IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

TRUESIGHT COMMUNICATIONS LLC, Plaintiff, v. SAMSUNG ELECTRONICS CO., LTD. AND SAMSUNG ELECTRONICS AMERICA, INC., Defendants.	Case No. 2:23-cv-00643-JRG

DEFENDANTS' AMENDED INVALIDITY CONTENTIONS AND
P.R. 3-3 AND 3-4 DISCLOSURES

Pursuant to Local Patent Rules ("P.R.") 3-3 and 3-4 and the Order Setting Scheduling Conference (Dkt. No. 12), Defendants Samsung Electronics Co., Ltd. ("SEC") and Samsung Electronics America, Inc. ("SEA") (collectively, "Samsung" or "Defendants") provide Defendants' Amended Invalidity Contentions and P.R. 3-3 and 3-4 Disclosures ("Invalidity Contentions") concerning United States Patent Nos. 8,949,879 (the "'879 Patent"), 8,898,803 (the "'803 Patent"), 9,595,300 (the "'300 Patent"), and 8,745,749 (the "'749 Patent") (together, the "Asserted Patents"). These contentions set forth Defendants' Invalidity Contentions with respect to the claims that were identified by Plaintiff Truesight Communications LLC ("Plaintiff" or "Truesight") in its Plaintiff's Disclosure of Asserted Claims and Infringement Contentions served May 29, 2024 ("Infringement Contentions") and Plaintiff's Amended Infringement Contentions dated October 29, 2024 to the extent the Court grants permission for Plaintiff to amend.

Samsung is also producing, concurrently with these Invalidity Contentions, documents required by P.R. 3-4, including copies of prior art references required by P.R. 3-4(b).

I. INTRODUCTORY STATEMENT

Plaintiff has asserted the following claims against Defendants in Case No. 2:23-cv-00643-JRG (E.D. Tex.):

U.S. Patent No.	Asserted Claims
8,949,879	1 through 19
8,898,803	1 through 14
9,595,300	1 through 20
8,745,749	1 through 25

(*See* Plaintiff's Disclosure of Asserted Claims and Infringement Contentions (P.R. 3-1).) These claims are collectively referred to as "the Asserted Claims." The Asserted Claims of the Asserted Patents, however, are neither novel nor non-obvious in view of the state of the prior art and the understanding of a person of ordinary skill in the art at the time of the alleged inventions ("POSITA"). The Asserted Claims are also invalid for lack of written description, lack of enablement, and/or indefiniteness under 35 U.S.C. § 112, as explained herein.

In accordance with P.R. 3-3(a)–(d), Defendants hereby: (a) identify each currently known item of prior art that either anticipates or renders obvious each asserted claim; (b) specify (i) whether each such item of prior art anticipates each asserted claim and/or renders it obvious, and (ii) if a combination of items of prior art renders a claim obvious, identify each such combination and the motivation to combine such items; (c) submit a chart identifying where each element in each asserted claim is disclosed, described, or taught in the prior art, and the identity of the structure(s), act(s), or material(s) in each item of prior art that performs the claimed function in the case of means-plus-function elements under 35 U.S.C. § 112, ¶ 6; and (d) identify the grounds for invalidating the Asserted Claims based upon indefiniteness under 35 U.S.C. § 112, ¶ 2 or enablement or written description under 35 U.S.C. § 112, ¶ 1, with respect to each asserted claim and based upon Defendants' investigation to date.

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The Invalidity Contentions provided herein by Defendants are preliminary and subject to revision as provided in the Local Rules, the Federal Rules of Civil Procedure, and/or any Order of this Court. For example, these Invalidity Contentions are based on Defendants' current knowledge, understanding, and belief as to the facts and information available at this time. Defendants have not yet completed their investigation, collection of information, discovery, or analysis relating to this action, and additional facts and information may require Defendants to supplement or modify these Invalidity Contentions.

Furthermore, Defendants are diligently seeking documents from third parties in discovery to demonstrate such third parties' earlier dates of invention under 35 U.S.C. § 102(g) and/or prior art offers for sale and public uses of products embodying the claimed invention under 35 U.S.C. § 102(b) or under 35 U.S.C. § 102(a). Defendants therefore reserve the right to supplement these Invalidity Contentions with further information and documentation, if and when it becomes available.

Defendants also reserve their right to supplement and/or amend these Invalidity Contentions after the Court has construed disputed claim terms. Defendants' contentions concerning the validity of the Asserted Claims may change based upon the Court's construction of the claims or positions that Truesight takes concerning infringement or validity issues after such construction. Moreover, given the inadequacies in Truesight's Infringement Contentions, Defendants have used their best efforts to understand how Truesight is construing the Asserted Claims for purposes of identifying invalidating prior art. Nothing contained in these Invalidity Contentions or any accompanying Exhibits, however, should be understood or deemed to be an express or implied admission or contention with respect to the proper construction or scope of any terms in the Asserted Claims, nor should they be understood to adopt Truesight's stated claim

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construction or its proposed scope of the Asserted Claims. Defendants' Invalidity Contentions merely consider Truesight's apparent application of the Asserted Claims to the accused products under the principle that the scope of the claim must be the same for invalidity as it is for infringement.

Defendants provide the information below and in the attached charts and document production in order to comply with P.R. 3-3 and 3-4. Defendants reserve the right to prove the invalidity or unenforceability of the Asserted Claims on bases other than those required to be disclosed in these Invalidity Contentions pursuant to P.R. 3-3. The production of documents that have been identified in these Invalidity Contentions shall not be deemed an admission that such documents are admissible or that Defendants have waived any objections regarding the admissibility of such documents.

Pursuant to the provisions of P.R. 3-3, Defendants identify specific portions of prior art references that disclose the elements of the Asserted Claims. Although Defendants have identified exemplary disclosures for each reference, each and every disclosure in the reference is not necessarily identified. The lack of a citation for an element should not be deemed an admission that the element is not disclosed or is not inherent in the reference. In an effort to focus the issues, Defendants identify only exemplary portions of cited references. It should be recognized that persons of ordinary skill in the art generally read a prior art reference as a whole and in the context of other publications and literature and in light of the knowledge of one of ordinary skill in the art. To understand and interpret any specific statement or disclosure within a prior art reference, such persons would rely on other information within the reference, along with other publications and their scientific or engineering knowledge. Defendants consequently reserve the right to rely upon other unidentified portions of the prior art references and on other publications and expert

testimony as to the knowledge of a person of ordinary skill in the art to provide context, and as aids to understanding and interpreting the portions of that art identified. Defendants also reserve the right to rely on other portions of the prior art references, other publications, and the testimony of experts to establish that a person of ordinary skill in the art would have been motivated to modify or combine certain of the cited references so as to render the claims obvious. Further, where Defendants identify a particular figure in a prior art reference, the identification should be understood to encompass the caption and description of the figure and any text relating to the figure in addition to the figure itself. Similarly, where an identified portion of text refers to a figure, the identification should be understood to include the figure as well. Defendants further reserve the right to rely upon any applicable industry standards and prior art cited to the patent office as invalidating references or to show the state of the art.

Prior art not included in these Invalidity Contentions, whether known or unknown to Defendants, may become relevant based on subsequent events. In particular, Defendants are currently unaware of the extent, if any, to which Plaintiff will contend that limitations of the Asserted Claims are not disclosed in the prior art identified by Defendants. To the extent that such an issue arises, Defendants reserve the right to identify other known references that would disclose or render obvious the allegedly missing limitation(s) of the Asserted Claims.

Defendants further intend to rely on inventor and Truesight admissions concerning the prior art relevant to the Asserted Patent found in, *inter alia*: the Asserted Patents, the patent prosecution histories for the Asserted Patents and related patents and/or patent applications; any deposition testimony of the named inventors on the Asserted Patents; and the papers filed and any evidence submitted by Plaintiff in connection with this litigation or other of its past, current, or

future litigations or administrative proceedings concerning or relating to one or more of the Asserted Patents.

Because Defendants are continuing their search for and analysis of relevant prior art, Defendants reserve the right to seek to amend or supplement the information provided herein, including identifying, charting, or relying upon additional prior art references, relevant disclosures, and bases for Invalidity Contentions. Additional prior art and disclosures, whether or not cited in this disclosure and whether known or not known to Defendants, may become relevant as investigation, analysis, and discovery continue. Defendants incorporate by reference, and intend to rely on, each reference, disclosure, or argument served in any prior or concurrent matter involving the same patents but not yet produced to Defendants by Plaintiff.

Additionally, because fact discovery has only just commenced, Defendants reserve the right to present additional prior art references or disclosures under 35 U.S.C. §§ 102(a), (b), (e), (f), or (g), or § 103, located during the course of discovery or further investigation, and to assert invalidity under 35 U.S.C. §§ 102(c), (d), or (f), if future discovery or investigation yields information that supports additional bases of invalidity.

II. INVALIDITY CONTENTIONS—P.R. 3-3

A. Identity of Each Item of Prior Art—P.R. 3-3(a)

Under P.R. 3-3(a), and subject to Defendants' reservation of rights as articulated above, Defendants identify each item of prior art that anticipates or renders obvious one or more of the Asserted Claims in the attached Prior Art Index submitted herewith. *See* Section V below. For references listed in Section V that are not identified as items of prior art that anticipate or render obvious an Asserted Claim, Defendants intend to rely on these references as *inter alia* background and evidence of the state of the art at the time of Plaintiff's alleged inventions and the level of skill and knowledge of a person of ordinary skill in the art at that time. *See Koninklijke Philips N.V. v.*

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Google LLC, 948 F. 3d 1330, 1347 (Fed. Cir. 2020) ("Regardless of the tribunal, the inquiry into whether any 'differences' between the invention and the prior art would have rendered the invention obvious to a skilled artisan necessarily depends on such artisan's knowledge.").

Additionally, the prior art references cited by Defendants include references that are related patent applications and issued patents that contain substantially the same subject matter (e.g., published U.S. patent applications, issued U.S. patents, foreign applications, or foreign issued patents). Any citation to or quotation from any of these patent applications or patents, therefore, encompasses any parallel citation to the same subject matter in other related or corresponding applications or patents. For example, where a claim chart cites a published patent application that ultimately issued as a patent with substantially the same written description, Defendants may rely upon the published patent application or the issued patent as prior art.

Defendants also reserve the right to later rely upon all references or portions of references provided in Section V to supplement or amend these disclosures. Defendants incorporate by reference (1) any and all prior art contained or identified in documents produced thus far by Plaintiff in this or any other proceeding, (2) any and all additional materials regarding or bearing upon invalidity in Plaintiff's possession or control that have not been produced to date, if any exist, and any and all prior art cited by or invalidity contentions served by defendants in any prior case or concurrent case.

Each disclosed item of prior art describing a product, system, or other implementation made in the United States is evidence of a prior invention by another under 35 U.S.C. § 102(g), as evidenced by the named inventors, authors, organizations, and publishers involved with each of these references. Defendants further intend to rely on admissions of the named inventors concerning the prior art, including statements found in the Asserted Patents, their prosecution

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histories, related patents or patent applications, any deposition testimony, and the papers filed and any evidence submitted by Plaintiff in conjunction with this litigation.

B. Whether Prior Art Anticipates or Renders Obvious—P.R. 3-3(b)

Pursuant to P.R. 3-3(b), and subject to Defendants' reservations of rights, Defendants identify in the attached Exhibits A-01 through A-23, A-25, B-01 through B-20, B-22, B-23, C-01 through C-21, and D-01 through D-13, D15 prior art references that anticipate the Asserted Claims under at least one or more of 35 U.S.C. §§ 102(a), (b), and (e), either expressly or inherently, and/or render obvious the Asserted Claims under 35 U.S.C. § 103 either alone or in combination with other references identified herein. Each Asserted Claim is anticipated by, or obvious in view of, one or more items of prior art identified in these disclosures, alone or in combination. Tables identifying ways in which the prior art references cited herein anticipate or render obvious the Asserted Claims is provided in Section II.B.2 below.

Much of the art identified in the attached Exhibits (i.e. claim charts) reflects common knowledge to persons of ordinary skill in the art and the state of the relevant art at the time of the earliest filing date of each Asserted Patent. Defendants may rely on additional citations, references, expert testimony, and other material to provide context or to aid in understanding the cited portions of the references or cited features of the systems. Defendants may also rely on expert testimony explaining relevant portions of references, relevant hardware or software products or systems, and other discovery regarding these subject matters. Additionally, Defendants may rely on other portions of any prior art reference for purposes of explaining the background and general technical subject area of the reference.

Where an individual reference is cited with respect to all limitations of an Asserted Claim, Defendants contend that the reference anticipates the claim under one or more of 35 U.S.C. §§ 102(a), (b), or (e) and also renders obvious the claim under 35 U.S.C. § 103, both by itself in

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view of the knowledge of a person of ordinary skill in the relevant art and in combination with the other cited references to the extent the reference is not found to disclose one or more claim limitations. A single prior art reference, for example, can establish obviousness where the differences between the disclosures within the reference and the claimed invention would have been obvious to one of ordinary skilled in the art. For example, "[c]ombining two embodiments disclosed adjacent to each other in a prior art patent does not require a leap of inventiveness." *Boston Scientific Scimed, Inc. v. Cordis Corp*., 554 F. 3d 982, 991 (Fed. Cir. 2009). If Plaintiff contends that an embodiment within a particular item of prior art does not fully disclose all limitations of a claim, Defendants reserve the right to rely on other embodiments in that prior art reference, or other information, to show single reference obviousness under 35 U.S.C. § 103(a).

Where an individual reference is cited with respect to fewer than all limitations of an Asserted Claim, Defendants contend that the reference renders obvious the claim under 35 U.S.C. § 103(a) by itself in view of the knowledge of a person of ordinary skill in the relevant art or in view of admitted prior art in the Asserted Patents and further in view of each other reference and combination of references that discloses the remaining claim limitation(s), as indicated in the claim charts submitted herewith." Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined." *KSR Int'l Co. v. Teleflex Inc.,* 550 U.S. 398, 406 (2007) (quoting *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17 (1966)). Exemplary motivations to combine references are discussed below in Section II.B.3. Defendants reserve the right to rely upon any references or assertions identified herein in connection with Defendants' contention that each Asserted Claim is invalid under 35 U.S.C. § 103 and to rely upon expert

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testimony addressing these references and assertions. The fact that prior art is identified to anticipate the Asserted Claims does not prevent Defendants from also relying on the same reference as rendering the Asserted Claims invalid as obvious. *Realtime Data, LLC v. Iancu*, 912 F. 3d 1368, 1373 (2019) ("anticipation is the epitome of obviousness"). If any cited prior art item does not fully disclose a limitation of an Asserted Claim or is alleged by Plaintiff to not disclose a limitation, the limitation is present and identified in another prior art item, or is admitted prior art by the Asserted Patents, as shown in the attached claim charts.

Many of the cited references cite or relate to additional references or products, services, or projects. Many of the cited references also cite hardware or systems. Defendants may rely upon these cited additional references and copies or exemplars of the cited hardware or systems. Defendants will produce or make available for inspection any of these cited references, hardware, or systems that they intend to rely upon. Defendants may also rely upon the disclosures of the references cited or discussed during the prosecution of the Asserted Patents or the assertions presented by the inventor about those references.

Defendants reserve the right to reduce the number of anticipation or obviousness references relied upon with respect to a given Asserted Claim and to exchange or otherwise modify the specific references relied upon for anticipation and within each obviousness combination for each Asserted Claim.

Discovery is at an early stage and Plaintiff has not provided any contentions or documentation with respect to any alleged pre-filing invention dates or with respect to claim limitations that are allegedly lacking in the prior art or not obvious over the prior art. Each limitation of the Asserted Claims was well known to those of ordinary skill in the art before the relevant priority date for each Asserted Claim, as detailed below.

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1. Priority

Plaintiff's P.R. 3-1(e) disclosures allege that the claimed inventions are entitled to the following priority dates:

U.S. Patent No.	Priority Date
8,949,879	April 22, 2011
8,898,803	January 11, 2010
9,595,300	October 21, 2009
8,745,749	November 15, 2010

Defendants' analysis and selection of prior art is based on, and assumes *arguendo*, the above priority dates. Defendants note that Truesight has provided no evidence to support its contentions that the Asserted Claims are entitled to claim priority back to these dates, relying on U.S. provisional patent application priority dates, and Defendants therefore reserve the right to argue that a later priority date is appropriate based on any findings as to the priority date of the Asserted Claims by the Court, information learned through discovery, or otherwise. Should Truesight fail to establish that any Asserted Claim is entitled to the above priority dates or should Truesight improperly later assert a different invention or priority date, Defendants reserve the right to add additional prior art references to these Invalidity Contentions.

2. Application of the Prior Art to the Claims[1]

The charts below identify references or exemplary combinations of references that either anticipate or render obvious the Asserted Claims. The discussion below sets forth rationales and motivations for combining the respective references with respect to the claimed features they disclose. For each of the Asserted Patents, Defendants may rely on "admitted prior art," which include statements in the specification or during prosecution identifying the work of others as

[1] The prior art references listed in the below charts of this section have been defined in Sections II.C and V.C.

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"prior art" are admissions that can be relied on for anticipation and obviousness purposes. *See Riverwood Int'l Corp. v. R. A. Jones & Co.,* 324 F. 3d 1346, 1354 (Fed. Cir. 2003).

'879 Patent

	Asserted Claims of the '879 Patent																	
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**
Knowles	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Emerson	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Arthur	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Jarman	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sullivan	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Craner	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
DTA800B1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '879 Patent																	
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**
Knowles in view of Novack	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Knowles in view of Hancock	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Knowles in view of Leung	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Knowles in view of Novack and/or Hancock and/or Leung and/or Damm and/or Goddard and/or Tran and/or Luong and/or Lewis and/or West and/or Sullivan and/or Wong and/or Huang and/or Elam and/or Gabriel and/or Gavita and/or Scott and/or Tong and/or Craner	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Emerson in view of Novack	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Emerson in view of Hancock	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Emerson in view of Leung	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Emerson in view of Novack and/or	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '879 Patent																		
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**
Hancock and/or Leung and/or Damm and/or Goddard and/or Tran and/or Luong and/or Lewis and/or West and/or Sullivan and/or Wong and/or Huang and/or Elam and/or Gabriel and/or Gavita and/or Scott and/or Tong and/or Craner																			
Arthur in view of Novack	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Arthur in view of Hancock	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Arthur in view of Leung	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Arthur in view of Novack and/or Hancock and/or Leung and/or Damm and/or Goddard and/or Tran and/or Luong and/or Lewis and/or West and/or Sullivan and/or Wong and/or Huang and/or Elam and/or Gabriel and/or Gavita and/or Scott and/or Tong and/or Craner	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Jarman in view of Novack	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Jarman in view of Hancock	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Jarman in view of Leung	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Jarman in view of Novack and/or Hancock and/or Leung and/or Damm and/or Goddard and/or Tran and/or Luong and/or Lewis and/or West and/or Sullivan and/or	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '879 Patent																		
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**
Wong and/or Huang and/or Elam and/or Gabriel and/or Gavita and/or Scott and/or Tong and/or Craner																			
Sullivan in view of Novack	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sullivan in view of Hancock	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sullivan in view of Leung	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sullivan in view of Novack and/or Hancock and/or Leung and/or Damm and/or Goddard and/or Tran and/or Luong and/or Lewis and/or West and/or Sullivan and/or Wong and/or Huang and/or Elam and/or Gabriel and/or Gavita and/or Scott and/or Tong and/or Craner	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Craner in view of Novack	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Craner in view of Hancock	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Craner in view of Leung	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Craner in view of Novack and/or Hancock and/or Leung and/or Damm and/or Goddard and/or Tran and/or Luong and/or Lewis and/or West and/or Craner and/or Wong and/or Huang and/or Elam and/or Gabriel and/or Gavita and/or Scott and/or Tong	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '879 Patent																	
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**
DTA800B1 in view of Novack	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
DTA800B1 in view of Hancock	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
DTA800B1 in view of Leung	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
DTA800B1 in view of Novack and/or Hancock and/or Leung and/or Damm and/or Goddard and/or Tran and/or Luong and/or Lewis and/or West and/or Sullivan and/or Wong and/or Huang and/or Elam and/or Gabriel and/or Gavita and/or Scott and/or Tong and/or Craner	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

'803 Patent

	Asserted Claims of the '803 Patent													
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Kirkland	X	X	X		X	X	X	X	X	X	X	X		X
Olaiya	X		X	X	X						X		X	X
Shinoda	X	X	X		X						X	X	X	X
Hasegawa	X		X		X						X	X	X	X
White	X	X	X	X	X	X	X	X	X	X	X	X		X
Harper	X	X	X	X	X	X	X	X	X	X	X	X		X
Butler	X	X	X	X	X	X	X	X	X	X	X	X		X
Rae	X		X	X	X	X		X			X	X		X
Kang	X		X	X	X	X	X		X	X	X			X
Mavrakakis	X	X	X	X	X	X	X	X	X	X	X	X		X
Raja	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Ayers	X	X	X	X	X	X	X	X	X	X	X		X	X
Hulbert	X	X	X								X	X		X
Netflix	X	X	X			X	X	X	X	X	X	X	X	
Amazon Unbox & VOD	X	X	X	X						X	X			
YouTube	X	X	X	X		X	X	X	X	X	X	X	X	

	Asserted Claims of the '803 Patent													
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Blockbuster Express Digital	X				X						X			X
Van Buskirk	X				X	X		X	X		X			X
Nishida	X		X	X							X	X	X	
Spotify	X	X	X	X		X	X	X	X	X	X	X	X	

	Asserted Claims of the '803 Patent - Combinations													
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Kirkland in view of Olaiya	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Kirkland in view of Hasegawa	X	X	X		X	X	X	X	X	X	X	X	X	X
Kirkland in view of Shinoda	X	X	X		X	X	X	X	X	X	X	X	X	X
Kirkland in view of Kang	X	X	X	X	X	X	X	X	X	X	X	X		X
Kirkland in view of Harper	X	X	X	X	X	X	X	X	X	X	X	X		X
Kirkland in view of Butler	X	X	X	X	X	X	X	X	X	X	X	X		X
Kirkland in view of Rae	X	X	X	X	X	X	X	X	X	X	X	X		X
Kirkland in view of Ayers	X	X	X	X	X	X	X	X	X	X	X	X		X
Kirkland in view of Mavrakakis	X	X	X	X	X	X	X	X	X	X	X	X		X
Kirkland in view of Takano	X	X	X		X	X	X	X	X	X	X	X		X
Kirkland in view of Moradi	X	X	X		X	X	X	X	X	X	X	X		X
Kirkland in view of Van Buskirk	X	X	X		X	X	X	X	X	X	X	X		X
Kirkland in view of Blockbuster Express Digital	X	X	X		X	X	X	X	X	X	X	X		X
Kirkland in view of Amazon Unbox & Amazon Video on Demand	X	X	X	X	X	X	X	X	X	X	X	X		X
Kirkland in view of YouTube	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '803 Patent - Combinations													
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Kirkland in view of Olaiya and/or Hasegawa and/or Shinoda and/or Kang and/or Harper and/or Butler and/or Rae and/or Ayers and/or Mavrakakis and/or Takano and/or Moradi and/or Van Buskirk and/or Blockbuster Express Digital and/or Amazon Unbox & VOD and/or YouTube	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Olaiya in view of Raja	X	X	X	X	X	X	X	X	X		X	X	X	X
Olaiya in view of Kirkland	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Olaiya in view of White	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Olaiya in view of Hulbert	X	X	X	X	X						X	X	X	X
Olaiya in view of Harper	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Olaiya in view of Butler	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Olaiya in view of Rae	X		X	X	X						X	X	X	X
Olaiya in view of Kang	X		X	X	X						X		X	X
Olaiya in view of Ayers	X		X	X	X	X	X	X	X	X	X		X	X
Olaiya in view of Takano	X		X	X	X						X		X	X
Olaiya in view of Moradi	X	X	X	X	X	X	X	X	X	X	X		X	X
Olaiya in view of Van Buskirk	X		X	X	X	X			X		X		X	X
Olaiya in view of Netflix Streaming	X		X	X	X	X	X		X	X	X	X	X	X
Olaiya in view of YouTube	X	X	X	X	X	X	X		X	X	X	X	X	X
Olaiya in view of Raja and/or Kirkland and/or White and/or Hulbert and/or Harper and/or	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '803 Patent - Combinations													
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Butler and/or Rae and/or Kang and/or Ayers and/or Takano and/or Moradi and/or Van Buskirk and/or Netflix Streaming and/or YouTube														
Kang in view of Kirkland	X	X	X	X	X	X	X	X	X	X	X	X		X
Kang in view of White	X	X	X	X	X	X	X	X	X	X	X	X		X
Kang in view of Hulbert	X	X	X	X	X	X	X		X	X	X	X		X
Kang in view of Shinoda	X	X	X	X	X	X	X		X	X	X	X	X	X
Kang in view of Olaiya	X		X	X	X	X	X		X	X	X		X	X
Kang in view of Hasegawa	X		X	X	X	X	X		X	X	X		X	X
Kang in view of Mavrakakis	X	X	X	X	X	X	X	X	X	X	X	X		X
Kang in view of Takano	X		X	X	X	X	X		X	X	X			X
Kang in view of Moradi	X	X	X	X	X	X	X		X	X	X			X
Kang in view of Kirkland and/or White and/or Hulbert and/or Shinoda and/or Olaiya and/or Hasegawa and/or Mavrakakis and/or Takano and/or Moradi	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Amazon Unbox & VOD in view of Kirkland	X	X	X	X	X	X	X	X	X	X	X	X		X
Amazon Unbox & VOD in view of White	X	X	X	X	X	X	X	X	X	X	X	X		X
Amazon Unbox & VOD in view of Hulbert	X	X	X	X						X	X	X		X
Amazon Unbox & VOD in view of Olaiya	X	X	X	X						X	X		X	X

	Asserted Claims of the '803 Patent - Combinations													
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Amazon Unbox & VOD in view of Hasegawa	X	X	X	X						X	X		X	X
Amazon Unbox & VOD in view of Shinoda	X	X	X	X						X	X	X	X	X
Amazon Unbox & VOD in view of Harper	X	X	X	X	X	X	X	X	X	X	X	X		X
Amazon Unbox & VOD in view of Butler	X	X	X	X	X	X	X	X	X	X	X	X		X
Amazon Unbox & VOD in view of Rae	X	X	X	X	X					X	X	X		X
Amazon Unbox & VOD in view of Kang	X	X	X	X	X					X	X			X
Amazon Unbox & VOD in view of Ayers	X	X	X	X	X	X	X	X	X	X	X			X
Amazon Unbox & VOD in view of Takano	X	X	X	X	X					X	X			X
Amazon Unbox & VOD in view of Moradi	X	X	X	X		X	X	X		X	X			
Amazon Unbox & VOD in view of Van Buskirk	X	X	X	X	X	X			X	X	X			
Amazon Unbox & VOD in view of Blockbuster Express Digital	X	X	X	X	X					X	X			X
Amazon Unbox and VOD in view of Kirkland and/or White and/or Hulbert and/or Olaiya and/or Hasegawa and/or Shinoda and/or Harper and/or Butler and/or Rae and/or Kang and/or Ayers and/or Takano and/or Moradi and/or Van Buskirk and/or Blockbuster Express Digital	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '803 Patent - Combinations													
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
YouTube in view of Kirkland	X	X	X	X	X	X	X	X	X	X	X	X	X	X
YouTube in view of Hulbert	X	X	X	X		X	X	X	X	X	X	X	X	X
YouTube in view of Olaiya	X	X	X	X		X	X	X	X	X	X	X	X	X
YouTube in view of Hasegawa	X	X	X	X	X	X	X	X	X	X	X	X	X	X
YouTube in view of Shinoda	X	X	X	X		X	X	X	X	X	X	X	X	X
YouTube in view of Harper	X	X	X	X	X	X	X	X	X	X	X	X	X	X
YouTube in view of Butler	X	X	X	X	X	X	X	X	X	X	X	X	X	X
YouTube in view of Rae	X	X	X	X	X	X	X	X	X	X	X	X	X	X
YouTube in view of Kang	X	X	X	X	X	X	X	X	X	X	X	X	X	X
YouTube in view of Ayers	X	X	X	X	X	X	X	X	X	X	X	X	X	X
YouTube in view of Takano	X	X	X	X	X	X	X	X	X	X	X	X	X	X
YouTube in view of Moradi	X	X	X	X		X	X	X	X	X	X	X	X	
YouTube in view of Van Buskirk	X	X	X	X	X	X	X	X	X	X	X	X	X	
YouTube in view of Blockbuster Express Digital	X	X	X	X	X	X	X	X	X	X	X	X	X	X
YouTube in view of Kirkland and/or Hulbert and/or Olaiya and/or Hasegawa and/or Shinoda and/or Harper and/or Butler and/or Rae and/or Kang and/or Ayers and/or Takano and/or Moradi and/or Van Buskirk and/or Blockbuster Express Digital	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '803 Patent - Combinations													
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Blockbuster Express Digital in view of Kirkland	X	X	X		X	X	X	X	X	X	X	X		X
Blockbuster Express Digital in view of White	X	X	X	X	X	X	X	X	X	X	X	X		X
Blockbuster Express Digital in view of Hulbert	X	X	X		X						X	X		X
Blockbuster Express Digital in view of Shinoda	X		X		X						X	X	X	X
Blockbuster Express Digital in view of Olaiya	X		X	X	X						X		X	X
Blockbuster Express Digital in view of Hasegawa	X		X		X						X		X	X
Blockbuster Express Digital in view of Mavrakakis	X	X	X	X	X	X	X	X	X	X	X	X		X
Blockbuster Express Digital in view of Takano	X				X						X			X
Blockbuster Express Digital in view of Moradi	X				X	X	X	X		X	X			X
Blockbuster Express Digital in view of Kirkland and/or White and/or Hulbert and/or Shinoda and/or Olaiya and/or Hasegawa and/or Mavrakakis and/or Takano and/or Moradi	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Nishida in view of Raja	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Nishida in view of Kirkland	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Nishida in view of White	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Nishida in view of Hulbert	X	X	X	X	X						X	X	X	X

	Asserted Claims of the '803 Patent - Combinations													
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Nishida in view of Harper	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Nishida in view of Butler	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Nishida in view of Rae	X		X	X	X	X		X			X	X	X	X
Nishida in view of Kang	X		X	X	X	X	X		X	X	X	X	X	X
Nishida in view of Ayers	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Nishida in view of Takano	X		X	X	X						X	X	X	X
Nishida in view of Moradi	X	X	X	X		X	X	X	X	X	X	X	X	
Nishida in view of Van Buskirk	X		X	X	X	X		X	X		X	X	X	X
Nishida in view of Netflix Streaming	X	X	X	X		X	X	X	X	X	X	X	X	
Nishida in view of YouTube	X	X	X	X		X	X	X	X	X	X	X	X	
Nishida in view of Spotify	X	X	X	X		X	X	X	X	X	X	X	X	
Nishida in view of Raja and/or Kirkland and/or White and/or Hulbert and/or Harper and/or Butler and/or Rae and/or Kang and/or Ayers and/or Takano and/or Moradi and/or Van Buskirk and/or Netflix Streaming and/or YouTube and/or Spotify	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Spotify in view of Kirkland	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Spotify in view of Hulbert	X	X	X	X		X	X	X	X	X	X	X	X	X
Spotify in view of Olaiya	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Spotify in view of Hasegawa	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Spotify in view of Shinoda	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '803 Patent - Combinations													
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Spotify in view of Nishida	X	X	X	X		X	X	X	X	X	X	X	X	
Spotify in view of Harper	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Spotify in view of Butler	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Spotify in view of Rae	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Spotify in view of Kang	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Spotify in view of Ayers	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Spotify in view of Takano	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Spotify in view of Moradi	X	X	X	X		X	X	X	X	X	X	X	X	
Spotify in view of Van Buskirk	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Spotify in view of Blockbuster Express Digital	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Spotify in view of Kirkland and/or Hulbert and/or Olaiya and/or Hasegawa and/or Shinoda and/or Nishida and/or Harper and/or Butler and/or Rae and/or Kang and/or Ayers and/or Takano and/or Moradi and/or Van Buskirk and/or Blockbuster Express Digital	X	X	X	X	X	X	X	X	X	X	X	X	X	X

'300 Patent

	Asserted Claims of the '300 Patent																			
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Nishikawa	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Angiolillo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Park '773	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Shiiyama	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Poslinksi	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '300 Patent																			
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Yun	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cronin	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '300 Patent Combinations																			
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Nishikawa in view of Vahtola	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Nishikawa in view of Angiolillo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Nishikawa in view of Shiiyama	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Nishikawa in view of Angiolillo and/or Vahtola and/or Shiiyama and/or Cronin and/or Poslinski and/or Ackley and/or Kuroiwa '764 and/or Errico and/or Park '332 and/or Van de Streek and/or Johnson and/or Boreczky and/or Kuroiwa '395 and/or Kashima and/or Hua and/or Oetzel and/or DVD Explorer	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Angiolillo in view of Vahtola	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Angiolillo in view of Nishikawa	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Angiolillo in view of Shiiyama	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Angiolillo in view of Nishikawa and/or Vahtola and/or Shiiyama and/or Cronin and/or Poslinski and/or Ackley	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '300 Patent Combinations																			
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
and/or Kuroiwa '764 and/or Errico and/or Park '332 and/or Van de Streek and/or Johnson and/or Boreczky and/or Kuroiwa '395 and/or Kashima and/or Hua and/or Oetzel and/or DVD Explorer																				
Park '773 in view of Vahtola	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Park '773 in view of Angiolillo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Park '773 in view of Shiiyama	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Park '773 in view of Nishikawa	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Park '773 in view of Angiolillo and/or Vahtola and/or Shiiyama and/or Cronin and/or Poslinski and/or Ackley and/or Kuroiwa '764 and/or Errico and/or Park '332 and/or Van de Streek and/or Johnson and/or Boreczky and/or Kuroiwa '395 and/or Kashima and/or Hua and/or Oetzel and/or DVD Explorer	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Shiiyama in view of Vahtola	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Shiiyama in view of Angiolillo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '300 Patent Combinations																			
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Shiiyama in view of Nishikawa	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Shiiyama in view of Angiolillo and/or Vahtola and/or Shiiyama Cronin and/or Poslinski and/or Ackley and/or Kuroiwa '764 and/or Errico and/or Park '332 and/or Van de Streek and/or Johnson and/or Boreczky and/or Kuroiwa '395 and/or Kashima and/or Hua and/or Oetzel and/or DVD Explorer	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Poslinski in view of Vahtola	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Poslinski in view of Angiolillo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Poslinski in view of Shiiyama	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Poslinski in view of Angiolillo and/or Vahtola and/or Shiiyama and/or Cronin and/or Nishikawa and/or Ackley and/or Kuroiwa '764 and/or Errico and/or Park '332 and/or Van de Streek and/or Johnson and/or Boreczky and/or Kuroiwa '395 and/or Kashima and/or Hua and/or Oetzel	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '300 Patent Combinations																			
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
and/or DVD Explorer																				
Yun in view of Vahtola	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Yun in view of Angiolillo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Yun in view of Shiiyama	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Yun in view of Angiolillo and/or Vahtola and/or Shiiyama and/or Cronin and/or Nishikawa and/or Ackley and/or Kuroiwa '764 and/or Errico and/or Park '332 and/or Van de Streek and/or Johnson and/or Boreczky and/or Kuroiwa '395 and/or Kashima and/or Hua and/or Oetzel and/or DVD Explorer	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cronin in view of Vahtola	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cronin in view of Angiolillo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cronin in view of Shiiyama	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cronin in view of Angiolillo and/or Vahtola and/or Shiiyama and/or Nishikawa and/or Ackley and/or Kuroiwa '764 and/or Errico and/or Park '332 and/or Van de Streek and/or Johnson	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '300 Patent Combinations																		
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
and/or Boreczky and/or Kuroiwa '395 and/or Kashima and/or Hua and/or Oetzel and/or DVD Explorer																				
DVD Architect 4.0 in view of Vahtola	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
DVD Architect 4.0 in view of Angiolillo	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
DVD Architect 4.0 in view of Shiiyama	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
DVD Architect 4.0 in view of Angiolillo and/or Vahtola and/or Shiiyama and/or Cronin and/or Nishikawa and/or Ackley and/or Kuroiwa '764 and/or Errico and/or Park '332 and/or Van de Streek and/or Johnson and/or Boreczky and/or Kuroiwa '395 and/or Kashima and/or Hua and/or Oetzel and/or DVD Explorer	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

'749 Patent

	Asserted Claims of the '749 Patent																							
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
Hamann	X	X						X						X				X	X			X			
Maeda	X	X				X	X	X						X	X	X	X	X	X			X	X	X	X
CPXM	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '749 Patent																							
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
SD Product Manual	X					X	X							X	X	X	X	X	X			X			
Lu		X	X	X	X					X	X	X						X	X	X	X	X			
SD Spec-2	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
SD Spec-3	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Dash	X					X	X	X						X				X				X			
Tsypliaev	X					X	X	X						X				X				X			
Hirota	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Meharchand	X	X				X	X	X						X				X				X			
Android SDK	X	X												X				X	X			X			
SanDisk SD Cards	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '749 Patent – Combinations																								
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
Hamann in view of Maeda	X	X				X	X	X						X	X	X	X	X	X			X	X	X	X
Hamann in view of CPXM	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hamann in view of SD Product Manual	X	X				X	X							X	X	X	X	X	X			X			
Hamann in view of Lu	X	X	X	X	X			X		X	X	X		X				X	X	X	X	X			
Hamann in view of SD Spec-2	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hamann in view of SD Spec-3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hamann in view of Dash	X	X				X	X	X						X				X	X			X			
Hamann in view of Tsypliaev	X	X				X	X	X						X				X	X			X			
Hamann in view of Hirota	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Hamann in view of Meharchand	X	X				X	X	X						X				X	X			X			
Hamann in view of Android SDK	X	X						X						X				X	X			X			
Hamann in view of SanDisk SD Cards	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hamann in view of Maeda and/or SD Product	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '749 Patent – Combinations																							
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
Manual and/or CPXM and/or Lu and/or SD Spec-2/3 and/or Dash and/or Tsypliaev and/or Hirota and/or Meharchand and/or Android SDK and/or SanDisk SD Cards																									
Maeda in view of Hamann	X	X				X	X	X						X	X	X	X	X	X			X	X	X	X
Maeda in view of CPXM	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Maeda in view of SD Product Manual	X	X				X	X	X						X	X	X	X	X	X			X	X	X	X
Maeda in view of Lu	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Maeda in view of SD Spec-2	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Maeda in view of SD Spec-3	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Maeda in view of Dash	X	X				X	X	X						X	X	X	X	X	X			X	X	X	X
Maeda in view of Tsypliaev	X	X				X	X	X						X	X	X	X	X	X			X	X	X	X
Maeda in view of Hirota	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Maeda in view of Meharchand	X	X				X	X	X						X	X	X	X	X	X			X	X	X	X
Maeda in view of Android SDK	X	X				X	X	X						X	X	X	X	X	X			X	X	X	X
Meada in view of SanDisk SD Cards	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Maeda in view of Hamann and/or SD Product Manual and/or CPXM and/or Lu	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '749 Patent – Combinations																								
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
and/or SD Spec-2/3 and/or Dash and/or Tsypliaev and/or Hirota and/or Meharchand and/or Android SDK and/or SanDisk SD Cards																									
CPXM in view of Hamann	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CPXM in view of Maeda	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CPXM in view of SD Product Manual	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CPXM in view of Lu	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CPXM in view of SD Spec-2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CPXM in view of SD Spec-3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CPXM in view of Dash	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CPXM in view of Tsypliaev	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CPXM in view of Hirota	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CPXM in view of Meharchand	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CPXM in view of Android SDK	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CPXM in view of SanDisk SD Cards	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CPXM in view of Hamann and/or Maeda and/or SD Product Manual and/or Lu and/or SD Spec-2/3 and/or Dash	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '749 Patent – Combinations																								
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
and/or Tsypliaev and/or Hirota and/or Meharchand and/or Android SDK and/or SanDisk SD Cards																									
Hirota in view of Hamann	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Hirota in view of Maeda	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Hirota in view of CPXM	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hirota in view of SD Product Manual	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Hirota in view of Lu	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Hirota in view of SD Spec-2	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Hirota in view of SD Spec-3	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Hirota in view of Dash	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Hirota in view of Tsypliaev	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Hirota in view of Meharchand	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Hirota in view of Android SDK	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Hirota in view of SanDisk SD Cards	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Hirota in view of Maeda and/or SD Product Manual and/or CPXM and/or Lu and/or SD Spec-2/3 and/or Dash and/or Tsypliaev and/or	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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	Asserted Claims of the '749 Patent – Combinations																							
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
Meharchand and/or Android SDK and/or SanDisk SD Cards																									
SD Product Manual in view of Hamann	X	X				X	X	X						X	X	X	X	X	X			X			
SD Product Manual in view of Maeda	X	X				X	X	X						X	X	X	X	X	X			X	X	X	X
SD Product Manual in view of CPXM	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SD Product Manual in view of Lu	X	X	X	X	X	X	X			X	X	X		X	X	X	X	X	X	X	X	X			
SD Product Manual in view of SD Spec-2	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
SD Product Manual in view of SD Spec-3	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
SD Product Manual in view of Dash	X					X	X	X						X	X	X	X	X	X			X			
SD Product Manual in view of Tsypliaev	X					X	X	X						X	X	X	X	X	X			X			
SD Product Manual in view of Hirota	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
SD Product Manual in view of Meharchand	X	X				X	X	X						X	X	X	X	X	X			X			
SD Product Manual in view of Android SDK	X	X				X	X							X	X	X	X	X	X			X			
SD Product Manual in view of Hamann and/or Maeda and/or CPXM and/or Lu	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '749 Patent – Combinations																							
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
and/or SD Spec-2/3 and/or Dash and/or Tsypliaev and/or Hirota and/or Meharchand and/or Android SDK																									
SD Spec-2/3 in view of Hamann	X	X	X	X	X			X		X	X	X		X				X	X	X	X	X			
SD Spec-2/3 in view of Maeda	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
SD Spec-2/3 in view of CPXM	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SD Spec-2/3 in view of SD Product Manual	X		X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
SD Spec-2/3 in view of Lu	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
SD Spec-2/3 in view of Dash	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
SD Spec-2/3 in view of Tsypliaev	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
SD Spec-2/3 in view of Hirota	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
SD Spec-2/3 in view of Meharchand	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
SD Spec-2/3 in view of Android SDK	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
SD Spec-2/3 in view of Hamann and/or Maeda and/or SD Product Manual and/or CPXM and/or Lu and/or Dash and/or Tsypliaev and/or Hirota and/or Meharchand	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Asserted Claims of the '749 Patent – Combinations																							
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
and/or Android SDK																									
SanDisk SD Cards in view of Hamann	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
SanDisk SD Cards in view of Maeda	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
SanDisk SD Cards in view of CPXM	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SanDisk SD Cards in view of Lu	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
SanDisk SD Cards in view of Dash	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
SanDisk SD Cards in view of Tsypliaev	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
SanDisk SD Cards in view of Hirota	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
SanDisk SD Cards in view of Meharchand	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
SanDisk SD Cards in view of Android SDK	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
SanDisk SD Cards in view of Hamann and/or Maeda and/or CPXM and/or Lu and/or Dash and/or Tsypliaev and/or Hirota and/or Meharchand and/or Android SDK	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Android SDK in view of Hamann	X	X						X						X				X	X			X			

	Asserted Claims of the '749 Patent – Combinations																								
Prior Art	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
Android SDK in view of Maeda	X	X				X	X	X						X	X	X	X	X	X			X	X	X	X
Android SDK in view of CPXM	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Android SDK in view of SD Product Manual	X	X				X	X							X	X	X	X	X	X			X			
Android SDK in view of Lu	X	X	X	X	X					X	X	X		X				X	X	X	X	X			
Android SDK in view of SD Spec-2	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Android SDK in view of SD Spec-3	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Android SDK in view of Dash	X	X				X	X	X						X				X	X			X			
Android SDK in view of Tsypliaev	X	X				X	X	X						X				X	X			X			
Android SDK in view of Hirota	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Android SDK in view of Meharchand	X	X				X	X	X						X				X	X			X			
Android SDK in view of SanDisk SD Cards	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Android SDK in view of Maeda and/or Hamann and/or SD Product Manual and/or CPXM and/or Lu and/or SD Spec-2/3 and/or Dash and/or Tsypliaev and/or Hirota and/or Meharchand and/or SanDisk SD Cards	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

3. Obviousness and Motivations to Combine

As shown in the prior art matrices above, each cited prior art reference may be combined with one or more other prior art references to render obvious the Asserted Claims in combination, as explained in more detail below. The disclosures of these references may also be combined with information known to persons skilled in the art at the time of the alleged inventions, and understood and supplemented in view of the common sense of persons skilled in the art at the time of the alleged inventions, including any statements in the intrinsic records of the Asserted Patents and related applications.

A person of ordinary skill would have been motivated to combine the prior art cited in the Exhibits based on the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art. For example, the identified prior art references for the Asserted Patents, including portions cited in attached Exhibits A-01 through A-23, A-25, B-01 through B-20, B-22, B-23, C-01 through C-21, and D-01 through D-13, D15, are analogous prior art to the subject matter of the Asserted Claims and each other, and are properly combinable. Because these prior art references and the Asserted Patents are from the same field of endeavor (*see, e.g.*, '879 Patent, 1:1315; '300 Patent, 1:13-15; '803 Patent, 1:15-40; '749 Patent, 1:13-15, 2:21-25), it would have been obvious for a POSITA to either ascertain any missing functionality claimed and/or look from one piece of prior art to another in order to find any missing functionality the POSITA desired to implement. Moreover, these references are reasonably pertinent to the problems purportedly addressed by the Asserted Patents. The identified prior art references for each of the Asserted Patents, including portions cited in attached Exhibits A-01 through A-23, A-25, B-01 through B-20, B-22, B-23, C-01 through C-21, and D-01 through D-13, D15 address the same or similar technical issues and suggest the same or similar solutions to those issues as the Asserted Claims.

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On such bases, on a limitation-by-limitation basis, Defendants expressly intend to combine one or more prior art items identified in the Exhibits with each other to address any further contention from Plaintiff that a particular prior art item supposedly lacks one or more limitations of an Asserted Claim. In other words, Defendants contend that each charted prior art item can be combined with other charted prior art items when a particular prior art item lacks or does not explicitly disclose a limitation or feature of an Asserted Claim. The suggested obviousness combinations described below are not to be construed to suggest that any reference included in the combinations is not anticipatory. Further, if Plaintiff contends that any of the anticipatory prior art fails to disclose one or more limitations of the Asserted Claims, Defendants reserve the right to identify other prior art references that, when combined with the anticipatory prior art, would render the Asserted Claims obvious despite an allegedly missing limitation. Defendants will further specify the motivations to combine the prior art, including through reliance on expert testimony, at the appropriate later stage of this lawsuit.

A person of skill in the art would have been motivated to combine the identified prior art items. As the United States Supreme Court held in *KSR*, 550 U.S. at 416: "The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." The Supreme Court further held that, "[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." *Id.* at 417.

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The Supreme Court has further held that "in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.* at 420. It is sufficient that a combination of limitations was "obvious to try" holding that, "[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense." *Id.* at 421. "In that instance the fact that a combination was obvious to try might show that it was obvious under § 103." *Id.* Finally, the Supreme Court recognized that "[g]ranting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, in the case of patents combining previously known limitations, deprive prior inventions of their value or utility." *Id.* at 419. All of the following rationales recognized in *KSR* support a finding of obviousness with respect to each of the obviousness combinations disclosed herein:

(1) Combining prior art limitations according to known methods to yield predictable results;

(2) Simple substitution of one known limitation for another to obtain predictable results;

(3) Use of known technique to improve similar devices (methods, or products) in the same way;

(4) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;

(5) "Obvious to try"—choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;

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(6) Known work in one field of endeavour may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to one of ordinary skill in the art; and

(7) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

Certain of these rationales are discussed with greater specificity below, but all apply, and the lack of a more specific discussion of some should not be taken to imply or admit that others do not also apply as the discussion below is intended to provide further explanation regarding certain of the specific rationales. As Plaintiff's positions regarding claim construction, specific prior art, specific combinations and/or the state of the art at the time of invention have not yet been disclosed, additional explanation regarding obviousness and/or motivation to combine specific references and knowledge may become relevant and appropriate. Accordingly, Defendants reserve the right to further identify and explain motivations to combine as the need arises based on positions taken by Plaintiff and/or rulings issued by the Court.

Defendants further contend that the prior art identified in these Invalidity Contentions is evidence of simultaneous or near-simultaneous independent invention by others of the alleged invention as recited in one or more of the Asserted Claims. Defendants reserve the right to rely on the simultaneous or near-simultaneous independent invention by others as further evidence of the obviousness of the Asserted Claims.

Each limitation of the Asserted Claims was well known to those of ordinary skill in the art before the priority date, as detailed below. The limitations recited in the Asserted Claims are mere

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combinations and modifications of these well-known limitations. A person of ordinary skill in the art would be able, and motivated, to improve the existing technology in the same or similar manner by combining or modifying the individual limitations that were already known in the art to yield predictable results.

Subject to the foregoing, Defendants identify the following exemplary reasons that skilled artisans would have combined limitations of the prior art to render obvious the Asserted Claims. The fact that others are not discussed more specifically should not be interpreted as an admission or concession that it does not apply. To the contrary, the discussion below simply provides more explanation of these specific rationales.

a) Motivations Identified During Prosecution

Defendants hereby expressly incorporate by reference any statements and reasons set forth by the Examiner during prosecution of the Asserted Patents and related patent applications, as to why it would have been obvious to modify or combine references to achieve the limitations of the Asserted Claims.

b) Combinations of Related References

In some instances, multiple prior art publications and/or physical references discuss or address the same or substantially similar underlying system or other project, such as multiple patents or publications discussing the same subject matter. Where multiple references discuss or relate to the same or related underlying projects, systems, or other subject matter, it would have been obvious to combine the discussions and disclosures of the references as they would be understood to describe features or potential features of the underlying project, system, or subject matter. Similarly, where one reference cites or discusses other references or their teachings, or references have one or more authors in common and a related area of subject matter, or have a common assignee, it would have been obvious to consider the teachings of the references in

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combination with each other due to the express relationships and commonalities between the references.

c) Specific Motivations to Combine and Additional Obviousness Considerations

(1) U.S. Patent No. 8,949,879

The ’879 Patent “relates to the field of video playback devices, and more particularly, those devices that play content from a digital library stored either locally or remotely” ’879 Patent at 1:12-15. More particularly, the Asserted Claims relate to a method or apparatus for operating a system “for setting rating based access controls for known digital content to be played on a video playback device.” *Id.* at Claim 1. According to the method and apparatus disclosed in the Asserted Claims, a system overrides an existing rating policy.

The ’879 Patent aims to record access controls associated with specific digital media assets in a digital library and creates policy decisions regarding use of the asset based on these settings. *Id.* at Abstract. All the content control functionality disclosed in the ’879 Patent was well-known in the prior art at the time of the Patent’s filing.

(a) Knowles in view of Novack and/or Hancock and/or Leung and/or Damm and/or Goddard and/or Tran and/or Luong and/or Lewis and/or West and/or Sullivan and/or Wong and/or Huang and/or Elam and/or Gabriel and/or Gavita and/or Scott and/or Tong and/or Craner

Knowles discloses a “multiple Interactive Program Guide (IPG) system” Knowles, Abstract. Knowles also discloses “[a]n embodiment of the invention is a system that provides customers with multiple instantly accessible electronic IPGs. The multiple IPG system enables users to view TV programs and schedule information in each IPG. Preferably, each IPG comprises a Grid Guide, a Channel Guide, and a Theme Guide. Each IPG receives, stores, and displays program titles and information and share some of the information with other IPGs.” Knowles,

¶[0044]. Knowles discloses an IPG that includes "VChip Plus+ in guide mode uses two data sources in combination to determine whether a show should be blocked: data downloaded and stored in the guide (channel lineups, show schedules, show ratings), and rating data transmitted over the VBI. Ordinary V-Chip devices use the data transmitted over the VBI to determine whether or not to block a show by rating. These ratings are sent a minimum of every 15 seconds. Thus, a show that a parent may wish blocked, may be seen for up to 15 seconds before the blocking takes effect. VCHIP Plus+ in guide mode uses show rating data already stored for each of the IPGs to determine whether a show should be blocked as soon as it begins, and use the VBI data to confirm if the show was properly blocked." Knowles at ¶[0099].

Novack discloses a "centralized biometric system for verifying the identity of a user over a communications network includes a device that stores biometric information in association with information that identifies users." Novack, Abstract. It also discloses that a "PIN provided by the user ¶[is used] as authorization from the user to deliver the requested media content to the user." Novack ¶[0007]. Novack discloses that a "problem with verifying the identity of a user based on a PIN is that it is easy for individuals to obtain the user's PIN." It provides a verification system that stores "at least one of pre-registered fingerprints, voice characteristic information, facial geometries, iris scan information, DNA, etc. for users" and a verification system that "includes a database 23 that stores biometric information in association with information that identifies users." Novack, ¶[0014], ¶[0041].

A POSITA would have recognized that Novack's disclosures relating to biometric information could easily be incorporated into Knowles. A POSITA would have been motivated to implement Novack's biometric systems into Knowles to address the problems with PINs. Novack, ¶[0009]. A POSITA would have understood that, as of the priority date of the '879 Patent, security

was important in authorizing use. This was especially so in V-Chip devices, which Knowles discloses. Knowles ¶[0099]. Novack's biometric verification could have mitigated this well-known drawback to Knowles's V-Chip system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., biometric verification) to improve similar devices or methods (e.g., devices for parental control of viewing content) in the same way (e.g., preventing the playback device play in the event of authentication was not provided). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., biometric verification) to a known device or method (e.g., devices for parental control of viewing content) that is ready for improvement to yield predictable results (e.g., device that permits viewing when biometrics are verified). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hancock discloses "an apparatus and method that provides for a user interface for programmable blocking, such as for parental control, of viewable programs, such as programs that can be viewed on a television receiver. A memory provides storage of information relating to viewable programming and user defined blocking instructions. A microprocessor generates a blocking command as a function of the information stored in memory. A blocking circuit, such as a blocking circuit which passes a baseband television video signal to a television display, provides blocking of the video signal in response to the blocking command." Hancock, 3:20-30. It also discloses that "[a]fter the viewer has selected, as described below, the television program viewing blocking/enablement function ("V-ChipPlus+"), the viewer's screen displays the V-Chip Plus +In-Guide User Interface Main Blocking Menu (the 'Main Blocking Menu')." Hancock, 6:24-28. It also discloses the "viewer selects a particular program, channel logo, or time slot to be blocked by

one selection method, for instance, using the viewer's remote control device to point to and select a program, channel or time slot." Hancock, 9:17–20.

A POSITA would have recognized that Hancock's disclosures relating to program data could easily be incorporated into Knowles. A POSITA would have been motivated to implement Hancock's program data into Knowles to provide additional information. A POSITA would have understood that, as of the priority date of the '879 Patent, program information was important to provide. Displaying information was central to both Knowles and Hancock. Knowles, ¶¶[0044]-[0046]; Hancock, 6:4-56. Hancock's additional media information could improve the media information already in Knowles's system. Additionally, both Knowles and Hancock disclose embodiments of the same V-Chip Plus System. *See, e.g.*, Knowles, ¶[0098]; Hancock 6:23-42. A POSITA would have considered the combination to amount to the use of known techniques (e.g., displaying program information on a television) to improve similar devices or methods (e.g., other systems that display program information on a television) in the same way (e.g., displaying information). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., displaying information) to a known device or method (e.g., displaying information) that is ready for improvement to yield predictable results (e.g., device that displays the identified information). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Leung discloses " an apparatus for parental control of a television receiver" Leung, ¶[0007]. It also discloses that the "viewer input device 46 also allows the viewer to remotely program the V-Chip Plus+ system to exclude programs according to one or more rating factors, as well as compiling or modifying the V-Chip Plus+ override lists. When the viewer wishes to review

the particular ratings set in the V-Chip Plus+ system or the V-Chip Plus+ override lists, the microprocessor 44 retrieves the appropriate information from RAM 48 and couples it to the video processor 50, where the information is formatted for display. Preferably, the information stored in the video processor 50 is a bit map of what is displayed on the TV display 42." Leung, ¶[0075]. It also discloses that for "the purpose of describing the operation of the override system, it is assumed that the television signal of each channel carried by the cable feed contains supplemental data, including channel identification, such as HBO, CNN, or NBC. Preferably, the channel identification is embedded in the VBI of the signal of each channel in an XDS format" Leung, ¶[0062].

A POSITA would have recognized that Leung's disclosures relating to program data could easily be incorporated into Knowles. A POSITA would have been motivated to implement Leung's program data into Knowles to provide additional program information. A POSITA would have understood that, as of the priority date of the '879 Patent, program information was important to provide. Program data was central to both Knowles and Leung. Knowles, ¶[0044]; Leung, ¶[0062]. Leung's additional media information could improve the media information already in Knowles's system. Additionally, both Knowles and Leung disclose embodiments of the same V-Chip Plus System. *See, e.g.*, Knowles, ¶[0098]; Leung, ¶[0074]. A POSITA would have considered the combination to amount to the use of known techniques (e.g., displaying program information on a television) to improve similar devices or methods (e.g., other systems that display program information on a television) in the same way (e.g., displaying information). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., displaying information) to a known device or method (e.g., displaying information) that is ready for improvement to yield predictable results (e.g., device that displays

the identified information). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Damm discloses a "system is provided for rating multimedia content streamed over a data network as a series of data frames, segments, or packets and for administering display of the rated content." Damm, ¶[0013]. It also discloses that for "satellite and cable television systems, a variety of remote control operated features are now available for blocking channels, programs, or offensive content detected in programs. V-chip technology is one of these implemented via a hardware chip added to the viewing terminal. The V-chip blocks content by reading the ratings embedded in television signaling data frames or recorded video and turns off the signal when the ratings exceed certain ratings-based thresholds set by the parents. V-chip technology utilizes a relatively complicated, but generally well known rating scheme including all youth (Y), youth 7 or older (Y7), general audience (G), parental guidance suggested (PG), teen 14 or over (TV14), and mature audience only (MA). Programs having these ratings may also include sub-ratings like contains violence (V), contains sexual situations (S), contains coarse language (L), and contains suggestive dialogue (D)." Damm, ¶[0003]. It also discloses that the "methods and system of the present invention is not limited to full length industry approved presentations. Any multimedia snippet, movie clip, audio clip, or the like may be rated and filtered or blocked at threw receiving device. If the receiving device does not detect any data in the content marker fields of received data packets of a presentation, or does not detect the presence of the marker field at all, then the content is not marked according to the methods and system of the present invention and may be rejected by default. However, in another embodiment if the un-marked presentation is conventionally rated the receiving device may default to a conventional ratings setting to determine

if the content will be allowed or not." Damm, ¶[0086]. It also discloses while "all of the existing solutions work to some extent to block unwanted content, new methods of content delivery and availability of new and emerging multimedia display devices create certain vulnerabilities in the existing methods. Other limitations are also apparent to one with skill in the art of multimedia content filtering. The boundaries between data network telephony (DNT), of which Internet protocol network telephony (IPNT) is a subset, and data packet enabled satellite and cable network content delivery paths are increasingly blurred by improvements in the capabilities of transversing between networks and transport protocols when accessing or delivering content. Cellular telephones capable of accessing IP data networks are increasingly being marketed as content receiving devices capable of receiving, displaying, and storing, and sharing multimedia content. Some "bleeding edge" devices have up to 2 gigabytes of storage capability. These and other like devices, including new devices being developed, are fully multimedia capable and highly mobile and may receive content from a variety of defined networks." Damm, ¶[0008].

A POSITA would have recognized that Damm's disclosures relating to defaulting to deny access could easily be incorporated into Knowles. A POSITA would have been motivated to implement Damm's program data into Knowles to provide additional security. A POSITA would have understood that, as of the priority date of the '879 Patent, parental control was important to provide. Such parental control was central to both Knowles and Damm. See, e.g., Knowles, ¶[0115]; Damm, ¶[0014]. Damm's defaulting to deny access could improve the parental control already in Knowles's system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., defaulting to deny access to view a program) to improve similar devices or methods (e.g., other systems that control access to a program) in the same way (e.g., preventing the program from being viewable). As another example, a POSITA would have

understood the modification or combination to amount to applying a known technique (e.g., defaulting to deny access to view a program) to a known device or method (e.g., other systems that control access to a program) that is ready for improvement to yield predictable results (e.g., device that defaults to deny access). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Goddard discloses a "a method of setting content rating parameters of a content control system. Employing the present method, a user may set acceptable content rating parameters based on the rating of example content by blocking or unblocking the example content. The content ratings system compares the content rating of the example content with existing acceptable content rating parameters and adjusts the content rating parameters accordingly. In this manner, specific knowledge of the content ratings scheme employed, or the meaning of specific content ratings used by the content ratings scheme, is not required." Goddard, 2:31-42. It also discloses that in "one embodiment, such a user interface 100 may include an on-screen control panel 102 for controlling access to media by the information appliance (see FIG. 6). A region or window 104 of the control panel 102 contains therein display fields such as "Channel" 106 and various control buttons or switches such as channel selection 108 & 110, volume 112 & 114, "Settings" 116 and so forth, which function as on-screen visual representations of controls of the information appliance or, alternately, peripheral devices attached thereto that provide access to one or more media." Goddard, 4:36-45.

A POSITA would have recognized that Goddard's disclosures relating to content control could easily be incorporated into Knowles. A POSITA would have been motivated to implement Goddard's content control into Knowles to provide additional functionality. A POSITA would

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have understood that, as of the priority date of the '879 Patent, content control was important to provide. Such parental control was central to both Knowles and Goddard. *See, e.g.*, Knowles, ¶[0115]; Goddard, 3:28-55. Goddard's content control could improve the content control already in Knowles's system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tran discloses "a method and system for multi-user, multi-device content access metering and control." Tran, ¶[0021]. It also discloses that in "the invention provides an access control system for both controlling access to inappropriate content, and metering of access to content, for one or more simultaneous users across a network of one or more connected devices, such as in a local area network." Tran, ¶[0022]. Tran also discloses an "implementation of blocking and metering for parental control of access to content via devices in a network is described below for an example network environment comprising networked devices such as network-connected televisions in said network 10. Such televisions may comprise display-connected devices that are network-connected digital televisions (DTVs) interconnected to each other via Ethernet or Wi-Fi wireless network. FIG. 10 shows an example display screen of a television device 12 in the network 10, designated as Family I^2TV, for content blocking and metering set-up according to

an embodiment of the invention. In one example, each user is assigned a color (e.g., green, yellow or blue). One or more of the users are children of various age groups." Tran, ¶[0083].

A POSITA would have recognized that Tran's disclosures relating to multi-user content control could easily be incorporated into Knowles. A POSITA would have been motivated to implement Tran's multi-user content control into Knowles to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, multi-user content control was important to provide. Such content control was central to both Knowles and Tran. Knowles, ¶[0115]; Tran, ¶[0083]. Tran's multi-user content control could improve the content control already in Knowles's system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., multi-user content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., multi-user content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Luong discloses "systems and methods for accessing parental control features." Luong, ¶[0004]. It also discloses "that any or all components within parental control system 500—including access control module 510, log module 520, and parental control tools 518—may be implemented as processing circuitry and/or as software implemented using processing circuitry (e.g., as computer-readable instructions encoded on a computer-readable medium and executed using a processor). This processing circuitry may be incorporated within user equipment

(e.g., control circuitry 304 of user equipment device 300 of FIG. 3) and/or within a data source (e.g., a local or remote server). In some embodiments, the components of parental control system 500 may be implemented across a number of user equipment devices (e.g., devices 402, 404, and 406) and/or data sources (e.g., data sources 416 and 418 of FIG. 4). In particular, access control module 510 may be implemented in part or in whole on a number of devices and/or data sources. For example, media detection unit 512 and media filter unit 514 may be implemented on all user equipment devices used (e.g., by restricted users) to access media. As another example, parental control database 516 may be located at a data source accessible to all the user equipment devices. Similarly, log module 520 may be implemented in part or in whole on a number of devices and/or data sources. For example, parental review application 522 may be implemented using processing circuitry on a user equipment device (e.g., user television equipment), and log database 524 may be located at a data source accessible to all the user equipment devices (e.g., via the Internet). When the components of parental control system 500 are distributed on a number of devices and/or data sources, they may communicate with each other directly and/or through communications network 414, using any suitable protocol. For example, data (e.g., log data, parental control data, etc.) may be transmitted between devices using the hypertext transfer protocol ("HTTP")." Luong, ¶[0091].

A POSITA would have recognized that Luong disclosures relating to a parental control database could easily be incorporated into Knowles. A POSITA would have been motivated to implement Luong's parental control database into Knowles to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, parental control was important to provide. Such content control was central to both Knowles and Luong. Knowles, ¶[0115]; Luong, ¶[0091]. Luong parental control database could improve the content control

already in Knowles's system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., database of parental control information) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., preventing content from being viewable based on stored data). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., database of parental control information) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content based on stored data). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Lewis discloses the "use of data boxes to personalize programming to the individual taste of the user." Lewis. 4:8-10. It also discloses "[o]nce the received data has been processed according to user specification, it may be played back on the display via playback device 15 and/or stored on built-in, non-movable storage device 14. This may occur as a simultaneous recording of a number of feeds while the user plays back a selective feed in a non-real-time mode. The built-in, non-movable storage device 14 may be any storage device for audio/video information known in the art. The built-in, non-movable storage device 14 may be divided into separate Data Boxes, which may be assigned to separate members of a family, business or group." Lewis, 15:1-11.

A POSITA would have recognized that Lewis's disclosures relating to group content control could easily be incorporated into Knowles. A POSITA would have been motivated to implement Lewis's group content control into Knowles to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, group content control was important to provide. Such content control was central to both Knowles and Lewis. Knowles, ¶[0115]; Lewis, 15:1-11. Lewis's group content control could improve the

content control already in Knowles's system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., group content control) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., preventing content from being viewable based on stored data). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., group content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

West discloses "incorporating both time and content controls within a single system and providing a plurality of censoring authority choices for multiple and variable numbers of viewers within a single household or multiple households." Wes, 4:48-53. It also discloses that "provision is made for each PIN holder to be responsible for viewing their permitted choices. The censorship device can be down line activated and deactivated. In addition, a timing clock within the censorship device is updated periodically by a down line signal to ensure proper synchronization of the censorship device real time clock with a single central clock." West, 5:13-19.

A POSITA would have recognized that West's disclosures relating to content control could easily be incorporated into Knowles. A POSITA would have been motivated to implement West's content control into Knowles to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, content control was important to provide. Such content control was central to both Knowles and West. Knowles, ¶[0115]; West, 4:48-57. West's content control could improve the content control already in Knowles's system. A POSITA would have considered the combination to amount to the use of known techniques

(e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Sullivan discloses the " a content control system and methods employed by a content control system for limiting access by sensitive users, such as children, or the like, to certain types of content." Sullivan,¶[0008]. It also discloses "in the simplest embodiment, where a user selects a particular rating, that rating and all higher ratings will be locked. In a more flexible embodiment, the ratings may be selected individually. Preferably, the manner of operation in this regard may be selected by the user, e.g., in a user preferences options field." Sullivan, ¶[0053].

A POSITA would have recognized that Sullivan's disclosures relating to group content control could easily be incorporated into Knowles. A POSITA would have been motivated to implement Sullivan's group content control into Knowles to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, group content control was important to provide. Such content control was central to both Knowles and Sullivan. Knowles, ¶[0115]. Sullivan's group content control could improve the content control already in Knowles's system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or

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combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Wong discloses "[i]n another embodiment, the user may choose to associate the defined V-chip (or any other existing parental control solution) rating levels to the local user-defined rating levels. If this were so, then when the test of whether or not to restrict the program 316 is made, there is already an expected value available from the V-chip, upon which the user could choose to agree or disagree. In this case, the V-chip rating would act as a default selection value. If the user does not agree with the V-chip rating, then the user would instead select to independently rate the video. This process would reduce the user interaction time required, if the user agrees with the recommended rating, and would also give the user a basis upon which to initially judge the rating of the program." Wong at 16:22–34. Wong also discloses "[i]n one embodiment, the restriction method will be utilized on an overlay of a dual widget platform. These dual widgets would be the Restriction Widget Blocking Procedure (the Blocking Widget), and the Restriction Widget Release Widget (Release Widget). Upon device startup, restriction is automatically enabled, unless specifically otherwise set by the user in a device option menu." Wong at 17:19–26. Wong also discloses "[t]raditional user interfaces are well known in the contexts of Video Cassette Recording (VCR) and Digital Video Recording (DVR), where a programming schedule of upcoming programming content is displayed. Similarly, audio prompting in the customer service and other business segments of a variety of industries are well known (such prompt sequence usually starts with "Press 1 for English", or "Press 1 for touch-tone dialing"). XM® and Sirius® satellite radio

systems typically use a visual interface (typically a list of stations or upcoming events) to select audio programming. However, what appears to be lacking is a user interface that learns from prior user interactions. Such an interface would facilitate user interactions, and reduce the frustrations typically encountered when using such non-learning systems." Wong at 1:26-40.

A POSITA would have recognized that Wong's disclosures relating to user interfaces could easily be incorporated into Knowles. A POSITA would have been motivated to implement Wong's user interface into Knowles to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, user interface was important to provide. Wong's user interface could improve the content control already in Knowles's system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., user interface) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., user interface) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Huang discloses It will also be appreciated by those skilled in the art that, while in the illustrated example the transmitter pulse timing is controlled by the specialized chip shown, in other embodiments it may be possible to implement these timing functions via software running in the main CPU itself which would serve as a substitute for the IR transmitter IC 204. In addition, when adapted for use in connection with the remote control application, the IrDA receiver may also be used for learning IR codes from other devices such as originally supplied remote controls.

The learning function would be made possible by paralleling the IrDA receiver output signal 210 to both the normal PDA connection 212 and the learning input 214 of the IR transmitter IC as shown." Huang at [0060]. Huang also discloses "[o]nce the primary user has setup the main configuration, new configurations can be created based on the master profile. The primary user may choose which devices and which levels of functionality to expose. This can include backgrounds, specific favorites and other features. The primary user may also choose whether the profile is to be "locked down," which may be used to prevent any additional customization by other users of the profile. In this manner, the primary user can maintain complete control over the way other users (e.g., family members) interact with the remote control application." Huang at [0262]. Huang also discloses "[u]niversal remote controls for controlling the operation of multiple, diverse home appliances are well known. In this regard, universal remote controls perform a valuable function by consolidating three, four, five, and more remote controls into one device. However, as more remotely controllable appliances enter the homes of consumers and the number of remotely controllable operations increase, the user interface of the universal remote control becomes increasingly more complex. This complexity arises from the need to provide more and more keys which are used to initiate the transmission of the control codes that control the increasing number of operations of the increasing number of home appliances. Disadvantageously, as the user interface of the universal remote control becomes more cluttered, the usability of the universal remote control diminishes. Accordingly, a need exists for a universal remote control having an improved user interface that simplifies the operation of the universal remote control and, as such, the remote operation of consumer appliances." Huang at [0004].

A POSITA would have recognized that Huang's disclosures relating to individual profiles could easily be incorporated into Knowles. A POSITA would have been motivated to implement

Huang's user interface into Knowles to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Huang's user interface could improve the content control already in Knowles's system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., individual profiles) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable based on a profile). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., user profiles) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display based on a profile). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Elam discloses "[t]he present invention relates generally to television broadcast systems, and more particularly to analog or digital television broadcast receivers and methods wherein program content rating data transmitted concurrently with a television program signal is utilized to provide parental control over the viewing by children of television programs broadcast over the system." Elam at 1:6–12. Elam also discloses "[t]he invention is directed to a television receiver for receiving and displaying to a viewer a television program transmission signal which includes a data signal and a program content rating signal indicative of the program content rating of the received television transmission. The receiver comprises circuit means for separating the data signal and the program content rating signal from the television program signal, a rating derivation circuit for deriving the program rating from the program content rating signal, user selection means responsive to user inputs for storing program rating viewing authorizations for one or more

viewers, means for comparing the derived program rating with the stored viewing authorization applicable to the viewer to develop a blanking control signal in the event the viewer is not authorized to view the program, a monitoring circuit for monitoring the integrity of at least a portion of the data signal, the monitoring circuit providing a rating default control signal upon the integrity of the portion of the data signal falling below a predetermined threshold level, and a blanking circuit responsive to the blanking control signal and the rating default control signal for blanking the program in the event the program rating level is not authorized to the viewer or the integrity of the portion of the data signal falls below the predetermined threshold level." Elam at 2:8–31. Elam also discloses "The present invention is directed to an improvement in the system proposed by Elam et al. wherein in an analog or digital television receiver the integrity of a data signal transmitted with the television program transmission is monitored to determine whether the data signal is being reliably received, and hence whether reliable rating characters are being received. In the event the integrity of the data signal falls below an acceptable threshold level, the program is either blanked, or, depending on the operating mode of the receiver, a determination is made whether to blank depending on either 1) the viewing authorization then in effect for the viewer, or 2) whether a default to view or default to blank authorization has been stored for the viewer. Accordingly, it is a general object of the present invention to provide a television receiver which provides conditional access to received television programs." Elam at 1:41-56.

A POSITA would have recognized that Elam's disclosures relating to individual profiles could easily be incorporated into Knowles. A POSITA would have been motivated to implement Elam's conditional access into Knowles to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Elam's user interface could improve the content control already in Knowles's

system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Gabriel discloses "[t]he present invention relates to control of access to content (e.g., audio data and/or video data)." Gabriel at [0001]. Gabriel also discloses that "[i]n another example embodiment according to the present invention, a method to control access to content is provided which includes selecting content, the selected content having metadata linked thereto via a pointer. The metadata is obtained using the pointer. The metadata and at least one filtering criterion are compared, the filtering criterion describing characteristics of at least one of permitted content or prohibited content. Access to the selected content is permitted or denied based on the comparison. The pointer may be embedded, for example, in a Vertical Blanking Interval (VBI) of a signal of the selected content. The pointer may be a URL, and the metadata may be obtained over the Internet using the URL." Gabriel at [0009]. Gabriel also discloses "[c]ontent-provision systems, such cable TV, satellite TV, video-on-demand (VOD), pay-per-view (PPV), and/or Web-based systems offer an enormous selection of video programs containing various types of substantive content, some of which may not be suitable for certain users, such as a child viewer." Gabriel at [0002].

A POSITA would have recognized that Gabriel's disclosures relating to individual profiles could easily be incorporated into Knowles. A POSITA would have been motivated to implement Gabriel's conditional access into Knowles to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Gabriel's user interface could improve the content control already in Knowles's system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Gavita discloses "[i]n an Internet Protocol Television (IPTV) environment, as in many other similar fields), users can be provided with the ability to log in (in some implementations users are required to log in) to access the account. In addition to an account validation, each account can have a plurality of users associated with it, each user having an individual log in. By creating profiles for different users, the account administrator (who is in the context of this discussion one of the users that is responsible for setting up accounts) can create profiles associated with each of the users that can be used to restrict access to content." Gavita at [0002]. Gavit also discloses "[i]n FIG. 10 another manner of viewing the above described processes is presented. In step 138, the set top box is initialized. In step 140 the credentials of the present users are captured

for processing and in step 142, access based on determined access rights is provided. Following step 142, the process can return to step 140 so that the permissions can change when a new user is detected. This would allow adults to be watching a violent or otherwise unsuitable content for a child, and then have the system lock out the content when a child enters the viewing area. When content is locked out, it can be paused and replaced with other content, or a blank screen. In some embodiments a barker channel can be displayed advertising network features, and explaining why the content has been blocked. The adult can then be provided with the ability to provide a one time override to the restriction." Gavita at [0044]. It also discloses "[a]t present logging in to an IPTV STB is done with a user specific credential, and requires that a controller with a form factor limited input mechanism is employed. This is far from ideal. Therefore, it would be desirable to provide a system and method that obviate or mitigate the above described problems." Gavita at [0007].

A POSITA would have recognized that Gavita's disclosures relating to biometric information could easily be incorporated into Knowles. A POSITA would have been motivated to implement Gavita's biometric systems into Knowles to address the problems with PINs. A POSITA would have understood that, as of the priority date of the '879 Patent, security was important in authorizing use. This was especially so in V-Chip devices, which Knowles discloses. Knowles ¶[0099]. Gavita's biometric verification and other verification could have mitigated this well-known drawback to Knowles's V-Chip system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., biometric and other verification) to improve similar devices or methods (e.g., devices for parental control of viewing content) in the same way (e.g., preventing the playback device play in the event of authentication was not provided). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., biometric and other verification) to a

known device or method (e.g., devices for parental control of viewing content) that is ready for improvement to yield predictable results (e.g., device that permits viewing when biometrics are verified). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Scott discloses a "disclosed content accessibility control (CAC) application suitable for use within the context of a multimedia content platform enables an administrative end user to control a subordinate end user's access to content. In a familial context, the subordinate end user (subordinate) may be a family's child or children while the administrative end user (administrator) may be the family's parent(s), guardian(s), or other supervisor(s). The CAC application enables an administrator to create a user account for a subordinate and to tag or otherwise identify specific content deemed by the administrator to be acceptable for viewing, listening to, playing, or otherwise experiencing by the subordinate. When the subordinate wishes to experience content, the subordinate activates the subordinate's user account by logging into the account. When a subordinate's user account is active, the multimedia platform effectively filters the available content so that the subordinate has access to only that content approved by the administrator." Scott at [0013]. It also discloses "[i]n the field of television (TV) and other multimedia and entertainment applications, features exist to give parents or others with supervisory roles coarse control over content that children may listen to, watch, or both. The V-chip, for example, enables parents to use TV ratings as a rough proxy for determining acceptable and unacceptable content for children." Scott at [0004].

A POSITA would have recognized that Scott's disclosures relating to individual profiles could easily be incorporated into Knowles. A POSITA would have been motivated to implement

Scott's conditional access into Knowles to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Scott's user interface could improve the content control already in Knowles's system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tong discloses "[t]he V-Chip is able to detect the rating, then compares it to what a user has requested be blocked based on the user's configuration of the V-Chip. If the program is outside what the user has configured as acceptable, the program is blocked." Tong at [0006]. Tong also discloses "[o]ther blocking technologies have expanded beyond pure ratings blocking. However, they still suffer from the limitations of only blocking based on certain criteria and are not a completely customizable to allow parents to define their own blocking parameters. As a result, there is a need to provide additional flexibility in allowing parents to block programming they, not others, deem objectionable from being viewed by their children" Tong at [0011]. *See also*, Tong at [0002]-[0010].

A POSITA would have recognized that Tong's disclosures relating to individual profiles could easily be incorporated into Knowles. A POSITA would have been motivated to implement

Tong's conditional access into Knowles to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Tong's user interface could improve the content control already in Knowles's system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Craner discloses "[s]ystems and methods for accessing edited or censored versions of the requested asset are also disclosed." Craner, Abstract. It also discloses that a "FIG. 6 shows illustrative locks setup display screen 600 used to customize parental control settings for the current user in accordance with one embodiment of the invention. Each user of the user equipment may have personalized parental control settings or the user equipment may have a single parental control policy in force for all users (or both methods may be used). If more than one user is defined, users may be authenticated upon accessing or powering on the user equipment using a standard username and password combination, a verification module (e.g., voice, iris, or fingerprint verification), or any other convenient method. " Craner 11:48-58. Craner discloses that "[f]or example, as is understood in the art, a voice recognition module utilizes an attached microphone to translate common phonemes into data characters and commands. The voice verification module

may compare the inputted phonemes to voiceprints already stored on user equipment 102 (FIG. 1). These stored voiceprints may have been established in advance via a voice training process. If an acceptable voiceprint match is found, access to the interactive content control application's privileged menu may be granted without the use of a manual parental control access code entry. A user may also navigate through the menu overlays, input data, and control the interactive content control application via voice if desired."" It provides a verification system that stores "at least one of pre-registered fingerprints, voice characteristic information, facial geometries, iris scan information, DNA, etc. for users" and a verification system that "includes a database 23 that stores biometric information in association with information that identifies users." Craner, 9:3–33.

A POSITA would have recognized that Craner's disclosures relating to biometric information could easily be incorporated into Knowles. A POSITA would have been motivated to implement Craner's biometric systems into Knowles to address the problems with PINs. A POSITA would have understood that, as of the priority date of the '879 Patent, security was important in authorizing use. This was especially so in V-Chip devices, which Knowles discloses. Knowles ¶[0099]. Craner's biometric verification could have mitigated this well-known drawback to Knowles's V-Chip system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., biometric verification) to improve similar devices or methods (e.g., devices for parental control of viewing content) in the same way (e.g., preventing the playback device play in the event of authentication was not provided). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., biometric verification) to a known device or method (e.g., devices for parental control of viewing content) that is ready for improvement to yield predictable results (e.g., device that permits viewing when biometrics are verified). A POSITA would have considered the

combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(b) DTA800B1 in view of Knowles and/or Novack and/or Hancock and/or Leung and/or Damm and/or Goddard and/or Tran and/or Luong and/or Lewis and/or West and/or Sullivan and/or Wong and/or Huang and/or Elam and/or Gabriel and/or Gavita and/or Scott and/or Tong and/or Craner

The DTA800B1 discloses "Parental Controls popularly known as the 'V-Chip'." DTA800B1 Manual at 9. It discloses using a pin as a password. DTA800B1 Manual at 9. It also discloses the option to create "Custom" rating settings to "update the current TV show and Movies ratings when new releases are available." DTA800B1 Manual at 9.

Knowles discloses a "multiple Interactive Program Guide (IPG) system" Knowles, Abstract. Knowles also discloses "[a]n embodiment of the invention is a system that provides customers with multiple instantly accessible electronic IPGs. The multiple IPG system enables users to view TV programs and schedule information in each IPG. Preferably, each IPG comprises a Grid Guide, a Channel Guide, and a Theme Guide. Each IPG receives, stores, and displays program titles and information and share some of the information with other IPGs." Knowles, ¶[0044]. Knowles discloses an IPG that includes "VChip Plus+ in guide mode uses two data sources in combination to determine whether a show should be blocked: data downloaded and stored in the guide (channel lineups, show schedules, show ratings), and rating data transmitted over the VBI. Ordinary V-Chip devices use the data transmitted over the VBI to determine whether or not to block a show by rating. These ratings are sent a minimum of every 15 seconds. Thus, a show that a parent may wish blocked, may be seen for up to 15 seconds before the blocking takes effect. VCHIP Plus+ in guide mode uses show rating data already stored for each of the IPGs to

determine whether a show should be blocked as soon as it begins, and use the VBI data to confirm if the show was properly blocked." Knowles at ¶[0099].

A POSITA would have recognized that Knowles's disclosures relating to content control could easily be incorporated into DTA800B1. A POSITA would have been motivated to implement Knowles's content control into DTA800B1 to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, content control was important to provide. Such parental control was central to both DTA800B1 and Knowles. *See, e.g.*, DTA800B1, 9; Knowles, ¶[0115]. Knowles's content control could improve the content control already in DTA800B1 system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Novack discloses a "centralized biometric system for verifying the identity of a user over a communications network includes a device that stores biometric information in association with information that identifies users." Novack, Abstract. It also discloses that a "PIN provided by the user ¶[is used] as authorization from the user to deliver the requested media content to the user." Novack ¶[0007]. Novack discloses that a "problem with verifying the identity of a user based on a PIN is that it is easy for individuals to obtain the user's PIN." It provides a verification system

that stores "at least one of pre-registered fingerprints, voice characteristic information, facial geometries, iris scan information, DNA, etc. for users" and a verification system that "includes a database 23 that stores biometric information in association with information that identifies users." Novack, ¶[0014], ¶[0041].

A POSITA would have recognized that Novack's disclosures relating to biometric information could easily be incorporated into DTA800B1. A POSITA would have been motivated to implement Novack's biometric systems into DTA800B1 to address the problems with PINs. Novack, ¶[0009]. A POSITA would have understood that, as of the priority date of the '879 Patent, security was important in authorizing use. This was especially so in V-Chip devices, which DTA800B1 discloses. DTA800B1, 9. Novack's biometric verification could have mitigated this well-known drawback to DTA800B1' V-Chip system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., biometric verification) to improve similar devices or methods (e.g., devices for parental control of viewing content) in the same way (e.g., preventing the playback device play in the event of authentication was not provided). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., biometric verification) to a known device or method (e.g., devices for parental control of viewing content) that is ready for improvement to yield predictable results (e.g., device that permits viewing when biometrics are verified). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hancock discloses "an apparatus and method that provides for a user interface for programmable blocking, such as for parental control, of viewable programs, such as programs that can be viewed on a television receiver. A memory provides storage of information relating to

viewable programming and user defined blocking instructions. A microprocessor generates a blocking command as a function of the information stored in memory. A blocking circuit, such as a blocking circuit which passes a baseband television video signal to a television display, provides blocking of the video signal in response to the blocking command." Hancock, 3:20-30. It also discloses that "[a]fter the viewer has selected, as described below, the television program viewing blocking/enablement function ("V-ChipPlus+"), the viewer's screen displays the V-Chip Plus +In-Guide User Interface Main Blocking Menu (the 'Main Blocking Menu')." Hancock, 6:24-28. It also discloses the "viewer selects a particular program, channel logo, or time slot to be blocked by one selection method, for instance, using the viewer's remote control device to point to and select a program, channel or time slot." Hancock, 9:17–20.

A POSITA would have recognized that Hancock's disclosures relating to program data could easily be incorporated into DTA800B1. A POSITA would have been motivated to implement Hancock's program data into DTA800B1 to provide additional information. A POSITA would have understood that, as of the priority date of the '879 Patent, program information was important to provide. Displaying information was central to both DTA800B1 and Hancock. DTA800B1, 9; Hancock, 6:4-56. Hancock's additional media information could improve the media information already in DTA800B1 system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., displaying program information on a television) to improve similar devices or methods (e.g., other systems that display program information on a television) in the same way (e.g., displaying information). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., displaying information) to a known device or method (e.g., displaying information) that is ready for improvement to yield predictable results (e.g., device that displays

the identified information). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Leung discloses " an apparatus for parental control of a television receiver" Leung, ¶[0007]. It also discloses that the "viewer input device 46 also allows the viewer to remotely program the V-Chip Plus+ system to exclude programs according to one or more rating factors, as well as compiling or modifying the V-Chip Plus+ override lists. When the viewer wishes to review the particular ratings set in the V-Chip Plus+ system or the V-Chip Plus+ override lists, the microprocessor 44 retrieves the appropriate information from RAM 48 and couples it to the video processor 50, where the information is formatted for display. Preferably, the information stored in the video processor 50 is a bit map of what is displayed on the TV display 42." Leung, ¶[0075]. It also discloses that for "the purpose of describing the operation of the override system, it is assumed that the television signal of each channel carried by the cable feed contains supplemental data, including channel identification, such as HBO, CNN, or NBC. Preferably, the channel identification is embedded in the VBI of the signal of each channel in an XDS format" Leung, ¶[0062].

A POSITA would have recognized that Leung's disclosures relating to program data could easily be incorporated into DTA800B1. A POSITA would have been motivated to implement Leung's program data into DTA800B1 to provide additional program information. A POSITA would have understood that, as of the priority date of the '879 Patent, program information was important to provide. Program data was central to both DTA800B1 and Leung. DTA800B1, 9; Leung, ¶[0062]. Leung's additional media information could improve the media information already in DTA800B1 system. A POSITA would have considered the combination to amount to

the use of known techniques (e.g., displaying program information on a television) to improve similar devices or methods (e.g., other systems that display program information on a television) in the same way (e.g., displaying information). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., displaying information) to a known device or method (e.g., displaying information) that is ready for improvement to yield predictable results (e.g., device that displays the identified information). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Damm discloses a "system is provided for rating multimedia content streamed over a data network as a series of data frames, segments, or packets and for administering display of the rated content." Damm, ¶[0013]. It also discloses that for "satellite and cable television systems, a variety of remote control operated features are now available for blocking channels, programs, or offensive content detected in programs. V-chip technology is one of these implemented via a hardware chip added to the viewing terminal. The V-chip blocks content by reading the ratings embedded in television signaling data frames or recorded video and turns off the signal when the ratings exceed certain ratings-based thresholds set by the parents. V-chip technology utilizes a relatively complicated, but generally well known rating scheme including all youth (Y), youth 7 or older (Y7), general audience (G), parental guidance suggested (PG), teen 14 or over (TV14), and mature audience only (MA). Programs having these ratings may also include sub-ratings like contains violence (V), contains sexual situations (S), contains coarse language (L), and contains suggestive dialogue (D)." Damm, ¶[0003]. It also discloses that the "methods and system of the present invention is not limited to full length industry approved presentations. Any multimedia snippet, movie clip, audio clip, or the like may be rated and filtered or blocked at threw receiving

device. If the receiving device does not detect any data in the content marker fields of received data packets of a presentation, or does not detect the presence of the marker field at all, then the content is not marked according to the methods and system of the present invention and may be rejected by default. However, in another embodiment if the un-marked presentation is conventionally rated the receiving device may default to a conventional ratings setting to determine if the content will be allowed or not." Damm, ¶[0086]. It also discloses while "all of the existing solutions work to some extent to block unwanted content, new methods of content delivery and availability of new and emerging multimedia display devices create certain vulnerabilities in the existing methods. Other limitations are also apparent to one with skill in the art of multimedia content filtering. The boundaries between data network telephony (DNT), of which Internet protocol network telephony (IPNT) is a subset, and data packet enabled satellite and cable network content delivery paths are increasingly blurred by improvements in the capabilities of transversing between networks and transport protocols when accessing or delivering content. Cellular telephones capable of accessing IP data networks are increasingly being marketed as content receiving devices capable of receiving, displaying, and storing, and sharing multimedia content. Some "bleeding edge" devices have up to 2 gigabytes of storage capability. These and other like devices, including new devices being developed, are fully multimedia capable and highly mobile and may receive content from a variety of defined networks." Damm, ¶[0008].

A POSITA would have recognized that Damm's disclosures relating to defaulting to deny access could easily be incorporated into DTA800B1. A POSITA would have been motivated to implement Damm's program data into DTA800B1 to provide additional security. A POSITA would have understood that, as of the priority date of the '879 Patent, parental control was important to provide. Such parental control was central to both DTA800B1 and Damm. See, e.g.,

DTA800B1, ¶[0115]; Damm, ¶[0014]. Damm's defaulting to deny access could improve the parental control already in DTA800B1 system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., defaulting to deny access to view a program) to improve similar devices or methods (e.g., other systems that control access to a program) in the same way (e.g., preventing the program from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., defaulting to deny access to view a program) to a known device or method (e.g., other systems that control access to a program) that is ready for improvement to yield predictable results (e.g., device that defaults to deny access). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Goddard discloses a "a method of setting content rating parameters of a content control system. Employing the present method, a user may set acceptable content rating parameters based on the rating of example content by blocking or unblocking the example content. The content ratings system compares the content rating of the example content with existing acceptable content rating parameters and adjusts the content rating parameters accordingly. In this manner, specific knowledge of the content ratings scheme employed, or the meaning of specific content ratings used by the content ratings scheme, is not required." Goddard, 2:31-42. It also discloses that in "one embodiment, such a user interface 100 may include an on-screen control panel 102 for controlling access to media by the information appliance (see FIG. 6). A region or window 104 of the control panel 102 contains therein display fields such as "Channel" 106 and various control buttons or switches such as channel selection 108 & 110, volume 112 & 114, "Settings" 116 and so forth, which function as on-screen visual representations of controls of the information

appliance or, alternately, peripheral devices attached thereto that provide access to one or more media." Goddard, 4:36-45.

A POSITA would have recognized that Goddard's disclosures relating to content control could easily be incorporated into DTA800B1. A POSITA would have been motivated to implement Goddard's content control into DTA800B1 to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, content control was important to provide. Such parental control was central to both DTA800B1 and Goddard. *See, e.g.*, DTA800B1, 9; Goddard, 3:28-55. Goddard's content control could improve the content control already in DTA800B1 system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tran discloses "a method and system for multi-user, multi-device content access metering and control." Tran, ¶[0021]. It also discloses that in "the invention provides an access control system for both controlling access to inappropriate content, and metering of access to content, for one or more simultaneous users across a network of one or more connected devices, such as in a local area network." Tran, ¶[0022]. Tran also discloses an "implementation of blocking and metering for parental control of access to content via devices in a network is described below for

an example network environment comprising networked devices such as network-connected televisions in said network 10. Such televisions may comprise display-connected devices that are network-connected digital televisions (DTVs) interconnected to each other via Ethernet or Wi-Fi wireless network. FIG. 10 shows an example display screen of a television device 12 in the network 10, designated as Family I^2TV, for content blocking and metering set-up according to an embodiment of the invention. In one example, each user is assigned a color (e.g., green, yellow or blue). One or more of the users are children of various age groups." Tran, ¶[0083].

A POSITA would have recognized that Tran's disclosures relating to multi-user content control could easily be incorporated into DTA800B1. A POSITA would have been motivated to implement Tran's multi-user content control into DTA800B1 to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, multi-user content control was important to provide. Such content control was central to both DTA800B1 and Tran. DTA800B1, 9; Tran, ¶[0083]. Tran's multi-user content control could improve the content control already in DTA800B1 system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., multi-user content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., multi-user content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Luong discloses "systems and methods for accessing parental control features." Luong, ¶[0004]. It also discloses "that any or all components within parental control system 500—including access control module 510, log module 520, and parental control tools 518—may be implemented as processing circuitry and/or as software implemented using processing circuitry (e.g., as computer-readable instructions encoded on a computer-readable medium and executed using a processor). This processing circuitry may be incorporated within user equipment (e.g., control circuitry 304 of user equipment device 300 of FIG. 3) and/or within a data source (e.g., a local or remote server). In some embodiments, the components of parental control system 500 may be implemented across a number of user equipment devices (e.g., devices 402, 404, and 406) and/or data sources (e.g., data sources 416 and 418 of FIG. 4). In particular, access control module 510 may be implemented in part or in whole on a number of devices and/or data sources. For example, media detection unit 512 and media filter unit 514 may be implemented on all user equipment devices used (e.g., by restricted users) to access media. As another example, parental control database 516 may be located at a data source accessible to all the user equipment devices. Similarly, log module 520 may be implemented in part or in whole on a number of devices and/or data sources. For example, parental review application 522 may be implemented using processing circuitry on a user equipment device (e.g., user television equipment), and log database 524 may be located at a data source accessible to all the user equipment devices (e.g., via the Internet). When the components of parental control system 500 are distributed on a number of devices and/or data sources, they may communicate with each other directly and/or through communications network 414, using any suitable protocol. For example, data (e.g., log data, parental control data, etc.) may be transmitted between devices using the hypertext transfer protocol ("HTTP")." Luong, ¶[0091].

A POSITA would have recognized that Luong disclosures relating to a parental control database could easily be incorporated into DTA800B1. A POSITA would have been motivated to implement Luong's parental control database into DTA800B1 to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, parental control was important to provide. Such content control was central to both DTA800B1 and Luong. DTA800B1, 9; Luong, ¶[0091]. Luong parental control database could improve the content control already in DTA800B1 system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., database of parental control information) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., preventing content from being viewable based on stored data). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., database of parental control information) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content based on stored data). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Lewis discloses the "use of data boxes to personalize programming to the individual taste of the user." Lewis. 4:8-10. It also discloses "[o]nce the received data has been processed according to user specification, it may be played back on the display via playback device 15 and/or stored on built-in, non-movable storage device 14. This may occur as a simultaneous recording of a number of feeds while the user plays back a selective feed in a non-real-time mode. The built-in, non-movable storage device 14 may be any storage device for audio/video information known in the art. The built-in, non-movable storage device 14 may be divided into separate Data Boxes, which may be assigned to separate members of a family, business or group." Lewis, 15:1-11.

A POSITA would have recognized that Lewis's disclosures relating to group content control could easily be incorporated into DTA800B1. A POSITA would have been motivated to implement Lewis's group content control into DTA800B1 to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, group content control was important to provide. Such content control was central to both DTA800B1 and Lewis. DTA800B1, 9; Lewis, 15:1-11. Lewis's group content control could improve the content control already in DTA800B1 system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., group content control) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., preventing content from being viewable based on stored data). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., group content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

West discloses "incorporating both time and content controls within a single system and providing a plurality of censoring authority choices for multiple and variable numbers of viewers within a single household or multiple households." West, 4:48-53. It also discloses that "provision is made for each PIN holder to be responsible for viewing their permitted choices. The censorship device can be down line activated and deactivated. In addition, a timing clock within the censorship device is updated periodically by a down line signal to ensure proper synchronization of the censorship device real time clock with a single central clock." West, 5:13-19.

A POSITA would have recognized that West's disclosures relating to content control could easily be incorporated into DTA800B1. A POSITA would have been motivated to implement West's content control into DTA800B1 to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, content control was important to provide. Such content control was central to both DTA800B1 and West. DTA800B1, 9; West, 4:48-57. West's content control could improve the content control already in DTA800B1 system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Sullivan discloses the " a content control system and methods employed by a content control system for limiting access by sensitive users, such as children, or the like, to certain types of content." Sullivan,¶[0008]. It also discloses "in the simplest embodiment, where a user selects a particular rating, that rating and all higher ratings will be locked. In a more flexible embodiment, the ratings may be selected individually. Preferably, the manner of operation in this regard may be selected by the user, e.g., in a user preferences options field." Sullivan, ¶[0053].

A POSITA would have recognized that Sullivan's disclosures relating to group content control could easily be incorporated into DTA800B1. A POSITA would have been motivated to

implement Sullivan's group content control into DTA800B1 to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, group content control was important to provide. Such content control was central to both DTA800B1 and Sullivan. DTA800B1, 9. Sullivan's group content control could improve the content control already in DTA800B1 system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Wong discloses "[i]n another embodiment, the user may choose to associate the defined V-chip (or any other existing parental control solution) rating levels to the local user-defined rating levels. If this were so, then when the test of whether or not to restrict the program 316 is made, there is already an expected value available from the V-chip, upon which the user could choose to agree or disagree. In this case, the V-chip rating would act as a default selection value. If the user does not agree with the V-chip rating, then the user would instead select to independently rate the video. This process would reduce the user interaction time required, if the user agrees with the recommended rating, and would also give the user a basis upon which to initially judge the rating of the program." Wong at 16:22–34. Wong also discloses "[i]n one embodiment, the restriction method will be utilized on an overlay of a dual widget platform. These dual widgets would be the

Restriction Widget Blocking Procedure (the Blocking Widget), and the Restriction Widget Release Widget (Release Widget). Upon device startup, restriction is automatically enabled, unless specifically otherwise set by the user in a device option menu." Wong at 17:19–26. Wong also discloses "[t]raditional user interfaces are well known in the contexts of Video Cassette Recording (VCR) and Digital Video Recording (DVR), where a programming schedule of upcoming programming content is displayed. Similarly, audio prompting in the customer service and other business segments of a variety of industries are well known (such prompt sequence usually starts with "Press 1 for English", or "Press 1 for touch-tone dialing"). XM® and Sirius® satellite radio systems typically use a visual interface (typically a list of stations or upcoming events) to select audio programming. However, what appears to be lacking is a user interface that learns from prior user interactions. Such an interface would facilitate user interactions, and reduce the frustrations typically encountered when using such non-learning systems." Wong at 1:26-40.

A POSITA would have recognized that Wong's disclosures relating to user interfaces could easily be incorporated into DTA800B1. A POSITA would have been motivated to implement Wong's user interface into DTA800B1 to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, user interface was important to provide. Wong's user interface could improve the content control already in DTA800B1 system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., user interface) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., user interface) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that

controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Huang discloses It will also be appreciated by those skilled in the art that, while in the illustrated example the transmitter pulse timing is controlled by the specialized chip shown, in other embodiments it may be possible to implement these timing functions via software running in the main CPU itself which would serve as a substitute for the IR transmitter IC 204. In addition, when adapted for use in connection with the remote control application, the IrDA receiver may also be used for learning IR codes from other devices such as originally supplied remote controls. The learning function would be made possible by paralleling the IrDA receiver output signal 210 to both the normal PDA connection 212 and the learning input 214 of the IR transmitter IC as shown." Huang at [0060]. Huang also discloses "[o]nce the primary user has setup the main configuration, new configurations can be created based on the master profile. The primary user may choose which devices and which levels of functionality to expose. This can include backgrounds, specific favorites and other features. The primary user may also choose whether the profile is to be "locked down," which may be used to prevent any additional customization by other users of the profile. In this manner, the primary user can maintain complete control over the way other users (e.g., family members) interact with the remote control application." Huang at [0262]. Huang also discloses "[u]niversal remote controls for controlling the operation of multiple, diverse home appliances are well known. In this regard, universal remote controls perform a valuable function by consolidating three, four, five, and more remote controls into one device. However, as more remotely controllable appliances enter the homes of consumers and the number of remotely controllable operations increase, the user interface of the universal remote control

becomes increasingly more complex. This complexity arises from the need to provide more and more keys which are used to initiate the transmission of the control codes that control the increasing number of operations of the increasing number of home appliances. Disadvantageously, as the user interface of the universal remote control becomes more cluttered, the usability of the universal remote control diminishes. Accordingly, a need exists for a universal remote control having an improved user interface that simplifies the operation of the universal remote control and, as such, the remote operation of consumer appliances." Huang at [0004].

A POSITA would have recognized that Huang's disclosures relating to individual profiles could easily be incorporated into DTA800B1. A POSITA would have been motivated to implement Huang's user interface into DTA800B1 to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Huang's user interface could improve the content control already in DTA800B1 system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., individual profiles) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable based on a profile). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., user profiles) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display based on a profile). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Elam discloses "[t]he present invention relates generally to television broadcast systems, and more particularly to analog or digital television broadcast receivers and methods wherein

program content rating data transmitted concurrently with a television program signal is utilized to provide parental control over the viewing by children of television programs broadcast over the system." Elam at 1:6–12. Elam also discloses "[t]he invention is directed to a television receiver for receiving and displaying to a viewer a television program transmission signal which includes a data signal and a program content rating signal indicative of the program content rating of the received television transmission. The receiver comprises circuit means for separating the data signal and the program content rating signal from the television program signal, a rating derivation circuit for deriving the program rating from the program content rating signal, user selection means responsive to user inputs for storing program rating viewing authorizations for one or more viewers, means for comparing the derived program rating with the stored viewing authorization applicable to the viewer to develop a blanking control signal in the event the viewer is not authorized to view the program, a monitoring circuit for monitoring the integrity of at least a portion of the data signal, the monitoring circuit providing a rating default control signal upon the integrity of the portion of the data signal falling below a predetermined threshold level, and a blanking circuit responsive to the blanking control signal and the rating default control signal for blanking the program in the event the program rating level is not authorized to the viewer or the integrity of the portion of the data signal falls below the predetermined threshold level." Elam at 2:8–31. Elam also discloses "The present invention is directed to an improvement in the system proposed by Elam et al. wherein in an analog or digital television receiver the integrity of a data signal transmitted with the television program transmission is monitored to determine whether the data signal is being reliably received, and hence whether reliable rating characters are being received. In the event the integrity of the data signal falls below an acceptable threshold level, the program is either blanked, or, depending on the operating mode of the receiver, a determination is

made whether to blank depending on either 1) the viewing authorization then in effect for the viewer, or 2) whether a default to view or default to blank authorization has been stored for the viewer. Accordingly, it is a general object of the present invention to provide a television receiver which provides conditional access to received television programs." Elam at 1:41-56.

A POSITA would have recognized that Elam's disclosures relating to individual profiles could easily be incorporated into DTA800B1. A POSITA would have been motivated to implement Elam's conditional access into DTA800B1 to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Elam's user interface could improve the content control already in DTA800B1 system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Gabriel discloses "[t]he present invention relates to control of access to content (e.g., audio data and/or video data)." Gabriel at [0001]. Gabriel also discloses that "[i]n another example embodiment according to the present invention, a method to control access to content is provided which includes selecting content, the selected content having metadata linked thereto via a pointer. The metadata is obtained using the pointer. The metadata and at least one filtering criterion are

compared, the filtering criterion describing characteristics of at least one of permitted content or prohibited content. Access to the selected content is permitted or denied based on the comparison. The pointer may be embedded, for example, in a Vertical Blanking Interval (VBI) of a signal of the selected content. The pointer may be a URL, and the metadata may be obtained over the Internet using the URL." Gabriel at [0009]. Gabriel also discloses "[c]ontent-provision systems, such cable TV, satellite TV, video-on-demand (VOD), pay-per-view (PPV), and/or Web-based systems offer an enormous selection of video programs containing various types of substantive content, some of which may not be suitable for certain users, such as a child viewer." Gabriel at [0002].

A POSITA would have recognized that Gabriel's disclosures relating to individual profiles could easily be incorporated into DTA800B1. A POSITA would have been motivated to implement Gabriel's conditional access into DTA800B1 to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Gabriel's user interface could improve the content control already in DTA800B1 system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Gavita discloses "[i]n an Internet Protocol Television (IPTV) environment, as in many other similar fields), users can be provided with the ability to log in (in some implementations users are required to log in) to access the account. In addition to an account validation, each account can have a plurality of users associated with it, each user having an individual log in. By creating profiles for different users, the account administrator (who is in the context of this discussion one of the users that is responsible for setting up accounts) can create profiles associated with each of the users that can be used to restrict access to content." Gavita at [0002]. Gavit also discloses "[i]n FIG. 10 another manner of viewing the above described processes is presented. In step 138, the set top box is initialized. In step 140 the credentials of the present users are captured for processing and in step 142, access based on determined access rights is provided. Following step 142, the process can return to step 140 so that the permissions can change when a new user is detected. This would allow adults to be watching a violent or otherwise unsuitable content for a child, and then have the system lock out the content when a child enters the viewing area. When content is locked out, it can be paused and replaced with other content, or a blank screen. In some embodiments a barker channel can be displayed advertising network features, and explaining why the content has been blocked. The adult can then be provided with the ability to provide a one time override to the restriction." Gavita at [0044]. It also discloses "[a]t present logging in to an IPTV STB is done with a user specific credential, and requires that a controller with a form factor limited input mechanism is employed. This is far from ideal. Therefore, it would be desirable to provide a system and method that obviate or mitigate the above described problems." Gavita at [0007].

A POSITA would have recognized that Gavita's disclosures relating to biometric information could easily be incorporated into DTA800B1. A POSITA would have been motivated to implement Gavita's biometric systems into DTA800B1 to address the problems with PINs. A

POSITA would have understood that, as of the priority date of the ’879 Patent, security was important in authorizing use. This was especially so in V-Chip devices, which DTA800B1 discloses. Gavita’s biometric verification and other verification could have mitigated this well-known drawback to DTA800B1’ V-Chip system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., biometric and other verification) to improve similar devices or methods (e.g., devices for parental control of viewing content) in the same way (e.g., preventing the playback device play in the event of authentication was not provided). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., biometric and other verification) to a known device or method (e.g., devices for parental control of viewing content) that is ready for improvement to yield predictable results (e.g., device that permits viewing when biometrics are verified). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Scott discloses a “disclosed content accessibility control (CAC) application suitable for use within the context of a multimedia content platform enables an administrative end user to control a subordinate end user's access to content. In a familial context, the subordinate end user (subordinate) may be a family's child or children while the administrative end user (administrator) may be the family's parent(s), guardian(s), or other supervisor(s). The CAC application enables an administrator to create a user account for a subordinate and to tag or otherwise identify specific content deemed by the administrator to be acceptable for viewing, listening to, playing, or otherwise experiencing by the subordinate. When the subordinate wishes to experience content, the subordinate activates the subordinate's user account by logging into the account. When a

subordinate's user account is active, the multimedia platform effectively filters the available content so that the subordinate has access to only that content approved by the administrator." Scott at [0013]. It also discloses "[i]n the field of television (TV) and other multimedia and entertainment applications, features exist to give parents or others with supervisory roles coarse control over content that children may listen to, watch, or both. The V-chip, for example, enables parents to use TV ratings as a rough proxy for determining acceptable and unacceptable content for children." Scott at [0004].

A POSITA would have recognized that Scott's disclosures relating to individual profiles could easily be incorporated into DTA800B1. A POSITA would have been motivated to implement Scott's conditional access into DTA800B1 to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Scott's user interface could improve the content control already in DTA800B1 system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tong discloses "[t]he V-Chip is able to detect the rating, then compares it to what a user has requested be blocked based on the user's configuration of the V-Chip. If the program is outside

what the user has configured as acceptable, the program is blocked." Tong at [0006]. Tong also discloses "[t]ther blocking technologies have expanded beyond pure ratings blocking. However, they still suffer from the limitations of only blocking based on certain criteria and are not a completely customizable to allow parents to define their own blocking parameters. As a result, there is a need to provide additional flexibility in allowing parents to block programming they, not others, deem objectionable from being viewed by their children" Tong at [0011]. *See also*, Tong at [0002]-[0010].

A POSITA would have recognized that Tong's disclosures relating to individual profiles could easily be incorporated into DTA800B1. A POSITA would have been motivated to implement Tong's conditional access into DTA800B1 to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Tong's user interface could improve the content control already in DTA800B1 system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Craner discloses "[s]ystems and methods for accessing edited or censored versions of the requested asset are also disclosed." Craner, Abstract. It also discloses that a "FIG. 6 shows

illustrative locks setup display screen 600 used to customize parental control settings for the current user in accordance with one embodiment of the invention. Each user of the user equipment may have personalized parental control settings or the user equipment may have a single parental control policy in force for all users (or both methods may be used). If more than one user is defined, users may be authenticated upon accessing or powering on the user equipment using a standard username and password combination, a verification module (e.g., voice, iris, or fingerprint verification), or any other convenient method. " Craner 11:48-58. Craner discloses that "[f]or example, as is understood in the art, a voice recognition module utilizes an attached microphone to translate common phonemes into data characters and commands. The voice verification module may compare the inputted phonemes to voiceprints already stored on user equipment 102 (FIG. 1). These stored voiceprints may have been established in advance via a voice training process. If an acceptable voiceprint match is found, access to the interactive content control application's privileged menu may be granted without the use of a manual parental control access code entry. A user may also navigate through the menu overlays, input data, and control the interactive content control application via voice if desired."" It provides a verification system that stores "at least one of pre-registered fingerprints, voice characteristic information, facial geometries, iris scan information, DNA, etc. for users" and a verification system that "includes a database 23 that stores biometric information in association with information that identifies users." Craner, 9:3–33.

A POSITA would have recognized that Craner's disclosures relating to biometric information could easily be incorporated into DTA800B1. A POSITA would have been motivated to implement Craner's biometric systems into DTA800B1 to address the problems with PINs. A POSITA would have understood that, as of the priority date of the '879 Patent, security was important in authorizing use. This was especially so in V-Chip devices, which DTA800B1

discloses. DTA800B1, 9. Craner's biometric verification could have mitigated this well-known drawback to DTA800B1' V-Chip system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., biometric verification) to improve similar devices or methods (e.g., devices for parental control of viewing content) in the same way (e.g., preventing the playback device play in the event of authentication was not provided). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., biometric verification) to a known device or method (e.g., devices for parental control of viewing content) that is ready for improvement to yield predictable results (e.g., device that permits viewing when biometrics are verified). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(c) Emerson in view of Knowles and/or Novack and/or Hancock and/or Leung and/or Damm and/or Goddard and/or Tran and/or Luong and/or Lewis and/or West and/or Sullivan and/or Wong and/or Huang and/or Elam and/or Gabriel and/or Gavita and/or Scott and/or Tong and/or Craner

Emerson discloses "a video services control system comprises a set top box operatively coupled to a television and a video services network communicatively coupled to the set top box and configured to provide video services to the television via the set top box. The video services network includes an application program operable to develop and implement individualized usage restriction profiles for two or more users of the set top box to control video services viewing by the users. The two or more users include one or more non-designated users and a designated administrator. Additionally, the application program is configured to provide the designated administrator with authority to dictate the usage restriction profile for each non-designated user. Each individualized usage restriction profile includes one or more restrictions on the content of

video services shown on the television for viewing by the corresponding user. The application program is configured to receive information input by the designated administrator, develop each usage restriction profile based on the input information unique to each user, and implement each usage restriction profile to control video services viewing by the users." Emerson, 1:36-57. Emerson also discloses "an exemplary system 100 configured for in-home set top box management in accordance with the principles of the present disclosure. As shown, a video services network 102 is communicatively connected to one or more set top boxes (STB or STBs) 104. The STBs 104 are operatively coupled to television sets (TV or TVs) 106. The video services network 102 is configured to provide video services to the TVs via the STBs, with the TVs receiving video signals from the STBs. In certain embodiments, the STBs 104 and TVs 106 are located in the same living or working environment, such as the same residential home or office, and/or are included in the same video services account. Additionally, the STBs 104 and TVs 106 may be accessed by a plurality of users, including one or more non-designated users 108 and a designated administrator 110. The video services network 102 includes an application program 112 designed to develop and implement individualized usage restriction profiles 114 for the non-designated users 108 based on information received from the designated administrator 110. The individualized usage restriction profiles include restrictions on the content of video services shown on the TVs 106 for viewing by the non-designated users 108." Emerson, 2:48-3:12.

Knowles discloses a "multiple Interactive Program Guide (IPG) system" Knowles, Abstract. Knowles also discloses "[a]n embodiment of the invention is a system that provides customers with multiple instantly accessible electronic IPGs. The multiple IPG system enables users to view TV programs and schedule information in each IPG. Preferably, each IPG comprises a Grid Guide, a Channel Guide, and a Theme Guide. Each IPG receives, stores, and displays

program titles and information and share some of the information with other IPGs." Knowles, ¶[0044]. Knowles discloses an IPG that includes "VChip Plus+ in guide mode uses two data sources in combination to determine whether a show should be blocked: data downloaded and stored in the guide (channel lineups, show schedules, show ratings), and rating data transmitted over the VBI. Ordinary V-Chip devices use the data transmitted over the VBI to determine whether or not to block a show by rating. These ratings are sent a minimum of every 15 seconds. Thus, a show that a parent may wish blocked, may be seen for up to 15 seconds before the blocking takes effect. VCHIP Plus+ in guide mode uses show rating data already stored for each of the IPGs to determine whether a show should be blocked as soon as it begins, and use the VBI data to confirm if the show was properly blocked." Knowles at ¶[0099].

A POSITA would have recognized that Knowles's disclosures relating to content control could easily be incorporated into Emerson. A POSITA would have been motivated to implement Knowles's content control into Emerson to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, content control was important to provide. Such parental control was central to both Emerson and Knowles. *See, e.g.*, Emerson, 2:48-3:12; Knowles, ¶[0115]. Knowles's content control could improve the content control already in Emerson system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to

amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Novack discloses a "centralized biometric system for verifying the identity of a user over a communications network includes a device that stores biometric information in association with information that identifies users." Novack, Abstract. It also discloses that a "PIN provided by the user ¶[is used] as authorization from the user to deliver the requested media content to the user." Novack ¶[0007]. Novack discloses that a "problem with verifying the identity of a user based on a PIN is that it is easy for individuals to obtain the user's PIN." It provides a verification system that stores "at least one of pre-registered fingerprints, voice characteristic information, facial geometries, iris scan information, DNA, etc. for users" and a verification system that "includes a database 23 that stores biometric information in association with information that identifies users." Novack, ¶[0014], ¶[0041].

A POSITA would have recognized that Novack's disclosures relating to biometric information could easily be incorporated into Emerson. A POSITA would have been motivated to implement Novack's biometric systems into Emerson to address the problems with PINs. Novack, ¶[0009]. A POSITA would have understood that, as of the priority date of the '879 Patent, security was important in authorizing use. This was especially so in V-Chip devices, which Emerson discloses. Emerson, 2:48-3:12. Novack's biometric verification could have mitigated this well-known drawback to Emerson' V-Chip system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., biometric verification) to improve similar devices or methods (e.g., devices for parental control of viewing content) in the same way (e.g., preventing the playback device play in the event of authentication was not provided). As another example, a POSITA would have understood the modification or combination to amount to applying a known

technique (e.g., biometric verification) to a known device or method (e.g., devices for parental control of viewing content) that is ready for improvement to yield predictable results (e.g., device that permits viewing when biometrics are verified). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hancock discloses "an apparatus and method that provides for a user interface for programmable blocking, such as for parental control, of viewable programs, such as programs that can be viewed on a television receiver. A memory provides storage of information relating to viewable programming and user defined blocking instructions. A microprocessor generates a blocking command as a function of the information stored in memory. A blocking circuit, such as a blocking circuit which passes a baseband television video signal to a television display, provides blocking of the video signal in response to the blocking command." Hancock, 3:20-30. It also discloses that "[a]fter the viewer has selected, as described below, the television program viewing blocking/enablement function ("V-ChipPlus+"), the viewer's screen displays the V-Chip Plus +In-Guide User Interface Main Blocking Menu (the 'Main Blocking Menu')." Hancock, 6:24-28. It also discloses the "viewer selects a particular program, channel logo, or time slot to be blocked by one selection method, for instance, using the viewer's remote control device to point to and select a program, channel or time slot." Hancock, 9:17–20.

A POSITA would have recognized that Hancock's disclosures relating to program data could easily be incorporated into Emerson. A POSITA would have been motivated to implement Hancock's program data into Emerson to provide additional information. A POSITA would have understood that, as of the priority date of the '879 Patent, program information was important to provide. Displaying information was central to both Emerson and Hancock. Emerson, 2:48-3:12;

Hancock, 6:4-56. Hancock's additional media information could improve the media information already in Emerson system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., displaying program information on a television) to improve similar devices or methods (e.g., other systems that display program information on a television) in the same way (e.g., displaying information). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., displaying information) to a known device or method (e.g., displaying information) that is ready for improvement to yield predictable results (e.g., device that displays the identified information). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Leung discloses " an apparatus for parental control of a television receiver" Leung, ¶[0007]. It also discloses that the "viewer input device 46 also allows the viewer to remotely program the V-Chip Plus+ system to exclude programs according to one or more rating factors, as well as compiling or modifying the V-Chip Plus+ override lists. When the viewer wishes to review the particular ratings set in the V-Chip Plus+ system or the V-Chip Plus+ override lists, the microprocessor 44 retrieves the appropriate information from RAM 48 and couples it to the video processor 50, where the information is formatted for display. Preferably, the information stored in the video processor 50 is a bit map of what is displayed on the TV display 42." Leung, ¶[0075]. It also discloses that for "the purpose of describing the operation of the override system, it is assumed that the television signal of each channel carried by the cable feed contains supplemental data, including channel identification, such as HBO, CNN, or NBC. Preferably, the channel identification is embedded in the VBI of the signal of each channel in an XDS format" Leung, ¶[0062].

A POSITA would have recognized that Leung's disclosures relating to program data could easily be incorporated into Emerson. A POSITA would have been motivated to implement Leung's program data into Emerson to provide additional program information. A POSITA would have understood that, as of the priority date of the '879 Patent, program information was important to provide. Program data was central to both Emerson and Leung. Emerson, 2:48-3:12; Leung, ¶[0062]. Leung's additional media information could improve the media information already in Emerson system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., displaying program information on a television) to improve similar devices or methods (e.g., other systems that display program information on a television) in the same way (e.g., displaying information). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., displaying information) to a known device or method (e.g., displaying information) that is ready for improvement to yield predictable results (e.g., device that displays the identified information). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Damm discloses a "system is provided for rating multimedia content streamed over a data network as a series of data frames, segments, or packets and for administering display of the rated content." Damm, ¶[0013]. It also discloses that for "satellite and cable television systems, a variety of remote control operated features are now available for blocking channels, programs, or offensive content detected in programs. V-chip technology is one of these implemented via a hardware chip added to the viewing terminal. The V-chip blocks content by reading the ratings embedded in television signaling data frames or recorded video and turns off the signal when the ratings exceed certain ratings-based thresholds set by the parents. V-chip technology utilizes a

relatively complicated, but generally well known rating scheme including all youth (Y), youth 7 or older (Y7), general audience (G), parental guidance suggested (PG), teen 14 or over (TV14), and mature audience only (MA). Programs having these ratings may also include sub-ratings like contains violence (V), contains sexual situations (S), contains coarse language (L), and contains suggestive dialogue (D)." Damm, ¶[0003]. It also discloses that the "methods and system of the present invention is not limited to full length industry approved presentations. Any multimedia snippet, movie clip, audio clip, or the like may be rated and filtered or blocked at threw receiving device. If the receiving device does not detect any data in the content marker fields of received data packets of a presentation, or does not detect the presence of the marker field at all, then the content is not marked according to the methods and system of the present invention and may be rejected by default. However, in another embodiment if the un-marked presentation is conventionally rated the receiving device may default to a conventional ratings setting to determine if the content will be allowed or not." Damm, ¶[0086]. It also discloses while "all of the existing solutions work to some extent to block unwanted content, new methods of content delivery and availability of new and emerging multimedia display devices create certain vulnerabilities in the existing methods. Other limitations are also apparent to one with skill in the art of multimedia content filtering. The boundaries between data network telephony (DNT), of which Internet protocol network telephony (IPNT) is a subset, and data packet enabled satellite and cable network content delivery paths are increasingly blurred by improvements in the capabilities of transversing between networks and transport protocols when accessing or delivering content. Cellular telephones capable of accessing IP data networks are increasingly being marketed as content receiving devices capable of receiving, displaying, and storing, and sharing multimedia content. Some "bleeding edge" devices have up to 2 gigabytes of storage capability. These and other like

devices, including new devices being developed, are fully multimedia capable and highly mobile and may receive content from a variety of defined networks." Damm, ¶[0008].

A POSITA would have recognized that Damm's disclosures relating to defaulting to deny access could easily be incorporated into Emerson. A POSITA would have been motivated to implement Damm's program data into Emerson to provide additional security. A POSITA would have understood that, as of the priority date of the '879 Patent, parental control was important to provide. Such parental control was central to both Emerson and Damm. See, e.g., Emerson, ¶[0115]; Damm, ¶[0014]. Damm's defaulting to deny access could improve the parental control already in Emerson system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., defaulting to deny access to view a program) to improve similar devices or methods (e.g., other systems that control access to a program) in the same way (e.g., preventing the program from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., defaulting to deny access to view a program) to a known device or method (e.g., other systems that control access to a program) that is ready for improvement to yield predictable results (e.g., device that defaults to deny access). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Goddard discloses a "a method of setting content rating parameters of a content control system. Employing the present method, a user may set acceptable content rating parameters based on the rating of example content by blocking or unblocking the example content. The content ratings system compares the content rating of the example content with existing acceptable content rating parameters and adjusts the content rating parameters accordingly. In this manner, specific

knowledge of the content ratings scheme employed, or the meaning of specific content ratings used by the content ratings scheme, is not required." Goddard, 2:31-42. It also discloses that in "one embodiment, such a user interface 100 may include an on-screen control panel 102 for controlling access to media by the information appliance (see FIG. 6). A region or window 104 of the control panel 102 contains therein display fields such as "Channel" 106 and various control buttons or switches such as channel selection 108 & 110, volume 112 & 114, "Settings" 116 and so forth, which function as on-screen visual representations of controls of the information appliance or, alternately, peripheral devices attached thereto that provide access to one or more media." Goddard, 4:36-45.

A POSITA would have recognized that Goddard's disclosures relating to content control could easily be incorporated into Emerson. A POSITA would have been motivated to implement Goddard's content control into Emerson to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, content control was important to provide. Such parental control was central to both Emerson and Goddard. *See, e.g.*, Emerson, 2:48-3:12; Goddard, 3:28-55. Goddard's content control could improve the content control already in Emerson system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to

amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tran discloses "a method and system for multi-user, multi-device content access metering and control." Tran, ¶[0021]. It also discloses that in "the invention provides an access control system for both controlling access to inappropriate content, and metering of access to content, for one or more simultaneous users across a network of one or more connected devices, such as in a local area network." Tran, ¶[0022]. Tran also discloses an "implementation of blocking and metering for parental control of access to content via devices in a network is described below for an example network environment comprising networked devices such as network-connected televisions in said network 10. Such televisions may comprise display-connected devices that are network-connected digital televisions (DTVs) interconnected to each other via Ethernet or Wi-Fi wireless network. FIG. 10 shows an example display screen of a television device 12 in the network 10, designated as Family I^2TV, for content blocking and metering set-up according to an embodiment of the invention. In one example, each user is assigned a color (e.g., green, yellow or blue). One or more of the users are children of various age groups." Tran, ¶[0083].

A POSITA would have recognized that Tran's disclosures relating to multi-user content control could easily be incorporated into Emerson. A POSITA would have been motivated to implement Tran's multi-user content control into Emerson to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, multi-user content control was important to provide. Such content control was central to both Emerson and Tran. Emerson, 2:48-3:12; Tran, ¶[0083]. Tran's multi-user content control could improve the content control already in Emerson system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., multi-user content control) to improve similar devices or

methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., multi-user content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Luong discloses "systems and methods for accessing parental control features." Luong, ¶[0004]. It also discloses "that any or all components within parental control system 500—including access control module 510, log module 520, and parental control tools 518—may be implemented as processing circuitry and/or as software implemented using processing circuitry (e.g., as computer-readable instructions encoded on a computer-readable medium and executed using a processor). This processing circuitry may be incorporated within user equipment (e.g., control circuitry 304 of user equipment device 300 of FIG. 3) and/or within a data source (e.g., a local or remote server). In some embodiments, the components of parental control system 500 may be implemented across a number of user equipment devices (e.g., devices 402, 404, and 406) and/or data sources (e.g., data sources 416 and 418 of FIG. 4). In particular, access control module 510 may be implemented in part or in whole on a number of devices and/or data sources. For example, media detection unit 512 and media filter unit 514 may be implemented on all user equipment devices used (e.g., by restricted users) to access media. As another example, parental control database 516 may be located at a data source accessible to all the user equipment devices. Similarly, log module 520 may be implemented in part or in whole on a number of devices and/or data sources. For example, parental review application 522 may be

implemented using processing circuitry on a user equipment device (e.g., user television equipment), and log database 524 may be located at a data source accessible to all the user equipment devices (e.g., via the Internet). When the components of parental control system 500 are distributed on a number of devices and/or data sources, they may communicate with each other directly and/or through communications network 414, using any suitable protocol. For example, data (e.g., log data, parental control data, etc.) may be transmitted between devices using the hypertext transfer protocol ("HTTP")." Luong, ¶[0091].

A POSITA would have recognized that Luong disclosures relating to a parental control database could easily be incorporated into Emerson. A POSITA would have been motivated to implement Luong's parental control database into Emerson to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, parental control was important to provide. Such content control was central to both Emerson and Luong. Emerson, 2:48-3:12; Luong, ¶[0091]. Luong parental control database could improve the content control already in Emerson system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., database of parental control information) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., preventing content from being viewable based on stored data). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., database of parental control information) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content based on stored data). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Lewis discloses the "use of data boxes to personalize programming to the individual taste of the user." Lewis. 4:8-10. It also discloses "[o]nce the received data has been processed according to user specification, it may be played back on the display via playback device 15 and/or stored on built-in, non-movable storage device 14. This may occur as a simultaneous recording of a number of feeds while the user plays back a selective feed in a non-real-time mode. The built-in, non-movable storage device 14 may be any storage device for audio/video information known in the art. The built-in, non-movable storage device 14 may be divided into separate Data Boxes, which may be assigned to separate members of a family, business or group." Lewis, 15:1-11.

A POSITA would have recognized that Lewis's disclosures relating to group content control could easily be incorporated into Emerson. A POSITA would have been motivated to implement Lewis's group content control into Emerson to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, group content control was important to provide. Such content control was central to both Emerson and Lewis. Emerson, 2:48-3:12; Lewis, 15:1-11. Lewis's group content control could improve the content control already in Emerson system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., group content control) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., preventing content from being viewable based on stored data). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., group content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

West discloses "incorporating both time and content controls within a single system and providing a plurality of censoring authority choices for multiple and variable numbers of viewers within a single household or multiple households." West, 4:48-53. It also discloses that "provision is made for each PIN holder to be responsible for viewing their permitted choices. The censorship device can be down line activated and deactivated. In addition, a timing clock within the censorship device is updated periodically by a down line signal to ensure proper synchronization of the censorship device real time clock with a single central clock." West, 5:13-19.

A POSITA would have recognized that West's disclosures relating to content control could easily be incorporated into Emerson. A POSITA would have been motivated to implement West's content control into Emerson to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, content control was important to provide. Such content control was central to both Emerson and West. Emerson, 2:48-3:12; West, 4:48-57. West's content control could improve the content control already in Emerson system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Sullivan discloses the " a content control system and methods employed by a content control system for limiting access by sensitive users, such as children, or the like, to certain types

of content." Sullivan,¶[0008]. It also discloses "in the simplest embodiment, where a user selects a particular rating, that rating and all higher ratings will be locked. In a more flexible embodiment, the ratings may be selected individually. Preferably, the manner of operation in this regard may be selected by the user, e.g., in a user preferences options field." Sullivan, ¶[0053].

A POSITA would have recognized that Sullivan's disclosures relating to group content control could easily be incorporated into Emerson. A POSITA would have been motivated to implement Sullivan's group content control into Emerson to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, group content control was important to provide. Such content control was central to both Emerson and Sullivan. Emerson, 2:48-3:12. Sullivan's group content control could improve the content control already in Emerson system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Wong discloses "[i]n another embodiment, the user may choose to associate the defined V-chip (or any other existing parental control solution) rating levels to the local user-defined rating levels. If this were so, then when the test of whether or not to restrict the program 316 is made, there is already an expected value available from the V-chip, upon which the user could choose to

agree or disagree. In this case, the V-chip rating would act as a default selection value. If the user does not agree with the V-chip rating, then the user would instead select to independently rate the video. This process would reduce the user interaction time required, if the user agrees with the recommended rating, and would also give the user a basis upon which to initially judge the rating of the program." Wong at 16:22–34. Wong also discloses "[i]n one embodiment, the restriction method will be utilized on an overlay of a dual widget platform. These dual widgets would be the Restriction Widget Blocking Procedure (the Blocking Widget), and the Restriction Widget Release Widget (Release Widget). Upon device startup, restriction is automatically enabled, unless specifically otherwise set by the user in a device option menu." Wong at 17:19–26. Wong also discloses "[t]raditional user interfaces are well known in the contexts of Video Cassette Recording (VCR) and Digital Video Recording (DVR), where a programming schedule of upcoming programming content is displayed. Similarly, audio prompting in the customer service and other business segments of a variety of industries are well known (such prompt sequence usually starts with "Press 1 for English", or "Press 1 for touch-tone dialing"). XM® and Sirius® satellite radio systems typically use a visual interface (typically a list of stations or upcoming events) to select audio programming. However, what appears to be lacking is a user interface that learns from prior user interactions. Such an interface would facilitate user interactions, and reduce the frustrations typically encountered when using such non-learning systems." Wong at 1:26-40.

A POSITA would have recognized that Wong's disclosures relating to user interfaces could easily be incorporated into Emerson. A POSITA would have been motivated to implement Wong's user interface into Emerson to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, user interface was important to provide. Wong's user interface could improve the content control already in Emerson system. A

POSITA would have considered the combination to amount to the use of known techniques (e.g., user interface) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., user interface) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Huang discloses It will also be appreciated by those skilled in the art that, while in the illustrated example the transmitter pulse timing is controlled by the specialized chip shown, in other embodiments it may be possible to implement these timing functions via software running in the main CPU itself which would serve as a substitute for the IR transmitter IC 204. In addition, when adapted for use in connection with the remote control application, the IrDA receiver may also be used for learning IR codes from other devices such as originally supplied remote controls. The learning function would be made possible by paralleling the IrDA receiver output signal 210 to both the normal PDA connection 212 and the learning input 214 of the IR transmitter IC as shown." Huang at [0060]. Huang also discloses "[o]nce the primary user has setup the main configuration, new configurations can be created based on the master profile. The primary user may choose which devices and which levels of functionality to expose. This can include backgrounds, specific favorites and other features. The primary user may also choose whether the profile is to be "locked down," which may be used to prevent any additional customization by other users of the profile. In this manner, the primary user can maintain complete control over the way other users (e.g., family members) interact with the remote control application." Huang at

[0262]. Huang also discloses "[u]niversal remote controls for controlling the operation of multiple, diverse home appliances are well known. In this regard, universal remote controls perform a valuable function by consolidating three, four, five, and more remote controls into one device. However, as more remotely controllable appliances enter the homes of consumers and the number of remotely controllable operations increase, the user interface of the universal remote control becomes increasingly more complex. This complexity arises from the need to provide more and more keys which are used to initiate the transmission of the control codes that control the increasing number of operations of the increasing number of home appliances. Disadvantageously, as the user interface of the universal remote control becomes more cluttered, the usability of the universal remote control diminishes. Accordingly, a need exists for a universal remote control having an improved user interface that simplifies the operation of the universal remote control and, as such, the remote operation of consumer appliances." Huang at [0004].

A POSITA would have recognized that Huang's disclosures relating to individual profiles could easily be incorporated into Emerson. A POSITA would have been motivated to implement Huang's user interface into Emerson to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Huang's user interface could improve the content control already in Emerson system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., individual profiles) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable based on a profile). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., user profiles) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that

controls content display based on a profile). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Elam discloses "[t]he present invention relates generally to television broadcast systems, and more particularly to analog or digital television broadcast receivers and methods wherein program content rating data transmitted concurrently with a television program signal is utilized to provide parental control over the viewing by children of television programs broadcast over the system." Elam at 1:6–12. Elam also discloses "[t]he invention is directed to a television receiver for receiving and displaying to a viewer a television program transmission signal which includes a data signal and a program content rating signal indicative of the program content rating of the received television transmission. The receiver comprises circuit means for separating the data signal and the program content rating signal from the television program signal, a rating derivation circuit for deriving the program rating from the program content rating signal, user selection means responsive to user inputs for storing program rating viewing authorizations for one or more viewers, means for comparing the derived program rating with the stored viewing authorization applicable to the viewer to develop a blanking control signal in the event the viewer is not authorized to view the program, a monitoring circuit for monitoring the integrity of at least a portion of the data signal, the monitoring circuit providing a rating default control signal upon the integrity of the portion of the data signal falling below a predetermined threshold level, and a blanking circuit responsive to the blanking control signal and the rating default control signal for blanking the program in the event the program rating level is not authorized to the viewer or the integrity of the portion of the data signal falls below the predetermined threshold level." Elam at 2:8–31. Elam also discloses "The present invention is directed to an improvement in the system

proposed by Elam et al. wherein in an analog or digital television receiver the integrity of a data signal transmitted with the television program transmission is monitored to determine whether the data signal is being reliably received, and hence whether reliable rating characters are being received. In the event the integrity of the data signal falls below an acceptable threshold level, the program is either blanked, or, depending on the operating mode of the receiver, a determination is made whether to blank depending on either 1) the viewing authorization then in effect for the viewer, or 2) whether a default to view or default to blank authorization has been stored for the viewer. Accordingly, it is a general object of the present invention to provide a television receiver which provides conditional access to received television programs." Elam at 1:41-56.

A POSITA would have recognized that Elam's disclosures relating to individual profiles could easily be incorporated into Emerson. A POSITA would have been motivated to implement Elam's conditional access into Emerson to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Elam's user interface could improve the content control already in Emerson system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Gabriel discloses "[t]he present invention relates to control of access to content (e.g., audio data and/or video data)." Gabriel at [0001]. Gabriel also discloses that "[i]n another example embodiment according to the present invention, a method to control access to content is provided which includes selecting content, the selected content having metadata linked thereto via a pointer. The metadata is obtained using the pointer. The metadata and at least one filtering criterion are compared, the filtering criterion describing characteristics of at least one of permitted content or prohibited content. Access to the selected content is permitted or denied based on the comparison. The pointer may be embedded, for example, in a Vertical Blanking Interval (VBI) of a signal of the selected content. The pointer may be a URL, and the metadata may be obtained over the Internet using the URL." Gabriel at [0009]. Gabriel also discloses "[c]ontent-provision systems, such cable TV, satellite TV, video-on-demand (VOD), pay-per-view (PPV), and/or Web-based systems offer an enormous selection of video programs containing various types of substantive content, some of which may not be suitable for certain users, such as a child viewer." Gabriel at [0002].

A POSITA would have recognized that Gabriel's disclosures relating to individual profiles could easily be incorporated into Emerson. A POSITA would have been motivated to implement Gabriel's conditional access into Emerson to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Gabriel's user interface could improve the content control already in Emerson system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to

applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Gavita discloses "[i]n an Internet Protocol Television (IPTV) environment, as in many other similar fields), users can be provided with the ability to log in (in some implementations users are required to log in) to access the account. In addition to an account validation, each account can have a plurality of users associated with it, each user having an individual log in. By creating profiles for different users, the account administrator (who is in the context of this discussion one of the users that is responsible for setting up accounts) can create profiles associated with each of the users that can be used to restrict access to content." Gavita at [0002]. Gavit also discloses "[i]n FIG. 10 another manner of viewing the above described processes is presented. In step 138, the set top box is initialized. In step 140 the credentials of the present users are captured for processing and in step 142, access based on determined access rights is provided. Following step 142, the process can return to step 140 so that the permissions can change when a new user is detected. This would allow adults to be watching a violent or otherwise unsuitable content for a child, and then have the system lock out the content when a child enters the viewing area. When content is locked out, it can be paused and replaced with other content, or a blank screen. In some embodiments a barker channel can be displayed advertising network features, and explaining why the content has been blocked. The adult can then be provided with the ability to provide a one time override to the restriction." Gavita at [0044]. It also discloses "[a]t present logging in to an IPTV STB is done with a user specific credential, and requires that a controller with a form factor limited

input mechanism is employed. This is far from ideal. Therefore, it would be desirable to provide a system and method that obviate or mitigate the above described problems." Gavita at [0007].

A POSITA would have recognized that Gavita's disclosures relating to biometric information could easily be incorporated into Emerson. A POSITA would have been motivated to implement Gavita's biometric systems into Emerson to address the problems with PINs. A POSITA would have understood that, as of the priority date of the '879 Patent, security was important in authorizing use. This was especially so in V-Chip devices, which Emerson discloses. Gavita's biometric verification and other verification could have mitigated this well-known drawback to Emerson' V-Chip system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., biometric and other verification) to improve similar devices or methods (e.g., devices for parental control of viewing content) in the same way (e.g., preventing the playback device play in the event of authentication was not provided). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., biometric and other verification) to a known device or method (e.g., devices for parental control of viewing content) that is ready for improvement to yield predictable results (e.g., device that permits viewing when biometrics are verified). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Scott discloses a "disclosed content accessibility control (CAC) application suitable for use within the context of a multimedia content platform enables an administrative end user to control a subordinate end user's access to content. In a familial context, the subordinate end user (subordinate) may be a family's child or children while the administrative end user (administrator) may be the family's parent(s), guardian(s), or other supervisor(s). The CAC application enables an

administrator to create a user account for a subordinate and to tag or otherwise identify specific content deemed by the administrator to be acceptable for viewing, listening to, playing, or otherwise experiencing by the subordinate. When the subordinate wishes to experience content, the subordinate activates the subordinate's user account by logging into the account. When a subordinate's user account is active, the multimedia platform effectively filters the available content so that the subordinate has access to only that content approved by the administrator." Scott at [0013]. It also discloses "[i]n the field of television (TV) and other multimedia and entertainment applications, features exist to give parents or others with supervisory roles coarse control over content that children may listen to, watch, or both. The V-chip, for example, enables parents to use TV ratings as a rough proxy for determining acceptable and unacceptable content for children." Scott at [0004].

A POSITA would have recognized that Scott's disclosures relating to individual profiles could easily be incorporated into Emerson. A POSITA would have been motivated to implement Scott's conditional access into Emerson to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Scott's user interface could improve the content control already in Emerson system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification

to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tong discloses "[t]he V-Chip is able to detect the rating, then compares it to what a user has requested be blocked based on the user's configuration of the V-Chip. If the program is outside what the user has configured as acceptable, the program is blocked." Tong at [0006]. Tong also discloses "[t]ther blocking technologies have expanded beyond pure ratings blocking. However, they still suffer from the limitations of only blocking based on certain criteria and are not a completely customizable to allow parents to define their own blocking parameters. As a result, there is a need to provide additional flexibility in allowing parents to block programming they, not others, deem objectionable from being viewed by their children" Tong at [0011]. *See also*, Tong at [0002]-[0010].

A POSITA would have recognized that Tong's disclosures relating to individual profiles could easily be incorporated into Emerson. A POSITA would have been motivated to implement Tong's conditional access into Emerson to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Tong's user interface could improve the content control already in Emerson system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification

to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Craner discloses "[s]ystems and methods for accessing edited or censored versions of the requested asset are also disclosed." Craner, Abstract. It also discloses that a "FIG. 6 shows illustrative locks setup display screen 600 used to customize parental control settings for the current user in accordance with one embodiment of the invention. Each user of the user equipment may have personalized parental control settings or the user equipment may have a single parental control policy in force for all users (or both methods may be used). If more than one user is defined, users may be authenticated upon accessing or powering on the user equipment using a standard username and password combination, a verification module (e.g., voice, iris, or fingerprint verification), or any other convenient method. " Craner 11:48-58. Craner discloses that "[f]or example, as is understood in the art, a voice recognition module utilizes an attached microphone to translate common phonemes into data characters and commands. The voice verification module may compare the inputted phonemes to voiceprints already stored on user equipment 102 (FIG. 1). These stored voiceprints may have been established in advance via a voice training process. If an acceptable voiceprint match is found, access to the interactive content control application's privileged menu may be granted without the use of a manual parental control access code entry. A user may also navigate through the menu overlays, input data, and control the interactive content control application via voice if desired."" It provides a verification system that stores "at least one of pre-registered fingerprints, voice characteristic information, facial geometries, iris scan information, DNA, etc. for users" and a verification system that "includes a database 23 that stores biometric information in association with information that identifies users." Craner, 9:3–33.

A POSITA would have recognized that Craner's disclosures relating to biometric information could easily be incorporated into Emerson. A POSITA would have been motivated to implement Craner's biometric systems into Emerson to address the problems with PINs. A POSITA would have understood that, as of the priority date of the '879 Patent, security was important in authorizing use. This was especially so in V-Chip devices, which Emerson discloses. Emerson, 2:48-3:12. Craner's biometric verification could have mitigated this well-known drawback to Emerson' V-Chip system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., biometric verification) to improve similar devices or methods (e.g., devices for parental control of viewing content) in the same way (e.g., preventing the playback device play in the event of authentication was not provided). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., biometric verification) to a known device or method (e.g., devices for parental control of viewing content) that is ready for improvement to yield predictable results (e.g., device that permits viewing when biometrics are verified). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(d) Arthur in view of Knowles and/or Novack and/or Hancock and/or Leung and/or Damm and/or Goddard and/or Tran and/or Luong and/or Lewis and/or West and/or Sullivan and/or Wong and/or Huang and/or Elam and/or Gabriel and/or Gavita and/or Scott and/or Tong and/or Craner

Arthur discloses a "method and apparatus for implementing multiple V-chip settings for a display device. The method comprises several steps, including a first step of receiving a first V-chip setting as input by a user via a graphical user interface. The first V-chip setting is then stored into a first portion of memory. Next, a second V-chip setting is received as input by a user via a

graphical user interface. First and second V-chip settings include a maximum allowable TV rating, moving rating, and content rating, as well as other viewer information. The second V-chip setting is stored into a second portion of memory. First and second portions of memory are each separately removable by a user. A desired one of the multiple V-chip settings is selected by a viewer via a graphical user interface and then enabled. The V-chip setting is password protected to provide access security to specific viewers. Finally, media is provided to a display device according to the enabled V-chip setting." Arthur at Abstract. It also discloses "[a]nother embodiment of the present invention provides a display system that implements the method of multiple V-chip settings for a display device. The display system includes a display device, a signal source that is coupled to the display device, a V-chip that is coupled to the signal source, a processor that is coupled to the V-chip, and a computer readable memory coupled to the processor. The computer readable memory has a plurality of portions for storing a plurality of V-chip settings. The computer readable memory also contains program instructions stored therein that, when executed, implement the method for providing one of the plurality of V-chip settings on the display device, as described hereinabove. The memory in which the multiple V-chip settings are stored can be an internal component to the media device, or it can be a removable memory card, e.g. SONY Memory Stick™." Arthur at 3:4–19.

Knowles discloses a "multiple Interactive Program Guide (IPG) system" Knowles, Abstract. Knowles also discloses "[a]n embodiment of the invention is a system that provides customers with multiple instantly accessible electronic IPGs. The multiple IPG system enables users to view TV programs and schedule information in each IPG. Preferably, each IPG comprises a Grid Guide, a Channel Guide, and a Theme Guide. Each IPG receives, stores, and displays program titles and information and share some of the information with other IPGs." Knowles,

¶[0044]. Knowles discloses an IPG that includes "VChip Plus+ in guide mode uses two data sources in combination to determine whether a show should be blocked: data downloaded and stored in the guide (channel lineups, show schedules, show ratings), and rating data transmitted over the VBI. Ordinary V-Chip devices use the data transmitted over the VBI to determine whether or not to block a show by rating. These ratings are sent a minimum of every 15 seconds. Thus, a show that a parent may wish blocked, may be seen for up to 15 seconds before the blocking takes effect. VCHIP Plus+ in guide mode uses show rating data already stored for each of the IPGs to determine whether a show should be blocked as soon as it begins, and use the VBI data to confirm if the show was properly blocked." Knowles at ¶[0099].

A POSITA would have recognized that Knowles's disclosures relating to content control could easily be incorporated into Arthur. A POSITA would have been motivated to implement Knowles's content control into Arthur to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, content control was important to provide. Such parental control was central to both Arthur and Knowles. *See, e.g.*, Arthur, 3:4-19.; Knowles, ¶[0115]. Knowles's content control could improve the content control already in Arthur system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Novack discloses a "centralized biometric system for verifying the identity of a user over a communications network includes a device that stores biometric information in association with information that identifies users." Novack, Abstract. It also discloses that a "PIN provided by the user ¶[is used] as authorization from the user to deliver the requested media content to the user." Novack ¶[0007]. Novack discloses that a "problem with verifying the identity of a user based on a PIN is that it is easy for individuals to obtain the user's PIN." It provides a verification system that stores "at least one of pre-registered fingerprints, voice characteristic information, facial geometries, iris scan information, DNA, etc. for users" and a verification system that "includes a database 23 that stores biometric information in association with information that identifies users." Novack, ¶[0014], ¶[0041].

A POSITA would have recognized that Novack's disclosures relating to biometric information could easily be incorporated into Arthur. A POSITA would have been motivated to implement Novack's biometric systems into Arthur to address the problems with PINs. Novack, ¶[0009]. A POSITA would have understood that, as of the priority date of the '879 Patent, security was important in authorizing use. This was especially so in V-Chip devices, which Arthur discloses. Arthur, 3:4-19.. Novack's biometric verification could have mitigated this well-known drawback to Arthur' V-Chip system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., biometric verification) to improve similar devices or methods (e.g., devices for parental control of viewing content) in the same way (e.g., preventing the playback device play in the event of authentication was not provided). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., biometric verification) to a known device or method (e.g., devices for parental control of viewing content) that is ready for improvement to yield predictable results (e.g., device

that permits viewing when biometrics are verified). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hancock discloses "an apparatus and method that provides for a user interface for programmable blocking, such as for parental control, of viewable programs, such as programs that can be viewed on a television receiver. A memory provides storage of information relating to viewable programming and user defined blocking instructions. A microprocessor generates a blocking command as a function of the information stored in memory. A blocking circuit, such as a blocking circuit which passes a baseband television video signal to a television display, provides blocking of the video signal in response to the blocking command." Hancock, 3:20-30. It also discloses that "[a]fter the viewer has selected, as described below, the television program viewing blocking/enablement function ("V-ChipPlus+"), the viewer's screen displays the V-Chip Plus +In-Guide User Interface Main Blocking Menu (the 'Main Blocking Menu')." Hancock, 6:24-28. It also discloses the "viewer selects a particular program, channel logo, or time slot to be blocked by one selection method, for instance, using the viewer's remote control device to point to and select a program, channel or time slot." Hancock, 9:17–20.

A POSITA would have recognized that Hancock's disclosures relating to program data could easily be incorporated into Arthur. A POSITA would have been motivated to implement Hancock's program data into Arthur to provide additional information. A POSITA would have understood that, as of the priority date of the '879 Patent, program information was important to provide. Displaying information was central to both Arthur and Hancock. Arthur, 3:4-19.; Hancock, 6:4-56. Hancock's additional media information could improve the media information already in Arthur system. A POSITA would have considered the combination to amount to the use

of known techniques (e.g., displaying program information on a television) to improve similar devices or methods (e.g., other systems that display program information on a television) in the same way (e.g., displaying information). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., displaying information) to a known device or method (e.g., displaying information) that is ready for improvement to yield predictable results (e.g., device that displays the identified information). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Leung discloses " an apparatus for parental control of a television receiver" Leung, ¶[0007]. It also discloses that the "viewer input device 46 also allows the viewer to remotely program the V-Chip Plus+ system to exclude programs according to one or more rating factors, as well as compiling or modifying the V-Chip Plus+ override lists. When the viewer wishes to review the particular ratings set in the V-Chip Plus+ system or the V-Chip Plus+ override lists, the microprocessor 44 retrieves the appropriate information from RAM 48 and couples it to the video processor 50, where the information is formatted for display. Preferably, the information stored in the video processor 50 is a bit map of what is displayed on the TV display 42." Leung, ¶[0075]. It also discloses that for "the purpose of describing the operation of the override system, it is assumed that the television signal of each channel carried by the cable feed contains supplemental data, including channel identification, such as HBO, CNN, or NBC. Preferably, the channel identification is embedded in the VBI of the signal of each channel in an XDS format" Leung, ¶[0062].

A POSITA would have recognized that Leung's disclosures relating to program data could easily be incorporated into Arthur. A POSITA would have been motivated to implement Leung's

program data into Arthur to provide additional program information. A POSITA would have understood that, as of the priority date of the '879 Patent, program information was important to provide. Program data was central to both Arthur and Leung. Arthur, 3:4-19.; Leung, ¶[0062]. Leung's additional media information could improve the media information already in Arthur system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., displaying program information on a television) to improve similar devices or methods (e.g., other systems that display program information on a television) in the same way (e.g., displaying information). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., displaying information) to a known device or method (e.g., displaying information) that is ready for improvement to yield predictable results (e.g., device that displays the identified information). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Damm discloses a "system is provided for rating multimedia content streamed over a data network as a series of data frames, segments, or packets and for administering display of the rated content." Damm, ¶[0013]. It also discloses that for "satellite and cable television systems, a variety of remote control operated features are now available for blocking channels, programs, or offensive content detected in programs. V-chip technology is one of these implemented via a hardware chip added to the viewing terminal. The V-chip blocks content by reading the ratings embedded in television signaling data frames or recorded video and turns off the signal when the ratings exceed certain ratings-based thresholds set by the parents. V-chip technology utilizes a relatively complicated, but generally well known rating scheme including all youth (Y), youth 7 or older (Y7), general audience (G), parental guidance suggested (PG), teen 14 or over (TV14),

and mature audience only (MA). Programs having these ratings may also include sub-ratings like contains violence (V), contains sexual situations (S), contains coarse language (L), and contains suggestive dialogue (D).” Damm, ¶[0003]. It also discloses that the “methods and system of the present invention is not limited to full length industry approved presentations. Any multimedia snippet, movie clip, audio clip, or the like may be rated and filtered or blocked at threw receiving device. If the receiving device does not detect any data in the content marker fields of received data packets of a presentation, or does not detect the presence of the marker field at all, then the content is not marked according to the methods and system of the present invention and may be rejected by default. However, in another embodiment if the un-marked presentation is conventionally rated the receiving device may default to a conventional ratings setting to determine if the content will be allowed or not.” Damm, ¶[0086]. It also discloses while “all of the existing solutions work to some extent to block unwanted content, new methods of content delivery and availability of new and emerging multimedia display devices create certain vulnerabilities in the existing methods. Other limitations are also apparent to one with skill in the art of multimedia content filtering. The boundaries between data network telephony (DNT), of which Internet protocol network telephony (IPNT) is a subset, and data packet enabled satellite and cable network content delivery paths are increasingly blurred by improvements in the capabilities of transversing between networks and transport protocols when accessing or delivering content. Cellular telephones capable of accessing IP data networks are increasingly being marketed as content receiving devices capable of receiving, displaying, and storing, and sharing multimedia content. Some “bleeding edge” devices have up to 2 gigabytes of storage capability. These and other like devices, including new devices being developed, are fully multimedia capable and highly mobile and may receive content from a variety of defined networks.” Damm, ¶[0008].

A POSITA would have recognized that Damm's disclosures relating to defaulting to deny access could easily be incorporated into Arthur. A POSITA would have been motivated to implement Damm's program data into Arthur to provide additional security. A POSITA would have understood that, as of the priority date of the '879 Patent, parental control was important to provide. Such parental control was central to both Arthur and Damm. See, e.g., Arthur, ¶[0115]; Damm, ¶[0014]. Damm's defaulting to deny access could improve the parental control already in Arthur system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., defaulting to deny access to view a program) to improve similar devices or methods (e.g., other systems that control access to a program) in the same way (e.g., preventing the program from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., defaulting to deny access to view a program) to a known device or method (e.g., other systems that control access to a program) that is ready for improvement to yield predictable results (e.g., device that defaults to deny access). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Goddard discloses a "a method of setting content rating parameters of a content control system. Employing the present method, a user may set acceptable content rating parameters based on the rating of example content by blocking or unblocking the example content. The content ratings system compares the content rating of the example content with existing acceptable content rating parameters and adjusts the content rating parameters accordingly. In this manner, specific knowledge of the content ratings scheme employed, or the meaning of specific content ratings used by the content ratings scheme, is not required." Goddard, 2:31-42. It also discloses that in

"one embodiment, such a user interface 100 may include an on-screen control panel 102 for controlling access to media by the information appliance (see FIG. 6). A region or window 104 of the control panel 102 contains therein display fields such as "Channel" 106 and various control buttons or switches such as channel selection 108 & 110, volume 112 & 114, "Settings" 116 and so forth, which function as on-screen visual representations of controls of the information appliance or, alternately, peripheral devices attached thereto that provide access to one or more media." Goddard, 4:36-45.

A POSITA would have recognized that Goddard's disclosures relating to content control could easily be incorporated into Arthur. A POSITA would have been motivated to implement Goddard's content control into Arthur to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, content control was important to provide. Such parental control was central to both Arthur and Goddard. *See, e.g.*, Arthur, 3:4-19.; Goddard, 3:28-55. Goddard's content control could improve the content control already in Arthur system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tran discloses "a method and system for multi-user, multi-device content access metering and control." Tran, ¶[0021]. It also discloses that in "the invention provides an access control

system for both controlling access to inappropriate content, and metering of access to content, for one or more simultaneous users across a network of one or more connected devices, such as in a local area network." Tran, ¶[0022]. Tran also discloses an "implementation of blocking and metering for parental control of access to content via devices in a network is described below for an example network environment comprising networked devices such as network-connected televisions in said network 10. Such televisions may comprise display-connected devices that are network-connected digital televisions (DTVs) interconnected to each other via Ethernet or Wi-Fi wireless network. FIG. 10 shows an example display screen of a television device 12 in the network 10, designated as Family I^2TV, for content blocking and metering set-up according to an embodiment of the invention. In one example, each user is assigned a color (e.g., green, yellow or blue). One or more of the users are children of various age groups." Tran, ¶[0083].

A POSITA would have recognized that Tran's disclosures relating to multi-user content control could easily be incorporated into Arthur. A POSITA would have been motivated to implement Tran's multi-user content control into Arthur to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, multi-user content control was important to provide. Such content control was central to both Arthur and Tran. Arthur, 3:4-19.; Tran, ¶[0083]. Tran's multi-user content control could improve the content control already in Arthur system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., multi-user content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., multi-user content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g.,

device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Luong discloses "systems and methods for accessing parental control features." Luong, ¶[0004]. It also discloses "that any or all components within parental control system 500—including access control module 510, log module 520, and parental control tools 518—may be implemented as processing circuitry and/or as software implemented using processing circuitry (e.g., as computer-readable instructions encoded on a computer-readable medium and executed using a processor). This processing circuitry may be incorporated within user equipment (e.g., control circuitry 304 of user equipment device 300 of FIG. 3) and/or within a data source (e.g., a local or remote server). In some embodiments, the components of parental control system 500 may be implemented across a number of user equipment devices (e.g., devices 402, 404, and 406) and/or data sources (e.g., data sources 416 and 418 of FIG. 4). In particular, access control module 510 may be implemented in part or in whole on a number of devices and/or data sources. For example, media detection unit 512 and media filter unit 514 may be implemented on all user equipment devices used (e.g., by restricted users) to access media. As another example, parental control database 516 may be located at a data source accessible to all the user equipment devices. Similarly, log module 520 may be implemented in part or in whole on a number of devices and/or data sources. For example, parental review application 522 may be implemented using processing circuitry on a user equipment device (e.g., user television equipment), and log database 524 may be located at a data source accessible to all the user equipment devices (e.g., via the Internet). When the components of parental control system 500 are distributed on a number of devices and/or data sources, they may communicate

with each other directly and/or through communications network 414, using any suitable protocol. For example, data (e.g., log data, parental control data, etc.) may be transmitted between devices using the hypertext transfer protocol ("HTTP")." Luong, ¶[0091].

A POSITA would have recognized that Luong disclosures relating to a parental control database could easily be incorporated into Arthur. A POSITA would have been motivated to implement Luong's parental control database into Arthur to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, parental control was important to provide. Such content control was central to both Arthur and Luong. Arthur, 3:4-19.; Luong, ¶[0091]. Luong parental control database could improve the content control already in Arthur system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., database of parental control information) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., preventing content from being viewable based on stored data). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., database of parental control information) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content based on stored data). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Lewis discloses the "use of data boxes to personalize programming to the individual taste of the user." Lewis. 4:8-10. It also discloses "[o]nce the received data has been processed according to user specification, it may be played back on the display via playback device 15 and/or stored on built-in, non-movable storage device 14. This may occur as a simultaneous recording of a number of feeds while the user plays back a selective feed in a non-real-time mode. The built-in, non-

movable storage device 14 may be any storage device for audio/video information known in the art. The built-in, non-movable storage device 14 may be divided into separate Data Boxes, which may be assigned to separate members of a family, business or group." Lewis, 15:1-11.

A POSITA would have recognized that Lewis's disclosures relating to group content control could easily be incorporated into Arthur. A POSITA would have been motivated to implement Lewis's group content control into Arthur to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, group content control was important to provide. Such content control was central to both Arthur and Lewis. Arthur, 3:4-19.; Lewis, 15:1-11. Lewis's group content control could improve the content control already in Arthur system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., group content control) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., preventing content from being viewable based on stored data). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., group content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

West discloses "incorporating both time and content controls within a single system and providing a plurality of censoring authority choices for multiple and variable numbers of viewers within a single household or multiple households." West, 4:48-53. It also discloses that "provision is made for each PIN holder to be responsible for viewing their permitted choices. The censorship device can be down line activated and deactivated. In addition, a timing clock within the censorship

device is updated periodically by a down line signal to ensure proper synchronization of the censorship device real time clock with a single central clock." West, 5:13-19.

A POSITA would have recognized that West's disclosures relating to content control could easily be incorporated into Arthur. A POSITA would have been motivated to implement West's content control into Arthur to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, content control was important to provide. Such content control was central to both Arthur and West. Arthur, 3:4-19.; West, 4:48-57. West's content control could improve the content control already in Arthur system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Sullivan discloses the " a content control system and methods employed by a content control system for limiting access by sensitive users, such as children, or the like, to certain types of content." Sullivan,¶[0008]. It also discloses "in the simplest embodiment, where a user selects a particular rating, that rating and all higher ratings will be locked. In a more flexible embodiment, the ratings may be selected individually. Preferably, the manner of operation in this regard may be selected by the user, e.g., in a user preferences options field." Sullivan, ¶[0053].

A POSITA would have recognized that Sullivan's disclosures relating to group content control could easily be incorporated into Arthur. A POSITA would have been motivated to implement Sullivan's group content control into Arthur to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, group content control was important to provide. Such content control was central to both Arthur and Sullivan. Arthur, 3:4-19.. Sullivan's group content control could improve the content control already in Arthur system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Wong discloses "[i]n another embodiment, the user may choose to associate the defined V-chip (or any other existing parental control solution) rating levels to the local user-defined rating levels. If this were so, then when the test of whether or not to restrict the program 316 is made, there is already an expected value available from the V-chip, upon which the user could choose to agree or disagree. In this case, the V-chip rating would act as a default selection value. If the user does not agree with the V-chip rating, then the user would instead select to independently rate the video. This process would reduce the user interaction time required, if the user agrees with the recommended rating, and would also give the user a basis upon which to initially judge the rating

of the program." Wong at 16:22–34. Wong also discloses "[i]n one embodiment, the restriction method will be utilized on an overlay of a dual widget platform. These dual widgets would be the Restriction Widget Blocking Procedure (the Blocking Widget), and the Restriction Widget Release Widget (Release Widget). Upon device startup, restriction is automatically enabled, unless specifically otherwise set by the user in a device option menu." Wong at 17:19–26. Wong also discloses "[t]raditional user interfaces are well known in the contexts of Video Cassette Recording (VCR) and Digital Video Recording (DVR), where a programming schedule of upcoming programming content is displayed. Similarly, audio prompting in the customer service and other business segments of a variety of industries are well known (such prompt sequence usually starts with "Press 1 for English", or "Press 1 for touch-tone dialing"). XM® and Sirius® satellite radio systems typically use a visual interface (typically a list of stations or upcoming events) to select audio programming. However, what appears to be lacking is a user interface that learns from prior user interactions. Such an interface would facilitate user interactions, and reduce the frustrations typically encountered when using such non-learning systems." Wong at 1:26-40.

A POSITA would have recognized that Wong's disclosures relating to user interfaces could easily be incorporated into Arthur. A POSITA would have been motivated to implement Wong's user interface into Arthur to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, user interface was important to provide. Wong's user interface could improve the content control already in Arthur system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., user interface) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g.,

user interface) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Huang discloses It will also be appreciated by those skilled in the art that, while in the illustrated example the transmitter pulse timing is controlled by the specialized chip shown, in other embodiments it may be possible to implement these timing functions via software running in the main CPU itself which would serve as a substitute for the IR transmitter IC 204. In addition, when adapted for use in connection with the remote control application, the IrDA receiver may also be used for learning IR codes from other devices such as originally supplied remote controls. The learning function would be made possible by paralleling the IrDA receiver output signal 210 to both the normal PDA connection 212 and the learning input 214 of the IR transmitter IC as shown." Huang at [0060]. Huang also discloses "[o]nce the primary user has setup the main configuration, new configurations can be created based on the master profile. The primary user may choose which devices and which levels of functionality to expose. This can include backgrounds, specific favorites and other features. The primary user may also choose whether the profile is to be "locked down," which may be used to prevent any additional customization by other users of the profile. In this manner, the primary user can maintain complete control over the way other users (e.g., family members) interact with the remote control application." Huang at [0262]. Huang also discloses "[u]niversal remote controls for controlling the operation of multiple, diverse home appliances are well known. In this regard, universal remote controls perform a valuable function by consolidating three, four, five, and more remote controls into one device. However, as more remotely controllable appliances enter the homes of consumers and the number

of remotely controllable operations increase, the user interface of the universal remote control becomes increasingly more complex. This complexity arises from the need to provide more and more keys which are used to initiate the transmission of the control codes that control the increasing number of operations of the increasing number of home appliances. Disadvantageously, as the user interface of the universal remote control becomes more cluttered, the usability of the universal remote control diminishes. Accordingly, a need exists for a universal remote control having an improved user interface that simplifies the operation of the universal remote control and, as such, the remote operation of consumer appliances." Huang at [0004].

A POSITA would have recognized that Huang's disclosures relating to individual profiles could easily be incorporated into Arthur. A POSITA would have been motivated to implement Huang's user interface into Arthur to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Huang's user interface could improve the content control already in Arthur system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., individual profiles) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable based on a profile). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., user profiles) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display based on a profile). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Elam discloses "[t]he present invention relates generally to television broadcast systems, and more particularly to analog or digital television broadcast receivers and methods wherein program content rating data transmitted concurrently with a television program signal is utilized to provide parental control over the viewing by children of television programs broadcast over the system." Elam at 1:6–12. Elam also discloses "[t]he invention is directed to a television receiver for receiving and displaying to a viewer a television program transmission signal which includes a data signal and a program content rating signal indicative of the program content rating of the received television transmission. The receiver comprises circuit means for separating the data signal and the program content rating signal from the television program signal, a rating derivation circuit for deriving the program rating from the program content rating signal, user selection means responsive to user inputs for storing program rating viewing authorizations for one or more viewers, means for comparing the derived program rating with the stored viewing authorization applicable to the viewer to develop a blanking control signal in the event the viewer is not authorized to view the program, a monitoring circuit for monitoring the integrity of at least a portion of the data signal, the monitoring circuit providing a rating default control signal upon the integrity of the portion of the data signal falling below a predetermined threshold level, and a blanking circuit responsive to the blanking control signal and the rating default control signal for blanking the program in the event the program rating level is not authorized to the viewer or the integrity of the portion of the data signal falls below the predetermined threshold level." Elam at 2:8–31. Elam also discloses "The present invention is directed to an improvement in the system proposed by Elam et al. wherein in an analog or digital television receiver the integrity of a data signal transmitted with the television program transmission is monitored to determine whether the data signal is being reliably received, and hence whether reliable rating characters are being

received. In the event the integrity of the data signal falls below an acceptable threshold level, the program is either blanked, or, depending on the operating mode of the receiver, a determination is made whether to blank depending on either 1) the viewing authorization then in effect for the viewer, or 2) whether a default to view or default to blank authorization has been stored for the viewer. Accordingly, it is a general object of the present invention to provide a television receiver which provides conditional access to received television programs." Elam at 1:41-56.

A POSITA would have recognized that Elam's disclosures relating to individual profiles could easily be incorporated into Arthur. A POSITA would have been motivated to implement Elam's conditional access into Arthur to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Elam's user interface could improve the content control already in Arthur system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Gabriel discloses "[t]he present invention relates to control of access to content (e.g., audio data and/or video data)." Gabriel at [0001]. Gabriel also discloses that "[i]n another example embodiment according to the present invention, a method to control access to content is provided

which includes selecting content, the selected content having metadata linked thereto via a pointer. The metadata is obtained using the pointer. The metadata and at least one filtering criterion are compared, the filtering criterion describing characteristics of at least one of permitted content or prohibited content. Access to the selected content is permitted or denied based on the comparison. The pointer may be embedded, for example, in a Vertical Blanking Interval (VBI) of a signal of the selected content. The pointer may be a URL, and the metadata may be obtained over the Internet using the URL." Gabriel at [0009]. Gabriel also discloses "[c]ontent-provision systems, such cable TV, satellite TV, video-on-demand (VOD), pay-per-view (PPV), and/or Web-based systems offer an enormous selection of video programs containing various types of substantive content, some of which may not be suitable for certain users, such as a child viewer." Gabriel at [0002].

A POSITA would have recognized that Gabriel's disclosures relating to individual profiles could easily be incorporated into Arthur. A POSITA would have been motivated to implement Gabriel's conditional access into Arthur to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Gabriel's user interface could improve the content control already in Arthur system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification

to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Gavita discloses "[i]n an Internet Protocol Television (IPTV) environment, as in many other similar fields), users can be provided with the ability to log in (in some implementations users are required to log in) to access the account. In addition to an account validation, each account can have a plurality of users associated with it, each user having an individual log in. By creating profiles for different users, the account administrator (who is in the context of this discussion one of the users that is responsible for setting up accounts) can create profiles associated with each of the users that can be used to restrict access to content." Gavita at [0002]. Gavit also discloses "[i]n FIG. 10 another manner of viewing the above described processes is presented. In step 138, the set top box is initialized. In step 140 the credentials of the present users are captured for processing and in step 142, access based on determined access rights is provided. Following step 142, the process can return to step 140 so that the permissions can change when a new user is detected. This would allow adults to be watching a violent or otherwise unsuitable content for a child, and then have the system lock out the content when a child enters the viewing area. When content is locked out, it can be paused and replaced with other content, or a blank screen. In some embodiments a barker channel can be displayed advertising network features, and explaining why the content has been blocked. The adult can then be provided with the ability to provide a one time override to the restriction." Gavita at [0044]. It also discloses "[a]t present logging in to an IPTV STB is done with a user specific credential, and requires that a controller with a form factor limited input mechanism is employed. This is far from ideal. Therefore, it would be desirable to provide a system and method that obviate or mitigate the above described problems." Gavita at [0007].

A POSITA would have recognized that Gavita's disclosures relating to biometric information could easily be incorporated into Arthur. A POSITA would have been motivated to implement Gavita's biometric systems into Arthur to address the problems with PINs. A POSITA would have understood that, as of the priority date of the '879 Patent, security was important in authorizing use. This was especially so in V-Chip devices, which Arthur discloses. Gavita's biometric verification and other verification could have mitigated this well-known drawback to Arthur' V-Chip system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., biometric and other verification) to improve similar devices or methods (e.g., devices for parental control of viewing content) in the same way (e.g., preventing the playback device play in the event of authentication was not provided). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., biometric and other verification) to a known device or method (e.g., devices for parental control of viewing content) that is ready for improvement to yield predictable results (e.g., device that permits viewing when biometrics are verified). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Scott discloses a "disclosed content accessibility control (CAC) application suitable for use within the context of a multimedia content platform enables an administrative end user to control a subordinate end user's access to content. In a familial context, the subordinate end user (subordinate) may be a family's child or children while the administrative end user (administrator) may be the family's parent(s), guardian(s), or other supervisor(s). The CAC application enables an administrator to create a user account for a subordinate and to tag or otherwise identify specific content deemed by the administrator to be acceptable for viewing, listening to, playing, or

otherwise experiencing by the subordinate. When the subordinate wishes to experience content, the subordinate activates the subordinate's user account by logging into the account. When a subordinate's user account is active, the multimedia platform effectively filters the available content so that the subordinate has access to only that content approved by the administrator." Scott at [0013]. It also discloses "[i]n the field of television (TV) and other multimedia and entertainment applications, features exist to give parents or others with supervisory roles coarse control over content that children may listen to, watch, or both. The V-chip, for example, enables parents to use TV ratings as a rough proxy for determining acceptable and unacceptable content for children." Scott at [0004].

A POSITA would have recognized that Scott's disclosures relating to individual profiles could easily be incorporated into Arthur. A POSITA would have been motivated to implement Scott's conditional access into Arthur to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Scott's user interface could improve the content control already in Arthur system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tong discloses "[t]he V-Chip is able to detect the rating, then compares it to what a user has requested be blocked based on the user's configuration of the V-Chip. If the program is outside what the user has configured as acceptable, the program is blocked." Tong at [0006]. Tong also discloses "[t]ther blocking technologies have expanded beyond pure ratings blocking. However, they still suffer from the limitations of only blocking based on certain criteria and are not a completely customizable to allow parents to define their own blocking parameters. As a result, there is a need to provide additional flexibility in allowing parents to block programming they, not others, deem objectionable from being viewed by their children" Tong at [0011]. *See also*, Tong at [0002]-[0010].

A POSITA would have recognized that Tong's disclosures relating to individual profiles could easily be incorporated into Arthur. A POSITA would have been motivated to implement Tong's conditional access into Arthur to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Tong's user interface could improve the content control already in Arthur system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Craner discloses "[s]ystems and methods for accessing edited or censored versions of the requested asset are also disclosed." Craner, Abstract. It also discloses that a "FIG. 6 shows illustrative locks setup display screen 600 used to customize parental control settings for the current user in accordance with one embodiment of the invention. Each user of the user equipment may have personalized parental control settings or the user equipment may have a single parental control policy in force for all users (or both methods may be used). If more than one user is defined, users may be authenticated upon accessing or powering on the user equipment using a standard username and password combination, a verification module (e.g., voice, iris, or fingerprint verification), or any other convenient method. " Craner 11:48-58. Craner discloses that "[f]or example, as is understood in the art, a voice recognition module utilizes an attached microphone to translate common phonemes into data characters and commands. The voice verification module may compare the inputted phonemes to voiceprints already stored on user equipment 102 (FIG. 1). These stored voiceprints may have been established in advance via a voice training process. If an acceptable voiceprint match is found, access to the interactive content control application's privileged menu may be granted without the use of a manual parental control access code entry. A user may also navigate through the menu overlays, input data, and control the interactive content control application via voice if desired."" It provides a verification system that stores "at least one of pre-registered fingerprints, voice characteristic information, facial geometries, iris scan information, DNA, etc. for users" and a verification system that "includes a database 23 that stores biometric information in association with information that identifies users." Craner, 9:3–33.

A POSITA would have recognized that Craner's disclosures relating to biometric information could easily be incorporated into Arthur. A POSITA would have been motivated to implement Craner's biometric systems into Arthur to address the problems with PINs. A POSITA

would have understood that, as of the priority date of the '879 Patent, security was important in authorizing use. This was especially so in V-Chip devices, which Arthur discloses. Arthur, 3:4-19.. Craner's biometric verification could have mitigated this well-known drawback to Arthur' V-Chip system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., biometric verification) to improve similar devices or methods (e.g., devices for parental control of viewing content) in the same way (e.g., preventing the playback device play in the event of authentication was not provided). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., biometric verification) to a known device or method (e.g., devices for parental control of viewing content) that is ready for improvement to yield predictable results (e.g., device that permits viewing when biometrics are verified). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(e) Jarman in view of Knowles and/or Novack and/or Hancock and/or Leung and/or Damm and/or Goddard and/or Tran and/or Luong and/or Lewis and/or West and/or Sullivan and/or Wong and/or Huang and/or Elam and/or Gabriel and/or Gavita and/or Scott and/or Tong and/or Craner

Jarman discloses "V-Chip technology is based on a system where parental ratings are associated with different television programs, and the user of the television can block programs based on ratings. For example, a television user could select to block all programs that are rated "TV-MA." The "MA" stands for mature audiences and indicates that the program is specifically designed to be viewed by adults and therefore may be unsuitable for children under 17." Jarman at ¶[0003]. It also discloses that "[w]ith a V-Chip enabled television, a user can only categorically block content based on the program's rating designation. For example, a parent may wish to block

all episodes of the television sitcom Coupling™ because of its sexually charged content. Coupling™ has a TV-14 rating, but the television user may not want to block all programs with the TV-14 rating. The user may only want to block all episodes of the "Coupling" television program, and permit access to other television programs that have a TV-14 rating. Also, a user may want to only allow certain selected programs, and block all other programs. For example, parents may wish to allow access to the children's program "Sesame Street" and the children's program "Mr. Rogers" but then block all other programs." Jarman at ¶[0004].

Knowles discloses a "multiple Interactive Program Guide (IPG) system" Knowles, Abstract. Knowles also discloses "[a]n embodiment of the invention is a system that provides customers with multiple instantly accessible electronic IPGs. The multiple IPG system enables users to view TV programs and schedule information in each IPG. Preferably, each IPG comprises a Grid Guide, a Channel Guide, and a Theme Guide. Each IPG receives, stores, and displays program titles and information and share some of the information with other IPGs." Knowles, ¶[0044]. Knowles discloses an IPG that includes "VChip Plus+ in guide mode uses two data sources in combination to determine whether a show should be blocked: data downloaded and stored in the guide (channel lineups, show schedules, show ratings), and rating data transmitted over the VBI. Ordinary V-Chip devices use the data transmitted over the VBI to determine whether or not to block a show by rating. These ratings are sent a minimum of every 15 seconds. Thus, a show that a parent may wish blocked, may be seen for up to 15 seconds before the blocking takes effect. VCHIP Plus+ in guide mode uses show rating data already stored for each of the IPGs to determine whether a show should be blocked as soon as it begins, and use the VBI data to confirm if the show was properly blocked." Knowles at ¶[0099].

A POSITA would have recognized that Knowles's disclosures relating to content control could easily be incorporated into Jarman. A POSITA would have been motivated to implement Knowles's content control into Jarman to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, content control was important to provide. Such parental control was central to both Jarman and Knowles. *See, e.g.*, Jarman, ¶[0003], ¶[0033]; Knowles, ¶[0115]. Knowles's content control could improve the content control already in Jarman system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Novack discloses a "centralized biometric system for verifying the identity of a user over a communications network includes a device that stores biometric information in association with information that identifies users." Novack, Abstract. It also discloses that a "PIN provided by the user ¶[is used] as authorization from the user to deliver the requested media content to the user." Novack ¶[0007]. Novack discloses that a "problem with verifying the identity of a user based on a PIN is that it is easy for individuals to obtain the user's PIN." It provides a verification system that stores "at least one of pre-registered fingerprints, voice characteristic information, facial geometries, iris scan information, DNA, etc. for users" and a verification system that "includes

a database 23 that stores biometric information in association with information that identifies users." Novack, ¶[0014], ¶[0041].

A POSITA would have recognized that Novack's disclosures relating to biometric information could easily be incorporated into Jarman. A POSITA would have been motivated to implement Novack's biometric systems into Jarman to address the problems with PINs. Novack, ¶[0009]. A POSITA would have understood that, as of the priority date of the '879 Patent, security was important in authorizing use. This was especially so in V-Chip devices, which Jarman discloses. Jarman, ¶[0003], ¶[0033]. Novack's biometric verification could have mitigated this well-known drawback to Jarman' V-Chip system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., biometric verification) to improve similar devices or methods (e.g., devices for parental control of viewing content) in the same way (e.g., preventing the playback device play in the event of authentication was not provided). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., biometric verification) to a known device or method (e.g., devices for parental control of viewing content) that is ready for improvement to yield predictable results (e.g., device that permits viewing when biometrics are verified). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hancock discloses "an apparatus and method that provides for a user interface for programmable blocking, such as for parental control, of viewable programs, such as programs that can be viewed on a television receiver. A memory provides storage of information relating to viewable programming and user defined blocking instructions. A microprocessor generates a blocking command as a function of the information stored in memory. A blocking circuit, such as

a blocking circuit which passes a baseband television video signal to a television display, provides blocking of the video signal in response to the blocking command." Hancock, 3:20-30. It also discloses that "[a]fter the viewer has selected, as described below, the television program viewing blocking/enablement function ("V-ChipPlus+"), the viewer's screen displays the V-Chip Plus +In-Guide User Interface Main Blocking Menu (the 'Main Blocking Menu')." Hancock, 6:24-28. It also discloses the "viewer selects a particular program, channel logo, or time slot to be blocked by one selection method, for instance, using the viewer's remote control device to point to and select a program, channel or time slot." Hancock, 9:17–20.

A POSITA would have recognized that Hancock's disclosures relating to program data could easily be incorporated into Jarman. A POSITA would have been motivated to implement Hancock's program data into Jarman to provide additional information. A POSITA would have understood that, as of the priority date of the '879 Patent, program information was important to provide. Displaying information was central to both Jarman and Hancock. Jarman, ¶[0003], ¶[0033]; Hancock, 6:4-56. Hancock's additional media information could improve the media information already in Jarman system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., displaying program information on a television) to improve similar devices or methods (e.g., other systems that display program information on a television) in the same way (e.g., displaying information). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., displaying information) to a known device or method (e.g., displaying information) that is ready for improvement to yield predictable results (e.g., device that displays the identified information). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Leung discloses " an apparatus for parental control of a television receiver" Leung, ¶[0007]. It also discloses that the "viewer input device 46 also allows the viewer to remotely program the V-Chip Plus+ system to exclude programs according to one or more rating factors, as well as compiling or modifying the V-Chip Plus+ override lists. When the viewer wishes to review the particular ratings set in the V-Chip Plus+ system or the V-Chip Plus+ override lists, the microprocessor 44 retrieves the appropriate information from RAM 48 and couples it to the video processor 50, where the information is formatted for display. Preferably, the information stored in the video processor 50 is a bit map of what is displayed on the TV display 42." Leung, ¶[0075]. It also discloses that for "the purpose of describing the operation of the override system, it is assumed that the television signal of each channel carried by the cable feed contains supplemental data, including channel identification, such as HBO, CNN, or NBC. Preferably, the channel identification is embedded in the VBI of the signal of each channel in an XDS format" Leung, ¶[0062].

A POSITA would have recognized that Leung's disclosures relating to program data could easily be incorporated into Jarman. A POSITA would have been motivated to implement Leung's program data into Jarman to provide additional program information. A POSITA would have understood that, as of the priority date of the '879 Patent, program information was important to provide. Program data was central to both Jarman and Leung. Jarman, ¶[0003], ¶[0033]; Leung, ¶[0062]. Leung's additional media information could improve the media information already in Jarman system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., displaying program information on a television) to improve similar devices or methods (e.g., other systems that display program information on a television) in the same way (e.g., displaying information). As another example, a POSITA would have understood the

modification or combination to amount to applying a known technique (e.g., displaying information) to a known device or method (e.g., displaying information) that is ready for improvement to yield predictable results (e.g., device that displays the identified information). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Damm discloses a "system is provided for rating multimedia content streamed over a data network as a series of data frames, segments, or packets and for administering display of the rated content." Damm, ¶[0013]. It also discloses that for "satellite and cable television systems, a variety of remote control operated features are now available for blocking channels, programs, or offensive content detected in programs. V-chip technology is one of these implemented via a hardware chip added to the viewing terminal. The V-chip blocks content by reading the ratings embedded in television signaling data frames or recorded video and turns off the signal when the ratings exceed certain ratings-based thresholds set by the parents. V-chip technology utilizes a relatively complicated, but generally well known rating scheme including all youth (Y), youth 7 or older (Y7), general audience (G), parental guidance suggested (PG), teen 14 or over (TV14), and mature audience only (MA). Programs having these ratings may also include sub-ratings like contains violence (V), contains sexual situations (S), contains coarse language (L), and contains suggestive dialogue (D)." Damm, ¶[0003]. It also discloses that the "methods and system of the present invention is not limited to full length industry approved presentations. Any multimedia snippet, movie clip, audio clip, or the like may be rated and filtered or blocked at threw receiving device. If the receiving device does not detect any data in the content marker fields of received data packets of a presentation, or does not detect the presence of the marker field at all, then the content is not marked according to the methods and system of the present invention and may be

rejected by default. However, in another embodiment if the un-marked presentation is conventionally rated the receiving device may default to a conventional ratings setting to determine if the content will be allowed or not." Damm, ¶[0086]. It also discloses while "all of the existing solutions work to some extent to block unwanted content, new methods of content delivery and availability of new and emerging multimedia display devices create certain vulnerabilities in the existing methods. Other limitations are also apparent to one with skill in the art of multimedia content filtering. The boundaries between data network telephony (DNT), of which Internet protocol network telephony (IPNT) is a subset, and data packet enabled satellite and cable network content delivery paths are increasingly blurred by improvements in the capabilities of transversing between networks and transport protocols when accessing or delivering content. Cellular telephones capable of accessing IP data networks are increasingly being marketed as content receiving devices capable of receiving, displaying, and storing, and sharing multimedia content. Some "bleeding edge" devices have up to 2 gigabytes of storage capability. These and other like devices, including new devices being developed, are fully multimedia capable and highly mobile and may receive content from a variety of defined networks." Damm, ¶[0008].

A POSITA would have recognized that Damm's disclosures relating to defaulting to deny access could easily be incorporated into Jarman. A POSITA would have been motivated to implement Damm's program data into Jarman to provide additional security. A POSITA would have understood that, as of the priority date of the '879 Patent, parental control was important to provide. Such parental control was central to both Jarman and Damm. See, e.g., Jarman, ¶[0115]; Damm, ¶[0014]. Damm's defaulting to deny access could improve the parental control already in Jarman system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., defaulting to deny access to view a program) to improve similar devices or

methods (e.g., other systems that control access to a program) in the same way (e.g., preventing the program from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., defaulting to deny access to view a program) to a known device or method (e.g., other systems that control access to a program) that is ready for improvement to yield predictable results (e.g., device that defaults to deny access). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Goddard discloses a "a method of setting content rating parameters of a content control system. Employing the present method, a user may set acceptable content rating parameters based on the rating of example content by blocking or unblocking the example content. The content ratings system compares the content rating of the example content with existing acceptable content rating parameters and adjusts the content rating parameters accordingly. In this manner, specific knowledge of the content ratings scheme employed, or the meaning of specific content ratings used by the content ratings scheme, is not required." Goddard, 2:31-42. It also discloses that in "one embodiment, such a user interface 100 may include an on-screen control panel 102 for controlling access to media by the information appliance (see FIG. 6). A region or window 104 of the control panel 102 contains therein display fields such as "Channel" 106 and various control buttons or switches such as channel selection 108 & 110, volume 112 & 114, "Settings" 116 and so forth, which function as on-screen visual representations of controls of the information appliance or, alternately, peripheral devices attached thereto that provide access to one or more media." Goddard, 4:36-45.

A POSITA would have recognized that Goddard's disclosures relating to content control could easily be incorporated into Jarman. A POSITA would have been motivated to implement Goddard's content control into Jarman to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, content control was important to provide. Such parental control was central to both Jarman and Goddard. *See, e.g.*, Jarman, ¶[0003], ¶[0033]; Goddard, 3:28-55. Goddard's content control could improve the content control already in Jarman system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tran discloses "a method and system for multi-user, multi-device content access metering and control." Tran, ¶[0021]. It also discloses that in "the invention provides an access control system for both controlling access to inappropriate content, and metering of access to content, for one or more simultaneous users across a network of one or more connected devices, such as in a local area network." Tran, ¶[0022]. Tran also discloses an "implementation of blocking and metering for parental control of access to content via devices in a network is described below for an example network environment comprising networked devices such as network-connected televisions in said network 10. Such televisions may comprise display-connected devices that are

network-connected digital televisions (DTVs) interconnected to each other via Ethernet or Wi-Fi wireless network. FIG. 10 shows an example display screen of a television device 12 in the network 10, designated as Family I^2TV, for content blocking and metering set-up according to an embodiment of the invention. In one example, each user is assigned a color (e.g., green, yellow or blue). One or more of the users are children of various age groups." Tran, ¶[0083].

A POSITA would have recognized that Tran's disclosures relating to multi-user content control could easily be incorporated into Jarman. A POSITA would have been motivated to implement Tran's multi-user content control into Jarman to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, multi-user content control was important to provide. Such content control was central to both Jarman and Tran. Jarman, ¶[0003], ¶[0033]; Tran, ¶[0083]. Tran's multi-user content control could improve the content control already in Jarman system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., multi-user content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., multi-user content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Luong discloses "systems and methods for accessing parental control features." Luong, ¶[0004]. It also discloses "that any or all components within parental control system 500—including access control module 510, log module 520, and parental control tools 518—may be

implemented as processing circuitry and/or as software implemented using processing circuitry (e.g., as computer-readable instructions encoded on a computer-readable medium and executed using a processor). This processing circuitry may be incorporated within user equipment (e.g., control circuitry 304 of user equipment device 300 of FIG. 3) and/or within a data source (e.g., a local or remote server). In some embodiments, the components of parental control system 500 may be implemented across a number of user equipment devices (e.g., devices 402, 404, and 406) and/or data sources (e.g., data sources 416 and 418 of FIG. 4). In particular, access control module 510 may be implemented in part or in whole on a number of devices and/or data sources. For example, media detection unit 512 and media filter unit 514 may be implemented on all user equipment devices used (e.g., by restricted users) to access media. As another example, parental control database 516 may be located at a data source accessible to all the user equipment devices. Similarly, log module 520 may be implemented in part or in whole on a number of devices and/or data sources. For example, parental review application 522 may be implemented using processing circuitry on a user equipment device (e.g., user television equipment), and log database 524 may be located at a data source accessible to all the user equipment devices (e.g., via the Internet). When the components of parental control system 500 are distributed on a number of devices and/or data sources, they may communicate with each other directly and/or through communications network 414, using any suitable protocol. For example, data (e.g., log data, parental control data, etc.) may be transmitted between devices using the hypertext transfer protocol ("HTTP")." Luong, ¶[0091].

A POSITA would have recognized that Luong disclosures relating to a parental control database could easily be incorporated into Jarman. A POSITA would have been motivated to implement Luong's parental control database into Jarman to provide additional functionality. A

POSITA would have understood that, as of the priority date of the '879 Patent, parental control was important to provide. Such content control was central to both Jarman and Luong. Jarman, ¶[0003], ¶[0033]; Luong, ¶[0091]. Luong parental control database could improve the content control already in Jarman system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., database of parental control information) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., preventing content from being viewable based on stored data). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., database of parental control information) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content based on stored data). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Lewis discloses the "use of data boxes to personalize programming to the individual taste of the user." Lewis. 4:8-10. It also discloses "[o]nce the received data has been processed according to user specification, it may be played back on the display via playback device 15 and/or stored on built-in, non-movable storage device 14. This may occur as a simultaneous recording of a number of feeds while the user plays back a selective feed in a non-real-time mode. The built-in, non-movable storage device 14 may be any storage device for audio/video information known in the art. The built-in, non-movable storage device 14 may be divided into separate Data Boxes, which may be assigned to separate members of a family, business or group." Lewis, 15:1-11.

A POSITA would have recognized that Lewis's disclosures relating to group content control could easily be incorporated into Jarman. A POSITA would have been motivated to implement Lewis's group content control into Jarman to provide additional functionality and

convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, group content control was important to provide. Such content control was central to both Jarman and Lewis. Jarman, ¶[0003], ¶[0033]; Lewis, 15:1-11. Lewis's group content control could improve the content control already in Jarman system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., group content control) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., preventing content from being viewable based on stored data). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., group content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

West discloses "incorporating both time and content controls within a single system and providing a plurality of censoring authority choices for multiple and variable numbers of viewers within a single household or multiple households." West, 4:48-53. It also discloses that "provision is made for each PIN holder to be responsible for viewing their permitted choices. The censorship device can be down line activated and deactivated. In addition, a timing clock within the censorship device is updated periodically by a down line signal to ensure proper synchronization of the censorship device real time clock with a single central clock." West, 5:13-19.

A POSITA would have recognized that West's disclosures relating to content control could easily be incorporated into Jarman. A POSITA would have been motivated to implement West's content control into Jarman to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, content control was important to

provide. Such content control was central to both Jarman and West. Jarman, ¶[0003], ¶[0033]; West, 4:48-57. West's content control could improve the content control already in Jarman system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Sullivan discloses the " a content control system and methods employed by a content control system for limiting access by sensitive users, such as children, or the like, to certain types of content." Sullivan,¶[0008]. It also discloses "In the simplest embodiment, where a user selects a particular rating, that rating and all higher ratings will be locked. In a more flexible embodiment, the ratings may be selected individually. Preferably, the manner of operation in this regard may be selected by the user, e.g., in a user preferences options field." Sullivan, ¶[0053].

A POSITA would have recognized that Sullivan's disclosures relating to group content control could easily be incorporated into Jarman. A POSITA would have been motivated to implement Sullivan's group content control into Jarman to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, group content control was important to provide. Such content control was central to both Jarman and Sullivan. Jarman, ¶[0003], ¶[0033]. Sullivan's group content control could improve the content control already in Jarman system. A POSITA would have considered the combination to

amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Wong discloses "[i]n another embodiment, the user may choose to associate the defined V-chip (or any other existing parental control solution) rating levels to the local user-defined rating levels. If this were so, then when the test of whether or not to restrict the program 316 is made, there is already an expected value available from the V-chip, upon which the user could choose to agree or disagree. In this case, the V-chip rating would act as a default selection value. If the user does not agree with the V-chip rating, then the user would instead select to independently rate the video. This process would reduce the user interaction time required, if the user agrees with the recommended rating, and would also give the user a basis upon which to initially judge the rating of the program." Wong at 16:22–34. Wong also discloses "[i]n one embodiment, the restriction method will be utilized on an overlay of a dual widget platform. These dual widgets would be the Restriction Widget Blocking Procedure (the Blocking Widget), and the Restriction Widget Release Widget (Release Widget). Upon device startup, restriction is automatically enabled, unless specifically otherwise set by the user in a device option menu." Wong at 17:19–26. Wong also discloses "[t]raditional user interfaces are well known in the contexts of Video Cassette Recording (VCR) and Digital Video Recording (DVR), where a programming schedule of upcoming

programming content is displayed. Similarly, audio prompting in the customer service and other business segments of a variety of industries are well known (such prompt sequence usually starts with “Press 1 for English”, or “Press 1 for touch-tone dialing”). XM® and Sirius® satellite radio systems typically use a visual interface (typically a list of stations or upcoming events) to select audio programming. However, what appears to be lacking is a user interface that learns from prior user interactions. Such an interface would facilitate user interactions, and reduce the frustrations typically encountered when using such non-learning systems.” Wong at 1:26-40.

A POSITA would have recognized that Wong’s disclosures relating to user interfaces could easily be incorporated into Jarman. A POSITA would have been motivated to implement Wong’s user interface into Jarman to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the ’879 Patent, user interface was important to provide. Wong’s user interface could improve the content control already in Jarman system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., user interface) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., user interface) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Huang discloses It will also be appreciated by those skilled in the art that, while in the illustrated example the transmitter pulse timing is controlled by the specialized chip shown, in other embodiments it may be possible to implement these timing functions via software running

in the main CPU itself which would serve as a substitute for the IR transmitter IC 204. In addition, when adapted for use in connection with the remote control application, the IrDA receiver may also be used for learning IR codes from other devices such as originally supplied remote controls. The learning function would be made possible by paralleling the IrDA receiver output signal 210 to both the normal PDA connection 212 and the learning input 214 of the IR transmitter IC as shown." Huang at [0060]. Huang also discloses "[o]nce the primary user has setup the main configuration, new configurations can be created based on the master profile. The primary user may choose which devices and which levels of functionality to expose. This can include backgrounds, specific favorites and other features. The primary user may also choose whether the profile is to be "locked down," which may be used to prevent any additional customization by other users of the profile. In this manner, the primary user can maintain complete control over the way other users (e.g., family members) interact with the remote control application." Huang at [0262]. Huang also discloses "[u]niversal remote controls for controlling the operation of multiple, diverse home appliances are well known. In this regard, universal remote controls perform a valuable function by consolidating three, four, five, and more remote controls into one device. However, as more remotely controllable appliances enter the homes of consumers and the number of remotely controllable operations increase, the user interface of the universal remote control becomes increasingly more complex. This complexity arises from the need to provide more and more keys which are used to initiate the transmission of the control codes that control the increasing number of operations of the increasing number of home appliances. Disadvantageously, as the user interface of the universal remote control becomes more cluttered, the usability of the universal remote control diminishes. Accordingly, a need exists for a universal remote control

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having an improved user interface that simplifies the operation of the universal remote control and, as such, the remote operation of consumer appliances." Huang at [0004].

A POSITA would have recognized that Huang's disclosures relating to individual profiles could easily be incorporated into Jarman. A POSITA would have been motivated to implement Huang's user interface into Jarman to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Huang's user interface could improve the content control already in Jarman system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., individual profiles) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable based on a profile). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., user profiles) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display based on a profile). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Elam discloses "[t]he present invention relates generally to television broadcast systems, and more particularly to analog or digital television broadcast receivers and methods wherein program content rating data transmitted concurrently with a television program signal is utilized to provide parental control over the viewing by children of television programs broadcast over the system." Elam at 1:6–12. Elam also discloses "[t]he invention is directed to a television receiver for receiving and displaying to a viewer a television program transmission signal which includes a data signal and a program content rating signal indicative of the program content rating of the

received television transmission. The receiver comprises circuit means for separating the data signal and the program content rating signal from the television program signal, a rating derivation circuit for deriving the program rating from the program content rating signal, user selection means responsive to user inputs for storing program rating viewing authorizations for one or more viewers, means for comparing the derived program rating with the stored viewing authorization applicable to the viewer to develop a blanking control signal in the event the viewer is not authorized to view the program, a monitoring circuit for monitoring the integrity of at least a portion of the data signal, the monitoring circuit providing a rating default control signal upon the integrity of the portion of the data signal falling below a predetermined threshold level, and a blanking circuit responsive to the blanking control signal and the rating default control signal for blanking the program in the event the program rating level is not authorized to the viewer or the integrity of the portion of the data signal falls below the predetermined threshold level." Elam at 2:8–31. Elam also discloses "The present invention is directed to an improvement in the system proposed by Elam et al. wherein in an analog or digital television receiver the integrity of a data signal transmitted with the television program transmission is monitored to determine whether the data signal is being reliably received, and hence whether reliable rating characters are being received. In the event the integrity of the data signal falls below an acceptable threshold level, the program is either blanked, or, depending on the operating mode of the receiver, a determination is made whether to blank depending on either 1) the viewing authorization then in effect for the viewer, or 2) whether a default to view or default to blank authorization has been stored for the viewer. Accordingly, it is a general object of the present invention to provide a television receiver which provides conditional access to received television programs." Elam at 1:41-56.

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A POSITA would have recognized that Elam's disclosures relating to individual profiles could easily be incorporated into Jarman. A POSITA would have been motivated to implement Elam's conditional access into Jarman to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Elam's user interface could improve the content control already in Jarman system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Gabriel discloses "[t]he present invention relates to control of access to content (e.g., audio data and/or video data)." Gabriel at [0001]. Gabriel also discloses that "[i]n another example embodiment according to the present invention, a method to control access to content is provided which includes selecting content, the selected content having metadata linked thereto via a pointer. The metadata is obtained using the pointer. The metadata and at least one filtering criterion are compared, the filtering criterion describing characteristics of at least one of permitted content or prohibited content. Access to the selected content is permitted or denied based on the comparison. The pointer may be embedded, for example, in a Vertical Blanking Interval (VBI) of a signal of the selected content. The pointer may be a URL, and the metadata may be obtained over the

Internet using the URL." Gabriel at [0009]. Gabriel also discloses "[c]ontent-provision systems, such cable TV, satellite TV, video-on-demand (VOD), pay-per-view (PPV), and/or Web-based systems offer an enormous selection of video programs containing various types of substantive content, some of which may not be suitable for certain users, such as a child viewer." Gabriel at [0002].

A POSITA would have recognized that Gabriel's disclosures relating to individual profiles could easily be incorporated into Jarman. A POSITA would have been motivated to implement Gabriel's conditional access into Jarman to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Gabriel's user interface could improve the content control already in Jarman system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Gavita discloses "[i]n an Internet Protocol Television (IPTV) environment, as in many other similar fields), users can be provided with the ability to log in (in some implementations users are required to log in) to access the account. In addition to an account validation, each account can have a plurality of users associated with it, each user having an individual log in. By

creating profiles for different users, the account administrator (who is in the context of this discussion one of the users that is responsible for setting up accounts) can create profiles associated with each of the users that can be used to restrict access to content." Gavita at [0002]. Gavit also discloses "[i]n FIG. 10 another manner of viewing the above described processes is presented. In step 138, the set top box is initialized. In step 140 the credentials of the present users are captured for processing and in step 142, access based on determined access rights is provided. Following step 142, the process can return to step 140 so that the permissions can change when a new user is detected. This would allow adults to be watching a violent or otherwise unsuitable content for a child, and then have the system lock out the content when a child enters the viewing area. When content is locked out, it can be paused and replaced with other content, or a blank screen. In some embodiments a barker channel can be displayed advertising network features, and explaining why the content has been blocked. The adult can then be provided with the ability to provide a one time override to the restriction." Gavita at [0044]. It also discloses "[a]t present logging in to an IPTV STB is done with a user specific credential, and requires that a controller with a form factor limited input mechanism is employed. This is far from ideal. Therefore, it would be desirable to provide a system and method that obviate or mitigate the above described problems." Gavita at [0007].

A POSITA would have recognized that Gavita's disclosures relating to biometric information could easily be incorporated into Jarman. A POSITA would have been motivated to implement Gavita's biometric systems into Jarman to address the problems with PINs. A POSITA would have understood that, as of the priority date of the '879 Patent, security was important in authorizing use. This was especially so in V-Chip devices, which Jarman discloses. Gavita's biometric verification and other verification could have mitigated this well-known drawback to Jarman' V-Chip system. A POSITA would have considered the combination to amount to the use

of known techniques (e.g., biometric and other verification) to improve similar devices or methods (e.g., devices for parental control of viewing content) in the same way (e.g., preventing the playback device play in the event of authentication was not provided). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., biometric and other verification) to a known device or method (e.g., devices for parental control of viewing content) that is ready for improvement to yield predictable results (e.g., device that permits viewing when biometrics are verified). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Scott discloses a "disclosed content accessibility control (CAC) application suitable for use within the context of a multimedia content platform enables an administrative end user to control a subordinate end user's access to content. In a familial context, the subordinate end user (subordinate) may be a family's child or children while the administrative end user (administrator) may be the family's parent(s), guardian(s), or other supervisor(s). The CAC application enables an administrator to create a user account for a subordinate and to tag or otherwise identify specific content deemed by the administrator to be acceptable for viewing, listening to, playing, or otherwise experiencing by the subordinate. When the subordinate wishes to experience content, the subordinate activates the subordinate's user account by logging into the account. When a subordinate's user account is active, the multimedia platform effectively filters the available content so that the subordinate has access to only that content approved by the administrator." Scott at [0013]. It also discloses "[i]n the field of television (TV) and other multimedia and entertainment applications, features exist to give parents or others with supervisory roles coarse control over content that children may listen to, watch, or both. The V-chip, for example, enables

parents to use TV ratings as a rough proxy for determining acceptable and unacceptable content for children." Scott at [0004].

A POSITA would have recognized that Scott's disclosures relating to individual profiles could easily be incorporated into Jarman. A POSITA would have been motivated to implement Scott's conditional access into Jarman to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Scott's user interface could improve the content control already in Jarman system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tong discloses "[t]he V-Chip is able to detect the rating, then compares it to what a user has requested be blocked based on the user's configuration of the V-Chip. If the program is outside what the user has configured as acceptable, the program is blocked." Tong at [0006]. Tong also discloses "[t]ther blocking technologies have expanded beyond pure ratings blocking. However, they still suffer from the limitations of only blocking based on certain criteria and are not a completely customizable to allow parents to define their own blocking parameters. As a result, there is a need to provide additional flexibility in allowing parents to block programming they, not

others, deem objectionable from being viewed by their children" Tong at [0011]. *See also*, Tong at [0002]-[0010].

A POSITA would have recognized that Tong's disclosures relating to individual profiles could easily be incorporated into Jarman. A POSITA would have been motivated to implement Tong's conditional access into Jarman to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Tong's user interface could improve the content control already in Jarman system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Craner discloses "[s]ystems and methods for accessing edited or censored versions of the requested asset are also disclosed." Craner, Abstract. It also discloses that a "FIG. 6 shows illustrative locks setup display screen 600 used to customize parental control settings for the current user in accordance with one embodiment of the invention. Each user of the user equipment may have personalized parental control settings or the user equipment may have a single parental control policy in force for all users (or both methods may be used). If more than one user is defined, users may be authenticated upon accessing or powering on the user equipment using a standard

username and password combination, a verification module (e.g., voice, iris, or fingerprint verification), or any other convenient method. ” Craner 11:48-58. Craner discloses that “[f]or example, as is understood in the art, a voice recognition module utilizes an attached microphone to translate common phonemes into data characters and commands. The voice verification module may compare the inputted phonemes to voiceprints already stored on user equipment 102 (FIG. 1). These stored voiceprints may have been established in advance via a voice training process. If an acceptable voiceprint match is found, access to the interactive content control application's privileged menu may be granted without the use of a manual parental control access code entry. A user may also navigate through the menu overlays, input data, and control the interactive content control application via voice if desired.”” It provides a verification system that stores “at least one of pre-registered fingerprints, voice characteristic information, facial geometries, iris scan information, DNA, etc. for users” and a verification system that “includes a database 23 that stores biometric information in association with information that identifies users.” Craner, 9:3–33.

A POSITA would have recognized that Craner’s disclosures relating to biometric information could easily be incorporated into Jarman. A POSITA would have been motivated to implement Craner’s biometric systems into Jarman to address the problems with PINs. A POSITA would have understood that, as of the priority date of the ’879 Patent, security was important in authorizing use. This was especially so in V-Chip devices, which Jarman discloses. Jarman, ¶[0003], ¶[0033]. Craner’s biometric verification could have mitigated this well-known drawback to Jarman’ V-Chip system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., biometric verification) to improve similar devices or methods (e.g., devices for parental control of viewing content) in the same way (e.g., preventing the playback device play in the event of authentication was not provided). As another example, a POSITA would

have understood the modification or combination to amount to applying a known technique (e.g., biometric verification) to a known device or method (e.g., devices for parental control of viewing content) that is ready for improvement to yield predictable results (e.g., device that permits viewing when biometrics are verified). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(f) Sullivan in view of Jarman and/or Knowles and/or Novack and/or Hancock and/or Leung and/or Damm and/or Goddard and/or Tran and/or Luong and/or Lewis and/or West and/or Sullivan and/or Wong and/or Huang and/or Elam and/or Gabriel and/or Gavita and/or Scott and/or Tong and/or Craner

Sullivan discloses the "a content control system and methods employed by a content control system for limiting access by sensitive users, such as children, or the like, to certain types of content." Sullivan,¶[0008]. It also discloses "in the simplest embodiment, where a user selects a particular rating, that rating and all higher ratings will be locked. In a more flexible embodiment, the ratings may be selected individually. Preferably, the manner of operation in this regard may be selected by the user, e.g., in a user preferences options field." Sullivan, ¶[0053].

Jarman discloses "V-Chip technology is based on a system where parental ratings are associated with different television programs, and the user of the television can block programs based on ratings. For example, a television user could select to block all programs that are rated "TV-MA." The "MA" stands for mature audiences and indicates that the program is specifically designed to be viewed by adults and therefore may be unsuitable for children under 17." Jarman at ¶[0003]. It also discloses that "[w]ith a V-Chip enabled television, a user can only categorically block content based on the program's rating designation. For example, a parent may wish to block all episodes of the television sitcom Coupling™ because of its sexually charged content.

Coupling™ has a TV-14 rating, but the television user may not want to block all programs with the TV-14 rating. The user may only want to block all episodes of the "Coupling" television program, and permit access to other television programs that have a TV-14 rating. Also, a user may want to only allow certain selected programs, and block all other programs. For example, parents may wish to allow access to the children's program "Sesame Street" and the children's program "Mr. Rogers" but then block all other programs." Jarman at ¶[0004].

A POSITA would have recognized that Jarman's disclosures relating to content control could easily be incorporated into Sullivan. A POSITA would have been motivated to implement Jarman's content control into Sullivan to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, content control was important to provide. Such parental control was central to both Sullivan and Jarman. *See, e.g.*, Sullivan, ¶[0008], ¶[0053]; Jarman, ¶[0003]; ¶[0004]. Jarman's content control could improve the content control already in Sullivan system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Knowles discloses a "multiple Interactive Program Guide (IPG) system" Knowles, Abstract. Knowles also discloses "[a]n embodiment of the invention is a system that provides

customers with multiple instantly accessible electronic IPGs. The multiple IPG system enables users to view TV programs and schedule information in each IPG. Preferably, each IPG comprises a Grid Guide, a Channel Guide, and a Theme Guide. Each IPG receives, stores, and displays program titles and information and share some of the information with other IPGs." Knowles, ¶[0044]. Knowles discloses an IPG that includes "VChip Plus+ in guide mode uses two data sources in combination to determine whether a show should be blocked: data downloaded and stored in the guide (channel lineups, show schedules, show ratings), and rating data transmitted over the VBI. Ordinary V-Chip devices use the data transmitted over the VBI to determine whether or not to block a show by rating. These ratings are sent a minimum of every 15 seconds. Thus, a show that a parent may wish blocked, may be seen for up to 15 seconds before the blocking takes effect. VCHIP Plus+ in guide mode uses show rating data already stored for each of the IPGs to determine whether a show should be blocked as soon as it begins, and use the VBI data to confirm if the show was properly blocked." Knowles at ¶[0099].

A POSITA would have recognized that Knowles's disclosures relating to content control could easily be incorporated into Sullivan. A POSITA would have been motivated to implement Knowles's content control into Sullivan to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, content control was important to provide. Such parental control was central to both Sullivan and Knowles. *See, e.g.*, Sullivan, ¶[0008], ¶[0053]; Knowles, ¶[0115]. Knowles's content control could improve the content control already in Sullivan system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to

applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Novack discloses a "centralized biometric system for verifying the identity of a user over a communications network includes a device that stores biometric information in association with information that identifies users." Novack, Abstract. It also discloses that a "PIN provided by the user ¶[is used] as authorization from the user to deliver the requested media content to the user." Novack ¶[0007]. Novack discloses that a "problem with verifying the identity of a user based on a PIN is that it is easy for individuals to obtain the user's PIN." It provides a verification system that stores "at least one of pre-registered fingerprints, voice characteristic information, facial geometries, iris scan information, DNA, etc. for users" and a verification system that "includes a database 23 that stores biometric information in association with information that identifies users." Novack, ¶[0014], ¶[0041].

A POSITA would have recognized that Novack's disclosures relating to biometric information could easily be incorporated into Sullivan. A POSITA would have been motivated to implement Novack's biometric systems into Sullivan to address the problems with PINs. Novack, ¶[0009]. A POSITA would have understood that, as of the priority date of the '879 Patent, security was important in authorizing use. This was especially so in V-Chip devices, which Sullivan discloses. Sullivan, ¶[0008], ¶[0053]. Novack's biometric verification could have mitigated this well-known drawback to Sullivan' V-Chip system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., biometric verification) to improve

similar devices or methods (e.g., devices for parental control of viewing content) in the same way (e.g., preventing the playback device play in the event of authentication was not provided). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., biometric verification) to a known device or method (e.g., devices for parental control of viewing content) that is ready for improvement to yield predictable results (e.g., device that permits viewing when biometrics are verified). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hancock discloses "an apparatus and method that provides for a user interface for programmable blocking, such as for parental control, of viewable programs, such as programs that can be viewed on a television receiver. A memory provides storage of information relating to viewable programming and user defined blocking instructions. A microprocessor generates a blocking command as a function of the information stored in memory. A blocking circuit, such as a blocking circuit which passes a baseband television video signal to a television display, provides blocking of the video signal in response to the blocking command." Hancock, 3:20-30. It also discloses that "[a]fter the viewer has selected, as described below, the television program viewing blocking/enablement function ("V-ChipPlus+"), the viewer's screen displays the V-Chip Plus +In-Guide User Interface Main Blocking Menu (the 'Main Blocking Menu')." Hancock, 6:24-28. It also discloses the "viewer selects a particular program, channel logo, or time slot to be blocked by one selection method, for instance, using the viewer's remote control device to point to and select a program, channel or time slot." Hancock, 9:17–20.

A POSITA would have recognized that Hancock's disclosures relating to program data could easily be incorporated into Sullivan. A POSITA would have been motivated to implement

Hancock's program data into Sullivan to provide additional information. A POSITA would have understood that, as of the priority date of the '879 Patent, program information was important to provide. Displaying information was central to both Sullivan and Hancock. Sullivan, ¶[0008], ¶[0053]; Hancock, 6:4-56. Hancock's additional media information could improve the media information already in Sullivan system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., displaying program information on a television) to improve similar devices or methods (e.g., other systems that display program information on a television) in the same way (e.g., displaying information). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., displaying information) to a known device or method (e.g., displaying information) that is ready for improvement to yield predictable results (e.g., device that displays the identified information). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Leung discloses " an apparatus for parental control of a television receiver" Leung, ¶[0007]. It also discloses that the "viewer input device 46 also allows the viewer to remotely program the V-Chip Plus+ system to exclude programs according to one or more rating factors, as well as compiling or modifying the V-Chip Plus+ override lists. When the viewer wishes to review the particular ratings set in the V-Chip Plus+ system or the V-Chip Plus+ override lists, the microprocessor 44 retrieves the appropriate information from RAM 48 and couples it to the video processor 50, where the information is formatted for display. Preferably, the information stored in the video processor 50 is a bit map of what is displayed on the TV display 42." Leung, ¶[0075]. It also discloses that for "the purpose of describing the operation of the override system, it is assumed that the television signal of each channel carried by the cable feed contains supplemental data,

including channel identification, such as HBO, CNN, or NBC. Preferably, the channel identification is embedded in the VBI of the signal of each channel in an XDS format" Leung, ¶[0062].

A POSITA would have recognized that Leung's disclosures relating to program data could easily be incorporated into Sullivan. A POSITA would have been motivated to implement Leung's program data into Sullivan to provide additional program information. A POSITA would have understood that, as of the priority date of the '879 Patent, program information was important to provide. Program data was central to both Sullivan and Leung. Sullivan, ¶[0008], ¶[0053]; Leung, ¶[0062]. Leung's additional media information could improve the media information already in Sullivan system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., displaying program information on a television) to improve similar devices or methods (e.g., other systems that display program information on a television) in the same way (e.g., displaying information). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., displaying information) to a known device or method (e.g., displaying information) that is ready for improvement to yield predictable results (e.g., device that displays the identified information). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Damm discloses a "system is provided for rating multimedia content streamed over a data network as a series of data frames, segments, or packets and for administering display of the rated content." Damm, ¶[0013]. It also discloses that for "satellite and cable television systems, a variety of remote control operated features are now available for blocking channels, programs, or offensive content detected in programs. V-chip technology is one of these implemented via a

hardware chip added to the viewing terminal. The V-chip blocks content by reading the ratings embedded in television signaling data frames or recorded video and turns off the signal when the ratings exceed certain ratings-based thresholds set by the parents. V-chip technology utilizes a relatively complicated, but generally well known rating scheme including all youth (Y), youth 7 or older (Y7), general audience (G), parental guidance suggested (PG), teen 14 or over (TV14), and mature audience only (MA). Programs having these ratings may also include sub-ratings like contains violence (V), contains sexual situations (S), contains coarse language (L), and contains suggestive dialogue (D)." Damm, ¶[0003]. It also discloses that the "methods and system of the present invention is not limited to full length industry approved presentations. Any multimedia snippet, movie clip, audio clip, or the like may be rated and filtered or blocked at threw receiving device. If the receiving device does not detect any data in the content marker fields of received data packets of a presentation, or does not detect the presence of the marker field at all, then the content is not marked according to the methods and system of the present invention and may be rejected by default. However, in another embodiment if the un-marked presentation is conventionally rated the receiving device may default to a conventional ratings setting to determine if the content will be allowed or not." Damm, ¶[0086]. It also discloses while "all of the existing solutions work to some extent to block unwanted content, new methods of content delivery and availability of new and emerging multimedia display devices create certain vulnerabilities in the existing methods. Other limitations are also apparent to one with skill in the art of multimedia content filtering. The boundaries between data network telephony (DNT), of which Internet protocol network telephony (IPNT) is a subset, and data packet enabled satellite and cable network content delivery paths are increasingly blurred by improvements in the capabilities of transversing between networks and transport protocols when accessing or delivering content. Cellular

telephones capable of accessing IP data networks are increasingly being marketed as content receiving devices capable of receiving, displaying, and storing, and sharing multimedia content. Some "bleeding edge" devices have up to 2 gigabytes of storage capability. These and other like devices, including new devices being developed, are fully multimedia capable and highly mobile and may receive content from a variety of defined networks." Damm, ¶[0008].

A POSITA would have recognized that Damm's disclosures relating to defaulting to deny access could easily be incorporated into Sullivan. A POSITA would have been motivated to implement Damm's program data into Sullivan to provide additional security. A POSITA would have understood that, as of the priority date of the '879 Patent, parental control was important to provide. Such parental control was central to both Sullivan and Damm. See, e.g., Sullivan, ¶[0115]; Damm, ¶[0014]. Damm's defaulting to deny access could improve the parental control already in Sullivan system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., defaulting to deny access to view a program) to improve similar devices or methods (e.g., other systems that control access to a program) in the same way (e.g., preventing the program from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., defaulting to deny access to view a program) to a known device or method (e.g., other systems that control access to a program) that is ready for improvement to yield predictable results (e.g., device that defaults to deny access). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Goddard discloses a "a method of setting content rating parameters of a content control system. Employing the present method, a user may set acceptable content rating parameters based

on the rating of example content by blocking or unblocking the example content. The content ratings system compares the content rating of the example content with existing acceptable content rating parameters and adjusts the content rating parameters accordingly. In this manner, specific knowledge of the content ratings scheme employed, or the meaning of specific content ratings used by the content ratings scheme, is not required." Goddard, 2:31-42. It also discloses that in "one embodiment, such a user interface 100 may include an on-screen control panel 102 for controlling access to media by the information appliance (see FIG. 6). A region or window 104 of the control panel 102 contains therein display fields such as "Channel" 106 and various control buttons or switches such as channel selection 108 & 110, volume 112 & 114, "Settings" 116 and so forth, which function as on-screen visual representations of controls of the information appliance or, alternately, peripheral devices attached thereto that provide access to one or more media." Goddard, 4:36-45.

A POSITA would have recognized that Goddard's disclosures relating to content control could easily be incorporated into Sullivan. A POSITA would have been motivated to implement Goddard's content control into Sullivan to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, content control was important to provide. Such parental control was central to both Sullivan and Goddard. *See, e.g.*, Sullivan, ¶[0008], ¶[0053]; Goddard, 3:28-55. Goddard's content control could improve the content control already in Sullivan system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content

control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tran discloses "a method and system for multi-user, multi-device content access metering and control." Tran, ¶[0021]. It also discloses that in "the invention provides an access control system for both controlling access to inappropriate content, and metering of access to content, for one or more simultaneous users across a network of one or more connected devices, such as in a local area network." Tran, ¶[0022]. Tran also discloses an "implementation of blocking and metering for parental control of access to content via devices in a network is described below for an example network environment comprising networked devices such as network-connected televisions in said network 10. Such televisions may comprise display-connected devices that are network-connected digital televisions (DTVs) interconnected to each other via Ethernet or Wi-Fi wireless network. FIG. 10 shows an example display screen of a television device 12 in the network 10, designated as Family I^2TV, for content blocking and metering set-up according to an embodiment of the invention. In one example, each user is assigned a color (e.g., green, yellow or blue). One or more of the users are children of various age groups." Tran, ¶[0083].

A POSITA would have recognized that Tran's disclosures relating to multi-user content control could easily be incorporated into Sullivan. A POSITA would have been motivated to implement Tran's multi-user content control into Sullivan to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, multi-user content control was important to provide. Such content control was central to both Sullivan and Tran. Sullivan, ¶[0008], ¶[0053]; Tran, ¶[0083]. Tran's multi-user content control could improve the

content control already in Sullivan system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., multi-user content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., multi-user content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Luong discloses "systems and methods for accessing parental control features." Luong, ¶[0004]. It also discloses "that any or all components within parental control system 500—including access control module 510, log module 520, and parental control tools 518—may be implemented as processing circuitry and/or as software implemented using processing circuitry (e.g., as computer-readable instructions encoded on a computer-readable medium and executed using a processor). This processing circuitry may be incorporated within user equipment (e.g., control circuitry 304 of user equipment device 300 of FIG. 3) and/or within a data source (e.g., a local or remote server). In some embodiments, the components of parental control system 500 may be implemented across a number of user equipment devices (e.g., devices 402, 404, and 406) and/or data sources (e.g., data sources 416 and 418 of FIG. 4). In particular, access control module 510 may be implemented in part or in whole on a number of devices and/or data sources. For example, media detection unit 512 and media filter unit 514 may be implemented on all user equipment devices used (e.g., by restricted users) to access media. As another example, parental control database 516 may be located at a data source accessible to all

the user equipment devices. Similarly, log module 520 may be implemented in part or in whole on a number of devices and/or data sources. For example, parental review application 522 may be implemented using processing circuitry on a user equipment device (e.g., user television equipment), and log database 524 may be located at a data source accessible to all the user equipment devices (e.g., via the Internet). When the components of parental control system 500 are distributed on a number of devices and/or data sources, they may communicate with each other directly and/or through communications network 414, using any suitable protocol. For example, data (e.g., log data, parental control data, etc.) may be transmitted between devices using the hypertext transfer protocol ("HTTP")." Luong, ¶[0091].

A POSITA would have recognized that Luong disclosures relating to a parental control database could easily be incorporated into Sullivan. A POSITA would have been motivated to implement Luong's parental control database into Sullivan to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, parental control was important to provide. Such content control was central to both Sullivan and Luong. Sullivan, ¶[0008], ¶[0053]; Luong, ¶[0091]. Luong parental control database could improve the content control already in Sullivan system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., database of parental control information) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., preventing content from being viewable based on stored data). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., database of parental control information) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content based on stored

data). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Lewis discloses the "use of data boxes to personalize programming to the individual taste of the user." Lewis. 4:8-10. It also discloses "[o]nce the received data has been processed according to user specification, it may be played back on the display via playback device 15 and/or stored on built-in, non-movable storage device 14. This may occur as a simultaneous recording of a number of feeds while the user plays back a selective feed in a non-real-time mode. The built-in, non-movable storage device 14 may be any storage device for audio/video information known in the art. The built-in, non-movable storage device 14 may be divided into separate Data Boxes, which may be assigned to separate members of a family, business or group." Lewis, 15:1-11.

A POSITA would have recognized that Lewis's disclosures relating to group content control could easily be incorporated into Sullivan. A POSITA would have been motivated to implement Lewis's group content control into Sullivan to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, group content control was important to provide. Such content control was central to both Sullivan and Lewis. Sullivan, ¶[0008], ¶[0053]; Lewis, 15:1-11. Lewis's group content control could improve the content control already in Sullivan system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., group content control) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., preventing content from being viewable based on stored data). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., group content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content). A POSITA would

have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

West discloses "incorporating both time and content controls within a single system and providing a plurality of censoring authority choices for multiple and variable numbers of viewers within a single household or multiple households." West, 4:48-53. It also discloses that "provision is made for each PIN holder to be responsible for viewing their permitted choices. The censorship device can be down line activated and deactivated. In addition, a timing clock within the censorship device is updated periodically by a down line signal to ensure proper synchronization of the censorship device real time clock with a single central clock." West, 5:13-19.

A POSITA would have recognized that West's disclosures relating to content control could easily be incorporated into Sullivan. A POSITA would have been motivated to implement West's content control into Sullivan to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, content control was important to provide. Such content control was central to both Sullivan and West. Sullivan, ¶[0008], ¶[0053]; West, 4:48-57. West's content control could improve the content control already in Sullivan system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to

choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Wong discloses "[i]n another embodiment, the user may choose to associate the defined V-chip (or any other existing parental control solution) rating levels to the local user-defined rating levels. If this were so, then when the test of whether or not to restrict the program 316 is made, there is already an expected value available from the V-chip, upon which the user could choose to agree or disagree. In this case, the V-chip rating would act as a default selection value. If the user does not agree with the V-chip rating, then the user would instead select to independently rate the video. This process would reduce the user interaction time required, if the user agrees with the recommended rating, and would also give the user a basis upon which to initially judge the rating of the program." Wong at 16:22–34. Wong also discloses "[i]n one embodiment, the restriction method will be utilized on an overlay of a dual widget platform. These dual widgets would be the Restriction Widget Blocking Procedure (the Blocking Widget), and the Restriction Widget Release Widget (Release Widget). Upon device startup, restriction is automatically enabled, unless specifically otherwise set by the user in a device option menu." Wong at 17:19–26. Wong also discloses "[t]raditional user interfaces are well known in the contexts of Video Cassette Recording (VCR) and Digital Video Recording (DVR), where a programming schedule of upcoming programming content is displayed. Similarly, audio prompting in the customer service and other business segments of a variety of industries are well known (such prompt sequence usually starts with "Press 1 for English", or "Press 1 for touch-tone dialing"). XM® and Sirius® satellite radio systems typically use a visual interface (typically a list of stations or upcoming events) to select audio programming. However, what appears to be lacking is a user interface that learns from prior

user interactions. Such an interface would facilitate user interactions, and reduce the frustrations typically encountered when using such non-learning systems." Wong at 1:26-40.

A POSITA would have recognized that Wong's disclosures relating to user interfaces could easily be incorporated into Sullivan. A POSITA would have been motivated to implement Wong's user interface into Sullivan to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, user interface was important to provide. Wong's user interface could improve the content control already in Sullivan system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., user interface) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., user interface) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Huang discloses It will also be appreciated by those skilled in the art that, while in the illustrated example the transmitter pulse timing is controlled by the specialized chip shown, in other embodiments it may be possible to implement these timing functions via software running in the main CPU itself which would serve as a substitute for the IR transmitter IC 204. In addition, when adapted for use in connection with the remote control application, the IrDA receiver may also be used for learning IR codes from other devices such as originally supplied remote controls. The learning function would be made possible by paralleling the IrDA receiver output signal 210 to both the normal PDA connection 212 and the learning input 214 of the IR transmitter IC as

shown." Huang at [0060]. Huang also discloses "[o]nce the primary user has setup the main configuration, new configurations can be created based on the master profile. The primary user may choose which devices and which levels of functionality to expose. This can include backgrounds, specific favorites and other features. The primary user may also choose whether the profile is to be "locked down," which may be used to prevent any additional customization by other users of the profile. In this manner, the primary user can maintain complete control over the way other users (e.g., family members) interact with the remote control application." Huang at [0262]. Huang also discloses "[u]niversal remote controls for controlling the operation of multiple, diverse home appliances are well known. In this regard, universal remote controls perform a valuable function by consolidating three, four, five, and more remote controls into one device. However, as more remotely controllable appliances enter the homes of consumers and the number of remotely controllable operations increase, the user interface of the universal remote control becomes increasingly more complex. This complexity arises from the need to provide more and more keys which are used to initiate the transmission of the control codes that control the increasing number of operations of the increasing number of home appliances. Disadvantageously, as the user interface of the universal remote control becomes more cluttered, the usability of the universal remote control diminishes. Accordingly, a need exists for a universal remote control having an improved user interface that simplifies the operation of the universal remote control and, as such, the remote operation of consumer appliances." Huang at [0004].

A POSITA would have recognized that Huang's disclosures relating to individual profiles could easily be incorporated into Sullivan. A POSITA would have been motivated to implement Huang's user interface into Sullivan to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were

important to provide. Huang's user interface could improve the content control already in Sullivan system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., individual profiles) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable based on a profile). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., user profiles) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display based on a profile). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Elam discloses "[t]he present invention relates generally to television broadcast systems, and more particularly to analog or digital television broadcast receivers and methods wherein program content rating data transmitted concurrently with a television program signal is utilized to provide parental control over the viewing by children of television programs broadcast over the system." Elam at 1:6–12. Elam also discloses "[t]he invention is directed to a television receiver for receiving and displaying to a viewer a television program transmission signal which includes a data signal and a program content rating signal indicative of the program content rating of the received television transmission. The receiver comprises circuit means for separating the data signal and the program content rating signal from the television program signal, a rating derivation circuit for deriving the program rating from the program content rating signal, user selection means responsive to user inputs for storing program rating viewing authorizations for one or more viewers, means for comparing the derived program rating with the stored viewing authorization applicable to the viewer to develop a blanking control signal in the event the viewer is not

authorized to view the program, a monitoring circuit for monitoring the integrity of at least a portion of the data signal, the monitoring circuit providing a rating default control signal upon the integrity of the portion of the data signal falling below a predetermined threshold level, and a blanking circuit responsive to the blanking control signal and the rating default control signal for blanking the program in the event the program rating level is not authorized to the viewer or the integrity of the portion of the data signal falls below the predetermined threshold level." Elam at 2:8–31. Elam also discloses "The present invention is directed to an improvement in the system proposed by Elam et al. wherein in an analog or digital television receiver the integrity of a data signal transmitted with the television program transmission is monitored to determine whether the data signal is being reliably received, and hence whether reliable rating characters are being received. In the event the integrity of the data signal falls below an acceptable threshold level, the program is either blanked, or, depending on the operating mode of the receiver, a determination is made whether to blank depending on either 1) the viewing authorization then in effect for the viewer, or 2) whether a default to view or default to blank authorization has been stored for the viewer. Accordingly, it is a general object of the present invention to provide a television receiver which provides conditional access to received television programs." Elam at 1:41-56.

A POSITA would have recognized that Elam's disclosures relating to individual profiles could easily be incorporated into Sullivan. A POSITA would have been motivated to implement Elam's conditional access into Sullivan to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Elam's user interface could improve the content control already in Sullivan system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control

systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Gabriel discloses "[t]he present invention relates to control of access to content (e.g., audio data and/or video data)." Gabriel at [0001]. Gabriel also discloses that "[i]n another example embodiment according to the present invention, a method to control access to content is provided which includes selecting content, the selected content having metadata linked thereto via a pointer. The metadata is obtained using the pointer. The metadata and at least one filtering criterion are compared, the filtering criterion describing characteristics of at least one of permitted content or prohibited content. Access to the selected content is permitted or denied based on the comparison. The pointer may be embedded, for example, in a Vertical Blanking Interval (VBI) of a signal of the selected content. The pointer may be a URL, and the metadata may be obtained over the Internet using the URL." Gabriel at [0009]. Gabriel also discloses "[c]ontent-provision systems, such cable TV, satellite TV, video-on-demand (VOD), pay-per-view (PPV), and/or Web-based systems offer an enormous selection of video programs containing various types of substantive content, some of which may not be suitable for certain users, such as a child viewer." Gabriel at [0002].

A POSITA would have recognized that Gabriel's disclosures relating to individual profiles could easily be incorporated into Sullivan. A POSITA would have been motivated to implement

Gabriel's conditional access into Sullivan to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Gabriel's user interface could improve the content control already in Sullivan system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Gavita discloses "[i]n an Internet Protocol Television (IPTV) environment, as in many other similar fields), users can be provided with the ability to log in (in some implementations users are required to log in) to access the account. In addition to an account validation, each account can have a plurality of users associated with it, each user having an individual log in. By creating profiles for different users, the account administrator (who is in the context of this discussion one of the users that is responsible for setting up accounts) can create profiles associated with each of the users that can be used to restrict access to content." Gavita at [0002]. Gavit also discloses "[i]n FIG. 10 another manner of viewing the above described processes is presented. In step 138, the set top box is initialized. In step 140 the credentials of the present users are captured for processing and in step 142, access based on determined access rights is provided. Following step 142, the process can return to step 140 so that the permissions can change when a new user is

detected. This would allow adults to be watching a violent or otherwise unsuitable content for a child, and then have the system lock out the content when a child enters the viewing area. When content is locked out, it can be paused and replaced with other content, or a blank screen. In some embodiments a barker channel can be displayed advertising network features, and explaining why the content has been blocked. The adult can then be provided with the ability to provide a one time override to the restriction." Gavita at [0044]. It also discloses "[a]t present logging in to an IPTV STB is done with a user specific credential, and requires that a controller with a form factor limited input mechanism is employed. This is far from ideal. Therefore, it would be desirable to provide a system and method that obviate or mitigate the above described problems." Gavita at [0007].

A POSITA would have recognized that Gavita's disclosures relating to biometric information could easily be incorporated into Sullivan. A POSITA would have been motivated to implement Gavita's biometric systems into Sullivan to address the problems with PINs. A POSITA would have understood that, as of the priority date of the '879 Patent, security was important in authorizing use. This was especially so in V-Chip devices, which Sullivan discloses. Gavita's biometric verification and other verification could have mitigated this well-known drawback to Sullivan' V-Chip system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., biometric and other verification) to improve similar devices or methods (e.g., devices for parental control of viewing content) in the same way (e.g., preventing the playback device play in the event of authentication was not provided). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., biometric and other verification) to a known device or method (e.g., devices for parental control of viewing content) that is ready for improvement to yield predictable results (e.g., device that permits viewing when biometrics are verified). A POSITA would have considered the

combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Scott discloses a "disclosed content accessibility control (CAC) application suitable for use within the context of a multimedia content platform enables an administrative end user to control a subordinate end user's access to content. In a familial context, the subordinate end user (subordinate) may be a family's child or children while the administrative end user (administrator) may be the family's parent(s), guardian(s), or other supervisor(s). The CAC application enables an administrator to create a user account for a subordinate and to tag or otherwise identify specific content deemed by the administrator to be acceptable for viewing, listening to, playing, or otherwise experiencing by the subordinate. When the subordinate wishes to experience content, the subordinate activates the subordinate's user account by logging into the account. When a subordinate's user account is active, the multimedia platform effectively filters the available content so that the subordinate has access to only that content approved by the administrator." Scott at [0013]. It also discloses "[i]n the field of television (TV) and other multimedia and entertainment applications, features exist to give parents or others with supervisory roles coarse control over content that children may listen to, watch, or both. The V-chip, for example, enables parents to use TV ratings as a rough proxy for determining acceptable and unacceptable content for children." Scott at [0004].

A POSITA would have recognized that Scott's disclosures relating to individual profiles could easily be incorporated into Sullivan. A POSITA would have been motivated to implement Scott's conditional access into Sullivan to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Scott's user interface could improve the content control already in Sullivan

system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tong discloses "[t]he V-Chip is able to detect the rating, then compares it to what a user has requested be blocked based on the user's configuration of the V-Chip. If the program is outside what the user has configured as acceptable, the program is blocked." Tong at [0006]. Tong also discloses "[t]ther blocking technologies have expanded beyond pure ratings blocking. However, they still suffer from the limitations of only blocking based on certain criteria and are not a completely customizable to allow parents to define their own blocking parameters. As a result, there is a need to provide additional flexibility in allowing parents to block programming they, not others, deem objectionable from being viewed by their children" Tong at [0011]. *See also*, Tong at [0002]-[0010].

A POSITA would have recognized that Tong's disclosures relating to individual profiles could easily be incorporated into Sullivan. A POSITA would have been motivated to implement Tong's conditional access into Sullivan to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Tong's user interface could improve the content control already in Sullivan

system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Craner discloses "[s]ystems and methods for accessing edited or censored versions of the requested asset are also disclosed." Craner, Abstract. It also discloses that a "FIG. 6 shows illustrative locks setup display screen 600 used to customize parental control settings for the current user in accordance with one embodiment of the invention. Each user of the user equipment may have personalized parental control settings or the user equipment may have a single parental control policy in force for all users (or both methods may be used). If more than one user is defined, users may be authenticated upon accessing or powering on the user equipment using a standard username and password combination, a verification module (e.g., voice, iris, or fingerprint verification), or any other convenient method. " Craner 11:48-58. Craner discloses that "[f]or example, as is understood in the art, a voice recognition module utilizes an attached microphone to translate common phonemes into data characters and commands. The voice verification module may compare the inputted phonemes to voiceprints already stored on user equipment 102 (FIG. 1). These stored voiceprints may have been established in advance via a voice training process. If an acceptable voiceprint match is found, access to the interactive content control application's

privileged menu may be granted without the use of a manual parental control access code entry. A user may also navigate through the menu overlays, input data, and control the interactive content control application via voice if desired."" It provides a verification system that stores "at least one of pre-registered fingerprints, voice characteristic information, facial geometries, iris scan information, DNA, etc. for users" and a verification system that "includes a database 23 that stores biometric information in association with information that identifies users." Craner, 9:3–33.

A POSITA would have recognized that Craner's disclosures relating to biometric information could easily be incorporated into Sullivan. A POSITA would have been motivated to implement Craner's biometric systems into Sullivan to address the problems with PINs. A POSITA would have understood that, as of the priority date of the '879 Patent, security was important in authorizing use. This was especially so in V-Chip devices, which Sullivan discloses. Sullivan, ¶[0008], ¶[0053]. Craner's biometric verification could have mitigated this well-known drawback to Sullivan' V-Chip system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., biometric verification) to improve similar devices or methods (e.g., devices for parental control of viewing content) in the same way (e.g., preventing the playback device play in the event of authentication was not provided). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., biometric verification) to a known device or method (e.g., devices for parental control of viewing content) that is ready for improvement to yield predictable results (e.g., device that permits viewing when biometrics are verified). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(g) Craner in view of Jarman and/or Knowles and/or Novack and/or Hancock and/or Leung and/or Damm

and/or Goddard and/or Tran and/or Luong and/or Lewis and/or West and/or Sullivan and/or Wong and/or Huang and/or Elam and/or Gabriel and/or Gavita and/or Scott and/or Tong

Craner discloses "[s]ystems and methods for accessing edited or censored versions of the requested asset are also disclosed." Craner, Abstract. It also discloses that a "FIG. 6 shows illustrative locks setup display screen 600 used to customize parental control settings for the current user in accordance with one embodiment of the invention. Each user of the user equipment may have personalized parental control settings or the user equipment may have a single parental control policy in force for all users (or both methods may be used). If more than one user is defined, users may be authenticated upon accessing or powering on the user equipment using a standard username and password combination, a verification module (e.g., voice, iris, or fingerprint verification), or any other convenient method. " Craner 11:48-58. Craner discloses that "[f]or example, as is understood in the art, a voice recognition module utilizes an attached microphone to translate common phonemes into data characters and commands. The voice verification module may compare the inputted phonemes to voiceprints already stored on user equipment 102 (FIG. 1). These stored voiceprints may have been established in advance via a voice training process. If an acceptable voiceprint match is found, access to the interactive content control application's privileged menu may be granted without the use of a manual parental control access code entry. A user may also navigate through the menu overlays, input data, and control the interactive content control application via voice if desired."" It provides a verification system that stores "at least one of pre-registered fingerprints, voice characteristic information, facial geometries, iris scan information, DNA, etc. for users" and a verification system that "includes a database 23 that stores biometric information in association with information that identifies users." Craner, 9:3–33.

Jarman discloses "V-Chip technology is based on a system where parental ratings are associated with different television programs, and the user of the television can block programs based on ratings. For example, a television user could select to block all programs that are rated "TV-MA." The "MA" stands for mature audiences and indicates that the program is specifically designed to be viewed by adults and therefore may be unsuitable for children under 17." Jarman at ¶[0003]. It also discloses that "[w]ith a V-Chip enabled television, a user can only categorically block content based on the program's rating designation. For example, a parent may wish to block all episodes of the television sitcom Coupling™ because of its sexually charged content. Coupling™ has a TV-14 rating, but the television user may not want to block all programs with the TV-14 rating. The user may only want to block all episodes of the "Coupling" television program, and permit access to other television programs that have a TV-14 rating. Also, a user may want to only allow certain selected programs, and block all other programs. For example, parents may wish to allow access to the children's program "Sesame Street" and the children's program "Mr. Rogers" but then block all other programs." Jarman at ¶[0004].

A POSITA would have recognized that Jarman's disclosures relating to content control could easily be incorporated into Craner. A POSITA would have been motivated to implement Jarman's content control into Craner to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, content control was important to provide. Such parental control was central to both Craner and Jarman. Jarman's content control could improve the content control already in Craner system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or

combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Knowles discloses a "multiple Interactive Program Guide (IPG) system" Knowles, Abstract. Knowles also discloses "[a]n embodiment of the invention is a system that provides customers with multiple instantly accessible electronic IPGs. The multiple IPG system enables users to view TV programs and schedule information in each IPG. Preferably, each IPG comprises a Grid Guide, a Channel Guide, and a Theme Guide. Each IPG receives, stores, and displays program titles and information and share some of the information with other IPGs." Knowles, ¶[0044]. Knowles discloses an IPG that includes "VChip Plus+ in guide mode uses two data sources in combination to determine whether a show should be blocked: data downloaded and stored in the guide (channel lineups, show schedules, show ratings), and rating data transmitted over the VBI. Ordinary V-Chip devices use the data transmitted over the VBI to determine whether or not to block a show by rating. These ratings are sent a minimum of every 15 seconds. Thus, a show that a parent may wish blocked, may be seen for up to 15 seconds before the blocking takes effect. VCHIP Plus+ in guide mode uses show rating data already stored for each of the IPGs to determine whether a show should be blocked as soon as it begins, and use the VBI data to confirm if the show was properly blocked." Knowles at ¶[0099].

A POSITA would have recognized that Knowles's disclosures relating to content control could easily be incorporated into Craner. A POSITA would have been motivated to implement Knowles's content control into Craner to provide additional functionality. A POSITA would have

understood that, as of the priority date of the '879 Patent, content control was important to provide. Such parental control was central to both Craner and Knowles. *See, e.g.*, Craner, ¶[0003], ¶[0033]; Knowles, ¶[0115]. Knowles's content control could improve the content control already in Craner system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Novack discloses a "centralized biometric system for verifying the identity of a user over a communications network includes a device that stores biometric information in association with information that identifies users." Novack, Abstract. It also discloses that a "PIN provided by the user ¶[is used] as authorization from the user to deliver the requested media content to the user." Novack ¶[0007]. Novack discloses that a "problem with verifying the identity of a user based on a PIN is that it is easy for individuals to obtain the user's PIN." It provides a verification system that stores "at least one of pre-registered fingerprints, voice characteristic information, facial geometries, iris scan information, DNA, etc. for users" and a verification system that "includes a database 23 that stores biometric information in association with information that identifies users." Novack, ¶[0014], ¶[0041].

A POSITA would have recognized that Novack's disclosures relating to biometric information could easily be incorporated into Craner. A POSITA would have been motivated to implement Novack's biometric systems into Craner to address the problems with PINs. Novack, ¶[0009]. A POSITA would have understood that, as of the priority date of the '879 Patent, security was important in authorizing use. This was especially so in V-Chip devices, which Craner discloses. Craner, ¶[0003], ¶[0033]. Novack's biometric verification could have mitigated this well-known drawback to Craner' V-Chip system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., biometric verification) to improve similar devices or methods (e.g., devices for parental control of viewing content) in the same way (e.g., preventing the playback device play in the event of authentication was not provided). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., biometric verification) to a known device or method (e.g., devices for parental control of viewing content) that is ready for improvement to yield predictable results (e.g., device that permits viewing when biometrics are verified). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hancock discloses "an apparatus and method that provides for a user interface for programmable blocking, such as for parental control, of viewable programs, such as programs that can be viewed on a television receiver. A memory provides storage of information relating to viewable programming and user defined blocking instructions. A microprocessor generates a blocking command as a function of the information stored in memory. A blocking circuit, such as a blocking circuit which passes a baseband television video signal to a television display, provides blocking of the video signal in response to the blocking command." Hancock, 3:20-30. It also

discloses that "[a]fter the viewer has selected, as described below, the television program viewing blocking/enablement function ("V-ChipPlus+"), the viewer's screen displays the V-Chip Plus +In-Guide User Interface Main Blocking Menu (the 'Main Blocking Menu')." Hancock, 6:24-28. It also discloses the "viewer selects a particular program, channel logo, or time slot to be blocked by one selection method, for instance, using the viewer's remote control device to point to and select a program, channel or time slot." Hancock, 9:17–20.

A POSITA would have recognized that Hancock's disclosures relating to program data could easily be incorporated into Craner. A POSITA would have been motivated to implement Hancock's program data into Craner to provide additional information. A POSITA would have understood that, as of the priority date of the '879 Patent, program information was important to provide. Displaying information was central to both Craner and Hancock. Craner, ¶[0003], ¶[0033]; Hancock, 6:4-56. Hancock's additional media information could improve the media information already in Craner system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., displaying program information on a television) to improve similar devices or methods (e.g., other systems that display program information on a television) in the same way (e.g., displaying information). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., displaying information) to a known device or method (e.g., displaying information) that is ready for improvement to yield predictable results (e.g., device that displays the identified information). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Leung discloses " an apparatus for parental control of a television receiver" Leung, ¶[0007]. It also discloses that the "viewer input device 46 also allows the viewer to remotely

program the V-Chip Plus+ system to exclude programs according to one or more rating factors, as well as compiling or modifying the V-Chip Plus+ override lists. When the viewer wishes to review the particular ratings set in the V-Chip Plus+ system or the V-Chip Plus+ override lists, the microprocessor 44 retrieves the appropriate information from RAM 48 and couples it to the video processor 50, where the information is formatted for display. Preferably, the information stored in the video processor 50 is a bit map of what is displayed on the TV display 42." Leung, ¶[0075]. It also discloses that for "the purpose of describing the operation of the override system, it is assumed that the television signal of each channel carried by the cable feed contains supplemental data, including channel identification, such as HBO, CNN, or NBC. Preferably, the channel identification is embedded in the VBI of the signal of each channel in an XDS format" Leung, ¶[0062].

A POSITA would have recognized that Leung's disclosures relating to program data could easily be incorporated into Craner. A POSITA would have been motivated to implement Leung's program data into Craner to provide additional program information. A POSITA would have understood that, as of the priority date of the '879 Patent, program information was important to provide. Program data was central to both Craner and Leung. Craner, ¶[0003], ¶[0033]; Leung, ¶[0062]. Leung's additional media information could improve the media information already in Craner system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., displaying program information on a television) to improve similar devices or methods (e.g., other systems that display program information on a television) in the same way (e.g., displaying information). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., displaying information) to a known device or method (e.g., displaying information) that is ready for

improvement to yield predictable results (e.g., device that displays the identified information). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Damm discloses a "system is provided for rating multimedia content streamed over a data network as a series of data frames, segments, or packets and for administering display of the rated content." Damm, ¶[0013]. It also discloses that for "satellite and cable television systems, a variety of remote control operated features are now available for blocking channels, programs, or offensive content detected in programs. V-chip technology is one of these implemented via a hardware chip added to the viewing terminal. The V-chip blocks content by reading the ratings embedded in television signaling data frames or recorded video and turns off the signal when the ratings exceed certain ratings-based thresholds set by the parents. V-chip technology utilizes a relatively complicated, but generally well known rating scheme including all youth (Y), youth 7 or older (Y7), general audience (G), parental guidance suggested (PG), teen 14 or over (TV14), and mature audience only (MA). Programs having these ratings may also include sub-ratings like contains violence (V), contains sexual situations (S), contains coarse language (L), and contains suggestive dialogue (D)." Damm, ¶[0003]. It also discloses that the "methods and system of the present invention is not limited to full length industry approved presentations. Any multimedia snippet, movie clip, audio clip, or the like may be rated and filtered or blocked at threw receiving device. If the receiving device does not detect any data in the content marker fields of received data packets of a presentation, or does not detect the presence of the marker field at all, then the content is not marked according to the methods and system of the present invention and may be rejected by default. However, in another embodiment if the un-marked presentation is conventionally rated the receiving device may default to a conventional ratings setting to determine

if the content will be allowed or not." Damm, ¶[0086]. It also discloses while "all of the existing solutions work to some extent to block unwanted content, new methods of content delivery and availability of new and emerging multimedia display devices create certain vulnerabilities in the existing methods. Other limitations are also apparent to one with skill in the art of multimedia content filtering. The boundaries between data network telephony (DNT), of which Internet protocol network telephony (IPNT) is a subset, and data packet enabled satellite and cable network content delivery paths are increasingly blurred by improvements in the capabilities of transversing between networks and transport protocols when accessing or delivering content. Cellular telephones capable of accessing IP data networks are increasingly being marketed as content receiving devices capable of receiving, displaying, and storing, and sharing multimedia content. Some "bleeding edge" devices have up to 2 gigabytes of storage capability. These and other like devices, including new devices being developed, are fully multimedia capable and highly mobile and may receive content from a variety of defined networks." Damm, ¶[0008].

A POSITA would have recognized that Damm's disclosures relating to defaulting to deny access could easily be incorporated into Craner. A POSITA would have been motivated to implement Damm's program data into Craner to provide additional security. A POSITA would have understood that, as of the priority date of the '879 Patent, parental control was important to provide. Such parental control was central to both Craner and Damm. See, e.g., Craner, ¶[0115]; Damm, ¶[0014]. Damm's defaulting to deny access could improve the parental control already in Craner system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., defaulting to deny access to view a program) to improve similar devices or methods (e.g., other systems that control access to a program) in the same way (e.g., preventing the program from being viewable). As another example, a POSITA would have understood the

modification or combination to amount to applying a known technique (e.g., defaulting to deny access to view a program) to a known device or method (e.g., other systems that control access to a program) that is ready for improvement to yield predictable results (e.g., device that defaults to deny access). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Goddard discloses a "a method of setting content rating parameters of a content control system. Employing the present method, a user may set acceptable content rating parameters based on the rating of example content by blocking or unblocking the example content. The content ratings system compares the content rating of the example content with existing acceptable content rating parameters and adjusts the content rating parameters accordingly. In this manner, specific knowledge of the content ratings scheme employed, or the meaning of specific content ratings used by the content ratings scheme, is not required." Goddard, 2:31-42. It also discloses that in "one embodiment, such a user interface 100 may include an on-screen control panel 102 for controlling access to media by the information appliance (see FIG. 6). A region or window 104 of the control panel 102 contains therein display fields such as "Channel" 106 and various control buttons or switches such as channel selection 108 & 110, volume 112 & 114, "Settings" 116 and so forth, which function as on-screen visual representations of controls of the information appliance or, alternately, peripheral devices attached thereto that provide access to one or more media." Goddard, 4:36-45.

A POSITA would have recognized that Goddard's disclosures relating to content control could easily be incorporated into Craner. A POSITA would have been motivated to implement Goddard's content control into Craner to provide additional functionality. A POSITA would have

understood that, as of the priority date of the '879 Patent, content control was important to provide. Such parental control was central to both Craner and Goddard. *See, e.g.*, Craner, ¶[0003], ¶[0033]; Goddard, 3:28-55. Goddard's content control could improve the content control already in Craner system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tran discloses "a method and system for multi-user, multi-device content access metering and control." Tran, ¶[0021]. It also discloses that in "the invention provides an access control system for both controlling access to inappropriate content, and metering of access to content, for one or more simultaneous users across a network of one or more connected devices, such as in a local area network." Tran, ¶[0022]. Tran also discloses an "implementation of blocking and metering for parental control of access to content via devices in a network is described below for an example network environment comprising networked devices such as network-connected televisions in said network 10. Such televisions may comprise display-connected devices that are network-connected digital televisions (DTVs) interconnected to each other via Ethernet or Wi-Fi wireless network. FIG. 10 shows an example display screen of a television device 12 in the network 10, designated as Family I^2TV, for content blocking and metering set-up according to

an embodiment of the invention. In one example, each user is assigned a color (e.g., green, yellow or blue). One or more of the users are children of various age groups." Tran, ¶[0083].

A POSITA would have recognized that Tran's disclosures relating to multi-user content control could easily be incorporated into Craner. A POSITA would have been motivated to implement Tran's multi-user content control into Craner to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, multi-user content control was important to provide. Such content control was central to both Craner and Tran. Craner, ¶[0003], ¶[0033]; Tran, ¶[0083]. Tran's multi-user content control could improve the content control already in Craner system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., multi-user content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., multi-user content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Luong discloses "systems and methods for accessing parental control features." Luong, ¶[0004]. It also discloses "that any or all components within parental control system 500—including access control module 510, log module 520, and parental control tools 518—may be implemented as processing circuitry and/or as software implemented using processing circuitry (e.g., as computer-readable instructions encoded on a computer-readable medium and executed using a processor). This processing circuitry may be incorporated within user equipment

(e.g., control circuitry 304 of user equipment device 300 of FIG. 3) and/or within a data source (e.g., a local or remote server). In some embodiments, the components of parental control system 500 may be implemented across a number of user equipment devices (e.g., devices 402, 404, and 406) and/or data sources (e.g., data sources 416 and 418 of FIG. 4). In particular, access control module 510 may be implemented in part or in whole on a number of devices and/or data sources. For example, media detection unit 512 and media filter unit 514 may be implemented on all user equipment devices used (e.g., by restricted users) to access media. As another example, parental control database 516 may be located at a data source accessible to all the user equipment devices. Similarly, log module 520 may be implemented in part or in whole on a number of devices and/or data sources. For example, parental review application 522 may be implemented using processing circuitry on a user equipment device (e.g., user television equipment), and log database 524 may be located at a data source accessible to all the user equipment devices (e.g., via the Internet). When the components of parental control system 500 are distributed on a number of devices and/or data sources, they may communicate with each other directly and/or through communications network 414, using any suitable protocol. For example, data (e.g., log data, parental control data, etc.) may be transmitted between devices using the hypertext transfer protocol ("HTTP")." Luong, ¶[0091].

A POSITA would have recognized that Luong disclosures relating to a parental control database could easily be incorporated into Craner. A POSITA would have been motivated to implement Luong's parental control database into Craner to provide additional functionality. A POSITA would have understood that, as of the priority date of the '879 Patent, parental control was important to provide. Such content control was central to both Craner and Luong. Craner, ¶[0003], ¶[0033]; Luong, ¶[0091]. Luong parental control database could improve the content

control already in Craner system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., database of parental control information) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., preventing content from being viewable based on stored data). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., database of parental control information) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content based on stored data). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Lewis discloses the "use of data boxes to personalize programming to the individual taste of the user." Lewis. 4:8-10. It also discloses "[o]nce the received data has been processed according to user specification, it may be played back on the display via playback device 15 and/or stored on built-in, non-movable storage device 14. This may occur as a simultaneous recording of a number of feeds while the user plays back a selective feed in a non-real-time mode. The built-in, non-movable storage device 14 may be any storage device for audio/video information known in the art. The built-in, non-movable storage device 14 may be divided into separate Data Boxes, which may be assigned to separate members of a family, business or group." Lewis, 15:1-11.

A POSITA would have recognized that Lewis's disclosures relating to group content control could easily be incorporated into Craner. A POSITA would have been motivated to implement Lewis's group content control into Craner to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, group content control was important to provide. Such content control was central to both Craner and Lewis. Craner, ¶[0003], ¶[0033]; Lewis, 15:1-11. Lewis's group content control could

improve the content control already in Craner system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., group content control) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., preventing content from being viewable based on stored data). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., group content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

West discloses "incorporating both time and content controls within a single system and providing a plurality of censoring authority choices for multiple and variable numbers of viewers within a single household or multiple households." West, 4:48-53. It also discloses that "provision is made for each PIN holder to be responsible for viewing their permitted choices. The censorship device can be down line activated and deactivated. In addition, a timing clock within the censorship device is updated periodically by a down line signal to ensure proper synchronization of the censorship device real time clock with a single central clock." West, 5:13-19.

A POSITA would have recognized that West's disclosures relating to content control could easily be incorporated into Craner. A POSITA would have been motivated to implement West's content control into Craner to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, content control was important to provide. Such content control was central to both Craner and West. Craner, ¶[0003], ¶[0033]; West, 4:48-57. West's content control could improve the content control already in Craner system. A POSITA would have considered the combination to amount to the use of known techniques

(e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Sullivan discloses the " a content control system and methods employed by a content control system for limiting access by sensitive users, such as children, or the like, to certain types of content." Sullivan,¶[0008]. It also discloses "In the simplest embodiment, where a user selects a particular rating, that rating and all higher ratings will be locked. In a more flexible embodiment, the ratings may be selected individually. Preferably, the manner of operation in this regard may be selected by the user, e.g., in a user preferences options field." Sullivan, ¶[0053].

A POSITA would have recognized that Sullivan's disclosures relating to group content control could easily be incorporated into Craner. A POSITA would have been motivated to implement Sullivan's group content control into Craner to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, group content control was important to provide. Such content control was central to both Craner and Sullivan. Craner, ¶[0003], ¶[0033]. Sullivan's group content control could improve the content control already in Craner system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., content control) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount

to applying a known technique (e.g., content control) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Wong discloses "[i]n another embodiment, the user may choose to associate the defined V-chip (or any other existing parental control solution) rating levels to the local user-defined rating levels. If this were so, then when the test of whether or not to restrict the program 316 is made, there is already an expected value available from the V-chip, upon which the user could choose to agree or disagree. In this case, the V-chip rating would act as a default selection value. If the user does not agree with the V-chip rating, then the user would instead select to independently rate the video. This process would reduce the user interaction time required, if the user agrees with the recommended rating, and would also give the user a basis upon which to initially judge the rating of the program." Wong at 16:22–34. Wong also discloses "[i]n one embodiment, the restriction method will be utilized on an overlay of a dual widget platform. These dual widgets would be the Restriction Widget Blocking Procedure (the Blocking Widget), and the Restriction Widget Release Widget (Release Widget). Upon device startup, restriction is automatically enabled, unless specifically otherwise set by the user in a device option menu." Wong at 17:19–26. Wong also discloses "[t]raditional user interfaces are well known in the contexts of Video Cassette Recording (VCR) and Digital Video Recording (DVR), where a programming schedule of upcoming programming content is displayed. Similarly, audio prompting in the customer service and other business segments of a variety of industries are well known (such prompt sequence usually starts with "Press 1 for English", or "Press 1 for touch-tone dialing"). XM® and Sirius® satellite radio

systems typically use a visual interface (typically a list of stations or upcoming events) to select audio programming. However, what appears to be lacking is a user interface that learns from prior user interactions. Such an interface would facilitate user interactions, and reduce the frustrations typically encountered when using such non-learning systems." Wong at 1:26-40.

A POSITA would have recognized that Wong's disclosures relating to user interfaces could easily be incorporated into Craner. A POSITA would have been motivated to implement Wong's user interface into Craner to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, user interface was important to provide. Wong's user interface could improve the content control already in Craner system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., user interface) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., user interface) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Huang discloses It will also be appreciated by those skilled in the art that, while in the illustrated example the transmitter pulse timing is controlled by the specialized chip shown, in other embodiments it may be possible to implement these timing functions via software running in the main CPU itself which would serve as a substitute for the IR transmitter IC 204. In addition, when adapted for use in connection with the remote control application, the IrDA receiver may also be used for learning IR codes from other devices such as originally supplied remote controls.

The learning function would be made possible by paralleling the IrDA receiver output signal 210 to both the normal PDA connection 212 and the learning input 214 of the IR transmitter IC as shown." Huang at [0060]. Huang also discloses "[o]nce the primary user has setup the main configuration, new configurations can be created based on the master profile. The primary user may choose which devices and which levels of functionality to expose. This can include backgrounds, specific favorites and other features. The primary user may also choose whether the profile is to be "locked down," which may be used to prevent any additional customization by other users of the profile. In this manner, the primary user can maintain complete control over the way other users (e.g., family members) interact with the remote control application." Huang at [0262]. Huang also discloses "[u]niversal remote controls for controlling the operation of multiple, diverse home appliances are well known. In this regard, universal remote controls perform a valuable function by consolidating three, four, five, and more remote controls into one device. However, as more remotely controllable appliances enter the homes of consumers and the number of remotely controllable operations increase, the user interface of the universal remote control becomes increasingly more complex. This complexity arises from the need to provide more and more keys which are used to initiate the transmission of the control codes that control the increasing number of operations of the increasing number of home appliances. Disadvantageously, as the user interface of the universal remote control becomes more cluttered, the usability of the universal remote control diminishes. Accordingly, a need exists for a universal remote control having an improved user interface that simplifies the operation of the universal remote control and, as such, the remote operation of consumer appliances." Huang at [0004].

A POSITA would have recognized that Huang's disclosures relating to individual profiles could easily be incorporated into Craner. A POSITA would have been motivated to implement

Huang's user interface into Craner to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Huang's user interface could improve the content control already in Craner system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., individual profiles) to improve similar devices or methods (e.g., other content control systems) in the same way (e.g., preventing content from being viewable based on a profile). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., user profiles) to a known device or method (e.g., other content control systems) that is ready for improvement to yield predictable results (e.g., device that controls content display based on a profile). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Elam discloses "[t]he present invention relates generally to television broadcast systems, and more particularly to analog or digital television broadcast receivers and methods wherein program content rating data transmitted concurrently with a television program signal is utilized to provide parental control over the viewing by children of television programs broadcast over the system." Elam at 1:6–12. Elam also discloses "[t]he invention is directed to a television receiver for receiving and displaying to a viewer a television program transmission signal which includes a data signal and a program content rating signal indicative of the program content rating of the received television transmission. The receiver comprises circuit means for separating the data signal and the program content rating signal from the television program signal, a rating derivation circuit for deriving the program rating from the program content rating signal, user selection means responsive to user inputs for storing program rating viewing authorizations for one or more

viewers, means for comparing the derived program rating with the stored viewing authorization applicable to the viewer to develop a blanking control signal in the event the viewer is not authorized to view the program, a monitoring circuit for monitoring the integrity of at least a portion of the data signal, the monitoring circuit providing a rating default control signal upon the integrity of the portion of the data signal falling below a predetermined threshold level, and a blanking circuit responsive to the blanking control signal and the rating default control signal for blanking the program in the event the program rating level is not authorized to the viewer or the integrity of the portion of the data signal falls below the predetermined threshold level." Elam at 2:8–31. Elam also discloses "The present invention is directed to an improvement in the system proposed by Elam et al. wherein in an analog or digital television receiver the integrity of a data signal transmitted with the television program transmission is monitored to determine whether the data signal is being reliably received, and hence whether reliable rating characters are being received. In the event the integrity of the data signal falls below an acceptable threshold level, the program is either blanked, or, depending on the operating mode of the receiver, a determination is made whether to blank depending on either 1) the viewing authorization then in effect for the viewer, or 2) whether a default to view or default to blank authorization has been stored for the viewer. Accordingly, it is a general object of the present invention to provide a television receiver which provides conditional access to received television programs." Elam at 1:41-56.

A POSITA would have recognized that Elam's disclosures relating to individual profiles could easily be incorporated into Craner. A POSITA would have been motivated to implement Elam's conditional access into Craner to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Elam's user interface could improve the content control already in Craner

system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Gabriel discloses "[t]he present invention relates to control of access to content (e.g., audio data and/or video data)." Gabriel at [0001]. Gabriel also discloses that "[i]n another example embodiment according to the present invention, a method to control access to content is provided which includes selecting content, the selected content having metadata linked thereto via a pointer. The metadata is obtained using the pointer. The metadata and at least one filtering criterion are compared, the filtering criterion describing characteristics of at least one of permitted content or prohibited content. Access to the selected content is permitted or denied based on the comparison. The pointer may be embedded, for example, in a Vertical Blanking Interval (VBI) of a signal of the selected content. The pointer may be a URL, and the metadata may be obtained over the Internet using the URL." Gabriel at [0009]. Gabriel also discloses "[c]ontent-provision systems, such cable TV, satellite TV, video-on-demand (VOD), pay-per-view (PPV), and/or Web-based systems offer an enormous selection of video programs containing various types of substantive content, some of which may not be suitable for certain users, such as a child viewer." Gabriel at [0002].

A POSITA would have recognized that Gabriel's disclosures relating to individual profiles could easily be incorporated into Craner. A POSITA would have been motivated to implement Gabriel's conditional access into Craner to provide additional functionality and convenience. A POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Gabriel's user interface could improve the content control already in Craner system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Gavita discloses "[i]n an Internet Protocol Television (IPTV) environment, as in many other similar fields), users can be provided with the ability to log in (in some implementations users are required to log in) to access the account. In addition to an account validation, each account can have a plurality of users associated with it, each user having an individual log in. By creating profiles for different users, the account administrator (who is in the context of this discussion one of the users that is responsible for setting up accounts) can create profiles associated with each of the users that can be used to restrict access to content." Gavita at [0002]. Gavit also discloses "[i]n FIG. 10 another manner of viewing the above described processes is presented. In step 138, the set top box is initialized. In step 140 the credentials of the present users are captured

for processing and in step 142, access based on determined access rights is provided. Following step 142, the process can return to step 140 so that the permissions can change when a new user is detected. This would allow adults to be watching a violent or otherwise unsuitable content for a child, and then have the system lock out the content when a child enters the viewing area. When content is locked out, it can be paused and replaced with other content, or a blank screen. In some embodiments a barker channel can be displayed advertising network features, and explaining why the content has been blocked. The adult can then be provided with the ability to provide a one time override to the restriction." Gavita at [0044]. It also discloses "[a]t present logging in to an IPTV STB is done with a user specific credential, and requires that a controller with a form factor limited input mechanism is employed. This is far from ideal. Therefore, it would be desirable to provide a system and method that obviate or mitigate the above described problems." Gavita at [0007].

A POSITA would have recognized that Gavita's disclosures relating to biometric information could easily be incorporated into Craner. A POSITA would have been motivated to implement Gavita's biometric systems into Craner to address the problems with PINs. A POSITA would have understood that, as of the priority date of the '879 Patent, security was important in authorizing use. This was especially so in V-Chip devices, which Craner discloses. Gavita's biometric verification and other verification could have mitigated this well-known drawback to Craner' V-Chip system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., biometric and other verification) to improve similar devices or methods (e.g., devices for parental control of viewing content) in the same way (e.g., preventing the playback device play in the event of authentication was not provided). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., biometric and other verification) to a known device or method (e.g., devices for

parental control of viewing content) that is ready for improvement to yield predictable results (e.g., device that permits viewing when biometrics are verified). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Scott discloses a "disclosed content accessibility control (CAC) application suitable for use within the context of a multimedia content platform enables an administrative end user to control a subordinate end user's access to content. In a familial context, the subordinate end user (subordinate) may be a family's child or children while the administrative end user (administrator) may be the family's parent(s), guardian(s), or other supervisor(s). The CAC application enables an administrator to create a user account for a subordinate and to tag or otherwise identify specific content deemed by the administrator to be acceptable for viewing, listening to, playing, or otherwise experiencing by the subordinate. When the subordinate wishes to experience content, the subordinate activates the subordinate's user account by logging into the account. When a subordinate's user account is active, the multimedia platform effectively filters the available content so that the subordinate has access to only that content approved by the administrator." Scott at [0013]. It also discloses "[i]n the field of television (TV) and other multimedia and entertainment applications, features exist to give parents or others with supervisory roles coarse control over content that children may listen to, watch, or both. The V-chip, for example, enables parents to use TV ratings as a rough proxy for determining acceptable and unacceptable content for children." Scott at [0004].

A POSITA would have recognized that Scott's disclosures relating to individual profiles could easily be incorporated into Craner. A POSITA would have been motivated to implement Scott's conditional access into Craner to provide additional functionality and convenience. A

POSITA would have understood that, as of the priority date of the ’879 Patent, profiles were important to provide. Scott’s user interface could improve the content control already in Craner system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tong discloses “[t]he V-Chip is able to detect the rating, then compares it to what a user has requested be blocked based on the user's configuration of the V-Chip. If the program is outside what the user has configured as acceptable, the program is blocked.” Tong at [0006]. Tong also discloses “[t]ther blocking technologies have expanded beyond pure ratings blocking. However, they still suffer from the limitations of only blocking based on certain criteria and are not a completely customizable to allow parents to define their own blocking parameters. As a result, there is a need to provide additional flexibility in allowing parents to block programming they, not others, deem objectionable from being viewed by their children” Tong at [0011]. *See also*, Tong at [0002]-[0010].

A POSITA would have recognized that Tong’s disclosures relating to individual profiles could easily be incorporated into Craner. A POSITA would have been motivated to implement Tong’s conditional access into Craner to provide additional functionality and convenience. A

POSITA would have understood that, as of the priority date of the '879 Patent, profiles were important to provide. Tong's user interface could improve the content control already in Craner system. A POSITA would have considered the combination to amount to the use of known techniques (e.g., conditional access) to improve similar devices or methods (e.g., content control systems) in the same way (e.g., conditional access in a content control system). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., conditional access) to a known device or method (e.g., content control systems) that is ready for improvement to yield predictable results (e.g., conditional access in a content control system). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(2) U.S. Patent No. 8,898,803

The '803 Patent "generally relates to the field of distributing digital media content via a kiosk, and specifically to integrating a kiosk distribution system with a streaming service." '803 Patent at 1:16-18. According to the method disclosed in the asserted claims, "content" and "user service information" is transferred from a kiosk to a "flash memory media device." '803 patent at 13:50-56. Then, "responsive to the flash memory media device being connected to the playback device," the user service information is used to access a streaming service to playback content when "the playback device is connected to a network via a network connection having a speed that meets a threshold for streaming digital content." *Id.* at 13:57-14:2. Otherwise, the content stored on the flash memory media device is played back. *Id.* at 14:3-5.

The '803 Patent aims to provide the user with "a portable version of the content from the kiosk for consumption anywhere, regardless of network access" in combination with "higher quality version from the streaming service for consumption when a network connection is available

to the playback device." *Id.* at 9:42-48. All of the content distribution techniques disclosed in the '803 Patent were well-known in the prior art at the time of the Patent's filing.

(a) Kirkland in view of Olaiya and/or Hasegawa and/or Shinoda and/or Kang and/or Harper and/or Butler and/or Rae and/or Ayers and/or Mavrakakis and/or Takano and/or Moradi and/or Van Buskirk and/or Blockbuster Express Digital and/or Amazon Unbox & VOD and/or YouTube

Kirkland discloses an "on-demand media server device." Kirkland ¶[0012]. Kirkland discloses that this server includes "a web server" that makes media "available via the internet." *Id.* The server also "includes security mechanisms that allow a user to establish a private server that only the user may communicate with and gain access to the user's media library." *Id.* ¶[0013]. One security mechanism that the server may be equipped with is "a smart card, or other type of removable media, reader/writer" into which the user "may insert the smart card or removable media." *Id.* ¶[0014]. The server then transfers "a digital certificate" to the removable media. *Id.* Thereafter "[t]he smart card or removable medium is required for a remotely located device to gain access to the user's personal media library." *Id.* ¶[0016].

Olaiya discloses "a system and method for Peer-to-Peer (P2P) media content streaming." Olaiya ¶[0003]. Olaiya discloses that prior to streaming a media content item, the playback device "downloads illustration media content, which is a derivate light-weight version of the original media content." *Id.* This illustration media content may be a "reduced quality version of a media content item." *Id.* ¶[0016]. After downloading the illustration media content, the playback device "initiates streaming." *Id.* ¶[0018]. However, if during streaming "the quality of the network connection falls below a defined threshold, the playback agent switches playback to the illustration media content." *Id.* ¶[0003]. "Thereafter, once the quality of the network connection improves or

a new connection is established, the playback agent switches playback back to the streaming original media content." *Id.*

A POSITA would have recognized that Olaiya's disclosures relating to downloading illustration media content and switching playback between streaming content and illustration media content could easily be incorporated into Kirkland. A POSITA would have been motivated to implement Olaiya's downloading of content and playback switching into Kirkland to "alleviate[] interruptions in playback resulting from an unstable network." Olaiya ¶[0002]. A POSITA would have understood that, as of the priority date of the '803 Patent, network speed was an important limitation on streaming media. This was especially so in mobile networks, which Kirkland discloses may be used by the playback device. Kirkland ¶[0076]. Olaiya's downloading of the content and playback switching would mitigate this well-known drawback to Kirkland's streaming server. A POSITA would have considered the combination to amount to the use of known techniques (e.g., downloading and switching playback between streamed and local content) to improve similar devices or methods (e.g., devices for playback of streaming content) in the same way (e.g., enabling the playback device to continue playback in the event of a failed or slow connection). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., downloading and switching playback between streamed and local content) to a known device or method (e.g., devices for playback of streaming content) that is ready for improvement to yield predictable results (e.g., a playback devices capable of continuing playback in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hasegawa discloses a method for "prevention of an interruption in playback of content, even if there is a temporary reduction in the communication circuit speed of the network." Hasegawa ¶[0024]. Hasegawa discloses a playback device capable of playing back DVDs and Blu-ray disks. *Id.* ¶[0028]. When a user inserts a DVD (containing SD video and audio content), the player may instead stream HD content from a server. *Id.* ¶¶[0049], [0054]. Then, "if there is a temporary reduction in the communication circuit speed of the network," the player switches play back to the "SD data of the DVD." *Id.* ¶[0068].

A POSITA would have recognized that Hasegawa's disclosures relating to obtaining SD local content via a medium and switching playback between HD streaming content and SD local content could easily be incorporated into Kirkland. A POSITA would have been motivated to implement Hasegawa's obtaining content via a medium and playback switching into Kirkland to account for "temporary reductions in communication circuit speeds of networks, including the Internet, due to a variety of environmental factors." Hasegawa ¶[0005]. A POSITA would have understood that, as of the priority date of the '803 Patent, network speed was an important limitation on streaming media. This was especially so in mobile networks, which Kirkland discloses may be used by the playback device. Kirkland ¶[0076]. Hasegawa's local content and playback switching would mitigate this well-known drawback to Kirkland's streaming server. A POSITA would have considered the combination to amount to the use of known techniques (e.g., obtaining content via a medium and switching playback between streamed and local content) to improve similar devices or methods (e.g., devices for playback of streaming content) in the same way (e.g., enabling the playback device to continue playback in the event of a failed or slow connection). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., obtaining content via a medium and

switching playback between streamed and local content) to a known device or method (e.g., devices for playback of streaming content) that is ready for improvement to yield predictable results (e.g., a playback devices capable of continuing playback in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Shinoda discloses a method that "enables playback of content of high quality, regardless of the storage capacity of the recording medium, on the player device side." Shinoda ¶[0012]. Shinoda discloses a "mobile entertainment device" with both an "optical disc drive" and a "memory card interface." *Id.* ¶¶[0023], [0026], [0027]. When the device is connected to a network, "video content is supplied from the distribution server." *Id.* ¶[0052]. But Shinoda recognizes that "it is necessary to take into account possible inability to obtain an adequate data transfer rate, and thus discloses a "detection operation" to determine a "communication rate threshold value." *Id.* ¶¶[0068], [0069], [0071]. When the communication rate falls below the threshold, a "playback switching operation" is performed to "carry out switching from playing back content from the network 4 to playing back content from the optical disc 100." *Id.* ¶[0075]. This may comprise switching between "MPEG-4 video from the optical disk" and "MPEG-2 HD video from the network." *Id.*

A POSITA would have recognized that Shinoda's disclosures relating to obtaining SD local content via a medium and switching playback between HD streaming content and SD local content could easily be incorporated into Kirkland. A POSITA would have been motivated to implement Shinoda's obtaining content via a medium and playback switching into Kirkland to account for "possible inability to obtain an adequate data transfer rate depending on, for example,

the state of the connected network." Shinoda ¶[0068]. A POSITA would have considered the combination to amount to the use of known techniques (e.g., obtaining content via a medium and switching playback between streamed and local content) to improve similar devices or methods (e.g., devices for playback of streaming content) in the same way (e.g., to enable the playback device to continue playback in the event of a failed or slow connection). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., obtaining content via a medium and switching playback between streamed and local content) to a known device or method (e.g., devices for playback of streaming content) that is ready for improvement to yield predictable results (e.g., a playback devices capable of continuing playback in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kang discloses a "kiosk" that is "a terminal of a contents distribution system installed in public places." Kang ¶[0043]. The kiosk of Kang "may receive contents data from the contents providing server 21, and transmit the contents data to the portable storage medium 24 that is inserted or connected to or communicating with the kiosk 25." *Id.* Then, "the portable storage medium 24 including data related to movie reproduction may be inserted to the contents reproducing apparatus 23 (operation 61)." *Id.* ¶[0057]. A decoder then "decodes A/V data of the selected movie, and outputs the decoded A/V data to the image display unit 231." *Id.* ¶[0059].

A POSITA would have recognized that Kang's disclosures relating to receiving content from a portable storage medium could easily be incorporated into Kirkland because Kirkland already discloses a portable media that receives data from the server. A POSITA would have been motivated to implement Kang's disclosure of receiving contents data via a portable storage

medium into Kirkland to provide an "off-line manner" of content distribution in addition to network-dependent streaming. Kang ¶[0054]. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via a streaming server) according to known methods (i.e., according to known methods for kiosk and streaming distribution) to yield predictable results (e.g., a media server capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a content distribution system containing a central server) in the same way (e.g., to provide offline content distribution). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., a personal streaming server) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Harper discloses a method to "sell digital content at retail location and transfer the content directly onto a customer's portable device." Harper ¶[0010]. Then, "[w]hen the user returns to his/her home and synchronizes the portable device with the media player on computer 110, the new items acquired from retail store 202 may be detected." *Id.* ¶[0049]. "The content so acquired will then be playable immediately" on the user's computer. *Id.* ¶[0048].

A POSITA would have recognized that Harper's disclosures relating to receiving content from a portable device could easily be incorporated into Kirkland because Kirkland already

discloses a portable media that receives data from the server. A POSITA would have been motivated to implement Harper's disclosure of receiving contents data via a portable device into Kirkland to enable offline content distribution in addition to network-dependent streaming. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via a streaming server) according to known methods (i.e., according to known methods for kiosk and streaming distribution) to yield predictable results (e.g., a media server capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a content distribution system containing a central server) in the same way (e.g., to provide offline content distribution). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., a personal streaming server) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Butler discloses a "digital watermark" to be applied to contents distributed, for example, via a kiosk. Butler ¶[0020]. The digital watermark may comprise "information about the user (whether a purchaser, recipient, distributor, etc.) of the digital content." *Id.* ¶[0034]. The content and watermark may be "downloaded to a portable device such as a portable music player or a portable storage device." *Id.* ¶[0117]. The content may then be "copied from the portable storage device to the user's personal computer or other electronic device(s) as desired." *Id.*

A POSITA would have recognized that Butler's disclosures relating to receiving content and a watermark with user information from a portable device could easily be incorporated into Kirkland because Kirkland already discloses a portable media that receives data from the server. A POSITA would have been motivated to implement Butler's disclosure of receiving contents data and a watermark via a portable device into Kirkland to enable offline content distribution in addition to network-dependent streaming and to fulfill Kirkland's goal of limiting distribution to authorized users. *See* Kirkland ¶[0013]. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via a streaming server) according to known methods (i.e., according to known methods for kiosk and streaming distribution, including watermarks) to yield predictable results (e.g., a media server capable of both online and offline content distribution with the security features of a watermark). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution of watermarked content) to improve similar devices or methods (e.g., a content distribution system containing a central server) in the same way (e.g., to provide secure offline content distribution). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of watermarked content) for use in another device in the same field of endeavor (e.g., a personal streaming server) due to design incentives or other market forces (e.g., the need to provide secure offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Rae discloses "[s]ystems and methods for over-encrypting symmetrically pre-encrypted content for off-line delivery to playback devices using portable media drives." Rae, 1:66-2:2. Rae discloses that distribution may be via a "kiosk configured to receive a portable media drive." *Id.*, 2:59-67. Rae discloses an encryption system that enables a "playback device" with the proper permissions to enable "playback of the symmetrically encrypted content." *Id.*, 2:59-3:18.

A POSITA would have recognized that Rae's disclosures relating to receiving content from a portable media drive could easily be incorporated into Kirkland because Kirkland already discloses a portable media that receives data from the server. A POSITA would have been motivated to implement Rae's disclosure of receiving contents data via a portable storage medium into Kirkland to "overcome bandwidth limitations imposed by existing network infrastructure." Rae, 1:18-33. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via a streaming server) according to known methods (i.e., according to known methods for kiosk and streaming distribution) to yield predictable results (e.g., a media server capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a content distribution system containing a central server) in the same way (e.g., to provide offline content distribution). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., a personal streaming server) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet).

A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Ayers discloses "a network of multimedia distribution kiosks for downloading and uploading multimedia data." Ayers ¶[0020]. Content present on a kiosk can be "downloaded immediately" by the user. *Id.* ¶[0046]. Furthermore, "media may be transferred, e.g., to a home system from a mobile system, so that a user can finish using the media." *Id.* ¶[0020].

A POSITA would have recognized that Ayers' disclosures relating to receiving content from a mobile system at a home system could easily be incorporated into Kirkland because Kirkland already discloses a portable media that receives data from the server. A POSITA would have been motivated to implement Ayers' disclosure of receiving contents data via a mobile system into Kirkland to enable offline content distribution in addition to network-dependent streaming. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via a streaming server) according to known methods (i.e., according to known methods for kiosk and streaming distribution) to yield predictable results (e.g., a media server capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a content distribution system containing a central server) in the same way (e.g., to provide offline content distribution). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., a personal streaming server) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet).

A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Mavrakakis discloses a "media distribution kiosk." Mavrakakis ¶[0001]. Mavrakakis further discloses that the media distribution kiosk may distribute content via a "wireless transceiver that establishes a wireless data connection with the media device." *Id.* ¶[0010].

A POSITA would have recognized that Mavrakakis' disclosure of connecting a kiosk to a media device via a wireless connection could easily be incorporated into Kirkland because Kirkland already discloses a portable media that receives data from the server. A POSITA would have been motivated to implement Mavrakakis' disclosure of using wireless communications to prevent "excessive wear and failure" of the reader/writer in Kirkland. Mavrakakis ¶[0006]. A POSITA would have further been motivated to implement wireless connections in Kirkland, because at the time of the invention it was common to make wireless connections across all fields involving computing devices. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., implementing wireless communication) to improve similar devices or methods (e.g., a kiosk) in the same way (e.g., to reduce wear on physical connectors). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Takano discloses a "portable storage device"/"iVDR" that "can be a semiconductor memory." Takano further discloses that the iVDR may be connected to a television, and may be transferred between different televisions in the user's home. Takano ¶¶[0022], [0030], [0031].

A POSITA would have recognized that Takano's disclosure of enabling a portable storage device to be transferred between playback devices could easily be incorporated into Kirkland

because Kirkland already discloses a portable media. A POSITA would be motivated to implement Takano's disclosure of enabling transfer of the portable media to allow the user to play back content on their playback device of choice. *See* Takano ¶[0004] ("users possess a plurality of terminals and selectively use the appropriate terminal according to the location of its usage or the like."). A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., enabling transfer of portable storage between playback devices) to improve similar devices or methods (e.g., a system for content distribution via a portable storage device) in the same way (e.g., to allow a user to play back content on their playback device of choice). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Moradi discloses "an Intelligent Video Streaming Server" that implements user authentication features. Among the authentication features is a feature "[a]llowing client or franchisee or franchisor to edit and change the password settings by entering the old password, and entering the new password and confirming the new password once more." Moradi ¶[0033].

A POSITA would have recognized that Moradi's password changing feature could easily be incorporated into Kirkland because Kirkland already discloses authentication using a password. A POSITA would have been motivated to implement Moradi's password changing feature to improve the security of the Kirkland system according to well-known methods. A POSITA would have understood the modification or combination to amount to applying a known technique (e.g., allowing a user to change their password) to a known device or method (e.g., a content distribution service) that is ready for improvement to yield predictable results (e.g., increasing security of user accounts). A POSITA would have considered the combination or modification to amount to

choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Van Buskirk discloses "offer[ing] kiosks where people can browse a catalog of movies, choosing to rent/purchase any of them, upon which it downloads straight onto your USB drive (all brands supported)."

A POSITA would have recognized that Van Buskirk's disclosures relating to receiving movies on a USB drive could easily be incorporated into Kirkland because Kirkland already discloses a portable media that receives data from the server. A POSITA would have been motivated to implement Van Buskirk's disclosure of receiving contents data via a USB drive into Kirkland to enable offline content distribution in addition to network-dependent streaming. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via a streaming server) according to known methods (i.e., according to known methods for kiosk and streaming distribution) to yield predictable results (e.g., a media server capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a content distribution system containing a central server) in the same way (e.g., to provide offline content distribution). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., a personal streaming server) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA

would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Blockbuster Express Digital was a kiosk distribution system that offered users movie downloads via SD cards. The user could then play back the movie on mobile phones, TVs, and other devices equipped with SD readers. *See* Dannen.

A POSITA would have recognized that Blockbuster Express Digital's features of receiving movies on an SD card could easily be incorporated into Kirkland because Kirkland already discloses a portable media that receives data from the server. A POSITA would have been motivated to implement Blockbuster Express Digital's disclosure of receiving contents data via an SD card into Kirkland to enable offline content distribution in addition to network-dependent streaming. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via a streaming server) according to known methods (i.e., according to known methods for kiosk and streaming distribution) to yield predictable results (e.g., a media server capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a content distribution system containing a central server) in the same way (e.g., to provide offline content distribution). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., a personal streaming server) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet).

A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Amazon Unbox & VOD were complimentary systems for distributing downloaded and streaming content via the internet. The user could choose to either purchase content for download via Amazon Unbox or purchase content for streaming via Amazon Video on Demand. *See* Amazon 2006; Amazon 2008.

A POSITA would have recognized that Amazon Unbox's feature of downloading a movie for local playback could easily be incorporated into Kirkland because Kirkland already discloses a server capable of content distribution via the internet. A POSITA would have been motivated to implement this local downloading feature into Kirkland to enable offline content distribution in addition to network-dependent streaming, just as Amazon implemented a local downloading feature (Amazon Unbox) alongside a streaming service (Amazon Video on Demand) to enable offline content distribution in addition to network-dependent streaming. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via download with content delivery via a streaming server) according to known methods (i.e., according to known methods for download and streaming distribution) to yield predictable results (e.g., a media server capable of both downloading and streaming content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., content delivery via download) to improve similar devices or methods (e.g., a content distribution system containing a central server) in the same way (e.g., to provide content in a form viewable offline). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., download distribution of content) for use in another device in the

same field of endeavor (e.g., a personal streaming server) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

YouTube was a service for distributing downloaded and streaming content via the internet. The user could choose to either receive content for download or for streaming. YouTube Press Release. Users of the service could be authenticated via a username and password, and could also be authenticated by cookies stored on a computer's hard drive. YouTube Privacy Policy.

A POSITA would have recognized that YouTube's feature of downloading a video for local playback could easily be incorporated into Kirkland because Kirkland already discloses a server capable of content distribution via the internet. A POSITA would have been motivated to implement this local downloading feature into Kirkland to enable offline content distribution in addition to network-dependent streaming, just as YouTube implemented a local downloading feature alongside a streaming service to enable offline content distribution in addition to network-dependent streaming. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via download with content delivery via a streaming server) according to known methods (i.e., according to known methods for download and streaming distribution) to yield predictable results (e.g., a media server capable of both downloading and streaming content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., content delivery via download) to improve similar devices or methods (e.g., a content distribution system containing a central server) in the same way (e.g., to provide content in a form

viewable offline). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., download distribution of content) for use in another device in the same field of endeavor (e.g., a personal streaming server) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(b) Olaiya in view of Raja and/or Kirkland and/or White and/or Hulbert and/or Harper and/or Butler and/or Rae and/or Kang and/or Ayers and/or Takano and/or Moradi and/or Van Buskirk and/or Netflix Streaming and/or YouTube

Olaiya discloses "a system and method for Peer-to-Peer (P2P) media content streaming." Olaiya ¶[0003]. Olaiya discloses that prior to streaming a media content item, the playback device "downloads illustration media content, which is a derivate light-weight version of the original media content." *Id.* This illustration media content may be a "reduced quality version of a media content item." *Id.* ¶[0016]. After downloading the illustration media content, the playback device "initiates streaming." *Id.* ¶[0018]. However, if during streaming "the quality of the network connection falls below a defined threshold, the playback agent switches playback to the illustration media content." *Id.* ¶[0003]. "Thereafter, once the quality of the network connection improves or a new connection is established, the playback agent switches playback back to the streaming original media content." *Id.*

Raja discloses various methods relating to "a remote access server farm." Raja's disclosures are pertinent to numerous client-server applications including "applications for streaming video and/or audio." Raja ¶[0070], Abstract. One of the methods Raja discloses is a "Program Neighborhood application." This application, which may be installed on a client,

"disclose[s] to users of the client nodes 102A, 102N those application programs hosted by the application servers that each client node is authorized to use." To access this application, the user may be required to provide authentication information, including a password and user credentials that may be obtained from, e.g., smart cards. *Id.* ¶¶[0155], [0157]. This authentication may be via a web browser. *Id.* ¶[0163].

A POSITA would have recognized that Raja's user authentication features could easily have been implemented in Olaiya because Olaiya already discloses a central server suitable to perform authentication functions. Olaiya ¶[0015]. A POSITA would have been motivated to implement these authentication features into Olaiya to identify the users that wish to gain access to Olaiya's Peer-to-Peer network. Identifying users in a Peer-to-Peer network has several benefits well known to a POSITA, including enabling commercial transactions, limiting access to authorized users, and allowing the monitor and control of "free-riders," a well-known challenge in Peer-to-Peer networks. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., user authentication) to improve similar devices or methods (e.g., to improve a Peer-to-Peer network) in the same way (e.g., to allow the network to control access to hosted content). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., user authentication) for use in another device in the same field of endeavor (e.g., a Peer-to-Peer network) due to design incentives or other market forces (e.g., to allow the network to control access to hosted content). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kirkland discloses an "on-demand media server device." Kirkland ¶[0012]. Kirkland discloses that this server includes "a web server" that makes media "available via the internet." *Id.* The server also "includes security mechanisms that allow a user to establish a private server that only the user may communicate with and gain access to the user's media library." *Id.* ¶[0013]. One security mechanism that the server may be equipped with is "a smart card, or other type of removable media, reader/writer" into which the user "may insert the smart card or removable media." *Id.* ¶[0014]. The server then transfers "a digital certificate" to the removable media. *Id.* Thereafter "[t]he smart card or removable medium is required for a remotely located device to gain access to the user's personal media library." *Id.* ¶[0016].

A POSITA would have recognized that Kirkland's user authentication features, including its authentication features utilizing a removable media, could easily have been implemented in Olaiya because Olaiya already discloses a central server suitable to perform authentication functions. Olaiya ¶[0015]. A POSITA would have been motivated to implement these authentication features into Olaiya to identify the users that wish to gain access to Olaiya's Peer-to-Peer network. Identifying users in a Peer-to-Peer network has several benefits well known to a POSITA, including enabling commercial transactions, limiting access to authorized users, and allowing the monitor and control of "free-riders," a well-known challenge in Peer-to-Peer networks. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., user authentication, including via a removable media) to improve similar devices or methods (e.g., to improve a Peer-to-Peer network) in the same way (e.g., to allow the network to control access to hosted content). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., user authentication) for use in another device in the same field of endeavor (e.g., a

Peer-to-Peer network) due to design incentives or other market forces (e.g., to allow the network to control access to hosted content). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

White discloses "improved systems and techniques for delivering DRM protected content to consumers separately from the DRM information and other data needed for playing the content." White ¶[0005]. In one embodiment, a "kiosk" allows the user to "insert a media device." *Id.* ¶[0016]. The kiosk then "stores the DRM information in a secure area of the removable media device 143." *Id.* The user may also receive content from a kiosk "recorded on an appropriate medium and delivered to the user." *Id.* ¶[0020]. Alternatively, the content may be "stream[ed] to a user's set top box" or "computer." *Id.* ¶[0030].

A POSITA would have recognized that White's DRM and content delivery features via a kiosk, could easily have been implemented in Olaiya because Olaiya already discloses a central server suitable to deliver content and perform authentication functions. Olaiya ¶¶[0015]-[0016]. A POSITA would have been motivated to implement these features into Olaiya to control the distribution of content on Olaiya's Peer-to-Peer network and to deliver content in an offline format to "alleviate[] interruptions in playback resulting from an unstable network." Olaiya ¶[0002]. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., DRM and kiosk delivery) to improve similar devices or methods (e.g., to improve a Peer-to-Peer network) in the same way (e.g., to control distribution of content and enable offline playback). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., DRM and kiosk delivery) for use in another device in the same field of endeavor (e.g., a Peer-to-Peer network) due

to design incentives or other market forces (e.g., to control distribution of content and enable offline playback). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hulbert discloses a "USB autorun device." Hulbert, Abstract. When the device is connected to a computer it may "automatically caus[e] content to be accessed or a task to be initiated." *Id.* In one application, the device may "be applied as a portable web-mail key, used to access a user's web-mail on any internet connected computer." *Id.*, 29:29-30:3. This would involve the device storing "A unique user ID and password." *Id.* In related applications, the device may be "used to listen to live streamed radio on any internet connected computer" or "provide access to a private website e.g. a private club or viewing video." *Id.*, 36:3-9, 41:18-42:25.

A POSITA would have recognized that Hulbert's user authentication features, including its authentication features utilizing a USB device, could easily have been implemented in Olaiya because Olaiya already discloses a central server suitable to perform authentication functions. Olaiya ¶[0015]. A POSITA would have been motivated to implement these authentication features into Olaiya to identify the users that wish to gain access to Olaiya's Peer-to-Peer network. Identifying users in a Peer-to-Peer network has several benefits well known to a POSITA, including enabling commercial transactions, limiting access to authorized users, and allowing the monitor and control of "free-riders," a well-known challenge in Peer-to-Peer networks. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., user authentication, including via a removable media) to improve similar devices or methods (e.g., to improve a Peer-to-Peer network) in the same way (e.g., to allow the network to control access to hosted content). As another example, a POSITA would have considered the combination

or modification to amount to using known work in one field of endeavor (e.g., user authentication) for use in another device in the same field of endeavor (e.g., a Peer-to-Peer network) due to design incentives or other market forces (e.g., to allow the network to control access to hosted content). As another example, a POSITA would have understood the modification or combination to amount to applying an express teaching, suggestion, or motivation in the prior art for their combination (e.g., Hulbert's teaching that a USB autorun device is suitable to "provide access to a private website e.g. a private club or viewing video"). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Harper discloses a method to "sell digital content at retail location and transfer the content directly onto a customer's portable device." Harper ¶[0010]. Then, "[w]hen the user returns to his/her home and synchronizes the portable device with the media player on computer 110, the new items acquired from retail store 202 may be detected." *Id.* ¶[0049]. "The content so acquired will then be playable immediately" on the user's computer. *Id.* ¶[0048].

A POSITA would have recognized that Harper's disclosures relating to receiving content from a portable device could easily be incorporated into Olaiya because Olaiya already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Harper's disclosure of receiving contents data via a portable device into Olaiya to enable offline content distribution in addition to network-dependent streaming. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via a streaming server) according to known methods (i.e., according to known methods for kiosk and streaming distribution) to yield predictable results (e.g., a media distribution service capable of both online

and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a content distribution system containing a central server) in the same way (e.g., to provide offline content distribution). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., a Peer-to-Peer streaming service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Butler discloses a "digital watermark" to be applied to contents distributed, for example, via a kiosk. Butler ¶[0020]. The digital watermark may comprise "information about the user (whether a purchaser, recipient, distributor, etc.) of the digital content." *Id.* ¶[0034]. The content and watermark may be "downloaded to a portable device such as a portable music player or a portable storage device." *Id.* ¶[0117]. The content may then be "copied from the portable storage device to the user's personal computer or other electronic device(s) as desired." *Id.*

A POSITA would have recognized that Butler's disclosures relating to receiving watermarked content from a portable device could easily be incorporated into Olaiya because Olaiya already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Butler's disclosure of receiving watermarked contents data via a portable device into Olaiya to enable offline content distribution in addition to network-dependent streaming, while also controlling the distribution of the content. A POSITA

would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via a streaming server) according to known methods (i.e., according to known methods for kiosk and streaming distribution and for watermarking content) to yield predictable results (e.g., a media distribution service capable of both online and secure offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution of watermarked content) to improve similar devices or methods (e.g., a content distribution system containing a central server) in the same way (e.g., to provide secure offline content distribution). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., a Peer-to-Peer streaming service) due to design incentives or other market forces (e.g., the need to provide secure offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Rae discloses "[s]ystems and methods for over-encrypting symmetrically pre-encrypted content for off-line delivery to playback devices using portable media drives." Rae, 1:66-2:2. Rae discloses that distribution may be via a "kiosk configured to receive a portable media drive." *Id.*, 2:59-67. Rae discloses an encryption system that enables a "playback device" with the proper permissions to enable "playback of the symmetrically encrypted content." *Id.*, 2:59-3:18.

A POSITA would have recognized that Rae's disclosures relating to receiving content from a portable media drive could easily be incorporated into Olaiya because Olaiya already discloses a content distribution network with multiple distribution points. A POSITA would have been

motivated to implement Rae's disclosure of receiving contents data via a portable media drive into Olaiya to "overcome bandwidth limitations imposed by existing network infrastructure." Rae, 1:18-33. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via a streaming server) according to known methods (i.e., according to known methods for kiosk and streaming distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a content distribution system containing a central server) in the same way (e.g., to provide offline content distribution). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., a Peer-to-Peer streaming service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kang discloses a "kiosk" that is "a terminal of a contents distribution system installed in public places." Kang ¶[0043]. The kiosk of Kang "may receive contents data from the contents providing server 21, and transmit the contents data to the portable storage medium 24 that is inserted or connected to or communicating with the kiosk 25." *Id.* Then, "the portable storage medium 24 including data related to movie reproduction may be inserted to the contents

reproducing apparatus 23 (operation 61)." *Id.* ¶[0057]. A decoder then "decodes A/V data of the selected movie, and outputs the decoded A/V data to the image display unit 231." *Id.* ¶[0059].

A POSITA would have recognized that Kang's disclosures relating to receiving content from a portable storage medium could easily be incorporated into Olaiya because Olaiya already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Kang's disclosure of receiving contents data via a portable storage medium into Olaiya to provide an "off-line manner" of content distribution in addition to network-dependent streaming. Kang ¶[0054]. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via a streaming server) according to known methods (i.e., according to known methods for kiosk and streaming distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a content distribution system containing a central server) in the same way (e.g., to provide offline content distribution). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., a Peer-to-Peer streaming service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Ayers discloses "a network of multimedia distribution kiosks for downloading and uploading multimedia data." Ayers ¶[0020]. Content present on a kiosk can be "downloaded immediately" by the user. *Id.* ¶[0046]. Furthermore, "media may be transferred, e.g., to a home system from a mobile system, so that a user can finish using the media. *Id.* ¶[0020].

A POSITA would have recognized that Ayers' disclosures relating to receiving content from a mobile system could easily be incorporated into Olaiya because Olaiya already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Ayers' disclosure of receiving contents data via a mobile system into Olaiya to enable offline content distribution in addition to network-dependent streaming. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via a streaming server) according to known methods (i.e., according to known methods for kiosk and streaming distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a content distribution system containing a central server) in the same way (e.g., to provide offline content distribution). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., a Peer-to-Peer streaming service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to

choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Takano discloses a "portable storage device"/"iVDR" that "can be a semiconductor memory". Takano further discloses that the iVDR may be connected to a television, and may be transferred between different televisions in the user's home. Takano ¶¶[0022], [0030], [0031].

A POSITA would have recognized that Takano's disclosure of enabling a portable storage device to be transferred between playback devices could easily be incorporated into Olaiya because Olaiya already discloses a removable memory unit. A POSITA would be motivated to implement Takano's disclosure of enabling transfer of the removable memory unit to allow the user to play back content on their playback device of choice. *See* Takano ¶[0004] ("users possess a plurality of terminals and selectively use the appropriate terminal according to the location of its usage or the like."). A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., enabling transfer of portable storage between playback devices) to improve similar devices or methods (e.g., a system for content distribution using a removable storage device) in the same way (e.g., to allow a user to play back content on their playback device of choice). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Van Buskirk discloses "offer[ing] kiosks where people can browse a catalog of movies, choosing to rent/purchase any of them, upon which it downloads straight onto your USB drive (all brands supported)."

A POSITA would have recognized that Van Buskirk's disclosures relating to receiving movies on a USB drive could easily be incorporated into Olaiya because Olaiya already discloses

a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Van Buskirk's disclosure of receiving contents data via a USB drive into Olaiya to enable offline content distribution in addition to network-dependent streaming. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via a streaming service) according to known methods (i.e., according to known methods for kiosk and streaming distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a content distribution system containing a central server) in the same way (e.g., to provide offline content distribution). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., a Peer-to-Peer streaming service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Netflix Streaming was a service for streaming content via the internet. Users of the service were authenticated via a username and password, and could also be authenticated by cookies stored on a computer's hard drive.

A POSITA would have recognized that Netflix Streaming's user authentication features could easily have been implemented in Olaiya because Olaiya already discloses a central server

suitable to perform authentication functions. Olaiya ¶[0015]. A POSITA would have been motivated to implement these authentication features into Olaiya to identify the users that wish to gain access to Olaiya's Peer-to-Peer network. Identifying users in a Peer-to-Peer network has several benefits well known to a POSITA, including enabling commercial transactions, limiting access to authorized users, and allowing the monitor and control of "free-riders," a well-known challenge in Peer-to-Peer networks. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., user authentication) to improve similar devices or methods (e.g., to improve a Peer-to-Peer network) in the same way (e.g., to allow the network to control access to hosted content). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., user authentication) for use in another device in the same field of endeavor (e.g., a Peer-to-Peer network) due to design incentives or other market forces (e.g., to allow the network to control access to hosted content). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

YouTube was a service for distributing downloaded and streaming content via the internet. The user could choose to either receive content for download or for streaming. YouTube Press Release. Users of the service could be authenticated via a username and password, and could also be authenticated by cookies stored on a computer's hard drive. YouTube Privacy Policy.

A POSITA would have recognized that YouTube's user authentication features could easily have been implemented in Olaiya because Olaiya already discloses a central server suitable to perform authentication functions. Olaiya ¶[0015]. A POSITA would have been motivated to implement these authentication features into Olaiya to identify the users that wish to gain access

to Olaiya's Peer-to-Peer network. Identifying users in a Peer-to-Peer network has several benefits well known to a POSITA, including enabling commercial transactions, limiting access to authorized users, and allowing the monitor and control of "free-riders," a well-known challenge in Peer-to-Peer networks. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., user authentication) to improve similar devices or methods (e.g., to improve a Peer-to-Peer network) in the same way (e.g., to allow the network to control access to hosted content). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., user authentication) for use in another device in the same field of endeavor (e.g., a Peer-to-Peer network) due to design incentives or other market forces (e.g., to allow the network to control access to hosted content). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Moradi discloses "an Intelligent Video Streaming Server" that implements user authentication features. Among the authentication features is a feature "[a]llowing client or franchisee or franchisor to edit and change the password settings by entering the old password, and entering the new password and confirming the new password once more." Moradi ¶[0033].

A POSITA would have recognized that Moradi's password changing feature could easily be incorporated into Olaiya in combination with Raja, Kirkland, Hulbert, Netflix Streaming, and/or YouTube because these combinations already disclose authentication using a password. A POSITA would have been motivated to implement Moradi's password changing feature to improve the security of the combined system according to well-known methods. A POSITA would have understood the modification or combination to amount to applying a known technique (e.g.,

allowing a user to change their password) to a known device or method (e.g., a content distribution service) that is ready for improvement to yield predictable results (e.g., increasing security of user accounts). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(c) Kang in view of Kirkland and/or White and/or Hulbert and/or Shinoda and/or Olaiya and/or Hasegawa and/or Mavrakakis and/or Takano and/or Moradi

Kang discloses a "kiosk" that is "a terminal of a contents distribution system installed in public places." Kang ¶[0043]. The kiosk of Kang "may receive contents data from the contents providing server 21, and transmit the contents data to the portable storage medium 24 that is inserted or connected to or communicating with the kiosk 25." *Id.* Then, "the portable storage medium 24 including data related to movie reproduction may be inserted to the contents reproducing apparatus 23 (operation 61)." *Id.* ¶[0057]. A decoder then "decodes A/V data of the selected movie, and outputs the decoded A/V data to the image display unit 231." *Id.* ¶[0059]. Kang also discloses that content distribution may be performed "via a wired/wireless network." *Id.* ¶[0030].

Kirkland discloses an "on-demand media server device." Kirkland ¶[0012]. Kirkland discloses that this server includes "a web server" that makes media "available via the internet." *Id.* The server also "includes security mechanisms that allow a user to establish a private server that only the user may communicate with and gain access to the user's media library." *Id.* ¶[0013]. One security mechanism that the server may be equipped with is "a smart card, or other type of removable media, reader/writer" into which the user "may insert the smart card or removable media." *Id.* ¶[0014]. The server then transfers "a digital certificate" to the removable media. *Id.*

Thereafter "[t]he smart card or removable medium is required for a remotely located device to gain access to the user's personal media library." *Id.* ¶[0016].

A POSITA would have recognized that Kirkland's media streaming features, including its authentication features utilizing a removable media, could easily have been implemented in Kang because Kang already discloses a kiosk for writing to a removable media. Kang ¶[0043]. A POSITA would have been motivated to implement these streaming and authentication features into Kang to provide a more convenient way for users to access content while maintaining security. In fact, Kang already contemplates "a contents purchase system via a wired/wireless network." *Id.* ¶[0030]. A POSITA would have understood the modification or combination to amount to applying an express teaching, suggestion, or motivation in the prior art for their combination (e.g., Kang's teaching of distributing content via a network). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content streaming utilizing a removable media for authentication) to a known device or method (e.g., a kiosk delivery system) that is ready for improvement to yield predictable results (e.g., a media distribution service capable of both secure online and offline content distribution). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

White discloses "improved systems and techniques for delivering DRM protected content to consumers separately from the DRM information and other data needed for playing the content." White ¶[0005]. In one embodiment, a "kiosk" allows the user to "insert a media device." *Id.* ¶[0016]. The kiosk then "stores the DRM information in a secure area of the removable media device 143." *Id.* The user may also receive content from a kiosk "recorded on an appropriate

medium and delivered to the user." *Id.* ¶[0020]. Alternatively, the content may be "stream[ed] to a user's set top box" or "computer." *Id.* ¶[0030].

A POSITA would have recognized that White's DRM and streaming features utilizing a removable media could easily have been implemented in Kang because Kang already discloses a kiosk for writing to a removable media. Kang ¶[0043]. A POSITA would have been motivated to implement these DRM and streaming features into Kang to provide a more convenient way for users to access content while maintaining security. In fact, Kang already contemplates "a contents purchase system via a wired/wireless network." *Id.* ¶[0030]. A POSITA would have understood the modification or combination to amount to applying an express teaching, suggestion, or motivation in the prior art for their combination (e.g., Kang's teaching of distributing content via a network). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content streaming utilizing a removable media for authentication) to a known device or method (e.g., a kiosk delivery system) that is ready for improvement to yield predictable results (e.g., a media distribution service capable of both secure online and offline content distribution). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hulbert discloses a "USB autorun device." Hulbert, Abstract. When the device is connected to a computer it may "automatically caus[e] content to be accessed or a task to be initiated." *Id.* In one application, the device may "be applied as a portable web-mail key, used to access a user's web-mail on any internet connected computer." *Id.*, 29:29-30:3. This would involve the device storing "A unique user ID and password." *Id.* In related applications, the device may be "used to

listen to live streamed radio on any internet connected computer" or "provide access to a private website e.g. a private club or viewing video." *Id.*, 36:3-9, 41:18-42:25.

A POSITA would have recognized that Hulbert's user authentication and streaming features via a USB device could easily have been implemented in Kang because Kang already discloses a kiosk for writing to a removable media. Kang ¶[0043]. A POSITA would have been motivated to implement these user authentication and streaming features into Kang to provide a more convenient way for users to access content while maintaining security. In fact, Kang already contemplates "a contents purchase system via a wired/wireless network." *Id.* ¶[0030]. A POSITA would have understood the modification or combination to amount to applying an express teaching, suggestion, or motivation in the prior art for their combination (e.g., Kang's teaching of distributing content via a network). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content streaming utilizing a removable media for authentication) to a known device or method (e.g., a kiosk delivery system) that is ready for improvement to yield predictable results (e.g., a media distribution service capable of both secure online and offline content distribution). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Shinoda discloses a method that "enables playback of content of high quality, regardless of the storage capacity of the recording medium, on the player device side." Shinoda ¶[0012]. Shinoda discloses a "mobile entertainment device" with both an "optical disc drive" and a "memory card interface." *Id.* ¶¶[0023], [0026], [0027]. When the device is connected to a network, "video content is supplied from the distribution server." *Id.* ¶[0052]. But Shinoda recognizes that "it is necessary to take into account possible inability to obtain an adequate data transfer rate, and

thus discloses a "detection operation" to determine a "communication rate threshold value." *Id.* ¶¶[0068], [0069], [0071]. When the communication rate falls below the threshold, a "playback switching operation" is performed to "carry out switching from playing back content from the network 4 to playing back content from the optical disc 100." *Id.* ¶[0075]. This may comprise switching between "MPEG-4 video from the optical disk" and "MPEG-2 HD video from the network." *Id.*

A POSITA would have recognized that Shinoda's disclosure relating to switching playback between local and streaming content could easily be incorporated into Kang because Kang discloses that content may be distributed both via a kiosk and via a network. Kang ¶¶[0030], [0043]. POSITA would have been motivated to implement the playback switching feature of Shinoda in Kang to account for "possible inability to obtain an adequate data transfer rate depending on, for example, the state of the connected network." Shinoda ¶[0068]. As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., playback switching between local and streaming content) to improve similar devices or methods (e.g., to improve a similar content distribution service capable of kiosk and network distribution) in the same way (e.g., to enable the playback device to continue playback in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Olaiya discloses "a system and method for Peer-to-Peer (P2P) media content streaming." Olaiya ¶[0003]. Olaiya discloses that prior to streaming a media content item, the playback device "downloads illustration media content, which is a derivate light-weight version of the original media content." *Id.* This illustration media content may be a "reduced quality version of a media

content item." *Id.* ¶[0016]. After downloading the illustration media content, the playback device "initiates streaming." *Id.* ¶[0018]. However, if during streaming "the quality of the network connection falls below a defined threshold, the playback agent switches playback to the illustration media content." *Id.* ¶[0003]. "Thereafter, once the quality of the network connection improves or a new connection is established, the playback agent switches playback back to the streaming original media content." *Id.*

A POSITA would have recognized that Olaiya's disclosure relating to switching playback between local and streaming content could easily be incorporated into Kang because Kang discloses that content may be distributed both via a kiosk and via a network. Kang ¶¶[0030], [0043]. POSITA would have been motivated to implement the playback switching feature of Olaiya in Kang to "alleviate[] interruptions in playback resulting from an unstable network." Olaiya ¶[0002]. As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., playback switching between local and streaming content) to improve similar devices or methods (e.g., to improve a similar content distribution service capable of kiosk and network distribution) in the same way (e.g., to enable the playback device to continue playback in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hasegawa discloses a method for "prevention of an interruption in playback of content, even if there is a temporary reduction in the communication circuit speed of the network." Hasegawa ¶[0024]. Hasegawa discloses a playback device capable of playing back DVDs and Blu-ray disks. *Id.* ¶[0028]. When a user inserts a DVD (containing SD video and audio content), the player may instead stream HD content from a server. *Id.* ¶¶[0049], [0054]. Then, "if there is a

temporary reduction in the communication circuit speed of the network," the player switches play back to the "SD data of the DVD." *Id.* ¶[0068].

A POSITA would have recognized that Hasegawa's disclosure relating to switching playback between local and streaming content could easily be incorporated into Kang because Kang discloses that content may be distributed both via a kiosk and via a network. Kang ¶¶[0030], [0043]. POSITA would have been motivated to implement the playback switching feature of Hasegawa in Kang to account for "temporary reductions in communication circuit speeds of networks, including the Internet, due to a variety of environmental factors." Hasegawa ¶[0005]. A POSITA would have understood that, as of the priority date of the '803 Patent, network speed was an important limitation on streaming media. This was especially so in mobile networks, which Kirkland discloses may be used by the playback device. Kirkland ¶[0076]. Hasegawa's local content and playback switching would mitigate this well-known drawback to Kirkland's streaming server. As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., playback switching between local and streaming content) to improve similar devices or methods (e.g., to improve a similar content distribution service capable of kiosk and network distribution) in the same way (e.g., to enable the playback device to continue playback in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Mavrakakis discloses a "media distribution kiosk." Mavrakakis ¶[0001]. Mavrakakis further discloses that the media distribution kiosk may distribute content via a "wireless transceiver that establishes a wireless data connection with the media device." *Id.* ¶[0010].

A POSITA would have recognized that Mavrakakis' disclosure of connecting a kiosk to a media device via a wireless connection could easily be incorporated into Kang because Kang already discloses a kiosk that transmits content to a portable storage medium. A POSITA would have been motivated to implement Mavrakakis' disclosure of using wireless communications to prevent "excessive wear and failure" of the "card reader" or similar components in Kang. Mavrakakis ¶[0006]; Kang ¶[0043]. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., implementing wireless communication) to improve similar devices or methods (e.g., a kiosk) in the same way (e.g., to reduce wear on physical connectors). As another example, a POSITA would have understood the modification or combination to amount to applying an express teaching, suggestion, or motivation in the prior art for their combination (e.g., Kang's teaching that a portable storage medium may be "inserted or connected to or communicating with the kiosk 25"). *See* Kang ¶[0043]. A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Takano discloses a "portable storage device"/"iVDR" that "can be a semiconductor memory". Takano further discloses that the iVDR may be connected to a television, and may be transferred between different televisions in the user's home. Takano¶¶[0022], [0030], [0031].

A POSITA would have recognized that Takano's disclosure of enabling a portable storage device to be transferred between playback devices could easily be incorporated into Kang because Kang already discloses a portable storage medium. A POSITA would be motivated to implement Takano's disclosure of enabling transfer of the portable storage medium to allow the user to play back content on their playback device of choice. *See* Takano ¶[0004] ("users possess a plurality of terminals and selectively use the appropriate terminal according to the location of its usage or the

like."). A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., enabling transfer of portable storage between playback devices) to improve similar devices or methods (e.g., a system for content distribution via a portable storage device) in the same way (e.g., to allow a user to play back content on their playback device of choice). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Moradi discloses "an Intelligent Video Streaming Server" that implements user authentication features. Among the authentication features is a feature "[a]llowing client or franchisee or franchisor to edit and change the password settings by entering the old password, and entering the new password and confirming the new password once more." Moradi ¶[0033].

A POSITA would have recognized that Moradi's password changing feature could easily be incorporated into Kang in combination with Kirkland and/or Hulbert because the combined system already discloses authentication using a password. A POSITA would have been motivated to implement Moradi's password changing feature to improve the security of the combined system according to well-known methods. A POSITA would have understood the modification or combination to amount to applying a known technique (e.g., allowing a user to change their password) to a known device or method (e.g., a content distribution service) that is ready for improvement to yield predictable results (e.g., increasing security of user accounts). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(d) Amazon Unbox & VOD in view of Kirkland and/or White and/or Hulbert and/or Olaiya and/or Hasegawa and/or Shinoda and/or Harper and/or Butler and/or Rae and/or Kang and/or Ayers and/or Takano and/or Moradi and/or Van Buskirk and/or Blockbuster Express Digital

Amazon Unbox & VOD were complimentary systems for distributing downloaded and streaming content via the internet. The user could choose to either purchase content for download via Amazon Unbox or purchase content for streaming via Amazon Video on Demand. *See* Amazon 2006; Amazon 2008.

Kirkland discloses an "on-demand media server device." Kirkland ¶[0012]. Kirkland discloses that this server includes "a web server" that makes media "available via the internet." *Id.* The server also "includes security mechanisms that allow a user to establish a private server that only the user may communicate with and gain access to the user's media library." *Id.* ¶[0013]. One security mechanism that the server may be equipped with is "a smart card, or other type of removable media, reader/writer" into which the user "may insert the smart card or removable media." *Id.* ¶[0014]. The server then transfers "a digital certificate" to the removable media. *Id.* Thereafter "[t]he smart card or removable medium is required for a remotely located device to gain access to the user's personal media library." *Id.* ¶[0016].

A POSITA would have recognized that Kirkland's user authentication features, including its authentication features utilizing a removable media, could easily have been implemented in Amazon Unbox & VOD because Amazon Unbox & VOD already disclose a web service requiring user authentication. A POSITA would have been motivated to implement these authentication features into Amazon Unbox & VOD to identify the users that wish to gain access to Amazon Unbox & VOD in a manner that is convenient for users. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., user authentication, including via a removable media) to improve similar devices or methods (e.g., to improve an internet streaming service) in the same way (e.g., to allow the network to control access to hosted content and allow users to authenticate conveniently). As another example, a POSITA would have

considered the combination or modification to amount to using known work in one field of endeavor (e.g., user authentication) for use in another device in the same field of endeavor (e.g., an internet streaming service) due to design incentives or other market forces (e.g., to allow the network to control access to hosted content and allow users to authenticate conveniently). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

White discloses "improved systems and techniques for delivering DRM protected content to consumers separately from the DRM information and other data needed for playing the content." White ¶[0005]. In one embodiment, a "kiosk" allows the user to "insert a media device." *Id.* ¶[0016]. The kiosk then "stores the DRM information in a secure area of the removable media device 143." *Id.* The user may also receive content from a kiosk "recorded on an appropriate medium and delivered to the user." *Id.* ¶[0020]. Alternatively, the content may be "stream[ed] to a user's set top box" or "computer." *Id.* ¶[0030].

A POSITA would have recognized that White's DRM features, including its DRM features utilizing a removable media, could easily have been implemented in Amazon Unbox & VOD because Amazon Unbox & VOD already disclose a web service requiring user authentication. A POSITA would have been motivated to implement these authentication features into Amazon Unbox & VOD to ensure authorized users only gain access to the content they are entitled to view through Amazon Unbox & VOD in a manner that is convenient for users. *See* White ¶[0009]. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., DRM via a removable media) to improve similar devices or methods (e.g., to improve an internet streaming service) in the same way (e.g., to allow the network to control access to hosted content and allow users to authenticate conveniently). As another example, a POSITA

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Hulbert discloses a "USB autorun device." Hulbert, Abstract. When the device is connected to a computer it may "automatically caus[e] content to be accessed or a task to be initiated." *Id.* In one application, the device may "be applied as a portable web-mail key, used to access a user's web-mail on any internet connected computer." *Id.*, 29:29-30:3. This would involve the device storing "A unique user ID and password." *Id.* In related applications, the device may be "used to listen to live streamed radio on any internet connected computer" or "provide access to a private website e.g. a private club or viewing video." *Id.*, 36:3-9, 41:18-42:25.

A POSITA would have recognized that Hulbert's user authentication features, including its authentication features utilizing a removable media, could easily have been implemented in Amazon Unbox & VOD because Amazon Unbox & VOD already disclose a web service requiring user authentication. A POSITA would have been motivated to implement these authentication features into Amazon Unbox & VOD to control access to Amazon Unbox & VOD "to provide easy access to a site and increase user loyalty." Hulbert, 11:12-15. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., user authentication, including via a removable media) to improve similar devices or methods (e.g., to improve an internet streaming service) in the same way (e.g., to allow the network to control access

to hosted content and allow users to authenticate conveniently). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., user authentication) for use in another device in the same field of endeavor (e.g., an internet streaming service) due to design incentives or other market forces (e.g., to allow the network to control access to hosted content and allow users to authenticate conveniently). As another example, a POSITA would have understood the modification or combination to amount to applying an express teaching, suggestion, or motivation in the prior art for their combination (e.g., Hulbert's teaching that a USB autorun device is suitable to "provide access to a private website e.g. a private club or viewing video"). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Olaiya discloses "a system and method for Peer-to-Peer (P2P) media content streaming." Olaiya ¶[0003]. Olaiya discloses that prior to streaming a media content item, the playback device "downloads illustration media content, which is a derivate light-weight version of the original media content." *Id.* This illustration media content may be a "reduced quality version of a media content item." *Id.* ¶[0016]. After downloading the illustration media content, the playback device "initiates streaming." *Id.* ¶[0018]. However, if during streaming "the quality of the network connection falls below a defined threshold, the playback agent switches playback to the illustration media content." *Id.* ¶[0003]. "Thereafter, once the quality of the network connection improves or a new connection is established, the playback agent switches playback back to the streaming original media content." *Id.*

A POSITA would have recognized that Olaiya's disclosures relating to switching playback between streaming content and illustration media content could easily be incorporated into

Amazon Unbox & VOD as Amazon Unbox & VOD already discloses both local and streaming content. A POSITA would have been motivated to implement Olaiya's playback switching into Amazon Unbox & VOD to "alleviate[] interruptions in playback resulting from an unstable network." Olaiya ¶[0002]. A POSITA would have understood that, as of the priority date of the '803 Patent, network speed was an important limitation on streaming media. Olaiya's playback switching would mitigate this well-known drawback to Amazon Unbox & Amazon Video on Demand's streaming service. A POSITA would have considered the combination to amount to the use of known techniques (e.g., switching playback between streamed and local content) to improve similar devices or methods (e.g., a streaming service) in the same way (e.g., to enable playback to continue in the event of a failed or slow connection). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., switching playback between streamed and local content) to a known device or method (e.g., a streaming service) that is ready for improvement to yield predictable results (e.g., to enable playback to continue in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hasegawa discloses a method for "prevention of an interruption in playback of content, even if there is a temporary reduction in the communication circuit speed of the network." Hasegawa ¶[0024]. Hasegawa discloses a playback device capable of playing back DVDs and Blu-ray disks. *Id.* ¶[0028]. When a user inserts a DVD (containing SD video and audio content), the player may instead stream HD content from a server. *Id.* ¶¶[0049], [0054]. Then, "if there is a temporary reduction in the communication circuit speed of the network," the player switches play back to the "SD data of the DVD." *Id.* ¶[0068].

A POSITA would have recognized that Hasegawa's disclosures relating to switching playback between streaming content and illustration media content could easily be incorporated into Amazon Unbox & VOD as Amazon Unbox & VOD already discloses both local and streaming content. A POSITA would have been motivated to implement Hasegawa's playback switching into Amazon Unbox & VOD to account for "temporary reductions in communication circuit speeds of networks, including the Internet, due to a variety of environmental factors." Hasegawa ¶[0005]. A POSITA would have understood that, as of the priority date of the '803 Patent, network speed was an important limitation on streaming media. This was especially so in mobile networks, which Kirkland discloses may be used by the playback device. Kirkland ¶[0076]. Hasegawa's local content and playback switching would mitigate this well-known drawback to Kirkland's streaming server. A POSITA would have understood that, as of the priority date of the '803 Patent, network speed was an important limitation on streaming media. Hasegawa's playback switching would mitigate this well-known drawback to Amazon Unbox & Amazon Video on Demand's streaming service. A POSITA would have considered the combination to amount to the use of known techniques (e.g., switching playback between streamed and local content) to improve similar devices or methods (e.g., a streaming service) in the same way (e.g., to enable playback to continue in the event of a failed or slow connection). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., switching playback between streamed and local content) to a known device or method (e.g., a streaming service) that is ready for improvement to yield predictable results (e.g., to enable playback to continue in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Shinoda discloses a method that "enables playback of content of high quality, regardless of the storage capacity of the recording medium, on the player device side." Shinoda ¶[0012]. Shinoda discloses a "mobile entertainment device" with both an "optical disc drive" and a "memory card interface." *Id.* ¶¶[0023], [0026], [0027]. When the device is connected to a network, "video content is supplied from the distribution server." *Id.* ¶[0052]. But Shinoda recognizes that "it is necessary to take into account possible inability to obtain an adequate data transfer rate, and thus discloses a "detection operation" to determine a "communication rate threshold value." *Id.* ¶¶[0068], [0069], [0071]. When the communication rate falls below the threshold, a "playback switching operation" is performed to "carry out switching from playing back content from the network 4 to playing back content from the optical disc 100." *Id.* ¶[0075]. This may comprise switching between "MPEG-4 video from the optical disk" and "MPEG-2 HD video from the network." *Id.*

A POSITA would have recognized that Shinoda's disclosures relating to switching playback between streaming content and illustration media content could easily be incorporated into Amazon Unbox & VOD as Amazon Unbox & VOD already discloses both local and streaming content. A POSITA would have been motivated to implement Shinoda's playback switching into Amazon Unbox & VOD to account for "possible inability to obtain an adequate data transfer rate depending on, for example, the state of the connected network." Shinoda ¶[0068]. A POSITA would have understood that, as of the priority date of the '803 Patent, network speed was an important limitation on streaming media. Shinoda's playback switching would mitigate this well-known drawback to Amazon Unbox & Amazon Video on Demand's streaming service. A POSITA would have considered the combination to amount to the use of known techniques (e.g., switching playback between streamed and local content) to improve similar devices or methods (e.g., a

streaming service) in the same way (e.g., to enable playback to continue in the event of a failed or slow connection). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., switching playback between streamed and local content) to a known device or method (e.g., a streaming service) that is ready for improvement to yield predictable results (e.g., to enable playback to continue in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Harper discloses a method to "sell digital content at retail location and transfer the content directly onto a customer's portable device." Harper ¶[0010]. Then, "[w]hen the user returns to his/her home and synchronizes the portable device with the media player on computer 110, the new items acquired from retail store 202 may be detected." *Id.* ¶[0049]. "The content so acquired will then be playable immediately" on the user's computer. *Id.* ¶[0048].

A POSITA would have recognized that Harper's disclosures relating to receiving content from a portable device could easily be incorporated into Amazon Unbox & VOD because Amazon Unbox & VOD already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Harper's disclosure of receiving contents data via a portable device into Amazon Unbox & VOD to enable offline content distribution in addition to network-dependent streaming and downloading. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As

another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Butler discloses a "digital watermark" to be applied to contents distributed, for example, via a kiosk. Butler ¶[0020]. The digital watermark may comprise "information about the user (whether a purchaser, recipient, distributor, etc.) of the digital content." *Id.* ¶[0034]. The content and watermark may be "downloaded to a portable device such as a portable music player or a portable storage device." *Id.* ¶[0117]. The content may then be "copied from the portable storage device to the user's personal computer or other electronic device(s) as desired." *Id.*

A POSITA would have recognized that Butler's disclosures relating to receiving watermarked content from a portable device could easily be incorporated into Amazon Unbox & VOD because Amazon Unbox & VOD already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Butler's disclosure of receiving watermarked contents data via a portable device into Amazon Unbox & VOD to enable secure offline content distribution in addition to network-dependent streaming and downloading. A POSITA would have considered the modification or combination to amount to

combining prior art elements (e.g., combining secure content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution of watermarked content) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional secure offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of watermarked content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide secure offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Rae discloses "[s]ystems and methods for over-encrypting symmetrically pre-encrypted content for off-line delivery to playback devices using portable media drives." Rae, 1:66-2:2. Rae discloses that distribution may be via a "kiosk configured to receive a portable media drive." *Id.*, 2:59-67. Rae discloses an encryption system that enables a "playback device" with the proper permissions to enable "playback of the symmetrically encrypted content." *Id.*, 2:59-3:18.

A POSITA would have recognized that Rae's disclosures relating to receiving content from a portable media drive could easily be incorporated into Amazon Unbox & VOD because Amazon Unbox & VOD already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Rae's disclosure of receiving contents data

via a portable media drive into Amazon Unbox & VOD to "overcome bandwidth limitations imposed by existing network infrastructure." Rae, 1:18-33. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kang discloses a "kiosk" that is "a terminal of a contents distribution system installed in public places." Kang ¶[0043]. The kiosk of Kang "may receive contents data from the contents providing server 21, and transmit the contents data to the portable storage medium 24 that is inserted or connected to or communicating with the kiosk 25." *Id.* Then, "the portable storage medium 24 including data related to movie reproduction may be inserted to the contents reproducing apparatus 23 (operation 61)." *Id.* ¶[0057]. A decoder then "decodes A/V data of the selected movie, and outputs the decoded A/V data to the image display unit 231." *Id.* ¶[0059].

A POSITA would have recognized that Kang's disclosures relating to receiving content from a portable storage medium could easily be incorporated into Amazon Unbox & VOD because Amazon Unbox & VOD already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Kang's disclosure of receiving contents data via a portable storage medium into Amazon Unbox & VOD to provide an "off-line manner" of content distribution in addition to network-dependent streaming or downloading. Kang ¶[0054]. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Ayers discloses "a network of multimedia distribution kiosks for downloading and uploading multimedia data." Ayers ¶[0020]. Content present on a kiosk can be "downloaded

immediately" by the user. *Id.* ¶[0046]. Furthermore, "media may be transferred, e.g., to a home system from a mobile system, so that a user can finish using the media. *Id.* ¶[0020].

A POSITA would have recognized that Ayers' disclosures relating to receiving content from a mobile system could easily be incorporated into Amazon Unbox & VOD because Amazon Unbox & VOD already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Ayers' disclosure of receiving contents data via a mobile system into Amazon Unbox & VOD to enable offline content distribution in addition to network-dependent streaming and downloading. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Takano discloses a "portable storage device"/"iVDR" that "can be a semiconductor memory". Takano further discloses that the iVDR may be connected to a television, and may be transferred between different televisions in the user's home. Takano ¶¶[0022], [0030], [0031].

A POSITA would have recognized that Takano's disclosure of enabling a portable storage device to be transferred between playback devices could easily be incorporated into Amazon Unbox and VOD because Amazon Unbox and Amazon Video already discloses downloading content to a storage medium. A POSITA would be motivated to implement Takano's disclosure of enabling transfer of the storage medium to allow the user to play back content on their playback device of choice. *See* Takano ¶[0004] ("users possess a plurality of terminals and selectively use the appropriate terminal according to the location of its usage or the like."). A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., enabling transfer of portable storage between playback devices) to improve similar devices or methods (e.g., a system for distribution of local content) in the same way (e.g., to allow a user to play back content on their playback device of choice). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Moradi discloses "an Intelligent Video Streaming Server" that implements user authentication features. Among the authentication features is a feature "[a]llowing client or franchisee or franchisor to edit and change the password settings by entering the old password, and entering the new password and confirming the new password once more." Moradi ¶[0033].

A POSITA would have recognized that Moradi's password changing feature could easily be incorporated into Amazon Unbox and VOD because Amazon Unbox and VOD already discloses authentication using a password. A POSITA would have been motivated to implement

Moradi's password changing feature to improve the security of Amazon Unbox and VOD according to well-known methods. A POSITA would have understood the modification or combination to amount to applying a known technique (e.g., allowing a user to change their password) to a known device or method (e.g., a content distribution service) that is ready for improvement to yield predictable results (e.g., increasing security of user accounts). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Van Buskirk discloses "offer[ing] kiosks where people can browse a catalog of movies, choosing to rent/purchase any of them, upon which it downloads straight onto your USB drive (all brands supported)."

A POSITA would have recognized that Van Buskirk's disclosures relating to receiving movies on a USB drive could easily be incorporated into Amazon Unbox & VOD because Amazon Unbox & VOD already discloses a content distribution service with multiple distribution points. A POSITA would have been motivated to implement Van Buskirk's disclosure of receiving contents data via a USB drive into Amazon Unbox & VOD to enable offline content distribution in addition to network-dependent streaming and downloading. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content

distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Blockbuster Express Digital was a kiosk distribution system that offered users movie downloads via SD cards. The user could then play back the movie on mobile phones, TVs, and other devices equipped with SD readers. *See* Dannen

A POSITA would have recognized that Blockbuster Express Digital's features of receiving movies on an SD card could easily be incorporated into Amazon Unbox & VOD because Amazon Unbox & VOD already discloses a content distribution service with multiple distribution points. A POSITA would have been motivated to implement Blockbuster Express Digital's disclosure of receiving contents data via an SD card into Amazon Unbox & VOD to enable offline content distribution in addition to network-dependent streaming and downloading. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline

content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(e) YouTube in view of Kirkland and/or Hulbert and/or Olaiya and/or Hasegawa and/or Shinoda and/or Harper and/or Butler and/or Rae and/or Kang and/or Ayers and/or Takano and/or Moradi and/or Van Buskirk and/or Blockbuster Express Digital

YouTube was a service for distributing downloaded and streaming content via the internet. The user could choose to either receive content for download or for streaming. YouTube Press Release. Users of the service could be authenticated via a username and password, and could also be authenticated by cookies stored on a computer's hard drive. YouTube Privacy Policy.

Kirkland discloses an "on-demand media server device." Kirkland ¶[0012]. Kirkland discloses that this server includes "a web server" that makes media "available via the internet." *Id.* The server also "includes security mechanisms that allow a user to establish a private server that only the user may communicate with and gain access to the user's media library." *Id.* ¶[0013]. One security mechanism that the server may be equipped with is "a smart card, or other type of removable media, reader/writer" into which the user "may insert the smart card or removable media." *Id.* ¶[0014]. The server then transfers "a digital certificate" to the removable media. *Id.* Thereafter "[t]he smart card or removable medium is required for a remotely located device to gain access to the user's personal media library." *Id.* ¶[0016].

A POSITA would have recognized that Kirkland's user authentication features, including its authentication features utilizing a removable media, could easily have been implemented in YouTube because YouTube already discloses a web service with user authentication. A POSITA would have been motivated to implement these authentication features into YouTube to identify the users that wish to gain access to YouTube in a manner that is convenient for users. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., user authentication, including via a removable media) to improve similar devices or methods (e.g., to improve an internet streaming service) in the same way (e.g., to allow the network to control access to hosted content and allow users to authenticate conveniently). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., user authentication) for use in another device in the same field of endeavor (e.g., an internet streaming service) due to design incentives or other market forces (e.g., to allow the network to control access to hosted content and allow users to authenticate conveniently). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hulbert discloses a "USB autorun device." Hulbert, Abstract. When the device is connected to a computer it may "automatically caus[e] content to be accessed or a task to be initiated." *Id.* In one application, the device may "be applied as a portable web-mail key, used to access a user's web-mail on any internet connected computer." *Id.*, 29:29-30:3. This would involve the device storing "A unique user ID and password." *Id.* In related applications, the device may be "used to listen to live streamed radio on any internet connected computer" or "provide access to a private website e.g. a private club or viewing video." *Id.*, 36:3-9, 41:18-42:25.

A POSITA would have recognized that Hulbert's user authentication features, including its authentication features utilizing a removable media, could easily have been implemented in YouTube because YouTube already disclose a web service with user authentication. A POSITA would have been motivated to implement these authentication features into YouTube to control access to YouTube "to provide easy access to a site and increase user loyalty." Hulbert, 11:12-15. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., user authentication, including via a removable media) to improve similar devices or methods (e.g., to improve an internet streaming service) in the same way (e.g., to allow the network to control access to hosted content and allow users to authenticate conveniently). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., user authentication) for use in another device in the same field of endeavor (e.g., an internet streaming service) due to design incentives or other market forces (e.g., to allow the network to control access to hosted content and allow users to authenticate conveniently). As another example, a POSITA would have understood the modification or combination to amount to applying an express teaching, suggestion, or motivation in the prior art for their combination (e.g., Hulbert's teaching that a USB autorun device is suitable to "provide access to a private website e.g. a private club or viewing video"). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Olaiya discloses "a system and method for Peer-to-Peer (P2P) media content streaming." Olaiya ¶[0003]. Olaiya discloses that prior to streaming a media content item, the playback device "downloads illustration media content, which is a derivate light-weight version of the original media content." *Id.* This illustration media content may be a "reduced quality version of a media

content item." *Id.* ¶[0016]. After downloading the illustration media content, the playback device "initiates streaming." *Id.* ¶[0018]. However, if during streaming "the quality of the network connection falls below a defined threshold, the playback agent switches playback to the illustration media content." *Id.* ¶[0003]. "Thereafter, once the quality of the network connection improves or a new connection is established, the playback agent switches playback back to the streaming original media content." *Id.*

A POSITA would have recognized that Olaiya's disclosures relating to switching playback between streaming content and illustration media content could easily be incorporated into YouTube as YouTube already discloses both local and streaming content. A POSITA would have been motivated to implement Olaiya's playback switching into YouTube to "alleviate[] interruptions in playback resulting from an unstable network." Olaiya ¶[0002]. A POSITA would have understood that, as of the priority date of the '803 Patent, network speed was an important limitation on streaming media. Olaiya's playback switching would mitigate this well-known drawback to YouTube's streaming service. A POSITA would have considered the combination to amount to the use of known techniques (e.g., switching playback between streamed and local content) to improve similar devices or methods (e.g., a streaming service) in the same way (e.g., to enable playback to continue in the event of a failed or slow connection). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., switching playback between streamed and local content) to a known device or method (e.g., a streaming service) that is ready for improvement to yield predictable results (e.g., to enable playback to continue in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hasegawa discloses a method for "prevention of an interruption in playback of content, even if there is a temporary reduction in the communication circuit speed of the network." Hasegawa ¶[0024]. Hasegawa discloses a playback device capable of playing back DVDs and Blu-ray disks. *Id.* ¶[0028]. When a user inserts a DVD (containing SD video and audio content), the player may instead stream HD content from a server. *Id.* ¶¶[0049], [0054]. Then, "if there is a temporary reduction in the communication circuit speed of the network," the player switches play back to the "SD data of the DVD." *Id.* ¶[0068].

A POSITA would have recognized that Hasegawa's disclosures relating to switching playback between streaming content and illustration media content could easily be incorporated into YouTube as YouTube already discloses both local and streaming content. A POSITA would have been motivated to implement Hasegawa's playback switching into YouTube to account for "temporary reductions in communication circuit speeds of networks, including the Internet, due to a variety of environmental factors." Hasegawa ¶[0005]. A POSITA would have understood that, as of the priority date of the '803 Patent, network speed was an important limitation on streaming media. This was especially so in mobile networks, which Kirkland discloses may be used by the playback device. Kirkland ¶[0076]. Hasegawa's local content and playback switching would mitigate this well-known drawback to Kirkland's streaming server. A POSITA would have understood that, as of the priority date of the '803 Patent, network speed was an important limitation on streaming media. Hasegawa's playback switching would mitigate this well-known drawback to YouTube's streaming service. A POSITA would have considered the combination to amount to the use of known techniques (e.g., switching playback between streamed and local content) to improve similar devices or methods (e.g., a streaming service) in the same way (e.g., to enable playback to continue in the event of a failed or slow connection). As another example, a

POSITA would have understood the modification or combination to amount to applying a known technique (e.g., switching playback between streamed and local content) to a known device or method (e.g., a streaming service) that is ready for improvement to yield predictable results (e.g., to enable playback to continue in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Shinoda discloses a method that "enables playback of content of high quality, regardless of the storage capacity of the recording medium, on the player device side." Shinoda ¶[0012]. Shinoda discloses a "mobile entertainment device" with both an "optical disc drive" and a "memory card interface." *Id.* ¶¶[0023], [0026], [0027]. When the device is connected to a network, "video content is supplied from the distribution server." *Id.* ¶[0052]. But Shinoda recognizes that "it is necessary to take into account possible inability to obtain an adequate data transfer rate, and thus discloses a "detection operation" to determine a "communication rate threshold value." *Id.* ¶¶[0068], [0069], [0071]. When the communication rate falls below the threshold, a "playback switching operation" is performed to "carry out switching from playing back content from the network 4 to playing back content from the optical disc 100." *Id.* ¶[0075]. This may comprise switching between "MPEG-4 video from the optical disk" and "MPEG-2 HD video from the network." *Id.*

A POSITA would have recognized that Shinoda's disclosures relating to switching playback between streaming content and illustration media content could easily be incorporated into YouTube as YouTube already discloses both local and streaming content. A POSITA would have been motivated to implement Shinoda's playback switching into YouTube to account for "possible inability to obtain an adequate data transfer rate depending on, for example, the state of

the connected network." Shinoda ¶[0068]. A POSITA would have understood that, as of the priority date of the '803 Patent, network speed was an important limitation on streaming media. Shinoda's playback switching would mitigate this well-known drawback to YouTube's streaming service. A POSITA would have considered the combination to amount to the use of known techniques (e.g., switching playback between streamed and local content) to improve similar devices or methods (e.g., a streaming service) in the same way (e.g., to enable playback to continue in the event of a failed or slow connection). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., switching playback between streamed and local content) to a known device or method (e.g., a streaming service) that is ready for improvement to yield predictable results (e.g., to enable playback to continue in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Harper discloses a method to "sell digital content at retail location and transfer the content directly onto a customer's portable device." Harper ¶[0010]. Then, "[w]hen the user returns to his/her home and synchronizes the portable device with the media player on computer 110, the new items acquired from retail store 202 may be detected." *Id.* ¶[0049]. "The content so acquired will then be playable immediately" on the user's computer. *Id.* ¶[0048].

A POSITA would have recognized that Harper's disclosures relating to receiving content from a portable device could easily be incorporated into YouTube because YouTube already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Harper's disclosure of receiving contents data via a portable device into YouTube to enable offline content distribution in addition to network-dependent streaming

and downloading. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Butler discloses a "digital watermark" to be applied to contents distributed, for example, via a kiosk. Butler ¶[0020]. The digital watermark may comprise "information about the user (whether a purchaser, recipient, distributor, etc.) of the digital content." *Id.* ¶[0034]. The content and watermark may be "downloaded to a portable device such as a portable music player or a portable storage device." *Id.* ¶[0117]. The content may then be "copied from the portable storage device to the user's personal computer or other electronic device(s) as desired." *Id.*

A POSITA would have recognized that Butler's disclosures relating to receiving content from a portable device could easily be incorporated into YouTube because YouTube already

discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Butler's disclosure of receiving contents data via a portable device into YouTube to enable offline content distribution in addition to network-dependent streaming and downloading. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Rae discloses "[s]ystems and methods for over-encrypting symmetrically pre-encrypted content for off-line delivery to playback devices using portable media drives." Rae, 1:66-2:2. Rae discloses that distribution may be via a "kiosk configured to receive a portable media drive." *Id.*, 2:59-67. Rae discloses an encryption system that enables a "playback device" with the proper permissions to enable "playback of the symmetrically encrypted content." *Id.*, 2:59-3:18.

A POSITA would have recognized that Rae's disclosures relating to receiving content from a portable media drive could easily be incorporated into YouTube because YouTube already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Rae's disclosure of receiving contents data via a portable media drive into YouTube to "overcome bandwidth limitations imposed by existing network infrastructure." Rae, 1:18-33. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kang discloses a "kiosk" that is "a terminal of a contents distribution system installed in public places." Kang ¶[0043]. The kiosk of Kang "may receive contents data from the contents providing server 21, and transmit the contents data to the portable storage medium 24 that is

inserted or connected to or communicating with the kiosk 25." *Id.* Then, "the portable storage medium 24 including data related to movie reproduction may be inserted to the contents reproducing apparatus 23 (operation 61)." *Id.* ¶[0057]. A decoder then "decodes A/V data of the selected movie, and outputs the decoded A/V data to the image display unit 231." *Id.* ¶[0059].

A POSITA would have recognized that Kang's disclosures relating to receiving content from a portable storage medium could easily be incorporated into YouTube because YouTube already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Kang's disclosure of receiving contents data via a portable storage medium into YouTube to provide an "off-line manner" of content distribution in addition to network-dependent streaming or downloading. Kang ¶[0054]. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would

have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Ayers discloses "a network of multimedia distribution kiosks for downloading and uploading multimedia data." Ayers ¶[0020]. Content present on a kiosk can be "downloaded immediately" by the user. *Id.* ¶[0046]. Furthermore, "media may be transferred, e.g., to a home system from a mobile system, so that a user can finish using the media. *Id.* ¶[0020].

A POSITA would have recognized that Ayers' disclosures relating to receiving content from a mobile system could easily be incorporated into YouTube because YouTube already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Ayers' disclosure of receiving contents data via a mobile system into YouTube to enable offline content distribution in addition to network-dependent streaming and downloading. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to

the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Takano discloses a "portable storage device"/"iVDR" that "can be a semiconductor memory". Takano further discloses that the iVDR may be connected to a television, and may be transferred between different televisions in the user's home. Takano ¶¶[0022], [0030], [0031].

A POSITA would have recognized that Takano's disclosure of enabling a portable storage device to be transferred between playback devices could easily be incorporated into YouTube because YouTube already discloses downloading content to a storage medium. A POSITA would be motivated to implement Takano's disclosure of enabling transfer of the storage medium to allow the user to play back content on their playback device of choice. *See* Takano ¶[0004] ("users possess a plurality of terminals and selectively use the appropriate terminal according to the location of its usage or the like."). A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., enabling transfer of portable storage between playback devices) to improve similar devices or methods (e.g., a system for distribution of local content) in the same way (e.g., to allow a user to play back content on their playback device of choice). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Moradi discloses "an Intelligent Video Streaming Server" that implements user authentication features. Among the authentication features is a feature "[a]llowing client or franchisee or franchisor to edit and change the password settings by entering the old password, and entering the new password and confirming the new password once more." Moradi ¶[0033].

A POSITA would have recognized that Moradi's password changing feature could easily be incorporated into YouTube because YouTube already discloses authentication using a password. A POSITA would have been motivated to implement Moradi's password changing feature to improve the security of YouTube according to well-known methods. A POSITA would have understood the modification or combination to amount to applying a known technique (e.g., allowing a user to change their password) to a known device or method (e.g., a content distribution service) that is ready for improvement to yield predictable results (e.g., increasing security of user accounts). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Van Buskirk discloses "offer[ing] kiosks where people can browse a catalog of movies, choosing to rent/purchase any of them, upon which it downloads straight onto your USB drive (all brands supported)."

A POSITA would have recognized that Van Buskirk's disclosures relating to receiving movies on a USB drive could easily be incorporated into YouTube because YouTube already discloses a content distribution service with multiple distribution points. A POSITA would have been motivated to implement Van Buskirk's disclosure of receiving contents data via a USB drive into YouTube to enable offline content distribution in addition to network-dependent streaming and downloading. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered

the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Blockbuster Express Digital was a kiosk distribution system that offered users movie downloads via SD cards. The user could then play back the movie on mobile phones, TVs, and other devices equipped with SD readers. *See* Dannen.

A POSITA would have recognized that Blockbuster Express Digital's features of receiving movies on an SD card could easily be incorporated into YouTube because YouTube already discloses a content distribution service with multiple distribution points. A POSITA would have been motivated to implement Blockbuster Express Digital's disclosure of receiving contents data via an SD card into YouTube to enable offline content distribution in addition to network-dependent streaming and downloading. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA

would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(f) Blockbuster Express Digital in view of Kirkland and/or White and/or Hulbert and/or Shinoda and/or Olaiya and/or Hasegawa and/or Mavrakakis and/or Takano and/or Moradi

Blockbuster Express Digital was a kiosk distribution system that offered users movie downloads via SD cards. The user could then play back the movie on mobile phones, TVs, and other devices equipped with SD readers. *See* Dannen.

Kirkland discloses an "on-demand media server device." Kirkland ¶[0012]. Kirkland discloses that this server includes "a web server" that makes media "available via the internet." *Id.* The server also "includes security mechanisms that allow a user to establish a private server that only the user may communicate with and gain access to the user's media library." *Id.* ¶[0013]. One security mechanism that the server may be equipped with is "a smart card, or other type of removable media, reader/writer" into which the user "may insert the smart card or removable media." *Id.* ¶[0014]. The server then transfers "a digital certificate" to the removable media. *Id.*

Thereafter "[t]he smart card or removable medium is required for a remotely located device to gain access to the user's personal media library." *Id.* ¶[0016].

A POSITA would have recognized that Kirkland's media streaming features, including its authentication features utilizing a removable media, could easily have been implemented in Blockbuster Express Digital because Blockbuster Express Digital already discloses a kiosk for writing to a removable media. A POSITA would have been motivated to implement these streaming and authentication features into Blockbuster Express Digital to provide a more convenient way for users to access content while maintaining security. A POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content streaming utilizing a removable media for authentication) to a known device or method (e.g., a kiosk delivery system) that is ready for improvement to yield predictable results (e.g., a media distribution service capable of both secure online and offline content distribution). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

White discloses "improved systems and techniques for delivering DRM protected content to consumers separately from the DRM information and other data needed for playing the content." White ¶[0005]. In one embodiment, a "kiosk" allows the user to "insert a media device." *Id.* ¶[0016]. The kiosk then "stores the DRM information in a secure area of the removable media device 143." *Id.* The user may also receive content from a kiosk "recorded on an appropriate medium and delivered to the user." *Id.* ¶[0020]. Alternatively, the content may be "stream[ed] to a user's set top box" or "computer." *Id.* ¶[0030].

A POSITA would have recognized that White's DRM and streaming features utilizing a removable media could easily have been implemented in Blockbuster Express Digital because

Blockbuster Express Digital already discloses a kiosk for writing to a removable media. A POSITA would have been motivated to implement these DRM and streaming features into Blockbuster Express Digital to provide a more convenient way for users to access content while maintaining security. A POSITA would have understood the modification or combination to amount to applying a known technique (e.g., content streaming utilizing a removable media for authentication) to a known device or method (e.g., a kiosk delivery system) that is ready for improvement to yield predictable results (e.g., a media distribution service capable of both secure online and offline content distribution). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hulbert discloses a "USB autorun device." Hulbert, Abstract. When the device is connected to a computer it may "automatically caus[e] content to be accessed or a task to be initiated." *Id.* In one application, the device may "be applied as a portable web-mail key, used to access a user's web-mail on any internet connected computer." *Id.*, 29:29-30:3. This would involve the device storing "A unique user ID and password." *Id.* In related applications, the device may be "used to listen to live streamed radio on any internet connected computer" or "provide access to a private website e.g. a private club or viewing video." *Id.*, 36:3-9, 41:18-42:25.

A POSITA would have recognized that Hulbert's user authentication and streaming features via a USB device could easily have been implemented in Blockbuster Express Digital because Blockbuster Express Digital already discloses a kiosk for writing to a removable media. A POSITA would have been motivated to implement these user authentication and streaming features into Blockbuster Express Digital to provide a more convenient way for users to access content while maintaining security. A POSITA would have understood the modification or

combination to amount to applying a known technique (e.g., content streaming utilizing a removable media for authentication) to a known device or method (e.g., a kiosk delivery system) that is ready for improvement to yield predictable results (e.g., a media distribution service capable of both secure online and offline content distribution). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Shinoda discloses a method that "enables playback of content of high quality, regardless of the storage capacity of the recording medium, on the player device side." Shinoda ¶[0012]. Shinoda discloses a "mobile entertainment device" with both an "optical disc drive" and a "memory card interface." *Id.* ¶¶[0023], [0026], [0027]. When the device is connected to a network, "video content is supplied from the distribution server." *Id.* ¶[0052]. But Shinoda recognizes that "it is necessary to take into account possible inability to obtain an adequate data transfer rate, and thus discloses a "detection operation" to determine a "communication rate threshold value." *Id.* ¶¶[0068], [0069], [0071]. When the communication rate falls below the threshold, a "playback switching operation" is performed to "carry out switching from playing back content from the network 4 to playing back content from the optical disc 100." *Id.* ¶[0075]. This may comprise switching between "MPEG-4 video from the optical disk" and "MPEG-2 HD video from the network." *Id.*

A POSITA would have recognized that Shinoda's disclosure relating to switching playback between local and streaming content could easily be incorporated into Blockbuster Express Digital in combination with one of Kirkland, White, and/or Hulbert because the combined system could distribute content both via a kiosk and via a network. A POSITA would have been motivated to implement the playback switching feature of Shinoda in the combined system to account for

"possible inability to obtain an adequate data transfer rate depending on, for example, the state of the connected network." Shinoda ¶[0068]. As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., playback switching between local and streaming content) to improve similar devices or methods (e.g., to improve a similar content distribution service capable of kiosk and network distribution) in the same way (e.g., to enable the playback device to continue playback in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Olaiya discloses "a system and method for Peer-to-Peer (P2P) media content streaming." Olaiya ¶[0003]. Olaiya discloses that prior to streaming a media content item, the playback device "downloads illustration media content, which is a derivate light-weight version of the original media content." *Id.* This illustration media content may be a "reduced quality version of a media content item." *Id.* ¶[0016]. After downloading the illustration media content, the playback device "initiates streaming." *Id.* ¶[0018]. However, if during streaming "the quality of the network connection falls below a defined threshold, the playback agent switches playback to the illustration media content." *Id.* ¶[0003]. "Thereafter, once the quality of the network connection improves or a new connection is established, the playback agent switches playback back to the streaming original media content." *Id.*

A POSITA would have recognized that Olaiya's disclosure relating to switching playback between local and streaming content could easily be incorporated into Blockbuster Express Digital in combination with one of Kirkland, White, and/or Hulbert because the combined system could distribute content both via a kiosk and via a network. A POSITA would have been motivated to

implement Olaiya's playback switching into the combined system to "alleviate[] interruptions in playback resulting from an unstable network." Olaiya ¶[0002]. As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., playback switching between local and streaming content) to improve similar devices or methods (e.g., to improve a similar content distribution service capable of kiosk and network distribution) in the same way (e.g., to enable the playback device to continue playback in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hasegawa discloses a method for "prevention of an interruption in playback of content, even if there is a temporary reduction in the communication circuit speed of the network." Hasegawa ¶[0024]. Hasegawa discloses a playback device capable of playing back DVDs and Blu-ray disks. *Id.* ¶[0028]. When a user inserts a DVD (containing SD video and audio content), the player may instead stream HD content from a server. *Id.* ¶¶[0049], [0054]. Then, "if there is a temporary reduction in the communication circuit speed of the network," the player switches play back to the "SD data of the DVD." *Id.* ¶[0068].

A POSITA would have recognized that Hasegawa's disclosure relating to switching playback between local and streaming content could easily be incorporated into Blockbuster Express Digital in combination with one of Kirkland, White, and/or Hulbert because the combined system could distribute content both via a kiosk and via a network. A POSITA would have been motivated to implement Hasegawa's playback switching into the combined system to account for "temporary reductions in communication circuit speeds of networks, including the Internet, due to a variety of environmental factors." Hasegawa ¶[0005]. A POSITA would have understood that,

as of the priority date of the '803 Patent, network speed was an important limitation on streaming media. This was especially so in mobile networks, which Kirkland discloses may be used by the playback device. Kirkland ¶[0076]. Hasegawa's local content and playback switching would mitigate this well-known drawback to Kirkland's streaming server. As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., playback switching between local and streaming content) to improve similar devices or methods (e.g., to improve a similar content distribution service capable of kiosk and network distribution) in the same way (e.g., to enable the playback device to continue playback in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Mavrakakis discloses a "media distribution kiosk." Mavrakakis ¶[0001]. Mavrakakis further discloses that the media distribution kiosk may distribute content via a "wireless transceiver that establishes a wireless data connection with the media device." *Id.* ¶[0010].

A POSITA would have recognized that Mavrakakis' disclosure of connecting a kiosk to a media device via a wireless connection could easily be incorporated into Blockbuster Express Digital because Blockbuster Express Digital already discloses a kiosk that transmits content to an SD card. A POSITA would have been motivated to implement Mavrakakis' disclosure of using wireless communications to prevent "excessive wear and failure" of the card reader or similar components in Blockbuster Express Digital. Mavrakakis ¶[0006]. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., implementing wireless communication) to improve similar devices or methods (e.g., a kiosk) in the same way (e.g., to reduce wear on physical connectors). A POSITA would have considered

the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Takano discloses a "portable storage device"/"iVDR" that "can be a semiconductor memory". Takano further discloses that the iVDR may be connected to a television, and may be transferred between different televisions in the user's home. Takano ¶¶[0022], [0030], [0031].

A POSITA would have recognized that Takano's disclosure of enabling a portable storage device to be transferred between playback devices could easily be incorporated into Blockbuster Express Digital because Blockbuster Express Digital already discloses an SD card. A POSITA would be motivated to implement Takano's disclosure of enabling transfer of the SD card to allow the user to play back content on their playback device of choice. *See* Takano ¶[0004] ("users possess a plurality of terminals and selectively use the appropriate terminal according to the location of its usage or the like."). A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., enabling transfer of portable storage between playback devices) to improve similar devices or methods (e.g., a system for content distribution via a portable storage device) in the same way (e.g., to allow a user to play back content on their playback device of choice). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Moradi discloses "an Intelligent Video Streaming Server" that implements user authentication features. Among the authentication features is a feature "[a]llowing client or franchisee or franchisor to edit and change the password settings by entering the old password, and entering the new password and confirming the new password once more." Moradi ¶[0033].

A POSITA would have recognized that Moradi's password changing feature could easily be incorporated into Blockbuster Express Digital in combination with Kirkland and/or Hulbert because the combined system already discloses authentication using a password. A POSITA would have been motivated to implement Moradi's password changing feature to improve the security of the combined system according to well-known methods. A POSITA would have understood the modification or combination to amount to applying a known technique (e.g., allowing a user to change their password) to a known device or method (e.g., a content distribution service) that is ready for improvement to yield predictable results (e.g., increasing security of user accounts). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(g) DivX Stage6 in view of Kirkland and/or White and/or Hulbert and/or Olaiya and/or Hasegawa and/or Shinoda and/or Harper and/or Butler and/or Rae and/or Kang and/or Ayers and/or Takano and/or Moradi and/or Van Buskirk and/or Blockbuster Express Digital

DivX Stage6 was a service for distributing downloaded and streaming content via the internet. The user could choose to either receive content for download or for streaming. Stage6 About Us. Users of the service could be authenticated via a username and password, and could also be authenticated by cookies stored on a computer's hard drive. Stage6 Privacy Policy.

Kirkland discloses an "on-demand media server device." Kirkland ¶[0012]. Kirkland discloses that this server includes "a web server" that makes media "available via the internet." *Id.* The server also "includes security mechanisms that allow a user to establish a private server that only the user may communicate with and gain access to the user's media library." *Id.* ¶[0013]. One security mechanism that the server may be equipped with is "a smart card, or other type of removable media, reader/writer" into which the user "may insert the smart card or removable

media." *Id.* ¶[0014]. The server then transfers "a digital certificate" to the removable media. *Id.* Thereafter "[t]he smart card or removable medium is required for a remotely located device to gain access to the user's personal media library." *Id.* ¶[0016].

A POSITA would have recognized that Kirkland's user authentication features, including its authentication features utilizing a removable media, could easily have been implemented in DivX Stage6 because DivX Stage6 already discloses a web service requiring user authentication. A POSITA would have been motivated to implement these authentication features into DivX Stage6 to identify the users that wish to gain access to DivX Stage6 in a manner that is convenient for users. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., user authentication, including via a removable media) to improve similar devices or methods (e.g., to improve an internet streaming service) in the same way (e.g., to allow the network to control access to hosted content and allow users to authenticate conveniently). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., user authentication) for use in another device in the same field of endeavor (e.g., an internet streaming service) due to design incentives or other market forces (e.g., to allow the network to control access to hosted content and allow users to authenticate conveniently). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

White discloses "improved systems and techniques for delivering DRM protected content to consumers separately from the DRM information and other data needed for playing the content." White ¶[0005]. In one embodiment, a "kiosk" allows the user to "insert a media device." *Id.* ¶[0016]. The kiosk then "stores the DRM information in a secure area of the removable media

device 143." *Id.* The user may also receive content from a kiosk "recorded on an appropriate medium and delivered to the user." *Id.* ¶[0020]. Alternatively, the content may be "stream[ed] to a user's set top box" or "computer." *Id.* ¶[0030].

A POSITA would have recognized that White's DRM features, including its DRM features utilizing a removable media, could easily have been implemented in DivX Stage6 because DivX Stage6 already discloses a web service requiring user authentication. A POSITA would have been motivated to implement these authentication features into DivX Stage6 to ensure authorized users only gain access to the content they are entitled to view through DivX Stage6 in a manner that is convenient for users. *See* White ¶[0009]. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., DRM via a removable media) to improve similar devices or methods (e.g., to improve an internet streaming service) in the same way (e.g., to allow the network to control access to hosted content and allow users to authenticate conveniently). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., DRM via a removable media) for use in another device in the same field of endeavor (e.g., an internet streaming service) due to design incentives or other market forces (e.g., to allow the network to control access to hosted content and allow users to authenticate conveniently). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hulbert discloses a "USB autorun device." Hulbert, Abstract. When the device is connected to a computer it may "automatically caus[e] content to be accessed or a task to be initiated." *Id.* In one application, the device may "be applied as a portable web-mail key, used to access a user's web-mail on any internet connected computer." *Id.*, 29:29-30:3. This would involve the device

storing "A unique user ID and password." *Id.* In related applications, the device may be "used to listen to live streamed radio on any internet connected computer" or "provide access to a private website e.g. a private club or viewing video." *Id.*, 36:3-9, 41:18-42:25.

A POSITA would have recognized that Hulbert's user authentication features, including its authentication features utilizing a removable media, could easily have been implemented in DivX Stage6 because DivX Stage6 already discloses a web service requiring user authentication. A POSITA would have been motivated to implement these authentication features into DivX Stage6 to control access to DivX Stage6 "to provide easy access to a site and increase user loyalty." Hulbert, 11:12-15. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., user authentication, including via a removable media) to improve similar devices or methods (e.g., to improve an internet streaming service) in the same way (e.g., to allow the network to control access to hosted content and allow users to authenticate conveniently). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., user authentication) for use in another device in the same field of endeavor (e.g., an internet streaming service) due to design incentives or other market forces (e.g., to allow the network to control access to hosted content and allow users to authenticate conveniently). As another example, a POSITA would have understood the modification or combination to amount to applying an express teaching, suggestion, or motivation in the prior art for their combination (e.g., Hulbert's teaching that a USB autorun device is suitable to "provide access to a private website e.g. a private club or viewing video"). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Olaiya discloses "a system and method for Peer-to-Peer (P2P) media content streaming." Olaiya ¶[0003]. Olaiya discloses that prior to streaming a media content item, the playback device "downloads illustration media content, which is a derivate light-weight version of the original media content." *Id.* This illustration media content may be a "reduced quality version of a media content item." *Id.* ¶[0016]. After downloading the illustration media content, the playback device "initiates streaming." *Id.* ¶[0018]. However, if during streaming "the quality of the network connection falls below a defined threshold, the playback agent switches playback to the illustration media content." *Id.* ¶[0003]. "Thereafter, once the quality of the network connection improves or a new connection is established, the playback agent switches playback back to the streaming original media content." *Id.*

A POSITA would have recognized that Olaiya's disclosures relating to switching playback between streaming content and illustration media content could easily be incorporated into DivX Stage6 as DivX Stage6 already discloses both local and streaming content. A POSITA would have been motivated to implement Olaiya's playback switching into DivX Stage6 to "alleviate[] interruptions in playback resulting from an unstable network." Olaiya ¶[0002]. A POSITA would have understood that, as of the priority date of the '803 Patent, network speed was an important limitation on streaming media. Olaiya's playback switching would mitigate this well-known drawback to DivX Stage6's streaming service. A POSITA would have considered the combination to amount to the use of known techniques (e.g., switching playback between streamed and local content) to improve similar devices or methods (e.g., a streaming service) in the same way (e.g., to enable playback to continue in the event of a failed or slow connection). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., switching playback between streamed and local content) to a known device or

method (e.g., a streaming service) that is ready for improvement to yield predictable results (e.g., to enable playback to continue in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hasegawa discloses a method for "prevention of an interruption in playback of content, even if there is a temporary reduction in the communication circuit speed of the network." Hasegawa ¶[0024]. Hasegawa discloses a playback device capable of playing back DVDs and Blu-ray disks. *Id.* ¶[0028]. When a user inserts a DVD (containing SD video and audio content), the player may instead stream HD content from a server. *Id.* ¶¶[0049], [0054]. Then, "if there is a temporary reduction in the communication circuit speed of the network," the player switches play back to the "SD data of the DVD." *Id.* ¶[0068].

A POSITA would have recognized that Hasegawa's disclosures relating to switching playback between streaming content and illustration media content could easily be incorporated into DivX Stage6 as DivX Stage6 already discloses both local and streaming content. A POSITA would have been motivated to implement Hasegawa's playback switching into DivX Stage6 to account for "temporary reductions in communication circuit speeds of networks, including the Internet, due to a variety of environmental factors." Hasegawa ¶[0005]. A POSITA would have understood that, as of the priority date of the '803 Patent, network speed was an important limitation on streaming media. This was especially so in mobile networks, which Kirkland discloses may be used by the playback device. Kirkland ¶[0076]. Hasegawa's local content and playback switching would mitigate this well-known drawback to Kirkland's streaming server. A POSITA would have understood that, as of the priority date of the '803 Patent, network speed was an important limitation on streaming media. Hasegawa's playback switching would mitigate this

well-known drawback to DivX Stage6's streaming service. A POSITA would have considered the combination to amount to the use of known techniques (e.g., switching playback between streamed and local content) to improve similar devices or methods (e.g., a streaming service) in the same way (e.g., to enable playback to continue in the event of a failed or slow connection). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., switching playback between streamed and local content) to a known device or method (e.g., a streaming service) that is ready for improvement to yield predictable results (e.g., to enable playback to continue in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Shinoda discloses a method that "enables playback of content of high quality, regardless of the storage capacity of the recording medium, on the player device side." Shinoda ¶[0012]. Shinoda discloses a "mobile entertainment device" with both an "optical disc drive" and a "memory card interface." *Id.* ¶¶[0023], [0026], [0027]. When the device is connected to a network, "video content is supplied from the distribution server." *Id.* ¶[0052]. But Shinoda recognizes that "it is necessary to take into account possible inability to obtain an adequate data transfer rate, and thus discloses a "detection operation" to determine a "communication rate threshold value." *Id.* ¶¶[0068], [0069], [0071]. When the communication rate falls below the threshold, a "playback switching operation" is performed to "carry out switching from playing back content from the network 4 to playing back content from the optical disc 100." *Id.* ¶[0075]. This may comprise switching between "MPEG-4 video from the optical disk" and "MPEG-2 HD video from the network." *Id.*

A POSITA would have recognized that Shinoda's disclosures relating to switching playback between streaming content and illustration media content could easily be incorporated into DivX Stage6 as DivX Stage6 already discloses both local and streaming content. A POSITA would have been motivated to implement Shinoda's playback switching into DivX Stage6 to account for "possible inability to obtain an adequate data transfer rate depending on, for example, the state of the connected network." Shinoda ¶[0068]. A POSITA would have understood that, as of the priority date of the '803 Patent, network speed was an important limitation on streaming media. Shinoda's playback switching would mitigate this well-known drawback to DivX Stage6's streaming service. A POSITA would have considered the combination to amount to the use of known techniques (e.g., switching playback between streamed and local content) to improve similar devices or methods (e.g., a streaming service) in the same way (e.g., to enable playback to continue in the event of a failed or slow connection). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., switching playback between streamed and local content) to a known device or method (e.g., a streaming service) that is ready for improvement to yield predictable results (e.g., to enable playback to continue in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Harper discloses a method to "sell digital content at retail location and transfer the content directly onto a customer's portable device." Harper ¶[0010]. Then, "[w]hen the user returns to his/her home and synchronizes the portable device with the media player on computer 110, the new items acquired from retail store 202 may be detected." *Id.* ¶[0049]. "The content so acquired will then be playable immediately" on the user's computer. *Id.* ¶[0048].

A POSITA would have recognized that Harper's disclosures relating to receiving content from a portable device could easily be incorporated into DivX Stage6 because DivX Stage6 already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Harper's disclosure of receiving contents data via a portable device into DivX Stage6 to enable offline content distribution in addition to network-dependent streaming and downloading. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Butler discloses a "digital watermark" to be applied to contents distributed, for example, via a kiosk. Butler ¶[0020]. The digital watermark may comprise "information about the user (whether a purchaser, recipient, distributor, etc.) of the digital content." *Id.* ¶[0034]. The content

and watermark may be "downloaded to a portable device such as a portable music player or a portable storage device." *Id.* ¶[0117]. The content may then be "copied from the portable storage device to the user's personal computer or other electronic device(s) as desired." *Id.*

A POSITA would have recognized that Butler's disclosures relating to receiving watermarked content from a portable device could easily be incorporated into DivX Stage6 because DivX Stage6 already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Butler's disclosure of receiving watermarked contents data via a portable device into DivX Stage6 to enable secure offline content distribution in addition to network-dependent streaming and downloading. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining secure content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution of watermarked content) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional secure offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of watermarked content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide secure offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination

or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Rae discloses "[s]ystems and methods for over-encrypting symmetrically pre-encrypted content for off-line delivery to playback devices using portable media drives." Rae, 1:66-2:2. Rae discloses that distribution may be via a "kiosk configured to receive a portable media drive." *Id.*, 2:59-67. Rae discloses an encryption system that enables a "playback device" with the proper permissions to enable "playback of the symmetrically encrypted content." *Id.*, 2:59-3:18.

A POSITA would have recognized that Rae's disclosures relating to receiving content from a portable media drive could easily be incorporated into DivX Stage6 because DivX Stage6 already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Rae's disclosure of receiving contents data via a portable media drive into DivX Stage6 to "overcome bandwidth limitations imposed by existing network infrastructure." Rae, 1:18-33. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives

or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kang discloses a "kiosk" that is "a terminal of a contents distribution system installed in public places." Kang ¶[0043]. The kiosk of Kang "may receive contents data from the contents providing server 21, and transmit the contents data to the portable storage medium 24 that is inserted or connected to or communicating with the kiosk 25." *Id.* Then, "the portable storage medium 24 including data related to movie reproduction may be inserted to the contents reproducing apparatus 23 (operation 61)." *Id.* ¶[0057]. A decoder then "decodes A/V data of the selected movie, and outputs the decoded A/V data to the image display unit 231." *Id.* ¶[0059].

A POSITA would have recognized that Kang's disclosures relating to receiving content from a portable storage medium could easily be incorporated into DivX Stage6 because DivX Stage6 already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Kang's disclosure of receiving contents data via a portable storage medium into DivX Stage6 to provide an "off-line manner" of content distribution in addition to network-dependent streaming or downloading. Kang ¶[0054]. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar

devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Ayers discloses "a network of multimedia distribution kiosks for downloading and uploading multimedia data." Ayers ¶[0020]. Content present on a kiosk can be "downloaded immediately" by the user. *Id.* ¶[0046]. Furthermore, "media may be transferred, e.g., to a home system from a mobile system, so that a user can finish using the media. *Id.* ¶[0020].

A POSITA would have recognized that Ayers' disclosures relating to receiving content from a mobile system could easily be incorporated into DivX Stage6 because DivX Stage6 already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Ayers' disclosure of receiving contents data via a mobile system into DivX Stage6 to enable offline content distribution in addition to network-dependent streaming and downloading. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution)

to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Takano discloses a "portable storage device"/"iVDR" that "can be a semiconductor memory". Takano further discloses that the iVDR may be connected to a television, and may be transferred between different televisions in the user's home. Takano ¶¶[0022], [0030], [0031].

A POSITA would have recognized that Takano's disclosure of enabling a portable storage device to be transferred between playback devices could easily be incorporated into DivX Stage6 because DivX Stage6 already discloses downloading content to a storage medium. A POSITA would be motivated to implement Takano's disclosure of enabling transfer of the storage medium to allow the user to play back content on their playback device of choice. *See* Takano ¶[0004] ("users possess a plurality of terminals and selectively use the appropriate terminal according to the location of its usage or the like."). A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., enabling transfer of portable storage between playback devices) to improve similar devices or methods (e.g., a system for distribution of local content) in the same way (e.g., to allow a user to play back content on their playback device of choice). A POSITA would have considered the combination or modification to amount

to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Moradi discloses "an Intelligent Video Streaming Server" that implements user authentication features. Among the authentication features is a feature "[a]llowing client or franchisee or franchisor to edit and change the password settings by entering the old password, and entering the new password and confirming the new password once more." Moradi ¶[0033].

A POSITA would have recognized that Moradi's password changing feature could easily be incorporated into DivX Stage6 because DivX Stage6 already discloses authentication using a password. A POSITA would have been motivated to implement Moradi's password changing feature to improve the security of DivX Stage6 according to well-known methods. A POSITA would have understood the modification or combination to amount to applying a known technique (e.g., allowing a user to change their password) to a known device or method (e.g., a content distribution service) that is ready for improvement to yield predictable results (e.g., increasing security of user accounts). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Van Buskirk discloses "offer[ing] kiosks where people can browse a catalog of movies, choosing to rent/purchase any of them, upon which it downloads straight onto your USB drive (all brands supported)."

A POSITA would have recognized that Van Buskirk's disclosures relating to receiving movies on a USB drive could easily be incorporated into DivX Stage6 because DivX Stage6 already discloses a content distribution service with multiple distribution points. A POSITA would have been motivated to implement Van Buskirk's disclosure of receiving contents data via a USB

drive into DivX Stage6 to enable offline content distribution in addition to network-dependent streaming and downloading. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Blockbuster Express Digital was a kiosk distribution system that offered users movie downloads via SD cards. The user could then play back the movie on mobile phones, TVs, and other devices equipped with SD readers. *See* Dannen

A POSITA would have recognized that Blockbuster Express Digital's features of receiving movies on an SD card could easily be incorporated into DivX Stage6 because DivX Stage6 already discloses a content distribution service with multiple distribution points. A POSITA would have been motivated to implement Blockbuster Express Digital's disclosure of receiving contents data

via an SD card into DivX Stage6 to enable offline content distribution in addition to network-dependent streaming and downloading. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(h) Nishida in view of Raja and/or Kirkland and/or White and/or Hulbert and/or Harper and/or Butler and/or Rae and/or Kang and/or Ayers and/or Takano and/or Moradi and/or Van Buskirk and/or Netflix Streaming and/or YouTube and/or Spotify

Nishida discloses a method to "enable content reproduction to be continued even when the communication status is not good." Nishida ¶[0005]. Nishida discloses that "where the communication status is good, a low bit rate stream file is recorded in a temporary recording device." *Id.* ¶[0006]. Then, in the event of an interruption, "a switchover is performed to reproduce

a file stored in the temporary storing device." *Id.* Later, when the communication status improves, "high bit rate streaming reproduction is carried out." *Id.*

Raja discloses various methods relating to "a remote access server farm." Raja's disclosures are pertinent to numerous client-server applications including "applications for streaming video and/or audio." Raja ¶[0070], Abstract. One of the methods Raja discloses is a "Program Neighborhood application." This application, which may be installed on a client, "disclose[s] to users of the client nodes 102A, 102N those application programs hosted by the application servers that each client node is authorized to use." To access this application, the user may be required to provide authentication information, including a password and user credentials that may be obtained from, e.g., smart cards. *Id.* ¶¶[0155], [0157]. This authentication may be via a web browser. *Id.* ¶[0163].

A POSITA would have recognized that Raja's user authentication features could easily have been implemented in Nishida because Nishida already discloses a central server suitable to perform authentication functions. Nishida ¶[0025], Fig. 1. A POSITA would have been motivated to implement these authentication features into Nishida to identify the users that wish to gain access to Nishida's content reproducing system. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., user authentication) to improve similar devices or methods (e.g., to improve a content reproducing system with streaming features) in the same way (e.g., to allow the network to control access to hosted content). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., user authentication) for use in another device in the same field of endeavor (e.g., a content reproducing system) due to design incentives or other market forces (e.g., to allow the network to control access to hosted content). A POSITA would

have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kirkland discloses an "on-demand media server device." Kirkland ¶[0012]. Kirkland discloses that this server includes "a web server" that makes media "available via the internet." *Id.* The server also "includes security mechanisms that allow a user to establish a private server that only the user may communicate with and gain access to the user's media library." *Id.* ¶[0013]. One security mechanism that the server may be equipped with is "a smart card, or other type of removable media, reader/writer" into which the user "may insert the smart card or removable media." *Id.* ¶[0014]. The server then transfers "a digital certificate" to the removable media. *Id.* Thereafter "[t]he smart card or removable medium is required for a remotely located device to gain access to the user's personal media library." *Id.* ¶[0016].

A POSITA would have recognized that Kirkland's user authentication features, including its authentication features utilizing a removable media, could easily have been implemented in Nishida because Nishida already discloses a central server suitable to perform authentication functions. Nishida ¶[0025], Fig. 1. A POSITA would have been motivated to implement these authentication features into Nishida to identify the users that wish to gain access to Nishida's content reproducing system. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., user authentication, including via a removable media) to improve similar devices or methods (e.g., to improve a content reproducing system with streaming features) in the same way (e.g., to allow the network to control access to hosted content). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., user authentication) for use in another device in the same field of endeavor (e.g., a content reproducing system) due to design incentives or other

market forces (e.g., to allow the network to control access to hosted content). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

White discloses "improved systems and techniques for delivering DRM protected content to consumers separately from the DRM information and other data needed for playing the content." White ¶[0005]. In one embodiment, a "kiosk" allows the user to "insert a media device." *Id.* ¶[0016]. The kiosk then "stores the DRM information in a secure area of the removable media device 143." *Id.* The user may also receive content from a kiosk "recorded on an appropriate medium and delivered to the user." *Id.* ¶[0020]. Alternatively, the content may be "stream[ed] to a user's set top box" or "computer." *Id.* ¶[0030].

A POSITA would have recognized that White's DRM and content delivery features via a kiosk, could easily have been implemented in Nishida because Nishida already discloses a central server suitable to deliver content. Nishida ¶[0025], Fig. 1. A POSITA would have been motivated to implement these features into Nishida to control the distribution of content on Nishida's content reproducing system and to deliver content in an offline format for use "in the case where the communication status is poor or interrupted." Nishida ¶[0006]. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., DRM and kiosk delivery) to improve similar devices or methods (e.g., to improve a content reproducing system with streaming features) in the same way (e.g., to control distribution of content and enable offline playback). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., DRM and kiosk delivery) for use in another device in the same field of endeavor (e.g., a content reproducing system) due to design incentives or other market forces (e.g., to control distribution of content and

enable offline playback). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hulbert discloses a "USB autorun device." Hulbert, Abstract. When the device is connected to a computer it may "automatically caus[e] content to be accessed or a task to be initiated." *Id.* In one application, the device may "be applied as a portable web-mail key, used to access a user's web-mail on any internet connected computer." *Id.*, 29:29-30:3. This would involve the device storing "A unique user ID and password." *Id.* In related applications, the device may be "used to listen to live streamed radio on any internet connected computer" or "provide access to a private website e.g. a private club or viewing video." *Id.*, 36:3-9, 41:18-42:25.

A POSITA would have recognized that Hulbert's user authentication features, including its authentication features utilizing a USB device, could easily have been implemented in Nishida because Nishida already discloses a central server suitable to perform authentication functions. Nishida ¶[0025], Fig. 1. A POSITA would have been motivated to implement these authentication features into Nishida to identify the users that wish to gain access to Nishida's content reproducing system. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., user authentication, including via a removable media) to improve similar devices or methods (e.g., to improve a content reproducing system with streaming features) in the same way (e.g., to allow the network to control access to hosted content). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., user authentication) for use in another device in the same field of endeavor (e.g., a content reproducing system) due to design incentives or other market forces (e.g., to allow the network to control access to hosted content). As another example,

a POSITA would have understood the modification or combination to amount to applying an express teaching, suggestion, or motivation in the prior art for their combination (e.g., Hulbert's teaching that a USB autorun device is suitable to "provide access to a private website e.g. a private club or viewing video"). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Harper discloses a method to "sell digital content at retail location and transfer the content directly onto a customer's portable device." Harper ¶[0010]. Then, "[w]hen the user returns to his/her home and synchronizes the portable device with the media player on computer 110, the new items acquired from retail store 202 may be detected." *Id.* ¶[0049]. "The content so acquired will then be playable immediately" on the user's computer. *Id.* ¶[0048].

A POSITA would have recognized that Harper's disclosures relating to receiving content from a portable device could easily be incorporated into Nishida because Nishida already discloses playing back "content stored in a hard disk (HDD)." Nishida ¶[0036]. A POSITA would have been motivated to implement Harper's disclosure of receiving contents data via a portable device into Nishida to enable offline content distribution in addition to network-dependent streaming. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via a streaming server) according to known methods (i.e., according to known methods for kiosk and streaming distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a content distribution system containing a central server)

in the same way (e.g., to provide offline content distribution). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., a content reproducing system with streaming features) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Butler discloses a "digital watermark" to be applied to contents distributed, for example, via a kiosk. Butler ¶[0020]. The digital watermark may comprise "information about the user (whether a purchaser, recipient, distributor, etc.) of the digital content." *Id.* ¶[0034]. The content and watermark may be "downloaded to a portable device such as a portable music player or a portable storage device." *Id.* ¶[0117]. The content may then be "copied from the portable storage device to the user's personal computer or other electronic device(s) as desired." *Id.*

A POSITA would have recognized that Butler's disclosures relating to receiving watermarked content from a portable device could easily be incorporated into Nishida because Nishida already discloses playing back "content stored in a hard disk (HDD)." Nishida ¶[0036]. A POSITA would have been motivated to implement Butler's disclosure of receiving watermarked contents data via a portable device into Nishida to enable offline content distribution in addition to network-dependent streaming, while also controlling the distribution of the content. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via a streaming server) according to known methods (i.e., according to known methods for kiosk and streaming

distribution and for watermarking content) to yield predictable results (e.g., a media distribution service capable of both online and secure offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution of watermarked content) to improve similar devices or methods (e.g., a content distribution system containing a central server) in the same way (e.g., to provide secure offline content distribution). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., a content reproducing system with streaming features) due to design incentives or other market forces (e.g., the need to provide secure offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Rae discloses "[s]ystems and methods for over-encrypting symmetrically pre-encrypted content for off-line delivery to playback devices using portable media drives." Rae, 1:66-2:2. Rae discloses that distribution may be via a "kiosk configured to receive a portable media drive." *Id.*, 2:59-67. Rae discloses an encryption system that enables a "playback device" with the proper permissions to enable "playback of the symmetrically encrypted content." *Id.*, 2:59-3:18.

A POSITA would have recognized that Rae's disclosures relating to receiving content from a portable media drive could easily be incorporated into Nishida because Nishida already discloses playing back "content stored in a hard disk (HDD)." Nishida ¶[0036]. A POSITA would have been motivated to implement Rae's disclosure of receiving contents data via a portable media drive into Nishida to "overcome bandwidth limitations imposed by existing network infrastructure." Rae,

1:18-33. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via a streaming server) according to known methods (i.e., according to known methods for kiosk and streaming distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a content distribution system containing a central server) in the same way (e.g., to provide offline content distribution). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., a content reproducing system with streaming features) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kang discloses a "kiosk" that is "a terminal of a contents distribution system installed in public places." Kang ¶[0043]. The kiosk of Kang "may receive contents data from the contents providing server 21, and transmit the contents data to the portable storage medium 24 that is inserted or connected to or communicating with the kiosk 25." *Id.* Then, "the portable storage medium 24 including data related to movie reproduction may be inserted to the contents reproducing apparatus 23 (operation 61)." *Id.* ¶[0057]. A decoder then "decodes A/V data of the selected movie, and outputs the decoded A/V data to the image display unit 231." *Id.* ¶[0059].

A POSITA would have recognized that Kang's disclosures relating to receiving content from a portable storage medium could easily be incorporated into Nishida because Nishida already discloses playing back "content stored in a hard disk (HDD)." Nishida ¶[0036]. A POSITA would have been motivated to implement Kang's disclosure of receiving contents data via a portable storage medium into Nishida to provide an "off-line manner" of content distribution in addition to network-dependent streaming. Kang ¶[0054]. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via a streaming server) according to known methods (i.e., according to known methods for kiosk and streaming distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a content distribution system containing a central server) in the same way (e.g., to provide offline content distribution). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., a content reproducing system with streaming features) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Ayers discloses "a network of multimedia distribution kiosks for downloading and uploading multimedia data." Ayers ¶[0020]. Content present on a kiosk can be "downloaded

immediately" by the user. *Id.* ¶[0046]. Furthermore, "media may be transferred, e.g., to a home system from a mobile system, so that a user can finish using the media. *Id.* ¶[0020].

A POSITA would have recognized that Ayers' disclosures relating to receiving content from a mobile system could easily be incorporated into Nishida because Nishida already discloses playing back "content stored in a hard disk (HDD)." Nishida ¶[0036]. A POSITA would have been motivated to implement Ayers' disclosure of receiving contents data via a mobile system into Nishida to enable offline content distribution in addition to network-dependent streaming. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via a streaming server) according to known methods (i.e., according to known methods for kiosk and streaming distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a content distribution system containing a central server) in the same way (e.g., to provide offline content distribution). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., a content reproducing system with streaming features) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Takano discloses a "portable storage device"/"iVDR" that "can be a semiconductor memory". Takano further discloses that the iVDR may be connected to a television, and may be transferred between different televisions in the user's home. Takano ¶¶[0022], [0030], [0031].

A POSITA would have recognized that Takano's disclosure of enabling a portable storage device to be transferred between playback devices could easily be incorporated into Nishida because Nishida already discloses playing back "content stored in a hard disk (HDD)." Nishida ¶[0036]. A POSITA would be motivated to implement Takano's disclosure of enabling transfer of the removable memory unit to allow the user to play back content on their playback device of choice. *See* Takano ¶[0004] ("users possess a plurality of terminals and selectively use the appropriate terminal according to the location of its usage or the like."). A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., enabling transfer of portable storage between playback devices) to improve similar devices or methods (e.g., a system for content distribution using an HDD) in the same way (e.g., to allow a user to play back content on their playback device of choice). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Van Buskirk discloses "offer[ing] kiosks where people can browse a catalog of movies, choosing to rent/purchase any of them, upon which it downloads straight onto your USB drive (all brands supported)."

A POSITA would have recognized that Van Buskirk's disclosures relating to receiving movies on a USB drive could easily be incorporated into Nishida because Nishida already discloses playing back "content stored in a hard disk (HDD)." Nishida ¶[0036]. A POSITA would have been motivated to implement Van Buskirk's disclosure of receiving contents data via a USB

drive into Nishida to enable offline content distribution in addition to network-dependent streaming. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via a streaming service) according to known methods (i.e., according to known methods for kiosk and streaming distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a content distribution system containing a central server) in the same way (e.g., to provide offline content distribution). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., a content reproducing system with streaming features) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Netflix Streaming was a service for streaming content via the internet. Users of the service were authenticated via a username and password, and could also be authenticated by cookies stored on a computer's hard drive.

A POSITA would have recognized that Netflix Streaming's user authentication features could easily have been implemented in Nishida because Nishida already discloses a central server suitable to perform authentication functions. Nishida ¶[0025], Fig. 1. A POSITA would have been motivated to implement these authentication features into Nishida to identify the users that wish

to gain access to Nishida's content reproducing system. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., user authentication) to improve similar devices or methods (e.g., to improve a content reproducing system with streaming features) in the same way (e.g., to allow the network to control access to hosted content). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., user authentication) for use in another device in the same field of endeavor (e.g., a content reproducing system) due to design incentives or other market forces (e.g., to allow the network to control access to hosted content). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

YouTube was a service for distributing downloaded and streaming content via the internet. The user could choose to either receive content for download or for streaming. YouTube Press Release. Users of the service could be authenticated via a username and password, and could also be authenticated by cookies stored on a computer's hard drive. YouTube Privacy Policy.

A POSITA would have recognized that YouTube's user authentication features could easily have been implemented in Nishida because Nishida already discloses a central server suitable to perform authentication functions. Nishida ¶[0025], Fig. 1. A POSITA would have been motivated to implement these authentication features into Nishida to identify the users that wish to gain access to Nishida's content reproducing system. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., user authentication) to improve similar devices or methods (e.g., to improve a content reproducing system with streaming features) in the same way (e.g., to allow the network to control access to hosted content). As another example, a POSITA would have considered the combination or modification to amount

to using known work in one field of endeavor (e.g., user authentication) for use in another device in the same field of endeavor (e.g., a content reproducing system) due to design incentives or other market forces (e.g., to allow the network to control access to hosted content). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Spotify was a service for streaming music and audio content to mobile devices via the internet. The user could select certain content to be downloaded for offline listening. Users of the service could be authenticated via a user name and password stored on the mobile device.

A POSITA would have recognized that Spotify's user authentication features could easily have been implemented in Nishida because Nishida already discloses a central server suitable to perform authentication functions. Nishida ¶[0025], Fig. 1. A POSITA would have been motivated to implement these authentication features into Nishida to identify the users that wish to gain access to Nishida's content reproducing system. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., user authentication) to improve similar devices or methods (e.g., to improve a content reproducing system with streaming features) in the same way (e.g., to allow the network to control access to hosted content). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., user authentication) for use in another device in the same field of endeavor (e.g., a content reproducing system) due to design incentives or other market forces (e.g., to allow the network to control access to hosted content). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Moradi discloses "an Intelligent Video Streaming Server" that implements user authentication features. Among the authentication features is a feature "[a]llowing client or franchisee or franchisor to edit and change the password settings by entering the old password, and entering the new password and confirming the new password once more." Moradi ¶[0033].

A POSITA would have recognized that Moradi's password changing feature could easily be incorporated into Nishida in combination with Raja, Kirkland, Hulbert, Netflix Streaming, YouTube, and/or Spotify because these combinations already disclose authentication using a password. A POSITA would have been motivated to implement Moradi's password changing feature to improve the security of the combined system according to well-known methods. A POSITA would have understood the modification or combination to amount to applying a known technique (e.g., allowing a user to change their password) to a known device or method (e.g., a content reproducing system) that is ready for improvement to yield predictable results (e.g., increasing security of user accounts). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(i) Spotify in view of Kirkland and/or Hulbert and/or Olaiya and/or Hasegawa and/or Shinoda and/or Nishida and/or Harper and/or Butler and/or Rae and/or Kang and/or Ayers and/or Takano and/or Moradi and/or Van Buskirk and/or Blockbuster Express Digital

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Kirkland discloses an "on-demand media server device." Kirkland ¶[0012]. Kirkland discloses that this server includes "a web server" that makes media "available via the internet." *Id.*

The server also "includes security mechanisms that allow a user to establish a private server that only the user may communicate with and gain access to the user's media library." *Id.* ¶[0013]. One security mechanism that the server may be equipped with is "a smart card, or other type of removable media, reader/writer" into which the user "may insert the smart card or removable media." *Id.* ¶[0014]. The server then transfers "a digital certificate" to the removable media. *Id.* Thereafter "[t]he smart card or removable medium is required for a remotely located device to gain access to the user's personal media library." *Id.* ¶[0016].

A POSITA would have recognized that Kirkland's user authentication features, including its authentication features utilizing a removable media, could easily have been implemented in Spotify because Spotify already discloses a web service with user authentication. A POSITA would have been motivated to implement these authentication features into Spotify to identify the users that wish to gain access to Spotify in a manner that is convenient for users. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., user authentication, including via a removable media) to improve similar devices or methods (e.g., to improve an internet streaming service) in the same way (e.g., to allow the network to control access to hosted content and allow users to authenticate conveniently). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., user authentication) for use in another device in the same field of endeavor (e.g., an internet streaming service) due to design incentives or other market forces (e.g., to allow the network to control access to hosted content and allow users to authenticate conveniently). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

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A POSITA would have recognized that Hulbert's user authentication features, including its authentication features utilizing a removable media, could easily have been implemented in Spotify because Spotify already disclose a web service with user authentication. A POSITA would have been motivated to implement these authentication features into Spotify to control access to Spotify "to provide easy access to a site and increase user loyalty." Hulbert, 11:12-15. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., user authentication, including via a removable media) to improve similar devices or methods (e.g., to improve an internet streaming service) in the same way (e.g., to allow the network to control access to hosted content and allow users to authenticate conveniently). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., user authentication) for use in another device in the same field of endeavor (e.g., an internet streaming service) due to design incentives or other market forces (e.g., to allow the network to control access to hosted content and allow users to authenticate conveniently). As another example, a POSITA would have understood the modification or combination to amount to applying an express teaching, suggestion, or motivation in the prior art for their combination (e.g., Hulbert's teaching that a USB autorun device is suitable to "provide

access to a private website e.g. a private club or viewing video"). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Olaiya discloses "a system and method for Peer-to-Peer (P2P) media content streaming." Olaiya ¶[0003]. Olaiya discloses that prior to streaming a media content item, the playback device "downloads illustration media content, which is a derivate light-weight version of the original media content." *Id.* This illustration media content may be a "reduced quality version of a media content item." *Id.* ¶[0016]. After downloading the illustration media content, the playback device "initiates streaming." *Id.* ¶[0018]. However, if during streaming "the quality of the network connection falls below a defined threshold, the playback agent switches playback to the illustration media content." *Id.* ¶[0003]. "Thereafter, once the quality of the network connection improves or a new connection is established, the playback agent switches playback back to the streaming original media content." *Id.*

A POSITA would have recognized that Olaiya's disclosures relating to switching playback between streaming content and illustration media content could easily be incorporated into Spotify as Spotify already discloses both local and streaming content. A POSITA would have been motivated to implement Olaiya's playback switching into Spotify to "alleviate[] interruptions in playback resulting from an unstable network." Olaiya ¶[0002]. A POSITA would have understood that, as of the priority date of the '803 Patent, network speed was an important limitation on streaming media. Olaiya's playback switching would mitigate this well-known drawback to Spotify's streaming service. A POSITA would have considered the combination to amount to the use of known techniques (e.g., switching playback between streamed and local content) to improve similar devices or methods (e.g., a streaming service) in the same way (e.g., to enable playback to

continue in the event of a failed or slow connection). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., switching playback between streamed and local content) to a known device or method (e.g., a streaming service) that is ready for improvement to yield predictable results (e.g., to enable playback to continue in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hasegawa discloses a method for "prevention of an interruption in playback of content, even if there is a temporary reduction in the communication circuit speed of the network." Hasegawa ¶[0024]. Hasegawa discloses a playback device capable of playing back DVDs and Blu-ray disks. *Id.* ¶[0028]. When a user inserts a DVD (containing SD video and audio content), the player may instead stream HD content from a server. *Id.* ¶¶[0049], [0054]. Then, "if there is a temporary reduction in the communication circuit speed of the network," the player switches play back to the "SD data of the DVD." *Id.* ¶[0068].

A POSITA would have recognized that Hasegawa's disclosures relating to switching playback between streaming content and illustration media content could easily be incorporated into Spotify as Spotify already discloses both local and streaming content. A POSITA would have been motivated to implement Hasegawa's playback switching into Spotify to account for "temporary reductions in communication circuit speeds of networks, including the Internet, due to a variety of environmental factors." Hasegawa ¶[0005]. A POSITA would have understood that, as of the priority date of the '803 Patent, network speed was an important limitation on streaming media. Hasegawa's playback switching would mitigate this well-known drawback to Spotify's streaming service. A POSITA would have considered the combination to amount to the use of

known techniques (e.g., switching playback between streamed and local content) to improve similar devices or methods (e.g., a streaming service) in the same way (e.g., to enable playback to continue in the event of a failed or slow connection). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., switching playback between streamed and local content) to a known device or method (e.g., a streaming service) that is ready for improvement to yield predictable results (e.g., to enable playback to continue in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Shinoda discloses a method that "enables playback of content of high quality, regardless of the storage capacity of the recording medium, on the player device side." Shinoda ¶[0012]. Shinoda discloses a "mobile entertainment device" with both an "optical disc drive" and a "memory card interface." *Id.* ¶¶[0023], [0026], [0027]. When the device is connected to a network, "video content is supplied from the distribution server." *Id.* ¶[0052]. But Shinoda recognizes that "it is necessary to take into account possible inability to obtain an adequate data transfer rate, and thus discloses a "detection operation" to determine a "communication rate threshold value." *Id.* ¶¶[0068], [0069], [0071]. When the communication rate falls below the threshold, a "playback switching operation" is performed to "carry out switching from playing back content from the network 4 to playing back content from the optical disc 100." *Id.* ¶[0075]. This may comprise switching between "MPEG-4 video from the optical disk" and "MPEG-2 HD video from the network." *Id.*

A POSITA would have recognized that Shinoda's disclosures relating to switching playback between streaming content and illustration media content could easily be incorporated

into Spotify as Spotify already discloses both local and streaming content. A POSITA would have been motivated to implement Shinoda's playback switching into Spotify to account for "possible inability to obtain an adequate data transfer rate depending on, for example, the state of the connected network." Shinoda ¶[0068]. A POSITA would have understood that, as of the priority date of the '803 Patent, network speed was an important limitation on streaming media. Shinoda's playback switching would mitigate this well-known drawback to Spotify's streaming service. A POSITA would have considered the combination to amount to the use of known techniques (e.g., switching playback between streamed and local content) to improve similar devices or methods (e.g., a streaming service) in the same way (e.g., to enable playback to continue in the event of a failed or slow connection). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., switching playback between streamed and local content) to a known device or method (e.g., a streaming service) that is ready for improvement to yield predictable results (e.g., to enable playback to continue in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Nishida discloses a method to "enable content reproduction to be continued even when the communication status is not good." Nishida ¶[0005]. Nishida discloses that "where the communication status is good, a low bit rate stream file is recorded in a temporary recording device." *Id.* ¶[0006]. Then, in the event of an interruption, "a switchover is performed to reproduce a file stored in the temporary storing device." *Id.* Later, when the communication status improves, "high bit rate streaming reproduction is carried out." *Id.*

A POSITA would have recognized that Nishida's disclosures relating to switching playback between streaming content and illustration media content could easily be incorporated into Spotify as Spotify already discloses both local and streaming content. A POSITA would have been motivated to implement Nishida's playback switching into Spotify to account for "the case where the communication status is poor or interrupted." Nishida ¶[0006]. A POSITA would have understood that, as of the priority date of the '803 Patent, network speed was an important limitation on streaming media. Nishida's playback switching would mitigate this well-known drawback to Spotify's streaming service. A POSITA would have considered the combination to amount to the use of known techniques (e.g., switching playback between streamed and local content) to improve similar devices or methods (e.g., a streaming service) in the same way (e.g., to enable playback to continue in the event of a failed or slow connection). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., switching playback between streamed and local content) to a known device or method (e.g., a streaming service) that is ready for improvement to yield predictable results (e.g., to enable playback to continue in the event of a failed or slow connection). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Harper discloses a method to "sell digital content at retail location and transfer the content directly onto a customer's portable device." Harper ¶[0010]. Then, "[w]hen the user returns to his/her home and synchronizes the portable device with the media player on computer 110, the new items acquired from retail store 202 may be detected." *Id.* ¶[0049]. "The content so acquired will then be playable immediately" on the user's computer. *Id.* ¶[0048].

A POSITA would have recognized that Harper's disclosures relating to receiving content from a portable device could easily be incorporated into Spotify because Spotify already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Harper's disclosure of receiving contents data via a portable device into Spotify to enable offline content distribution in addition to network-dependent streaming and downloading. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Butler discloses a "digital watermark" to be applied to contents distributed, for example, via a kiosk. Butler ¶[0020]. The digital watermark may comprise "information about the user (whether a purchaser, recipient, distributor, etc.) of the digital content." *Id.* ¶[0034]. The content

and watermark may be "downloaded to a portable device such as a portable music player or a portable storage device." *Id.* ¶[0117]. The content may then be "copied from the portable storage device to the user's personal computer or other electronic device(s) as desired." *Id.*

A POSITA would have recognized that Butler's disclosures relating to receiving content from a portable device could easily be incorporated into Spotify because Spotify already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Butler's disclosure of receiving contents data via a portable device into Spotify to enable offline content distribution in addition to network-dependent streaming and downloading. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Rae discloses "[s]ystems and methods for over-encrypting symmetrically pre-encrypted content for off-line delivery to playback devices using portable media drives." Rae, 1:66-2:2. Rae discloses that distribution may be via a "kiosk configured to receive a portable media drive." *Id.*, 2:59-67. Rae discloses an encryption system that enables a "playback device" with the proper permissions to enable "playback of the symmetrically encrypted content." *Id.*, 2:59-3:18.

A POSITA would have recognized that Rae's disclosures relating to receiving content from a portable media drive could easily be incorporated into Spotify because Spotify already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Rae's disclosure of receiving contents data via a portable media drive into Spotify to "overcome bandwidth limitations imposed by existing network infrastructure." Rae, 1:18-33. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to

choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kang discloses a "kiosk" that is "a terminal of a contents distribution system installed in public places." Kang ¶[0043]. The kiosk of Kang "may receive contents data from the contents providing server 21, and transmit the contents data to the portable storage medium 24 that is inserted or connected to or communicating with the kiosk 25." *Id.* Then, "the portable storage medium 24 including data related to movie reproduction may be inserted to the contents reproducing apparatus 23 (operation 61)." *Id.* ¶[0057]. A decoder then "decodes A/V data of the selected movie, and outputs the decoded A/V data to the image display unit 231." *Id.* ¶[0059].

A POSITA would have recognized that Kang's disclosures relating to receiving content from a portable storage medium could easily be incorporated into Spotify because Spotify already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Kang's disclosure of receiving contents data via a portable storage medium into Spotify to provide an "off-line manner" of content distribution in addition to network-dependent streaming or downloading. Kang ¶[0054]. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or

modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Ayers discloses "a network of multimedia distribution kiosks for downloading and uploading multimedia data." Ayers ¶[0020]. Content present on a kiosk can be "downloaded immediately" by the user. *Id.* ¶[0046]. Furthermore, "media may be transferred, e.g., to a home system from a mobile system, so that a user can finish using the media. *Id.* ¶[0020].

A POSITA would have recognized that Ayers' disclosures relating to receiving content from a mobile system could easily be incorporated into Spotify because Spotify already discloses a content distribution network with multiple distribution points. A POSITA would have been motivated to implement Ayers' disclosure of receiving contents data via a mobile system into Spotify to enable offline content distribution in addition to network-dependent streaming and downloading. A POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a

POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Takano discloses a "portable storage device"/"iVDR" that "can be a semiconductor memory". Takano further discloses that the iVDR may be connected to a television, and may be transferred between different televisions in the user's home. Takano ¶¶[0022], [0030], [0031].

A POSITA would have recognized that Takano's disclosure of enabling a portable storage device to be transferred between playback devices could easily be incorporated into Spotify because Spotify already discloses downloading content to a storage medium. A POSITA would be motivated to implement Takano's disclosure of enabling transfer of the storage medium to allow the user to play back content on their playback device of choice. *See* Takano ¶[0004] ("users possess a plurality of terminals and selectively use the appropriate terminal according to the location of its usage or the like."). A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., enabling transfer of portable storage between playback devices) to improve similar devices or methods (e.g., a system for distribution of local content) in the same way (e.g., to allow a user to play back content on their playback device of choice). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Moradi discloses "an Intelligent Video Streaming Server" that implements user authentication features. Among the authentication features is a feature "[a]llowing client or franchisee or franchisor to edit and change the password settings by entering the old password, and entering the new password and confirming the new password once more." Moradi ¶[0033].

A POSITA would have recognized that Moradi's password changing feature could easily be incorporated into Spotify because Spotify already discloses authentication using a password. A POSITA would have been motivated to implement Moradi's password changing feature to improve the security of Spotify according to well-known methods. A POSITA would have understood the modification or combination to amount to applying a known technique (e.g., allowing a user to change their password) to a known device or method (e.g., a content distribution service) that is ready for improvement to yield predictable results (e.g., increasing security of user accounts). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Van Buskirk discloses "offer[ing] kiosks where people can browse a catalog of movies, choosing to rent/purchase any of them, upon which it downloads straight onto your USB drive (all brands supported)."

A POSITA would have recognized that Van Buskirk's disclosures relating to receiving movies on a USB drive could easily be incorporated into Spotify because Spotify already discloses a content distribution service with multiple distribution points. A POSITA would have been motivated to implement Van Buskirk's disclosure of receiving contents data via a USB drive into Spotify to enable offline content distribution in addition to network-dependent streaming and downloading. A POSITA would have considered the modification or combination to amount to

combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Blockbuster Express Digital was a kiosk distribution system that offered users movie downloads via SD cards. The user could then play back the movie on mobile phones, TVs, and other devices equipped with SD readers. *See* Dannen.

A POSITA would have recognized that Blockbuster Express Digital's features of receiving content on an SD card could easily be incorporated into Spotify because Spotify already discloses a content distribution service with multiple distribution points. A POSITA would have been motivated to implement Blockbuster Express Digital's disclosure of receiving contents data via an SD card into Spotify to enable offline content distribution in addition to network-dependent streaming and downloading. A POSITA would have considered the modification or combination

to amount to combining prior art elements (e.g., combining content delivery via a kiosk with content delivery via the internet) according to known methods (i.e., according to known methods for kiosk and internet distribution) to yield predictable results (e.g., a media distribution service capable of both online and offline content distribution). As another example, a POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., kiosk distribution) to improve similar devices or methods (e.g., a system for internet content delivery) in the same way (e.g., to provide additional offline content distribution channels). As another example, a POSITA would have considered the combination or modification to amount to using known work in one field of endeavor (e.g., kiosk distribution of content) for use in another device in the same field of endeavor (e.g., an internet distribution service) due to design incentives or other market forces (e.g., the need to provide offline content to devices that may not be reliably connected to the internet). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(3) U.S. Patent No. 9,595,300

The ’300 Patent “relates to the field of navigating the playback of digital content.” ’300 Patent at 1:14-15. More particularly, the Asserted Claims relate to a method, medium, or apparatus for operating a system “for navigating a plurality of chapters of video content within a video.” *Id.* at Claim 1. According to the method and apparatus disclosed in the Asserted Claims, navigation occurs through chapter selection.

The ’300 Patent aims for on-screen display to indicate to the user the current point in the playback of the video within the context of the chapter delineations. *Id.* at Abstract. All the navigation functionality discloses in the ’300 Patent were well-known in the prior art at the time of the Patent’s filing.

(a) Nishikawa ‘716 in view of Angiolillo and/or Vahtola and/or Shiiyama and/or Cronin and/or Poslinski and/or Ackley and/or Kuroiwa ’764 and/or Errico and/or Park ’332 and/or Van de Streek and/or Johnson and/or Boreczky and/or Kuroiwa ’395 and/or Kashima and/or Hua and/or Oetzel

Nishikawa ‘716 discloses that the “invention relates generally to navigating video content, and in particular to navigating bookmarked video content using thumbnailed images thereof.” Nishikawa ‘716, ¶[0002]. It also discloses that one “aspect of the invention is to enable users to place markers at desired locations within recorded or cached video content. In one embodiment, such markers may be placed while the content is being recorded or cached, while in another embodiment the markers may be placed after the content has been recorded or cached. Such markers (which may also be referred to herein as bookmarks or chapter marks) may be used to instantly jump to a particular scene or location within a video presentation.” Nishikawa ‘716, ¶[0017]. Nishikawa ‘716 also discloses “Memory 110 may also include instructions for causing CPU 106 to place, in response to a user instruction, one or more chapter marks at various viewing locations of cached or recorded content. Memory 110 may also instructions for generating one or more thumbnailed images representative of the content at the previously-placed chapter marks.” Nishikawa ‘716, ¶[0024]. Nishikawa ‘716 discloses that the “Video Cassette Recorder (VCR) has changed the lives of television (TV) viewers by allowing viewers to time-shift TV programs to match their lifestyles. Using the VCR, the viewer stores programs onto magnetic tape; this can then be played back at the viewer's convenience. The VCR gives the viewer the ability to pause the program playback whenever he desires, fast-forward through unwanted program material or commercials, and to replay favorite scenes. However, a VCR cannot both capture and play back information at the same time.” Nishikawa ‘716, ¶[0003].

Angiolillo discloses that a " media content instance is provided for display. A plurality of first images are identified associated with locations within a first segment of a media content instance according to a first offset that is one of: a time interval and a number of frames. The first images are retrieved from the media content instance. At least some of the first images are provided for display." Angiolillo, abstract. It also discloses that a "user can navigate a location control pane 320, e.g., using one or more of directional arrow buttons 210-225 on user input device 125. Additionally, the user may navigate location control pane 320 using "fast forward" and "rewind" buttons 270 and 265 as well as other buttons such as "scene skip" buttons (not illustrated in FIG. 2) that allow for navigation according to indexing within a media stream or file, e.g., navigation from track to track on a DVD. "Scene skip" buttons, or the "fast forward" and "rewind" buttons 270 and 265 may be configured to permit a user to navigate images 335 quickly and efficiently." Angiolillo, ¶[0042]. Angiolillo also discloses "[s]torage device 140 may include one or more data storage media, devices, or configurations and may employ any type, form, and combination of storage media. For example, the storage device 140 may include, but is not limited to, a hard drive, network drive, flash drive, magnetic disc, optical disc, or other non-volatile storage unit. Various portions of media content, applications, such as location access control application 155, or a PVR application (not shown), and other data may be temporarily and/or permanently stored in the storage device 140. The storage device 140 of FIG. 1 is shown to be a part of the processing subsystem 105 for illustrative purposes only. It will be understood that the storage device 140 may additionally or alternatively be located external to the processing subsystem 105." Angiolillo, ¶[0026]. It also discloses that the "exemplary control pane 320 illustrated in FIG. 5 is displayed as a vertical bar placed on the right side of media content instance 315, which media content instance 315 is sized so that control pane 320 does not generally obstruct media content instance 315.

Selection tool 325 as illustrated in FIG. 5 is operative to magnify the selected image 345 relative to the other images 335 included in control pane 320. As a user navigates from one image 335 to another using selection tool 325, the image 335 which is currently a selected image 345 may be magnified slightly. When the user navigates away from a given image 335, the previous selected image 345 may return to a "pre-magnified" size. FIG. 6 illustrates a further example of a location control pane 320. Location control pane 320 as illustrated in FIG. 6 is vertically overlaid across a portion of a media content instance 315 on a display 310, allowing media content instance 315 to retain an original size, although a portion of the media content instance 315 over which the location control pane 320 is overlaid may become obscured by the location control pane 320." Angiolillo, ¶¶[0038]-[0039].

A POSITA would have recognized that Angiolillo's disclosures relating to navigating video content could easily be incorporated into Nishikawa '716. A POSITA would have been motivated to implement Angiolillo's navigation and vertical display into Nishikawa '716 to address the problems in Nishikawa '716. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation and file storage was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content with vertical display) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content with vertical display) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination

or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Vahtola discloses "[r]ecording chapter information may include recording a chapter title. Recording a chapter title may involve accessing customizable information stored in the memory device and basing the chapter title at least partially on the customizable information. Receiving user input may instruct a processor to: begin or resume recording the continuous media data to the memory device, and record chapter information for the location in the continuous media data where the processor begins or resumes recording." Vahtola, ¶[0011]. It also discloses that the "processing element 14 can include a processor 20 operatively coupled to a memory 22. The memory 22 can comprise volatile and/or non-volatile memory, and typically stores content, data, or the like. For example, the memory 22 can store client applications, instructions, or the like for the processor 20 to perform steps associated with operation of the entity in accordance with exemplary embodiments of the present invention. Also, for example, the memory 22 can store one or more continuous media data sequences, such as those received from the continuous media data source 12. As is described below, to facilitate navigation of one or more of those sequences (or other purposes described herein), the memory 22 can further store chapter information therein. The memory 22 may be fixed or removable. The memory device 22 may include a hard drive, a CD, a DVD, a Blu-ray disk, a memory card such as a Flash memory card, a Memory stick, a Secure Digital (SD) card and the like, a video tape cassette, an audio tape cassette, and the like." Vahtola, ¶[0034]. Vahtola also discloses "[o]nce the chapters are created, the chapters may be used to generate a table of contents or other menu-type display of the chapters in the recorded continuous media data. In one embodiment, the processor generates a menu in which thumbnail images from the chapter or even portions of the continuous media data from each chapter are displayed in such

a menu. In one embodiment of the present invention, the user can select an image or a portion of continuous media to use in this regard by actuating a particular user input device during the recording of the continuous media data. The thumbnail or the continuous media portion may be then recorded as chapter information or the location (e.g., the frame or range of frames) of the thumbnail or the continuous media portion can be recorded as chapter information. In other embodiments the first frame or the first several seconds of each chapter is used as the thumbnail image or the continuous media portion, respectively." ¶[0061].

A POSITA would have recognized that Vahtola's disclosures relating to navigating video content could easily be incorporated into Nishikawa '716. A POSITA would have been motivated to implement Vahtola's SD card storage and video preview Nishikawa '716 to address the problems in Nishikawa '716. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling data storage, and video preview was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., storing data on an SD card; video preview) to improve similar devices or methods (e.g., navigating video content; displaying previews) in the same way (e.g., navigating video content stored on a drive; displaying video previews). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., storing data on an SD card; video preview) to a known device or method (e.g., navigating video content using chapters) that is ready for improvement to yield predictable results (e.g., , navigating video content stored on a drive; displaying video previews). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Shiiyama discloses that "it is an object of the present invention to allow the user easily to restore synchronous display of a thumbnail image sequence from a state wherein synchronization between the thumbnail image sequence and moving image playback is interrupted by, e.g., scroll operation of the thumbnail image sequence. It is another object of the present invention to allow the user to designate a desired scene more reliably when the thumbnail image sequence is displayed by automatic scroll synchronized with playback of a moving image." Shiiyama, 2:26-29. It also discloses that "when the user wants to make a jump to a desired scene by selecting a given thumbnail image from the thumbnail image sequence, while the thumbnail image sequence is automatically scrolled in synchronism with the displayed moving image, the contents of the thumbnail image sequence have been scrolled at a delicate timing, and the user may select a thumbnail image that he or she did not intend. This is also a problem posed upon displaying a thumbnail image sequence in synchronism with the displayed moving image." Shiiyama, 2:4-13. It also discloses "[w]hen one image of the thumbnail image sequence **2001**, e.g., a thumbnail image corresponding to scene **22**, is designated by mouse operation or the like, a moving image corresponding to scene **22** is played back on the moving image playback area **2000**." Shiiyama, 1:38-42. Shiiyama also discloses "[a]s the storage medium for supplying the program code, for example, a floppy disk, hard disk, optical disk, magneto-optical disk, CD-ROM, CD-R, magnetic tape, nonvolatile memory card, ROM, and the like may be used." 17:37-40.

A POSITA would have recognized that Shiiyama's disclosures relating to navigating video content could easily be incorporated into Nishikawa '716. A POSITA would have been motivated to implement Shiiyama's storage on a flash drive into Nishikawa '716 to address the problems in Nishikawa '716. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation and file storage was important. A POSITA would have considered

the combination to amount to the use of known techniques (e.g., storing data on flash memory) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content stored on a drive). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., storing data on flash memory) to a known device or method (e.g., navigating video content using chapters) that is ready for improvement to yield predictable results (e.g., navigating video content stored on a drive). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Cronin discloses that in "accordance with one or more aspects of the thumbnail navigation bar for video, video content is accessed. Multiple thumbnails corresponding to the video content are generated by generating, for each of multiple locations of the video content, a thumbnail of the video content that is displayed at the location. The multiple thumbnails are made available as the thumbnails of a navigation bar to be displayed on a display device in response to a user request to display the navigation bar received while the video content is being played on the display device." Cronin at ¶[0004]. It also discloses that "[v]ideo content display module 114 receives video content 106, converts video content 106 into a format that can be displayed by a display device, and outputs the converted video content as video content 116. Video content display module 114 also optionally extracts particular content from video content 106, such as tuning to a particular channel, selecting a particular stream, and so forth. Navigation bar display module 104 optionally receives a series of thumbnails 108 corresponding to video content 106 and video content 116. Other types of content corresponding to video content 106, such as audio content, are also oftentimes received by device 102. Thumbnails 108 can be received from a same or different source as video content 106, or alternatively can be generated by device 102." Cronin at ¶[0015].

It also discloses "[n]avigation bar 204 thus provides a user interface that allows a user to quickly and easily rewind and/or fast forward through video content. The user can rewind and/or fast forward through the video content by scrolling through the thumbnails of the navigation bar to select the particular location he or she would like to jump to, and then selecting a thumbnail corresponding to that particular location. Playback of the video content then begins at the location corresponding to the selected thumbnail. Using navigation bar 204, the user is able to move swiftly through the thumbnails corresponding to the video content and is oftentimes less likely to overshoot a particular location or thumbnail he or she is looking for." Cronin at ¶[0032].

A POSITA would have recognized that Cronin's disclosures relating to navigating video content could easily be incorporated into Nishikawa '716. A POSITA would have been motivated to implement Cronin's thumbnail navigation into Nishikawa '716 to address the problems in Nishikawa '716. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., thumbnail navigation) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content via thumbnails). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., thumbnail navigation) to a known device or method (e.g., navigating video content using chapters) that is ready for improvement to yield predictable results (e.g., navigating video content via thumbnails). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Poslinski discloses that "[i]n one exemplary embodiment, media content received at the tuner (105) is temporarily buffered, or stored, in a live cache buffer (110). If there are multiple

tuners (105), there may be a live cache buffer (110) corresponding to each of the tuners (105). As shown in FIG. 1, the live cache buffer (110) may be a part of the storage device (109) (e.g. a reserved portion of a hard dive). In an alternative embodiment (not shown), the live cache buffer (110) may reside in memory (102) or in a storage device external to the STB (100). Media content received into the live cache buffer (110) has a temporary recording designation. In other words, the media content stored in the live cache buffer (110) will either be deleted or retained through election by the user as a permanent recording. A permanent recording will be understood to mean media content that is stored for an extended period of time as decided by the user. Permanent recordings may be stored in a permanent storage unit (119), for example. The permanent storage unit (119) may be a part of the storage device (109) or it may be a stand-alone unit. For example, the permanent storage unit (119) may be a hard drive, an optical disc, a network drive, a buffer in memory, or any other type of permanent storage device that is a part of the storage unit (109) or that is a stand-alone unit." Poslinksi, ¶[0030]. It also discloses ""In one of many possible embodiments, the present invention provides a method and system for displaying a number of portions of a number of recorded media content instances during a single viewing session. The method includes defining a number of entries such that each of the number of entries corresponds to one of the number of portions of the number of recorded media content instances, including each of the entries in a play list, and selecting the play list from a number of play lists for viewing. The portions of the number of recorded media content instances included in the entries in the play list are then displayed during the single viewing session." Poslinski, ¶[0006].

A POSITA would have recognized that Poslinski's disclosures relating to assembling the timeline could easily be incorporated into Nishikawa '716. A POSITA would have been motivated to implement Poslinski's timeline assembly into Nishikawa '716 to address the problems in

Nishikawa ‘716. A POSITA would have understood that, as of the priority date of the ’300 Patent, timeline creation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., timeline assembly) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content via an assembled timeline). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., timeline assembly) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content via an assembled timeline). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Ackley discloses “The present disclosure provides a user friendly navigation scheme to media and media players. The disclosure provides for a menu system that overlays the video on a DVD, and can be viewed and selections made during viewing of a video stream. The system and method applies to media players, including but not limited to DVD players, software DVD-ROM players, high definition video players, hard drive based players, optical players, personal computers, or any other media player known to one of ordinary skill in the art.” Ackley, ¶[0008]. It also discloses that “[i]n another embodiment, thumbnails may include different video sources. In other words, each thumbnail 510 represents a different movie, a documentary, trailer, etc., originating from sources other than the media player. For instance, the media player may be connected to the Internet, and if a specific thumbnail is selected, a particular video may be downloaded from the Internet. Likewise, the video source may be a personal computer attached to the media player. The personal computer would have a hard drive with stored videos that are selectable by the media player.” Ackley, ¶[0049].

A POSITA would have recognized that Ackley's disclosures relating to video preview could easily be incorporated into Nishikawa '716. A POSITA would have been motivated to implement Ackley's video preview into Nishikawa '716 to address the problems in Nishikawa '716. A POSITA would have understood that, as of the priority date of the '300 Patent, video preview was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., video preview) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content while showing a video preview). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., video preview) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content while showing a video preview). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kuriowa '764 discloses "[a]n information processing apparatus includes area image extracting means for extracting, as a telop image, an area displaying a telop in contents, detecting means for detecting a scene change in images of the contents, recording means for converting an image at the time when a scene change is detected by the detecting means to a thumbnail image and recording the thumbnail image, display control means for controlling to arrange and display a plurality of the thumbnail images and a plurality of the telop images chronologically, and playing means for playing the contents from the position corresponding to the selected thumbnail image or telop image." Kuroiwa '764 at Abstract. It also discloses "the contents recording section 23 controls a scene change detecting section 71 to detect the time upon scene change in frames and supplies the detection result to a film roll data creating section 72. The film roll data creating

section 72 converts the image of the frame immediately after the scene change corresponding to the time code of the time upon scene change to a thumbnail image and records the result to film roll data 92 and stores the film roll data 92 in the contents data storage section 24 in connection with the contents data 91. The image recording section 73 causes the contents data storage section 24 to store information on the contents obtained by the contents recording section 23 as contents data." Kuroiwa '764 at 4:60–5:5. It discloses the "display control means may control to display the contents being currently played and the telop image on one screen." Kuroiwa '764 at 2:18–20.

A POSITA would have recognized that Kuriowa '764's disclosures relating to navigating video content could easily be incorporated into Nishikawa '716. A POSITA would have been motivated to implement Kuriowa '764's navigation into Nishikawa '716 to address the problems in Nishikawa '716. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Errico discloses "A system for presenting a summarization of audio and/or visual content having a plurality of segments to a user together with a graphical user interface that preferably indicates to the viewer the relative temporal position of video segments viewed in the summary

within the content from which the summary was derived." Errico at Abstract. It also discloses "One example of a personalized nagivational [sic] control is a button configured to 'replay the last two seconds of the segment previously viewed.' This macro button could be as follows: smart skip, in reverse, one segment, no theme change, offset two seconds, from end of segment, with zero fade in; play, for two seconds, in default mode; and resume prior navigation operation." Errico at 10:61–67. It also discloses "The amount of video content is expanding at an ever increasing rate, some of which includes sporting events. Simultaneously, the available time for viewers to consume or otherwise view all of the desirable video content is decreasing. With the increased amount of video content coupled with the decreasing time available to view the video content, it becomes increasingly problematic for viewers to view all of the potentially desirable content in its entirety. Accordingly, viewers are increasingly selective regarding the video content that they select to view. To accommodate viewer demands, techniques have been developed to provide a summarization of the video representative in some manner of the entire video. Video summarization likewise facilitates additional features including browsing, filtering, indexing, retrieval, etc. The typical purpose for creating a video summarization is to obtain a compact representation of the original video for subsequent viewing." Errico, 1:12-28. It adds that "There are two major approaches to video summarization. The first approach for video summarization is key frame detection… The second approach for video summarization is directed at detecting events that are important for the particular video content." Errico, 1:29-43.

A POSITA would have recognized that Errico's disclosures relating to navigating video content could easily be incorporated into Nishikawa '716. A POSITA would have been motivated to implement Errico's navigation into Nishikawa '716 to address the problems in Nishikawa '716. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video

navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Park ’332 discloses ““Provided are an apparatus and method of displaying multimedia contents, more particularly, an apparatus and method of displaying stored multimedia contents to accommodate a user's preference using limited buttons of a remote control device or a cellular phone. The apparatus for displaying multimedia contents includes an alignment condition determination unit determining an alignment condition corresponding to a first user command signal among a plurality of alignment conditions, a detailed condition determination unit determining a detailed condition corresponding to a second user command signal among detailed conditions included in the alignment condition, a contents extraction unit extracting first multimedia contents according to the determined detailed condition, and a display unit displaying the determined alignment condition in a first region, the determined detailed condition in a second region, and a second multimedia contents selected by a user among the extracted first multimedia contents in a third region of a screen.” Park ’332 at Abstract. It also discloses “Increasing Internet usage by users having various backgrounds and interests has had a huge impact on all digital industries, particularly with respect to Internet-based services and contents which may be

customized based on a user's background and interests. Internet-based services and contents, which are provided through the Internet, are becoming the standards of digital industries in the 21st century. In addition, due to the fast growth of Internet networks and multimedia contents in cellular phones, PDAs, and notebook computers, utilization of multimedia is essential rather than optional. The development from analog TV to digital TV is in progress, and users may receive various types of information, as well as public broadcast, through the TV." Park '332 at 1:25-38.

A POSITA would have recognized that Park '332's disclosures relating to navigating video content could easily be incorporated into Nishikawa '716. A POSITA would have been motivated to implement Park '332's navigation into Nishikawa '716 to address the problems in Nishikawa '716. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Van De Streek discloses a "[m]ethod of and system for selecting a position in an image sequence. A representation (200) of the image sequence is displayed, together with a position indicator (206) configured to be moved along the representation (200). The position in the image sequence is selected in correspondence to a present position of the position indicator (206). A

collection of key frames is obtained, each key frame being associated with a portion of the representation (200). From this collection of key frames a current key frame (212) is displayed whose associated portion comprises a present position of the position indicator (206). Indications (205) of the locations of the key frames in the collection may be shown as well." Van De Streek at Abstract. It also discloses "The invention relates to a method of selecting a position in an image sequence, comprising displaying a representation of the image sequence, providing a position indicator configured to be moved along the representation, and selecting the position in the image sequence in correspondence to a present position of the position indicator." Van De Streek at [0001]. It also discloses "The known system has the disadvantage that the viewer can only see the frame on the video stream corresponding to the location of the slider along the bar. This makes it very difficult for him to establish the context in which this frame occurs in the video stream, and so makes it difficult for him to navigate through the video stream." Van De Streek at [0006].

A POSITA would have recognized that Van De Streek's disclosures relating to navigating video content could easily be incorporated into Nishikawa '716. A POSITA would have been motivated to implement Van De Streek's navigation into Nishikawa '716 to address the problems in Nishikawa '716. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., preview video) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual preview). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., preview video) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with video preview). A POSITA would have considered the

combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Johnson discloses an "[a]pparatus, system and method for the navigation of aggregated content using skipping and content metadata. An apparatus includes a processor to receive a control signal from a navigation controller and to display a skip function user interface on a display device. The skip function user interface is used to navigate aggregated content items and includes one or more skip boxes. Each of the one or more skip boxes is associated with a content item in the aggregated content items. Other embodiments are described and claimed." Johnson at Abstract. It also discloses that in "one embodiment, platform 510 may comprise a CPU 512, a chip set 513, one or more drivers 514, one or more network connections 515, an operating system 516, and/or a media center application 517 comprising one or more software applications, for example. Platform 510 also may comprise storage 518. Storage 518 may include control and content data used to define the functionality and metadata associated with skip function user interface 202." Johnson at [0037].

A POSITA would have recognized that Johnson's disclosures relating to navigating video content could easily be incorporated into Nishikawa '716. A POSITA would have been motivated to implement Johnson's metadata into Nishikawa '716 to address the problems in Nishikawa '716. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., metadata) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with metadat). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., metadata) to a known device or method (e.g., navigating video content) that is

ready for improvement to yield predictable results (e.g., navigating video content with metadata). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Boreczky discloses a "system is provided where a number of representative video snapshots are displayed on a timeline indicating a position to jump to in a video using control buttons, such as fast forward, reverse, or a timeline scroll bar. The video snapshots are obtained by opening a low resolution connection to a video server to receive forward looking video segments. The forward looking video segments are summarized and the representative video snapshots are selected and displayed to provide a reference frame for the user to select a timeline position, or snapshots directly linked to positions in the higher resolution video. Backward looking video segments may be similarly summarized from the low resolution connection, or alternatively from video previously played. As the video progresses, new forward looking video segments are received and new representative video snapshots are summarized and displayed in close proximity with the video being played." Boreczky at Abstract. It also discloses ""The present invention includes a computer program product which is a storage medium (media) having instructions stored thereon/in which can be used to program a computer to perform any of the processes of the present invention. The storage medium can include, but is not limited to, any type of disk including floppy disks, optical discs, DVD, CD-ROMS, microdrive, and magneto-optical disks, ROMs, RAMs, EPROMs, EEPROMs, DRAMs, VRAMs, flash memory devices, magnetic or optical cards, nanosystems (including molecular memory ICs), or any type of media or device suitable for storing instructions and/or data." Boreczky at 9:8–18. It also discloses "an embodiment of the present invention during playback of a video, such as a video invoked by commands 325 and displayed on display device 330 by a video application running on device 320. A video 400

displays a current playback position of a video data stream being played by the video application. Video controls 410 (pause/play button) and slide bar 415 allow user control and user movements of the current playback position. Alternate embodiments include step and/or skip back and forward functions, fast forward, fast rewind, go to start, go to end, jump to next index point, jump to last index point, and any other type of control that might be associated with a video playback device. Slide bar 415 is displayed in conjunction with a timeline (0:00. .33:30, for example) which provides timing marks indicating approximate positions of the video in correspondence to other points in the video. Alternatively, instead of an entire video segment being displayed on the timeline, any selected portions of the video may be represented on the timeline." Boreczky at 4:36–54.

A POSITA would have recognized that Boreczky's disclosures relating to navigating video content could easily be incorporated into Nishikawa '716. A POSITA would have been motivated to implement Boreczky's navigation into Nishikawa '716 to address the problems in Nishikawa '716. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kuroiwa ’395 discloses an “information processing apparatus includes a content metadata obtaining unit configured to obtain content metadata; a determination unit configured to determine the category of the content metadata; an editing unit configured to edit the content metadata so that, when text data of the content metadata is to be reproduced on the basis of the category of the content metadata determined by the determination unit, information on a predetermined link destination is displayed in response to a predetermined operation being performed on the reproduced text data; a reproduction unit configured to reproduce the text data of the content metadata in synchronization with the reproduction of the content; and a display unit configured to display the information on the link destination on the basis of the content metadata edited by the editing unit when the predetermined operation is performed on the text data of the content metadata reproduced by the reproduction unit.” Kuroiwa ’395 at Abstract. It also discloses that in “recent years, a technology has been proposed in which text information contained in an EPG is displayed, and also a search process is performed by a search engine via the Internet by using the text information as a keyword and a search result is displayed (see Japanese Unexamined Patent Application Publication No. 2004-23345).” Kuroiwa ’395 at 1:30-35.

A POSITA would have recognized that Kuriowa ‘395’s disclosures relating to navigating video content could easily be incorporated into Nishikawa ‘716. A POSITA would have been motivated to implement Kuriowa ‘395’s navigation into Nishikawa ‘716 to address the problems in Nishikawa ‘716. A POSITA would have understood that, as of the priority date of the ’300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the

modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kashima discloses a "display control apparatus: in a virtual three-dimensional space in which is disposed a three-dimensional model of an object contained in a moving image picked up by performing successive imaging operations once by using an imaging device, draws a plurality of thumbnail images extracted from the moving image to the respective positions of the imaging device at the time when the thumbnail images were picked up and draws information that relates the thumbnail images in order in which they were picked up, thereby generating a bird's eye-display image which provides a bird's-eye-view drawing of the virtual three-dimensional space containing the three-dimensional model and the thumbnail images; and causes a display unit to display the bird's eye-display image." Kashima at Abstract. It also discloses the "storage unit may store movement track information which represents a movement track of the imaging device at the time when the imaging device picked up the moving image, as additional information of the moving image and the display image generation unit may draw the thumbnail images in the virtual three-dimensional space at the respective positions of the imaging device at the time when the thumbnail images were picked up based on the movement track information." Kashima at 2:9-17. Kashima discloses "There are regular playback display and film roll display available as a video display method for displaying moving images picked up and video-recorded with an imaging device such as a video camera. The regular playback display method will display a video (x-axis and y-axis of an imaging plane) by reproducing its video-recorded moving images sequentially

from the beginning along a time axis t. The user can grasp imaged contents by viewing the video thus reproduced regularly but in a considerable lapse of time. To reduce the time, a method is available for fast-forwarding the moving images in playback display but still requires a lapse of time to some extent in order to grasp the imaged contents of the moving images as a whole." Kashima, 1:10-23. It also discloses "[a]ccording to the film roll display approach, if an arbitrary one is selected from among the thumbnail images displayed in a list, it is possible also to display the moving images by regularly reproducing them starting from a playback position that corresponds to the thumbnail image. According to such film roll display, the user can understand the imaged contents of the moving images as a whole more easily than by the regular playback display." Kashim, 1:29-36

A POSITA would have recognized that Kashima's disclosures relating to navigating video content could easily be incorporated into Nishikawa '716. A POSITA would have been motivated to implement Kashima's navigation into Nishikawa '716 to address the problems in Nishikawa '716. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hua discloses "Smart video presentation involves presenting one or more videos in a video presentation user interface (IU). In example implementation, a video presentation UI includes a listing of multiple video entries, with each video entry including multiple static thumbnails to represent the corresponding video. In another example implementation, a video presentation UI includes a scalable number of static thumbnails to represent a video, with the scalable number adjustable by a user with a scaling interface tool. In yet another example implementation, a video presentation UI includes a video playing region, a video slider bar region, and a filmstrip region that presents multiple static thumbnails for a video that is playable in the video playing region." Hua at Abstract. Hua also discloses "[v]ideos 104 can be stored at local storage, on a local network, over the internet, some combination thereof, and so forth. For example, they may be stored on flash memory or a local hard drive. They may also be stored on a local area network (LAN) server. Alternatively, they may be stored at a server farm and/or storage area network (SAN) that is connected to the internet. In short, videos 104 may be stored at and/or retrieved from any processor-accessible media." Hua at [0020]. It also discloses "People and organizations store a significant number of items on their computing devices. These items can be text files, data files, images, videos, or some combination thereof. To be able to utilize such items, users must be able to locate, retrieve, manipulate, and otherwise manage those items that interest them. Among the various types of items, it can be particularly challenging to locate and/or manage videos due to their dynamic nature and oftentimes long lengths" Hua, [0002].

A POSITA would have recognized that Hua's disclosures relating to navigating video content could easily be incorporated into Nishikawa '716. A POSITA would have been motivated to implement Hua's navigation into Nishikawa '716 to address the problems in Nishikawa '716. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video

navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Oetzel discloses "[t]he present embodiments provide methods and apparatuses for use in navigating through content. Some embodiments provide methods for use in navigating through content that receive an initial first directional control command, activate a seek mode upon receipt of the initial first directional control command comprising advancing over a first amount of content in a first direction from a first point in the content to a second point in the content, receive an initial second directional control command following the receipt of the initial first directional command, and activate a search mode upon receipt of the initial second directional control command, comprising advancing back over a second amount of the first amount of the content where the second amount is less than the first amount of the content." Oetzel at Abstract. It also discloses "[t]he present embodiments advantageously addresses the needs above as well as other needs by providing a apparatus for use in navigating through content, such multimedia content, textual content, web or internet content, graphics content, picture content and substantially any relevant content. Some embodiments provide methods for use in navigating through content, comprising receiving an initial first directional control command; activating a seek mode upon receipt of the

initial first directional control command, comprising advancing over a first amount of content in a first direction from a first point in the content to a second point in the content; receiving an initial second directional control command following the receipt of the initial first directional command; and activating a search mode upon receipt of the initial second directional control command, comprising advancing back over a second amount of the first amount of the content wherein the second amount is less than the first amount of the content." Oetzel at [0005]. Oetzel also discloses "[i]ncreased amounts of content often result in increased needs to access the content. However, identifying and/or finding desired content can be difficult do at least in part to the increased amount of content and/or the increased amount of data utilized in recording the content." Oetzel at [0004].

A POSITA would have recognized that Oetzel's disclosures relating to navigating video content could easily be incorporated into Nishikawa '716. A POSITA would have been motivated to implement Oetzel's navigation into Nishikawa '716 to address the problems in Nishikawa '716. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

DVD Explorer discloses a DVR system. Explorer Manual at 1. It also discloses pausing and recording a live program with timeline bar shown on the screen with the video. Explorer Manual at 9. It also discloses that once can "watch and record high-definition programs" *Id*. at 2. DVD Explorer also discloses navigating videos. *See generally,* Explorer Manual 3-6.

A POSITA would have recognized that DVD Explorer's disclosures relating to navigating video content could easily be incorporated into Nishikawa '716. A POSITA would have been motivated to implement DVD Explorer's navigation into Nishikawa '716 to address the problems in Nishikawa '716. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(b) DVD Architect in view of Nishikawa '716 and/or Angiolillo and/or Vahtola and/or Shiiyama and/or Cronin and/or Poslinski and/or Ackley and/or Kuroiwa '764 and/or Errico and/or Park '332 and/or Van de Streek and/or Johnson and/or Boreczky and/or Kuroiwa '395 and/or Kashima and/or Hua and/or Oetzel

DVD Architect discloses a creating a DVD with chapters that can be used for navigation. *See, e.g.*, Sony Vegas Movie Studio: Adding Markers Tutorial; DVD Architect - creating DVD

Menus. It also discloses using those chapters for navigation. *See, e.g.*, DVD Architect. Vintage King Website; DVD Architect - creating DVD Menus. It discloses using a focus identifier for navigation. *See, e.g.*, DVD Architect. Vintage King Website; DVD Architect - creating DVD Menus.

Nishikawa '716 discloses that the "invention relates generally to navigating video content, and in particular to navigating bookmarked video content using thumbnailed images thereof." Nishikawa '716, ¶[0002]. It also discloses that one "aspect of the invention is to enable users to place markers at desired locations within recorded or cached video content. In one embodiment, such markers may be placed while the content is being recorded or cached, while in another embodiment the markers may be placed after the content has been recorded or cached. Such markers (which may also be referred to herein as bookmarks or chapter marks) may be used to instantly jump to a particular scene or location within a video presentation." Nishikawa '716, ¶[0017]. Nishikawa '716 also discloses "Memory 110 may also include instructions for causing CPU 106 to place, in response to a user instruction, one or more chapter marks at various viewing locations of cached or recorded content. Memory 110 may also instructions for generating one or more thumbnailed images representative of the content at the previously-placed chapter marks." Nishikawa '716, ¶[0024]. Nishikawa '716 discloses that the "Video Cassette Recorder (VCR) has changed the lives of television (TV) viewers by allowing viewers to time-shift TV programs to match their lifestyles. Using the VCR, the viewer stores programs onto magnetic tape; this can then be played back at the viewer's convenience. The VCR gives the viewer the ability to pause the program playback whenever he desires, fast-forward through unwanted program material or commercials, and to replay favorite scenes. However, a VCR cannot both capture and play back information at the same time." Nishikawa '716, ¶[0003].

A POSITA would have recognized that Nishikawa '716's disclosures relating to navigating video content could easily be incorporated into DVD Architect. A POSITA would have been motivated to implement Nishikawa '716's navigation into DVD Architect to address the problems in DVD Architect. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content using chapters) to improve similar devices or methods (e.g., navigating video content using focus identifiers) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content using chapters) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Angiolillo discloses that a " media content instance is provided for display. A plurality of first images are identified associated with locations within a first segment of a media content instance according to a first offset that is one of: a time interval and a number of frames. The first images are retrieved from the media content instance. At least some of the first images are provided for display." Angiolillo, abstract. It also discloses that a "user can navigate a location control pane 320, e.g., using one or more of directional arrow buttons 210-225 on user input device 125. Additionally, the user may navigate location control pane 320 using "fast forward" and "rewind" buttons 270 and 265 as well as other buttons such as "scene skip" buttons (not illustrated in FIG. 2) that allow for navigation according to indexing within a media stream or file, e.g., navigation

from track to track on a DVD. “Scene skip” buttons, or the “fast forward” and “rewind” buttons 270 and 265 may be configured to permit a user to navigate images 335 quickly and efficiently.” Angiolillo, ¶[0042]. Angiolillo also discloses “[s]torage device 140 may include one or more data storage media, devices, or configurations and may employ any type, form, and combination of storage media. For example, the storage device 140 may include, but is not limited to, a hard drive, network drive, flash drive, magnetic disc, optical disc, or other non-volatile storage unit. Various portions of media content, applications, such as location access control application 155, or a PVR application (not shown), and other data may be temporarily and/or permanently stored in the storage device 140. The storage device 140 of FIG. 1 is shown to be a part of the processing subsystem 105 for illustrative purposes only. It will be understood that the storage device 140 may additionally or alternatively be located external to the processing subsystem 105.” Angiolillo, ¶[0026]. It also discloses that the “exemplary control pane 320 illustrated in FIG. 5 is displayed as a vertical bar placed on the right side of media content instance 315, which media content instance 315 is sized so that control pane 320 does not generally obstruct media content instance 315. Selection tool 325 as illustrated in FIG. 5 is operative to magnify the selected image 345 relative to the other images 335 included in control pane 320. As a user navigates from one image 335 to another using selection tool 325, the image 335 which is currently a selected image 345 may be magnified slightly. When the user navigates away from a given image 335, the previous selected image 345 may return to a “pre-magnified” size. FIG. 6 illustrates a further example of a location control pane 320. Location control pane 320 as illustrated in FIG. 6 is vertically overlaid across a portion of a media content instance 315 on a display 310, allowing media content instance 315 to retain an original size, although a portion of the media content instance 315 over which the location

control pane 320 is overlaid may become obscured by the location control pane 320." Angiolillo, ¶¶[0038]-[0039].

A POSITA would have recognized that Angiolillo's disclosures relating to navigating video content could easily be incorporated into DVD Architect. A POSITA would have been motivated to implement Angiolillo's navigation and vertical display into DVD Architect to address the problems in DVD Architect. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation and file storage was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content with vertical display) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content with vertical display) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Vahtola discloses "[r]ecording chapter information may include recording a chapter title. Recording a chapter title may involve accessing customizable information stored in the memory device and basing the chapter title at least partially on the customizable information. Receiving user input may instruct a processor to: begin or resume recording the continuous media data to the memory device, and record chapter information for the location in the continuous media data where the processor begins or resumes recording." Vahtola, ¶[0011]. It also discloses that the "processing element 14 can include a processor 20 operatively coupled to a memory 22. The

memory 22 can comprise volatile and/or non-volatile memory, and typically stores content, data, or the like. For example, the memory 22 can store client applications, instructions, or the like for the processor 20 to perform steps associated with operation of the entity in accordance with exemplary embodiments of the present invention. Also, for example, the memory 22 can store one or more continuous media data sequences, such as those received from the continuous media data source 12. As is described below, to facilitate navigation of one or more of those sequences (or other purposes described herein), the memory 22 can further store chapter information therein. The memory 22 may be fixed or removable. The memory device 22 may include a hard drive, a CD, a DVD, a Blu-ray disk, a memory card such as a Flash memory card, a Memory stick, a Secure Digital (SD) card and the like, a video tape cassette, an audio tape cassette, and the like." Vahtola, ¶[0034]. Vahtola also discloses "[o]nce the chapters are created, the chapters may be used to generate a table of contents or other menu-type display of the chapters in the recorded continuous media data. In one embodiment, the processor generates a menu in which thumbnail images from the chapter or even portions of the continuous media data from each chapter are displayed in such a menu. In one embodiment of the present invention, the user can select an image or a portion of continuous media to use in this regard by actuating a particular user input device during the recording of the continuous media data. The thumbnail or the continuous media portion may be then recorded as chapter information or the location (e.g., the frame or range of frames) of the thumbnail or the continuous media portion can be recorded as chapter information. In other embodiments the first frame or the first several seconds of each chapter is used as the thumbnail image or the continuous media portion, respectively." ¶[0061].

A POSITA would have recognized that Vahtola's disclosures relating to navigating video content could easily be incorporated into DVD Architect. A POSITA would have been motivated

to implement Vahtola's SD card storage and video preview DVD Architect to address the problems in DVD Architect. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling data storage, and video preview was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., storing data on an SD card; video preview) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content stored on a drive; displaying video previews). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., storing data on an SD card; video preview) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., , navigating video content stored on a drive; displaying video previews). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Shiiyama discloses that "it is an object of the present invention to allow the user easily to restore synchronous display of a thumbnail image sequence from a state wherein synchronization between the thumbnail image sequence and moving image playback is interrupted by, e.g., scroll operation of the thumbnail image sequence. It is another object of the present invention to allow the user to designate a desired scene more reliably when the thumbnail image sequence is displayed by automatic scroll synchronized with playback of a moving image." Shiiyama, 2:26-29. It also discloses that "when the user wants to make a jump to a desired scene by selecting a given thumbnail image from the thumbnail image sequence, while the thumbnail image sequence is automatically scrolled in synchronism with the displayed moving image, the contents of the thumbnail image sequence have been scrolled at a delicate timing, and the user may select a thumbnail image that he or she did not intend. This is also a problem posed upon displaying a

thumbnail image sequence in synchronism with the displayed moving image." Shiiyama, 2:4-13. It also discloses "[w]hen one image of the thumbnail image sequence **2001**, e.g., a thumbnail image corresponding to scene **22**, is designated by mouse operation or the like, a moving image corresponding to scene **22** is played back on the moving image playback area **2000**." Shiiyama, 1:38-42. Shiiyama also discloses "[a]s the storage medium for supplying the program code, for example, a floppy disk, hard disk, optical disk, magneto-optical disk, CD-ROM, CD-R, magnetic tape, nonvolatile memory card, ROM, and the like may be used." 17:37-40.

A POSITA would have recognized that Shiiyama's disclosures relating to navigating video content could easily be incorporated into DVD Architect. A POSITA would have been motivated to implement Shiiyama's storage on a flash drive into DVD Architect to address the problems in DVD Architect. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation and file storage was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., storing data on flash memory) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content stored on a drive). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., storing data on flash memory) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content stored on a drive). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Cronin discloses that in "accordance with one or more aspects of the thumbnail navigation bar for video, video content is accessed. Multiple thumbnails corresponding to the video content are generated by generating, for each of multiple locations of the video content, a thumbnail of the

video content that is displayed at the location. The multiple thumbnails are made available as the thumbnails of a navigation bar to be displayed on a display device in response to a user request to display the navigation bar received while the video content is being played on the display device." Cronin at ¶[0004]. It also discloses that "[v]ideo content display module 114 receives video content 106, converts video content 106 into a format that can be displayed by a display device, and outputs the converted video content as video content 116. Video content display module 114 also optionally extracts particular content from video content 106, such as tuning to a particular channel, selecting a particular stream, and so forth. Navigation bar display module 104 optionally receives a series of thumbnails 108 corresponding to video content 106 and video content 116. Other types of content corresponding to video content 106, such as audio content, are also oftentimes received by device 102. Thumbnails 108 can be received from a same or different source as video content 106, or alternatively can be generated by device 102." Cronin at ¶[0015]. It also discloses "[n]avigation bar 204 thus provides a user interface that allows a user to quickly and easily rewind and/or fast forward through video content. The user can rewind and/or fast forward through the video content by scrolling through the thumbnails of the navigation bar to select the particular location he or she would like to jump to, and then selecting a thumbnail corresponding to that particular location. Playback of the video content then begins at the location corresponding to the selected thumbnail. Using navigation bar 204, the user is able to move swiftly through the thumbnails corresponding to the video content and is oftentimes less likely to overshoot a particular location or thumbnail he or she is looking for." Cronin at ¶[0032].

A POSITA would have recognized that Cronin's disclosures relating to navigating video content could easily be incorporated into DVD Architect. A POSITA would have been motivated to implement Cronin's thumbnail navigation into DVD Architect to address the problems in DVD

Architect. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., thumbnail navigation) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content via thumbnails). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., thumbnail navigation) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content via thumbnails). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Poslinski discloses that "[i]n one exemplary embodiment, media content received at the tuner (105) is temporarily buffered, or stored, in a live cache buffer (110). If there are multiple tuners (105), there may be a live cache buffer (110) corresponding to each of the tuners (105). As shown in FIG. 1, the live cache buffer (110) may be a part of the storage device (109) (e.g. a reserved portion of a hard dive). In an alternative embodiment (not shown), the live cache buffer (110) may reside in memory (102) or in a storage device external to the STB (100). Media content received into the live cache buffer (110) has a temporary recording designation. In other words, the media content stored in the live cache buffer (110) will either be deleted or retained through election by the user as a permanent recording. A permanent recording will be understood to mean media content that is stored for an extended period of time as decided by the user. Permanent recordings may be stored in a permanent storage unit (119), for example. The permanent storage unit (119) may be a part of the storage device (109) or it may be a stand-alone unit. For example, the permanent storage unit (119) may be a hard drive, an optical disc, a network drive, a buffer in

memory, or any other type of permanent storage device that is a part of the storage unit (109) or that is a stand-alone unit." Poslinksi, ¶[0030]. It also discloses ""In one of many possible embodiments, the present invention provides a method and system for displaying a number of portions of a number of recorded media content instances during a single viewing session. The method includes defining a number of entries such that each of the number of entries corresponds to one of the number of portions of the number of recorded media content instances, including each of the entries in a play list, and selecting the play list from a number of play lists for viewing. The portions of the number of recorded media content instances included in the entries in the play list are then displayed during the single viewing session." Poslinski, ¶[0006].

A POSITA would have recognized that Poslinski's disclosures relating to assembling the timeline could easily be incorporated into DVD Architect. A POSITA would have been motivated to implement Poslinski's timeline assembly into DVD Architect to address the problems in DVD Architect. A POSITA would have understood that, as of the priority date of the '300 Patent, timeline creation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., timeline assembly) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content via an assembled timeline). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., timeline assembly) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content via an assembled timeline). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Ackley discloses "The present disclosure provides a user friendly navigation scheme to media and media players. The disclosure provides for a menu system that overlays the video on a DVD, and can be viewed and selections made during viewing of a video stream. The system and method applies to media players, including but not limited to DVD players, software DVD-ROM players, high definition video players, hard drive based players, optical players, personal computers, or any other media player known to one of ordinary skill in the art." Ackley, ¶[0008]. It also discloses that "[i]n another embodiment, thumbnails may include different video sources. In other words, each thumbnail 510 represents a different movie, a documentary, trailer, etc., originating from sources other than the media player. For instance, the media player may be connected to the Internet, and if a specific thumbnail is selected, a particular video may be downloaded from the Internet. Likewise, the video source may be a personal computer attached to the media player. The personal computer would have a hard drive with stored videos that are selectable by the media player." Ackley, ¶[0049].

A POSITA would have recognized that Ackley's disclosures relating to video preview could easily be incorporated into DVD Architect. A POSITA would have been motivated to implement Ackley's video preview into DVD Architect to address the problems in DVD Architect. A POSITA would have understood that, as of the priority date of the '300 Patent, video preview was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., video preview) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content while showing a video preview). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., video preview) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video

content while showing a video preview). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kuriowa ’764 discloses “[a]n information processing apparatus includes area image extracting means for extracting, as a telop image, an area displaying a telop in contents, detecting means for detecting a scene change in images of the contents, recording means for converting an image at the time when a scene change is detected by the detecting means to a thumbnail image and recording the thumbnail image, display control means for controlling to arrange and display a plurality of the thumbnail images and a plurality of the telop images chronologically, and playing means for playing the contents from the position corresponding to the selected thumbnail image or telop image.” Kuroiwa ’764 at Abstract. It also discloses “the contents recording section 23 controls a scene change detecting section 71 to detect the time upon scene change in frames and supplies the detection result to a film roll data creating section 72. The film roll data creating section 72 converts the image of the frame immediately after the scene change corresponding to the time code of the time upon scene change to a thumbnail image and records the result to film roll data 92 and stores the film roll data 92 in the contents data storage section 24 in connection with the contents data 91. The image recording section 73 causes the contents data storage section 24 to store information on the contents obtained by the contents recording section 23 as contents data.” Kuroiwa ’764 at 4:60–5:5. It discloses the “display control means may control to display the contents being currently played and the telop image on one screen.” Kuroiwa ’764 at 2:18–20.

A POSITA would have recognized that Kuriowa ’764’s disclosures relating to navigating video content could easily be incorporated into DVD Architect. A POSITA would have been motivated to implement Kuriowa ’764’s navigation into DVD Architect to address the problems

in DVD Architect. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Errico discloses "A system for presenting a summarization of audio and/or visual content having a plurality of segments to a user together with a graphical user interface that preferably indicates to the viewer the relative temporal position of video segments viewed in the summary within the content from which the summary was derived." Errico at Abstract. It also discloses ""One example of a personalized nagivational [sic] control is a button configured to "replay the last two seconds of the segment previously viewed." This macro button could be as follows: smart skip, in reverse, one segment, no theme change, offset two seconds, from end of segment, with zero fade in; play, for two seconds, in default mode; and resume prior navigation operation." Errico at 10:61–67. It also discloses "The amount of video content is expanding at an ever increasing rate, some of which includes sporting events. Simultaneously, the available time for viewers to consume or otherwise view all of the desirable video content is decreasing. With the increased amount of video content coupled with the decreasing time available to view the video content, it becomes increasingly problematic for viewers to view all of the potentially desirable content in its entirety.

Accordingly, viewers are increasingly selective regarding the video content that they select to view. To accommodate viewer demands, techniques have been developed to provide a summarization of the video representative in some manner of the entire video. Video summarization likewise facilitates additional features including browsing, filtering, indexing, retrieval, etc. The typical purpose for creating a video summarization is to obtain a compact representation of the original video for subsequent viewing." Errico, 1:12-28. It adds that "There are two major approaches to video summarization. The first approach for video summarization is key frame detection… The second approach for video summarization is directed at detecting events that are important for the particular video content." Errico, 1:29-43.

A POSITA would have recognized that Errico's disclosures relating to navigating video content could easily be incorporated into DVD Architect. A POSITA would have been motivated to implement Errico's navigation into DVD Architect to address the problems in DVD Architect. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Park ’332 discloses ““Provided are an apparatus and method of displaying multimedia contents, more particularly, an apparatus and method of displaying stored multimedia contents to accommodate a user's preference using limited buttons of a remote control device or a cellular phone. The apparatus for displaying multimedia contents includes an alignment condition determination unit determining an alignment condition corresponding to a first user command signal among a plurality of alignment conditions, a detailed condition determination unit determining a detailed condition corresponding to a second user command signal among detailed conditions included in the alignment condition, a contents extraction unit extracting first multimedia contents according to the determined detailed condition, and a display unit displaying the determined alignment condition in a first region, the determined detailed condition in a second region, and a second multimedia contents selected by a user among the extracted first multimedia contents in a third region of a screen.” Park ’332 at Abstract. It also discloses “Increasing Internet usage by users having various backgrounds and interests has had a huge impact on all digital industries, particularly with respect to Internet-based services and contents which may be customized based on a user's background and interests. Internet-based services and contents, which are provided through the Internet, are becoming the standards of digital industries in the 21st century. In addition, due to the fast growth of Internet networks and multimedia contents in cellular phones, PDAs, and notebook computers, utilization of multimedia is essential rather than optional. The development from analog TV to digital TV is in progress, and users may receive various types of information, as well as public broadcast, through the TV.” Park ’332 at 1:25-38.

A POSITA would have recognized that Park ‘332’s disclosures relating to navigating video content could easily be incorporated into DVD Architect. A POSITA would have been motivated to implement Park ‘332’s navigation into DVD Architect to address the problems in DVD

Architect. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Van De Streek discloses a "[m]ethod of and system for selecting a position in an image sequence. A representation (200) of the image sequence is displayed, together with a position indicator (206) configured to be moved along the representation (200). The position in the image sequence is selected in correspondence to a present position of the position indicator (206). A collection of key frames is obtained, each key frame being associated with a portion of the representation (200). From this collection of key frames a current key frame (212) is displayed whose associated portion comprises a present position of the position indicator (206). Indications (205) of the locations of the key frames in the collection may be shown as well." Van De Streek at Abstract. It also discloses "The invention relates to a method of selecting a position in an image sequence, comprising displaying a representation of the image sequence, providing a position indicator configured to be moved along the representation, and selecting the position in the image sequence in correspondence to a present position of the position indicator." Van De Streek at [0001]. It also discloses "The known system has the disadvantage that the viewer can only see the

frame on the video stream corresponding to the location of the slider along the bar. This makes it very difficult for him to establish the context in which this frame occurs in the video stream, and so makes it difficult for him to navigate through the video stream." Van De Streek at [0006].

A POSITA would have recognized that Van De Streek's disclosures relating to navigating video content could easily be incorporated into DVD Architect. A POSITA would have been motivated to implement Van De Streek's navigation into DVD Architect to address the problems in DVD Architect. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., preview video) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual preview). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., preview video) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with video preview). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Johnson discloses an "[a]pparatus, system and method for the navigation of aggregated content using skipping and content metadata. An apparatus includes a processor to receive a control signal from a navigation controller and to display a skip function user interface on a display device. The skip function user interface is used to navigate aggregated content items and includes one or more skip boxes. Each of the one or more skip boxes is associated with a content item in the aggregated content items. Other embodiments are described and claimed." Johnson at Abstract. It also discloses that in "one embodiment, platform 510 may comprise a CPU 512, a chip set 513,

one or more drivers 514, one or more network connections 515, an operating system 516, and/or a media center application 517 comprising one or more software applications, for example. Platform 510 also may comprise storage 518. Storage 518 may include control and content data used to define the functionality and metadata associated with skip function user interface 202." Johnson at [0037].

A POSITA would have recognized that Johnson's disclosures relating to navigating video content could easily be incorporated into DVD Architect. A POSITA would have been motivated to implement Johnson's metadata into DVD Architect to address the problems in DVD Architect. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., metadata) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with metadat). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., metadata) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with metadata). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Boreczky discloses a "system is provided where a number of representative video snapshots are displayed on a timeline indicating a position to jump to in a video using control buttons, such as fast forward, reverse, or a timeline scroll bar. The video snapshots are obtained by opening a low resolution connection to a video server to receive forward looking video segments. The forward looking video segments are summarized and the representative video snapshots are selected and displayed to provide a reference frame for the user to select a timeline

position, or snapshots directly linked to positions in the higher resolution video. Backward looking video segments may be similarly summarized from the low resolution connection, or alternatively from video previously played. As the video progresses, new forward looking video segments are received and new representative video snapshots are summarized and displayed in close proximity with the video being played." Boreczky at Abstract. It also discloses ""The present invention includes a computer program product which is a storage medium (media) having instructions stored thereon/in which can be used to program a computer to perform any of the processes of the present invention. The storage medium can include, but is not limited to, any type of disk including floppy disks, optical discs, DVD, CD-ROMS, microdrive, and magneto-optical disks, ROMs, RAMs, EPROMs, EEPROMs, DRAMs, VRAMs, flash memory devices, magnetic or optical cards, nanosystems (including molecular memory ICs), or any type of media or device suitable for storing instructions and/or data." Boreczky at 9:8–18. It also discloses "an embodiment of the present invention during playback of a video, such as a video invoked by commands 325 and displayed on display device 330 by a video application running on device 320. A video 400 displays a current playback position of a video data stream being played by the video application. Video controls 410 (pause/play button) and slide bar 415 allow user control and user movements of the current playback position. Alternate embodiments include step and/or skip back and forward functions, fast forward, fast rewind, go to start, go to end, jump to next index point, jump to last index point, and any other type of control that might be associated with a video playback device. Slide bar 415 is displayed in conjunction with a timeline (0:00. .33:30, for example) which provides timing marks indicating approximate positions of the video in correspondence to other points in the video. Alternatively, instead of an entire video segment being displayed on the

timeline, any selected portions of the video may be represented on the timeline." Boreczky at 4:36–54.

A POSITA would have recognized that Boreczky's disclosures relating to navigating video content could easily be incorporated into DVD Architect. A POSITA would have been motivated to implement Boreczky's navigation into DVD Architect to address the problems in DVD Architect. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kuroiwa '395 discloses an "information processing apparatus includes a content metadata obtaining unit configured to obtain content metadata; a determination unit configured to determine the category of the content metadata; an editing unit configured to edit the content metadata so that, when text data of the content metadata is to be reproduced on the basis of the category of the content metadata determined by the determination unit, information on a predetermined link destination is displayed in response to a predetermined operation being performed on the reproduced text data; a reproduction unit configured to reproduce the text data of the content metadata in synchronization with the reproduction of the content; and a display unit configured to

display the information on the link destination on the basis of the content metadata edited by the editing unit when the predetermined operation is performed on the text data of the content metadata reproduced by the reproduction unit." Kuroiwa '395 at Abstract. It also discloses that in "recent years, a technology has been proposed in which text information contained in an EPG is displayed, and also a search process is performed by a search engine via the Internet by using the text information as a keyword and a search result is displayed (see Japanese Unexamined Patent Application Publication No. 2004-23345)." Kuroiwa '395 at 1:30-35.

A POSITA would have recognized that Kuriowa '395's disclosures relating to navigating video content could easily be incorporated into DVD Architect. A POSITA would have been motivated to implement Kuriowa '395's navigation into DVD Architect to address the problems in DVD Architect. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kashima discloses a "display control apparatus: in a virtual three-dimensional space in which is disposed a three-dimensional model of an object contained in a moving image picked up by performing successive imaging operations once by using an imaging device, draws a plurality

of thumbnail images extracted from the moving image to the respective positions of the imaging device at the time when the thumbnail images were picked up and draws information that relates the thumbnail images in order in which they were picked up, thereby generating a bird's eye-display image which provides a bird's-eye-view drawing of the virtual three-dimensional space containing the three-dimensional model and the thumbnail images; and causes a display unit to display the bird's eye-display image." Kashima at Abstract. It also discloses the "storage unit may store movement track information which represents a movement track of the imaging device at the time when the imaging device picked up the moving image, as additional information of the moving image and the display image generation unit may draw the thumbnail images in the virtual three-dimensional space at the respective positions of the imaging device at the time when the thumbnail images were picked up based on the movement track information." Kashima at 2:9-17. Kashima discloses "There are regular playback display and film roll display available as a video display method for displaying moving images picked up and video-recorded with an imaging device such as a video camera. The regular playback display method will display a video (x-axis and y-axis of an imaging plane) by reproducing its video-recorded moving images sequentially from the beginning along a time axis t. The user can grasp imaged contents by viewing the video thus reproduced regularly but in a considerable lapse of time. To reduce the time, a method is available for fast-forwarding the moving images in playback display but still requires a lapse of time to some extent in order to grasp the imaged contents of the moving images as a whole." Kashima, 1:10-23. It also discloses "[a]ccording to the film roll display approach, if an arbitrary one is selected from among the thumbnail images displayed in a list, it is possible also to display the moving images by regularly reproducing them starting from a playback position that corresponds to the thumbnail image. According to such film roll display, the user can understand

the imaged contents of the moving images as a whole more easily than by the regular playback display." Kashim, 1:29-36

A POSITA would have recognized that Kashima's disclosures relating to navigating video content could easily be incorporated into DVD Architect. A POSITA would have been motivated to implement Kashima's navigation into DVD Architect to address the problems in DVD Architect. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hua discloses "Smart video presentation involves presenting one or more videos in a video presentation user interface (IU). In example implementation, a video presentation UI includes a listing of multiple video entries, with each video entry including multiple static thumbnails to represent the corresponding video. In another example implementation, a video presentation UI includes a scalable number of static thumbnails to represent a video, with the scalable number adjustable by a user with a scaling interface tool. In yet another example implementation, a video presentation UI includes a video playing region, a video slider bar region, and a filmstrip region that presents multiple static thumbnails for a video that is playable in the video playing region."

Hua at Abstract. Hua also discloses "[v]ideos 104 can be stored at local storage, on a local network, over the internet, some combination thereof, and so forth. For example, they may be stored on flash memory or a local hard drive. They may also be stored on a local area network (LAN) server. Alternatively, they may be stored at a server farm and/or storage area network (SAN) that is connected to the internet. In short, videos 104 may be stored at and/or retrieved from any processor-accessible media." Hua at [0020]. It also discloses "People and organizations store a significant number of items on their computing devices. These items can be text files, data files, images, videos, or some combination thereof. To be able to utilize such items, users must be able to locate, retrieve, manipulate, and otherwise manage those items that interest them. Among the various types of items, it can be particularly challenging to locate and/or manage videos due to their dynamic nature and oftentimes long lengths" Hua, [0002].

A POSITA would have recognized that Hua's disclosures relating to navigating video content could easily be incorporated into DVD Architect. A POSITA would have been motivated to implement Hua's navigation into DVD Architect to address the problems in DVD Architect. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the

combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Oetzel discloses "[t]he present embodiments provide methods and apparatuses for use in navigating through content. Some embodiments provide methods for use in navigating through content that receive an initial first directional control command, activate a seek mode upon receipt of the initial first directional control command comprising advancing over a first amount of content in a first direction from a first point in the content to a second point in the content, receive an initial second directional control command following the receipt of the initial first directional command, and activate a search mode upon receipt of the initial second directional control command, comprising advancing back over a second amount of the first amount of the content where the second amount is less than the first amount of the content." Oetzel at Abstract. It also discloses "[t]he present embodiments advantageously addresses the needs above as well as other needs by providing a apparatus for use in navigating through content, such multimedia content, textual content, web or internet content, graphics content, picture content and substantially any relevant content. Some embodiments provide methods for use in navigating through content, comprising receiving an initial first directional control command; activating a seek mode upon receipt of the initial first directional control command, comprising advancing over a first amount of content in a first direction from a first point in the content to a second point in the content; receiving an initial second directional control command following the receipt of the initial first directional command; and activating a search mode upon receipt of the initial second directional control command, comprising advancing back over a second amount of the first amount of the content wherein the second amount is less than the first amount of the content." Oetzel at [0005]. Oetzel also discloses "[i]ncreased amounts of content often result in increased needs to access the content. However,

identifying and/or finding desired content can be difficult do at least in part to the increased amount of content and/or the increased amount of data utilized in recording the content." Oetzel at [0004].

A POSITA would have recognized that Oetzel's disclosures relating to navigating video content could easily be incorporated into DVD Architect. A POSITA would have been motivated to implement Oetzel's navigation into DVD Architect to address the problems in DVD Architect. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

DVD Explorer discloses a DVR system. Explorer Manual at 1. It also discloses pausing and recording a live program with timeline bar shown on the screen with the video. Explorer Manual at 9. It also discloses that once can "watch and record high-definition programs" *Id*. at 2. DVD Explorer also discloses navigating videos. *See generally,* Explorer Manual 3-6.

A POSITA would have recognized that DVD Explorer's disclosures relating to navigating video content could easily be incorporated into DVD Architect. A POSITA would have been motivated to implement DVD Explorer's navigation into DVD Architect to address the problems in DVD Architect. A POSITA would have understood that, as of the priority date of the '300

Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(c) Angiolillo in view of Nishikawa '716 and/or Vahtola and/or Shiiyama and/or Cronin and/or Poslinski and/or Ackley and/or Kuroiwa '764 and/or Errico and/or Park '332 and/or Van de Streek and/or Johnson and/or Boreczky and/or Kuroiwa '395 and/or Kashima and/or Hua and/or Oetzel

Angiolillo discloses that a " media content instance is provided for display. A plurality of first images are identified associated with locations within a first segment of a media content instance according to a first offset that is one of: a time interval and a number of frames. The first images are retrieved from the media content instance. At least some of the first images are provided for display." Angiolillo, abstract. It also discloses that a "user can navigate a location control pane 320, e.g., using one or more of directional arrow buttons 210-225 on user input device 125. Additionally, the user may navigate location control pane 320 using "fast forward" and "rewind" buttons 270 and 265 as well as other buttons such as "scene skip" buttons (not illustrated in FIG. 2) that allow for navigation according to indexing within a media stream or file, e.g., navigation from track to track on a DVD. "Scene skip" buttons, or the "fast forward" and "rewind" buttons 270 and 265 may be configured to permit a user to navigate images 335 quickly and efficiently."

Angiolillo, ¶[0042]. Angiolillo also discloses "[s]torage device 140 may include one or more data storage media, devices, or configurations and may employ any type, form, and combination of storage media. For example, the storage device 140 may include, but is not limited to, a hard drive, network drive, flash drive, magnetic disc, optical disc, or other non-volatile storage unit. Various portions of media content, applications, such as location access control application 155, or a PVR application (not shown), and other data may be temporarily and/or permanently stored in the storage device 140. The storage device 140 of FIG. 1 is shown to be a part of the processing subsystem 105 for illustrative purposes only. It will be understood that the storage device 140 may additionally or alternatively be located external to the processing subsystem 105." Angiolillo, ¶[0026]. It also discloses that the "exemplary control pane 320 illustrated in FIG. 5 is displayed as a vertical bar placed on the right side of media content instance 315, which media content instance 315 is sized so that control pane 320 does not generally obstruct media content instance 315. Selection tool 325 as illustrated in FIG. 5 is operative to magnify the selected image 345 relative to the other images 335 included in control pane 320. As a user navigates from one image 335 to another using selection tool 325, the image 335 which is currently a selected image 345 may be magnified slightly. When the user navigates away from a given image 335, the previous selected image 345 may return to a "pre-magnified" size. FIG. 6 illustrates a further example of a location control pane 320. Location control pane 320 as illustrated in FIG. 6 is vertically overlaid across a portion of a media content instance 315 on a display 310, allowing media content instance 315 to retain an original size, although a portion of the media content instance 315 over which the location control pane 320 is overlaid may become obscured by the location control pane 320." Angiolillo, ¶¶[0038]-[0039].

Nishikawa ‘716 discloses that the “invention relates generally to navigating video content, and in particular to navigating bookmarked video content using thumbnailed images thereof.” Nishikawa ‘716, ¶[0002]. It also discloses that one “aspect of the invention is to enable users to place markers at desired locations within recorded or cached video content. In one embodiment, such markers may be placed while the content is being recorded or cached, while in another embodiment the markers may be placed after the content has been recorded or cached. Such markers (which may also be referred to herein as bookmarks or chapter marks) may be used to instantly jump to a particular scene or location within a video presentation.” Nishikawa ‘716, ¶[0017]. Nishikawa ‘716 also discloses “Memory 110 may also include instructions for causing CPU 106 to place, in response to a user instruction, one or more chapter marks at various viewing locations of cached or recorded content. Memory 110 may also instructions for generating one or more thumbnailed images representative of the content at the previously-placed chapter marks.” Nishikawa ‘716, ¶[0024]. Nishikawa ‘716 discloses that the “Video Cassette Recorder (VCR) has changed the lives of television (TV) viewers by allowing viewers to time-shift TV programs to match their lifestyles. Using the VCR, the viewer stores programs onto magnetic tape; this can then be played back at the viewer's convenience. The VCR gives the viewer the ability to pause the program playback whenever he desires, fast-forward through unwanted program material or commercials, and to replay favorite scenes. However, a VCR cannot both capture and play back information at the same time.” Nishikawa ‘716, ¶[0003].

A POSITA would have recognized that Nishikawa ‘716’s disclosures relating to navigating video content could easily be incorporated into Angiolillo. A POSITA would have been motivated to implement Nishikawa ‘716’s navigation into Angiolillo to address the problems in Angiolillo. A POSITA would have understood that, as of the priority date of the ’300 Patent, controlling video

navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content using chapters) to improve similar devices or methods (e.g., navigating video content using vertical chapters) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content using chapters) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Vahtola discloses "[r]ecording chapter information may include recording a chapter title. Recording a chapter title may involve accessing customizable information stored in the memory device and basing the chapter title at least partially on the customizable information. Receiving user input may instruct a processor to: begin or resume recording the continuous media data to the memory device, and record chapter information for the location in the continuous media data where the processor begins or resumes recording." Vahtola, ¶[0011]. It also discloses that the "processing element 14 can include a processor 20 operatively coupled to a memory 22. The memory 22 can comprise volatile and/or non-volatile memory, and typically stores content, data, or the like. For example, the memory 22 can store client applications, instructions, or the like for the processor 20 to perform steps associated with operation of the entity in accordance with exemplary embodiments of the present invention. Also, for example, the memory 22 can store one or more continuous media data sequences, such as those received from the continuous media data source 12. As is described below, to facilitate navigation of one or more of those sequences (or

other purposes described herein), the memory 22 can further store chapter information therein. The memory 22 may be fixed or removable. The memory device 22 may include a hard drive, a CD, a DVD, a Blu-ray disk, a memory card such as a Flash memory card, a Memory stick, a Secure Digital (SD) card and the like, a video tape cassette, an audio tape cassette, and the like." Vahtola, ¶[0034]. Vahtola also discloses "[o]nce the chapters are created, the chapters may be used to generate a table of contents or other menu-type display of the chapters in the recorded continuous media data. In one embodiment, the processor generates a menu in which thumbnail images from the chapter or even portions of the continuous media data from each chapter are displayed in such a menu. In one embodiment of the present invention, the user can select an image or a portion of continuous media to use in this regard by actuating a particular user input device during the recording of the continuous media data. The thumbnail or the continuous media portion may be then recorded as chapter information or the location (e.g., the frame or range of frames) of the thumbnail or the continuous media portion can be recorded as chapter information. In other embodiments the first frame or the first several seconds of each chapter is used as the thumbnail image or the continuous media portion, respectively." ¶[0061].

A POSITA would have recognized that Vahtola's disclosures relating to navigating video content could easily be incorporated into Angiolillo. A POSITA would have been motivated to implement Vahtola's SD card storage and video preview Angiolillo to address the problems in Angiolillo. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling data storage, and video preview was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., storing data on an SD card; video preview) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content stored on a drive; displaying video previews). As another example,

a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., storing data on an SD card; video preview) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., , navigating video content stored on a drive; displaying video previews). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Shiiyama discloses that "it is an object of the present invention to allow the user easily to restore synchronous display of a thumbnail image sequence from a state wherein synchronization between the thumbnail image sequence and moving image playback is interrupted by, e.g., scroll operation of the thumbnail image sequence. It is another object of the present invention to allow the user to designate a desired scene more reliably when the thumbnail image sequence is displayed by automatic scroll synchronized with playback of a moving image." Shiiyama, 2:26-29. It also discloses that "when the user wants to make a jump to a desired scene by selecting a given thumbnail image from the thumbnail image sequence, while the thumbnail image sequence is automatically scrolled in synchronism with the displayed moving image, the contents of the thumbnail image sequence have been scrolled at a delicate timing, and the user may select a thumbnail image that he or she did not intend. This is also a problem posed upon displaying a thumbnail image sequence in synchronism with the displayed moving image." Shiiyama, 2:4-13. It also discloses "[w]hen one image of the thumbnail image sequence **2001**, e.g., a thumbnail image corresponding to scene **22**, is designated by mouse operation or the like, a moving image corresponding to scene **22** is played back on the moving image playback area **2000**." Shiiyama, 1:38-42. Shiiyama also discloses "[a]s the storage medium for supplying the program code, for

example, a floppy disk, hard disk, optical disk, magneto-optical disk, CD-ROM, CD-R, magnetic tape, nonvolatile memory card, ROM, and the like may be used." 17:37-40.

A POSITA would have recognized that Shiiyama's disclosures relating to navigating video content could easily be incorporated into Angiolillo. A POSITA would have been motivated to implement Shiiyama's storage on a flash drive into Angiolillo to address the problems in Angiolillo. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation and file storage was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., storing data on flash memory) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content stored on a drive). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., storing data on flash memory) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content stored on a drive). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Cronin discloses that in "accordance with one or more aspects of the thumbnail navigation bar for video, video content is accessed. Multiple thumbnails corresponding to the video content are generated by generating, for each of multiple locations of the video content, a thumbnail of the video content that is displayed at the location. The multiple thumbnails are made available as the thumbnails of a navigation bar to be displayed on a display device in response to a user request to display the navigation bar received while the video content is being played on the display device." Cronin at ¶[0004]. It also discloses that "[v]ideo content display module 114 receives video content 106, converts video content 106 into a format that can be displayed by a display device, and outputs

the converted video content as video content 116. Video content display module 114 also optionally extracts particular content from video content 106, such as tuning to a particular channel, selecting a particular stream, and so forth. Navigation bar display module 104 optionally receives a series of thumbnails 108 corresponding to video content 106 and video content 116. Other types of content corresponding to video content 106, such as audio content, are also oftentimes received by device 102. Thumbnails 108 can be received from a same or different source as video content 106, or alternatively can be generated by device 102." Cronin at ¶[0015]. It also discloses "[n]avigation bar 204 thus provides a user interface that allows a user to quickly and easily rewind and/or fast forward through video content. The user can rewind and/or fast forward through the video content by scrolling through the thumbnails of the navigation bar to select the particular location he or she would like to jump to, and then selecting a thumbnail corresponding to that particular location. Playback of the video content then begins at the location corresponding to the selected thumbnail. Using navigation bar 204, the user is able to move swiftly through the thumbnails corresponding to the video content and is oftentimes less likely to overshoot a particular location or thumbnail he or she is looking for." Cronin at ¶[0032].

A POSITA would have recognized that Cronin's disclosures relating to navigating video content could easily be incorporated into Angiolillo. A POSITA would have been motivated to implement Cronin's thumbnail navigation into Angiolillo to address the problems in Angiolillo. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., thumbnail navigation) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content via thumbnails). As another example, a POSITA would have understood the modification or combination to amount

to applying a known technique (e.g., thumbnail navigation) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content via thumbnails). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Poslinski discloses that "[i]n one exemplary embodiment, media content received at the tuner (105) is temporarily buffered, or stored, in a live cache buffer (110). If there are multiple tuners (105), there may be a live cache buffer (110) corresponding to each of the tuners (105). As shown in FIG. 1, the live cache buffer (110) may be a part of the storage device (109) (e.g. a reserved portion of a hard dive). In an alternative embodiment (not shown), the live cache buffer (110) may reside in memory (102) or in a storage device external to the STB (100). Media content received into the live cache buffer (110) has a temporary recording designation. In other words, the media content stored in the live cache buffer (110) will either be deleted or retained through election by the user as a permanent recording. A permanent recording will be understood to mean media content that is stored for an extended period of time as decided by the user. Permanent recordings may be stored in a permanent storage unit (119), for example. The permanent storage unit (119) may be a part of the storage device (109) or it may be a stand-alone unit. For example, the permanent storage unit (119) may be a hard drive, an optical disc, a network drive, a buffer in memory, or any other type of permanent storage device that is a part of the storage unit (109) or that is a stand-alone unit." Poslinksi, ¶[0030]. It also discloses ""In one of many possible embodiments, the present invention provides a method and system for displaying a number of portions of a number of recorded media content instances during a single viewing session. The method includes defining a number of entries such that each of the number of entries corresponds

to one of the number of portions of the number of recorded media content instances, including each of the entries in a play list, and selecting the play list from a number of play lists for viewing. The portions of the number of recorded media content instances included in the entries in the play list are then displayed during the single viewing session." Poslinski, ¶[0006].

A POSITA would have recognized that Poslinski's disclosures relating to assembling the timeline could easily be incorporated into Angiolillo. A POSITA would have been motivated to implement Poslinski's timeline assembly into Angiolillo to address the problems in Angiolillo. A POSITA would have understood that, as of the priority date of the '300 Patent, timeline creation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., timeline assembly) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content via an assembled timeline). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., timeline assembly) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content via an assembled timeline). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Ackley discloses "The present disclosure provides a user friendly navigation scheme to media and media players. The disclosure provides for a menu system that overlays the video on a DVD, and can be viewed and selections made during viewing of a video stream. The system and method applies to media players, including but not limited to DVD players, software DVD-ROM players, high definition video players, hard drive based players, optical players, personal computers, or any other media player known to one of ordinary skill in the art." Ackley, ¶[0008].

It also discloses that "[i]n another embodiment, thumbnails may include different video sources. In other words, each thumbnail 510 represents a different movie, a documentary, trailer, etc., originating from sources other than the media player. For instance, the media player may be connected to the Internet, and if a specific thumbnail is selected, a particular video may be downloaded from the Internet. Likewise, the video source may be a personal computer attached to the media player. The personal computer would have a hard drive with stored videos that are selectable by the media player." Ackley, ¶[0049].

A POSITA would have recognized that Ackley's disclosures relating to video preview could easily be incorporated into Angiolillo. A POSITA would have been motivated to implement Ackley's video preview into Angiolillo to address the problems in Angiolillo. A POSITA would have understood that, as of the priority date of the '300 Patent, video preview was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., video preview) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content while showing a video preview). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., video preview) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content while showing a video preview). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kuriowa '764 discloses "[a]n information processing apparatus includes area image extracting means for extracting, as a telop image, an area displaying a telop in contents, detecting means for detecting a scene change in images of the contents, recording means for converting an

image at the time when a scene change is detected by the detecting means to a thumbnail image and recording the thumbnail image, display control means for controlling to arrange and display a plurality of the thumbnail images and a plurality of the telop images chronologically, and playing means for playing the contents from the position corresponding to the selected thumbnail image or telop image." Kuroiwa '764 at Abstract. It also discloses "the contents recording section 23 controls a scene change detecting section 71 to detect the time upon scene change in frames and supplies the detection result to a film roll data creating section 72. The film roll data creating section 72 converts the image of the frame immediately after the scene change corresponding to the time code of the time upon scene change to a thumbnail image and records the result to film roll data 92 and stores the film roll data 92 in the contents data storage section 24 in connection with the contents data 91. The image recording section 73 causes the contents data storage section 24 to store information on the contents obtained by the contents recording section 23 as contents data." Kuroiwa '764 at 4:60–5:5. It discloses the "display control means may control to display the contents being currently played and the telop image on one screen." Kuroiwa '764 at 2:18–20.

A POSITA would have recognized that Kuriowa '764's disclosures relating to navigating video content could easily be incorporated into Angiolillo. A POSITA would have been motivated to implement Kuriowa '764's navigation into Angiolillo to address the problems in Angiolillo. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or

method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Errico discloses "A system for presenting a summarization of audio and/or visual content having a plurality of segments to a user together with a graphical user interface that preferably indicates to the viewer the relative temporal position of video segments viewed in the summary within the content from which the summary was derived." Errico at Abstract. It also discloses ""One example of a personalized nagivational [sic] control is a button configured to "replay the last two seconds of the segment previously viewed." This macro button could be as follows: smart skip, in reverse, one segment, no theme change, offset two seconds, from end of segment, with zero fade in; play, for two seconds, in default mode; and resume prior navigation operation." Errico at 10:61–67. It also discloses "The amount of video content is expanding at an ever increasing rate, some of which includes sporting events. Simultaneously, the available time for viewers to consume or otherwise view all of the desirable video content is decreasing. With the increased amount of video content coupled with the decreasing time available to view the video content, it becomes increasingly problematic for viewers to view all of the potentially desirable content in its entirety. Accordingly, viewers are increasingly selective regarding the video content that they select to view. To accommodate viewer demands, techniques have been developed to provide a summarization of the video representative in some manner of the entire video. Video summarization likewise facilitates additional features including browsing, filtering, indexing, retrieval, etc. The typical purpose for creating a video summarization is to obtain a compact representation of the original video for subsequent viewing." Errico, 1:12-28. It adds that "There

are two major approaches to video summarization. The first approach for video summarization is key frame detection… The second approach for video summarization is directed at detecting events that are important for the particular video content." Errico, 1:29-43.

A POSITA would have recognized that Errico's disclosures relating to navigating video content could easily be incorporated into Angiolillo. A POSITA would have been motivated to implement Errico's navigation into Angiolillo to address the problems in Angiolillo. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Park '332 discloses ""Provided are an apparatus and method of displaying multimedia contents, more particularly, an apparatus and method of displaying stored multimedia contents to accommodate a user's preference using limited buttons of a remote control device or a cellular phone. The apparatus for displaying multimedia contents includes an alignment condition determination unit determining an alignment condition corresponding to a first user command signal among a plurality of alignment conditions, a detailed condition determination unit determining a detailed condition corresponding to a second user command signal among detailed

conditions included in the alignment condition, a contents extraction unit extracting first multimedia contents according to the determined detailed condition, and a display unit displaying the determined alignment condition in a first region, the determined detailed condition in a second region, and a second multimedia contents selected by a user among the extracted first multimedia contents in a third region of a screen." Park '332 at Abstract. It also discloses "Increasing Internet usage by users having various backgrounds and interests has had a huge impact on all digital industries, particularly with respect to Internet-based services and contents which may be customized based on a user's background and interests. Internet-based services and contents, which are provided through the Internet, are becoming the standards of digital industries in the 21st century. In addition, due to the fast growth of Internet networks and multimedia contents in cellular phones, PDAs, and notebook computers, utilization of multimedia is essential rather than optional. The development from analog TV to digital TV is in progress, and users may receive various types of information, as well as public broadcast, through the TV." Park '332 at 1:25-38.

A POSITA would have recognized that Park '332's disclosures relating to navigating video content could easily be incorporated into Angiolillo. A POSITA would have been motivated to implement Park '332's navigation into Angiolillo to address the problems in Angiolillo. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results

(e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Van De Streek discloses a "[m]ethod of and system for selecting a position in an image sequence. A representation (200) of the image sequence is displayed, together with a position indicator (206) configured to be moved along the representation (200). The position in the image sequence is selected in correspondence to a present position of the position indicator (206). A collection of key frames is obtained, each key frame being associated with a portion of the representation (200). From this collection of key frames a current key frame (212) is displayed whose associated portion comprises a present position of the position indicator (206). Indications (205) of the locations of the key frames in the collection may be shown as well." Van De Streek at Abstract. It also discloses "The invention relates to a method of selecting a position in an image sequence, comprising displaying a representation of the image sequence, providing a position indicator configured to be moved along the representation, and selecting the position in the image sequence in correspondence to a present position of the position indicator." Van De Streek at [0001]. It also discloses "The known system has the disadvantage that the viewer can only see the frame on the video stream corresponding to the location of the slider along the bar. This makes it very difficult for him to establish the context in which this frame occurs in the video stream, and so makes it difficult for him to navigate through the video stream." Van De Streek at [0006].

A POSITA would have recognized that Van De Streek's disclosures relating to navigating video content could easily be incorporated into Angiolillo. A POSITA would have been motivated to implement Van De Streek's navigation into Angiolillo to address the problems in Angiolillo. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video

navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., preview video) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual preview). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., preview video) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with video preview). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Johnson discloses an "[a]pparatus, system and method for the navigation of aggregated content using skipping and content metadata. An apparatus includes a processor to receive a control signal from a navigation controller and to display a skip function user interface on a display device. The skip function user interface is used to navigate aggregated content items and includes one or more skip boxes. Each of the one or more skip boxes is associated with a content item in the aggregated content items. Other embodiments are described and claimed." Johnson at Abstract. It also discloses that in "one embodiment, platform 510 may comprise a CPU 512, a chip set 513, one or more drivers 514, one or more network connections 515, an operating system 516, and/or a media center application 517 comprising one or more software applications, for example. Platform 510 also may comprise storage 518. Storage 518 may include control and content data used to define the functionality and metadata associated with skip function user interface 202." Johnson at [0037].

A POSITA would have recognized that Johnson's disclosures relating to navigating video content could easily be incorporated into Angiolillo. A POSITA would have been motivated to

implement Johnson's metadata into Angiolillo to address the problems in Angiolillo. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., metadata) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with metadat). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., metadata) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with metadata). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Boreczky discloses a "system is provided where a number of representative video snapshots are displayed on a timeline indicating a position to jump to in a video using control buttons, such as fast forward, reverse, or a timeline scroll bar. The video snapshots are obtained by opening a low resolution connection to a video server to receive forward looking video segments. The forward looking video segments are summarized and the representative video snapshots are selected and displayed to provide a reference frame for the user to select a timeline position, or snapshots directly linked to positions in the higher resolution video. Backward looking video segments may be similarly summarized from the low resolution connection, or alternatively from video previously played. As the video progresses, new forward looking video segments are received and new representative video snapshots are summarized and displayed in close proximity with the video being played." Boreczky at Abstract. It also discloses ""The present invention includes a computer program product which is a storage medium (media) having instructions stored thereon/in which can be used to program a computer to perform any of the processes of the

present invention. The storage medium can include, but is not limited to, any type of disk including floppy disks, optical discs, DVD, CD-ROMS, microdrive, and magneto-optical disks, ROMs, RAMs, EPROMs, EEPROMs, DRAMs, VRAMs, flash memory devices, magnetic or optical cards, nanosystems (including molecular memory ICs), or any type of media or device suitable for storing instructions and/or data." Boreczky at 9:8–18. It also discloses "an embodiment of the present invention during playback of a video, such as a video invoked by commands 325 and displayed on display device 330 by a video application running on device 320. A video 400 displays a current playback position of a video data stream being played by the video application. Video controls 410 (pause/play button) and slide bar 415 allow user control and user movements of the current playback position. Alternate embodiments include step and/or skip back and forward functions, fast forward, fast rewind, go to start, go to end, jump to next index point, jump to last index point, and any other type of control that might be associated with a video playback device. Slide bar 415 is displayed in conjunction with a timeline (0:00. .33:30, for example) which provides timing marks indicating approximate positions of the video in correspondence to other points in the video. Alternatively, instead of an entire video segment being displayed on the timeline, any selected portions of the video may be represented on the timeline." Boreczky at 4:36–54.

A POSITA would have recognized that Boreczky's disclosures relating to navigating video content could easily be incorporated into Angiolillo. A POSITA would have been motivated to implement Boreczky's navigation into Angiolillo to address the problems in Angiolillo. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods

(e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kuroiwa '395 discloses an "information processing apparatus includes a content metadata obtaining unit configured to obtain content metadata; a determination unit configured to determine the category of the content metadata; an editing unit configured to edit the content metadata so that, when text data of the content metadata is to be reproduced on the basis of the category of the content metadata determined by the determination unit, information on a predetermined link destination is displayed in response to a predetermined operation being performed on the reproduced text data; a reproduction unit configured to reproduce the text data of the content metadata in synchronization with the reproduction of the content; and a display unit configured to display the information on the link destination on the basis of the content metadata edited by the editing unit when the predetermined operation is performed on the text data of the content metadata reproduced by the reproduction unit." Kuroiwa '395 at Abstract. It also discloses that in "recent years, a technology has been proposed in which text information contained in an EPG is displayed, and also a search process is performed by a search engine via the Internet by using the text information as a keyword and a search result is displayed (see Japanese Unexamined Patent Application Publication No. 2004-23345)." Kuroiwa '395 at 1:30-35.

A POSITA would have recognized that Kuriowa ‘395’s disclosures relating to navigating video content could easily be incorporated into Angiolillo. A POSITA would have been motivated to implement Kuriowa ‘395’s navigation into Angiolillo to address the problems in Angiolillo. A POSITA would have understood that, as of the priority date of the ’300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kashima discloses a “display control apparatus: in a virtual three-dimensional space in which is disposed a three-dimensional model of an object contained in a moving image picked up by performing successive imaging operations once by using an imaging device, draws a plurality of thumbnail images extracted from the moving image to the respective positions of the imaging device at the time when the thumbnail images were picked up and draws information that relates the thumbnail images in order in which they were picked up, thereby generating a bird's eye-display image which provides a bird's-eye-view drawing of the virtual three-dimensional space containing the three-dimensional model and the thumbnail images; and causes a display unit to display the bird's eye-display image.” Kashima at Abstract. It also discloses the “storage unit may store movement track information which represents a movement track of the imaging device at the

time when the imaging device picked up the moving image, as additional information of the moving image and the display image generation unit may draw the thumbnail images in the virtual three-dimensional space at the respective positions of the imaging device at the time when the thumbnail images were picked up based on the movement track information." Kashima at 2:9-17. Kashima discloses "There are regular playback display and film roll display available as a video display method for displaying moving images picked up and video-recorded with an imaging device such as a video camera. The regular playback display method will display a video (x-axis and y-axis of an imaging plane) by reproducing its video-recorded moving images sequentially from the beginning along a time axis t. The user can grasp imaged contents by viewing the video thus reproduced regularly but in a considerable lapse of time. To reduce the time, a method is available for fast-forwarding the moving images in playback display but still requires a lapse of time to some extent in order to grasp the imaged contents of the moving images as a whole." Kashima, 1:10-23. It also discloses "[a]ccording to the film roll display approach, if an arbitrary one is selected from among the thumbnail images displayed in a list, it is possible also to display the moving images by regularly reproducing them starting from a playback position that corresponds to the thumbnail image. According to such film roll display, the user can understand the imaged contents of the moving images as a whole more easily than by the regular playback display." Kashim, 1:29-36

A POSITA would have recognized that Kashima's disclosures relating to navigating video content could easily be incorporated into Angiolillo. A POSITA would have been motivated to implement Kashima's navigation into Angiolillo to address the problems in Angiolillo. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known

techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hua discloses "Smart video presentation involves presenting one or more videos in a video presentation user interface (IU). In example implementation, a video presentation UI includes a listing of multiple video entries, with each video entry including multiple static thumbnails to represent the corresponding video. In another example implementation, a video presentation UI includes a scalable number of static thumbnails to represent a video, with the scalable number adjustable by a user with a scaling interface tool. In yet another example implementation, a video presentation UI includes a video playing region, a video slider bar region, and a filmstrip region that presents multiple static thumbnails for a video that is playable in the video playing region." Hua at Abstract. Hua also discloses "[v]ideos 104 can be stored at local storage, on a local network, over the internet, some combination thereof, and so forth. For example, they may be stored on flash memory or a local hard drive. They may also be stored on a local area network (LAN) server. Alternatively, they may be stored at a server farm and/or storage area network (SAN) that is connected to the internet. In short, videos 104 may be stored at and/or retrieved from any processor-accessible media." Hua at [0020]. It also discloses "People and organizations store a significant number of items on their computing devices. These items can be text files, data files,

images, videos, or some combination thereof. To be able to utilize such items, users must be able to locate, retrieve, manipulate, and otherwise manage those items that interest them. Among the various types of items, it can be particularly challenging to locate and/or manage videos due to their dynamic nature and oftentimes long lengths" Hua, [0002].

A POSITA would have recognized that Hua's disclosures relating to navigating video content could easily be incorporated into Angiolillo. A POSITA would have been motivated to implement Hua's navigation into Angiolillo to address the problems in Angiolillo. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Oetzel discloses "[t]he present embodiments provide methods and apparatuses for use in navigating through content. Some embodiments provide methods for use in navigating through content that receive an initial first directional control command, activate a seek mode upon receipt of the initial first directional control command comprising advancing over a first amount of content in a first direction from a first point in the content to a second point in the content, receive an initial second directional control command following the receipt of the initial first directional command,

and activate a search mode upon receipt of the initial second directional control command, comprising advancing back over a second amount of the first amount of the content where the second amount is less than the first amount of the content." Oetzel at Abstract. It also discloses "[t]he present embodiments advantageously addresses the needs above as well as other needs by providing a apparatus for use in navigating through content, such multimedia content, textual content, web or internet content, graphics content, picture content and substantially any relevant content. Some embodiments provide methods for use in navigating through content, comprising receiving an initial first directional control command; activating a seek mode upon receipt of the initial first directional control command, comprising advancing over a first amount of content in a first direction from a first point in the content to a second point in the content; receiving an initial second directional control command following the receipt of the initial first directional command; and activating a search mode upon receipt of the initial second directional control command, comprising advancing back over a second amount of the first amount of the content wherein the second amount is less than the first amount of the content." Oetzel at [0005]. Oetzel also discloses "[i]ncreased amounts of content often result in increased needs to access the content. However, identifying and/or finding desired content can be difficult do at least in part to the increased amount of content and/or the increased amount of data utilized in recording the content." Oetzel at [0004].

A POSITA would have recognized that Oetzel's disclosures relating to navigating video content could easily be incorporated into Angiolillo. A POSITA would have been motivated to implement Oetzel's navigation into Angiolillo to address the problems in Angiolillo. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating

video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

DVD Explorer discloses a DVR system. Explorer Manual at 1. It also discloses pausing and recording a live program with timeline bar shown on the screen with the video. Explorer Manual at 9. It also discloses that once can "watch and record high-definition programs" *Id*. at 2. DVD Explorer also discloses navigating videos. *See generally,* Explorer Manual 3-6.

A POSITA would have recognized that DVD Explorer's disclosures relating to navigating video content could easily be incorporated into Angiolillo. A POSITA would have been motivated to implement DVD Explorer's navigation into Angiolillo to address the problems in Angiolillo. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the

combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(d) Park ’773 in view of Nishikawa ‘716 and/or Angiolillo and/or Vahtola and/or Shiiyama and/or Cronin and/or Poslinski and/or Ackley and/or Kuroiwa ’764 and/or Errico and/or Park ’332 and/or Van de Streek and/or Johnson and/or Boreczky and/or Kuroiwa ’395 and/or Kashima and/or Hua and/or Oetzel

Park ’773 discloses “[t]he present invention is provides an apparatus and method for providing additional information about media content by which characteristic features of media content can be maximally represented by setting additional information related to the media content to be displayed at a desired time by a user.” Park ’773 at [0012]. It also discloses “Provided are an apparatus and method for providing additional information of media content. In digital contents management, the apparatus for providing additional information of media content includes a media source, a media renderer, an additional information analyzer, a smart progress bar, and an additional information renderer. The media source receives media and additional information from a local file, a portable storage medium or a network and transfers the received media and additional information into the apparatus. The media renderer renders the received media to a user. The additional information analyzer analyzes the received additional information. The smart progress bar controls the playback of the media based on the analyzed additional information. The additional information renderer displays the additional information to the user by controlling the smart progress bar.” Park ’773 at Abstract. It also discloses that “what is needed is technology of utilizing additional information related to content in various ways, for example, compiling or searching for the additional information, at a time desired by a user.” Park ’773, [0011]. It also discloses “The present invention provides an exemplary embodiment of an apparatus for providing additional information of media content in digital contents management,

the apparatus including a media source receiving media and additional information from at least one of a local file, a portable storage medium and a network and transferring the received media and additional information into the apparatus, a media renderer rendering the received media to a user, an additional information analyzer analyzing the received additional information, a smart progress bar controlling the playback of the media based on the analyzed additional information, and an additional information renderer displaying the additional information to the user by controlling the smart progress bar." Park '773 at [0013].

Nishikawa '716 discloses that the "invention relates generally to navigating video content, and in particular to navigating bookmarked video content using thumbnailed images thereof." Nishikawa '716, ¶[0002]. It also discloses that one "aspect of the invention is to enable users to place markers at desired locations within recorded or cached video content. In one embodiment, such markers may be placed while the content is being recorded or cached, while in another embodiment the markers may be placed after the content has been recorded or cached. Such markers (which may also be referred to herein as bookmarks or chapter marks) may be used to instantly jump to a particular scene or location within a video presentation." Nishikawa '716, ¶[0017]. Nishikawa '716 also discloses "Memory 110 may also include instructions for causing CPU 106 to place, in response to a user instruction, one or more chapter marks at various viewing locations of cached or recorded content. Memory 110 may also instructions for generating one or more thumbnailed images representative of the content at the previously-placed chapter marks." Nishikawa '716, ¶[0024]. Nishikawa '716 discloses that the "Video Cassette Recorder (VCR) has changed the lives of television (TV) viewers by allowing viewers to time-shift TV programs to match their lifestyles. Using the VCR, the viewer stores programs onto magnetic tape; this can then be played back at the viewer's convenience. The VCR gives the viewer the ability to pause

the program playback whenever he desires, fast-forward through unwanted program material or commercials, and to replay favorite scenes. However, a VCR cannot both capture and play back information at the same time." Nishikawa '716, ¶[0003].

A POSITA would have recognized that Nishikawa '716's disclosures relating to navigating video content could easily be incorporated into Park '773. A POSITA would have been motivated to implement Nishikawa '716's navigation into Park '773 to address the problems in Park '773. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation and file storage was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content with chapter navigation) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content with chapter navigation) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Angiolillo discloses that a " media content instance is provided for display. A plurality of first images are identified associated with locations within a first segment of a media content instance according to a first offset that is one of: a time interval and a number of frames. The first images are retrieved from the media content instance. At least some of the first images are provided for display." Angiolillo, abstract. It also discloses that a "user can navigate a location control pane 320, e.g., using one or more of directional arrow buttons 210-225 on user input device 125.

Additionally, the user may navigate location control pane 320 using “fast forward” and “rewind” buttons 270 and 265 as well as other buttons such as “scene skip” buttons (not illustrated in FIG. 2) that allow for navigation according to indexing within a media stream or file, e.g., navigation from track to track on a DVD. “Scene skip” buttons, or the “fast forward” and “rewind” buttons 270 and 265 may be configured to permit a user to navigate images 335 quickly and efficiently.” Angiolillo, ¶[0042]. Angiolillo also discloses “[s]torage device 140 may include one or more data storage media, devices, or configurations and may employ any type, form, and combination of storage media. For example, the storage device 140 may include, but is not limited to, a hard drive, network drive, flash drive, magnetic disc, optical disc, or other non-volatile storage unit. Various portions of media content, applications, such as location access control application 155, or a PVR application (not shown), and other data may be temporarily and/or permanently stored in the storage device 140. The storage device 140 of FIG. 1 is shown to be a part of the processing subsystem 105 for illustrative purposes only. It will be understood that the storage device 140 may additionally or alternatively be located external to the processing subsystem 105.” Angiolillo, ¶[0026]. It also discloses that the “exemplary control pane 320 illustrated in FIG. 5 is displayed as a vertical bar placed on the right side of media content instance 315, which media content instance 315 is sized so that control pane 320 does not generally obstruct media content instance 315. Selection tool 325 as illustrated in FIG. 5 is operative to magnify the selected image 345 relative to the other images 335 included in control pane 320. As a user navigates from one image 335 to another using selection tool 325, the image 335 which is currently a selected image 345 may be magnified slightly. When the user navigates away from a given image 335, the previous selected image 345 may return to a “pre-magnified” size. FIG. 6 illustrates a further example of a location control pane 320. Location control pane 320 as illustrated in FIG. 6 is vertically overlaid across a

portion of a media content instance 315 on a display 310, allowing media content instance 315 to retain an original size, although a portion of the media content instance 315 over which the location control pane 320 is overlaid may become obscured by the location control pane 320." Angiolillo, ¶¶[0038]-[0039].

A POSITA would have recognized that Angiolillo's disclosures relating to navigating video content could easily be incorporated into Park '773. A POSITA would have been motivated to implement Angiolillo's navigation and vertical display into Park '773to address the problems in Park '773. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation and file storage was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content with vertical display) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content with vertical display) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Vahtola discloses "[r]ecording chapter information may include recording a chapter title. Recording a chapter title may involve accessing customizable information stored in the memory device and basing the chapter title at least partially on the customizable information. Receiving user input may instruct a processor to: begin or resume recording the continuous media data to the memory device, and record chapter information for the location in the continuous media data

where the processor begins or resumes recording." Vahtola, ¶[0011]. It also discloses that the "processing element 14 can include a processor 20 operatively coupled to a memory 22. The memory 22 can comprise volatile and/or non-volatile memory, and typically stores content, data, or the like. For example, the memory 22 can store client applications, instructions, or the like for the processor 20 to perform steps associated with operation of the entity in accordance with exemplary embodiments of the present invention. Also, for example, the memory 22 can store one or more continuous media data sequences, such as those received from the continuous media data source 12. As is described below, to facilitate navigation of one or more of those sequences (or other purposes described herein), the memory 22 can further store chapter information therein. The memory 22 may be fixed or removable. The memory device 22 may include a hard drive, a CD, a DVD, a Blu-ray disk, a memory card such as a Flash memory card, a Memory stick, a Secure Digital (SD) card and the like, a video tape cassette, an audio tape cassette, and the like." Vahtola, ¶[0034]. Vahtola also discloses "[o]nce the chapters are created, the chapters may be used to generate a table of contents or other menu-type display of the chapters in the recorded continuous media data. In one embodiment, the processor generates a menu in which thumbnail images from the chapter or even portions of the continuous media data from each chapter are displayed in such a menu. In one embodiment of the present invention, the user can select an image or a portion of continuous media to use in this regard by actuating a particular user input device during the recording of the continuous media data. The thumbnail or the continuous media portion may be then recorded as chapter information or the location (e.g., the frame or range of frames) of the thumbnail or the continuous media portion can be recorded as chapter information. In other embodiments the first frame or the first several seconds of each chapter is used as the thumbnail image or the continuous media portion, respectively." ¶[0061].

A POSITA would have recognized that Vahtola's disclosures relating to navigating video content could easily be incorporated into Park '773. A POSITA would have been motivated to implement Vahtola's SD card storage and video preview Park '773 to address the problems in Park '773. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling data storage, and video preview was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., storing data on an SD card; video preview) to improve similar devices or methods (e.g., storing data on a flash drive, navigating video content; displaying previews) in the same way (e.g., navigating video content stored on a drive; displaying video previews). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., storing data on an SD card; video preview) to a known device or method (e.g., navigating video content using chapters) that is ready for improvement to yield predictable results (e.g., , navigating video content stored on a drive; displaying video previews). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Shiiyama discloses that "it is an object of the present invention to allow the user easily to restore synchronous display of a thumbnail image sequence from a state wherein synchronization between the thumbnail image sequence and moving image playback is interrupted by, e.g., scroll operation of the thumbnail image sequence. It is another object of the present invention to allow the user to designate a desired scene more reliably when the thumbnail image sequence is displayed by automatic scroll synchronized with playback of a moving image." Shiiyama, 2:26-29. It also discloses that "when the user wants to make a jump to a desired scene by selecting a given thumbnail image from the thumbnail image sequence, while the thumbnail image sequence is

automatically scrolled in synchronism with the displayed moving image, the contents of the thumbnail image sequence have been scrolled at a delicate timing, and the user may select a thumbnail image that he or she did not intend. This is also a problem posed upon displaying a thumbnail image sequence in synchronism with the displayed moving image." Shiiyama, 2:4-13. It also discloses "[w]hen one image of the thumbnail image sequence **2001**, e.g., a thumbnail image corresponding to scene **22**, is designated by mouse operation or the like, a moving image corresponding to scene **22** is played back on the moving image playback area **2000**." Shiiyama, 1:38-42. Shiiyama also discloses "[a]s the storage medium for supplying the program code, for example, a floppy disk, hard disk, optical disk, magneto-optical disk, CD-ROM, CD-R, magnetic tape, nonvolatile memory card, ROM, and the like may be used." 17:37-40.

A POSITA would have recognized that Shiiyama's disclosures relating to navigating video content could easily be incorporated into Park '773. A POSITA would have been motivated to implement Shiiyama's storage on a flash drive into Park '773 to address the problems in Park '773. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation and file storage was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., storing data on flash memory) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content stored on a drive). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., storing data on flash memory) to a known device or method (e.g., navigating video content using chapters) that is ready for improvement to yield predictable results (e.g., navigating video content stored on a drive). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Cronin discloses that in "accordance with one or more aspects of the thumbnail navigation bar for video, video content is accessed. Multiple thumbnails corresponding to the video content are generated by generating, for each of multiple locations of the video content, a thumbnail of the video content that is displayed at the location. The multiple thumbnails are made available as the thumbnails of a navigation bar to be displayed on a display device in response to a user request to display the navigation bar received while the video content is being played on the display device." Cronin at ¶[0004]. It also discloses that "[v]ideo content display module 114 receives video content 106, converts video content 106 into a format that can be displayed by a display device, and outputs the converted video content as video content 116. Video content display module 114 also optionally extracts particular content from video content 106, such as tuning to a particular channel, selecting a particular stream, and so forth. Navigation bar display module 104 optionally receives a series of thumbnails 108 corresponding to video content 106 and video content 116. Other types of content corresponding to video content 106, such as audio content, are also oftentimes received by device 102. Thumbnails 108 can be received from a same or different source as video content 106, or alternatively can be generated by device 102." Cronin at ¶[0015]. It also discloses "[n]avigation bar 204 thus provides a user interface that allows a user to quickly and easily rewind and/or fast forward through video content. The user can rewind and/or fast forward through the video content by scrolling through the thumbnails of the navigation bar to select the particular location he or she would like to jump to, and then selecting a thumbnail corresponding to that particular location. Playback of the video content then begins at the location corresponding to the selected thumbnail. Using navigation bar 204, the user is able to move swiftly through the thumbnails corresponding to the video content and is oftentimes less likely to overshoot a particular location or thumbnail he or she is looking for." Cronin at ¶[0032].

A POSITA would have recognized that Cronin's disclosures relating to navigating video content could easily be incorporated into Park '773. A POSITA would have been motivated to implement Cronin's thumbnail navigation into Park '773 to address the problems in Park '773. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., thumbnail navigation) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content via thumbnails). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., thumbnail navigation) to a known device or method (e.g., navigating video content using chapters) that is ready for improvement to yield predictable results (e.g., navigating video content via thumbnails). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Poslinski discloses that "[i]n one exemplary embodiment, media content received at the tuner (105) is temporarily buffered, or stored, in a live cache buffer (110). If there are multiple tuners (105), there may be a live cache buffer (110) corresponding to each of the tuners (105). As shown in FIG. 1, the live cache buffer (110) may be a part of the storage device (109) (e.g. a reserved portion of a hard dive). In an alternative embodiment (not shown), the live cache buffer (110) may reside in memory (102) or in a storage device external to the STB (100). Media content received into the live cache buffer (110) has a temporary recording designation. In other words, the media content stored in the live cache buffer (110) will either be deleted or retained through election by the user as a permanent recording. A permanent recording will be understood to mean media content that is stored for an extended period of time as decided by the user. Permanent

recordings may be stored in a permanent storage unit (119), for example. The permanent storage unit (119) may be a part of the storage device (109) or it may be a stand-alone unit. For example, the permanent storage unit (119) may be a hard drive, an optical disc, a network drive, a buffer in memory, or any other type of permanent storage device that is a part of the storage unit (109) or that is a stand-alone unit." Poslinksi, ¶[0030]. It also discloses ""In one of many possible embodiments, the present invention provides a method and system for displaying a number of portions of a number of recorded media content instances during a single viewing session. The method includes defining a number of entries such that each of the number of entries corresponds to one of the number of portions of the number of recorded media content instances, including each of the entries in a play list, and selecting the play list from a number of play lists for viewing. The portions of the number of recorded media content instances included in the entries in the play list are then displayed during the single viewing session." Poslinski, ¶[0006].

A POSITA would have recognized that Poslinski's disclosures relating to assembling the timeline could easily be incorporated into Park '773. A POSITA would have been motivated to implement Poslinski's timeline assembly into Park '773 to address the problems in Park '773. A POSITA would have understood that, as of the priority date of the '300 Patent, timeline creation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., timeline assembly) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content via an assembled timeline). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., timeline assembly) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content via an assembled timeline). A POSITA would have considered the

combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Ackley discloses "The present disclosure provides a user friendly navigation scheme to media and media players. The disclosure provides for a menu system that overlays the video on a DVD, and can be viewed and selections made during viewing of a video stream. The system and method applies to media players, including but not limited to DVD players, software DVD-ROM players, high definition video players, hard drive based players, optical players, personal computers, or any other media player known to one of ordinary skill in the art." Ackley, ¶[0008]. It also discloses that "[i]n another embodiment, thumbnails may include different video sources. In other words, each thumbnail 510 represents a different movie, a documentary, trailer, etc., originating from sources other than the media player. For instance, the media player may be connected to the Internet, and if a specific thumbnail is selected, a particular video may be downloaded from the Internet. Likewise, the video source may be a personal computer attached to the media player. The personal computer would have a hard drive with stored videos that are selectable by the media player." Ackley, ¶[0049].

A POSITA would have recognized that Ackley's disclosures relating to video preview could easily be incorporated into Park '773. A POSITA would have been motivated to implement Ackley's video preview into Park '773 to address the problems in Park '773. A POSITA would have understood that, as of the priority date of the '300 Patent, video preview was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., video preview) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content while showing a video preview). As another example, a POSITA would have understood the modification or combination to amount to applying a known

technique (e.g., video preview) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content while showing a video preview). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kuriowa '764 discloses "[a]n information processing apparatus includes area image extracting means for extracting, as a telop image, an area displaying a telop in contents, detecting means for detecting a scene change in images of the contents, recording means for converting an image at the time when a scene change is detected by the detecting means to a thumbnail image and recording the thumbnail image, display control means for controlling to arrange and display a plurality of the thumbnail images and a plurality of the telop images chronologically, and playing means for playing the contents from the position corresponding to the selected thumbnail image or telop image." Kuroiwa '764 at Abstract. It also discloses "the contents recording section 23 controls a scene change detecting section 71 to detect the time upon scene change in frames and supplies the detection result to a film roll data creating section 72. The film roll data creating section 72 converts the image of the frame immediately after the scene change corresponding to the time code of the time upon scene change to a thumbnail image and records the result to film roll data 92 and stores the film roll data 92 in the contents data storage section 24 in connection with the contents data 91. The image recording section 73 causes the contents data storage section 24 to store information on the contents obtained by the contents recording section 23 as contents data." Kuroiwa '764 at 4:60–5:5. It discloses the "display control means may control to display the contents being currently played and the telop image on one screen." Kuroiwa '764 at 2:18–20.

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A POSITA would have recognized that Kuriowa ’764’s disclosures relating to navigating video content could easily be incorporated into Park ‘773. A POSITA would have been motivated to implement Kuriowa ’764’s navigation into Park ‘773 to address the problems in Park ‘773. A POSITA would have understood that, as of the priority date of the ’300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Errico discloses “A system for presenting a summarization of audio and/or visual content having a plurality of segments to a user together with a graphical user interface that preferably indicates to the viewer the relative temporal position of video segments viewed in the summary within the content from which the summary was derived.” Errico at Abstract. It also discloses ““One example of a personalized nagivational control is a button configured to “replay the last two seconds of the segment previously viewed.” This macro button could be as follows: smart skip, in reverse, one segment, no theme change, offset two seconds, from end of segment, with zero fade in; play, for two seconds, in default mode; and resume prior navigation operation.” Errico at 10:61–67. It also discloses “The amount of video content is expanding at an ever increasing rate, some of which includes sporting events. Simultaneously, the available time for viewers to consume

or otherwise view all of the desirable video content is decreasing. With the increased amount of video content coupled with the decreasing time available to view the video content, it becomes increasingly problematic for viewers to view all of the potentially desirable content in its entirety. Accordingly, viewers are increasingly selective regarding the video content that they select to view. To accommodate viewer demands, techniques have been developed to provide a summarization of the video representative in some manner of the entire video. Video summarization likewise facilitates additional features including browsing, filtering, indexing, retrieval, etc. The typical purpose for creating a video summarization is to obtain a compact representation of the original video for subsequent viewing." Errico, 1:12-28. It adds that "There are two major approaches to video summarization. The first approach for video summarization is key frame detection… The second approach for video summarization is directed at detecting events that are important for the particular video content." Errico, 1:29-43.

A POSITA would have recognized that Errico's disclosures relating to navigating video content could easily be incorporated into Park '773. A POSITA would have been motivated to implement Errico's navigation into Park '773 to address the problems in Park '773. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination

or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Park ’332 discloses ““Provided are an apparatus and method of displaying multimedia contents, more particularly, an apparatus and method of displaying stored multimedia contents to accommodate a user's preference using limited buttons of a remote control device or a cellular phone. The apparatus for displaying multimedia contents includes an alignment condition determination unit determining an alignment condition corresponding to a first user command signal among a plurality of alignment conditions, a detailed condition determination unit determining a detailed condition corresponding to a second user command signal among detailed conditions included in the alignment condition, a contents extraction unit extracting first multimedia contents according to the determined detailed condition, and a display unit displaying the determined alignment condition in a first region, the determined detailed condition in a second region, and a second multimedia contents selected by a user among the extracted first multimedia contents in a third region of a screen.” Park ’332 at Abstract. It also discloses “Increasing Internet usage by users having various backgrounds and interests has had a huge impact on all digital industries, particularly with respect to Internet-based services and contents which may be customized based on a user's background and interests. Internet-based services and contents, which are provided through the Internet, are becoming the standards of digital industries in the 21st century. In addition, due to the fast growth of Internet networks and multimedia contents in cellular phones, PDAs, and notebook computers, utilization of multimedia is essential rather than optional. The development from analog TV to digital TV is in progress, and users may receive various types of information, as well as public broadcast, through the TV.” Park ’332 at 1:25-38.

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A POSITA would have recognized that Park '332's disclosures relating to navigating video content could easily be incorporated into Park '773. A POSITA would have been motivated to implement Park '332's navigation into Park '773 to address the problems in Park '773. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Van De Streek discloses a "[m]ethod of and system for selecting a position in an image sequence. A representation (200) of the image sequence is displayed, together with a position indicator (206) configured to be moved along the representation (200). The position in the image sequence is selected in correspondence to a present position of the position indicator (206). A collection of key frames is obtained, each key frame being associated with a portion of the representation (200). From this collection of key frames a current key frame (212) is displayed whose associated portion comprises a present position of the position indicator (206). Indications (205) of the locations of the key frames in the collection may be shown as well." Van De Streek at Abstract. It also discloses "The invention relates to a method of selecting a position in an image sequence, comprising displaying a representation of the image sequence, providing a position

indicator configured to be moved along the representation, and selecting the position in the image sequence in correspondence to a present position of the position indicator." Van De Streek at [0001]. It also discloses "The known system has the disadvantage that the viewer can only see the frame on the video stream corresponding to the location of the slider along the bar. This makes it very difficult for him to establish the context in which this frame occurs in the video stream, and so makes it difficult for him to navigate through the video stream." Van De Streek at [0006].

A POSITA would have recognized that Van De Streek's disclosures relating to navigating video content could easily be incorporated into Park '773. A POSITA would have been motivated to implement Van De Streek's navigation into Park '773 to address the problems in Park '773. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., preview video) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual preview). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., preview video) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with video preview). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Johnson discloses an "[a]pparatus, system and method for the navigation of aggregated content using skipping and content metadata. An apparatus includes a processor to receive a control signal from a navigation controller and to display a skip function user interface on a display device. The skip function user interface is used to navigate aggregated content items and includes

one or more skip boxes. Each of the one or more skip boxes is associated with a content item in the aggregated content items. Other embodiments are described and claimed." Johnson at Abstract. It also discloses that in "one embodiment, platform 510 may comprise a CPU 512, a chip set 513, one or more drivers 514, one or more network connections 515, an operating system 516, and/or a media center application 517 comprising one or more software applications, for example. Platform 510 also may comprise storage 518. Storage 518 may include control and content data used to define the functionality and metadata associated with skip function user interface 202." Johnson at [0037].

A POSITA would have recognized that Johnson's disclosures relating to navigating video content could easily be incorporated into Park '773. A POSITA would have been motivated to implement Johnson's metadata into Park '773 to address the problems in Park '773. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., metadata) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with metadat). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., metadata) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with metadata). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Boreczky discloses a "system is provided where a number of representative video snapshots are displayed on a timeline indicating a position to jump to in a video using control buttons, such as fast forward, reverse, or a timeline scroll bar. The video snapshots are obtained

by opening a low resolution connection to a video server to receive forward looking video segments. The forward looking video segments are summarized and the representative video snapshots are selected and displayed to provide a reference frame for the user to select a timeline position, or snapshots directly linked to positions in the higher resolution video. Backward looking video segments may be similarly summarized from the low resolution connection, or alternatively from video previously played. As the video progresses, new forward looking video segments are received and new representative video snapshots are summarized and displayed in close proximity with the video being played." Boreczky at Abstract. It also discloses ""The present invention includes a computer program product which is a storage medium (media) having instructions stored thereon/in which can be used to program a computer to perform any of the processes of the present invention. The storage medium can include, but is not limited to, any type of disk including floppy disks, optical discs, DVD, CD-ROMS, microdrive, and magneto-optical disks, ROMs, RAMs, EPROMs, EEPROMs, DRAMs, VRAMs, flash memory devices, magnetic or optical cards, nanosystems (including molecular memory ICs), or any type of media or device suitable for storing instructions and/or data." Boreczky at 9:8–18. It also discloses "an embodiment of the present invention during playback of a video, such as a video invoked by commands 325 and displayed on display device 330 by a video application running on device 320. A video 400 displays a current playback position of a video data stream being played by the video application. Video controls 410 (pause/play button) and slide bar 415 allow user control and user movements of the current playback position. Alternate embodiments include step and/or skip back and forward functions, fast forward, fast rewind, go to start, go to end, jump to next index point, jump to last index point, and any other type of control that might be associated with a video playback device. Slide bar 415 is displayed in conjunction with a timeline (0:00. .33:30, for example) which

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provides timing marks indicating approximate positions of the video in correspondence to other points in the video. Alternatively, instead of an entire video segment being displayed on the timeline, any selected portions of the video may be represented on the timeline." Boreczky at 4:36–54.

A POSITA would have recognized that Boreczky's disclosures relating to navigating video content could easily be incorporated into Park '773. A POSITA would have been motivated to implement Boreczky's navigation into Park '773 to address the problems in Park '773. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kuroiwa '395 discloses an "information processing apparatus includes a content metadata obtaining unit configured to obtain content metadata; a determination unit configured to determine the category of the content metadata; an editing unit configured to edit the content metadata so that, when text data of the content metadata is to be reproduced on the basis of the category of the content metadata determined by the determination unit, information on a predetermined link destination is displayed in response to a predetermined operation being performed on the

reproduced text data; a reproduction unit configured to reproduce the text data of the content metadata in synchronization with the reproduction of the content; and a display unit configured to display the information on the link destination on the basis of the content metadata edited by the editing unit when the predetermined operation is performed on the text data of the content metadata reproduced by the reproduction unit." Kuroiwa '395 at Abstract. It also discloses that in "recent years, a technology has been proposed in which text information contained in an EPG is displayed, and also a search process is performed by a search engine via the Internet by using the text information as a keyword and a search result is displayed (see Japanese Unexamined Patent Application Publication No. 2004-23345)." Kuroiwa '395 at 1:30-35.

A POSITA would have recognized that Kuriowa '395's disclosures relating to navigating video content could easily be incorporated into Park '773. A POSITA would have been motivated to implement Kuriowa '395's navigation into Park '773 to address the problems in Park '773. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kashima discloses a “display control apparatus: in a virtual three-dimensional space in which is disposed a three-dimensional model of an object contained in a moving image picked up by performing successive imaging operations once by using an imaging device, draws a plurality of thumbnail images extracted from the moving image to the respective positions of the imaging device at the time when the thumbnail images were picked up and draws information that relates the thumbnail images in order in which they were picked up, thereby generating a bird's eye-display image which provides a bird's-eye-view drawing of the virtual three-dimensional space containing the three-dimensional model and the thumbnail images; and causes a display unit to display the bird's eye-display image.” Kashima at Abstract. It also discloses the “storage unit may store movement track information which represents a movement track of the imaging device at the time when the imaging device picked up the moving image, as additional information of the moving image and the display image generation unit may draw the thumbnail images in the virtual three-dimensional space at the respective positions of the imaging device at the time when the thumbnail images were picked up based on the movement track information.” Kashima at 2:9-17. Kashima discloses “There are regular playback display and film roll display available as a video display method for displaying moving images picked up and video-recorded with an imaging device such as a video camera. The regular playback display method will display a video (x-axis and y-axis of an imaging plane) by reproducing its video-recorded moving images sequentially from the beginning along a time axis t. The user can grasp imaged contents by viewing the video thus reproduced regularly but in a considerable lapse of time. To reduce the time, a method is available for fast-forwarding the moving images in playback display but still requires a lapse of time to some extent in order to grasp the imaged contents of the moving images as a whole.” Kashima, 1:10-23. It also discloses “[a]ccording to the film roll display approach, if an arbitrary

one is selected from among the thumbnail images displayed in a list, it is possible also to display the moving images by regularly reproducing them starting from a playback position that corresponds to the thumbnail image. According to such film roll display, the user can understand the imaged contents of the moving images as a whole more easily than by the regular playback display." Kashim, 1:29-36

A POSITA would have recognized that Kashima's disclosures relating to navigating video content could easily be incorporated into Park '773. A POSITA would have been motivated to implement Kashima's navigation into Park '773 to address the problems in Park '773. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hua discloses "Smart video presentation involves presenting one or more videos in a video presentation user interface (IU). In example implementation, a video presentation UI includes a listing of multiple video entries, with each video entry including multiple static thumbnails to represent the corresponding video. In another example implementation, a video presentation UI includes a scalable number of static thumbnails to represent a video, with the scalable number

adjustable by a user with a scaling interface tool. In yet another example implementation, a video presentation UI includes a video playing region, a video slider bar region, and a filmstrip region that presents multiple static thumbnails for a video that is playable in the video playing region." Hua at Abstract. Hua also discloses "[v]ideos 104 can be stored at local storage, on a local network, over the internet, some combination thereof, and so forth. For example, they may be stored on flash memory or a local hard drive. They may also be stored on a local area network (LAN) server. Alternatively, they may be stored at a server farm and/or storage area network (SAN) that is connected to the internet. In short, videos 104 may be stored at and/or retrieved from any processor-accessible media." Hua at [0020]. It also discloses "People and organizations store a significant number of items on their computing devices. These items can be text files, data files, images, videos, or some combination thereof. To be able to utilize such items, users must be able to locate, retrieve, manipulate, and otherwise manage those items that interest them. Among the various types of items, it can be particularly challenging to locate and/or manage videos due to their dynamic nature and oftentimes long lengths" Hua, [0002].

A POSITA would have recognized that Hua's disclosures relating to navigating video content could easily be incorporated into Park '773. A POSITA would have been motivated to implement Hua's navigation into Park '773 to address the problems in Park '773. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g.,

navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Oetzel discloses "[t]he present embodiments provide methods and apparatuses for use in navigating through content. Some embodiments provide methods for use in navigating through content that receive an initial first directional control command, activate a seek mode upon receipt of the initial first directional control command comprising advancing over a first amount of content in a first direction from a first point in the content to a second point in the content, receive an initial second directional control command following the receipt of the initial first directional command, and activate a search mode upon receipt of the initial second directional control command, comprising advancing back over a second amount of the first amount of the content where the second amount is less than the first amount of the content." Oetzel at Abstract. It also discloses "[t]he present embodiments advantageously addresses the needs above as well as other needs by providing a apparatus for use in navigating through content, such multimedia content, textual content, web or internet content, graphics content, picture content and substantially any relevant content. Some embodiments provide methods for use in navigating through content, comprising receiving an initial first directional control command; activating a seek mode upon receipt of the initial first directional control command, comprising advancing over a first amount of content in a first direction from a first point in the content to a second point in the content; receiving an initial second directional control command following the receipt of the initial first directional command; and activating a search mode upon receipt of the initial second directional control command, comprising advancing back over a second amount of the first amount of the content wherein the

second amount is less than the first amount of the content." Oetzel at [0005]. Oetzel also discloses "[i]ncreased amounts of content often result in increased needs to access the content. However, identifying and/or finding desired content can be difficult do at least in part to the increased amount of content and/or the increased amount of data utilized in recording the content." Oetzel at [0004].

A POSITA would have recognized that Oetzel's disclosures relating to navigating video content could easily be incorporated into Park '773. A POSITA would have been motivated to implement Oetzel's navigation into Park '773 to address the problems in Park '773. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

DVD Explorer discloses a DVR system. Explorer Manual at 1. It also discloses pausing and recording a live program with timeline bar shown on the screen with the video. Explorer Manual at 9. It also discloses that once can "watch and record high-definition programs" *Id*. at 2. DVD Explorer also discloses navigating videos. *See generally,* Explorer Manual 3-6.

A POSITA would have recognized that DVD Explorer's disclosures relating to navigating video content could easily be incorporated into Park '773. A POSITA would have been motivated

to implement DVD Explorer's navigation into Park '773 to address the problems in Park '773. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(e) Shiiyama in view of Nishikawa '716 and/or Angiolillo and/or Vahtola and/or Cronin and/or Poslinski and/or Ackley and/or Kuroiwa '764 and/or Errico and/or Park '332 and/or Van de Streek and/or Johnson and/or Boreczky and/or Kuroiwa '395 and/or Kashima and/or Hua and/or Oetzel

Shiiyama discloses that "it is an object of the present invention to allow the user easily to restore synchronous display of a thumbnail image sequence from a state wherein synchronization between the thumbnail image sequence and moving image playback is interrupted by, e.g., scroll operation of the thumbnail image sequence. It is another object of the present invention to allow the user to designate a desired scene more reliably when the thumbnail image sequence is displayed by automatic scroll synchronized with playback of a moving image." Shiiyama, 2:26-29. It also discloses that "when the user wants to make a jump to a desired scene by selecting a given thumbnail image from the thumbnail image sequence, while the thumbnail image sequence is automatically scrolled in synchronism with the displayed moving image, the contents of the

thumbnail image sequence have been scrolled at a delicate timing, and the user may select a thumbnail image that he or she did not intend. This is also a problem posed upon displaying a thumbnail image sequence in synchronism with the displayed moving image." Shiiyama, 2:4-13. It also discloses "[w]hen one image of the thumbnail image sequence **2001**, e.g., a thumbnail image corresponding to scene **22**, is designated by mouse operation or the like, a moving image corresponding to scene **22** is played back on the moving image playback area **2000**." Shiiyama, 1:38-42. Shiiyama also discloses "[a]s the storage medium for supplying the program code, for example, a floppy disk, hard disk, optical disk, magneto-optical disk, CD-ROM, CD-R, magnetic tape, nonvolatile memory card, ROM, and the like may be used." 17:37-40.

Nishikawa '716 discloses that the "invention relates generally to navigating video content, and in particular to navigating bookmarked video content using thumbnailed images thereof." Nishikawa '716, ¶[0002]. It also discloses that one "aspect of the invention is to enable users to place markers at desired locations within recorded or cached video content. In one embodiment, such markers may be placed while the content is being recorded or cached, while in another embodiment the markers may be placed after the content has been recorded or cached. Such markers (which may also be referred to herein as bookmarks or chapter marks) may be used to instantly jump to a particular scene or location within a video presentation." Nishikawa '716, ¶[0017]. Nishikawa '716 also discloses "Memory 110 may also include instructions for causing CPU 106 to place, in response to a user instruction, one or more chapter marks at various viewing locations of cached or recorded content. Memory 110 may also instructions for generating one or more thumbnailed images representative of the content at the previously-placed chapter marks." Nishikawa '716, ¶[0024]. Nishikawa '716 discloses that the "Video Cassette Recorder (VCR) has changed the lives of television (TV) viewers by allowing viewers to time-shift TV programs to

match their lifestyles. Using the VCR, the viewer stores programs onto magnetic tape; this can then be played back at the viewer's convenience. The VCR gives the viewer the ability to pause the program playback whenever he desires, fast-forward through unwanted program material or commercials, and to replay favorite scenes. However, a VCR cannot both capture and play back information at the same time." Nishikawa '716, ¶[0003].

A POSITA would have recognized that Nishikawa '716's disclosures relating to navigating video content could easily be incorporated into Shiiyama. A POSITA would have been motivated to implement Nishikawa '716's navigation into Shiiyama to address the problems in Shiiyama. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation and file storage was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content with chapter navigation) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content with chapter navigation) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Angiolillo discloses that a " media content instance is provided for display. A plurality of first images are identified associated with locations within a first segment of a media content instance according to a first offset that is one of: a time interval and a number of frames. The first images are retrieved from the media content instance. At least some of the first images are provided

for display." Angiolillo, abstract. It also discloses that a "user can navigate a location control pane 320, e.g., using one or more of directional arrow buttons 210-225 on user input device 125. Additionally, the user may navigate location control pane 320 using "fast forward" and "rewind" buttons 270 and 265 as well as other buttons such as "scene skip" buttons (not illustrated in FIG. 2) that allow for navigation according to indexing within a media stream or file, e.g., navigation from track to track on a DVD. "Scene skip" buttons, or the "fast forward" and "rewind" buttons 270 and 265 may be configured to permit a user to navigate images 335 quickly and efficiently." Angiolillo, ¶[0042]. Angiolillo also discloses "[s]torage device 140 may include one or more data storage media, devices, or configurations and may employ any type, form, and combination of storage media. For example, the storage device 140 may include, but is not limited to, a hard drive, network drive, flash drive, magnetic disc, optical disc, or other non-volatile storage unit. Various portions of media content, applications, such as location access control application 155, or a PVR application (not shown), and other data may be temporarily and/or permanently stored in the storage device 140. The storage device 140 of FIG. 1 is shown to be a part of the processing subsystem 105 for illustrative purposes only. It will be understood that the storage device 140 may additionally or alternatively be located external to the processing subsystem 105." Angiolillo, ¶[0026]. It also discloses that the "exemplary control pane 320 illustrated in FIG. 5 is displayed as a vertical bar placed on the right side of media content instance 315, which media content instance 315 is sized so that control pane 320 does not generally obstruct media content instance 315. Selection tool 325 as illustrated in FIG. 5 is operative to magnify the selected image 345 relative to the other images 335 included in control pane 320. As a user navigates from one image 335 to another using selection tool 325, the image 335 which is currently a selected image 345 may be magnified slightly. When the user navigates away from a given image 335, the previous selected

image 345 may return to a "pre-magnified" size. FIG. 6 illustrates a further example of a location control pane 320. Location control pane 320 as illustrated in FIG. 6 is vertically overlaid across a portion of a media content instance 315 on a display 310, allowing media content instance 315 to retain an original size, although a portion of the media content instance 315 over which the location control pane 320 is overlaid may become obscured by the location control pane 320." Angiolillo, ¶¶[0038]-[0039].

A POSITA would have recognized that Angiolillo's disclosures relating to navigating video content could easily be incorporated into Shiiyama. A POSITA would have been motivated to implement Angiolillo's navigation and vertical display into Shiiyama to address the problems in Shiiyama. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation and file storage was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content with vertical display) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content with vertical display) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Vahtola discloses "[r]ecording chapter information may include recording a chapter title. Recording a chapter title may involve accessing customizable information stored in the memory device and basing the chapter title at least partially on the customizable information. Receiving

user input may instruct a processor to: begin or resume recording the continuous media data to the memory device, and record chapter information for the location in the continuous media data where the processor begins or resumes recording." Vahtola, ¶[0011]. It also discloses that the "processing element 14 can include a processor 20 operatively coupled to a memory 22. The memory 22 can comprise volatile and/or non-volatile memory, and typically stores content, data, or the like. For example, the memory 22 can store client applications, instructions, or the like for the processor 20 to perform steps associated with operation of the entity in accordance with exemplary embodiments of the present invention. Also, for example, the memory 22 can store one or more continuous media data sequences, such as those received from the continuous media data source 12. As is described below, to facilitate navigation of one or more of those sequences (or other purposes described herein), the memory 22 can further store chapter information therein. The memory 22 may be fixed or removable. The memory device 22 may include a hard drive, a CD, a DVD, a Blu-ray disk, a memory card such as a Flash memory card, a Memory stick, a Secure Digital (SD) card and the like, a video tape cassette, an audio tape cassette, and the like." Vahtola, ¶[0034]. Vahtola also discloses "[o]nce the chapters are created, the chapters may be used to generate a table of contents or other menu-type display of the chapters in the recorded continuous media data. In one embodiment, the processor generates a menu in which thumbnail images from the chapter or even portions of the continuous media data from each chapter are displayed in such a menu. In one embodiment of the present invention, the user can select an image or a portion of continuous media to use in this regard by actuating a particular user input device during the recording of the continuous media data. The thumbnail or the continuous media portion may be then recorded as chapter information or the location (e.g., the frame or range of frames) of the thumbnail or the continuous media portion can be recorded as chapter information. In other

embodiments the first frame or the first several seconds of each chapter is used as the thumbnail image or the continuous media portion, respectively." ¶[0061].

A POSITA would have recognized that Vahtola's disclosures relating to navigating video content could easily be incorporated into Shiiyama. A POSITA would have been motivated to implement Vahtola's SD card storage and video preview Shiiyama to address the problems in Shiiyama. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling data storage, and video preview was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., storing data on an SD card; video preview) to improve similar devices or methods (e.g., storing data on a flash drive, navigating video content; displaying previews) in the same way (e.g., navigating video content stored on a drive; displaying video previews). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., storing data on an SD card; video preview) to a known device or method (e.g., navigating video content using chapters) that is ready for improvement to yield predictable results (e.g., , navigating video content stored on a drive; displaying video previews). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Cronin discloses that in "accordance with one or more aspects of the thumbnail navigation bar for video, video content is accessed. Multiple thumbnails corresponding to the video content are generated by generating, for each of multiple locations of the video content, a thumbnail of the video content that is displayed at the location. The multiple thumbnails are made available as the thumbnails of a navigation bar to be displayed on a display device in response to a user request to display the navigation bar received while the video content is being played on the display device."

Cronin at ¶[0004]. It also discloses that "[v]ideo content display module 114 receives video content 106, converts video content 106 into a format that can be displayed by a display device, and outputs the converted video content as video content 116. Video content display module 114 also optionally extracts particular content from video content 106, such as tuning to a particular channel, selecting a particular stream, and so forth. Navigation bar display module 104 optionally receives a series of thumbnails 108 corresponding to video content 106 and video content 116. Other types of content corresponding to video content 106, such as audio content, are also oftentimes received by device 102. Thumbnails 108 can be received from a same or different source as video content 106, or alternatively can be generated by device 102." Cronin at ¶[0015]. It also discloses "[n]avigation bar 204 thus provides a user interface that allows a user to quickly and easily rewind and/or fast forward through video content. The user can rewind and/or fast forward through the video content by scrolling through the thumbnails of the navigation bar to select the particular location he or she would like to jump to, and then selecting a thumbnail corresponding to that particular location. Playback of the video content then begins at the location corresponding to the selected thumbnail. Using navigation bar 204, the user is able to move swiftly through the thumbnails corresponding to the video content and is oftentimes less likely to overshoot a particular location or thumbnail he or she is looking for." Cronin at ¶[0032].

A POSITA would have recognized that Cronin's disclosures relating to navigating video content could easily be incorporated into Shiiyama. A POSITA would have been motivated to implement Cronin's thumbnail navigation into Shiiyama to address the problems in Shiiyama. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., thumbnail navigation) to improve similar devices or methods (e.g.,

navigating video content) in the same way (e.g., navigating video content via thumbnails). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., thumbnail navigation) to a known device or method (e.g., navigating video content using chapters) that is ready for improvement to yield predictable results (e.g., navigating video content via thumbnails). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Poslinski discloses that "[i]n one exemplary embodiment, media content received at the tuner (105) is temporarily buffered, or stored, in a live cache buffer (110). If there are multiple tuners (105), there may be a live cache buffer (110) corresponding to each of the tuners (105). As shown in FIG. 1, the live cache buffer (110) may be a part of the storage device (109) (e.g. a reserved portion of a hard dive). In an alternative embodiment (not shown), the live cache buffer (110) may reside in memory (102) or in a storage device external to the STB (100). Media content received into the live cache buffer (110) has a temporary recording designation. In other words, the media content stored in the live cache buffer (110) will either be deleted or retained through election by the user as a permanent recording. A permanent recording will be understood to mean media content that is stored for an extended period of time as decided by the user. Permanent recordings may be stored in a permanent storage unit (119), for example. The permanent storage unit (119) may be a part of the storage device (109) or it may be a stand-alone unit. For example, the permanent storage unit (119) may be a hard drive, an optical disc, a network drive, a buffer in memory, or any other type of permanent storage device that is a part of the storage unit (109) or that is a stand-alone unit." Poslinksi, ¶[0030]. It also discloses ""In one of many possible embodiments, the present invention provides a method and system for displaying a number of

portions of a number of recorded media content instances during a single viewing session. The method includes defining a number of entries such that each of the number of entries corresponds to one of the number of portions of the number of recorded media content instances, including each of the entries in a play list, and selecting the play list from a number of play lists for viewing. The portions of the number of recorded media content instances included in the entries in the play list are then displayed during the single viewing session." Poslinski, ¶[0006].

A POSITA would have recognized that Poslinski's disclosures relating to assembling the timeline could easily be incorporated into Shiiyama. A POSITA would have been motivated to implement Poslinski's timeline assembly into Shiiyama to address the problems in Shiiyama. A POSITA would have understood that, as of the priority date of the '300 Patent, timeline creation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., timeline assembly) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content via an assembled timeline). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., timeline assembly) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content via an assembled timeline). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Ackley discloses "The present disclosure provides a user friendly navigation scheme to media and media players. The disclosure provides for a menu system that overlays the video on a DVD, and can be viewed and selections made during viewing of a video stream. The system and method applies to media players, including but not limited to DVD players, software DVD-ROM

players, high definition video players, hard drive based players, optical players, personal computers, or any other media player known to one of ordinary skill in the art." Ackley, ¶[0008]. It also discloses that "[i]n another embodiment, thumbnails may include different video sources. In other words, each thumbnail 510 represents a different movie, a documentary, trailer, etc., originating from sources other than the media player. For instance, the media player may be connected to the Internet, and if a specific thumbnail is selected, a particular video may be downloaded from the Internet. Likewise, the video source may be a personal computer attached to the media player. The personal computer would have a hard drive with stored videos that are selectable by the media player." Ackley, ¶[0049].

A POSITA would have recognized that Ackley's disclosures relating to video preview could easily be incorporated into Shiiyama. A POSITA would have been motivated to implement Ackley's video preview into Shiiyama to address the problems in Shiiyama. A POSITA would have understood that, as of the priority date of the '300 Patent, video preview was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., video preview) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content while showing a video preview). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., video preview) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content while showing a video preview). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kuriowa ’764 discloses “[a]n information processing apparatus includes area image extracting means for extracting, as a telop image, an area displaying a telop in contents, detecting means for detecting a scene change in images of the contents, recording means for converting an image at the time when a scene change is detected by the detecting means to a thumbnail image and recording the thumbnail image, display control means for controlling to arrange and display a plurality of the thumbnail images and a plurality of the telop images chronologically, and playing means for playing the contents from the position corresponding to the selected thumbnail image or telop image.” Kuroiwa ’764 at Abstract. It also discloses “the contents recording section 23 controls a scene change detecting section 71 to detect the time upon scene change in frames and supplies the detection result to a film roll data creating section 72. The film roll data creating section 72 converts the image of the frame immediately after the scene change corresponding to the time code of the time upon scene change to a thumbnail image and records the result to film roll data 92 and stores the film roll data 92 in the contents data storage section 24 in connection with the contents data 91. The image recording section 73 causes the contents data storage section 24 to store information on the contents obtained by the contents recording section 23 as contents data.” Kuroiwa ’764 at 4:60–5:5. It discloses the “display control means may control to display the contents being currently played and the telop image on one screen.” Kuroiwa ’764 at 2:18–20.

A POSITA would have recognized that Kuriowa ’764’s disclosures relating to navigating video content could easily be incorporated into Shiiyama. A POSITA would have been motivated to implement Kuriowa ’764’s navigation into Shiiyama to address the problems in Shiiyama. A POSITA would have understood that, as of the priority date of the ’300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods

(e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Errico discloses "A system for presenting a summarization of audio and/or visual content having a plurality of segments to a user together with a graphical user interface that preferably indicates to the viewer the relative temporal position of video segments viewed in the summary within the content from which the summary was derived." Errico at Abstract. It also discloses ""One example of a personalized nagivational control is a button configured to "replay the last two seconds of the segment previously viewed." This macro button could be as follows: smart skip, in reverse, one segment, no theme change, offset two seconds, from end of segment, with zero fade in; play, for two seconds, in default mode; and resume prior navigation operation." Errico at 10:61–67. It also discloses "The amount of video content is expanding at an ever increasing rate, some of which includes sporting events. Simultaneously, the available time for viewers to consume or otherwise view all of the desirable video content is decreasing. With the increased amount of video content coupled with the decreasing time available to view the video content, it becomes increasingly problematic for viewers to view all of the potentially desirable content in its entirety. Accordingly, viewers are increasingly selective regarding the video content that they select to view. To accommodate viewer demands, techniques have been developed to provide a summarization of the video representative in some manner of the entire video. Video

summarization likewise facilitates additional features including browsing, filtering, indexing, retrieval, etc. The typical purpose for creating a video summarization is to obtain a compact representation of the original video for subsequent viewing." Errico, 1:12-28. It adds that "There are two major approaches to video summarization. The first approach for video summarization is key frame detection… The second approach for video summarization is directed at detecting events that are important for the particular video content." Errico, 1:29-43.

A POSITA would have recognized that Errico's disclosures relating to navigating video content could easily be incorporated into Shiiyama. A POSITA would have been motivated to implement Errico's navigation into Shiiyama to address the problems in Shiiyama. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Park '332 discloses ""Provided are an apparatus and method of displaying multimedia contents, more particularly, an apparatus and method of displaying stored multimedia contents to accommodate a user's preference using limited buttons of a remote control device or a cellular phone. The apparatus for displaying multimedia contents includes an alignment condition

determination unit determining an alignment condition corresponding to a first user command signal among a plurality of alignment conditions, a detailed condition determination unit determining a detailed condition corresponding to a second user command signal among detailed conditions included in the alignment condition, a contents extraction unit extracting first multimedia contents according to the determined detailed condition, and a display unit displaying the determined alignment condition in a first region, the determined detailed condition in a second region, and a second multimedia contents selected by a user among the extracted first multimedia contents in a third region of a screen." Park '332 at Abstract. It also discloses "Increasing Internet usage by users having various backgrounds and interests has had a huge impact on all digital industries, particularly with respect to Internet-based services and contents which may be customized based on a user's background and interests. Internet-based services and contents, which are provided through the Internet, are becoming the standards of digital industries in the 21st century. In addition, due to the fast growth of Internet networks and multimedia contents in cellular phones, PDAs, and notebook computers, utilization of multimedia is essential rather than optional. The development from analog TV to digital TV is in progress, and users may receive various types of information, as well as public broadcast, through the TV." Park '332 at 1:25-38.

A POSITA would have recognized that Park '332's disclosures relating to navigating video content could easily be incorporated into Shiiyama. A POSITA would have been motivated to implement Park '332's navigation into Shiiyama to address the problems in Shiiyama. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another

example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Van De Streek discloses a "[m]ethod of and system for selecting a position in an image sequence. A representation (200) of the image sequence is displayed, together with a position indicator (206) configured to be moved along the representation (200). The position in the image sequence is selected in correspondence to a present position of the position indicator (206). A collection of key frames is obtained, each key frame being associated with a portion of the representation (200). From this collection of key frames a current key frame (212) is displayed whose associated portion comprises a present position of the position indicator (206). Indications (205) of the locations of the key frames in the collection may be shown as well." Van De Streek at Abstract. It also discloses "The invention relates to a method of selecting a position in an image sequence, comprising displaying a representation of the image sequence, providing a position indicator configured to be moved along the representation, and selecting the position in the image sequence in correspondence to a present position of the position indicator." Van De Streek at [0001]. It also discloses "The known system has the disadvantage that the viewer can only see the frame on the video stream corresponding to the location of the slider along the bar. This makes it very difficult for him to establish the context in which this frame occurs in the video stream, and so makes it difficult for him to navigate through the video stream." Van De Streek at [0006].

A POSITA would have recognized that Van De Streek's disclosures relating to navigating video content could easily be incorporated into Shiiyama. A POSITA would have been motivated to implement Van De Streek's navigation into Shiiyama to address the problems in Shiiyama. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., preview video) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual preview). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., preview video) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with video preview). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Johnson discloses an "[a]pparatus, system and method for the navigation of aggregated content using skipping and content metadata. An apparatus includes a processor to receive a control signal from a navigation controller and to display a skip function user interface on a display device. The skip function user interface is used to navigate aggregated content items and includes one or more skip boxes. Each of the one or more skip boxes is associated with a content item in the aggregated content items. Other embodiments are described and claimed." Johnson at Abstract. It also discloses that in "one embodiment, platform 510 may comprise a CPU 512, a chip set 513, one or more drivers 514, one or more network connections 515, an operating system 516, and/or a media center application 517 comprising one or more software applications, for example. Platform 510 also may comprise storage 518. Storage 518 may include control and content data used to

define the functionality and metadata associated with skip function user interface 202." Johnson at [0037].

A POSITA would have recognized that Johnson's disclosures relating to navigating video content could easily be incorporated into Shiiyama. A POSITA would have been motivated to implement Johnson's metadata into Shiiyama to address the problems in Shiiyama. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., metadata) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with metadat). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., metadata) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with metadata). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Boreczky discloses a "system is provided where a number of representative video snapshots are displayed on a timeline indicating a position to jump to in a video using control buttons, such as fast forward, reverse, or a timeline scroll bar. The video snapshots are obtained by opening a low resolution connection to a video server to receive forward looking video segments. The forward looking video segments are summarized and the representative video snapshots are selected and displayed to provide a reference frame for the user to select a timeline position, or snapshots directly linked to positions in the higher resolution video. Backward looking video segments may be similarly summarized from the low resolution connection, or alternatively from video previously played. As the video progresses, new forward looking video segments are

received and new representative video snapshots are summarized and displayed in close proximity with the video being played." Boreczky at Abstract. It also discloses ""The present invention includes a computer program product which is a storage medium (media) having instructions stored thereon/in which can be used to program a computer to perform any of the processes of the present invention. The storage medium can include, but is not limited to, any type of disk including floppy disks, optical discs, DVD, CD-ROMS, microdrive, and magneto-optical disks, ROMs, RAMs, EPROMs, EEPROMs, DRAMs, VRAMs, flash memory devices, magnetic or optical cards, nanosystems (including molecular memory ICs), or any type of media or device suitable for storing instructions and/or data." Boreczky at 9:8–18. It also discloses "an embodiment of the present invention during playback of a video, such as a video invoked by commands 325 and displayed on display device 330 by a video application running on device 320. A video 400 displays a current playback position of a video data stream being played by the video application. Video controls 410 (pause/play button) and slide bar 415 allow user control and user movements of the current playback position. Alternate embodiments include step and/or skip back and forward functions, fast forward, fast rewind, go to start, go to end, jump to next index point, jump to last index point, and any other type of control that might be associated with a video playback device. Slide bar 415 is displayed in conjunction with a timeline (0:00. .33:30, for example) which provides timing marks indicating approximate positions of the video in correspondence to other points in the video. Alternatively, instead of an entire video segment being displayed on the timeline, any selected portions of the video may be represented on the timeline." Boreczky at 4:36–54.

A POSITA would have recognized that Boreczky's disclosures relating to navigating video content could easily be incorporated into Shiiyama. A POSITA would have been motivated to

implement Boreczky's navigation into Shiiyama to address the problems in Shiiyama. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kuroiwa '395 discloses an "information processing apparatus includes a content metadata obtaining unit configured to obtain content metadata; a determination unit configured to determine the category of the content metadata; an editing unit configured to edit the content metadata so that, when text data of the content metadata is to be reproduced on the basis of the category of the content metadata determined by the determination unit, information on a predetermined link destination is displayed in response to a predetermined operation being performed on the reproduced text data; a reproduction unit configured to reproduce the text data of the content metadata in synchronization with the reproduction of the content; and a display unit configured to display the information on the link destination on the basis of the content metadata edited by the editing unit when the predetermined operation is performed on the text data of the content metadata reproduced by the reproduction unit." Kuroiwa '395 at Abstract. It also discloses that in "recent years, a technology has been proposed in which text information contained in an EPG is displayed,

and also a search process is performed by a search engine via the Internet by using the text information as a keyword and a search result is displayed (see Japanese Unexamined Patent Application Publication No. 2004-23345).” Kuroiwa ’395 at 1:30-35.

A POSITA would have recognized that Kuriowa ‘395’s disclosures relating to navigating video content could easily be incorporated into Shiiyama. A POSITA would have been motivated to implement Kuriowa ‘395’s navigation into Shiiyama to address the problems in Shiiyama. A POSITA would have understood that, as of the priority date of the ’300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kashima discloses a “display control apparatus: in a virtual three-dimensional space in which is disposed a three-dimensional model of an object contained in a moving image picked up by performing successive imaging operations once by using an imaging device, draws a plurality of thumbnail images extracted from the moving image to the respective positions of the imaging device at the time when the thumbnail images were picked up and draws information that relates the thumbnail images in order in which they were picked up, thereby generating a bird's eye-display image which provides a bird's-eye-view drawing of the virtual three-dimensional space

containing the three-dimensional model and the thumbnail images; and causes a display unit to display the bird's eye-display image." Kashima at Abstract. It also discloses the "storage unit may store movement track information which represents a movement track of the imaging device at the time when the imaging device picked up the moving image, as additional information of the moving image and the display image generation unit may draw the thumbnail images in the virtual three-dimensional space at the respective positions of the imaging device at the time when the thumbnail images were picked up based on the movement track information." Kashima at 2:9-17. Kashima discloses "There are regular playback display and film roll display available as a video display method for displaying moving images picked up and video-recorded with an imaging device such as a video camera. The regular playback display method will display a video (x-axis and y-axis of an imaging plane) by reproducing its video-recorded moving images sequentially from the beginning along a time axis t. The user can grasp imaged contents by viewing the video thus reproduced regularly but in a considerable lapse of time. To reduce the time, a method is available for fast-forwarding the moving images in playback display but still requires a lapse of time to some extent in order to grasp the imaged contents of the moving images as a whole." Kashima, 1:10-23. It also discloses "[a]ccording to the film roll display approach, if an arbitrary one is selected from among the thumbnail images displayed in a list, it is possible also to display the moving images by regularly reproducing them starting from a playback position that corresponds to the thumbnail image. According to such film roll display, the user can understand the imaged contents of the moving images as a whole more easily than by the regular playback display." Kashim, 1:29-36

A POSITA would have recognized that Kashima's disclosures relating to navigating video content could easily be incorporated into Shiiyama. A POSITA would have been motivated to

implement Kashima's navigation into Shiiyama to address the problems in Shiiyama. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hua discloses "Smart video presentation involves presenting one or more videos in a video presentation user interface (IU). In example implementation, a video presentation UI includes a listing of multiple video entries, with each video entry including multiple static thumbnails to represent the corresponding video. In another example implementation, a video presentation UI includes a scalable number of static thumbnails to represent a video, with the scalable number adjustable by a user with a scaling interface tool. In yet another example implementation, a video presentation UI includes a video playing region, a video slider bar region, and a filmstrip region that presents multiple static thumbnails for a video that is playable in the video playing region." Hua at Abstract. Hua also discloses "[v]ideos 104 can be stored at local storage, on a local network, over the internet, some combination thereof, and so forth. For example, they may be stored on flash memory or a local hard drive. They may also be stored on a local area network (LAN) server. Alternatively, they may be stored at a server farm and/or storage area network (SAN) that is

connected to the internet. In short, videos 104 may be stored at and/or retrieved from any processor-accessible media." Hua at [0020]. It also discloses "People and organizations store a significant number of items on their computing devices. These items can be text files, data files, images, videos, or some combination thereof. To be able to utilize such items, users must be able to locate, retrieve, manipulate, and otherwise manage those items that interest them. Among the various types of items, it can be particularly challenging to locate and/or manage videos due to their dynamic nature and oftentimes long lengths" Hua, [0002].

A POSITA would have recognized that Hua's disclosures relating to navigating video content could easily be incorporated into Shiiyama. A POSITA would have been motivated to implement Hua's navigation into Shiiyama to address the problems in Shiiyama. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Oetzel discloses "[t]he present embodiments provide methods and apparatuses for use in navigating through content. Some embodiments provide methods for use in navigating through content that receive an initial first directional control command, activate a seek mode upon receipt

of the initial first directional control command comprising advancing over a first amount of content in a first direction from a first point in the content to a second point in the content, receive an initial second directional control command following the receipt of the initial first directional command, and activate a search mode upon receipt of the initial second directional control command, comprising advancing back over a second amount of the first amount of the content where the second amount is less than the first amount of the content." Oetzel at Abstract. It also discloses "[t]he present embodiments advantageously addresses the needs above as well as other needs by providing a apparatus for use in navigating through content, such multimedia content, textual content, web or internet content, graphics content, picture content and substantially any relevant content. Some embodiments provide methods for use in navigating through content, comprising receiving an initial first directional control command; activating a seek mode upon receipt of the initial first directional control command, comprising advancing over a first amount of content in a first direction from a first point in the content to a second point in the content; receiving an initial second directional control command following the receipt of the initial first directional command; and activating a search mode upon receipt of the initial second directional control command, comprising advancing back over a second amount of the first amount of the content wherein the second amount is less than the first amount of the content." Oetzel at [0005]. Oetzel also discloses "[i]ncreased amounts of content often result in increased needs to access the content. However, identifying and/or finding desired content can be difficult do at least in part to the increased amount of content and/or the increased amount of data utilized in recording the content." Oetzel at [0004].

A POSITA would have recognized that Oetzel's disclosures relating to navigating video content could easily be incorporated into Shiiyama. A POSITA would have been motivated to implement Oetzel's navigation into Shiiyama to address the problems in Shiiyama. A POSITA

would have understood that, as of the priority date of the ’300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

DVD Explorer discloses a DVR system. Explorer Manual at 1. It also discloses pausing and recording a live program with timeline bar shown on the screen with the video. Explorer Manual at 9. It also discloses that once can “watch and record high-definition programs” *Id*. at 2. DVD Explorer also discloses navigating videos. *See generally,* Explorer Manual 3-6.

A POSITA would have recognized that DVD Explorer’s disclosures relating to navigating video content could easily be incorporated into Shiiyama. A POSITA would have been motivated to implement DVD Explorer’s navigation into Shiiyama to address the problems in Shiiyama. A POSITA would have understood that, as of the priority date of the ’300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or

method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(f) Poslinski in view of Shiiyama and/or Nishikawa '716 and/or Angiolillo and/or Park '773 and/or Vahtola and/or Cronin and/or Ackley and/or Kuroiwa '764 and/or Errico and/or Park '332 and/or Van de Streek and/or Johnson and/or Boreczky and/or Kuroiwa '395 and/or Kashima and/or Hua and/or Oetzel

Poslinski discloses that "[i]n one exemplary embodiment, media content received at the tuner (105) is temporarily buffered, or stored, in a live cache buffer (110). If there are multiple tuners (105), there may be a live cache buffer (110) corresponding to each of the tuners (105). As shown in FIG. 1, the live cache buffer (110) may be a part of the storage device (109) (e.g. a reserved portion of a hard dive). In an alternative embodiment (not shown), the live cache buffer (110) may reside in memory (102) or in a storage device external to the STB (100). Media content received into the live cache buffer (110) has a temporary recording designation. In other words, the media content stored in the live cache buffer (110) will either be deleted or retained through election by the user as a permanent recording. A permanent recording will be understood to mean media content that is stored for an extended period of time as decided by the user. Permanent recordings may be stored in a permanent storage unit (119), for example. The permanent storage unit (119) may be a part of the storage device (109) or it may be a stand-alone unit. For example, the permanent storage unit (119) may be a hard drive, an optical disc, a network drive, a buffer in memory, or any other type of permanent storage device that is a part of the storage unit (109) or that is a stand-alone unit." Poslinksi, ¶[0030]. It also discloses ""In one of many possible

embodiments, the present invention provides a method and system for displaying a number of portions of a number of recorded media content instances during a single viewing session. The method includes defining a number of entries such that each of the number of entries corresponds to one of the number of portions of the number of recorded media content instances, including each of the entries in a play list, and selecting the play list from a number of play lists for viewing. The portions of the number of recorded media content instances included in the entries in the play list are then displayed during the single viewing session." Poslinski, ¶[0006].

Shiiyama discloses that "it is an object of the present invention to allow the user easily to restore synchronous display of a thumbnail image sequence from a state wherein synchronization between the thumbnail image sequence and moving image playback is interrupted by, e.g., scroll operation of the thumbnail image sequence. It is another object of the present invention to allow the user to designate a desired scene more reliably when the thumbnail image sequence is displayed by automatic scroll synchronized with playback of a moving image." Shiiyama, 2:26-29. It also discloses that "when the user wants to make a jump to a desired scene by selecting a given thumbnail image from the thumbnail image sequence, while the thumbnail image sequence is automatically scrolled in synchronism with the displayed moving image, the contents of the thumbnail image sequence have been scrolled at a delicate timing, and the user may select a thumbnail image that he or she did not intend. This is also a problem posed upon displaying a thumbnail image sequence in synchronism with the displayed moving image." Shiiyama, 2:4-13. It also discloses "[w]hen one image of the thumbnail image sequence **2001**, e.g., a thumbnail image corresponding to scene **22**, is designated by mouse operation or the like, a moving image corresponding to scene **22** is played back on the moving image playback area **2000**." Shiiyama, 1:38-42. Shiiyama also discloses "[a]s the storage medium for supplying the program code, for

example, a floppy disk, hard disk, optical disk, magneto-optical disk, CD-ROM, CD-R, magnetic tape, nonvolatile memory card, ROM, and the like may be used." 17:37-40.

A POSITA would have recognized that Shiiyama's disclosures relating to video navigation could easily be incorporated into Poslinski. A POSITA would have been motivated to implement Shiiyama's video navigation into Poslinski to address the problems in Poslinski. A POSITA would have understood that, as of the priority date of the '300 Patent, timeline creation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., video navigation) to improve similar devices or methods (e.g., creation of the navigation bar) in the same way (e.g., navigating video content via an assembled timeline). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video) to a known device or method (e.g., creation of the navigation bar) that is ready for improvement to yield predictable results (e.g., navigating video content via an assembled timeline). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Nishikawa '716 discloses that the "invention relates generally to navigating video content, and in particular to navigating bookmarked video content using thumbnailed images thereof." Nishikawa '716, ¶[0002]. It also discloses that one "aspect of the invention is to enable users to place markers at desired locations within recorded or cached video content. In one embodiment, such markers may be placed while the content is being recorded or cached, while in another embodiment the markers may be placed after the content has been recorded or cached. Such markers (which may also be referred to herein as bookmarks or chapter marks) may be used to instantly jump to a particular scene or location within a video presentation." Nishikawa '716,

¶[0017]. Nishikawa ‘716 also discloses “Memory 110 may also include instructions for causing CPU 106 to place, in response to a user instruction, one or more chapter marks at various viewing locations of cached or recorded content. Memory 110 may also instructions for generating one or more thumbnailed images representative of the content at the previously-placed chapter marks.” Nishikawa ‘716, ¶[0024]. Nishikawa ‘716 discloses that the “Video Cassette Recorder (VCR) has changed the lives of television (TV) viewers by allowing viewers to time-shift TV programs to match their lifestyles. Using the VCR, the viewer stores programs onto magnetic tape; this can then be played back at the viewer's convenience. The VCR gives the viewer the ability to pause the program playback whenever he desires, fast-forward through unwanted program material or commercials, and to replay favorite scenes. However, a VCR cannot both capture and play back information at the same time.” Nishikawa ‘716, ¶[0003].

A POSITA would have recognized that Nishikawa ‘716’s disclosures relating to navigating video content could easily be incorporated into Poslinski. A POSITA would have been motivated to implement Nishikawa ‘716’s navigation into Poslinski to address the problems in Poslinski. A POSITA would have understood that, as of the priority date of the ’300 Patent, controlling video navigation and file storage was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., video navigation) to improve similar devices or methods (e.g., creation of the navigation bar) in the same way (e.g., navigating video content via an assembled timeline). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video) to a known device or method (e.g., creation of the navigation bar) that is ready for improvement to yield predictable results (e.g., navigating video content via an assembled timeline). A POSITA would

have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Angiolillo discloses that a " media content instance is provided for display. A plurality of first images are identified associated with locations within a first segment of a media content instance according to a first offset that is one of: a time interval and a number of frames. The first images are retrieved from the media content instance. At least some of the first images are provided for display." Angiolillo, abstract. It also discloses that a "user can navigate a location control pane 320, e.g., using one or more of directional arrow buttons 210-225 on user input device 125. Additionally, the user may navigate location control pane 320 using "fast forward" and "rewind" buttons 270 and 265 as well as other buttons such as "scene skip" buttons (not illustrated in FIG. 2) that allow for navigation according to indexing within a media stream or file, e.g., navigation from track to track on a DVD. "Scene skip" buttons, or the "fast forward" and "rewind" buttons 270 and 265 may be configured to permit a user to navigate images 335 quickly and efficiently." Angiolillo, ¶[0042]. Angiolillo also discloses "[s]torage device 140 may include one or more data storage media, devices, or configurations and may employ any type, form, and combination of storage media. For example, the storage device 140 may include, but is not limited to, a hard drive, network drive, flash drive, magnetic disc, optical disc, or other non-volatile storage unit. Various portions of media content, applications, such as location access control application 155, or a PVR application (not shown), and other data may be temporarily and/or permanently stored in the storage device 140. The storage device 140 of FIG. 1 is shown to be a part of the processing subsystem 105 for illustrative purposes only. It will be understood that the storage device 140 may additionally or alternatively be located external to the processing subsystem 105." Angiolillo, ¶[0026]. It also discloses that the "exemplary control pane 320 illustrated in FIG. 5 is displayed as

a vertical bar placed on the right side of media content instance 315, which media content instance 315 is sized so that control pane 320 does not generally obstruct media content instance 315. Selection tool 325 as illustrated in FIG. 5 is operative to magnify the selected image 345 relative to the other images 335 included in control pane 320. As a user navigates from one image 335 to another using selection tool 325, the image 335 which is currently a selected image 345 may be magnified slightly. When the user navigates away from a given image 335, the previous selected image 345 may return to a "pre-magnified" size. FIG. 6 illustrates a further example of a location control pane 320. Location control pane 320 as illustrated in FIG. 6 is vertically overlaid across a portion of a media content instance 315 on a display 310, allowing media content instance 315 to retain an original size, although a portion of the media content instance 315 over which the location control pane 320 is overlaid may become obscured by the location control pane 320." Angiolillo, ¶¶[0038]-[0039].

A POSITA would have recognized that Angiolillo's disclosures relating to navigating video content could easily be incorporated into Poslinski. A POSITA would have been motivated to implement Angiolillo's navigation and vertical display into Poslinski to address the problems in Poslinski. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation and file storage was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., video navigation) to improve similar devices or methods (e.g., creation of the navigation bar) in the same way (e.g., navigating video content via an assembled timeline). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video) to a known device or method (e.g., creation of the navigation bar) that is ready for improvement to yield predictable results (e.g., navigating video content via an assembled timeline). A POSITA

would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Vahtola discloses "[r]ecording chapter information may include recording a chapter title. Recording a chapter title may involve accessing customizable information stored in the memory device and basing the chapter title at least partially on the customizable information. Receiving user input may instruct a processor to: begin or resume recording the continuous media data to the memory device, and record chapter information for the location in the continuous media data where the processor begins or resumes recording." Vahtola, ¶[0011]. It also discloses that the "processing element 14 can include a processor 20 operatively coupled to a memory 22. The memory 22 can comprise volatile and/or non-volatile memory, and typically stores content, data, or the like. For example, the memory 22 can store client applications, instructions, or the like for the processor 20 to perform steps associated with operation of the entity in accordance with exemplary embodiments of the present invention. Also, for example, the memory 22 can store one or more continuous media data sequences, such as those received from the continuous media data source 12. As is described below, to facilitate navigation of one or more of those sequences (or other purposes described herein), the memory 22 can further store chapter information therein. The memory 22 may be fixed or removable. The memory device 22 may include a hard drive, a CD, a DVD, a Blu-ray disk, a memory card such as a Flash memory card, a Memory stick, a Secure Digital (SD) card and the like, a video tape cassette, an audio tape cassette, and the like." Vahtola, ¶[0034]. Vahtola also discloses "[o]nce the chapters are created, the chapters may be used to generate a table of contents or other menu-type display of the chapters in the recorded continuous media data. In one embodiment, the processor generates a menu in which thumbnail images from the chapter or even portions of the continuous media data from each chapter are displayed in such

a menu. In one embodiment of the present invention, the user can select an image or a portion of continuous media to use in this regard by actuating a particular user input device during the recording of the continuous media data. The thumbnail or the continuous media portion may be then recorded as chapter information or the location (e.g., the frame or range of frames) of the thumbnail or the continuous media portion can be recorded as chapter information. In other embodiments the first frame or the first several seconds of each chapter is used as the thumbnail image or the continuous media portion, respectively." ¶[0061].

A POSITA would have recognized that Vahtola's disclosures relating to navigating video content could easily be incorporated into Poslinski. A POSITA would have been motivated to implement Vahtola's SD card storage and video preview Poslinski to address the problems in Poslinski. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling data storage, and video preview was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., video navigation) to improve similar devices or methods (e.g., creation of the navigation bar) in the same way (e.g., navigating video content via an assembled timeline). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video) to a known device or method (e.g., creation of the navigation bar) that is ready for improvement to yield predictable results (e.g., navigating video content via an assembled timeline). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Cronin discloses that in "accordance with one or more aspects of the thumbnail navigation bar for video, video content is accessed. Multiple thumbnails corresponding to the video content are generated by generating, for each of multiple locations of the video content, a thumbnail of the

video content that is displayed at the location. The multiple thumbnails are made available as the thumbnails of a navigation bar to be displayed on a display device in response to a user request to display the navigation bar received while the video content is being played on the display device." Cronin at ¶[0004]. It also discloses that "[v]ideo content display module 114 receives video content 106, converts video content 106 into a format that can be displayed by a display device, and outputs the converted video content as video content 116. Video content display module 114 also optionally extracts particular content from video content 106, such as tuning to a particular channel, selecting a particular stream, and so forth. Navigation bar display module 104 optionally receives a series of thumbnails 108 corresponding to video content 106 and video content 116. Other types of content corresponding to video content 106, such as audio content, are also oftentimes received by device 102. Thumbnails 108 can be received from a same or different source as video content 106, or alternatively can be generated by device 102." Cronin at ¶[0015]. It also discloses "[n]avigation bar 204 thus provides a user interface that allows a user to quickly and easily rewind and/or fast forward through video content. The user can rewind and/or fast forward through the video content by scrolling through the thumbnails of the navigation bar to select the particular location he or she would like to jump to, and then selecting a thumbnail corresponding to that particular location. Playback of the video content then begins at the location corresponding to the selected thumbnail. Using navigation bar 204, the user is able to move swiftly through the thumbnails corresponding to the video content and is oftentimes less likely to overshoot a particular location or thumbnail he or she is looking for." Cronin at ¶[0032].

A POSITA would have recognized that Cronin's disclosures relating to navigating video content could easily be incorporated into Poslinski. A POSITA would have been motivated to implement Cronin's thumbnail navigation into Poslinski to address the problems in Poslinski. A

POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., video navigation) to improve similar devices or methods (e.g., creation of the navigation bar) in the same way (e.g., navigating video content via an assembled timeline). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video) to a known device or method (e.g., creation of the navigation bar) that is ready for improvement to yield predictable results (e.g., navigating video content via an assembled timeline). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Ackley discloses "The present disclosure provides a user friendly navigation scheme to media and media players. The disclosure provides for a menu system that overlays the video on a DVD, and can be viewed and selections made during viewing of a video stream. The system and method applies to media players, including but not limited to DVD players, software DVD-ROM players, high definition video players, hard drive based players, optical players, personal computers, or any other media player known to one of ordinary skill in the art." Ackley, ¶[0008]. It also discloses that "[i]n another embodiment, thumbnails may include different video sources. In other words, each thumbnail 510 represents a different movie, a documentary, trailer, etc., originating from sources other than the media player. For instance, the media player may be connected to the Internet, and if a specific thumbnail is selected, a particular video may be downloaded from the Internet. Likewise, the video source may be a personal computer attached to the media player. The personal computer would have a hard drive with stored videos that are selectable by the media player." Ackley, ¶[0049].

A POSITA would have recognized that Ackley's disclosures relating to video preview could easily be incorporated into Poslinski. A POSITA would have been motivated to implement Ackley's video preview into Poslinski to address the problems in Poslinski. A POSITA would have considered the combination to amount to the use of known techniques (e.g., video navigation) to improve similar devices or methods (e.g., creation of the navigation bar) in the same way (e.g., navigating video content via an assembled timeline). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video) to a known device or method (e.g., creation of the navigation bar) that is ready for improvement to yield predictable results (e.g., navigating video content via an assembled timeline). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kuriowa '764 discloses "[a]n information processing apparatus includes area image extracting means for extracting, as a telop image, an area displaying a telop in contents, detecting means for detecting a scene change in images of the contents, recording means for converting an image at the time when a scene change is detected by the detecting means to a thumbnail image and recording the thumbnail image, display control means for controlling to arrange and display a plurality of the thumbnail images and a plurality of the telop images chronologically, and playing means for playing the contents from the position corresponding to the selected thumbnail image or telop image." Kuroiwa '764 at Abstract. It also discloses "the contents recording section 23 controls a scene change detecting section 71 to detect the time upon scene change in frames and supplies the detection result to a film roll data creating section 72. The film roll data creating section 72 converts the image of the frame immediately after the scene change corresponding to

the time code of the time upon scene change to a thumbnail image and records the result to film roll data 92 and stores the film roll data 92 in the contents data storage section 24 in connection with the contents data 91. The image recording section 73 causes the contents data storage section 24 to store information on the contents obtained by the contents recording section 23 as contents data." Kuroiwa '764 at 4:60–5:5. It discloses the "display control means may control to display the contents being currently played and the telop image on one screen." Kuroiwa '764 at 2:18–20.

A POSITA would have recognized that Kuriowa '764's disclosures relating to navigating video content could easily be incorporated into Poslinski. A POSITA would have been motivated to implement Kuriowa '764's navigation into Poslinski to address the problems in Poslinski. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Errico discloses "A system for presenting a summarization of audio and/or visual content having a plurality of segments to a user together with a graphical user interface that preferably indicates to the viewer the relative temporal position of video segments viewed in the summary within the content from which the summary was derived." Errico at Abstract. It also discloses

““One example of a personalized nagivational control is a button configured to “replay the last two seconds of the segment previously viewed.” This macro button could be as follows: smart skip, in reverse, one segment, no theme change, offset two seconds, from end of segment, with zero fade in; play, for two seconds, in default mode; and resume prior navigation operation.” Errico at 10:61–67. It also discloses “The amount of video content is expanding at an ever increasing rate, some of which includes sporting events. Simultaneously, the available time for viewers to consume or otherwise view all of the desirable video content is decreasing. With the increased amount of video content coupled with the decreasing time available to view the video content, it becomes increasingly problematic for viewers to view all of the potentially desirable content in its entirety. Accordingly, viewers are increasingly selective regarding the video content that they select to view. To accommodate viewer demands, techniques have been developed to provide a summarization of the video representative in some manner of the entire video. Video summarization likewise facilitates additional features including browsing, filtering, indexing, retrieval, etc. The typical purpose for creating a video summarization is to obtain a compact representation of the original video for subsequent viewing.” Errico, 1:12-28. It adds that “There are two major approaches to video summarization. The first approach for video summarization is key frame detection… The second approach for video summarization is directed at detecting events that are important for the particular video content.” Errico, 1:29-43.

A POSITA would have recognized that Errico’s disclosures relating to navigating video content could easily be incorporated into Poslinski. A POSITA would have been motivated to implement Errico’s navigation into Poslinski to address the problems in Poslinski. A POSITA would have understood that, as of the priority date of the ’300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known

techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Park ’332 discloses ““Provided are an apparatus and method of displaying multimedia contents, more particularly, an apparatus and method of displaying stored multimedia contents to accommodate a user's preference using limited buttons of a remote control device or a cellular phone. The apparatus for displaying multimedia contents includes an alignment condition determination unit determining an alignment condition corresponding to a first user command signal among a plurality of alignment conditions, a detailed condition determination unit determining a detailed condition corresponding to a second user command signal among detailed conditions included in the alignment condition, a contents extraction unit extracting first multimedia contents according to the determined detailed condition, and a display unit displaying the determined alignment condition in a first region, the determined detailed condition in a second region, and a second multimedia contents selected by a user among the extracted first multimedia contents in a third region of a screen.” Park ’332 at Abstract. It also discloses “Increasing Internet usage by users having various backgrounds and interests has had a huge impact on all digital industries, particularly with respect to Internet-based services and contents which may be customized based on a user's background and interests. Internet-based services and contents, which

are provided through the Internet, are becoming the standards of digital industries in the 21st century. In addition, due to the fast growth of Internet networks and multimedia contents in cellular phones, PDAs, and notebook computers, utilization of multimedia is essential rather than optional. The development from analog TV to digital TV is in progress, and users may receive various types of information, as well as public broadcast, through the TV." Park '332 at 1:25-38.

A POSITA would have recognized that Park '332's disclosures relating to navigating video content could easily be incorporated into Poslinski. A POSITA would have been motivated to implement Park '332's navigation into Poslinski to address the problems in Poslinski. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Van De Streek discloses a "[m]ethod of and system for selecting a position in an image sequence. A representation (200) of the image sequence is displayed, together with a position indicator (206) configured to be moved along the representation (200). The position in the image sequence is selected in correspondence to a present position of the position indicator (206). A collection of key frames is obtained, each key frame being associated with a portion of the

representation (200). From this collection of key frames a current key frame (212) is displayed whose associated portion comprises a present position of the position indicator (206). Indications (205) of the locations of the key frames in the collection may be shown as well." Van De Streek at Abstract. It also discloses "The invention relates to a method of selecting a position in an image sequence, comprising displaying a representation of the image sequence, providing a position indicator configured to be moved along the representation, and selecting the position in the image sequence in correspondence to a present position of the position indicator." Van De Streek at [0001]. It also discloses "The known system has the disadvantage that the viewer can only see the frame on the video stream corresponding to the location of the slider along the bar. This makes it very difficult for him to establish the context in which this frame occurs in the video stream, and so makes it difficult for him to navigate through the video stream." Van De Streek at [0006].

A POSITA would have recognized that Van De Streek's disclosures relating to navigating video content could easily be incorporated into Poslinski. A POSITA would have been motivated to implement Van De Streek's navigation into Poslinski to address the problems in Poslinski. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., preview video) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual preview). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., preview video) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with video preview). A POSITA would have considered the combination or modification

to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Johnson discloses an "[a]pparatus, system and method for the navigation of aggregated content using skipping and content metadata. An apparatus includes a processor to receive a control signal from a navigation controller and to display a skip function user interface on a display device. The skip function user interface is used to navigate aggregated content items and includes one or more skip boxes. Each of the one or more skip boxes is associated with a content item in the aggregated content items. Other embodiments are described and claimed." Johnson at Abstract. It also discloses that in "one embodiment, platform 510 may comprise a CPU 512, a chip set 513, one or more drivers 514, one or more network connections 515, an operating system 516, and/or a media center application 517 comprising one or more software applications, for example. Platform 510 also may comprise storage 518. Storage 518 may include control and content data used to define the functionality and metadata associated with skip function user interface 202." Johnson at [0037].

A POSITA would have recognized that Johnson's disclosures relating to navigating video content could easily be incorporated into Poslinski. A POSITA would have been motivated to implement Johnson's metadata into Poslinski to address the problems in Poslinski. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., metadata) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with metadat). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., metadata) to a known device or method (e.g., navigating video content) that is ready for

improvement to yield predictable results (e.g., navigating video content with metadata). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Boreczky discloses a "system is provided where a number of representative video snapshots are displayed on a timeline indicating a position to jump to in a video using control buttons, such as fast forward, reverse, or a timeline scroll bar. The video snapshots are obtained by opening a low resolution connection to a video server to receive forward looking video segments. The forward looking video segments are summarized and the representative video snapshots are selected and displayed to provide a reference frame for the user to select a timeline position, or snapshots directly linked to positions in the higher resolution video. Backward looking video segments may be similarly summarized from the low resolution connection, or alternatively from video previously played. As the video progresses, new forward looking video segments are received and new representative video snapshots are summarized and displayed in close proximity with the video being played." Boreczky at Abstract. It also discloses ""The present invention includes a computer program product which is a storage medium (media) having instructions stored thereon/in which can be used to program a computer to perform any of the processes of the present invention. The storage medium can include, but is not limited to, any type of disk including floppy disks, optical discs, DVD, CD-ROMS, microdrive, and magneto-optical disks, ROMs, RAMs, EPROMs, EEPROMs, DRAMs, VRAMs, flash memory devices, magnetic or optical cards, nanosystems (including molecular memory ICs), or any type of media or device suitable for storing instructions and/or data." Boreczky at 9:8–18. It also discloses "an embodiment of the present invention during playback of a video, such as a video invoked by commands 325 and displayed on display device 330 by a video application running on device 320. A video 400

displays a current playback position of a video data stream being played by the video application. Video controls 410 (pause/play button) and slide bar 415 allow user control and user movements of the current playback position. Alternate embodiments include step and/or skip back and forward functions, fast forward, fast rewind, go to start, go to end, jump to next index point, jump to last index point, and any other type of control that might be associated with a video playback device. Slide bar 415 is displayed in conjunction with a timeline (0:00. .33:30, for example) which provides timing marks indicating approximate positions of the video in correspondence to other points in the video. Alternatively, instead of an entire video segment being displayed on the timeline, any selected portions of the video may be represented on the timeline." Boreczky at 4:36–54.

A POSITA would have recognized that Boreczky's disclosures relating to navigating video content could easily be incorporated into Poslinski. A POSITA would have been motivated to implement Boreczky's navigation into Poslinski to address the problems in Poslinski. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kuroiwa ’395 discloses an “information processing apparatus includes a content metadata obtaining unit configured to obtain content metadata; a determination unit configured to determine the category of the content metadata; an editing unit configured to edit the content metadata so that, when text data of the content metadata is to be reproduced on the basis of the category of the content metadata determined by the determination unit, information on a predetermined link destination is displayed in response to a predetermined operation being performed on the reproduced text data; a reproduction unit configured to reproduce the text data of the content metadata in synchronization with the reproduction of the content; and a display unit configured to display the information on the link destination on the basis of the content metadata edited by the editing unit when the predetermined operation is performed on the text data of the content metadata reproduced by the reproduction unit.” Kuroiwa ’395 at Abstract. It also discloses that in “recent years, a technology has been proposed in which text information contained in an EPG is displayed, and also a search process is performed by a search engine via the Internet by using the text information as a keyword and a search result is displayed (see Japanese Unexamined Patent Application Publication No. 2004-23345).” Kuroiwa ’395 at 1:30-35.

A POSITA would have recognized that Kuriowa ‘395’s disclosures relating to navigating video content could easily be incorporated into Poslinski. A POSITA would have been motivated to implement Kuriowa ‘395’s navigation into Poslinski to address the problems in Poslinski. A POSITA would have understood that, as of the priority date of the ’300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination

to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kashima discloses a "display control apparatus: in a virtual three-dimensional space in which is disposed a three-dimensional model of an object contained in a moving image picked up by performing successive imaging operations once by using an imaging device, draws a plurality of thumbnail images extracted from the moving image to the respective positions of the imaging device at the time when the thumbnail images were picked up and draws information that relates the thumbnail images in order in which they were picked up, thereby generating a bird's eye-display image which provides a bird's-eye-view drawing of the virtual three-dimensional space containing the three-dimensional model and the thumbnail images; and causes a display unit to display the bird's eye-display image." Kashima at Abstract. It also discloses the "storage unit may store movement track information which represents a movement track of the imaging device at the time when the imaging device picked up the moving image, as additional information of the moving image and the display image generation unit may draw the thumbnail images in the virtual three-dimensional space at the respective positions of the imaging device at the time when the thumbnail images were picked up based on the movement track information." Kashima at 2:9-17. Kashima discloses "There are regular playback display and film roll display available as a video display method for displaying moving images picked up and video-recorded with an imaging device such as a video camera. The regular playback display method will display a video (x-axis and y-axis of an imaging plane) by reproducing its video-recorded moving images sequentially

from the beginning along a time axis t. The user can grasp imaged contents by viewing the video thus reproduced regularly but in a considerable lapse of time. To reduce the time, a method is available for fast-forwarding the moving images in playback display but still requires a lapse of time to some extent in order to grasp the imaged contents of the moving images as a whole." Kashima, 1:10-23. It also discloses "[a]ccording to the film roll display approach, if an arbitrary one is selected from among the thumbnail images displayed in a list, it is possible also to display the moving images by regularly reproducing them starting from a playback position that corresponds to the thumbnail image. According to such film roll display, the user can understand the imaged contents of the moving images as a whole more easily than by the regular playback display." Kashim, 1:29-36

A POSITA would have recognized that Kashima's disclosures relating to navigating video content could easily be incorporated into Poslinski. A POSITA would have been motivated to implement Kashima's navigation into Poslinski to address the problems in Poslinski. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hua discloses "Smart video presentation involves presenting one or more videos in a video presentation user interface (IU). In example implementation, a video presentation UI includes a listing of multiple video entries, with each video entry including multiple static thumbnails to represent the corresponding video. In another example implementation, a video presentation UI includes a scalable number of static thumbnails to represent a video, with the scalable number adjustable by a user with a scaling interface tool. In yet another example implementation, a video presentation UI includes a video playing region, a video slider bar region, and a filmstrip region that presents multiple static thumbnails for a video that is playable in the video playing region." Hua at Abstract. Hua also discloses "[v]ideos 104 can be stored at local storage, on a local network, over the internet, some combination thereof, and so forth. For example, they may be stored on flash memory or a local hard drive. They may also be stored on a local area network (LAN) server. Alternatively, they may be stored at a server farm and/or storage area network (SAN) that is connected to the internet. In short, videos 104 may be stored at and/or retrieved from any processor-accessible media." Hua at [0020]. It also discloses "People and organizations store a significant number of items on their computing devices. These items can be text files, data files, images, videos, or some combination thereof. To be able to utilize such items, users must be able to locate, retrieve, manipulate, and otherwise manage those items that interest them. Among the various types of items, it can be particularly challenging to locate and/or manage videos due to their dynamic nature and oftentimes long lengths" Hua, [0002].

A POSITA would have recognized that Hua's disclosures relating to navigating video content could easily be incorporated into Poslinski. A POSITA would have been motivated to implement Hua's navigation into Poslinski to address the problems in Poslinski. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was

important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Oetzel discloses "[t]he present embodiments provide methods and apparatuses for use in navigating through content. Some embodiments provide methods for use in navigating through content that receive an initial first directional control command, activate a seek mode upon receipt of the initial first directional control command comprising advancing over a first amount of content in a first direction from a first point in the content to a second point in the content, receive an initial second directional control command following the receipt of the initial first directional command, and activate a search mode upon receipt of the initial second directional control command, comprising advancing back over a second amount of the first amount of the content where the second amount is less than the first amount of the content." Oetzel at Abstract. It also discloses "[t]he present embodiments advantageously addresses the needs above as well as other needs by providing a apparatus for use in navigating through content, such multimedia content, textual content, web or internet content, graphics content, picture content and substantially any relevant content. Some embodiments provide methods for use in navigating through content, comprising receiving an initial first directional control command; activating a seek mode upon receipt of the

initial first directional control command, comprising advancing over a first amount of content in a first direction from a first point in the content to a second point in the content; receiving an initial second directional control command following the receipt of the initial first directional command; and activating a search mode upon receipt of the initial second directional control command, comprising advancing back over a second amount of the first amount of the content wherein the second amount is less than the first amount of the content." Oetzel at [0005]. Oetzel also discloses "[i]ncreased amounts of content often result in increased needs to access the content. However, identifying and/or finding desired content can be difficult do at least in part to the increased amount of content and/or the increased amount of data utilized in recording the content." Oetzel at [0004].

A POSITA would have recognized that Oetzel's disclosures relating to navigating video content could easily be incorporated into Poslinksi. A POSITA would have been motivated to implement Oetzel's navigation into Poslinksi to address the problems in Poslinksi. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

DVD Explorer discloses a DVR system. Explorer Manual at 1. It also discloses pausing and recording a live program with timeline bar shown on the screen with the video. Explorer Manual at 9. It also discloses that once can "watch and record high-definition programs" *Id*. at 2. DVD Explorer also discloses navigating videos. *See generally,* Explorer Manual 3-6.

A POSITA would have recognized that DVD Explorer's disclosures relating to navigating video content could easily be incorporated into Poslinski. A POSITA would have been motivated to implement DVD Explorer's navigation into Poslinski to address the problems in Poslinski. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(g) Yun, in view of Nishikawa '716 and/or Vahtola and/or Angiolillo and/or Shiiyama and/or Cronin and/or Poslinski and/or Ackley and/or Kuroiwa '764 and/or Errico and/or Park '332 and/or Van de Streek and/or Johnson and/or Boreczky and/or Kuroiwa '395 and/or Kashima and/or Hua and/or Oetzel

Yun discloses a "method for providing a Graphical User Interface (GUI) for changing a reproducing time point, and an imaging apparatus incorporating the same are provided. The GUI for changing a reproducing time point displays reduction images of specific time points within a

time period including a specific time point selected by a pointer, and changes the reproducing time point to the time point represented by the reduction image selected from the displayed reduction images. Accordingly, a user is able to search for a desired time point without going through a plurality of manipulations to change the reproducing time point on the progress bar using the pointer." Yun at Abstract. It also discloses "[m] ethods and apparatuses consistent with the present invention relate to providing a Graphical User Interface (GUI) for changing a reproducing time point, and more particularly, to providing GUI for changing a current reproducing time point and an image apparatus incorporating the same." Yun at 1:17–22. Yun also discloses that "A progress bar is widely used to represent a current reproducing time point while a moving image is reproduced. The progress bar represents the length of whole moving image in a bar form, and represents the current reproducing time point by moving the bar." Yun, Yun, 1:24-28. It adds "The different time point on the progress bar is selected by inputting a pointer. In doing so, the progress bar changes the reproducing time point faster than a fast forward (FF) operation or a rewind (REW) operation." Yun, 1:32-35. Yun also discloses "the user has to go through a plurality of manipulations to change the reproducing time point using the pointer on the progress bar. Further, the longer the length of the moving image, the more the user is inconvenienced." Yun, 1:42-45.

Angiolillo discloses that a "media content instance is provided for display. A plurality of first images are identified associated with locations within a first segment of a media content instance according to a first offset that is one of: a time interval and a number of frames. The first images are retrieved from the media content instance. At least some of the first images are provided for display." Angiolillo, abstract. It also discloses that a "user can navigate a location control pane 320, e.g., using one or more of directional arrow buttons 210-225 on user input device 125. Additionally, the user may navigate location control pane 320 using "fast forward" and "rewind"

buttons 270 and 265 as well as other buttons such as “scene skip” buttons (not illustrated in FIG. 2) that allow for navigation according to indexing within a media stream or file, e.g., navigation from track to track on a DVD. “Scene skip” buttons, or the “fast forward” and “rewind” buttons 270 and 265 may be configured to permit a user to navigate images 335 quickly and efficiently.” Angiolillo, ¶[0042]. Angiolillo also discloses “[s]torage device 140 may include one or more data storage media, devices, or configurations and may employ any type, form, and combination of storage media. For example, the storage device 140 may include, but is not limited to, a hard drive, network drive, flash drive, magnetic disc, optical disc, or other non-volatile storage unit. Various portions of media content, applications, such as location access control application 155, or a PVR application (not shown), and other data may be temporarily and/or permanently stored in the storage device 140. The storage device 140 of FIG. 1 is shown to be a part of the processing subsystem 105 for illustrative purposes only. It will be understood that the storage device 140 may additionally or alternatively be located external to the processing subsystem 105.” Angiolillo, ¶[0026]. It also discloses that the “exemplary control pane 320 illustrated in FIG. 5 is displayed as a vertical bar placed on the right side of media content instance 315, which media content instance 315 is sized so that control pane 320 does not generally obstruct media content instance 315. Selection tool 325 as illustrated in FIG. 5 is operative to magnify the selected image 345 relative to the other images 335 included in control pane 320. As a user navigates from one image 335 to another using selection tool 325, the image 335 which is currently a selected image 345 may be magnified slightly. When the user navigates away from a given image 335, the previous selected image 345 may return to a “pre-magnified” size. FIG. 6 illustrates a further example of a location control pane 320. Location control pane 320 as illustrated in FIG. 6 is vertically overlaid across a portion of a media content instance 315 on a display 310, allowing media content instance 315 to

retain an original size, although a portion of the media content instance 315 over which the location control pane 320 is overlaid may become obscured by the location control pane 320." Angiolillo, ¶¶[0038]-[0039].

A POSITA would have recognized that Angiolillo's disclosures relating to navigating video content could easily be incorporated into Yun. A POSITA would have been motivated to implement Angiolillo's navigation and vertical display into Yun to address the problems in Yun. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation and file storage was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content with vertical display) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content with vertical display) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Nishikawa '716 discloses that the "invention relates generally to navigating video content, and in particular to navigating bookmarked video content using thumbnailed images thereof." Nishikawa '716, ¶[0002]. It also discloses that one "aspect of the invention is to enable users to place markers at desired locations within recorded or cached video content. In one embodiment, such markers may be placed while the content is being recorded or cached, while in another embodiment the markers may be placed after the content has been recorded or cached. Such

markers (which may also be referred to herein as bookmarks or chapter marks) may be used to instantly jump to a particular scene or location within a video presentation." Nishikawa '716, ¶[0017]. Nishikawa '716 also discloses "Memory 110 may also include instructions for causing CPU 106 to place, in response to a user instruction, one or more chapter marks at various viewing locations of cached or recorded content. Memory 110 may also instructions for generating one or more thumbnailed images representative of the content at the previously-placed chapter marks." Nishikawa '716, ¶[0024]. Nishikawa '716 discloses that the "Video Cassette Recorder (VCR) has changed the lives of television (TV) viewers by allowing viewers to time-shift TV programs to match their lifestyles. Using the VCR, the viewer stores programs onto magnetic tape; this can then be played back at the viewer's convenience. The VCR gives the viewer the ability to pause the program playback whenever he desires, fast-forward through unwanted program material or commercials, and to replay favorite scenes. However, a VCR cannot both capture and play back information at the same time." Nishikawa '716, ¶[0003].

A POSITA would have recognized that Nishikawa '716's disclosures relating to navigating video content could easily be incorporated into Yun. A POSITA would have been motivated to implement Nishikawa '716's navigation into Yun to address the problems in Yun. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content using chapters) to improve similar devices or methods (e.g., navigating video content using vertical chapters) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content using chapters) to a known device or method (e.g., navigating video content) that is ready

for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Vahtola discloses "[r]ecording chapter information may include recording a chapter title. Recording a chapter title may involve accessing customizable information stored in the memory device and basing the chapter title at least partially on the customizable information. Receiving user input may instruct a processor to: begin or resume recording the continuous media data to the memory device, and record chapter information for the location in the continuous media data where the processor begins or resumes recording." Vahtola, ¶[0011]. It also discloses that the "processing element 14 can include a processor 20 operatively coupled to a memory 22. The memory 22 can comprise volatile and/or non-volatile memory, and typically stores content, data, or the like. For example, the memory 22 can store client applications, instructions, or the like for the processor 20 to perform steps associated with operation of the entity in accordance with exemplary embodiments of the present invention. Also, for example, the memory 22 can store one or more continuous media data sequences, such as those received from the continuous media data source 12. As is described below, to facilitate navigation of one or more of those sequences (or other purposes described herein), the memory 22 can further store chapter information therein. The memory 22 may be fixed or removable. The memory device 22 may include a hard drive, a CD, a DVD, a Blu-ray disk, a memory card such as a Flash memory card, a Memory stick, a Secure Digital (SD) card and the like, a video tape cassette, an audio tape cassette, and the like." Vahtola, ¶[0034]. Vahtola also discloses "[o]nce the chapters are created, the chapters may be used to generate a table of contents or other menu-type display of the chapters in the recorded continuous media data. In one embodiment, the processor generates a menu in which thumbnail images from

the chapter or even portions of the continuous media data from each chapter are displayed in such a menu. In one embodiment of the present invention, the user can select an image or a portion of continuous media to use in this regard by actuating a particular user input device during the recording of the continuous media data. The thumbnail or the continuous media portion may be then recorded as chapter information or the location (e.g., the frame or range of frames) of the thumbnail or the continuous media portion can be recorded as chapter information. In other embodiments the first frame or the first several seconds of each chapter is used as the thumbnail image or the continuous media portion, respectively." ¶[0061].

A POSITA would have recognized that Vahtola's disclosures relating to navigating video content could easily be incorporated into Yun. A POSITA would have been motivated to implement Vahtola's SD card storage and video preview Yun to address the problems in Yun. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling data storage, and video preview was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., storing data on an SD card; video preview) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content stored on a drive; displaying video previews). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., storing data on an SD card; video preview) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., , navigating video content stored on a drive; displaying video previews). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Shiiyama discloses that "it is an object of the present invention to allow the user easily to restore synchronous display of a thumbnail image sequence from a state wherein synchronization between the thumbnail image sequence and moving image playback is interrupted by, e.g., scroll operation of the thumbnail image sequence. It is another object of the present invention to allow the user to designate a desired scene more reliably when the thumbnail image sequence is displayed by automatic scroll synchronized with playback of a moving image." Shiiyama, 2:26-29. It also discloses that "when the user wants to make a jump to a desired scene by selecting a given thumbnail image from the thumbnail image sequence, while the thumbnail image sequence is automatically scrolled in synchronism with the displayed moving image, the contents of the thumbnail image sequence have been scrolled at a delicate timing, and the user may select a thumbnail image that he or she did not intend. This is also a problem posed upon displaying a thumbnail image sequence in synchronism with the displayed moving image." Shiiyama, 2:4-13. It also discloses "[w]hen one image of the thumbnail image sequence **2001**, e.g., a thumbnail image corresponding to scene **22**, is designated by mouse operation or the like, a moving image corresponding to scene **22** is played back on the moving image playback area **2000**." Shiiyama, 1:38-42. Shiiyama also discloses "[a]s the storage medium for supplying the program code, for example, a floppy disk, hard disk, optical disk, magneto-optical disk, CD-ROM, CD-R, magnetic tape, nonvolatile memory card, ROM, and the like may be used." 17:37-40.

A POSITA would have recognized that Shiiyama's disclosures relating to navigating video content could easily be incorporated into Yun. A POSITA would have been motivated to implement Shiiyama's storage on a flash drive into Yun to address the problems in Yun. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation and file storage was important. A POSITA would have considered the combination to

amount to the use of known techniques (e.g., storing data on flash memory) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content stored on a drive). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., storing data on flash memory) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content stored on a drive). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Cronin discloses that in "accordance with one or more aspects of the thumbnail navigation bar for video, video content is accessed. Multiple thumbnails corresponding to the video content are generated by generating, for each of multiple locations of the video content, a thumbnail of the video content that is displayed at the location. The multiple thumbnails are made available as the thumbnails of a navigation bar to be displayed on a display device in response to a user request to display the navigation bar received while the video content is being played on the display device." Cronin at ¶[0004]. It also discloses that "[v]ideo content display module 114 receives video content 106, converts video content 106 into a format that can be displayed by a display device, and outputs the converted video content as video content 116. Video content display module 114 also optionally extracts particular content from video content 106, such as tuning to a particular channel, selecting a particular stream, and so forth. Navigation bar display module 104 optionally receives a series of thumbnails 108 corresponding to video content 106 and video content 116. Other types of content corresponding to video content 106, such as audio content, are also oftentimes received by device 102. Thumbnails 108 can be received from a same or different source as video content 106, or alternatively can be generated by device 102." Cronin at ¶[0015].

It also discloses "[n]avigation bar 204 thus provides a user interface that allows a user to quickly and easily rewind and/or fast forward through video content. The user can rewind and/or fast forward through the video content by scrolling through the thumbnails of the navigation bar to select the particular location he or she would like to jump to, and then selecting a thumbnail corresponding to that particular location. Playback of the video content then begins at the location corresponding to the selected thumbnail. Using navigation bar 204, the user is able to move swiftly through the thumbnails corresponding to the video content and is oftentimes less likely to overshoot a particular location or thumbnail he or she is looking for." Cronin at ¶[0032].

A POSITA would have recognized that Cronin's disclosures relating to navigating video content could easily be incorporated into Yun. A POSITA would have been motivated to implement Cronin's thumbnail navigation into Yun to address the problems in Yun. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., thumbnail navigation) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content via thumbnails). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., thumbnail navigation) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content via thumbnails). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Poslinski discloses that "[i]n one exemplary embodiment, media content received at the tuner (105) is temporarily buffered, or stored, in a live cache buffer (110). If there are multiple

tuners (105), there may be a live cache buffer (110) corresponding to each of the tuners (105). As shown in FIG. 1, the live cache buffer (110) may be a part of the storage device (109) (e.g. a reserved portion of a hard dive). In an alternative embodiment (not shown), the live cache buffer (110) may reside in memory (102) or in a storage device external to the STB (100). Media content received into the live cache buffer (110) has a temporary recording designation. In other words, the media content stored in the live cache buffer (110) will either be deleted or retained through election by the user as a permanent recording. A permanent recording will be understood to mean media content that is stored for an extended period of time as decided by the user. Permanent recordings may be stored in a permanent storage unit (119), for example. The permanent storage unit (119) may be a part of the storage device (109) or it may be a stand-alone unit. For example, the permanent storage unit (119) may be a hard drive, an optical disc, a network drive, a buffer in memory, or any other type of permanent storage device that is a part of the storage unit (109) or that is a stand-alone unit." Poslinksi, ¶[0030]. It also discloses ""In one of many possible embodiments, the present invention provides a method and system for displaying a number of portions of a number of recorded media content instances during a single viewing session. The method includes defining a number of entries such that each of the number of entries corresponds to one of the number of portions of the number of recorded media content instances, including each of the entries in a play list, and selecting the play list from a number of play lists for viewing. The portions of the number of recorded media content instances included in the entries in the play list are then displayed during the single viewing session." Poslinski, ¶[0006].

A POSITA would have recognized that Poslinski's disclosures relating to assembling the timeline could easily be incorporated into Yun. A POSITA would have been motivated to implement Poslinski's timeline assembly into Yun to address the problems in Yun. A POSITA

would have understood that, as of the priority date of the '300 Patent, timeline creation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., timeline assembly) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content via an assembled timeline). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., timeline assembly) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content via an assembled timeline). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Ackley discloses "The present disclosure provides a user friendly navigation scheme to media and media players. The disclosure provides for a menu system that overlays the video on a DVD, and can be viewed and selections made during viewing of a video stream. The system and method applies to media players, including but not limited to DVD players, software DVD-ROM players, high definition video players, hard drive based players, optical players, personal computers, or any other media player known to one of ordinary skill in the art." Ackley, ¶[0008]. It also discloses that "[i]n another embodiment, thumbnails may include different video sources. In other words, each thumbnail 510 represents a different movie, a documentary, trailer, etc., originating from sources other than the media player. For instance, the media player may be connected to the Internet, and if a specific thumbnail is selected, a particular video may be downloaded from the Internet. Likewise, the video source may be a personal computer attached to the media player. The personal computer would have a hard drive with stored videos that are selectable by the media player." Ackley, ¶[0049].

A POSITA would have recognized that Ackley's disclosures relating to video preview could easily be incorporated into Yun. A POSITA would have been motivated to implement Ackley's video preview into Yun to address the problems in Yun. A POSITA would have understood that, as of the priority date of the '300 Patent, video preview was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., video preview) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content while showing a video preview). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., video preview) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content while showing a video preview). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kuriowa '764 discloses "[a]n information processing apparatus includes area image extracting means for extracting, as a telop image, an area displaying a telop in contents, detecting means for detecting a scene change in images of the contents, recording means for converting an image at the time when a scene change is detected by the detecting means to a thumbnail image and recording the thumbnail image, display control means for controlling to arrange and display a plurality of the thumbnail images and a plurality of the telop images chronologically, and playing means for playing the contents from the position corresponding to the selected thumbnail image or telop image." Kuroiwa '764 at Abstract. It also discloses "the contents recording section 23 controls a scene change detecting section 71 to detect the time upon scene change in frames and supplies the detection result to a film roll data creating section 72. The film roll data creating

section 72 converts the image of the frame immediately after the scene change corresponding to the time code of the time upon scene change to a thumbnail image and records the result to film roll data 92 and stores the film roll data 92 in the contents data storage section 24 in connection with the contents data 91. The image recording section 73 causes the contents data storage section 24 to store information on the contents obtained by the contents recording section 23 as contents data." Kuroiwa '764 at 4:60–5:5. It discloses the "display control means may control to display the contents being currently played and the telop image on one screen." Kuroiwa '764 at 2:18–20.

A POSITA would have recognized that Kuriowa '764's disclosures relating to navigating video content could easily be incorporated into Yun. A POSITA would have been motivated to implement Kuriowa '764's navigation into Yun to address the problems in Yun. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Errico discloses "A system for presenting a summarization of audio and/or visual content having a plurality of segments to a user together with a graphical user interface that preferably indicates to the viewer the relative temporal position of video segments viewed in the summary

within the content from which the summary was derived." Errico at Abstract. It also discloses ""One example of a personalized nagivational control is a button configured to "replay the last two seconds of the segment previously viewed." This macro button could be as follows: smart skip, in reverse, one segment, no theme change, offset two seconds, from end of segment, with zero fade in; play, for two seconds, in default mode; and resume prior navigation operation." Errico at 10:61–67. It also discloses "The amount of video content is expanding at an ever increasing rate, some of which includes sporting events. Simultaneously, the available time for viewers to consume or otherwise view all of the desirable video content is decreasing. With the increased amount of video content coupled with the decreasing time available to view the video content, it becomes increasingly problematic for viewers to view all of the potentially desirable content in its entirety. Accordingly, viewers are increasingly selective regarding the video content that they select to view. To accommodate viewer demands, techniques have been developed to provide a summarization of the video representative in some manner of the entire video. Video summarization likewise facilitates additional features including browsing, filtering, indexing, retrieval, etc. The typical purpose for creating a video summarization is to obtain a compact representation of the original video for subsequent viewing." Errico, 1:12-28. It adds that "There are two major approaches to video summarization. The first approach for video summarization is key frame detection… The second approach for video summarization is directed at detecting events that are important for the particular video content." Errico, 1:29-43.

A POSITA would have recognized that Errico's disclosures relating to navigating video content could easily be incorporated into Yun. A POSITA would have been motivated to implement Errico's navigation into Yun to address the problems in Yun. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was

important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Park ’332 discloses ““Provided are an apparatus and method of displaying multimedia contents, more particularly, an apparatus and method of displaying stored multimedia contents to accommodate a user's preference using limited buttons of a remote control device or a cellular phone. The apparatus for displaying multimedia contents includes an alignment condition determination unit determining an alignment condition corresponding to a first user command signal among a plurality of alignment conditions, a detailed condition determination unit determining a detailed condition corresponding to a second user command signal among detailed conditions included in the alignment condition, a contents extraction unit extracting first multimedia contents according to the determined detailed condition, and a display unit displaying the determined alignment condition in a first region, the determined detailed condition in a second region, and a second multimedia contents selected by a user among the extracted first multimedia contents in a third region of a screen.” Park ’332 at Abstract. It also discloses “Increasing Internet usage by users having various backgrounds and interests has had a huge impact on all digital industries, particularly with respect to Internet-based services and contents which may be

customized based on a user's background and interests. Internet-based services and contents, which are provided through the Internet, are becoming the standards of digital industries in the 21st century. In addition, due to the fast growth of Internet networks and multimedia contents in cellular phones, PDAs, and notebook computers, utilization of multimedia is essential rather than optional. The development from analog TV to digital TV is in progress, and users may receive various types of information, as well as public broadcast, through the TV." Park '332 at 1:25-38.

A POSITA would have recognized that Park '332's disclosures relating to navigating video content could easily be incorporated into Yun. A POSITA would have been motivated to implement Park '332's navigation into Yun to address the problems in Yun. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Van De Streek discloses a "[m]ethod of and system for selecting a position in an image sequence. A representation (200) of the image sequence is displayed, together with a position indicator (206) configured to be moved along the representation (200). The position in the image sequence is selected in correspondence to a present position of the position indicator (206). A

collection of key frames is obtained, each key frame being associated with a portion of the representation (200). From this collection of key frames a current key frame (212) is displayed whose associated portion comprises a present position of the position indicator (206). Indications (205) of the locations of the key frames in the collection may be shown as well." Van De Streek at Abstract. It also discloses "The invention relates to a method of selecting a position in an image sequence, comprising displaying a representation of the image sequence, providing a position indicator configured to be moved along the representation, and selecting the position in the image sequence in correspondence to a present position of the position indicator." Van De Streek at [0001]. It also discloses "The known system has the disadvantage that the viewer can only see the frame on the video stream corresponding to the location of the slider along the bar. This makes it very difficult for him to establish the context in which this frame occurs in the video stream, and so makes it difficult for him to navigate through the video stream." Van De Streek at [0006].

A POSITA would have recognized that Van De Streek's disclosures relating to navigating video content could easily be incorporated into Yun. A POSITA would have been motivated to implement Van De Streek's navigation into Yun to address the problems in Yun. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., preview video) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual preview). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., preview video) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with video preview). A POSITA would have considered the combination or modification to amount to

choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Johnson discloses an "[a]pparatus, system and method for the navigation of aggregated content using skipping and content metadata. An apparatus includes a processor to receive a control signal from a navigation controller and to display a skip function user interface on a display device. The skip function user interface is used to navigate aggregated content items and includes one or more skip boxes. Each of the one or more skip boxes is associated with a content item in the aggregated content items. Other embodiments are described and claimed." Johnson at Abstract. It also discloses that in "one embodiment, platform 510 may comprise a CPU 512, a chip set 513, one or more drivers 514, one or more network connections 515, an operating system 516, and/or a media center application 517 comprising one or more software applications, for example. Platform 510 also may comprise storage 518. Storage 518 may include control and content data used to define the functionality and metadata associated with skip function user interface 202." Johnson at [0037].

A POSITA would have recognized that Johnson's disclosures relating to navigating video content could easily be incorporated into Yun. A POSITA would have been motivated to implement Johnson's metadata into Yun to address the problems in Yun. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., metadata) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with metadat). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., metadata) to a known device or method (e.g., navigating video content) that is ready for

improvement to yield predictable results (e.g., navigating video content with metadata). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Boreczky discloses a "system is provided where a number of representative video snapshots are displayed on a timeline indicating a position to jump to in a video using control buttons, such as fast forward, reverse, or a timeline scroll bar. The video snapshots are obtained by opening a low resolution connection to a video server to receive forward looking video segments. The forward looking video segments are summarized and the representative video snapshots are selected and displayed to provide a reference frame for the user to select a timeline position, or snapshots directly linked to positions in the higher resolution video. Backward looking video segments may be similarly summarized from the low resolution connection, or alternatively from video previously played. As the video progresses, new forward looking video segments are received and new representative video snapshots are summarized and displayed in close proximity with the video being played." Boreczky at Abstract. It also discloses ""The present invention includes a computer program product which is a storage medium (media) having instructions stored thereon/in which can be used to program a computer to perform any of the processes of the present invention. The storage medium can include, but is not limited to, any type of disk including floppy disks, optical discs, DVD, CD-ROMS, microdrive, and magneto-optical disks, ROMs, RAMs, EPROMs, EEPROMs, DRAMs, VRAMs, flash memory devices, magnetic or optical cards, nanosystems (including molecular memory ICs), or any type of media or device suitable for storing instructions and/or data." Boreczky at 9:8–18. It also discloses "an embodiment of the present invention during playback of a video, such as a video invoked by commands 325 and displayed on display device 330 by a video application running on device 320. A video 400

displays a current playback position of a video data stream being played by the video application. Video controls 410 (pause/play button) and slide bar 415 allow user control and user movements of the current playback position. Alternate embodiments include step and/or skip back and forward functions, fast forward, fast rewind, go to start, go to end, jump to next index point, jump to last index point, and any other type of control that might be associated with a video playback device. Slide bar 415 is displayed in conjunction with a timeline (0:00. .33:30, for example) which provides timing marks indicating approximate positions of the video in correspondence to other points in the video. Alternatively, instead of an entire video segment being displayed on the timeline, any selected portions of the video may be represented on the timeline." Boreczky at 4:36–54.

A POSITA would have recognized that Boreczky's disclosures relating to navigating video content could easily be incorporated into Yun. A POSITA would have been motivated to implement Boreczky's navigation into Yun to address the problems in Yun. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kuroiwa ’395 discloses an “information processing apparatus includes a content metadata obtaining unit configured to obtain content metadata; a determination unit configured to determine the category of the content metadata; an editing unit configured to edit the content metadata so that, when text data of the content metadata is to be reproduced on the basis of the category of the content metadata determined by the determination unit, information on a predetermined link destination is displayed in response to a predetermined operation being performed on the reproduced text data; a reproduction unit configured to reproduce the text data of the content metadata in synchronization with the reproduction of the content; and a display unit configured to display the information on the link destination on the basis of the content metadata edited by the editing unit when the predetermined operation is performed on the text data of the content metadata reproduced by the reproduction unit.” Kuroiwa ’395 at Abstract. It also discloses that in “recent years, a technology has been proposed in which text information contained in an EPG is displayed, and also a search process is performed by a search engine via the Internet by using the text information as a keyword and a search result is displayed (see Japanese Unexamined Patent Application Publication No. 2004-23345).” Kuroiwa ’395 at 1:30-35.

A POSITA would have recognized that Kuriowa ‘395’s disclosures relating to navigating video content could easily be incorporated into Yun. A POSITA would have been motivated to implement Kuriowa ‘395’s navigation into Yun to address the problems in Yun. A POSITA would have understood that, as of the priority date of the ’300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to

applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kashima discloses a "display control apparatus: in a virtual three-dimensional space in which is disposed a three-dimensional model of an object contained in a moving image picked up by performing successive imaging operations once by using an imaging device, draws a plurality of thumbnail images extracted from the moving image to the respective positions of the imaging device at the time when the thumbnail images were picked up and draws information that relates the thumbnail images in order in which they were picked up, thereby generating a bird's eye-display image which provides a bird's-eye-view drawing of the virtual three-dimensional space containing the three-dimensional model and the thumbnail images; and causes a display unit to display the bird's eye-display image." Kashima at Abstract. It also discloses the "storage unit may store movement track information which represents a movement track of the imaging device at the time when the imaging device picked up the moving image, as additional information of the moving image and the display image generation unit may draw the thumbnail images in the virtual three-dimensional space at the respective positions of the imaging device at the time when the thumbnail images were picked up based on the movement track information." Kashima at 2:9-17. Kashima discloses "There are regular playback display and film roll display available as a video display method for displaying moving images picked up and video-recorded with an imaging device such as a video camera. The regular playback display method will display a video (x-axis and y-axis of an imaging plane) by reproducing its video-recorded moving images sequentially

from the beginning along a time axis t. The user can grasp imaged contents by viewing the video thus reproduced regularly but in a considerable lapse of time. To reduce the time, a method is available for fast-forwarding the moving images in playback display but still requires a lapse of time to some extent in order to grasp the imaged contents of the moving images as a whole." Kashima, 1:10-23. It also discloses "[a]ccording to the film roll display approach, if an arbitrary one is selected from among the thumbnail images displayed in a list, it is possible also to display the moving images by regularly reproducing them starting from a playback position that corresponds to the thumbnail image. According to such film roll display, the user can understand the imaged contents of the moving images as a whole more easily than by the regular playback display." Kashim, 1:29-36

A POSITA would have recognized that Kashima's disclosures relating to navigating video content could easily be incorporated into Yun. A POSITA would have been motivated to implement Kashima's navigation into Yun to address the problems in Yun. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hua discloses "Smart video presentation involves presenting one or more videos in a video presentation user interface (IU). In example implementation, a video presentation UI includes a listing of multiple video entries, with each video entry including multiple static thumbnails to represent the corresponding video. In another example implementation, a video presentation UI includes a scalable number of static thumbnails to represent a video, with the scalable number adjustable by a user with a scaling interface tool. In yet another example implementation, a video presentation UI includes a video playing region, a video slider bar region, and a filmstrip region that presents multiple static thumbnails for a video that is playable in the video playing region." Hua at Abstract. Hua also discloses "[v]ideos 104 can be stored at local storage, on a local network, over the internet, some combination thereof, and so forth. For example, they may be stored on flash memory or a local hard drive. They may also be stored on a local area network (LAN) server. Alternatively, they may be stored at a server farm and/or storage area network (SAN) that is connected to the internet. In short, videos 104 may be stored at and/or retrieved from any processor-accessible media." Hua at [0020]. It also discloses "People and organizations store a significant number of items on their computing devices. These items can be text files, data files, images, videos, or some combination thereof. To be able to utilize such items, users must be able to locate, retrieve, manipulate, and otherwise manage those items that interest them. Among the various types of items, it can be particularly challenging to locate and/or manage videos due to their dynamic nature and oftentimes long lengths" Hua, [0002].

A POSITA would have recognized that Hua's disclosures relating to navigating video content could easily be incorporated into Yun. A POSITA would have been motivated to implement Hua's navigation into Yun to address the problems in Yun. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was

important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Oetzel discloses "[t]he present embodiments provide methods and apparatuses for use in navigating through content. Some embodiments provide methods for use in navigating through content that receive an initial first directional control command, activate a seek mode upon receipt of the initial first directional control command comprising advancing over a first amount of content in a first direction from a first point in the content to a second point in the content, receive an initial second directional control command following the receipt of the initial first directional command, and activate a search mode upon receipt of the initial second directional control command, comprising advancing back over a second amount of the first amount of the content where the second amount is less than the first amount of the content." Oetzel at Abstract. It also discloses "[t]he present embodiments advantageously addresses the needs above as well as other needs by providing a apparatus for use in navigating through content, such multimedia content, textual content, web or internet content, graphics content, picture content and substantially any relevant content. Some embodiments provide methods for use in navigating through content, comprising receiving an initial first directional control command; activating a seek mode upon receipt of the

initial first directional control command, comprising advancing over a first amount of content in a first direction from a first point in the content to a second point in the content; receiving an initial second directional control command following the receipt of the initial first directional command; and activating a search mode upon receipt of the initial second directional control command, comprising advancing back over a second amount of the first amount of the content wherein the second amount is less than the first amount of the content." Oetzel at [0005]. Oetzel also discloses "[i]ncreased amounts of content often result in increased needs to access the content. However, identifying and/or finding desired content can be difficult do at least in part to the increased amount of content and/or the increased amount of data utilized in recording the content." Oetzel at [0004].

A POSITA would have recognized that Oetzel's disclosures relating to navigating video content could easily be incorporated into Yun. A POSITA would have been motivated to implement Oetzel's navigation into Yun to address the problems in Yun. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

DVD Explorer discloses a DVR system. Explorer Manual at 1. It also discloses pausing and recording a live program with timeline bar shown on the screen with the video. Explorer Manual at 9. It also discloses that once can "watch and record high-definition programs" *Id*. at 2. DVD Explorer also discloses navigating videos. *See generally,* Explorer Manual 3-6.

A POSITA would have recognized that DVD Explorer's disclosures relating to navigating video content could easily be incorporated into Yun. A POSITA would have been motivated to implement DVD Explorer's navigation into Yun to address the problems in Yun. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(h) Cronin in view of Yun and/or Nishikawa '716 and/or Vahtola and/or Angiolillo and/or Shiiyama and/or Poslinski and/or Ackley and/or Kuroiwa '764 and/or Errico and/or Park '332 and/or Van de Streek and/or Johnson and/or Boreczky and/or Kuroiwa '395 and/or Kashima and/or Hua and/or Oetzel

Cronin discloses that in "accordance with one or more aspects of the thumbnail navigation bar for video, video content is accessed. Multiple thumbnails corresponding to the video content are generated by generating, for each of multiple locations of the video content, a thumbnail of the

video content that is displayed at the location. The multiple thumbnails are made available as the thumbnails of a navigation bar to be displayed on a display device in response to a user request to display the navigation bar received while the video content is being played on the display device." Cronin at ¶[0004]. It also discloses that "[v]ideo content display module 114 receives video content 106, converts video content 106 into a format that can be displayed by a display device, and outputs the converted video content as video content 116. Video content display module 114 also optionally extracts particular content from video content 106, such as tuning to a particular channel, selecting a particular stream, and so forth. Navigation bar display module 104 optionally receives a series of thumbnails 108 corresponding to video content 106 and video content 116. Other types of content corresponding to video content 106, such as audio content, are also oftentimes received by device 102. Thumbnails 108 can be received from a same or different source as video content 106, or alternatively can be generated by device 102." Cronin at ¶[0015]. It also discloses "[n]avigation bar 204 thus provides a user interface that allows a user to quickly and easily rewind and/or fast forward through video content. The user can rewind and/or fast forward through the video content by scrolling through the thumbnails of the navigation bar to select the particular location he or she would like to jump to, and then selecting a thumbnail corresponding to that particular location. Playback of the video content then begins at the location corresponding to the selected thumbnail. Using navigation bar 204, the user is able to move swiftly through the thumbnails corresponding to the video content and is oftentimes less likely to overshoot a particular location or thumbnail he or she is looking for." Cronin at ¶[0032].

Yun discloses a "method for providing a Graphical User Interface (GUI) for changing a reproducing time point, and an imaging apparatus incorporating the same are provided. The GUI for changing a reproducing time point displays reduction images of specific time points within a

time period including a specific time point selected by a pointer, and changes the reproducing time point to the time point represented by the reduction image selected from the displayed reduction images. Accordingly, a user is able to search for a desired time point without going through a plurality of manipulations to change the reproducing time point on the progress bar using the pointer." Yun at Abstract. It also discloses "[m] ethods and apparatuses consistent with the present invention relate to providing a Graphical User Interface (GUI) for changing a reproducing time point, and more particularly, to providing GUI for changing a current reproducing time point and an image apparatus incorporating the same." Yun at 1:17–22. Yun also discloses that "A progress bar is widely used to represent a current reproducing time point while a moving image is reproduced. The progress bar represents the length of whole moving image in a bar form, and represents the current reproducing time point by moving the bar." Yun, Yun, 1:24-28. It adds "The different time point on the progress bar is selected by inputting a pointer. In doing so, the progress bar changes the reproducing time point faster than a fast forward (FF) operation or a rewind (REW) operation." Yun, 1:32-35. Yun also discloses "the user has to go through a plurality of manipulations to change the reproducing time point using the pointer on the progress bar. Further, the longer the length of the moving image, the more the user is inconvenienced." Yun, 1:42-45.

A POSITA would have recognized that Yun's disclosures relating to navigating video content could easily be incorporated into Cronin. A POSITA would have been motivated to implement Yun's progress bar into Cronin to address the problems in Cronin. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content using vertical chapters) to improve similar devices or methods (e.g., navigating video content, vertical chapters) in the same way (e.g., navigating video

content, video preview). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content using vertical chapters) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content via vertical chapters and video preview). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Angiolillo discloses that a "media content instance is provided for display. A plurality of first images are identified associated with locations within a first segment of a media content instance according to a first offset that is one of: a time interval and a number of frames. The first images are retrieved from the media content instance. At least some of the first images are provided for display." Angiolillo, abstract. It also discloses that a "user can navigate a location control pane 320, e.g., using one or more of directional arrow buttons 210-225 on user input device 125. Additionally, the user may navigate location control pane 320 using "fast forward" and "rewind" buttons 270 and 265 as well as other buttons such as "scene skip" buttons (not illustrated in FIG. 2) that allow for navigation according to indexing within a media stream or file, e.g., navigation from track to track on a DVD. "Scene skip" buttons, or the "fast forward" and "rewind" buttons 270 and 265 may be configured to permit a user to navigate images 335 quickly and efficiently." Angiolillo, ¶[0042]. Angiolillo also discloses "[s]torage device 140 may include one or more data storage media, devices, or configurations and may employ any type, form, and combination of storage media. For example, the storage device 140 may include, but is not limited to, a hard drive, network drive, flash drive, magnetic disc, optical disc, or other non-volatile storage unit. Various portions of media content, applications, such as location access control application 155, or a PVR

application (not shown), and other data may be temporarily and/or permanently stored in the storage device 140. The storage device 140 of FIG. 1 is shown to be a part of the processing subsystem 105 for illustrative purposes only. It will be understood that the storage device 140 may additionally or alternatively be located external to the processing subsystem 105." Angiolillo, ¶[0026]. It also discloses that the "exemplary control pane 320 illustrated in FIG. 5 is displayed as a vertical bar placed on the right side of media content instance 315, which media content instance 315 is sized so that control pane 320 does not generally obstruct media content instance 315. Selection tool 325 as illustrated in FIG. 5 is operative to magnify the selected image 345 relative to the other images 335 included in control pane 320. As a user navigates from one image 335 to another using selection tool 325, the image 335 which is currently a selected image 345 may be magnified slightly. When the user navigates away from a given image 335, the previous selected image 345 may return to a "pre-magnified" size. FIG. 6 illustrates a further example of a location control pane 320. Location control pane 320 as illustrated in FIG. 6 is vertically overlaid across a portion of a media content instance 315 on a display 310, allowing media content instance 315 to retain an original size, although a portion of the media content instance 315 over which the location control pane 320 is overlaid may become obscured by the location control pane 320." Angiolillo, ¶¶[0038]-[0039].

A POSITA would have recognized that Angiolillo's disclosures relating to navigating video content could easily be incorporated into Cronin. A POSITA would have been motivated to implement Angiolillo's navigation and vertical display into Cronin to address the problems in Cronin. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation and file storage was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content with

vertical display) to improve similar devices or methods (e.g., navigating video content, video previews) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content with vertical display) to a known device or method (e.g., navigating video content, video previews) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display and video previews). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Nishikawa '716 discloses that the "invention relates generally to navigating video content, and in particular to navigating bookmarked video content using thumbnailed images thereof." Nishikawa '716, ¶[0002]. It also discloses that one "aspect of the invention is to enable users to place markers at desired locations within recorded or cached video content. In one embodiment, such markers may be placed while the content is being recorded or cached, while in another embodiment the markers may be placed after the content has been recorded or cached. Such markers (which may also be referred to herein as bookmarks or chapter marks) may be used to instantly jump to a particular scene or location within a video presentation." Nishikawa '716, ¶[0017]. Nishikawa '716 also discloses "Memory 110 may also include instructions for causing CPU 106 to place, in response to a user instruction, one or more chapter marks at various viewing locations of cached or recorded content. Memory 110 may also instructions for generating one or more thumbnailed images representative of the content at the previously-placed chapter marks." Nishikawa '716, ¶[0024]. Nishikawa '716 discloses that the "Video Cassette Recorder (VCR) has changed the lives of television (TV) viewers by allowing viewers to time-shift TV programs to match their lifestyles. Using the VCR, the viewer stores programs onto magnetic tape; this can

then be played back at the viewer's convenience. The VCR gives the viewer the ability to pause the program playback whenever he desires, fast-forward through unwanted program material or commercials, and to replay favorite scenes. However, a VCR cannot both capture and play back information at the same time." Nishikawa '716, ¶[0003].

A POSITA would have recognized that Nishikawa '716's disclosures relating to navigating video content could easily be incorporated into Cronin. A POSITA would have been motivated to implement Nishikawa '716's navigation into Cronin to address the problems in Cronin. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content using chapters) to improve similar devices or methods (e.g., navigating video content, video previews)) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content using chapters) to a known device or method (e.g., navigating video content, video previews) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Vahtola discloses "[r]ecording chapter information may include recording a chapter title. Recording a chapter title may involve accessing customizable information stored in the memory device and basing the chapter title at least partially on the customizable information. Receiving user input may instruct a processor to: begin or resume recording the continuous media data to the memory device, and record chapter information for the location in the continuous media data

where the processor begins or resumes recording." Vahtola, ¶[0011]. It also discloses that the "processing element 14 can include a processor 20 operatively coupled to a memory 22. The memory 22 can comprise volatile and/or non-volatile memory, and typically stores content, data, or the like. For example, the memory 22 can store client applications, instructions, or the like for the processor 20 to perform steps associated with operation of the entity in accordance with exemplary embodiments of the present invention. Also, for example, the memory 22 can store one or more continuous media data sequences, such as those received from the continuous media data source 12. As is described below, to facilitate navigation of one or more of those sequences (or other purposes described herein), the memory 22 can further store chapter information therein. The memory 22 may be fixed or removable. The memory device 22 may include a hard drive, a CD, a DVD, a Blu-ray disk, a memory card such as a Flash memory card, a Memory stick, a Secure Digital (SD) card and the like, a video tape cassette, an audio tape cassette, and the like." Vahtola, ¶[0034]. Vahtola also discloses "[o]nce the chapters are created, the chapters may be used to generate a table of contents or other menu-type display of the chapters in the recorded continuous media data. In one embodiment, the processor generates a menu in which thumbnail images from the chapter or even portions of the continuous media data from each chapter are displayed in such a menu. In one embodiment of the present invention, the user can select an image or a portion of continuous media to use in this regard by actuating a particular user input device during the recording of the continuous media data. The thumbnail or the continuous media portion may be then recorded as chapter information or the location (e.g., the frame or range of frames) of the thumbnail or the continuous media portion can be recorded as chapter information. In other embodiments the first frame or the first several seconds of each chapter is used as the thumbnail image or the continuous media portion, respectively." ¶[0061].

A POSITA would have recognized that Vahtola's disclosures relating to navigating video content could easily be incorporated into Cronin. A POSITA would have been motivated to implement Vahtola's SD card storage and video preview Cronin to address the problems in Cronin. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling data storage, and video preview was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., storing data on an SD card; video preview) to improve similar devices or methods(e.g., navigating video content, video previews) in the same way (e.g., navigating video content stored on a drive; displaying video previews). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., storing data on an SD card; video preview) to a known device or method (e.g., navigating video content, video previews) that is ready for improvement to yield predictable results (e.g., navigating video content stored on a drive; displaying video previews). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Shiiyama discloses that "it is an object of the present invention to allow the user easily to restore synchronous display of a thumbnail image sequence from a state wherein synchronization between the thumbnail image sequence and moving image playback is interrupted by, e.g., scroll operation of the thumbnail image sequence. It is another object of the present invention to allow the user to designate a desired scene more reliably when the thumbnail image sequence is displayed by automatic scroll synchronized with playback of a moving image." Shiiyama, 2:26-29. It also discloses that "when the user wants to make a jump to a desired scene by selecting a given thumbnail image from the thumbnail image sequence, while the thumbnail image sequence is automatically scrolled in synchronism with the displayed moving image, the contents of the

thumbnail image sequence have been scrolled at a delicate timing, and the user may select a thumbnail image that he or she did not intend. This is also a problem posed upon displaying a thumbnail image sequence in synchronism with the displayed moving image." Shiiyama, 2:4-13. It also discloses "[w]hen one image of the thumbnail image sequence **2001**, e.g., a thumbnail image corresponding to scene **22**, is designated by mouse operation or the like, a moving image corresponding to scene **22** is played back on the moving image playback area **2000**." Shiiyama, 1:38-42. Shiiyama also discloses "[a]s the storage medium for supplying the program code, for example, a floppy disk, hard disk, optical disk, magneto-optical disk, CD-ROM, CD-R, magnetic tape, nonvolatile memory card, ROM, and the like may be used." 17:37-40.

A POSITA would have recognized that Shiiyama's disclosures relating to navigating video content could easily be incorporated into Cronin. A POSITA would have been motivated to implement Shiiyama's storage on a flash drive into Cronin to address the problems in Cronin. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation and file storage was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., storing data on flash memory) to improve similar devices or methods (e.g., navigating video content, video previews) in the same way (e.g., navigating video content stored on a drive). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., storing data on flash memory) to a known device or method (e.g., navigating video content, video previews) that is ready for improvement to yield predictable results (e.g., navigating video content stored on a drive). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Poslinski discloses that "[i]n one exemplary embodiment, media content received at the tuner (105) is temporarily buffered, or stored, in a live cache buffer (110). If there are multiple tuners (105), there may be a live cache buffer (110) corresponding to each of the tuners (105). As shown in FIG. 1, the live cache buffer (110) may be a part of the storage device (109) (e.g. a reserved portion of a hard dive). In an alternative embodiment (not shown), the live cache buffer (110) may reside in memory (102) or in a storage device external to the STB (100). Media content received into the live cache buffer (110) has a temporary recording designation. In other words, the media content stored in the live cache buffer (110) will either be deleted or retained through election by the user as a permanent recording. A permanent recording will be understood to mean media content that is stored for an extended period of time as decided by the user. Permanent recordings may be stored in a permanent storage unit (119), for example. The permanent storage unit (119) may be a part of the storage device (109) or it may be a stand-alone unit. For example, the permanent storage unit (119) may be a hard drive, an optical disc, a network drive, a buffer in memory, or any other type of permanent storage device that is a part of the storage unit (109) or that is a stand-alone unit." Poslinksi, ¶[0030]. It also discloses ""In one of many possible embodiments, the present invention provides a method and system for displaying a number of portions of a number of recorded media content instances during a single viewing session. The method includes defining a number of entries such that each of the number of entries corresponds to one of the number of portions of the number of recorded media content instances, including each of the entries in a play list, and selecting the play list from a number of play lists for viewing. The portions of the number of recorded media content instances included in the entries in the play list are then displayed during the single viewing session." Poslinski, ¶[0006].

A POSITA would have recognized that Poslinski's disclosures relating to assembling the timeline could easily be incorporated into Cronin. A POSITA would have been motivated to implement Poslinski's timeline assembly into Cronin to address the problems in Cronin. A POSITA would have understood that, as of the priority date of the '300 Patent, timeline creation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., timeline assembly) to improve similar devices or methods (e.g., navigating video content, video previews) in the same way (e.g., navigating video content via an assembled timeline). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., timeline assembly) to a known device or method (e.g., navigating video content, video previews) that is ready for improvement to yield predictable results (e.g., navigating video content via an assembled timeline). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Ackley discloses "The present disclosure provides a user friendly navigation scheme to media and media players. The disclosure provides for a menu system that overlays the video on a DVD, and can be viewed and selections made during viewing of a video stream. The system and method applies to media players, including but not limited to DVD players, software DVD-ROM players, high definition video players, hard drive based players, optical players, personal computers, or any other media player known to one of ordinary skill in the art." Ackley, ¶[0008]. It also discloses that "[i]n another embodiment, thumbnails may include different video sources. In other words, each thumbnail 510 represents a different movie, a documentary, trailer, etc., originating from sources other than the media player. For instance, the media player may be connected to the Internet, and if a specific thumbnail is selected, a particular video may be

downloaded from the Internet. Likewise, the video source may be a personal computer attached to the media player. The personal computer would have a hard drive with stored videos that are selectable by the media player." Ackley, ¶[0049].

A POSITA would have recognized that Ackley's disclosures relating to video preview could easily be incorporated into Cronin. A POSITA would have been motivated to implement Ackley's video preview into Cronin to address the problems in Cronin. A POSITA would have understood that, as of the priority date of the '300 Patent, video preview was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., video preview) to improve similar devices or methods (e.g., navigating video content, video previews) in the same way (e.g., navigating video content while showing a video preview). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., video preview) to a known device or method(e.g., navigating video content, video previews) that is ready for improvement to yield predictable results (e.g., navigating video content while showing a video preview). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kuriowa '764 discloses "[a]n information processing apparatus includes area image extracting means for extracting, as a telop image, an area displaying a telop in contents, detecting means for detecting a scene change in images of the contents, recording means for converting an image at the time when a scene change is detected by the detecting means to a thumbnail image and recording the thumbnail image, display control means for controlling to arrange and display a plurality of the thumbnail images and a plurality of the telop images chronologically, and playing means for playing the contents from the position corresponding to the selected thumbnail image

or telop image." Kuroiwa '764 at Abstract. It also discloses "the contents recording section 23 controls a scene change detecting section 71 to detect the time upon scene change in frames and supplies the detection result to a film roll data creating section 72. The film roll data creating section 72 converts the image of the frame immediately after the scene change corresponding to the time code of the time upon scene change to a thumbnail image and records the result to film roll data 92 and stores the film roll data 92 in the contents data storage section 24 in connection with the contents data 91. The image recording section 73 causes the contents data storage section 24 to store information on the contents obtained by the contents recording section 23 as contents data." Kuroiwa '764 at 4:60–5:5. It discloses the "display control means may control to display the contents being currently played and the telop image on one screen." Kuroiwa '764 at 2:18–20.

A POSITA would have recognized that Kuriowa '764's disclosures relating to navigating video content could easily be incorporated into Cronin. A POSITA would have been motivated to implement Kuriowa '764's navigation into Cronin to address the problems in Cronin. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content, video previews) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content, video previews) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Errico discloses “A system for presenting a summarization of audio and/or visual content having a plurality of segments to a user together with a graphical user interface that preferably indicates to the viewer the relative temporal position of video segments viewed in the summary within the content from which the summary was derived.” Errico at Abstract. It also discloses ““One example of a personalized nagivational control is a button configured to “replay the last two seconds of the segment previously viewed.” This macro button could be as follows: smart skip, in reverse, one segment, no theme change, offset two seconds, from end of segment, with zero fade in; play, for two seconds, in default mode; and resume prior navigation operation.” Errico at 10:61–67. It also discloses “The amount of video content is expanding at an ever increasing rate, some of which includes sporting events. Simultaneously, the available time for viewers to consume or otherwise view all of the desirable video content is decreasing. With the increased amount of video content coupled with the decreasing time available to view the video content, it becomes increasingly problematic for viewers to view all of the potentially desirable content in its entirety. Accordingly, viewers are increasingly selective regarding the video content that they select to view. To accommodate viewer demands, techniques have been developed to provide a summarization of the video representative in some manner of the entire video. Video summarization likewise facilitates additional features including browsing, filtering, indexing, retrieval, etc. The typical purpose for creating a video summarization is to obtain a compact representation of the original video for subsequent viewing.” Errico, 1:12-28. It adds that “There are two major approaches to video summarization. The first approach for video summarization is key frame detection… The second approach for video summarization is directed at detecting events that are important for the particular video content.” Errico, 1:29-43.

A POSITA would have recognized that Errico's disclosures relating to navigating video content could easily be incorporated into Cronin. A POSITA would have been motivated to implement Errico's navigation into Cronin to address the problems in Cronin. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content, video previews) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content, video previews) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Park '332 discloses ""Provided are an apparatus and method of displaying multimedia contents, more particularly, an apparatus and method of displaying stored multimedia contents to accommodate a user's preference using limited buttons of a remote control device or a cellular phone. The apparatus for displaying multimedia contents includes an alignment condition determination unit determining an alignment condition corresponding to a first user command signal among a plurality of alignment conditions, a detailed condition determination unit determining a detailed condition corresponding to a second user command signal among detailed conditions included in the alignment condition, a contents extraction unit extracting first multimedia contents according to the determined detailed condition, and a display unit displaying the determined alignment condition in a first region, the determined detailed condition in a second

region, and a second multimedia contents selected by a user among the extracted first multimedia contents in a third region of a screen." Park '332 at Abstract. It also discloses "Increasing Internet usage by users having various backgrounds and interests has had a huge impact on all digital industries, particularly with respect to Internet-based services and contents which may be customized based on a user's background and interests. Internet-based services and contents, which are provided through the Internet, are becoming the standards of digital industries in the 21st century. In addition, due to the fast growth of Internet networks and multimedia contents in cellular phones, PDAs, and notebook computers, utilization of multimedia is essential rather than optional. The development from analog TV to digital TV is in progress, and users may receive various types of information, as well as public broadcast, through the TV." Park '332 at 1:25-38.

A POSITA would have recognized that Park '332's disclosures relating to navigating video content could easily be incorporated into Cronin. A POSITA would have been motivated to implement Park '332's navigation into Cronin to address the problems in Cronin. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content, video previews) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content, video previews) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Van De Streek discloses a "[m]ethod of and system for selecting a position in an image sequence. A representation (200) of the image sequence is displayed, together with a position indicator (206) configured to be moved along the representation (200). The position in the image sequence is selected in correspondence to a present position of the position indicator (206). A collection of key frames is obtained, each key frame being associated with a portion of the representation (200). From this collection of key frames a current key frame (212) is displayed whose associated portion comprises a present position of the position indicator (206). Indications (205) of the locations of the key frames in the collection may be shown as well." Van De Streek at Abstract. It also discloses "The invention relates to a method of selecting a position in an image sequence, comprising displaying a representation of the image sequence, providing a position indicator configured to be moved along the representation, and selecting the position in the image sequence in correspondence to a present position of the position indicator." Van De Streek at [0001]. It also discloses "The known system has the disadvantage that the viewer can only see the frame on the video stream corresponding to the location of the slider along the bar. This makes it very difficult for him to establish the context in which this frame occurs in the video stream, and so makes it difficult for him to navigate through the video stream." Van De Streek at [0006].

A POSITA would have recognized that Van De Streek's disclosures relating to navigating video content could easily be incorporated into Cronin. A POSITA would have been motivated to implement Van De Streek's navigation into Cronin to address the problems in Cronin. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., preview video) to improve similar devices or methods (e.g., navigating video content, video previews) in the same way (e.g., navigating video content with visual preview). As

another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., preview video) to a known device or method (e.g., navigating video content, video previews) that is ready for improvement to yield predictable results (e.g., navigating video content with video preview). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Johnson discloses an "[a]pparatus, system and method for the navigation of aggregated content using skipping and content metadata. An apparatus includes a processor to receive a control signal from a navigation controller and to display a skip function user interface on a display device. The skip function user interface is used to navigate aggregated content items and includes one or more skip boxes. Each of the one or more skip boxes is associated with a content item in the aggregated content items. Other embodiments are described and claimed." Johnson at Abstract. It also discloses that in "one embodiment, platform 510 may comprise a CPU 512, a chip set 513, one or more drivers 514, one or more network connections 515, an operating system 516, and/or a media center application 517 comprising one or more software applications, for example. Platform 510 also may comprise storage 518. Storage 518 may include control and content data used to define the functionality and metadata associated with skip function user interface 202." Johnson at [0037].

A POSITA would have recognized that Johnson's disclosures relating to navigating video content could easily be incorporated into Cronin. A POSITA would have been motivated to implement Johnson's metadata into Cronin to address the problems in Cronin. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known

techniques (e.g., metadata) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content, video previews). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., metadata) to a known device or method (e.g., navigating video content, video previews) that is ready for improvement to yield predictable results (e.g., navigating video content with metadata). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Boreczky discloses a "system is provided where a number of representative video snapshots are displayed on a timeline indicating a position to jump to in a video using control buttons, such as fast forward, reverse, or a timeline scroll bar. The video snapshots are obtained by opening a low resolution connection to a video server to receive forward looking video segments. The forward looking video segments are summarized and the representative video snapshots are selected and displayed to provide a reference frame for the user to select a timeline position, or snapshots directly linked to positions in the higher resolution video. Backward looking video segments may be similarly summarized from the low resolution connection, or alternatively from video previously played. As the video progresses, new forward looking video segments are received and new representative video snapshots are summarized and displayed in close proximity with the video being played." Boreczky at Abstract. It also discloses ""The present invention includes a computer program product which is a storage medium (media) having instructions stored thereon/in which can be used to program a computer to perform any of the processes of the present invention. The storage medium can include, but is not limited to, any type of disk including floppy disks, optical discs, DVD, CD-ROMS, microdrive, and magneto-optical disks, ROMs,

RAMs, EPROMs, EEPROMs, DRAMs, VRAMs, flash memory devices, magnetic or optical cards, nanosystems (including molecular memory ICs), or any type of media or device suitable for storing instructions and/or data." Boreczky at 9:8–18. It also discloses "an embodiment of the present invention during playback of a video, such as a video invoked by commands 325 and displayed on display device 330 by a video application running on device 320. A video 400 displays a current playback position of a video data stream being played by the video application. Video controls 410 (pause/play button) and slide bar 415 allow user control and user movements of the current playback position. Alternate embodiments include step and/or skip back and forward functions, fast forward, fast rewind, go to start, go to end, jump to next index point, jump to last index point, and any other type of control that might be associated with a video playback device. Slide bar 415 is displayed in conjunction with a timeline (0:00. .33:30, for example) which provides timing marks indicating approximate positions of the video in correspondence to other points in the video. Alternatively, instead of an entire video segment being displayed on the timeline, any selected portions of the video may be represented on the timeline." Boreczky at 4:36–54.

A POSITA would have recognized that Boreczky's disclosures relating to navigating video content could easily be incorporated into Cronin. A POSITA would have been motivated to implement Boreczky's navigation into Cronin to address the problems in Cronin. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content, video previews) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount

to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content, video previews) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kuroiwa ’395 discloses an “information processing apparatus includes a content metadata obtaining unit configured to obtain content metadata; a determination unit configured to determine the category of the content metadata; an editing unit configured to edit the content metadata so that, when text data of the content metadata is to be reproduced on the basis of the category of the content metadata determined by the determination unit, information on a predetermined link destination is displayed in response to a predetermined operation being performed on the reproduced text data; a reproduction unit configured to reproduce the text data of the content metadata in synchronization with the reproduction of the content; and a display unit configured to display the information on the link destination on the basis of the content metadata edited by the editing unit when the predetermined operation is performed on the text data of the content metadata reproduced by the reproduction unit.” Kuroiwa ’395 at Abstract. It also discloses that in “recent years, a technology has been proposed in which text information contained in an EPG is displayed, and also a search process is performed by a search engine via the Internet by using the text information as a keyword and a search result is displayed (see Japanese Unexamined Patent Application Publication No. 2004-23345).” Kuroiwa ’395 at 1:30-35.

A POSITA would have recognized that Kuriowa ‘395’s disclosures relating to navigating video content could easily be incorporated into Cronin. A POSITA would have been motivated to implement Kuriowa ‘395’s navigation into Cronin to address the problems in Cronin. A POSITA

would have understood that, as of the priority date of the ’300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content, video previews) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content, video previews) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Kashima discloses a “display control apparatus: in a virtual three-dimensional space in which is disposed a three-dimensional model of an object contained in a moving image picked up by performing successive imaging operations once by using an imaging device, draws a plurality of thumbnail images extracted from the moving image to the respective positions of the imaging device at the time when the thumbnail images were picked up and draws information that relates the thumbnail images in order in which they were picked up, thereby generating a bird's eye-display image which provides a bird's-eye-view drawing of the virtual three-dimensional space containing the three-dimensional model and the thumbnail images; and causes a display unit to display the bird's eye-display image.” Kashima at Abstract. It also discloses the “storage unit may store movement track information which represents a movement track of the imaging device at the time when the imaging device picked up the moving image, as additional information of the moving image and the display image generation unit may draw the thumbnail images in the virtual three-dimensional space at the respective positions of the imaging device at the time when the

thumbnail images were picked up based on the movement track information." Kashima at 2:9-17. Kashima discloses "There are regular playback display and film roll display available as a video display method for displaying moving images picked up and video-recorded with an imaging device such as a video camera. The regular playback display method will display a video (x-axis and y-axis of an imaging plane) by reproducing its video-recorded moving images sequentially from the beginning along a time axis t. The user can grasp imaged contents by viewing the video thus reproduced regularly but in a considerable lapse of time. To reduce the time, a method is available for fast-forwarding the moving images in playback display but still requires a lapse of time to some extent in order to grasp the imaged contents of the moving images as a whole." Kashima, 1:10-23. It also discloses "[a]ccording to the film roll display approach, if an arbitrary one is selected from among the thumbnail images displayed in a list, it is possible also to display the moving images by regularly reproducing them starting from a playback position that corresponds to the thumbnail image. According to such film roll display, the user can understand the imaged contents of the moving images as a whole more easily than by the regular playback display." Kashim, 1:29-36

A POSITA would have recognized that Kashima's disclosures relating to navigating video content could easily be incorporated into Cronin. A POSITA would have been motivated to implement Kashima's navigation into Cronin to address the problems in Cronin. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content, video previews) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount

to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content, video previews) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hua discloses "Smart video presentation involves presenting one or more videos in a video presentation user interface (IU). In example implementation, a video presentation UI includes a listing of multiple video entries, with each video entry including multiple static thumbnails to represent the corresponding video. In another example implementation, a video presentation UI includes a scalable number of static thumbnails to represent a video, with the scalable number adjustable by a user with a scaling interface tool. In yet another example implementation, a video presentation UI includes a video playing region, a video slider bar region, and a filmstrip region that presents multiple static thumbnails for a video that is playable in the video playing region." Hua at Abstract. Hua also discloses "[v]ideos 104 can be stored at local storage, on a local network, over the internet, some combination thereof, and so forth. For example, they may be stored on flash memory or a local hard drive. They may also be stored on a local area network (LAN) server. Alternatively, they may be stored at a server farm and/or storage area network (SAN) that is connected to the internet. In short, videos 104 may be stored at and/or retrieved from any processor-accessible media." Hua at [0020]. It also discloses "People and organizations store a significant number of items on their computing devices. These items can be text files, data files, images, videos, or some combination thereof. To be able to utilize such items, users must be able to locate, retrieve, manipulate, and otherwise manage those items that interest them. Among the

various types of items, it can be particularly challenging to locate and/or manage videos due to their dynamic nature and oftentimes long lengths" Hua, [0002].

A POSITA would have recognized that Hua's disclosures relating to navigating video content could easily be incorporated into Cronin. A POSITA would have been motivated to implement Hua's navigation into Cronin to address the problems in Cronin. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content, video previews) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content, video previews) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Oetzel discloses "[t]he present embodiments provide methods and apparatuses for use in navigating through content. Some embodiments provide methods for use in navigating through content that receive an initial first directional control command, activate a seek mode upon receipt of the initial first directional control command comprising advancing over a first amount of content in a first direction from a first point in the content to a second point in the content, receive an initial second directional control command following the receipt of the initial first directional command, and activate a search mode upon receipt of the initial second directional control command, comprising advancing back over a second amount of the first amount of the content where the

second amount is less than the first amount of the content." Oetzel at Abstract. It also discloses "[t]he present embodiments advantageously addresses the needs above as well as other needs by providing a apparatus for use in navigating through content, such multimedia content, textual content, web or internet content, graphics content, picture content and substantially any relevant content. Some embodiments provide methods for use in navigating through content, comprising receiving an initial first directional control command; activating a seek mode upon receipt of the initial first directional control command, comprising advancing over a first amount of content in a first direction from a first point in the content to a second point in the content; receiving an initial second directional control command following the receipt of the initial first directional command; and activating a search mode upon receipt of the initial second directional control command, comprising advancing back over a second amount of the first amount of the content wherein the second amount is less than the first amount of the content." Oetzel at [0005]. Oetzel also discloses "[i]ncreased amounts of content often result in increased needs to access the content. However, identifying and/or finding desired content can be difficult do at least in part to the increased amount of content and/or the increased amount of data utilized in recording the content." Oetzel at [0004].

A POSITA would have recognized that Oetzel's disclosures relating to navigating video content could easily be incorporated into Cronin. A POSITA would have been motivated to implement Oetzel's navigation into Cronin to address the problems in Cronin. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to

applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

DVD Explorer discloses a DVR system. Explorer Manual at 1. It also discloses pausing and recording a live program with timeline bar shown on the screen with the video. Explorer Manual at 9. It also discloses that once can "watch and record high-definition programs" *Id*. at 2. DVD Explorer also discloses navigating videos. *See generally,* Explorer Manual 3-6.

A POSITA would have recognized that DVD Explorer's disclosures relating to navigating video content could easily be incorporated into Cronin. A POSITA would have been motivated to implement DVD Explorer's navigation into Cronin to address the problems in Cronin. A POSITA would have understood that, as of the priority date of the '300 Patent, controlling video navigation was important. A POSITA would have considered the combination to amount to the use of known techniques (e.g., navigating video content) to improve similar devices or methods (e.g., navigating video content) in the same way (e.g., navigating video content with visual display). As another example, a POSITA would have understood the modification or combination to amount to applying a known technique (e.g., navigating video content) to a known device or method (e.g., navigating video content) that is ready for improvement to yield predictable results (e.g., navigating video content with visual display). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(4) U.S. Patent No. 8,745,749

The ’749 Patent “generally relates to the field of memory devices, and more particularly, generation of virtual memory devices” and discloses methods for generating and using a virtual SD (secure digital) card. ’749 Patent at 1:13-15. According to the methods disclosed in the Asserted Claims, a media key block (MKB) and media identification (media ID) are read and stored, a file system for secure data is created on a storage device that corresponds to the secure data area of the SD card, and a file system for user data is created on the storage device that corresponds to the user data area of the SD card, where the size of the file system for secure data is determinant on a size of the file system for user data, the determination based on a lookup table providing a relationship between sizes. *Id.* at Claim 1.

The ’749 Patent aims to address technical limitations of current SD cards including “cost, space considerations for connectors, [] lack of security software drivers” and “secure external storage.” *Id*., 2:15-25. This is accomplished by creating a virtual SD card by use of hard disk drives. *See id.,* 1:43-58. All of the methods disclosed in the ’749 Patent were well-known in the prior art at the time of the patent’s filing.

(a) Maeda in view of Hamann and/or SD Product Manual and/or CPXM and/or Lu and/or SD Spec-2/3 and/or Dash and/or Tsypliaev and/or Hirota and/or Meharchand and/or Android SDK[2] and/or SanDisk SD Cards

Maeda discloses “forming a data storage format in a semiconductor memory card that enables a nonvolatile memory [to have] a longer lifespan.” *Maeda*, at 2:57-60. Specifically, Maeda discloses a method to align cluster boundaries and erasable block boundaries of the user area and the volume management information such that “only one erasable block needs to be erased when

[2] Android SDK is described by at least publications Cupcake and Android Application.

a cluster is rewritten or overwritten, and the number of times that erasable blocks have to be erased can be reduced." *Id*. at 3:46-48. Maeda accomplishes this by "calculate[ing] a size of volume management information based on a number of clusters in the memory area that are to be managed" (*id*. at 3:24-26) and reserving clusters for "recording volume management information" (*id.* at 3:40-41) so "the volume management information can be aligned with an erasable block boundary" (*id*. at 3:44-45). *See also* Figs. 12, 16, 17.

Hamann discloses "a virtual smart card (VSC) [that] is a software implemented version of a real smart card providing the equivalent functionality of a real smart card." *Hamann* at Abstract. Specifically, Hamann discloses that the "VSC is created and used by a VSC control program which handles the creation, the security and the read/write process of the VSC" such that the "VSC has a logical file structure comprising a public area, a private area, a secure key area, a password area, and a unique identifier area." *Id.* Hamann further discloses that "data objects placed into the private area are encrypted." *Id.*

A POSITA would have been motivated to modify Maeda with Hamann. First, Hamann discloses the SD card architecture described in the patent. Indeed, according to the SD Card Association, Maeda is a standard essential patent. See https://www.sd-3c.com/IPInformation.aspx. A POSITA would have been motivated to virtualize the industry standard SD Card architecture as described in Maeda for the reasons Hamann describes, at least because technology is moving toward virtualization. Additionally, smart cards have similar data formats (e.g., protected area, user area) and encryption. *See Maeda* at 6:66-7:2 (describing that a semiconductor memory card ("SD card") that includes a "partition control area, the system area, and the user area."); *see also Hamann* at [0016] ("VSC having a logical file structure comprising a public area, a private area, a secure key area, password area, and an unique identifier area."). Hamann teaches virtualization of

a smart card, which includes "any programmed data carrier." *Hamann* at [0002] ("'smart cards' (the term 'smart card' used in the present invention also covers any programmed data carrier used in any portable device, like mobile phone, digital personal assistant etc., to securely hold subscriber specific information)). Further, a POSITA would have understood that the semiconductor memory card described by Maeda would have been included in definition of smart card, as defined by Hamann. *See Maeda* at 2:61-65 ("The type of Semiconductor memory card known as secure digital (SD) memory card has made great strides toward resolving the aforementioned problems of reduction in processing time and nonvolatile memory longevity. . . .").

Similarly, Hamann teaches the concept of "greatly increase[ing]. . . data storage capacity." *Hamann* at [0002]. Therefore, a POSITA aiming to "greatly increase. . . data storage capacity" of an SD card would have looked to virtualize Maeda's SD card by the teachings of Hamann to create a virtual SD card with increased storage capacity. A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Furthermore, Hamann teaches that virtualizing memory cards allows such memory cards to be backed up. *See* Hamann at [0002]. Virtualizing SD Cards like those described in Maeda would provide benefits to users, as Hamann suggests. For example, Maeda teaches that users may store content such as music and images on the memory card disclosed therein. *See Maeda*, 25:64-26:3. The ability to backup such content (whether DRM protected content or a user's own images) would be beneficial to users, as it would prevent loss of their content in the event of an SD Card failure. And while Hamann described making backups of access cards, a POSITA having Hamann's teachings would have understood the benefits provided by backing up content like that described in Meada.

Moreover, while Hamann teaches virtualization of a smart card, it also describes that virtualization could be performed for "any programmed data carrier." Hamann at [0002] ("'smart cards' (the term 'smart card' used in the present invention also covers any programmed data carrier used in any portable device, like mobile phone, digital personal assistant etc., to securely hold subscriber specific information)). Thus, the semiconductor memory card described by Maeda would have been included in the definition of "smart card" as defined by Hamann. *See* Maeda at 2:61-65 ("The type of Semiconductor memory card known as secure digital (SD) memory card has made great strides toward resolving the aforementioned problems of reduction in processing time and nonvolatile memory longevity. . . .").

Additionally, Maeda describes that an SD card's "nonvolatile memory is formed from a memory component that includes a floating gate buried in an insulating layer." *Maeda* at 2:35-37. As such, when a user modifies data stored in particular clusters, the "memory component can only be erased a few tens of thousands of times" such that the "lifespan of the nonvolatile memory [is] significantly reduced." *Id.* at 2:37-41. A POSITA would have understood that Maeda's SD card has a limited number of read/writes that may be performed when a user modifies data. Therefore, a POSITA would be motivated to virtualize Maeda's SD card by the teachings of Hamann to increase the lifespan of the SD card.

A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., virtualizing a smart card) to improve similar devices or methods (e.g., another memory device, such as an SD card) in the same way (e.g., to provide a virtual SD card). As another example, a POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., modifying a physical SD card) according to known methods (i.e., according to known methods for virtualizing a memory device) to yield predictable results

(e.g., resulting in a virtual copy of a physical memory device). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

The SD Product Manual describes product specifications for different SanDisk SD cards. The manual discloses that the SanDisk Secure Digital (SD) Card is a flash-based memory card specifically designed to meet the security, capacity, performance and environmental requirements inherent in next generation mobile phones and consumer electronic devices. *See SD Product Manual* at 1-1. "The SanDisk SD Card includes a copyright protection mechanism that complies with the security of the SDMI standard, and is faster and capable of higher memory capacity." *Id*.

A POSITA would have been motivated to modify the above combination of Maeda-Hamann with SD Product Manual because SD Product Manual describes the relationship between the total size of an SD card and the protected area and user area, such that the user may format the virtual SD card accordingly. Specifically, a POSITA would have used the product descriptions in SD Product Manual to calculate a more accurate β value (the β value in Maeda being the percentage of the SD card that is protected area). For example, Maeda describes that the protected area is a percentage (e.g., 10%) of the total size of the storage area. *See Maeda* at 15:12-21 ("if the total size of the volume area is 'volume size', the user data area is an area 'volume size×(1−β)' extending from the start of the volume area, and an area 'volume size×β' following the user data area is allocated to the protected area. Here, β is a value for which the minimum setting is 0.01. To take one example, if the volume size is 64 MB and β is 0.01, the protected area is set at 640 KB. The format of the user data area and the protected area is realized when the file system operation unit 9 executes the initialization procedure shown in FIG. 9.").

A POSITA, however, would have understood that the size of the protected area would need to change based on the size of the total area of the SD card, and that the ideal ratio may not necessarily be an exact 0.01 (or 1%). As such, a POSITA would look to obtain a more accurate ratio of user data area to protected area, which it would find by using SD Product Manual. *SD Product Manual* at Table 1-1. Of note, taking the numbers of Table 1-1 of the SD Product Manual reveals that the ratio to sizes varies between 1.01% and 1.21% as the user area size decreases. A POSITA would have understood the modification to amount to applying a known technique (e.g., implementing the table of sizes to the user area and protected area of the virtual SD card) to a known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card with increased protected area when user area decreased). As another example, a POSITA would have understood the combination or modification to amount to the simple substitution of one known element (e.g., a lookup table from the SD Product Manual for determining protected area) for another (e.g., Maeda's equation for determining protected area) to obtain predictable results (e.g., a protected area that slightly increases when user area decreases). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

CPXM defines a robust and renewable method for protecting content stored on a number of physical media types. *See CPXM* at 1. The guide includes information relating to SD card specifications and common elements of the SD card. *See id.* CPXM discloses content encryption. *See CPXM* at 1 ("The Content Protection for eXtended Media Specification (CPXM) defines a robust and renewable method for protecting content stored on a number of physical media types. . . . The SD Memory Card Book specifies additional details for using CPXM technology to protect content stored on the SD Memory Card, and on other implementations of protected storage with

an interface and security system equivalent to that of the SD Memory Card."). In particular, CPXM discloses where encryption keys are stored. While Maeda discloses encryption keys, it is silent as to where they are stored.

A POSITA would have known that encryption keys must be stored somewhere. As such, a POSITA would have looked to CPXM, because it describes protecting content stored on physical media, and is a guide for SD card protection. A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success (e.g., choosing from a finite number of identified, predictable solutions for storage of encryption keys).

Lu discloses an "encryption and decryption methods for implementing hardware and software binding." *Lu* at 1. Lu discloses that the encryption method includes "HASH transformation to obtain a software serial number; using a symmetric encryption algorithm to encrypt a software plain text; using a public key to encrypt a symmetric key through an asymmetric encryption algorithm; and finally, putting the encrypted software plain text and symmetric key together and downloading them into a memory." *Id.* at Abstract. Specifically, Lu discloses methods for "binding of a software product and a hardware product, thereby improving the security of the software product and the hardware product." *Id.*

A POSITA would be motivated to combine Lu with the Maeda-Hamann-SD Product Manual combination because Lu would add additional security features to the system and allow tying the security to the hardware platform. *Id.* at 1. Further, a POSITA would understand that there are many ways to hack encryption, and copying memory to another device allows for would-be hackers time to decrypt the information. As such a POSITA would look to Lu, because tying the encryption would prevent hacking by one that tries to copy the virtual SD card to another

device. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., tying encryption keys in Lu to a host hardware device) to improve similar devices (e.g., to improve security of the virtual SD card) in the same way (e.g., tying the encryption keys of the virtual SD card to the host device). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Similar to SD Product Manual, the SD Memory Card Specifications (Parts 2 and 3) ("SD Spec-2/3")[3] describe the standard specifications for SD memory cards. Part 2 specifies the volume structure and file structure of the SD Memory Card (Secure Digital Memory Card) and the file system that defines the logical structure uses FAT file system based on ISO/IEC 9293 standard. *SD Memory Card Specification, Part 2, File System Specification*,V1.0, (Feb. 2000) and SD Spec V1.01 ("SD Spec-2" or "Part 2") at FS-1. Part 3 describes the SD Memory Card specific 'data element.' *SD Memory Card Specification, Part 3, File System Specification*,V1.0, (Feb. 2000) and SD Spec V1.01 ("SD Spec-3" or "Part 3")) at SS-2. Part 2 and Part 3 have tables containing information about the sizes of SD cards, including total size, user size and protected areas. *See SD Spec-2* at Table C-2 and *SD Spec-3* at Table B-2. While Maeda discloses a formula for determining these relative sizes and while that formula is a close approximation of the SD Memory Card Specification tables, it varies.

A POSITA would have understood that a lot of work and research went into the development of those tables and that it would take into account important considerations to ensure sufficient memory for encryption keys and the protected area, in general. As such, a POSITA

[3] All citations to SD Spec-2/3, SD Spec-2 and SD Spec-3 refer to both version 1.0 and 1.01 (as further analyzed in Exhibits D-07, D-08, and D-15).

would have been motivated to use the SD specifications for Maeda, which discloses an SD card. A POSITA would have understood the combination or modification to amount to the simple substitution of one known element (e.g., equation from Maeda) for another (e.g., the lookup tables from the SD Card Spec. (Parts 2/3)) to obtain predictable results (e.g., a protected area size meeting SD card specifications). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Dash discloses a method for accommodating expandable storage devices in a storage virtualization environment (*see Dash* at 1:8-11) such that "the expandable storage devices [can] remain in operation and online while any storage virtualization software related configuration changes are performed" (*id.* at 3:6-8). The method receives "information describing storage expansion in an expandable storage device" (*id.* at 3:28-29) and determines "changes to be made to information for converting input/output (I/O) operations directed at a virtual storage device to I/O operations directed at the expandable storage device" (*id.* at 3:29-32). Additionally, Dash describes "a virtual storage device manager, and an online storage device resize module." *Id.* at 3:38-40. The "virtual storage device manager is configured to map input/output (I/O) operations targeting a virtual storage device to I/O operations targeting an expandable storage device." *Id.* at 3:40-43. The online storage device resize module which is in communication with the virtual storage device manager is configured to "receive information describing storage expansion in the expandable storage device," "determine changes to be made to the storage device mapping information using the information describing storage expansion in the expandable storage device," and "update the storage device mapping information while the expandable storage device is online." *Id.* at 3:46-53; *see also* Figs. 2 and 3. While Maeda discloses partitioning of secure and

user areas, it does not disclose physical and logical partitioning as a virtual SD Card. Dash, however, does describe the mapping of information to describe storage.

Since Maeda is silent on how it would partition areas in a virtual system, a POSITA would have looked to Dash that discloses changes to the size of storage (e.g., due to expandable storage) in a virtual environment that includes mapping information. As such, a POSITA would be motivated to use Dash's virtual device manager to map the logical and physical addresses of Maeda's SD card as virtualized by Hamann. Therefore, a POSITA would have understood the modification to amount to applying a known technique (e.g., implementing mapping between physical and logical addresses) to a known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card that contains file systems corresponding to a physical SD card). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tsypliaev discloses a method for protecting a disk drive or other data storage. *Tsypliaev* at Abstract. Specifically, Tsypliaev describes mounting a virtual storage that "combines a full access temporary storage and a READ-only portion of a main storage" (*id.*) such that only the virtual storage is modified. Specifically, Tsypliaev describes that the "virtual storage is mounted (i.e. made available to the OS)" and includes "a combination of two storages: the protected area of the main drive and the temporary data storage." *Id.* at 6:10-18. The protected area of the virtual storage includes the "contents of a hard disk drive (HDD)" while the temporary storage reflects "changes or edits to the files or other data structures in the main drive being affected by a user applications or system utilities" such that these modifications "can be registered and handled in the virtual storage as if it were real storage." *Id.* at 6:21-29. As such, the data of a hard drive is protected by

"activating a special redirection driver for read and write requests (or any other disk access requests that alter the contents of the data), so that write requests are redirected to the temporary storage." *Id.* at 4:15-19.

A POSITA would have considered the combination of Tsypliaev's external storage to amount to using known work in one field of endeavor (SD cards) for use in another device in the same field of endeavor (Maeda's SD card as virtualized by the teachings of Hamann) due to design incentives (changing physical storages to virtual storages such that data may be further protected from potentially malicious applications). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hirota discloses "a semiconductor memory card that can be used as a storage medium for storing digital contents and as a storage medium for storing general-purpose computer data (not an object of copyright protection)." *Hirota* at 2:3-7. Specifically, Hirota discloses that the semiconductor memory card includes "an authentication area and a non-authentication area" (*id.* at 2:12-23) such that "copyright protection can be stored in the authentication area and other data can be stored in the non-authentication area" (*id.* at 2:26-27). Hirota's semiconductor memory card also includes "an area resizing circuit which resizes the authentication area and the non-authentication area" (*id.* at 3:24-35) such that "the semiconductor memory card can be used mainly as a recording medium for digital contents and can be used as an auxiliary storage apparatus in a computer system" (*id.* at 3:27-30).

A POSITA would have recognized that the features described in Hirota, such as using a semiconductor memory card as an auxiliary storage medium for a computer, could be implemented into the combination to increase the size of secure storage. As such, the integration would enhance

the ability for users to store large files of digital contents. Furthermore, Hirota discloses where encryption keys are stored. *See Hirota* at 12:51-56 ("The authentication area 332 stores an encryption key 425 which is a secret key used for decrypting the encrypted content 426 stored in the non-authentication area 331. The special area 304 stores the medium ID 341 which is necessary for accessing the authentication area 332."); 22:41-46 ("As shown in FIG. 15, the authentication circuit 216 of the player 201 has the encryption and decryption functions, and also prestores a master key 1301 which is a secret key being equal to the master key 323a held by the memory card 109, and a device ID 1302 which is an ID unique to the player 201, such as a product serial number (s/n).").

While Maeda discloses encryption keys, it is silent as to where they are stored. A POSITA would have known that encryption keys must be stored somewhere. As such, a POSITA would have looked to Hirota, because it describes using a semiconductor memory card as an auxiliary storage medium for a computer and describes security features to include on the semiconductor memory card (e.g., encryption keys). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success (e.g., choosing from a finite number of identified, predictable solutions for storage of encryption keys). Furthermore, a POSITA would have understood the modification to amount to applying a known technique (e.g., implementing an auxiliary storage) to a known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card that is used to store large files of digital contents).

Meharchand discloses "a data protection controller for preventing data recorded on a data storage medium from being corrupted, modified or deleted." *Meharchand* at 1:8-10. The "data protection controller [] is interposed between a processor [] of a computing system and a data

storage device (such as. . . memory stick)" (*id.* at 2:32-36) and is "used to create and maintain a protected data space and a virtual data space on the data storage device" (*id.* at 2:36-38). After the protected data space and the virtual data spaces are created, "the controller conceals the virtual data space from the processor" (*id.* at 2:39-40) and "presents the data storage device to the processor as having a capacity equal to that of the protected data space only" (*id.* at 2:40-42). Therefore, the "virtual data [can] be reviewed and modified" (*id.* at 2:57-58) such that any "undesired changes to the protected data by unauthorized users and malicious software such as viruses" (*id.* at 2:64-65) are eliminated.

A POSITA would have known that SD cards are susceptible to potentially malicious software. As such, a POSITA would have considered the features of Meharchand, such as the data protection controller, to enhance the ability for users to protect data storage from potentially malicious software. A POSITA would have considered the combination to amount to using known work in one field of endeavor (SD cards) for use in another device in the same field of endeavor (Maeda's SD card as virtualized by the teachings of Hamann) due to design incentives (protecting from potentially malicious applications). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Cupcake captures a series of updates that address changes based on "Android 1.5, also known as Cupcake." Cupcake at 10. Specifically, Cupcake discloses "create[ing] an Android Virtual Device (AVD)" (*id.* at 22) such as a "virtual Secure Digital (SD) Card" (*id.* at 24). Similarly, Android Application discloses "concepts and code you need to start building smartphone applications with the Android programming environment." *Android Application* at Preface. Android Application discloses "creat[ing] a virtual SD card" such that a user can "debug[]

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on an emulator." *Id.* at 76. Because Cupcake and Android Application (collectively "Android SDK") describe creating a virtual SD card, a POSITA generating a virtual SD card would use have understood the descriptions in Android SDK to amount to applying an express teaching, suggestion, or motivation in the prior art for their combination. A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Similar to SD Product Manual and SD Spec-2/3, SanDisk SD Cards describe the standards for SanDisk SD memory cards. SanDisk SD cards are a flash-based memory card specifically designed to meet the security, capacity, performance and environmental requirements inherent in next generation mobile phones and consumer electronic devices. *See SD Product Manual* at 1-1. SanDisk SD cards are also compatible with other devices, and as such, comply with the file system and security specifications promulgated by the SD Association, and listed in SD Spec-2/3. *See id.* at 1-4, 3-22, 3-23, 4-37, 4-39.

A POSITA would have understood that significant work and research went into the development of SanDisk SD Cards which would take into account important considerations to ensure SanDisk SD Cards comply with SD Association standards. As such, a POSITA would have been motivated to use the SanDisk SD Card in Maeda, which discloses an SD card. A POSITA would have understood the combination or modification to amount to the simple substitution of one known element (e.g., Maeda's SD Card) for another (e.g., SanDisk SD Card) to obtain predictable results (e.g., structure and functionality of an SD Card that complies with SD Association standards). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(b) Hamann in view of Maeda and/or SD Product Manual and/or CPXM and/or Lu and/or SD Card Spec. (Parts 2/3) and/or Dash and/or Tsypliaev and/or Hirota and/or Meharchand and/or Android SDK and/or SanDisk SD Cards

Hamann discloses "a virtual smart card (VSC) [that] is a software implemented version of a real smart card providing the equivalent functionality of a real smart card." *Hamann* at Abstract. Specifically, Hamann discloses that the "VSC is created and used by a VSC control program which handles the creation, the security and the read/write process of the VSC" such that the "VSC has a logical file structure comprising a public area, a private area, a secure key area, a password area, and a unique identifier area." *Id.* Hamann further discloses that "data objects placed into the private area are encrypted." *Id.*

Maeda discloses "forming a data storage format in a semiconductor memory card that enables a nonvolatile memory [to have] a longer lifespan." *Maeda*, at 2:57-60. Specifically, Maeda discloses a method to align cluster boundaries and erasable block boundaries of the user area and the volume management information such that "only one erasable block needs to be erased when a cluster is rewritten or overwritten, and the number of times that erasable blocks have to be erased can be reduced." *Id*. at 3:46-48. Maeda accomplishes this by "calculate[ing] a size of volume management information based on a number of clusters in the memory area that are to be managed" (*id*. at 3:24-26) and reserving clusters for "recording volume management information" (*id.* at 3:40-41) so "the volume management information can be aligned with an erasable block boundary" (*id*. at 3:44-45). *See also* Figs. 12, 16, 17.

A POSITA would have been motivated to modify Hamann with Maeda. SD cards and smart cards have similar data formats (e.g., protected area, user area) and encryption. *See Hamann* at [0016] ("VSC having a logical file structure comprising a public area, a private area, a secure key area, password area, and an unique identifier area."); *see also Maeda* at 6:66-7:2 (describing that

a semiconductor memory card ("SD card") that includes a "partition control area, the system area, and the user area."). Hamann teaches virtualization of a smart card, which includes "any programmed data carrier." *Hamann* at [0002] ("'smart cards' (the term 'smart card' used in the present invention also covers any programmed data carrier used in any portable device, like mobile phone, digital personal assistant etc., to securely hold subscriber specific information)). A POSITA would have understood that a smart card, as defined in Hamann, would include an SD Card or the semiconductor memory card described by Maeda. *See Maeda* at 2:61-65 ("The type of Semiconductor memory card known as secure digital (SD) memory card has made great strides toward resolving the aforementioned problems of reduction in processing time and nonvolatile memory longevity. . . ."). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Furthermore, Hamann teaches that virtualizing memory cards allows such memory cards to be backed up. *See* Hamann at [0002]. Virtualizing SD Cards like those described in Maeda would provide benefits to users, as Hamann suggests. For example, Maeda teaches that users may store content such as music and images on the memory card disclosed therein. *See Maeda*, 25:64-26:3. The ability to backup such content (whether DRM protected content or a user's own images) would be beneficial to users, as it would prevent loss of their content in the event of an SD Card failure. And while Hamann described making backups of access cards, a POSITA having Hamann's teachings would have understood the benefits provided by backing up content like that described in Meada.

Moreover, while Hamann teaches virtualization of a smart card, it also describes that virtualization could be performed for "any programmed data carrier." Hamann at [0002] ("'smart

cards' (the term 'smart card' used in the present invention also covers any programmed data carrier used in any portable device, like mobile phone, digital personal assistant etc., to securely hold subscriber specific information)). Thus, the semiconductor memory card described by Maeda would have been included in the definition of "smart card" as defined by Hamann. *See* Maeda at 2:61-65 ("The type of Semiconductor memory card known as secure digital (SD) memory card has made great strides toward resolving the aforementioned problems of reduction in processing time and nonvolatile memory longevity. . . .").

Similarly, Hamann teaches that smart cards are a new type of transaction card that is able to "greatly increase. . . data storage capacity." *Hamann* at [0002]. Therefore, a POSITA aiming to "greatly increase. . . data storage capacity" of an SD card would implement Hamann to virtualize Maeda's SD card to create a virtual SD card with increased storage capacity.

Additionally, Hamann describes that the virtual smart card includes cryptographic protection for data encryption and authentication, similar to an SD card. *See Hamann* at [0040] ("The logic for protecting the private data areas of the VSC (by password) and the cryptographic routines used, e.g. for data encryption and authentication, are implemented inside the virtual smart card control program (8) instead using the "smart card operating system with access control" stored in the ROM of the real smart card."); *Maeda* at 14:57-62 ("When encrypted data to be written into the protected area is output from the access apparatus 200 connected to the semiconductor memory card 100, the Ks decrypting unit 16 uses the session key Ks to decrypt this data which has already been encrypted by session key Ks before being output."). As such, a POSITA would be motivated to virtualize Maeda's SD card based on Hamann with increased security. Specifically, instead of using a password to protect the private area of the virtual SD card (*see Hamann* at [0040]), a POSITA would be motivated to use increased security to implement the AKE process disclosed

by Maeda such that only authorized devices can be used to access the protected area of the virtual SD card.

A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., virtualizing a smart card) to improve similar devices or methods (e.g., another memory device, such as an SD card) in the same way (e.g., to provide a virtual SD card). As another example, a POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., modifying a physical SD card) according to known methods (i.e., according to known methods for virtualizing a memory device) to yield predictable results (e.g., resulting in a virtual copy of a physical memory device). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

The SD Product Manual describes product specifications for different SanDisk SD cards. The manual discloses that the SanDisk Secure Digital (SD) Card is a flash-based memory card specifically designed to meet the security, capacity, performance and environmental requirements inherent in next generation mobile phones and consumer electronic devices. *See SD Product Manual* at 1-1. The SanDisk SD Card includes a copyright protection mechanism that complies with the security of the SDMI standard, and is faster and capable of higher memory capacity. *Id*.

A POSITA would have been motivated to modify the above combination of Hamann-Maeda with SD Product Manual because SD Product Manual describes the relationship between the total size of an SD card and the protected area and user area, such that the user may format the virtual SD card accordingly. Specifically, a POSITA would have used the product descriptions in SD Product Manual to calculate a more accurate β value (the β value in Maeda being the percentage of the SD card that is protected area). For example, Maeda describes that the protected area is a

percentage (e.g., 10%) of the total size of the storage area. *See Maeda* at 15:12-21 ("if the total size of the volume area is 'volume size', the user data area is an area 'volume size×(1−β)' extending from the start of the volume area, and an area 'volume size×β' following the user data area is allocated to the protected area. Here, β is a value for which the minimum setting is 0.01. To take one example, if the volume size is 64 MB and β is 0.01, the protected area is set at 640 KB. The format of the user data area and the protected area is realized when the file system operation unit 9 executes the initialization procedure shown in FIG. 9.").

A POSITA, however, would have understood that the size of the protected area would need to change based on the size of the total area of the SD card, and that the ideal ratio may not necessarily be an exact 0.01 (or 1%). As such, a POSITA would look to obtain a more accurate ratio of user data area to protected area, which it would find by using SD Product Manual. *SD Product Manual* at Table 1-1. Of note, taking the numbers of Table 1-1 of the SD Product Manual reveals that the ratio to sizes varies between 1.01% and 1.21% as the user area size decreases. A POSITA would have understood the modification to amount to applying a known technique (e.g., implementing the table of sizes to the user area and protected area of the virtual SD card) to a known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card with increased protected area when user area decreased). As another example, a POSITA would have understood the combination or modification to amount to the simple substitution of one known element (e.g., a lookup table from the SD Product Manual for determining protected area) for another (e.g., Maeda's equation for determining protected area) to obtain predictable results (e.g., a protected area that slightly increases when user area decreases). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

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CPXM defines a robust and renewable method for protecting content stored on a number of physical media types. *See CPXM* at 1. The guide includes information relating to SD card specifications and common elements of the SD card. *See id.* CPXM discloses content encryption. *See CPXM* at 1 ("The Content Protection for eXtended Media Specification (CPXM) defines a robust and renewable method for protecting content stored on a number of physical media types. . . . The SD Memory Card Book specifies additional details for using CPXM technology to protect content stored on the SD Memory Card, and on other implementations of protected storage with an interface and security system equivalent to that of the SD Memory Card."). In particular, CPXM discloses where encryption keys are stored. While Maeda discloses encryption keys, it is silent as to where they are stored.

A POSITA would have known that encryption keys must be stored somewhere. As such, a POSITA would have looked to CPXM, because it describes protecting content stored on physical media, and is a guide for SD card protection. A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success (e.g., choosing from a finite number of identified, predictable solutions for storage of encryption keys).

Lu discloses an "encryption and decryption methods for implementing hardware and software binding." *Lu* at 1. Lu discloses that the encryption method includes "HASH transformation to obtain a software serial number; using a symmetric encryption algorithm to encrypt a software plain text; using a public key to encrypt a symmetric key through an asymmetric encryption algorithm; and finally, putting the encrypted software plain text and symmetric key together and downloading them into a memory." *Id.* at Abstract. Specifically, Lu discloses methods

for "binding of a software product and a hardware product, thereby improving the security of the software product and the hardware product." *Id.*

A POSITA would be motivated to combine Lu with the Hamann-Maeda-SD Product Manual combination because Lu would add additional security features to the system and allow tying the security to the hardware platform. *Id.* at 1. Further, a POSITA would understand that there are many ways to hack encryption, and copying memory to another device allows for would-be hackers time to decrypt the information. As such a POSITA would look to Lu, because tying the encryption would prevent hacking by one that tries to copy the virtual SD card to another device. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., tying encryption keys in Lu to a host hardware device) to improve similar devices (e.g., to improve security of the virtual SD card) in the same way (e.g., tying the encryption keys of the virtual SD card to the host device). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Similar to SD Product Manual, the SD Card Spec. (Parts 2/3) describe the standard specifications for SD memory cards. Part 2 specifies the volume structure and file structure of the SD Memory Card (Secure Digital Memory Card) and the file system that defines the logical structure uses FAT file system based on ISO/IEC 9293 standard. *SD Spec-2* at FS-1. Part 3 describes the SD Memory Card specific 'data element.' *SD Spec-3* at SS-2. Part 2 and Part 3 have tables containing information about the sizes of SD cards, including total size, user size and protected areas. *See SD Spec-2* at Table C-2 and *SD Spec-3* at Table B-2. While Maeda discloses a formula for determining these relative sizes and while that formula is a close approximation of the SD Memory Card Specification tables, it varies.

A POSITA would have understood that a lot of work and research went into the development of those tables and that it would take into account important considerations to ensure sufficient memory for encryption keys and the protected area, in general. As such, a POSITA would have been motivated to use the SD specifications for Maeda, which discloses an SD card. A POSITA would have understood the combination or modification to amount to the simple substitution of one known element (e.g., equation from Maeda) for another (e.g., the lookup tables from the SD Spec-2/3) to obtain predictable results (e.g., a protected area size meeting SD card specifications). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Dash discloses a method for accommodating expandable storage devices in a storage virtualization environment (*see Dash* at 1:8-11) such that "the expandable storage devices [can] remain in operation and online while any storage virtualization software related configuration changes are performed" (*id.* at 3:6-8). The method receives "information describing storage expansion in an expandable storage device" (*id.* at 3:28-29) and determines "changes to be made to information for converting input/output (I/O) operations directed at a virtual storage device to I/O operations directed at the expandable storage device" (*id.* at 3:29-32). Additionally, Dash describes "a virtual storage device manager, and an online storage device resize module." *Id.* at 3:38-40. The "virtual storage device manager is configured to map input/output (I/O) operations targeting a virtual storage device to I/O operations targeting an expandable storage device." *Id.* at 3:40-43. The online storage device resize module which is in communication with the virtual storage device manager is configured to "receive information describing storage expansion in the expandable storage device," "determine changes to be made to the storage device mapping

information using the information describing storage expansion in the expandable storage device," and "update the storage device mapping information while the expandable storage device is online." *Id.* at 3:46-53; *see also* Figs. 2 and 3. While Maeda discloses partitioning of secure and user areas, it does not disclose physical and logical partitioning as a virtual SD Card. Dash, however, does describe the mapping of information to describe storage.

Since Maeda is silent on how it would partition areas in a virtual system, a POSITA would have looked to Dash that discloses changes to the size of storage (e.g., due to expandable storage) in a virtual environment that includes mapping information. As such, a POSITA would be motivated to use Dash's virtual device manager to map the logical and physical addresses of Maeda's SD card as virtualized by Hamann. Therefore, a POSITA would have understood the modification to amount to applying a known technique (e.g., implementing mapping between physical and logical addresses) to a known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card that contains file systems corresponding to a physical SD card). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tsypliaev discloses a method for protecting a disk drive or other data storage. *Tsypliaev* at Abstract. Specifically, Tsypliaev describes mounting a virtual storage that "combines a full access temporary storage and a READ-only portion of a main storage" (*id.*) such that only the virtual storage is modified. Specifically, Tsypliaev describes that the "virtual storage is mounted (i.e. made available to the OS)" and includes "a combination of two storages: the protected area of the main drive and the temporary data storage." *Id.* at 6:10-18. The protected area of the virtual storage includes the "contents of a hard disk drive (HDD)" while the temporary storage reflects "changes

or edits to the files or other data structures in the main drive being affected by a user applications or system utilities" such that these modifications "can be registered and handled in the virtual storage as if it were real storage." *Id.* at 6:21-29. As such, the data of a hard drive is protected by "activating a special redirection driver for read and write requests (or any other disk access requests that alter the contents of the data), so that write requests are redirected to the temporary storage." *Id.* at 4:15-19.

A POSITA would have considered the combination of Tsypliaev's external storage to amount to using known work in one field of endeavor (SD cards) for use in another device in the same field of endeavor (Maeda's SD card as virtualized by the teachings of Hamann) due to design incentives (changing physical storages to virtual storages such that data may be further protected from potentially malicious applications). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hirota discloses "a semiconductor memory card that can be used as a storage medium for storing digital contents and as a storage medium for storing general-purpose computer data (not an object of copyright protection)." *Hirota* at 2:3-7. Specifically, Hirota discloses that the semiconductor memory card includes "an authentication area and a non-authentication area" (*id.* at 2:12-23) such that "copyright protection can be stored in the authentication area and other data can be stored in the non-authentication area" (*id.* at 2:26-27). Hirota's semiconductor memory card also includes "an area resizing circuit which resizes the authentication area and the non-authentication area" (*id.* at 3:24-35) such that "the semiconductor memory card can be used mainly as a recording medium for digital contents and can be used as an auxiliary storage apparatus in a computer system" (*id.* at 3:27-30).

A POSITA would have recognized that the features described in Hirota, such as using a semiconductor memory card as an auxiliary storage medium for a computer, could be implemented into the combination to increase the size of secure storage. As such, the integration would enhance the ability for users to store large files of digital contents. Furthermore, Hirota discloses where encryption keys are stored. *See Hirota* at 12:51-56 ("The authentication area 332 stores an encryption key 425 which is a secret key used for decrypting the encrypted content 426 stored in the non-authentication area 331. The special area 304 stores the medium ID 341 which is necessary for accessing the authentication area 332."); 22:41-46 ("As shown in FIG. 15, the authentication circuit 216 of the player 201 has the encryption and decryption functions, and also prestores a master key 1301 which is a secret key being equal to the master key 323a held by the memory card 109, and a device ID 1302 which is an ID unique to the player 201, such as a product serial number (s/n).").

While Maeda discloses encryption keys, it is silent as to where they are stored. A POSITA would have known that encryption keys must be stored somewhere. As such, a POSITA would have looked to Hirota, because it describes using a semiconductor memory card as an auxiliary storage medium for a computer and describes security features to include on the semiconductor memory card (e.g., encryption keys). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success (e.g., choosing from a finite number of identified, predictable solutions for storage of encryption keys). Furthermore,, a POSITA would have understood the modification to amount to applying a known technique (e.g., implementing an auxiliary storage) to a known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card that is used to store large files of digital contents). A

POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Meharchand discloses "a data protection controller for preventing data recorded on a data storage medium from being corrupted, modified or deleted." *Meharchand* at 1:8-10. The "data protection controller [] is interposed between a processor [] of a computing system and a data storage device (such as. . . memory stick)" (*id.* at 2:32-36) and is "used to create and maintain a protected data space and a virtual data space on the data storage device" (*id.* at 2:36-38). After the protected data space and the virtual data spaces are created, "the controller conceals the virtual data space from the processor" (*id.* at 2:39-40) and "presents the data storage device to the processor as having a capacity equal to that of the protected data space only" (*id.* at 2:40-42). Therefore, the "virtual data [can] be reviewed and modified" (*id.* at 2:57-58) such that any "undesired changes to the protected data by unauthorized users and malicious software such as viruses" (*id.* at 2:64-65) are eliminated.

A POSITA would have known that SD cards are susceptible to potentially malicious software. As such, a POSITA would have considered the features of Meharchand, such as the data protection controller, to enhance the ability for users to protect data storage from potentially malicious software. A POSITA would have considered the combination to amount to using known work in one field of endeavor (SD cards) for use in another device in the same field of endeavor (Maeda's SD card as virtualized by the teachings of Hamann) due to design incentives (protecting from potentially malicious applications). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Cupcake captures a series of updates that address changes based on "Android 1.5, also known as Cupcake." Cupcake at 10. Specifically, Cupcake discloses "create[ing] an Android Virtual Device (AVD)" (*id.* at 22) such as a "virtual Secure Digital (SD) Card" (*id.* at 24). Similarly, Android Application discloses "concepts and code you need to start building smartphone applications with the Android programming environment." *Android Application* at Preface. Android Application discloses "create[ing] a virtual SD card" such that a user can "debug[] on an emulator." *Id.* at 76. Because Android SDK describes creating a virtual SD card, a POSITA generating a virtual SD card would use have understood the descriptions in Android SDK to amount to applying an express teaching, suggestion, or motivation in the prior art for their combination. A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Similar to SD Product Manual and SD Spec-2/3, SanDisk SD Cards describe the standards for SanDisk SD memory cards. SanDisk SD cards are a flash-based memory card specifically designed to meet the security, capacity, performance and environmental requirements inherent in next generation mobile phones and consumer electronic devices. *See SD Product Manual* at 1-1. SanDisk SD cards are also compatible with other devices, and as such, comply with the file system and security specifications promulgated by the SD Association, and listed in SD Spec-2/3. *See id.* at 1-4, 3-22, 3-23, 4-37, 4-39.

A POSITA would have understood that significant work and research went into the development of SanDisk SD Cards which would take into account important considerations to ensure SanDisk SD Cards comply with SD Association standards. As such, a POSITA would have been motivated to use the SanDisk SD Card in the Hamann-Maeda combination, which discloses

an SD card. A POSITA would have understood the combination or modification to amount to the simple substitution of one known element (e.g., Maeda's SD Card) for another (e.g., SanDisk SD Card) to obtain predictable results (e.g., structure and functionality of an SD Card that complies with SD Association standards). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(c) CPXM in view of Maeda and/or Hamann and/or SD Product Manual and/or Lu and/or SD Card Spec. (Parts 2/3) and/or Dash and/or Tsypliaev and/or Hirota and/or Meharchand and/or Android SDK and/or SanDisk SD Cards

CPXM defines a robust and renewable method for protecting content stored on a number of physical media types. *See CPXM* at 1. The guide includes information relating to SD card specifications and common elements of the SD card. *See id.* A POSITA looking to generate a virtual SD card and also include encryption, specifically, storing encryption keys, would have been motivated to look to CPXM. Specifically, CPXM discloses content encryption. *See CPXM* at 1 ("The Content Protection for eXtended Media Specification (CPXM) defines a robust and renewable method for protecting content stored on a number of physical media types. . . The SD Memory Card Book specifies additional details for using CPXM technology to protect content stored on the SD Memory Card, and on other implementations of protected storage with an interface and security system equivalent to that of the SD Memory Card."). Because CPXM describes protecting content stored on physical media, and is a guide for SD card protection, a POSITA generating a virtual SD card would use the descriptions in CPXM to ensure the virtual SD card includes the security features of a real SD card.

Hamann discloses "a virtual smart card (VSC) [that] is a software implemented version of a real smart card providing the equivalent functionality of a real smart card." *Hamann* at Abstract.

Specifically, Hamann discloses that the "VSC is created and used by a VSC control program which handles the creation, the security and the read/write process of the VSC" such that the "VSC has a logical file structure comprising a public area, a private area, a secure key area, a password area, and a unique identifier area." *Id.* Hamann further discloses that "data objects placed into the private area are encrypted." *Id.*

Maeda discloses "forming a data storage format in a semiconductor memory card that enables a nonvolatile memory [to have] a longer lifespan." *Maeda*, at 2:57-60. Specifically, Maeda discloses a method to align cluster boundaries and erasable block boundaries of the user area and the volume management information such that "only one erasable block needs to be erased when a cluster is rewritten or overwritten, and the number of times that erasable blocks have to be erased can be reduced." *Id*. at 3:46-48. Maeda accomplishes this by "calculate[ing] a size of volume management information based on a number of clusters in the memory area that are to be managed" (*id*. at 3:24-26) and reserving clusters for "recording volume management information" (*id.* at 3:40-41) so "the volume management information can be aligned with an erasable block boundary" (*id*. at 3:44-45). *See also* Figs. 12, 16, 17.

A POSITA would have been motivated to modify CPXM with the above combination of Maeda and Hamann. SD cards and smart cards have similar data formats (e.g., protected area, user area) and encryption. *See Hamann* at [0016] ("VSC having a logical file structure comprising a public area, a private area, a secure key area, password area, and an unique identifier area."); *see also Maeda* at 6:66-7:2 (describing that a semiconductor memory card ("SD card") that includes a "partition control area, the system area, and the user area."). Hamann teaches virtualization of a smart card, which includes "any programmed data carrier." *Hamann* at [0002] ("'smart cards' (the term 'smart card' used in the present invention also covers any programmed data carrier used in

any portable device, like mobile phone, digital personal assistant etc., to securely hold subscriber specific information)). A POSITA would have understood that a smart card, as defined in Hamann, would include an SD Card or the semiconductor memory card described by Maeda. *See Maeda* at 2:61-65 ("The type of Semiconductor memory card known as secure digital (SD) memory card has made great strides toward resolving the aforementioned problems of reduction in processing time and nonvolatile memory longevity. . . .").

Similarly, Hamann teaches that smart cards are a new type of transaction card that is able to "greatly increase. . . data storage capacity." *Hamann* at [0002]. Therefore, a POSITA aiming to "greatly increase. . . data storage capacity" of an SD card would implement Hamann to virtualize Maeda's SD card to create a virtual SD card with increased storage capacity. A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Furthermore, Hamann teaches that virtualizing memory cards allows such memory cards to be backed up. *See* Hamann at [0002]. Virtualizing SD Cards like those described in Maeda would provide benefits to users, as Hamann suggests. For example, Maeda teaches that users may store content such as music and images on the memory card disclosed therein. *See Maeda*, 25:64-26:3. The ability to backup such content (whether DRM protected content or a user's own images) would be beneficial to users, as it would prevent loss of their content in the event of an SD Card failure. And while Hamann described making backups of access cards, a POSITA having Hamann's teachings would have understood the benefits provided by backing up content like that described in Meada.

Moreover, while Hamann teaches virtualization of a smart card, it also describes that virtualization could be performed for "any programmed data carrier." Hamann at [0002] ("'smart

cards' (the term 'smart card' used in the present invention also covers any programmed data carrier used in any portable device, like mobile phone, digital personal assistant etc., to securely hold subscriber specific information)). Thus, the semiconductor memory card described by Maeda would have been included in the definition of "smart card" as defined by Hamann. *See* Maeda at 2:61-65 ("The type of Semiconductor memory card known as secure digital (SD) memory card has made great strides toward resolving the aforementioned problems of reduction in processing time and nonvolatile memory longevity. . . .").

Additionally, Maeda describes that an SD card's "nonvolatile memory is formed from a memory component that includes a floating gate buried in an insulating layer." *Maeda* at 2:35-37. As such, when a user modifies data stored in particular clusters, the "memory component can only be erased a few tens of thousands of times" such that the "lifespan of the nonvolatile memory [is] significantly reduced." *Id.* at 2:37-41. A POSITA would have understood that Maeda's SD card has a limited number of read/writes that may be performed when a user modifies data. Therefore, a POSITA would be motivated to virtualize Maeda's SD card by the teachings of Hamann to increase the lifespan of the SD card.

A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., virtualizing a smart card) to improve similar devices or methods (e.g., another memory device, such as an SD card) in the same way (e.g., to provide a virtual SD card). As another example, a POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., modifying a physical SD card) according to known methods (i.e., according to known methods for virtualizing a memory device) to yield predictable results (e.g., resulting in a virtual copy of a physical memory device). A POSITA would have considered

the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

The SD Product Manual describes product specifications for different SanDisk SD cards. The manual discloses that the SanDisk Secure Digital (SD) Card is a flash-based memory card specifically designed to meet the security, capacity, performance and environmental requirements inherent in next generation mobile phones and consumer electronic devices. *See SD Product Manual* at 1-1. The SanDisk SD Card includes a copyright protection mechanism that complies with the security of the SDMI standard, and is faster and capable of higher memory capacity. *Id*.

A POSITA would have been motivated to modify the above combination of CPXM-Maeda-Hamann with SD Product Manual because SD Product Manual describes the relationship between the total size of an SD card and the protected area and user area, such that the user may format the virtual SD card accordingly. Specifically, a POSITA would have used the product descriptions in SD Product Manual to calculate a more accurate β value (the β value in Maeda being the percentage of the SD card that is protected area). For example, Maeda describes that the protected area is a percentage (e.g., 10%) of the total size of the storage area. *See Maeda* at 15:12-21 ("if the total size of the volume area is 'volume size', the user data area is an area 'volume size×(1−β)' extending from the start of the volume area, and an area 'volume size×β' following the user data area is allocated to the protected area. Here, β is a value for which the minimum setting is 0.01. To take one example, if the volume size is 64 MB and β is 0.01, the protected area is set at 640 KB. The format of the user data area and the protected area is realized when the file system operation unit 9 executes the initialization procedure shown in FIG. 9.").

A POSITA, however, would have understood that the size of the protected area would need to change based on the size of the total area of the SD card, and that the ideal ratio may not

necessarily be an exact 0.01 (or 1%). As such, a POSITA would look to obtain a more accurate ratio of user data area to protected area, which it would find by using SD Product Manual. *SD Product Manual* at Table 1-1. Of note, taking the numbers of Table 1-1 of the SD Product Manual reveals that the ratio to sizes varies between 1.01% and 1.21% as the user area size decreases. A POSITA would have understood the modification to amount to applying a known technique (e.g., implementing the table of sizes to the user area and protected area of the virtual SD card) to a known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card with increased protected area when user area decreased). As another example, a POSITA would have understood the combination or modification to amount to the simple substitution of one known element (e.g., a lookup table from the SD Product Manual for determining protected area) for another (e.g., Maeda's equation for determining protected area) to obtain predictable results (e.g., a protected area that slightly increases when user area decreases). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Lu discloses an "encryption and decryption methods for implementing hardware and software binding." *Lu* at 1. Lu discloses that the encryption method includes "HASH transformation to obtain a software serial number; using a symmetric encryption algorithm to encrypt a software plain text; using a public key to encrypt a symmetric key through an asymmetric encryption algorithm; and finally, putting the encrypted software plain text and symmetric key together and downloading them into a memory." *Id.* at Abstract. Specifically, Lu discloses methods for "binding of a software product and a hardware product, thereby improving the security of the software product and the hardware product." *Id.*

A POSITA would be motivated to combine Lu with the CPXM-Hamann-Maeda combination because Lu would add additional security features to the system and allow tying the security to the hardware platform. *Id.* at 1. Further, a POSITA would understand that there are many ways to hack encryption, and copying memory to another device allows for would-be hackers time to decrypt the information. As such a POSITA would look to Lu, because tying the encryption would prevent hacking by one that tries to copy the virtual SD card to another device. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., tying encryption keys in Lu to a host hardware device) to improve similar devices (e.g., to improve security of the virtual SD card) in the same way (e.g., tying the encryption keys of the virtual SD card to the host device). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Similar to SD Product Manual, the SD Card Spec. (Parts 2/3) describe the standard specifications for SD memory cards. Part 2 specifies the volume structure and file structure of the SD Memory Card (Secure Digital Memory Card) and the file system that defines the logical structure uses FAT file system based on ISO/IEC 9293 standard. *SD Spec-2* at FS-1. Part 3 describes the SD Memory Card specific 'data element.' *SD Spec-3* at SS-2. Part 2 and Part 3 have tables containing information about the sizes of SD cards, including total size, user size and protected areas. *See SD Spec-2* at Table C-2 and *SD Spec-3* at Table B-2. While Maeda discloses a formula for determining these relative sizes and while that formula is a close approximation of the SD Memory Card Specification tables, it varies.

A POSITA would have understood that a lot of work and research went into the development of those tables and that it would take into account important considerations to ensure

sufficient memory for encryption keys and the protected area, in general. As such, a POSITA would have been motivated to use the SD specifications for Maeda, which discloses an SD card. A POSITA would have understood the combination or modification to amount to the simple substitution of one known element (e.g., equation from Maeda) for another (e.g., the lookup tables from the SD Spec-2/3) to obtain predictable results (e.g., a protected area size meeting SD card specifications). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Dash discloses a method for accommodating expandable storage devices in a storage virtualization environment (*see Dash* at 1:8-11) such that "the expandable storage devices [can] remain in operation and online while any storage virtualization software related configuration changes are performed" (*id.* at 3:6-8). The method receives "information describing storage expansion in an expandable storage device" (*id.* at 3:28-29) and determines "changes to be made to information for converting input/output (I/O) operations directed at a virtual storage device to I/O operations directed at the expandable storage device" (*id.* at 3:29-32). Additionally, Dash describes "a virtual storage device manager, and an online storage device resize module." *Id.* at 3:38-40. The "virtual storage device manager is configured to map input/output (I/O) operations targeting a virtual storage device to I/O operations targeting an expandable storage device." *Id.* at 3:40-43. The online storage device resize module which is in communication with the virtual storage device manager is configured to "receive information describing storage expansion in the expandable storage device," "determine changes to be made to the storage device mapping information using the information describing storage expansion in the expandable storage device," and "update the storage device mapping information while the expandable storage device is

online." *Id.* at 3:46-53; *see also* Figs. 2 and 3. While Maeda discloses partitioning of secure and user areas, it does not disclose physical and logical partitioning as a virtual SD Card. Dash, however, does describe the mapping of information to describe storage.

Since Maeda is silent on how it would partition areas in a virtual system, a POSITA would have looked to Dash that discloses changes to the size of storage (e.g., due to expandable storage) in a virtual environment that includes mapping information. As such, a POSITA would be motivated to use Dash's virtual device manager to map the logical and physical addresses of Maeda's SD card as virtualized by Hamann. Therefore, a POSITA would have understood the modification to amount to applying a known technique (e.g., implementing mapping between physical and logical addresses) to a known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card that contains file systems corresponding to a physical SD card). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tsypliaev discloses a method for protecting a disk drive or other data storage. *Tsypliaev* at Abstract. Specifically, Tsypliaev describes mounting a virtual storage that "combines a full access temporary storage and a READ-only portion of a main storage" (*id.*) such that only the virtual storage is modified. Specifically, Tsypliaev describes that the "virtual storage is mounted (i.e. made available to the OS)" and includes "a combination of two storages: the protected area of the main drive and the temporary data storage." *Id.* at 6:10-18. The protected area of the virtual storage includes the "contents of a hard disk drive (HDD)" while the temporary storage reflects "changes or edits to the files or other data structures in the main drive being affected by a user applications or system utilities" such that these modifications "can be registered and handled in the virtual

storage as if it were real storage." *Id.* at 6:21-29. As such, the data of a hard drive is protected by "activating a special redirection driver for read and write requests (or any other disk access requests that alter the contents of the data), so that write requests are redirected to the temporary storage." *Id.* at 4:15-19.

A POSITA would have considered the combination of Tsypliaev's external storage to amount to using known work in one field of endeavor (SD cards) for use in another device in the same field of endeavor (Maeda's SD card as virtualized by the teachings of Hamann) due to design incentives (changing physical storages to virtual storages such that data may be further protected from potentially malicious applications). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hirota discloses "a semiconductor memory card that can be used as a storage medium for storing digital contents and as a storage medium for storing general-purpose computer data (not an object of copyright protection)." *Hirota* at 2:3-7. Specifically, Hirota discloses that the semiconductor memory card includes "an authentication area and a non-authentication area" (*id.* at 2:12-23) such that "copyright protection can be stored in the authentication area and other data can be stored in the non-authentication area" (*id.* at 2:26-27). Hirota's semiconductor memory card also includes "an area resizing circuit which resizes the authentication area and the non-authentication area" (*id.* at 3:24-35) such that "the semiconductor memory card can be used mainly as a recording medium for digital contents and can be used as an auxiliary storage apparatus in a computer system" (*id.* at 3:27-30).

A POSITA would have recognized that the features described in Hirota, such as using a semiconductor memory card as an auxiliary storage medium for a computer, could be implemented

into the combination to increase the size of secure storage. As such, the integration would enhance the ability for users to store large files of digital contents. Furthermore, Hirota discloses where encryption keys are stored. *See Hirota* at 12:51-56 ("The authentication area 332 stores an encryption key 425 which is a secret key used for decrypting the encrypted content 426 stored in the non-authentication area 331. The special area 304 stores the medium ID 341 which is necessary for accessing the authentication area 332."); 22:41-46 ("As shown in FIG. 15, the authentication circuit 216 of the player 201 has the encryption and decryption functions, and also prestores a master key 1301 which is a secret key being equal to the master key 323a held by the memory card 109, and a device ID 1302 which is an ID unique to the player 201, such as a product serial number (s/n).").

While Maeda discloses encryption keys, it is silent as to where they are stored. A POSITA would have known that encryption keys must be stored somewhere. As such, a POSITA would have looked to Hirota, because it describes using a semiconductor memory card as an auxiliary storage medium for a computer and describes security features to include on the semiconductor memory card (e.g., encryption keys). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success (e.g., choosing from a finite number of identified, predictable solutions for storage of encryption keys). Furthermore,, a POSITA would have understood the modification to amount to applying a known technique (e.g., implementing an auxiliary storage) to a known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card that is used to store large files of digital contents).

Meharchand discloses "a data protection controller for preventing data recorded on a data storage medium from being corrupted, modified or deleted." *Meharchand* at 1:8-10. The "data

protection controller [] is interposed between a processor [] of a computing system and a data storage device (such as. . . memory stick)" (*id.* at 2:32-36) and is "used to create and maintain a protected data space and a virtual data space on the data storage device" (*id.* at 2:36-38). After the protected data space and the virtual data spaces are created, "the controller conceals the virtual data space from the processor" (*id.* at 2:39-40) and "presents the data storage device to the processor as having a capacity equal to that of the protected data space only" (*id.* at 2:40-42). Therefore, the "virtual data [can] be reviewed and modified" (*id.* at 2:57-58) such that any "undesired changes to the protected data by unauthorized users and malicious software such as viruses" (*id.* at 2:64-65) are eliminated.

A POSITA would have known that SD cards are susceptible to potentially malicious software. As such, a POSITA would have considered the features of Meharchand, such as the data protection controller, to enhance the ability for users to protect data storage from potentially malicious software. A POSITA would have considered the combination to amount to using known work in one field of endeavor (SD cards) for use in another device in the same field of endeavor (Maeda's SD card as virtualized by the teachings of Hamann) due to design incentives (protecting from potentially malicious applications). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Cupcake captures a series of updates that address changes based on "Android 1.5, also known as Cupcake." Cupcake at 10. Specifically, Cupcake discloses "create[ing] an Android Virtual Device (AVD)" (*id.* at 22) such as a "virtual Secure Digital (SD) Card" (*id.* at 24). Similarly, Android Application discloses "concepts and code you need to start building smartphone applications with the Android programming environment." *Android Application* at

Preface. Android Application discloses "create[ing] a virtual SD card" such that a user can "debug[] on an emulator." *Id.* at 76. Because Android SDK describes creating a virtual SD card, a POSITA generating a virtual SD card would use have understood the descriptions in Android SDK to amount to applying an express teaching, suggestion, or motivation in the prior art for their combination. A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Similar to SD Product Manual and SD Spec-2/3, SanDisk SD Cards describe the standards for SanDisk SD memory cards. SanDisk SD cards are a flash-based memory card specifically designed to meet the security, capacity, performance and environmental requirements inherent in next generation mobile phones and consumer electronic devices. *See SD Product Manual* at 1-1. SanDisk SD cards are also compatible with other devices, and as such, comply with the file system and security specifications promulgated by the SD Association, and listed in SD Spec-2/3. *See id.* at 1-4, 3-22, 3-23, 4-37, 4-39.

A POSITA would have understood that significant work and research went into the development of SanDisk SD Cards which would take into account important considerations to ensure SanDisk SD Cards comply with SD Association standards. As such, a POSITA would have been motivated to use the SanDisk SD Card in the CPXM-Maeda-Hamann combination, which discloses an SD card. A POSITA would have understood the combination or modification to amount to the simple substitution of one known element (e.g., Maeda's SD Card) for another (e.g., SanDisk SD Card) to obtain predictable results (e.g., structure and functionality of an SD Card that complies with SD Association standards). A POSITA would have considered the combination or

modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(d) Hirota in view of Maeda and/or Hamann and/or SD Product Manual and/or CPXM and/or Lu and/or SD Card Spec. (Parts 2/3) and/or Dash and/or Tsypliaev and/or Meharchand and/or Android SDK and/or SanDisk SD Cards

Hirota discloses "a semiconductor memory card that can be used as a storage medium for storing digital contents and as a storage medium for storing general-purpose computer data (not an object of copyright protection)." *Hirota* at 2:3-7. Specifically, Hirota discloses that the semiconductor memory card includes "an authentication area and a non-authentication area" (*id.* at 2:12-23) such that "copyright protection can be stored in the authentication area and other data can be stored in the non-authentication area" (*id.* at 2:26-27). Hirota's semiconductor memory card also includes "an area resizing circuit which resizes the authentication area and the non-authentication area" (*id.* at 3:24-35) such that "the semiconductor memory card can be used mainly as a recording medium for digital contents and can be used as an auxiliary storage apparatus in a computer system" (*id.* at 3:27-30). A POSITA would have recognized that the features described in Hirota, such as using a semiconductor memory card as an auxiliary storage medium for a computer, could be virtualized to increase the size of secure storage. As such, the integration would enhance the ability for users to store large files of digital contents.

Hamann discloses "a virtual smart card (VSC) [that] is a software implemented version of a real smart card providing the equivalent functionality of a real smart card." *Hamann* at Abstract. Specifically, Hamann discloses that the "VSC is created and used by a VSC control program which handles the creation, the security and the read/write process of the VSC" such that the "VSC has a logical file structure comprising a public area, a private area, a secure key area, a password area,

and a unique identifier area." *Id.* Hamann further discloses that "data objects placed into the private area are encrypted." *Id.*

Maeda discloses "forming a data storage format in a semiconductor memory card that enables a nonvolatile memory [to have] a longer lifespan." *Maeda*, at 2:57-60. Specifically, Maeda discloses a method to align cluster boundaries and erasable block boundaries of the user area and the volume management information such that "only one erasable block needs to be erased when a cluster is rewritten or overwritten, and the number of times that erasable blocks have to be erased can be reduced." *Id*. at 3:46-48. Maeda accomplishes this by "calculate[ing] a size of volume management information based on a number of clusters in the memory area that are to be managed" (*id*. at 3:24-26) and reserving clusters for "recording volume management information" (*id.* at 3:40-41) so "the volume management information can be aligned with an erasable block boundary" (*id*. at 3:44-45). *See also* Figs. 12, 16, 17.

A POSITA would have been motivated to modify Hirota with the above combination of Maeda and Hamann. SD cards and smart cards have similar data formats (e.g., protected area, user area) and encryption. *See Hamann* at [0016] ("VSC having a logical file structure comprising a public area, a private area, a secure key area, password area, and an unique identifier area."); *see also Maeda* at 6:66-7:2 (describing that a semiconductor memory card ("SD card") that includes a "partition control area, the system area, and the user area."). Hamann teaches virtualization of a smart card, which includes "any programmed data carrier." *Hamann* at [0002] ("'smart cards' (the term 'smart card' used in the present invention also covers any programmed data carrier used in any portable device, like mobile phone, digital personal assistant etc., to securely hold subscriber specific information)). A POSITA would have understood that a smart card, as defined in Hamann, would include an SD Card or the semiconductor memory card described by Maeda. *See Maeda* at

2:61-65 ("The type of Semiconductor memory card known as secure digital (SD) memory card has made great strides toward resolving the aforementioned problems of reduction in processing time and nonvolatile memory longevity. . . .").

Similarly, Hamann teaches the concept of "greatly increase[ing]. . . data storage capacity." *Hamann* at [0002]. Therefore, a POSITA aiming to "greatly increase. . . data storage capacity" of an SD card would have looked to virtualize Maeda's SD card by the teachings of Hamann to create a virtual SD card with increased storage capacity. A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Furthermore, Hamann teaches that virtualizing memory cards allows such memory cards to be backed up. *See* Hamann at [0002]. Virtualizing SD Cards like those described in Maeda would provide benefits to users, as Hamann suggests. For example, Maeda teaches that users may store content such as music and images on the memory card disclosed therein. *See Maeda*, 25:64-26:3. The ability to backup such content (whether DRM protected content or a user's own images) would be beneficial to users, as it would prevent loss of their content in the event of an SD Card failure. And while Hamann described making backups of access cards, a POSITA having Hamann's teachings would have understood the benefits provided by backing up content like that described in Meada.

Moreover, while Hamann teaches virtualization of a smart card, it also describes that virtualization could be performed for "any programmed data carrier." Hamann at [0002] ("'smart cards' (the term 'smart card' used in the present invention also covers any programmed data carrier used in any portable device, like mobile phone, digital personal assistant etc., to securely hold subscriber specific information)). Thus, the semiconductor memory card described by Maeda

would have been included in the definition of "smart card" as defined by Hamann. *See* Maeda at 2:61-65 ("The type of Semiconductor memory card known as secure digital (SD) memory card has made great strides toward resolving the aforementioned problems of reduction in processing time and nonvolatile memory longevity. . . .").

Additionally, Maeda describes that an SD card's "nonvolatile memory is formed from a memory component that includes a floating gate buried in an insulating layer." *Maeda* at 2:35-37. As such, when a user modifies data stored in particular clusters, the "memory component can only be erased a few tens of thousands of times" such that the "lifespan of the nonvolatile memory [is] significantly reduced." *Id.* at 2:37-41. A POSITA would have understood that Maeda's SD card has a limited number of read/writes that may be performed when a user modifies data. Therefore, a POSITA would be motivated to virtualize Maeda's SD card by the teachings of Hamann to increase the lifespan of the SD card.

A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., virtualizing a smart card) to improve similar devices or methods (e.g., another memory device, such as an SD card) in the same way (e.g., to provide a virtual SD card). As another example, a POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., modifying a physical SD card) according to known methods (i.e., according to known methods for virtualizing a memory device) to yield predictable results (e.g., resulting in a virtual copy of a physical memory device). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

The SD Product Manual describes product specifications for different SanDisk SD cards. The manual discloses that the SanDisk Secure Digital (SD) Card is a flash-based memory card

specifically designed to meet the security, capacity, performance and environmental requirements inherent in next generation mobile phones and consumer electronic devices. *See SD Product Manual* at 1-1. The SanDisk SD Card includes a copyright protection mechanism that complies with the security of the SDMI standard, and is faster and capable of higher memory capacity. *Id*.

A POSITA would have been motivated to modify the above combination of Hirota-Maeda-Hamann with SD Product Manual because SD Product Manual describes the relationship between the total size of an SD card and the protected area and user area, such that the user may format the virtual SD card accordingly. Specifically, a POSITA would have used the product descriptions in SD Product Manual to calculate a more accurate β value (the β value in Maeda being the percentage of the SD card that is protected area). For example, Maeda describes that the protected area is a percentage (e.g., 10%) of the total size of the storage area. *See Maeda* at 15:12-21 ("if the total size of the volume area is 'volume size', the user data area is an area 'volume size×(1−β)' extending from the start of the volume area, and an area 'volume size×β' following the user data area is allocated to the protected area. Here, β is a value for which the minimum setting is 0.01. To take one example, if the volume size is 64 MB and β is 0.01, the protected area is set at 640 KB. The format of the user data area and the protected area is realized when the file system operation unit 9 executes the initialization procedure shown in FIG. 9.").

A POSITA, however, would have understood that the size of the protected area would need to change based on the size of the total area of the SD card, and that the ideal ratio may not necessarily be an exact 0.01 (or 1%). As such, a POSITA would look to obtain a more accurate ratio of user data area to protected area, which it would find by using SD Product Manual. *SD Product Manual* at Table 1-1. Of note, taking the numbers of Table 1-1 of the SD Product Manual reveals that the ratio to sizes varies between 1.01% and 1.21% as the user area size decreases. A

POSITA would have understood the modification to amount to applying a known technique (e.g., implementing the table of sizes to the user area and protected area of the virtual SD card) to a known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card with increased protected area when user area decreased). As another example, a POSITA would have understood the combination or modification to amount to the simple substitution of one known element (e.g., a lookup table from the SD Product Manual for determining protected area) for another (e.g., Maeda's equation for determining protected area) to obtain predictable results (e.g., a protected area that slightly increases when user area decreases). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

CPXM defines a robust and renewable method for protecting content stored on a number of physical media types. *See CPXM* at 1. The guide includes information relating to SD card specifications and common elements of the SD card. *See id.* CPXM discloses content encryption. *See CPXM* at 1 ("The Content Protection for eXtended Media Specification (CPXM) defines a robust and renewable method for protecting content stored on a number of physical media types. . . . The SD Memory Card Book specifies additional details for using CPXM technology to protect content stored on the SD Memory Card, and on other implementations of protected storage with an interface and security system equivalent to that of the SD Memory Card."). In particular, CPXM discloses where encryption keys are stored. While Maeda discloses encryption keys, it is silent as to where they are stored.

A POSITA would have known that encryption keys must be stored somewhere. As such, a POSITA would have looked to CPXM, because it describes protecting content stored on physical media, and is a guide for SD card protection. A POSITA would have considered the combination

or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success (e.g., choosing from a finite number of identified, predictable solutions for storage of encryption keys). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Lu discloses an "encryption and decryption methods for implementing hardware and software binding." *Lu* at 1. Lu discloses that the encryption method includes "HASH transformation to obtain a software serial number; using a symmetric encryption algorithm to encrypt a software plain text; using a public key to encrypt a symmetric key through an asymmetric encryption algorithm; and finally, putting the encrypted software plain text and symmetric key together and downloading them into a memory." *Id.* at Abstract. Specifically, Lu discloses methods for "binding of a software product and a hardware product, thereby improving the security of the software product and the hardware product." *Id.*

A POSITA would be motivated to combine Lu with the Hirota-Hamann-Maeda-SD Product Manual combination because Lu would add additional security features to the system and allow tying the security to the hardware platform. *Id.* at 1. Further, a POSITA would understand that there are many ways to hack encryption, and copying memory to another device allows for would-be hackers time to decrypt the information. As such a POSITA would look to Lu, because tying the encryption would prevent hacking by one that tries to copy the virtual SD card to another device. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., tying encryption keys in Lu to a host hardware device) to improve similar devices (e.g., to improve security of the virtual SD card) in the same way (e.g., tying the encryption keys of the virtual SD card to the host device). A POSITA would have considered the

combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Similar to SD Product Manual, the SD Card Spec. (Parts 2/3) describe the standard specifications for SD memory cards. Part 2 specifies the volume structure and file structure of the SD Memory Card (Secure Digital Memory Card) and the file system that defines the logical structure uses FAT file system based on ISO/IEC 9293 standard. *SD Spec-2* at FS-1. Part 3 describes the SD Memory Card specific 'data element.' *SD Spec-3* at SS-2. Part 2 and Part 3 have tables containing information about the sizes of SD cards, including total size, user size and protected areas. *See SD Spec-2* at Table C-2 and *SD Spec-3* at Table B-2. While Maeda discloses a formula for determining these relative sizes and while that formula is a close approximation of the SD Memory Card Specification tables, it varies.

A POSITA would have understood that a lot of work and research went into the development of those tables and that it would take into account important considerations to ensure sufficient memory for encryption keys and the protected area, in general. As such, a POSITA would have been motivated to use the SD specifications for Maeda, which discloses an SD card. A POSITA would have understood the combination or modification to amount to the simple substitution of one known element (e.g., equation from Maeda) for another (e.g., the lookup tables from the SD Spec-2/3) to obtain predictable results (e.g., a protected area size meeting SD card specifications). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

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remain in operation and online while any storage virtualization software related configuration changes are performed" (*id.* at 3:6-8). The method receives "information describing storage expansion in an expandable storage device" (*id.* at 3:28-29) and determines "changes to be made to information for converting input/output (I/O) operations directed at a virtual storage device to I/O operations directed at the expandable storage device" (*id.* at 3:29-32). Additionally, Dash describes "a virtual storage device manager, and an online storage device resize module." *Id.* at 3:38-40. The "virtual storage device manager is configured to map input/output (I/O) operations targeting a virtual storage device to I/O operations targeting an expandable storage device." *Id.* at 3:40-43. The online storage device resize module which is in communication with the virtual storage device manager is configured to "receive information describing storage expansion in the expandable storage device," "determine changes to be made to the storage device mapping information using the information describing storage expansion in the expandable storage device," and "update the storage device mapping information while the expandable storage device is online." *Id.* at 3:46-53; *see also* Figs. 2 and 3. While Maeda discloses partitioning of secure and user areas, it does not disclose physical and logical partitioning as a virtual SD Card. Dash, however, does describe the mapping of information to describe storage.

Since Maeda is silent on how it would partition areas in a virtual system, a POSITA would have looked to Dash that discloses changes to the size of storage (e.g., due to expandable storage) in a virtual environment that includes mapping information. As such, a POSITA would be motivated to use Dash's virtual device manager to map the logical and physical addresses of Maeda's SD card as virtualized by Hamann. Therefore, a POSITA would have understood the modification to amount to applying a known technique (e.g., implementing mapping between physical and logical addresses) to a known device or method (e.g., virtual SD card) that is ready

for improvement to yield predictable results (e.g., a virtual SD card that contains file systems corresponding to a physical SD card). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tsypliaev discloses a method for protecting a disk drive or other data storage. *Tsypliaev* at Abstract. Specifically, Tsypliaev describes mounting a virtual storage that "combines a full access temporary storage and a READ-only portion of a main storage" (*id.*) such that only the virtual storage is modified. Specifically, Tsypliaev describes that the "virtual storage is mounted (i.e. made available to the OS)" and includes "a combination of two storages: the protected area of the main drive and the temporary data storage." *Id.* at 6:10-18. The protected area of the virtual storage includes the "contents of a hard disk drive (HDD)" while the temporary storage reflects "changes or edits to the files or other data structures in the main drive being affected by a user applications or system utilities" such that these modifications "can be registered and handled in the virtual storage as if it were real storage." *Id.* at 6:21-29. As such, the data of a hard drive is protected by "activating a special redirection driver for read and write requests (or any other disk access requests that alter the contents of the data), so that write requests are redirected to the temporary storage." *Id.* at 4:15-19.

A POSITA would have considered the combination of Tsypliaev's external storage to amount to using known work in one field of endeavor (SD cards) for use in another device in the same field of endeavor (Maeda's SD card as virtualized by the teachings of Hamann) due to design incentives (changing physical storages to virtual storages such that data may be further protected from potentially malicious applications). A POSITA would have considered the combination or

modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Meharchand discloses "a data protection controller for preventing data recorded on a data storage medium from being corrupted, modified or deleted." *Meharchand* at 1:8-10. The "data protection controller [] is interposed between a processor [] of a computing system and a data storage device (such as. . . memory stick)" (*id.* at 2:32-36) and is "used to create and maintain a protected data space and a virtual data space on the data storage device" (*id.* at 2:36-38). After the protected data space and the virtual data spaces are created, "the controller conceals the virtual data space from the processor" (*id.* at 2:39-40) and "presents the data storage device to the processor as having a capacity equal to that of the protected data space only" (*id.* at 2:40-42). Therefore, the "virtual data [can] be reviewed and modified" (*id.* at 2:57-58) such that any "undesired changes to the protected data by unauthorized users and malicious software such as viruses" (*id.* at 2:64-65) are eliminated.

A POSITA would have known that SD cards are susceptible to potentially malicious software. As such, a POSITA would have considered the features of Meharchand, such as the data protection controller, to enhance the ability for users to protect data storage from potentially malicious software. A POSITA would have considered the combination to amount to using known work in one field of endeavor (SD cards) for use in another device in the same field of endeavor (Maeda's SD card as virtualized by the teachings of Hamann) due to design incentives (protecting from potentially malicious applications). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Cupcake captures a series of updates that address changes based on "Android 1.5, also known as Cupcake." Cupcake at 10. Specifically, Cupcake discloses "create[ing] an Android Virtual Device (AVD)" (*id.* at 22) such as a "virtual Secure Digital (SD) Card" (*id.* at 24). Similarly, Android Application discloses "concepts and code you need to start building smartphone applications with the Android programming environment." *Android Application* at Preface. Android Application discloses "create[ing] a virtual SD card" such that a user can "debug[] on an emulator." *Id.* at 76. Because Android SDK describes creating a virtual SD card, a POSITA generating a virtual SD card would use have understood the descriptions in Android SDK to amount to applying an express teaching, suggestion, or motivation in the prior art for their combination. A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Similar to SD Product Manual and SD Spec-2/3, SanDisk SD Cards describe the standards for SanDisk SD memory cards. SanDisk SD cards are a flash-based memory card specifically designed to meet the security, capacity, performance and environmental requirements inherent in next generation mobile phones and consumer electronic devices. *See SD Product Manual* at 1-1. SanDisk SD cards are also compatible with other devices, and as such, comply with the file system and security specifications promulgated by the SD Association, and listed in SD Spec-2/3. *See id.* at 1-4, 3-22, 3-23, 4-37, 4-39.

A POSITA would have understood that significant work and research went into the development of SanDisk SD Cards which would take into account important considerations to ensure SanDisk SD Cards comply with SD Association standards. As such, a POSITA would have been motivated to use the SanDisk SD Card in the Hirota-Maeda-Hamann combination, which

discloses an SD card. A POSITA would have understood the combination or modification to amount to the simple substitution of one known element (e.g., Maeda's SD Card) for another (e.g., SanDisk SD Card) to obtain predictable results (e.g., structure and functionality of an SD Card that complies with SD Association standards). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(e) SD Product Manual in view of Maeda and/or Hamann and/or CPXM and/or Lu and/or SD Card Spec. (Parts 2/3) and/or Dash and/or Tsypliaev and/or Hirota and/or Meharchand and/or Android SDK

The SD Product Manual describes product specifications for different SanDisk SD cards. The manual discloses that the SanDisk Secure Digital (SD) Card is a flash-based memory card specifically designed to meet the security, capacity, performance and environmental requirements inherent in next generation mobile phones and consumer electronic devices. *See SD Product Manual* at 1-1. The SanDisk SD Card includes a copyright protection mechanism that complies with the security of the SDMI standard, and is faster and capable of higher memory capacity. *Id*.

Hamann discloses "a virtual smart card (VSC) [that] is a software implemented version of a real smart card providing the equivalent functionality of a real smart card." *Hamann* at Abstract. Specifically, Hamann discloses that the "VSC is created and used by a VSC control program which handles the creation, the security and the read/write process of the VSC" such that the "VSC has a logical file structure comprising a public area, a private area, a secure key area, a password area, and a unique identifier area." *Id.* Hamann further discloses that "data objects placed into the private area are encrypted." *Id.*

Maeda discloses "forming a data storage format in a semiconductor memory card that enables a nonvolatile memory [to have] a longer lifespan." *Maeda*, at 2:57-60. Specifically, Maeda

discloses a method to align cluster boundaries and erasable block boundaries of the user area and the volume management information such that "only one erasable block needs to be erased when a cluster is rewritten or overwritten, and the number of times that erasable blocks have to be erased can be reduced." *Id*. at 3:46-48. Maeda accomplishes this by "calculate[ing] a size of volume management information based on a number of clusters in the memory area that are to be managed" (*id*. at 3:24-26) and reserving clusters for "recording volume management information" (*id.* at 3:40-41) so "the volume management information can be aligned with an erasable block boundary" (*id*. at 3:44-45). *See also* Figs. 12, 16, 17.

A POSITA would have been motivated to modify SD Product Manual with Maeda and Hamann because SD Product Manual describes the relationship between the total size of an SD card and the protected area and user area, such that the user may format the virtual SD card accordingly. Specifically, a POSITA would have used the product descriptions in SD Product Manual to calculate a more accurate β value (the β value in Maeda being the percentage of the SD card that is protected area). For example, Maeda describes that the protected area is a percentage (e.g., 10%) of the total size of the storage area. *See Maeda* at 15:12-21 ("if the total size of the volume area is 'volume size', the user data area is an area 'volume size×(1−β)' extending from the start of the volume area, and an area 'volume size×β' following the user data area is allocated to the protected area. Here, β is a value for which the minimum setting is 0.01. To take one example, if the volume size is 64 MB and β is 0.01, the protected area is set at 640 KB. The format of the user data area and the protected area is realized when the file system operation unit 9 executes the initialization procedure shown in FIG. 9.").

A POSITA, however, would have understood that the size of the protected area would need to change based on the size of the total area of the SD card, and that the ideal ratio may not

necessarily be an exact 0.01 (or 1%). As such, a POSITA would look to obtain a more accurate ratio of user data area to protected area, which it would find by using SD Product Manual. *SD Product Manual* at Table 1-1. Of note, taking the numbers of Table 1-1 of the SD Product Manual reveals that the ratio to sizes varies between 1.01% and 1.21% as the user area size decreases. A POSITA would have understood the modification to amount to applying a known technique (e.g., implementing the table of sizes to the user area and protected area of the virtual SD card) to a known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card with increased protected area when user area decreased). As another example, a POSITA would have understood the combination or modification to amount to the simple substitution of one known element (e.g., a lookup table from the SD Product Manual for determining protected area) for another (e.g., Maeda's equation for determining protected area) to obtain predictable results (e.g., a protected area that slightly increases when user area decreases). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

A POSITA would have been motivated to modify SD Product Manual with the above combination of Maeda and Hamann. SD cards and smart cards have similar data formats (e.g., protected area, user area) and encryption. *See Hamann* at [0016] ("VSC having a logical file structure comprising a public area, a private area, a secure key area, password area, and an unique identifier area."); *see also Maeda* at 6:66-7:2 (describing that a semiconductor memory card ("SD card") that includes a "partition control area, the system area, and the user area."). Hamann teaches virtualization of a smart card, which includes "any programmed data carrier." *Hamann* at [0002] ("'smart cards' (the term 'smart card' used in the present invention also covers any programmed data carrier used in any portable device, like mobile phone, digital personal assistant etc., to

securely hold subscriber specific information)). A POSITA would have understood that a smart card, as defined in Hamann, would include an SD Card or the semiconductor memory card described by Maeda. *See Maeda* at 2:61-65 ("The type of Semiconductor memory card known as secure digital (SD) memory card has made great strides toward resolving the aforementioned problems of reduction in processing time and nonvolatile memory longevity. . . .").

Similarly, Hamann teaches the concept of "greatly increase[ing]. . . data storage capacity." *Hamann* at [0002]. Therefore, a POSITA aiming to "greatly increase. . . data storage capacity" of an SD card would have looked to virtualize Maeda's SD card by the teachings of Hamann to create a virtual SD card with increased storage capacity. A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Furthermore, Hamann teaches that virtualizing memory cards allows such memory cards to be backed up. *See* Hamann at [0002]. Virtualizing SD Cards like those described in Maeda would provide benefits to users, as Hamann suggests. For example, Maeda teaches that users may store content such as music and images on the memory card disclosed therein. *See Maeda*, 25:64-26:3. The ability to backup such content (whether DRM protected content or a user's own images) would be beneficial to users, as it would prevent loss of their content in the event of an SD Card failure. And while Hamann described making backups of access cards, a POSITA having Hamann's teachings would have understood the benefits provided by backing up content like that described in Meada.

Moreover, while Hamann teaches virtualization of a smart card, it also describes that virtualization could be performed for "any programmed data carrier." Hamann at [0002] ("'smart cards' (the term 'smart card' used in the present invention also covers any programmed data carrier

used in any portable device, like mobile phone, digital personal assistant etc., to securely hold subscriber specific information)). Thus, the semiconductor memory card described by Maeda would have been included in the definition of "smart card" as defined by Hamann. *See* Maeda at 2:61-65 ("The type of Semiconductor memory card known as secure digital (SD) memory card has made great strides toward resolving the aforementioned problems of reduction in processing time and nonvolatile memory longevity. . . .").

Additionally, Maeda describes that an SD card's "nonvolatile memory is formed from a memory component that includes a floating gate buried in an insulating layer." *Maeda* at 2:35-37. As such, when a user modifies data stored in particular clusters, the "memory component can only be erased a few tens of thousands of times" such that the "lifespan of the nonvolatile memory [is] significantly reduced." *Id.* at 2:37-41. A POSITA would have understood that Maeda's SD card has a limited number of read/writes that may be performed when a user modifies data. Therefore, a POSITA would be motivated to virtualize Maeda's SD card by the teachings of Hamann to increase the lifespan of the SD card.

A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., virtualizing a smart card) to improve similar devices or methods (e.g., another memory device, such as an SD card) in the same way (e.g., to provide a virtual SD card). As another example, a POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., modifying a physical SD card) according to known methods (i.e., according to known methods for virtualizing a memory device) to yield predictable results (e.g., resulting in a virtual copy of a physical memory device). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

CPXM defines a robust and renewable method for protecting content stored on a number of physical media types. *See CPXM* at 1. The guide includes information relating to SD card specifications and common elements of the SD card. *See id.* CPXM discloses content encryption. *See CPXM* at 1 ("The Content Protection for eXtended Media Specification (CPXM) defines a robust and renewable method for protecting content stored on a number of physical media types. . . . The SD Memory Card Book specifies additional details for using CPXM technology to protect content stored on the SD Memory Card, and on other implementations of protected storage with an interface and security system equivalent to that of the SD Memory Card."). In particular, CPXM discloses where encryption keys are stored. While Maeda discloses encryption keys, it is silent as to where they are stored.

A POSITA would have known that encryption keys must be stored somewhere. As such, a POSITA would have looked to CPXM, because it describes protecting content stored on physical media, and is a guide for SD card protection. A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success (e.g., choosing from a finite number of identified, predictable solutions for storage of encryption keys). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Lu discloses an "encryption and decryption methods for implementing hardware and software binding." *Lu* at 1. Lu discloses that the encryption method includes "HASH transformation to obtain a software serial number; using a symmetric encryption algorithm to encrypt a software plain text; using a public key to encrypt a symmetric key through an asymmetric encryption algorithm; and finally, putting the encrypted software plain text and symmetric key

together and downloading them into a memory." *Id.* at Abstract. Specifically, Lu discloses methods for "binding of a software product and a hardware product, thereby improving the security of the software product and the hardware product." *Id.*

A POSITA would be motivated to combine Lu with the SD Product Manual-Hamann-Maeda combination because Lu would add additional security features to the system and allow tying the security to the hardware platform. *Id.* at 1. Further, a POSITA would understand that there are many ways to hack encryption, and copying memory to another device allows for would-be hackers time to decrypt the information. As such a POSITA would look to Lu, because tying the encryption would prevent hacking by one that tries to copy the virtual SD card to another device. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., tying encryption keys in Lu to a host hardware device) to improve similar devices (e.g., to improve security of the virtual SD card) in the same way (e.g., tying the encryption keys of the virtual SD card to the host device). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Similar to SD Product Manual, the SD Card Spec. (Parts 2/3) describe the standard specifications for SD memory cards. Part 2 specifies the volume structure and file structure of the SD Memory Card (Secure Digital Memory Card) and the file system that defines the logical structure uses FAT file system based on ISO/IEC 9293 standard. *SD Spec-2* at FS-1. Part 3 describes the SD Memory Card specific 'data element.' *SD Spec-3* at SS-2. Part 2 and Part 3 have tables containing information about the sizes of SD cards, including total size, user size and protected areas. *See SD Spec-2* at Table C-2 and *SD Spec-3* at Table B-2. While Maeda discloses

a formula for determining these relative sizes and while that formula is a close approximation of the SD Memory Card Specification tables, it varies.

A POSITA would have understood that a lot of work and research went into the development of those tables and that it would take into account important considerations to ensure sufficient memory for encryption keys and the protected area, in general. As such, a POSITA would have been motivated to use the SD specifications for Maeda, which discloses an SD card. A POSITA would have understood the combination or modification to amount to the simple substitution of one known element (e.g., equation from Maeda) for another (e.g., the lookup tables from the SD Spec-2/3) to obtain predictable results (e.g., a protected area size meeting SD card specifications). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Dash discloses a method for accommodating expandable storage devices in a storage virtualization environment (*see Dash* at 1:8-11) such that "the expandable storage devices [can] remain in operation and online while any storage virtualization software related configuration changes are performed" (*id.* at 3:6-8). The method receives "information describing storage expansion in an expandable storage device" (*id.* at 3:28-29) and determines "changes to be made to information for converting input/output (I/O) operations directed at a virtual storage device to I/O operations directed at the expandable storage device" (*id.* at 3:29-32). Additionally, Dash describes "a virtual storage device manager, and an online storage device resize module." *Id.* at 3:38-40. The "virtual storage device manager is configured to map input/output (I/O) operations targeting a virtual storage device to I/O operations targeting an expandable storage device." *Id.* at 3:40-43. The online storage device resize module which is in communication with the virtual

storage device manager is configured to "receive information describing storage expansion in the expandable storage device," "determine changes to be made to the storage device mapping information using the information describing storage expansion in the expandable storage device," and "update the storage device mapping information while the expandable storage device is online." *Id.* at 3:46-53; *see also* Figs. 2 and 3. While Maeda discloses partitioning of secure and user areas, it does not disclose physical and logical partitioning as a virtual SD Card. Dash, however, does describe the mapping of information to describe storage.

Since Maeda is silent on how it would partition areas in a virtual system, a POSITA would have looked to Dash that discloses changes to the size of storage (e.g., due to expandable storage) in a virtual environment that includes mapping information. As such, a POSITA would be motivated to use Dash's virtual device manager to map the logical and physical addresses of Maeda's SD card as virtualized by Hamann. Therefore, a POSITA would have understood the modification to amount to applying a known technique (e.g., implementing mapping between physical and logical addresses) to a known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card that contains file systems corresponding to a physical SD card). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tsypliaev discloses a method for protecting a disk drive or other data storage. *Tsypliaev* at Abstract. Specifically, Tsypliaev describes mounting a virtual storage that "combines a full access temporary storage and a READ-only portion of a main storage" (*id.*) such that only the virtual storage is modified. Specifically, Tsypliaev describes that the "virtual storage is mounted (i.e. made available to the OS)" and includes "a combination of two storages: the protected area of the

main drive and the temporary data storage." *Id.* at 6:10-18. The protected area of the virtual storage includes the "contents of a hard disk drive (HDD)" while the temporary storage reflects "changes or edits to the files or other data structures in the main drive being affected by a user applications or system utilities" such that these modifications "can be registered and handled in the virtual storage as if it were real storage." *Id.* at 6:21-29. As such, the data of a hard drive is protected by "activating a special redirection driver for read and write requests (or any other disk access requests that alter the contents of the data), so that write requests are redirected to the temporary storage." *Id.* at 4:15-19.

A POSITA would have considered the combination of Tsypliaev's external storage to amount to using known work in one field of endeavor (SD cards) for use in another device in the same field of endeavor (Maeda's SD card as virtualized by the teachings of Hamann) due to design incentives (changing physical storages to virtual storages such that data may be further protected from potentially malicious applications). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hirota discloses "a semiconductor memory card that can be used as a storage medium for storing digital contents and as a storage medium for storing general-purpose computer data (not an object of copyright protection)." *Hirota* at 2:3-7. Specifically, Hirota discloses that the semiconductor memory card includes "an authentication area and a non-authentication area" (*id.* at 2:12-23) such that "copyright protection can be stored in the authentication area and other data can be stored in the non-authentication area" (*id.* at 2:26-27). Hirota's semiconductor memory card also includes "an area resizing circuit which resizes the authentication area and the non-authentication area" (*id.* at 3:24-35) such that "the semiconductor memory card can be used mainly

as a recording medium for digital contents and can be used as an auxiliary storage apparatus in a computer system" (*id.* at 3:27-30).

A POSITA would have recognized that the features described in Hirota, such as using a semiconductor memory card as an auxiliary storage medium for a computer, could be implemented into the combination to increase the size of secure storage. As such, the integration would enhance the ability for users to store large files of digital contents. Furthermore, Hirota discloses where encryption keys are stored. *See Hirota* at 12:51-56 ("The authentication area 332 stores an encryption key 425 which is a secret key used for decrypting the encrypted content 426 stored in the non-authentication area 331. The special area 304 stores the medium ID 341 which is necessary for accessing the authentication area 332."); 22:41-46 ("As shown in FIG. 15, the authentication circuit 216 of the player 201 has the encryption and decryption functions, and also prestores a master key 1301 which is a secret key being equal to the master key 323a held by the memory card 109, and a device ID 1302 which is an ID unique to the player 201, such as a product serial number (s/n).").

While Maeda discloses encryption keys, it is silent as to where they are stored. A POSITA would have known that encryption keys must be stored somewhere. As such, a POSITA would have looked to Hirota, because it describes using a semiconductor memory card as an auxiliary storage medium for a computer and describes security features to include on the semiconductor memory card (e.g., encryption keys). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success (e.g., choosing from a finite number of identified, predictable solutions for storage of encryption keys). Furthermore,, a POSITA would have understood the modification to amount to applying a known technique (e.g., implementing an auxiliary storage)

to a known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card that is used to store large files of digital contents).Meharchand discloses "a data protection controller for preventing data recorded on a data storage medium from being corrupted, modified or deleted." *Meharchand* at 1:8-10. The "data protection controller [] is interposed between a processor [] of a computing system and a data storage device (such as. . . memory stick)" (*id.* at 2:32-36) and is "used to create and maintain a protected data space and a virtual data space on the data storage device" (*id.* at 2:36-38). After the protected data space and the virtual data spaces are created, "the controller conceals the virtual data space from the processor" (*id.* at 2:39-40) and "presents the data storage device to the processor as having a capacity equal to that of the protected data space only" (*id.* at 2:40-42). Therefore, the "virtual data [can] be reviewed and modified" (*id.* at 2:57-58) such that any "undesired changes to the protected data by unauthorized users and malicious software such as viruses" (*id.* at 2:64-65) are eliminated.

A POSITA would have known that SD cards are susceptible to potentially malicious software. As such, a POSITA would have considered the features of Meharchand, such as the data protection controller, to enhance the ability for users to protect data storage from potentially malicious software. A POSITA would have considered the combination to amount to using known work in one field of endeavor (SD cards) for use in another device in the same field of endeavor (Maeda's SD card as virtualized by the teachings of Hamann) due to design incentives (protecting from potentially malicious applications).

Cupcake captures a series of updates that address changes based on "Android 1.5, also known as Cupcake." Cupcake at 10. Specifically, Cupcake discloses "create[ing] an Android Virtual Device (AVD)" (*id.* at 22) such as a "virtual Secure Digital (SD) Card" (*id.* at 24).

Similarly, Android Application discloses "concepts and code you need to start building smartphone applications with the Android programming environment." *Android Application* at Preface. Android Application discloses "create[ing] a virtual SD card" such that a user can "debug[] on an emulator." *Id.* at 76. Because describes creating a virtual SD card, a POSITA generating a virtual SD card would use have understood the descriptions in Android SDK to amount to applying an express teaching, suggestion, or motivation in the prior art for their combination. A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(f) SD Card Spec. (Parts 2/3) in view of Maeda and/or Hamann and/or SD Product Manual and/or CPXM and/or Lu and/or Dash and/or Tsypliaev and/or Hirota and/or Meharchand and/or Android SDK

The SD Card Spec. (Parts 2/3) describe the standard specifications for SD memory cards. Part 2 specifies the volume structure and file structure of the SD Memory Card (Secure Digital Memory Card) and the file system that defines the logical structure uses FAT file system based on ISO/IEC 9293 standard. *SD Spec-2* at FS-1. Part 3 describes the SD Memory Card specific 'data element.' *SD Spec-3* at SS-2.

Hamann discloses "a virtual smart card (VSC) [that] is a software implemented version of a real smart card providing the equivalent functionality of a real smart card." *Hamann* at Abstract. Specifically, Hamann discloses that the "VSC is created and used by a VSC control program which handles the creation, the security and the read/write process of the VSC" such that the "VSC has a logical file structure comprising a public area, a private area, a secure key area, a password area, and a unique identifier area." *Id.* Hamann further discloses that "data objects placed into the private area are encrypted." *Id.*

Maeda discloses "forming a data storage format in a semiconductor memory card that enables a nonvolatile memory [to have] a longer lifespan." *Maeda*, at 2:57-60. Specifically, Maeda discloses a method to align cluster boundaries and erasable block boundaries of the user area and the volume management information such that "only one erasable block needs to be erased when a cluster is rewritten or overwritten, and the number of times that erasable blocks have to be erased can be reduced." *Id*. at 3:46-48. Maeda accomplishes this by "calculate[ing] a size of volume management information based on a number of clusters in the memory area that are to be managed" (*id*. at 3:24-26) and reserving clusters for "recording volume management information" (*id.* at 3:40-41) so "the volume management information can be aligned with an erasable block boundary" (*id*. at 3:44-45). *See also* Figs. 12, 16, 17.

A POSITA would have been motivated to modify SD Card Spec. (Parts 2/3) with the above combination of Maeda and Hamann. SD cards and smart cards have similar data formats (e.g., protected area, user area) and encryption. *See Hamann* at [0016] ("VSC having a logical file structure comprising a public area, a private area, a secure key area, password area, and an unique identifier area."); *see also Maeda* at 6:66-7:2 (describing that a semiconductor memory card ("SD card") that includes a "partition control area, the system area, and the user area."). Hamann teaches virtualization of a smart card, which includes "any programmed data carrier." *Hamann* at [0002] ("'smart cards' (the term 'smart card' used in the present invention also covers any programmed data carrier used in any portable device, like mobile phone, digital personal assistant etc., to securely hold subscriber specific information)). A POSITA would have understood that a smart card, as defined in Hamann, would include an SD Card or the semiconductor memory card described by Maeda. *See Maeda* at 2:61-65 ("The type of Semiconductor memory card known as

secure digital (SD) memory card has made great strides toward resolving the aforementioned problems of reduction in processing time and nonvolatile memory longevity. . . .").

Similarly, Hamann teaches the concept of "greatly increase[ing]. . . data storage capacity." *Hamann* at [0002]. Therefore, a POSITA aiming to "greatly increase. . . data storage capacity" of an SD card would have looked to virtualize Maeda's SD card by the teachings of Hamann to create a virtual SD card with increased storage capacity. A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Furthermore, Hamann teaches that virtualizing memory cards allows such memory cards to be backed up. *See* Hamann at [0002]. Virtualizing SD Cards like those described in Maeda would provide benefits to users, as Hamann suggests. For example, Maeda teaches that users may store content such as music and images on the memory card disclosed therein. *See Maeda*, 25:64-26:3. The ability to backup such content (whether DRM protected content or a user's own images) would be beneficial to users, as it would prevent loss of their content in the event of an SD Card failure. And while Hamann described making backups of access cards, a POSITA having Hamann's teachings would have understood the benefits provided by backing up content like that described in Meada.

Moreover, while Hamann teaches virtualization of a smart card, it also describes that virtualization could be performed for "any programmed data carrier." Hamann at [0002] ("'smart cards' (the term 'smart card' used in the present invention also covers any programmed data carrier used in any portable device, like mobile phone, digital personal assistant etc., to securely hold subscriber specific information)). Thus, the semiconductor memory card described by Maeda would have been included in the definition of "smart card" as defined by Hamann. *See* Maeda at

2:61-65 ("The type of Semiconductor memory card known as secure digital (SD) memory card has made great strides toward resolving the aforementioned problems of reduction in processing time and nonvolatile memory longevity. . . .").

Additionally, Maeda describes that an SD card's "nonvolatile memory is formed from a memory component that includes a floating gate buried in an insulating layer." *Maeda* at 2:35-37. As such, when a user modifies data stored in particular clusters, the "memory component can only be erased a few tens of thousands of times" such that the "lifespan of the nonvolatile memory [is] significantly reduced." *Id.* at 2:37-41. A POSITA would have understood that Maeda's SD card has a limited number of read/writes that may be performed when a user modifies data. Therefore, a POSITA would be motivated to virtualize Maeda's SD card by the teachings of Hamann to increase the lifespan of the SD card.

A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., virtualizing a smart card) to improve similar devices or methods (e.g., another memory device, such as an SD card) in the same way (e.g., to provide a virtual SD card). As another example, a POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., modifying a physical SD card) according to known methods (i.e., according to known methods for virtualizing a memory device) to yield predictable results (e.g., resulting in a virtual copy of a physical memory device). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

The SD Product Manual describes product specifications for different SanDisk SD cards. The manual discloses that the SanDisk Secure Digital (SD) Card is a flash-based memory card specifically designed to meet the security, capacity, performance and environmental requirements

inherent in next generation mobile phones and consumer electronic devices. *See SD Product Manual* at 1-1. The SanDisk SD Card includes a copyright protection mechanism that complies with the security of the SDMI standard, and is faster and capable of higher memory capacity. *Id*.

A POSITA would have been motivated to modify the above combination of SD Card Spec. (Parts 2/3)-Maeda-Hamann with SD Product Manual because SD Product Manual describes the relationship between the total size of an SD card and the protected area and user area, such that the user may format the virtual SD card accordingly. Specifically, a POSITA would have used the product descriptions in SD Product Manual to calculate a more accurate β value (the β value in Maeda being the percentage of the SD card that is protected area). For example, Maeda describes that the protected area is a percentage (e.g., 10%) of the total size of the storage area. *See Maeda* at 15:12-21 ("if the total size of the volume area is 'volume size', the user data area is an area 'volume size×(1−β)' extending from the start of the volume area, and an area 'volume size×β' following the user data area is allocated to the protected area. Here, β is a value for which the minimum setting is 0.01. To take one example, if the volume size is 64 MB and β is 0.01, the protected area is set at 640 KB. The format of the user data area and the protected area is realized when the file system operation unit 9 executes the initialization procedure shown in FIG. 9."). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

A POSITA, however, would have understood that the size of the protected area would need to change based on the size of the total area of the SD card, and that the ideal ratio may not necessarily be an exact 0.01 (or 1%). As such, a POSITA would look to obtain a more accurate ratio of user data area to protected area, which it would find by using SD Product Manual. *SD Product Manual* at Table 1-1. Of note, taking the numbers of Table 1-1 of the SD Product Manual

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reveals that the ratio to sizes varies between 1.01% and 1.21% as the user area size decreases. A POSITA would have understood the modification to amount to applying a known technique (e.g., implementing the table of sizes to the user area and protected area of the virtual SD card) to a known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card with increased protected area when user area decreased). As another example, a POSITA would have understood the combination or modification to amount to the simple substitution of one known element (e.g., a lookup table from the SD Product Manual for determining protected area) for another (e.g., Maeda's equation for determining protected area) to obtain predictable results (e.g., a protected area that slightly increases when user area decreases).

CPXM defines a robust and renewable method for protecting content stored on a number of physical media types. *See CPXM* at 1. The guide includes information relating to SD card specifications and common elements of the SD card. *See id.* CPXM discloses content encryption. *See CPXM* at 1 ("The Content Protection for eXtended Media Specification (CPXM) defines a robust and renewable method for protecting content stored on a number of physical media types. . . . The SD Memory Card Book specifies additional details for using CPXM technology to protect content stored on the SD Memory Card, and on other implementations of protected storage with an interface and security system equivalent to that of the SD Memory Card."). In particular, CPXM discloses where encryption keys are stored. While Maeda discloses encryption keys, it is silent as to where they are stored.

A POSITA would have known that encryption keys must be stored somewhere. As such, a POSITA would have looked to CPXM, because it describes protecting content stored on physical media, and is a guide for SD card protection. A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions,

with a reasonable expectation of success (e.g., choosing from a finite number of identified, predictable solutions for storage of encryption keys).

Lu discloses an "encryption and decryption methods for implementing hardware and software binding." *Lu* at 1. Lu discloses that the encryption method includes "HASH transformation to obtain a software serial number; using a symmetric encryption algorithm to encrypt a software plain text; using a public key to encrypt a symmetric key through an asymmetric encryption algorithm; and finally, putting the encrypted software plain text and symmetric key together and downloading them into a memory." *Id.* at Abstract. Specifically, Lu discloses methods for "binding of a software product and a hardware product, thereby improving the security of the software product and the hardware product." *Id.*

A POSITA would be motivated to combine Lu with the SD Card Spec. (Parts 2/3)-Hamann-Maeda-SD Product Manual combination because Lu would add additional security features to the system and allow tying the security to the hardware platform. *Id.* at 1. Further, a POSITA would understand that there are many ways to hack encryption, and copying memory to another device allows for would-be hackers time to decrypt the information. As such a POSITA would look to Lu, because tying the encryption would prevent hacking by one that tries to copy the virtual SD card to another device. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., tying encryption keys in Lu to a host hardware device) to improve similar devices (e.g., to improve security of the virtual SD card) in the same way (e.g., tying the encryption keys of the virtual SD card to the host device). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Dash discloses a method for accommodating expandable storage devices in a storage virtualization environment (*see Dash* at 1:8-11) such that "the expandable storage devices [can] remain in operation and online while any storage virtualization software related configuration changes are performed" (*id.* at 3:6-8). The method receives "information describing storage expansion in an expandable storage device" (*id.* at 3:28-29) and determines "changes to be made to information for converting input/output (I/O) operations directed at a virtual storage device to I/O operations directed at the expandable storage device" (*id.* at 3:29-32). Additionally, Dash describes "a virtual storage device manager, and an online storage device resize module." *Id.* at 3:38-40. The "virtual storage device manager is configured to map input/output (I/O) operations targeting a virtual storage device to I/O operations targeting an expandable storage device." *Id.* at 3:40-43. The online storage device resize module which is in communication with the virtual storage device manager is configured to "receive information describing storage expansion in the expandable storage device," "determine changes to be made to the storage device mapping information using the information describing storage expansion in the expandable storage device," and "update the storage device mapping information while the expandable storage device is online." *Id.* at 3:46-53; *see also* Figs. 2 and 3. While Maeda discloses partitioning of secure and user areas, it does not disclose physical and logical partitioning as a virtual SD Card. Dash, however, does describe the mapping of information to describe storage.

Since Maeda is silent on how it would partition areas in a virtual system, a POSITA would have looked to Dash that discloses changes to the size of storage (e.g., due to expandable storage) in a virtual environment that includes mapping information. As such, a POSITA would be motivated to use Dash's virtual device manager to map the logical and physical addresses of Maeda's SD card as virtualized by Hamann. Therefore, a POSITA would have understood the

modification to amount to applying a known technique (e.g., implementing mapping between physical and logical addresses) to a known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card that contains file systems corresponding to a physical SD card). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tsypliaev discloses a method for protecting a disk drive or other data storage. *Tsypliaev* at Abstract. Specifically, Tsypliaev describes mounting a virtual storage that "combines a full access temporary storage and a READ-only portion of a main storage" (*id.*) such that only the virtual storage is modified. Specifically, Tsypliaev describes that the "virtual storage is mounted (i.e. made available to the OS)" and includes "a combination of two storages: the protected area of the main drive and the temporary data storage." *Id.* at 6:10-18. The protected area of the virtual storage includes the "contents of a hard disk drive (HDD)" while the temporary storage reflects "changes or edits to the files or other data structures in the main drive being affected by a user applications or system utilities" such that these modifications "can be registered and handled in the virtual storage as if it were real storage." *Id.* at 6:21-29. As such, the data of a hard drive is protected by "activating a special redirection driver for read and write requests (or any other disk access requests that alter the contents of the data), so that write requests are redirected to the temporary storage." *Id.* at 4:15-19.

A POSITA would have considered the combination of Tsypliaev's external storage to amount to using known work in one field of endeavor (SD cards) for use in another device in the same field of endeavor (Maeda's SD card as virtualized by the teachings of Hamann) due to design incentives (changing physical storages to virtual storages such that data may be further protected

from potentially malicious applications). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hirota discloses "a semiconductor memory card that can be used as a storage medium for storing digital contents and as a storage medium for storing general-purpose computer data (not an object of copyright protection)." *Hirota* at 2:3-7. Specifically, Hirota discloses that the semiconductor memory card includes "an authentication area and a non-authentication area" (*id.* at 2:12-23) such that "copyright protection can be stored in the authentication area and other data can be stored in the non-authentication area" (*id.* at 2:26-27). Hirota's semiconductor memory card also includes "an area resizing circuit which resizes the authentication area and the non-authentication area" (*id.* at 3:24-35) such that "the semiconductor memory card can be used mainly as a recording medium for digital contents and can be used as an auxiliary storage apparatus in a computer system" (*id.* at 3:27-30).

A POSITA would have recognized that the features described in Hirota, such as using a semiconductor memory card as an auxiliary storage medium for a computer, could be implemented into the combination to increase the size of secure storage. As such, the integration would enhance the ability for users to store large files of digital contents. Furthermore, Hirota discloses where encryption keys are stored. *See Hirota* at 12:51-56 ("The authentication area 332 stores an encryption key 425 which is a secret key used for decrypting the encrypted content 426 stored in the non-authentication area 331. The special area 304 stores the medium ID 341 which is necessary for accessing the authentication area 332."); 22:41-46 ("As shown in FIG. 15, the authentication circuit 216 of the player 201 has the encryption and decryption functions, and also prestores a master key 1301 which is a secret key being equal to the master key 323a held by the memory card

109, and a device ID 1302 which is an ID unique to the player 201, such as a product serial number (s/n).").

While Maeda discloses encryption keys, it is silent as to where they are stored. A POSITA would have known that encryption keys must be stored somewhere. As such, a POSITA would have looked to Hirota, because it describes using a semiconductor memory card as an auxiliary storage medium for a computer and describes security features to include on the semiconductor memory card (e.g., encryption keys). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success (e.g., choosing from a finite number of identified, predictable solutions for storage of encryption keys). Furthermore,, a POSITA would have understood the modification to amount to applying a known technique (e.g., implementing an auxiliary storage) to a known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card that is used to store large files of digital contents).Meharchand discloses "a data protection controller for preventing data recorded on a data storage medium from being corrupted, modified or deleted." *Meharchand* at 1:8-10. The "data protection controller [] is interposed between a processor [] of a computing system and a data storage device (such as. . . memory stick)" (*id.* at 2:32-36) and is "used to create and maintain a protected data space and a virtual data space on the data storage device" (*id.* at 2:36-38). After the protected data space and the virtual data spaces are created, "the controller conceals the virtual data space from the processor" (*id.* at 2:39-40) and "presents the data storage device to the processor as having a capacity equal to that of the protected data space only" (*id.* at 2:40-42). Therefore, the "virtual data [can] be reviewed and modified" (*id.* at 2:57-58) such that any

"undesired changes to the protected data by unauthorized users and malicious software such as viruses" (*id.* at 2:64-65) are eliminated.

A POSITA would have known that SD cards are susceptible to potentially malicious software. As such, a POSITA would have considered the features of Meharchand, such as the data protection controller, to enhance the ability for users to protect data storage from potentially malicious software. A POSITA would have considered the combination to amount to using known work in one field of endeavor (SD cards) for use in another device in the same field of endeavor (Maeda's SD card as virtualized by the teachings of Hamann) due to design incentives (protecting from potentially malicious applications).

Cupcake captures a series of updates that address changes based on "Android 1.5, also known as Cupcake." Cupcake at 10. Specifically, Cupcake discloses "create[ing] an Android Virtual Device (AVD)" (*id.* at 22) such as a "virtual Secure Digital (SD) Card" (*id.* at 24). Similarly, Android Application discloses "concepts and code you need to start building smartphone applications with the Android programming environment." *Android Application* at Preface. Android Application discloses "create[ing] a virtual SD card" such that a user can "debug[] on an emulator." *Id.* at 76. Because Android SDK describes creating a virtual SD card, a POSITA generating a virtual SD card would use have understood the descriptions in Android SDK to amount to applying an express teaching, suggestion, or motivation in the prior art for their combination. A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

(g) SanDisk SD Cards in view of Maeda and/or Hamann and/or CPXM and/or Lu and/or Dash and/or Tsypliaev and/or Hirota and/or Meharchand and/or Android SDK

SanDisk SD Cards describe the standards for SanDisk SD memory cards. SanDisk SD cards are a flash-based memory card specifically designed to meet the security, capacity, performance and environmental requirements inherent in next generation mobile phones and consumer electronic devices. *See SD Product Manual* at 1-1. SanDisk SD cards are also compatible with other devices, and as such, comply with the file system and security specifications promulgated by the SD Association, and listed in SD Spec-2/3. *See id.* at 1-4, 3-22, 3-23, 4-37, 4-39.

Maeda discloses "forming a data storage format in a semiconductor memory card that enables a nonvolatile memory [to have] a longer lifespan." *Maeda*, at 2:57-60. Specifically, Maeda discloses a method to align cluster boundaries and erasable block boundaries of the user area and the volume management information such that "only one erasable block needs to be erased when a cluster is rewritten or overwritten, and the number of times that erasable blocks have to be erased can be reduced." *Id*. at 3:46-48. Maeda accomplishes this by "calculate[ing] a size of volume management information based on a number of clusters in the memory area that are to be managed" (*id*. at 3:24-26) and reserving clusters for "recording volume management information" (*id.* at 3:40-41) so "the volume management information can be aligned with an erasable block boundary" (*id*. at 3:44-45). *See also* Figs. 12, 16, 17.

Hamann discloses "a virtual smart card (VSC) [that] is a software implemented version of a real smart card providing the equivalent functionality of a real smart card." *Hamann* at Abstract. Specifically, Hamann discloses that the "VSC is created and used by a VSC control program which handles the creation, the security and the read/write process of the VSC" such that the "VSC has a logical file structure comprising a public area, a private area, a secure key area, a password area,

and a unique identifier area." *Id.* Hamann further discloses that "data objects placed into the private area are encrypted." *Id.*

A POSITA would have been motivated to modify SanDisk SD Cards with the above combination of Maeda and Hamann. SD cards and smart cards have similar data formats (e.g., protected area, user area) and encryption. *See Hamann* at [0016] ("VSC having a logical file structure comprising a public area, a private area, a secure key area, password area, and an unique identifier area."); *see also Maeda* at 6:66-7:2 (describing that a semiconductor memory card ("SD card") that includes a "partition control area, the system area, and the user area."). Hamann teaches virtualization of a smart card, which includes "any programmed data carrier." *Hamann* at [0002] ("'smart cards' (the term 'smart card' used in the present invention also covers any programmed data carrier used in any portable device, like mobile phone, digital personal assistant etc., to securely hold subscriber specific information)). A POSITA would have understood that a smart card, as defined in Hamann, would include an SD Card or the semiconductor memory card described by Maeda. *See Maeda* at 2:61-65 ("The type of Semiconductor memory card known as secure digital (SD) memory card has made great strides toward resolving the aforementioned problems of reduction in processing time and nonvolatile memory longevity. . . .").

Similarly, Hamann teaches the concept of "greatly increase[ing]. . . data storage capacity." *Hamann* at [0002]. Therefore, a POSITA aiming to "greatly increase. . . data storage capacity" of an SD card would have looked to virtualize Maeda's SD card by the teachings of Hamann to create a virtual SD card with increased storage capacity. A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Furthermore, Hamann teaches that virtualizing memory cards allows such memory cards to be backed up. *See* Hamann at [0002]. Virtualizing SD Cards like those described in Maeda would provide benefits to users, as Hamann suggests. For example, Maeda teaches that users may store content such as music and images on the memory card disclosed therein. *See Maeda*, 25:64-26:3. The ability to backup such content (whether DRM protected content or a user's own images) would be beneficial to users, as it would prevent loss of their content in the event of an SD Card failure. And while Hamann described making backups of access cards, a POSITA having Hamann's teachings would have understood the benefits provided by backing up content like that described in Meada.

Moreover, while Hamann teaches virtualization of a smart card, it also describes that virtualization could be performed for "any programmed data carrier." Hamann at [0002] ("'smart cards' (the term 'smart card' used in the present invention also covers any programmed data carrier used in any portable device, like mobile phone, digital personal assistant etc., to securely hold subscriber specific information)). Thus, the semiconductor memory card described by Maeda would have been included in the definition of "smart card" as defined by Hamann. *See* Maeda at 2:61-65 ("The type of Semiconductor memory card known as secure digital (SD) memory card has made great strides toward resolving the aforementioned problems of reduction in processing time and nonvolatile memory longevity. . . .").

Additionally, Maeda describes that an SD card's "nonvolatile memory is formed from a memory component that includes a floating gate buried in an insulating layer." *Maeda* at 2:35-37. As such, when a user modifies data stored in particular clusters, the "memory component can only be erased a few tens of thousands of times" such that the "lifespan of the nonvolatile memory [is] significantly reduced." *Id.* at 2:37-41. A POSITA would have understood that Maeda's SD card

has a limited number of read/writes that may be performed when a user modifies data. Therefore, a POSITA would be motivated to virtualize Maeda's SD card by the teachings of Hamann to increase the lifespan of the SD card.

A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., virtualizing a smart card) to improve similar devices or methods (e.g., another memory device, such as an SD card) in the same way (e.g., to provide a virtual SD card). As another example, a POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., modifying a physical SD card) according to known methods (i.e., according to known methods for virtualizing a memory device) to yield predictable results (e.g., resulting in a virtual copy of a physical memory device). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

CPXM defines a robust and renewable method for protecting content stored on a number of physical media types. *See CPXM* at 1. The guide includes information relating to SD card specifications and common elements of the SD card. *See id.* CPXM discloses content encryption. *See CPXM* at 1 ("The Content Protection for eXtended Media Specification (CPXM) defines a robust and renewable method for protecting content stored on a number of physical media types. . . The SD Memory Card Book specifies additional details for using CPXM technology to protect content stored on the SD Memory Card, and on other implementations of protected storage with an interface and security system equivalent to that of the SD Memory Card."). In particular, CPXM discloses where encryption keys are stored. While Maeda discloses encryption keys, it is silent as to where they are stored.

A POSITA would have known that encryption keys must be stored somewhere. As such, a POSITA would have looked to CPXM, because it describes protecting content stored on physical media, and is a guide for SD card protection. A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success (e.g., choosing from a finite number of identified, predictable solutions for storage of encryption keys).

Lu discloses an "encryption and decryption methods for implementing hardware and software binding." *Lu* at 1. Lu discloses that the encryption method includes "HASH transformation to obtain a software serial number; using a symmetric encryption algorithm to encrypt a software plain text; using a public key to encrypt a symmetric key through an asymmetric encryption algorithm; and finally, putting the encrypted software plain text and symmetric key together and downloading them into a memory." *Id.* at Abstract. Specifically, Lu discloses methods for "binding of a software product and a hardware product, thereby improving the security of the software product and the hardware product." *Id.*

A POSITA would be motivated to combine Lu with the SanDisk SD Cards-Maeda-Hamann combination because Lu would add additional security features to the system and allow tying the security to the hardware platform. *Id.* at 1. Further, a POSITA would understand that there are many ways to hack encryption, and copying memory to another device allows for would-be hackers time to decrypt the information. As such a POSITA would look to Lu, because tying the encryption would prevent hacking by one that tries to copy the virtual SD card to another device. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., tying encryption keys in Lu to a host hardware device) to improve similar devices (e.g., to improve security of the virtual SD card) in the same way (e.g., tying the

encryption keys of the virtual SD card to the host device). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Dash discloses a method for accommodating expandable storage devices in a storage virtualization environment (*see Dash* at 1:8-11) such that "the expandable storage devices [can] remain in operation and online while any storage virtualization software related configuration changes are performed" (*id.* at 3:6-8). The method receives "information describing storage expansion in an expandable storage device" (*id.* at 3:28-29) and determines "changes to be made to information for converting input/output (I/O) operations directed at a virtual storage device to I/O operations directed at the expandable storage device" (*id.* at 3:29-32). Additionally, Dash describes "a virtual storage device manager, and an online storage device resize module." *Id.* at 3:38-40. The "virtual storage device manager is configured to map input/output (I/O) operations targeting a virtual storage device to I/O operations targeting an expandable storage device." *Id.* at 3:40-43. The online storage device resize module which is in communication with the virtual storage device manager is configured to "receive information describing storage expansion in the expandable storage device," "determine changes to be made to the storage device mapping information using the information describing storage expansion in the expandable storage device," and "update the storage device mapping information while the expandable storage device is online." *Id.* at 3:46-53; *see also* Figs. 2 and 3. While Maeda discloses partitioning of secure and user areas, it does not disclose physical and logical partitioning as a virtual SD Card. Dash, however, does describe the mapping of information to describe storage.

Since Maeda is silent on how it would partition areas in a virtual system, a POSITA would have looked to Dash that discloses changes to the size of storage (e.g., due to expandable storage)

in a virtual environment that includes mapping information. As such, a POSITA would be motivated to use Dash's virtual device manager to map the logical and physical addresses of Maeda's SD card as virtualized by Hamann. Therefore, a POSITA would have understood the modification to amount to applying a known technique (e.g., implementing mapping between physical and logical addresses) to a known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card that contains file systems corresponding to a physical SD card). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tsypliaev discloses a method for protecting a disk drive or other data storage. *Tsypliaev* at Abstract. Specifically, Tsypliaev describes mounting a virtual storage that "combines a full access temporary storage and a READ-only portion of a main storage" (*id.*) such that only the virtual storage is modified. Specifically, Tsypliaev describes that the "virtual storage is mounted (i.e. made available to the OS)" and includes "a combination of two storages: the protected area of the main drive and the temporary data storage." *Id.* at 6:10-18. The protected area of the virtual storage includes the "contents of a hard disk drive (HDD)" while the temporary storage reflects "changes or edits to the files or other data structures in the main drive being affected by a user applications or system utilities" such that these modifications "can be registered and handled in the virtual storage as if it were real storage." *Id.* at 6:21-29. As such, the data of a hard drive is protected by "activating a special redirection driver for read and write requests (or any other disk access requests that alter the contents of the data), so that write requests are redirected to the temporary storage." *Id.* at 4:15-19.

A POSITA would have considered the combination of Tsypliaev's external storage to amount to using known work in one field of endeavor (SD cards) for use in another device in the same field of endeavor (Maeda's SD card as virtualized by the teachings of Hamann) due to design incentives (changing physical storages to virtual storages such that data may be further protected from potentially malicious applications). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hirota discloses "a semiconductor memory card that can be used as a storage medium for storing digital contents and as a storage medium for storing general-purpose computer data (not an object of copyright protection)." *Hirota* at 2:3-7. Specifically, Hirota discloses that the semiconductor memory card includes "an authentication area and a non-authentication area" (*id.* at 2:12-23) such that "copyright protection can be stored in the authentication area and other data can be stored in the non-authentication area" (*id.* at 2:26-27). Hirota's semiconductor memory card also includes "an area resizing circuit which resizes the authentication area and the non-authentication area" (*id.* at 3:24-35) such that "the semiconductor memory card can be used mainly as a recording medium for digital contents and can be used as an auxiliary storage apparatus in a computer system" (*id.* at 3:27-30).

A POSITA would have recognized that the features described in Hirota, such as using a semiconductor memory card as an auxiliary storage medium for a computer, could be implemented into the combination to increase the size of secure storage. As such, the integration would enhance the ability for users to store large files of digital contents. Furthermore, Hirota discloses where encryption keys are stored. *See Hirota* at 12:51-56 ("The authentication area 332 stores an encryption key 425 which is a secret key used for decrypting the encrypted content 426 stored in

the non-authentication area 331. The special area 304 stores the medium ID 341 which is necessary for accessing the authentication area 332."); 22:41-46 ("As shown in FIG. 15, the authentication circuit 216 of the player 201 has the encryption and decryption functions, and also prestores a master key 1301 which is a secret key being equal to the master key 323a held by the memory card 109, and a device ID 1302 which is an ID unique to the player 201, such as a product serial number (s/n).").

While Maeda discloses encryption keys, it is silent as to where they are stored. A POSITA would have known that encryption keys must be stored somewhere. As such, a POSITA would have looked to Hirota, because it describes using a semiconductor memory card as an auxiliary storage medium for a computer and describes security features to include on the semiconductor memory card (e.g., encryption keys). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success (e.g., choosing from a finite number of identified, predictable solutions for storage of encryption keys). Furthermore,, a POSITA would have understood the modification to amount to applying a known technique (e.g., implementing an auxiliary storage) to a known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card that is used to store large files of digital contents). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Meharchand discloses "a data protection controller for preventing data recorded on a data storage medium from being corrupted, modified or deleted." *Meharchand* at 1:8-10. The "data protection controller [] is interposed between a processor [] of a computing system and a data storage device (such as. . . memory stick)" (*id.* at 2:32-36) and is "used to create and maintain a

protected data space and a virtual data space on the data storage device" (*id.* at 2:36-38). After the protected data space and the virtual data spaces are created, "the controller conceals the virtual data space from the processor" (*id.* at 2:39-40) and "presents the data storage device to the processor as having a capacity equal to that of the protected data space only" (*id.* at 2:40-42). Therefore, the "virtual data [can] be reviewed and modified" (*id.* at 2:57-58) such that any "undesired changes to the protected data by unauthorized users and malicious software such as viruses" (*id.* at 2:64-65) are eliminated.

A POSITA would have known that SD cards are susceptible to potentially malicious software. As such, a POSITA would have considered the features of Meharchand, such as the data protection controller, to enhance the ability for users to protect data storage from potentially malicious software. A POSITA would have considered the combination to amount to using known work in one field of endeavor (SD cards) for use in another device in the same field of endeavor (Maeda's SD card as virtualized by the teachings of Hamann) due to design incentives (protecting from potentially malicious applications). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Android SDK captures a series of updates that address changes based on "Android 1.5, also known as Cupcake." Cupcake at 10. Specifically, Android SDK discloses "create[ing] an Android Virtual Device (AVD)" (*id.* at 22) such as a "virtual Secure Digital (SD) Card" (*id.* at 24). Similarly, Android SDK discloses "concepts and code you need to start building smartphone applications with the Android programming environment." *Android Application* at Preface. Android SDK discloses "create[ing] a virtual SD card" such that a user can "debug[] on an emulator." *Id.* at 76. Because Android SDK describes creating a virtual SD card, a POSITA

generating a virtual SD card would use have understood the descriptions in Android SDK to amount to applying an express teaching, suggestion, or motivation in the prior art for their combination.

(h) Android SDK in view of Maeda and/or Hamann and/or SD Product Manual and/or CPXM and/or Lu and/or SD Spec-2/3 and/or Dash and/or Tsypliaev and/or Hirota and/or Meharchand and/or SanDisk SD Cards

Cupcake captures a series of updates that address changes based on "Android 1.5, also known as Cupcake." Cupcake at 10. Specifically, Cupcake discloses "create[ing] an Android Virtual Device (AVD)" (*id.* at 22) such as a "virtual Secure Digital (SD) Card" (*id.* at 24). Android Application discloses "concepts and code you need to start building smartphone applications with the Android programming environment." *Android Application* at Preface. Android Application discloses "create[ing] a virtual SD card" such that a user can "debug[] on an emulator." *Id.* at 76. Cupcake and Android Application are perhaps illustrative, but not exhaustive of Android SDK.

Maeda discloses "forming a data storage format in a semiconductor memory card that enables a nonvolatile memory [to have] a longer lifespan." *Maeda*, at 2:57-60. Specifically, Maeda discloses a method to align cluster boundaries and erasable block boundaries of the user area and the volume management information such that "only one erasable block needs to be erased when a cluster is rewritten or overwritten, and the number of times that erasable blocks have to be erased can be reduced." *Id*. at 3:46-48. Maeda accomplishes this by "calculate[ing] a size of volume management information based on a number of clusters in the memory area that are to be managed" (*id*. at 3:24-26) and reserving clusters for "recording volume management information" (*id.* at 3:40-41) so "the volume management information can be aligned with an erasable block boundary" (*id*. at 3:44-45). *See also* Figs. 12, 16, 17.

Hamann discloses "a virtual smart card (VSC) [that] is a software implemented version of a real smart card providing the equivalent functionality of a real smart card." *Hamann* at Abstract. Specifically, Hamann discloses that the "VSC is created and used by a VSC control program which handles the creation, the security and the read/write process of the VSC" such that the "VSC has a logical file structure comprising a public area, a private area, a secure key area, a password area, and a unique identifier area." *Id.* Hamann further discloses that "data objects placed into the private area are encrypted." *Id.*

A POSITA would have been motivated to modify Android SDK with the above combination of Maeda and Hamann. SD cards and smart cards have similar data formats (e.g., protected area, user area) and encryption. *See Hamann* at [0016] ("VSC having a logical file structure comprising a public area, a private area, a secure key area, password area, and an unique identifier area."); *see also Maeda* at 6:66-7:2 (describing that a semiconductor memory card ("SD card") that includes a "partition control area, the system area, and the user area."). Hamann teaches virtualization of a smart card, which includes "any programmed data carrier." *Hamann* at [0002] ("'smart cards' (the term 'smart card' used in the present invention also covers any programmed data carrier used in any portable device, like mobile phone, digital personal assistant etc., to securely hold subscriber specific information)). A POSITA would have understood that a smart card, as defined in Hamann, would include an SD Card or the semiconductor memory card described by Maeda. *See Maeda* at 2:61-65 ("The type of Semiconductor memory card known as secure digital (SD) memory card has made great strides toward resolving the aforementioned problems of reduction in processing time and nonvolatile memory longevity. . . .").

Similarly, Hamann teaches the concept of "greatly increase[ing]. . . data storage capacity." *Hamann* at [0002]. Therefore, a POSITA aiming to "greatly increase. . . data storage capacity" of

an SD card would have looked to virtualize Maeda's SD card by the teachings of Hamann to create a virtual SD card with increased storage capacity. A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Furthermore, Hamann teaches that virtualizing memory cards allows such memory cards to be backed up. *See* Hamann at [0002]. Virtualizing SD Cards like those described in Maeda would provide benefits to users, as Hamann suggests. For example, Maeda teaches that users may store content such as music and images on the memory card disclosed therein. *See Maeda*, 25:64-26:3. The ability to backup such content (whether DRM protected content or a user's own images) would be beneficial to users, as it would prevent loss of their content in the event of an SD Card failure. And while Hamann described making backups of access cards, a POSITA having Hamann's teachings would have understood the benefits provided by backing up content like that described in Meada.

Moreover, while Hamann teaches virtualization of a smart card, it also describes that virtualization could be performed for "any programmed data carrier." Hamann at [0002] ("'smart cards' (the term 'smart card' used in the present invention also covers any programmed data carrier used in any portable device, like mobile phone, digital personal assistant etc., to securely hold subscriber specific information)). Thus, the semiconductor memory card described by Maeda would have been included in the definition of "smart card" as defined by Hamann. *See* Maeda at 2:61-65 ("The type of Semiconductor memory card known as secure digital (SD) memory card has made great strides toward resolving the aforementioned problems of reduction in processing time and nonvolatile memory longevity. . . .").

Additionally, Maeda describes that an SD card's "nonvolatile memory is formed from a memory component that includes a floating gate buried in an insulating layer." *Maeda* at 2:35-37. As such, when a user modifies data stored in particular clusters, the "memory component can only be erased a few tens of thousands of times" such that the "lifespan of the nonvolatile memory [is] significantly reduced." *Id.* at 2:37-41. A POSITA would have understood that Maeda's SD card has a limited number of read/writes that may be performed when a user modifies data. Therefore, a POSITA would be motivated to virtualize Maeda's SD card by the teachings of Hamann to increase the lifespan of the SD card.

A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., virtualizing a smart card) to improve similar devices or methods (e.g., another memory device, such as an SD card) in the same way (e.g., to provide a virtual SD card). As another example, a POSITA would have considered the modification or combination to amount to combining prior art elements (e.g., modifying a physical SD card) according to known methods (i.e., according to known methods for virtualizing a memory device) to yield predictable results (e.g., resulting in a virtual copy of a physical memory device). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

The SD Product Manual describes product specifications for different SanDisk SD cards. The manual discloses that the SanDisk Secure Digital (SD) Card is a flash-based memory card specifically designed to meet the security, capacity, performance and environmental requirements inherent in next generation mobile phones and consumer electronic devices. *See SD Product Manual* at 1-1. "The SanDisk SD Card includes a copyright protection mechanism that complies with the security of the SDMI standard, and is faster and capable of higher memory capacity." *Id.*

A POSITA would have been motivated to modify the above combination of Android SDK-Maeda-Hamann with SD Product Manual because SD Product Manual describes the relationship between the total size of an SD card and the protected area and user area, such that the user may format the virtual SD card accordingly. Specifically, a POSITA would have used the product descriptions in SD Product Manual to calculate a more accurate β value (the β value in Maeda being the percentage of the SD card that is protected area). For example, Maeda describes that the protected area is a percentage (e.g., 10%) of the total size of the storage area. *See Maeda* at 15:12-21 ("if the total size of the volume area is 'volume size', the user data area is an area 'volume size×(1−β)' extending from the start of the volume area, and an area 'volume size×β' following the user data area is allocated to the protected area. Here, β is a value for which the minimum setting is 0.01. To take one example, if the volume size is 64 MB and β is 0.01, the protected area is set at 640 KB. The format of the user data area and the protected area is realized when the file system operation unit 9 executes the initialization procedure shown in FIG. 9."). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

A POSITA, however, would have understood that the size of the protected area would need to change based on the size of the total area of the SD card, and that the ideal ratio may not necessarily be an exact 0.01 (or 1%). As such, a POSITA would look to obtain a more accurate ratio of user data area to protected area, which it would find by using SD Product Manual. *SD Product Manual* at Table 1-1. Of note, taking the numbers of Table 1-1 of the SD Product Manual reveals that the ratio to sizes varies between 1.01% and 1.21% as the user area size decreases. A POSITA would have understood the modification to amount to applying a known technique (e.g., implementing the table of sizes to the user area and protected area of the virtual SD card) to a

known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card with increased protected area when user area decreased). As another example, a POSITA would have understood the combination or modification to amount to the simple substitution of one known element (e.g., a lookup table from the SD Product Manual for determining protected area) for another (e.g., Maeda's equation for determining protected area) to obtain predictable results (e.g., a protected area that slightly increases when user area decreases). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

CPXM defines a robust and renewable method for protecting content stored on a number of physical media types. *See CPXM* at 1. The guide includes information relating to SD card specifications and common elements of the SD card. *See id.* CPXM discloses content encryption. *See CPXM* at 1 ("The Content Protection for eXtended Media Specification (CPXM) defines a robust and renewable method for protecting content stored on a number of physical media types. . . . The SD Memory Card Book specifies additional details for using CPXM technology to protect content stored on the SD Memory Card, and on other implementations of protected storage with an interface and security system equivalent to that of the SD Memory Card."). In particular, CPXM discloses where encryption keys are stored. While Maeda discloses encryption keys, it is silent as to where they are stored.

A POSITA would have known that encryption keys must be stored somewhere. As such, a POSITA would have looked to CPXM, because it describes protecting content stored on physical media, and is a guide for SD card protection. A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions,

with a reasonable expectation of success (e.g., choosing from a finite number of identified, predictable solutions for storage of encryption keys).

Lu discloses an "encryption and decryption methods for implementing hardware and software binding." *Lu* at 1. Lu discloses that the encryption method includes "HASH transformation to obtain a software serial number; using a symmetric encryption algorithm to encrypt a software plain text; using a public key to encrypt a symmetric key through an asymmetric encryption algorithm; and finally, putting the encrypted software plain text and symmetric key together and downloading them into a memory." *Id.* at Abstract. Specifically, Lu discloses methods for "binding of a software product and a hardware product, thereby improving the security of the software product and the hardware product." *Id.*

A POSITA would be motivated to combine Lu with the Maeda-Hamann-SD Product Manual combination because Lu would add additional security features to the system and allow tying the security to the hardware platform. *Id.* at 1. Further, a POSITA would understand that there are many ways to hack encryption, and copying memory to another device allows for would-be hackers time to decrypt the information. As such a POSITA would look to Lu, because tying the encryption would prevent hacking by one that tries to copy the virtual SD card to another device. A POSITA would have considered the modification or combination to amount to the use of known techniques (e.g., tying encryption keys in Lu to a host hardware device) to improve similar devices (e.g., to improve security of the virtual SD card) in the same way (e.g., tying the encryption keys of the virtual SD card to the host device). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Similar to SD Product Manual, the SD Spec-2/3 describe the standard specifications for SD memory cards. Part 2 specifies the volume structure and file structure of the SD Memory Card (Secure Digital Memory Card) and the file system that defines the logical structure uses FAT file system based on ISO/IEC 9293 standard. *SD Spec-2* at FS-1. Part 3 describes the SD Memory Card specific 'data element.' *SD Spec-3* at SS-2. Part 2 and Part 3 have tables containing information about the sizes of SD cards, including total size, user size and protected areas. *See SD Spec-2* at Table C-2 and *SD Spec-3* at Table B-2. While Maeda discloses a formula for determining these relative sizes and while that formula is a close approximation of the SD Memory Card Specification tables, it varies.

A POSITA would have understood that a lot of work and research went into the development of those tables and that it would take into account important considerations to ensure sufficient memory for encryption keys and the protected area, in general. As such, a POSITA would have been motivated to use the SD specifications for Maeda, which discloses an SD card. A POSITA would have understood the combination or modification to amount to the simple substitution of one known element (e.g., equation from Maeda) for another (e.g., the lookup tables from the SD Spec-2/3) to obtain predictable results (e.g., a protected area size meeting SD card specifications). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Dash discloses a method for accommodating expandable storage devices in a storage virtualization environment (*see Dash* at 1:8-11) such that "the expandable storage devices [can] remain in operation and online while any storage virtualization software related configuration changes are performed" (*id.* at 3:6-8). The method receives "information describing storage

expansion in an expandable storage device" (*id.* at 3:28-29) and determines "changes to be made to information for converting input/output (I/O) operations directed at a virtual storage device to I/O operations directed at the expandable storage device" (*id.* at 3:29-32). Additionally, Dash describes "a virtual storage device manager, and an online storage device resize module." *Id.* at 3:38-40. The "virtual storage device manager is configured to map input/output (I/O) operations targeting a virtual storage device to I/O operations targeting an expandable storage device." *Id.* at 3:40-43. The online storage device resize module which is in communication with the virtual storage device manager is configured to "receive information describing storage expansion in the expandable storage device," "determine changes to be made to the storage device mapping information using the information describing storage expansion in the expandable storage device," and "update the storage device mapping information while the expandable storage device is online." *Id.* at 3:46-53; *see also* Figs. 2 and 3. While Maeda discloses partitioning of secure and user areas, it does not disclose physical and logical partitioning as a virtual SD Card. Dash, however, does describe the mapping of information to describe storage.

Since Maeda is silent on how it would partition areas in a virtual system, a POSITA would have looked to Dash that discloses changes to the size of storage (e.g., due to expandable storage) in a virtual environment that includes mapping information. As such, a POSITA would be motivated to use Dash's virtual device manager to map the logical and physical addresses of Maeda's SD card as virtualized by Hamann. Therefore, a POSITA would have understood the modification to amount to applying a known technique (e.g., implementing mapping between physical and logical addresses) to a known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card that contains file systems corresponding to a physical SD card). A POSITA would have considered the combination or

modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Tsypliaev discloses a method for protecting a disk drive or other data storage. *Tsypliaev* at Abstract. Specifically, Tsypliaev describes mounting a virtual storage that "combines a full access temporary storage and a READ-only portion of a main storage" (*id.*) such that only the virtual storage is modified. Specifically, Tsypliaev describes that the "virtual storage is mounted (i.e. made available to the OS)" and includes "a combination of two storages: the protected area of the main drive and the temporary data storage." *Id.* at 6:10-18. The protected area of the virtual storage includes the "contents of a hard disk drive (HDD)" while the temporary storage reflects "changes or edits to the files or other data structures in the main drive being affected by a user applications or system utilities" such that these modifications "can be registered and handled in the virtual storage as if it were real storage." *Id.* at 6:21-29. As such, the data of a hard drive is protected by "activating a special redirection driver for read and write requests (or any other disk access requests that alter the contents of the data), so that write requests are redirected to the temporary storage." *Id.* at 4:15-19.

A POSITA would have considered the combination of Tsypliaev's external storage to amount to using known work in one field of endeavor (SD cards) for use in another device in the same field of endeavor (Maeda's SD card as virtualized by the teachings of Hamann) due to design incentives (changing physical storages to virtual storages such that data may be further protected from potentially malicious applications). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Hirota discloses "a semiconductor memory card that can be used as a storage medium for storing digital contents and as a storage medium for storing general-purpose computer data (not an object of copyright protection)." *Hirota* at 2:3-7. Specifically, Hirota discloses that the semiconductor memory card includes "an authentication area and a non-authentication area" (*id.* at 2:12-23) such that "copyright protection can be stored in the authentication area and other data can be stored in the non-authentication area" (*id.* at 2:26-27). Hirota's semiconductor memory card also includes "an area resizing circuit which resizes the authentication area and the non-authentication area" (*id.* at 3:24-35) such that "the semiconductor memory card can be used mainly as a recording medium for digital contents and can be used as an auxiliary storage apparatus in a computer system" (*id.* at 3:27-30).

A POSITA would have recognized that the features described in Hirota, such as using a semiconductor memory card as an auxiliary storage medium for a computer, could be implemented into the combination to increase the size of secure storage. As such, the integration would enhance the ability for users to store large files of digital contents. Furthermore, Hirota discloses where encryption keys are stored. *See Hirota* at 12:51-56 ("The authentication area 332 stores an encryption key 425 which is a secret key used for decrypting the encrypted content 426 stored in the non-authentication area 331. The special area 304 stores the medium ID 341 which is necessary for accessing the authentication area 332."); 22:41-46 ("As shown in FIG. 15, the authentication circuit 216 of the player 201 has the encryption and decryption functions, and also prestores a master key 1301 which is a secret key being equal to the master key 323a held by the memory card 109, and a device ID 1302 which is an ID unique to the player 201, such as a product serial number (s/n).").

While Maeda discloses encryption keys, it is silent as to where they are stored. A POSITA would have known that encryption keys must be stored somewhere. As such, a POSITA would have looked to Hirota, because it describes using a semiconductor memory card as an auxiliary storage medium for a computer and describes security features to include on the semiconductor memory card (e.g., encryption keys). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success (e.g., choosing from a finite number of identified, predictable solutions for storage of encryption keys). Furthermore,, a POSITA would have understood the modification to amount to applying a known technique (e.g., implementing an auxiliary storage) to a known device or method (e.g., virtual SD card) that is ready for improvement to yield predictable results (e.g., a virtual SD card that is used to store large files of digital contents). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Meharchand discloses "a data protection controller for preventing data recorded on a data storage medium from being corrupted, modified or deleted." *Meharchand* at 1:8-10. The "data protection controller [] is interposed between a processor [] of a computing system and a data storage device (such as. . . memory stick)" (*id.* at 2:32-36) and is "used to create and maintain a protected data space and a virtual data space on the data storage device" (*id.* at 2:36-38). After the protected data space and the virtual data spaces are created, "the controller conceals the virtual data space from the processor" (*id.* at 2:39-40) and "presents the data storage device to the processor as having a capacity equal to that of the protected data space only" (*id.* at 2:40-42). Therefore, the "virtual data [can] be reviewed and modified" (*id.* at 2:57-58) such that any

"undesired changes to the protected data by unauthorized users and malicious software such as viruses" (*id.* at 2:64-65) are eliminated.

A POSITA would have known that SD cards are susceptible to potentially malicious software. As such, a POSITA would have considered the features of Meharchand, such as the data protection controller, to enhance the ability for users to protect data storage from potentially malicious software. A POSITA would have considered the combination to amount to using known work in one field of endeavor (SD cards) for use in another device in the same field of endeavor (Maeda's SD card as virtualized by the teachings of Hamann) due to design incentives (protecting from potentially malicious applications). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

Android SDK captures a series of updates that address changes based on "Android 1.5, also known as Cupcake." Cupcake at 10. Specifically, Android SDK discloses "create[ing] an Android Virtual Device (AVD)" (*id.* at 22) such as a "virtual Secure Digital (SD) Card" (*id.* at 24). Similarly, Android SDK discloses "concepts and code you need to start building smartphone applications with the Android programming environment." *Android Application* at Preface. Android SDK discloses "create[ing] a virtual SD card" such that a user can "debug[] on an emulator." *Id.* at 76. Because Android SDK describes creating a virtual SD card, a POSITA generating a virtual SD card would use have understood the descriptions in Android SDK to amount to applying an express teaching, suggestion, or motivation in the prior art for their combination.

Similar to SD Product Manual and SD Spec-2/3, SanDisk SD Cards describe the standards for SanDisk SD memory cards. SanDisk SD cards are a flash-based memory card specifically

designed to meet the security, capacity, performance and environmental requirements inherent in next generation mobile phones and consumer electronic devices. *See SD Product Manual* at 1-1. SanDisk SD cards are also compatible with other devices, and as such, comply with the file system and security specifications promulgated by the SD Association, and listed in SD Spec-2/3. *See id.* at 1-4, 3-22, 3-23, 4-37, 4-39.

A POSITA would have understood that significant work and research went into the development of SanDisk SD Cards which would take into account important considerations to ensure SanDisk SD Cards comply with SD Association standards. As such, a POSITA would have been motivated to use the SanDisk SD Card in the Android SDK-Maeda-Hamann combination, which discloses an SD card. A POSITA would have understood the combination or modification to amount to the simple substitution of one known element (e.g., Maeda's SD Card) for another (e.g., SanDisk SD Card) to obtain predictable results (e.g., structure and functionality of an SD Card that complies with SD Association standards). A POSITA would have considered the combination or modification to amount to choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.

C. Claim Charts—P.R. 3-3(c)

Pursuant to P.R. 3-3(c), and subject to Defendants' reservation of rights, claim charts providing a limitation-by-limitation analysis of where specifically, in each prior art item, each limitation of the Asserted Claims of the Asserted Patents is found (and, to the extent limitations may be governed by 35 U.S.C. § 112 ¶ 6 as discussed below, the identity of the structure(s), act(s), or material(s) in each item of prior art that performs the claimed function) are attached in A-01 through A-23, A-25, B-01 through B-20, B-22, B-23, C-01 through C-21, and D-01 through D-13, D15.

1. Claim Charts for U.S. Patent No. 8,949,879

Exhibit	Prior Art Reference
Exhibit A-01	Omnibus Claim Chart of Prior Art References against U.S. Patent No. 8,949,879 ("'879 Patent Omnibus Chart")
Exhibit A-02	Claim Chart of U.S. Patent Publication US 2005/0251822 ("Knowles") against U.S. Patent No. 8,949,879
Exhibit A-03	Claim Chart of U.S. Patent Publication US 2006/0277564 ("Jarman") against U.S. Patent No. 8,949,879
Exhibit A-04	Claim Chart of U.S. Patent Publication US 8,566,855 ("Wong") against U.S. Patent No. 8,949,879
Exhibit A-05	Claim Chart of U.S. Patent Publication US 2002/0095673 ("Leung") against U.S. Patent No. 8,949,879
Exhibit A-06	Claim Chart of U.S. Patent Publication US 6,701,523 ("Hancock") against U.S. Patent No. 8,949,879
Exhibit A-07	Claim Chart of U.S. Patent Publication US 2005/0028191 ("Sullivan") against U.S. Patent No. 8,949,879
Exhibit A-08	Claim Chart of U.S. Patent Publication US 6,643,715 ("Arthur") against U.S. Patent No. 8,949,879
Exhibit A-09	Claim Chart of U.S. Patent Publication US 2006/0271791 ("Novack") against U.S. Patent No. 8,949,879
Exhibit A-10	Claim Chart of U.S. Patent Publication US 2006/0130118 ("Damm") against U.S. Patent No. 8,949,879
Exhibit A-11	Claim Chart of U.S. Patent Publication US 8,856,818 ("Emerson") against U.S. Patent No. 8,949,879
Exhibit A-12	Claim Chart of U.S. Patent Publication US 6,684,240 ("Goddard") against U.S. Patent No. 8,949,879
Exhibit A-13	Claim Chart of U.S. Patent Publication US 2011/0185437 ("Tran") against U.S. Patent No. 8,949,879
Exhibit A-14	Claim Chart of U.S. Patent Publication US 2011/0283311 ("Luong") against U.S. Patent No. 8,949,879
Exhibit A-15	Claim Chart of U.S. Patent Publication US 8,955,029 ("Lewis") against U.S.

	Patent No. 8,949,879
Exhibit A-16	Claim Chart of U.S. Patent Publication U.S. Patent Publication 2009/0254778 ("Huang") against U.S. Patent No. 8,949,879
Exhibit A-17	Claim Chart of U.S. Patent Publication US 5,550,575 ("West") against U.S. Patent No. 8,949,879
Exhibit A-18	Claim Chart of U.S. Patent Publication US 6,216,263 ("Elam") against U.S. Patent No. 8,949,879
Exhibit A-19	Claim Chart of U.S. Patent Publication US 2005/0022229 ("Gabriel") against U.S. Patent No. 8,949,879
Exhibit A-20	Claim Chart of U.S. Patent Publication US 2012/0167123 ("Gavita") against U.S. Patent No. 8,949,879
Exhibit A-21	Claim Chart of U.S. Patent Publication US 2009/0300671 ("Scott") against U.S. Patent No. 8,949,879
Exhibit A-22	Claim Chart of U.S. Patent Publication US 2009/0307718 ("Tong") against U.S. Patent No. 8,949,879
Exhibit A-23	Claim Chart of RCA DTA800B1 System ("DTA800B1") against U.S. Patent No. 8,949,879
Exhibit A-24	Ineligibility Contentions against U.S. Patent No. 8,949,879
Exhibit A-25	Claim Chart of U.S. Patent US 8,079,044 ("Craner") against U.S. Patent No. 8,949,879

2. Claim Charts for U.S. Patent No. 8,898,803

Exhibit	**Prior Art Reference**
Exhibit B-01	Omnibus Claim Chart of Prior Art References against U.S. Patent No. 8,898,803 ("'803 Patent Omnibus Chart")
Exhibit B-02	Claim Chart of U.S. Patent Publication 2008/0263634 ("Kirkland") against U.S. Patent No. 8,898,803
Exhibit B-03	Claim Chart of U.S. Patent Publication 2009/0083412 ("Olaiya") against U.S. Patent No. 8,898,803
Exhibit B-04	Claim Chart of J.P. Patent No. 4,281,467 ("Shinoda") against U.S. Patent No. 8,898,803

Exhibit B-05	Claim Chart of J.P. Patent Publication 2009/048715 ("Hasegawa") against U.S. Patent No. 8,898,803
Exhibit B-06	Claim Chart of U.S. Patent Publication 2011/0138486 ("White") against U.S. Patent No. 8,898,803
Exhibit B-07	Claim Chart of U.S. Patent Publication 2006/0190410 ("Harper") against U.S. Patent No. 8,898,803
Exhibit B-08	Claim Chart of U.S. Patent Publication 2010/0169652 ("Butler") against U.S. Patent No. 8,898,803
Exhibit B-09	Claim Chart of U.S. Patent No. 8,600,062 ("Rae") against U.S. Patent No. 8,898,803
Exhibit B-10	Claim Chart of U.S. Patent Publication 2009/0049464 ("Kang") against U.S. Patent No. 8,898,803
Exhibit B-11	Claim Chart of U.S. Patent Publication 2009/0117846 ("Mavrakakis") against U.S. Patent No. 8,898,803
Exhibit B-12	Claim Chart of U.S. Patent Publication 2009/0187654 ("Raja") against U.S. Patent No. 8,898,803
Exhibit B-13	Claim Chart of U.S. Patent Publication 2003/0078986 ("Ayers") against U.S. Patent No. 8,898,803
Exhibit B-14	Claim Chart of W.O. Patent Publication 2008/068514 ("Hulbert") against U.S. Patent No. 8,898,803
Exhibit B-15	Claim Chart of Eliot Van Buskirk, *Distributing Films via USB Flash Drive*, Wired, Mar. 11, 2007 ("Van Buskirk") against U.S. Patent No. 8,898,803
Exhibit B-16	Claim Chart of Netflix Streaming against U.S. Patent No. 8,898,803
Exhibit B-17	Claim Chart of Amazon Unbox & Amazon Video on Demand against U.S. Patent No. 8,898,803
Exhibit B-18	Claim Chart of YouTube against U.S. Patent No. 8,898,803
Exhibit B-19	Claim Chart of Blockbuster Express Digital against U.S. Patent No. 8,898,803
Exhibit B-20	Claim Chart of DivX Stage6 against U.S. Patent No. 8,898,803
Exhibit B-21	Ineligibility Contentions against U.S. Patent No. 8,898,803

Exhibit B-22	Claim Chart of U.S. Patent Publication 2009/0241156 ("Nishida") against U.S. Patent No. 8,898,803
Exhibit B-23	Claim Chart of Spotify against U.S. Patent No. 8,898,803

3. Claim Charts for U.S. Patent No. 9,595,300

Exhibit	Prior Art Reference
Exhibit C-01	Omnibus Claim Chart of Prior Art References against U.S. Patent No. 9,595,300 ("'300 Patent Omnibus Chart")
Exhibit C-02	Claim Chart of U.S. Patent Publication 2005/0091597A1 ("Ackley") against U.S. Patent No. 9,595,300
Exhibit C-03	Claim Chart of U.S. Patent Publication 2008/0155617 ("Angiolillo") against U.S. Patent No. 9,595,300
Exhibit C-04	Claim Chart of U.S. Patent 7,401,351 ("Boreczky") against U.S. Patent No. 9,595,300
Exhibit C-05	Claim Chart of U.S. Patent Publication 2009/0172543 ("Cronin") against U.S. Patent No. 9,595,300
Exhibit C-06	Claim Chart of U.S. Patent 7,904,814 ("Errico") against U.S. Patent No. 9,595,300
Exhibit C-07	Claim Chart of U.S. Patent Publication 2007/0204238 ("Hua") against U.S. Patent No. 9,595,300
Exhibit C-08	Claim Chart of U.S. Patent Publication 2008/0229204 ("Johnson") against U.S. Patent No. 9,595,300
Exhibit C-09	Claim Chart of U.S. Patent 8,422,857 ("Kashima") against U.S. Patent No. 9,595,300
Exhibit C-10	Claim Chart of U.S. Patent 8,316,395 ("Kuroiwa '395) against U.S. Patent No. 9,595,300
Exhibit C-11	Claim Chart of U.S. Patent 8,213,764 ("Kuroiwa '764") against U.S. Patent No. 9,595,300
Exhibit C-12	Claim Chart of U.S. Patent Publication 2006/0080716 ("Nishikawa '716") against U.S. Patent No. 9,595,300

Exhibit C-13	Claim Chart of U.S. Patent Publication 2007/0198111A1 (“Oetzel”) against U.S. Patent No. 9,595,300
Exhibit C-14	Claim Chart of U.S. Patent 8,375,332 (“Park ’332”) against U.S. Patent No. 9,595,300
Exhibit C-15	Claim Chart of U.S. Patent Publication 2008/0101773 (“Park ’773”) against U.S. Patent No. 9,595,300
Exhibit C-16	Claim Chart of U.S. Patent Publication 2006/0059526 (“Poslinski”) against U.S. Patent No. 9,595,300
Exhibit C-17	Claim Chart of U.S. Patent 8,019,195 (“Shiiyama”) against U.S. Patent No. 9,595,300
Exhibit C-18	Claim Chart of U.S. Patent Publication 2008/0141160 (“Vahtola”) against U.S. Patent No. 9,595,300
Exhibit C-19	Claim Chart of U.S. Patent Publication 2002/0186234 (“Van De Streek”) against U.S. Patent No. 9,595,300
Exhibit C-20	Claim Chart of U.S. Patent 8,875,022 (“Yun”) against U.S. Patent No. 9,595,300
Exhibit C-21	Claim Chart of Sony DVD Architect 4.0 (“DVD Architect 4.0”) against U.S. Patent No. 9,595,300
Exhibit C-22	Ineligibility Contentions against U.S. Patent No. 9,595,300

4. Claim Charts for U.S. Patent No. 8,745,749

Exhibit	**Prior Art Reference**
Exhibit D-01	Omnibus Claim Chart of Prior Art References against U.S. Patent No. 8,745,749 (“’749 Patent Omnibus Chart”)
Exhibit D-02	Claim Chart of U.S. Patent Publication 2002/0080190A1 ("Hamann") against U.S. Patent No. 8,745,749
Exhibit D-03	Claim Chart of U.S. Patent U.S. Patent 6,611,907 (“Maeda”) against U.S. Patent No. 8,745,749
Exhibit D-04	Claim Chart of Content Protection for eXtended Media Specification (Revision 0.85 Preliminary Release, September 27, 2010) (4C entity) ("CPXM") against U.S. Patent No. 8,745,749

Exhibit D-05	Claim Chart of SanDisk SD Card Product Manual, Version 2.2, November 2004 ("SD Product Manual") against U.S. Patent No. 8,745,749
Exhibit D-06	Claim Chart of Chinese Patent No. 100,468,438C (“Lu”) against U.S. Patent No. 8,745,749
Exhibit D-07	Claim Chart of SD Memory Card Specifications, Part 2 (File System Specification), Version 1.0, February 2000 and Version 1.01, April 2001 (“SD Spec-2”) against U.S. Patent No. 8,745,749
Exhibit D-08	Claim Chart of SD Memory Card Specifications, Part 3 (Security Specification), Version 1.0, February 2000 and Version 1.01, April 2001 (“SD Spec-3”) against U.S. Patent No. 8,745,749
Exhibit D-09	Claim Chart of U.S. Patent 7,603,533 (“Tsypliaev”) against U.S. Patent No. 8,745,749
Exhibit D-10	Claim Chart of U.S. Patent No. 7,921,262B1 ("Dash") against U.S. Patent No. 8,745,749
Exhibit D-11	Claim Chart of U.S. Patent No. 7,370,165B2 ("Meharchand") against U.S. Patent No. 8,745,749
Exhibit D-12	Claim Chart of U.S. Patent No. 6,789,192B2 (“Hirota”) against U.S. Patent No. 8,745,749
Exhibit D-13	Claim Chart of Android SDK against U.S. Patent No. 8,745,749
Exhibit D-14	Ineligibility Contentions against U.S. Patent No. 8,745,749
Exhibit D-15	Claim Chart of SanDisk SD Cards against U.S. Patent No. 8,745,749

D. Invalidity Under 35 U.S.C. § 112—P.R. 3-3(d)

Pursuant to P.R. 3-3(d), and subject to Defendants’ reservation of rights, Defendants identify below the grounds upon which Defendants currently contend the Asserted Claims are invalid for lack of written description and/or enablement under 35 U.S.C. § 112, ¶ 1, and/or for failing to comply with the definiteness requirements of 35 U.S.C. § 112, ¶ 2. The disclosures below do not attempt to identify all recitations of a given term or phrase in each claim. Where Defendants have identified an instance of a term or limitation in a particular claim that renders the claim invalid

under Section 112, Defendants contend that every instance of the challenged term or limitation, or similar term or limitation, in the claim renders the claim invalid for the same reasons.

The following contentions are subject to revision and amendment under Federal Rule of Civil Procedure 26(e) and the Orders of record in this matter where appropriate in light of further investigation and discovery regarding the defenses below, the Court's construction of the claims at issue, or the review and analysis of expert witnesses.

1. Lack of Enablement and Written Description

One or more Asserted Claims of the Asserted Patents are invalid under § 112, ¶ 1 for failing to particularly point out and distinctly claim the subject matter which the patentee regards as its alleged invention such that one skilled in the relevant art would be reasonably apprised of the bounds of the asserted claims when read in light of the specification. Section 112, paragraph 1 requires that the specification contain a written description of the invention. "[T]he hallmark of written description is disclosure." *Boston Scientific Corp. v. Johnson & Johnson*, 647 F. 3d 1353, 1361-62 (Fed. Cir. 2011) (citation omitted). The test for whether a specification adequately describes an invention is "whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date . . . . [T]he test requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art . . . . [It] is a question of fact." *Ariad Pharms., Inc. v. Eli Lilly and Co.,* 598 F. 3d 1336, 1351 (Fed. Cir. 2010) (*en banc*); *Boston Scientific*, 647 F. 3d at 1362.

Section 112, paragraph 1 also requires that the patent specification enable "those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation.'" *Genentech, Inc. v. Novo Nordisk A/S*, 108 F. 3d 1361, 1365 (Fed. Cir. 1997) (quoting *In re Wright*, 999 F. 2d 1557, 1561 (Fed. Cir. 1993)). "[T]he scope of the claims must be

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less than or equal to the scope of the enablement." *Nat'l Recovery Tech., Inc. v. Magnetic Separation Sys., Inc.,* 166 F. 3d 1190, 1196 (Fed. Cir. 1999).

Subject to Defendants' reservation of rights, Defendants identify the following written description and enablement grounds. The following does not purport to list every claim limitation to the foregoing disclosed grounds. Where a particular claim term or limitation is identified, Defendants contend that the identified term or limitation, as well as the surrounding claim language in context as recited in the applicable claim, suffer from the identified Section 112 defect. Furthermore, where a particular claim term or limitation is identified with respect to one or more particular claims, Defendants contend that each other Asserted Claim that recites the same claim term or limitation, or similar claim term or limitation, is subject to the same Section 112 defect. Defendants also reserve the right to assert additional Section 112 defenses as discovery progresses.

The Asserted Claims fail to meet the requirements of 35 U.S.C. § 112, ¶ 1 because the specifications of the Asserted Patents do not contain a written description of the alleged invention and do not enable a person skilled in the art to make and use the alleged invention. In particular, at least the following limitations of the Asserted Claims are not enabled and/or lack written description support:

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- "a rating policy management module for selectively setting rating based access control on a per media and per user basis for digital content of a digital library thereby overriding a policy set by the V-chip for access to the digital content from the video playback device" Claim 1.
- "a rating policy enforcement module for enforcing rating based access to the individual digital content for a plurality of users separate from and in addition to an administrator, wherein at least a first user and a second user of the plurality of users have different media rating requirements and have different media ratings associated with a same specific digital content" Claim 1.
- "…thereby overriding a policy set by the V-chip for access to the digital content from the video playback device" Claim 1.

- "retrieving media information from the memory comprising a rating based media access policy for a digital content" Claim 4.

- "receiving from the user a first rating based access control policy override action for a first viewer and a second, different, rating based access control policy override action for a second viewer with respect to a same specific digital content, wherein the first viewer and second viewer are separate and distinct from the user from which the override actions are received" Claim 4.

- "wherein the first viewer and second viewer are separate and distinct from the user from which the override actions are received" Claim 4.

- "…wherein the authentication codes comprise biometric information" Claims 7, 14.

- "responsive to determining that rating based access control configured to override the V-chip default rating based access policy is enabled: . . . reading a default rating based access policy action associated with the selected media content configured to override the V-chip default rating based access policy" Claim 12.

- "the default rating based access policy action" Claim 15.

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- "if the playback device is connected to a network via a network connection having a speed that meets a threshold for streaming digital content, …" Claim 1[d].

- "The method of claim 1, wherein the user account information for each account based digital streaming service comprises an account identifier and login information." Claim 2.

- "The method of claim 1, wherein the content transfer can occur without removing the flash memory media device from a device containing the flash memory media device." Claim 4.

- "The method of claim 1, wherein the content transfer can occur by removing the flash memory media device from a device containing the flash memory media device." Claim 5.

- "The method of claim 1, wherein the user service information is received from a data feed from a provider of the streaming service." Claim 8.

- "…and wherein the connected flash memory media device previously has received content from a kiosk delivery system including the user service information…" Claim 11[a].

- "responsive to the user service information being unrecognized by the playback device, playing back the content from the connected flash memory media device, the content previously received from the kiosk delivery system; and" Claim 11[b]

- "responsive to the user service information being recognized by the playback device:" Claim 11[c].

- "responsive to a speed of the connection not meeting a threshold for streaming digital content, playing back the content from the connected flash memory media device; and" Claim 11[f].

- "responsive to the speed of the connection meeting the threshold for streaming digital content, streaming the content from the account based digital media content streaming service, wherein streaming the content from the account based digital media content streaming service comprises streaming the content in high definition, and wherein the content on the flash memory media device is standard definition." Claim 11[g].

- "The method of claim 11, wherein the threshold is a lower limit on speed consistent with avoiding service interruptions." Claim 13.

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- "as initially configured and stored on the [secure digital] / [SD] card" Claims 1, 8, 15.

- "the timeline assembled from the chapter titles, the chapter start times, and the location on the [secure digital] / [SD] card of chapter preview images that correspond to the playable content stored as part of the metadata" Claims 1, 8, 15.

- "receive a selection of one of the chapter preview images as chapter skip input during the continuous playback of the video" Claims 1, 8.

- "move the at least one image from each chapter one position along the line with respect to the focus identifier, according to the chapter skip input, wherein the one image is moved to the left when the chapter skip input indicates a skip forward and wherein the one image is moved to the right when the chapter skip input indicates a skip backward" Claims 1, 8.

- "skipping playback of the video to a chapter identified by the focus identifier such that the video playback continues from the position of the chapter identified by the focus identifier" Claim 1, 8.

- "a receive module configured to receive a selection of one of the chapter preview images as chapter skip input during the continuous playback of the video" Claim 15.

- "a move module configured to move the at least one image from each chapter one position along the line with respect to the focus identifier, according to the chapter skip input, wherein the one image is moved to the left when the chapter skip input indicates a skip forward and wherein the one image is moved to the right when the chapter skip input indicates a skip backward" Claim 15.

- "a resume module for skipping playback of the video to a chapter identified by the focus identifier such that the video playback continues from the position of the chapter identified by the focus identifier" Claim 15.

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- "determination based on a lookup table providing a relationship between sizes," Claims 1[d], 14[d], 18[d], 22[d].

- "wherein the file system for secure data is encrypted," Claim 2.

- "wherein the file system is encrypted with an encryption key," Claims 3-5, 10-12.

- "a trusted host" Claims 5 and 12.

- "wherein the media key block and the media identification are assigned to the device and not from the SD card," Claim 9.

- "the encryption key not stored by the computer system." Claim 10.

- "the encryption key derived from a computer system and stored by the computer system." Claim 11.

- "the encryption key derived from a computer system and stored by the computer system within a trusted host." Claim 12.

- "The method of any one of claims 1 through 5, wherein the media identification comprises random data not allocated from the SD card." Claim 13.

- "create[ing] a file system for secure data on a storage device for storage of secure data corresponding to a secure data area of the SD card," Claims 14[c], 22[c].

- "accessing the data stored in the secure area of the provisioned virtual SD card," Claim 14[e].

- "extracting the data from the secured area of the provisioned virtual SD card," Claim 14[f].

- "access the data stored in the secure area of the provisioned virtual SD card," Claim 22[e].

- "extract the data from the secured area of the provisioned virtual SD card," Claim 22[f].
- "Authenticated Key Encryption (AKE)," Claims 15, 16, 17, 23, 24, 25.
- "wherein the encryption key is derived from a computer system and stored by the computer system." Claim 21.
- "data received from an application program through Authenticated Key Encryption (AKE) is encrypted with another key before storing the data in the secure area" Claims 17, 25.

2. Indefiniteness

As detailed below, the Asserted Claims are indefinite under 35 U.S.C. § 112, ¶ 2. Claims are indefinite under 35 U.S.C. § 112, ¶ 2 when they "fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.,* 134 S. Ct. 2120, 2124 (2014).

Defendants note that the Court's Docket Control Orders contemplate that all indefiniteness issues be brought to the Court's attention through the *Markman* briefing process (*see* Dkt. No. 27 at 5), which has not yet begun. Defendants' detailed arguments as to indefiniteness will be presented at that time, through the *Markman* meet and confer and briefing process.

Subject to Defendants' reservation of rights, and based on Defendants' present understanding of Truesight's Infringement Contentions, at least one or more of these claim terms/phrases/limitations are indefinite because they, when read in light of the specifications and the prosecution histories, fail to inform with reasonable certainty those skilled in the art about the scope of the invention, and are therefore invalid for indefiniteness under 35 U.S.C. § 112 ¶ 2. *See Nautilus, Inc. v. Biosig Instruments, Inc.,* 134 S. Ct. 2120 (2012). Although the question of whether a given claim term is indefinite may turn on claim construction positions advocated and/or that will be advocated by Truesight (including how Truesight applies or interprets any claim constructions), Defendants allege that at least the following claims of the Asserted Patents are

invalid because they include limitations and/or claim terms that fail to satisfy the definiteness requirement of 35 U.S.C. § 112 ¶ 2:

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- “a rating policy management module for selectively setting rating based access control on a per media and per user basis for digital content of a digital library thereby overriding a policy set by the V-chip for access to the digital content from the video playback device” Claim 1.

- “a rating policy enforcement module for enforcing rating based access to the individual digital content for a plurality of users separate from and in addition to an administrator, wherein at least a first user and a second user of the plurality of users have different media rating requirements and have different media ratings associated with a same specific digital content” Claim 1.

- “the individual digital content” Claim 1.

- “wherein a first of the two users is allowed to access the specific digital content based upon a first authentication code and a second of the two users is blocked from access to the specific digital content based upon a second authentication code, wherein the first authentication code comprises a personal identification number (PIN), wherein the different ratings associated with the specific digital content are enforced using the first and second authentication codes, and wherein the first of the two users is allowed to access the specific digital content in response to determining that a content identifier of the specific digital content matches a user identifier of the first user and the personal identification number of the first user is successfully authenticated.” Claim 1.

- “…a content identifier…” Claim 1.

- “…a user identifier…” Claim 1.

- “A method in a computing system for creating specific rating policies for digital media access, the method comprising: under control of the computing system having a memory and a processor, performing the acts of retrieving media information. . . displaying the rating based media access policy . . . receiving from the user a first rating based access control policy override action first viewer and a second, different, rating based access control policy override action for a second viewer with respect to a same specific digital content, wherein the first viewer and second viewer are separate and distinct from the user from which the override actions are received, and wherein the first viewer is associated with a first authentication code unique to the first viewer and the second viewer is associated with a second authentication code unique to the second viewer; storing the first and second policy override actions . . ., and wherein the first viewer is allowed to access the specific digital content based upon the first authentication code and the second

viewer is blocked from access to the specific digital content based upon the second authentication code, wherein the first authentication code comprises a personal identification number (PIN), and wherein the first of the two users is allowed to access the specific digital content in response to determining that a content identifier of the specific digital content matches a user identifier of the first user and the personal identification number of the first user is successfully authenticated." Claim 4.

- "…the media information;" Claim 8.

- "…a media owner." Claim 9.

- "storing the first and second policy override actions in a rating policy repository wherein future playback of the digital content is allowed or blocked consistent with the stored policy override action" Claim 4

- "wherein the first viewer is allowed to access the specific digital content based upon the first authentication code and the second viewer is blocked from access to the specific digital content based upon the second authentication code, wherein the first authentication code comprises a personal identification number (PIN), and wherein the first of the two users is allowed to access the specific digital content in response to determining that a content identifier of the specific digital content matches a user identifier of the first user and the personal identification number of the first user is successfully authenticated." Claim 4.

- " wherein the first policy override action comprises modifying media access for the first viewer and the second policy override action comprises modifying media access for the second viewer" Claim 10.

- "wherein the first policy override action comprises modifying media access for a group that includes the first viewer" Claim 11.

- "reading a default rating based access policy action associated with the selected media content configured to override the V-chip default rating based access policy" Claim 12.

- "responsive to a first user selecting a media content from the displayed metadata . . . validating an authentication code . . . wherein the first authentication code comprises a personal identification number (PIN), and wherein the first of the two users is allowed to access the media content in response to determining that a content identifier of the media content matches a user identifier of the first user and the personal identification number of the first user is successfully authenticated." Claim 12.

- "determining that an authentication code associated with the second preventing playback of the media wherein the first and second users are not administrators of

the rating based access control configured to override the V-Chip default rating based access policy" Claim 12.

- "the media" / "the same media" Claim 12.

- "the default rating based access policy action" Claim 15.

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- "A method of delivering content by integrating a kiosk delivery system with a streaming service" Claim 1[pre].

- "kiosk" Claims 1, 9, 10, 11.

- "user service information" Claims 1, 3, 6, 7, 8, 10, 11, 12.

- "a threshold for streaming digital content" Claims 1, 11.

- "high definition" Claims 1, 11.

- "standard definition" Claims 1, 11.

- "login information" Claim 2.

- "The method of claim 1, wherein the content transfer can occur without removing the flash memory media device from a device containing the flash memory media device." Claim 4.

- "The method of claim 1, wherein the content transfer can occur by removing the flash memory media device from a device containing the flash memory media device." Claim 5.

- "The method of claim 1, wherein the user service information is received from a user device." Claim 6.

- "The method of claim 1, wherein the user service information is received through a website." Claim 7.

- "The method of claim 1, wherein the user service information is received from a data feed from a provider of the streaming service." Claim 8.

- "A method of operating a playback device to automatically play back content from either a flash memory media device or a digital streaming service depending upon playback circumstances" Claim 11[pre].

- "…and wherein the connected flash memory media device previously has received content from a kiosk delivery system including the user service information that

includes user account information for one or more account based digital streaming services;" Claim 11[a].

- "The method of claim 11, wherein accessing the account based digital media content streaming service using the user service information comprises automatically logging the user into the account based digital media content streaming service." Claim 12.

- "The method of claim 11, wherein the threshold is a lower limit on speed consistent with avoiding service interruptions." Claim 13.

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- "reading from a metadata file stored with the video chapter start times, and location on a secure digital card (SD card) of chapter preview images that correspond to the playable content" Claim 1.

- "the playable content" Claim 1.

- "the chapter titles" Claim 1.

- "the playable content stored as part of the metadata" Claim 1.

- "the flash memory device" Claim 5.

- "the instructions when executed causing at least one processor to:

read from a metadata file associated with and stored with a video chapter titles, chapter start times, and location on a secure digital card (SD card) of chapter preview images that correspond to the playable content as initially configured and stored on the secure digital card, each chapter comprising a segment of content of the video;

present, during continuous playback of a video, an on-screen display to a user, the on-screen display including a timeline having a demarcation for the beginning of each of the plurality of chapter of the video and having a marker corresponding to a current position in the video playback, the timeline assembled from the chapter titles, the chapter start times, and the location on the SD card of chapter preview images that correspond to the playable content stored as part of the metadata, and the on-screen display including one image for

each of the plurality of chapters from the chapter preview images displayed in sequential order parallel to the timeline, wherein a focus identifier marks an image of a chapter corresponding to the current position within the continuous video playback; receive a selection of one of the chapter preview images as chapter skip input during the continuous playback of the video;

move the at least one image from each chapter one position along the line with respect to the focus identifier, according to the chapter skip input, wherein the one image is moved to the left when the chapter skip input indicates a skip forward and wherein the one image is moved to the right when the chapter skip input indicates a skip backward; and

skipping playback of the video to a chapter identified by the focus identifier such that the video playback continues from the position of the chapter identified by the focus identifier." Claim 8.

- "instructions that cause the at least one processor to:

  initiate playback of the video from the flash memory device;

  read metadata from the flash memory device;

  match the read metadata from the flash memory device with the video; and

  assemble the video and the metadata in a memory structure to retrieve for playback" Claim 11.

- "a chapter presentation module, configured to:

  read from a metadata file associated with and stored with the video chapter titles, chapter start times, and location on a secure digital card (SD card) of chapter preview images that correspond to the playable content as initially configured and stored on the secure digital card, each chapter comprising a segment of content of the video; and

present, during continuous playback of a video, an on-screen display on the video screen, the on-screen display including a timeline having a demarcation for the beginning of each of the plurality of chapters of the video and having a marker corresponding to a current position in the video playback, the timeline assembled from the chapter titles, the chapter start times, and the location on the SD card of chapter preview images that correspond to the playable content stored as part of the metadata, and the on-screen display including one image for each of the plurality of chapters from the chapter preview images displayed in sequential order parallel to the timeline, wherein a focus identifier marks an image of a chapter corresponding to the current position within the continuous video playback;" Claim 15.

- "a receive module configured to receive a selection of one of the chapter preview images as chapter skip input during the continuous playback of the video;" Clam 15.
- "a move module configured to move the at least one image from each chapter one position along the line with respect to the focus identifier, according to the chapter skip input, wherein the one image is moved to the left when the chapter skip input indicates a skip forward and wherein the one image is moved to the right when the chapter skip input indicates a skip backward;" Claim 15.
- "a resume module for skipping playback of the video to a chapter identified by the focus identifier such that the video playback continues from the position of the chapter identified by the focus identifier." Claim 15.
- "a playback module for initiating playback of the video from the secured digital memory device" Claim 18.
- "a reading module for reading metadata from the secured digital memory device" Claim 18.
- "a match module for matching the read metadata from the secured digital memory device with the video" Claim 18.
- "an assembly module for assembling the video and the metadata in a memory structure to retrieve for playback and display" Claim 18.

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- “wherein a size of the file system for secure data is determinant on a size of the file system for user data, the determination based on a lookup table providing a relationship between the sizes.” Claim 1[d], 14[d], 18[d], 22[d].
- “a lookup table” Claims 1[d], 14[d], 18[d], 22[d].
- “The method of claim 2, wherein the file system is encrypted with an encryption key, the encryption key derived from computer system information and the encryption key not stored by the computer system.” Claim 3.
- “The method of claim 2, wherein the file system is encrypted with an encryption key, the encryption key derived from a computer system and stored by the computer system.” Claim 4.
- “The method of claim 2, wherein the file system is encrypted with an encryption key, the encryption key derived from a computer system and stored by the computer system within a trusted host.” Claim 5.
- “the file system” Claims 10-12.
- “stored by the computer system” Claims 3-5, 10-12, 20-21.
- “a trusted host” Claims 5 and 12.
- “storage devices” Claim 7.
- “The method of claim 2, wherein the media key block and the media identification are assigned to the device and not from the SD card.” Claim 9.
- “the SD card” Claims 14[c], 22[c].
- “The method of claim 1, wherein the file system is encrypted with an encryption key, the encryption key derived from computer system information and the encryption key not stored by the computer system.” Claim 10.
- “The method of claim 1, wherein the file system is encrypted with an encryption key, the encryption key derived from a computer system and stored by the computer system.” Claim 11.
- “The method of claim 1, wherein the file system is encrypted with an encryption key, the encryption key derived from a computer system and stored by the computer system within a trusted host.” Claim 12.
- “The method of any one of claims 1 through 5, wherein the media identification comprises random data not allocated from the SD card.” Claim 13.
- “creating a file system for secure data on a storage device for storage of secure data corresponding to a secure data area of the SD card,” Claim 14[c].
- “accessing the data stored in the secure area of the provisioned virtual SD card,” Claim 14[e].
- “extracting the data from the secured area of the provisioned virtual SD card,” Claim 14[f].

- "Authenticated Key Encryption (AKE)," Claims 15, 16, 17, 23, 24, 25.
- "data received from an application program through Authenticated Key Encryption (AKE)" Claims 16, 17, 24, 25.
- "create a file system for secure data on a storage device for storage of secure data corresponding to a secure data area of the SD card," Claim 18[c].
- "of any one of claims 18, 19, or 20, wherein the encryption key is derived from a computer system and stored by the computer system" Claim 21.
- "create a file system for secure data on a storage device for storage of secure data corresponding to a secure data area of the SD card," Claim 22[c].
- "access the data stored in the secure area of the provisioned virtual SD card," Claim 22[e].
- "extract the data from the secured area of the provisioned virtual SD card," Claim 22[f].
- "stored by the computer system." Claim 21 (indefinite as to Claim 20).

3. 35 U.S.C. § 112, ¶ 6 (Means Plus Function)

The following terms of the Asserted Patents may be subject to 35 U.S.C. § 112 ¶ 6, which allows for drafting claims that recite means or a step for performing a specified function without the recital of structure material, or acts in support thereof. In such cases, "the claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." 35 U.S.C. § 112 ¶ 6. If a claim does not recite the term "means," there is a rebuttable presumption that § 112 ¶ 6 does not apply. *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir. 2015). However, this presumption may be overcome, e.g., when the claims recite non-structural generic placeholders that invoke § 112 ¶ 6. As the MPEP explains, "[t]ypically, the claim limitation will use the linking word 'for' to associate 'means' or a generic placeholder with the function." MPEP § 2181. Additionally, the phrase "configured to" is a well-recognized synonym of "for" and often signals a means-plus-function claim. For example, the MPEP explains that other linking words besides "for" may be used to signal means-plus-function treatment "such as 'so that' or 'configured to'." MPEP § 2181 (explaining that "ink delivery means," "module configured to deliver ink," and "means for ink delivery" all are interpreted as

claim elements that invoke § 112(6) equivalency.). As to the term "module," this is a "well-known nonce word that can operate as a substitute for 'means'." *Rain Computing, Inc. v. Samsung Elecs. Am., Inc.*, 989 F.3d 1002, 1006 (Fed. Cir. 2021). The following terms in each of the Asserted Claims, as well as their analogues in dependent claims, may be governed by § 112 ¶ 6:

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- "a rating policy management module for selectively setting rating based access control on a per media and per user basis for digital content of a digital library thereby overriding a policy set by the V-chip for access to the digital content from the video playback device" Claim 1.

- "a rating policy enforcement module for enforcing rating based access to the individual digital content for a plurality of users separate from and in addition to an administrator wherein at least a first user and a second user of the plurality of users have different media rating requirements and have different media ratings associated with a same specific digital content wherein a first of the two users is allowed to access the specific digital content based upon a first authentication code and a second of the two users is blocked from access to the specific digital content based upon a second authentication code, wherein the first authentication code comprises a personal identification number (PIN), wherein the different ratings associated with the specific digital content are enforced using the first and second authentication codes, and wherein the first of the two users is allowed to access the specific digital content in response to determining that a content identifier of the specific digital content matches a user identifier of the first user and the personal identification number of the first user is successfully authenticated" Claim 1.

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- "a chapter presentation module, configured to: read from a metadata file associated with and stored with the video chapter titles, chapter start times, and location on a secure digital card (SD card) of chapter preview images that correspond to the playable content as initially configured and stored on the secure digital card, each chapter comprising a segment of content of the video; and present, during continuous playback of a video, an on-screen display on the video screen, the on-screen display including a timeline having a demarcation for the beginning of each of the plurality of chapters of the video and having a marker corresponding to a current position in the video playback, the timeline assembled from the chapter titles, the chapter start times, and the location on the SD card of chapter preview images that correspond to the playable content stored as part of the metadata, and the on-screen display including one image for each of the plurality of chapters from the chapter preview images displayed in sequential order parallel to the timeline, wherein a focus identifier marks an image of a chapter corresponding to the current position within the continuous video playback" Claim 15.

- "a receive module configured to receive a selection of one of the chapter preview images as chapter skip input during the continuous playback of the video" Clam 15.

- "a move module configured to move the at least one image from each chapter one position along the line with respect to the focus identifier, according to the chapter skip input, wherein the one image is moved to the left when the chapter skip input indicates a skip forward and wherein the one image is moved to the right when the chapter skip input indicates a skip backward" Claim 15.

- "a resume module for skipping playback of the video to a chapter identified by the focus identifier such that the video playback continues from the position of the chapter identified by the focus identifier" Claim 15.

- "a playback module for initiating playback of the video from the secured digital memory device" Claim 18.

- "a reading module for reading metadata from the secured digital memory device" Claim 18.

- "a match module for matching the read metadata from the secured digital memory device with the video" Claim 18.

In each of the above limitations, the claimed functions are underlined in the claim language. Pursuant to P.R. 3-3(c), the identity of the structure(s), act(s), or materials(s) in each item of prior art that performs the claimed functions is shown in the attached charts for these limitations. Defendants contend that each of the references in the charts disclose the same functions and at least the same corresponding structure for performing each claimed function as the "structure," if any, disclosed in the asserted patent specifications – *i.e.*, generic computer hardware, such as modules, processors, or memory. For instance, the '300 and '879 patents describe the claimed "modules" generically as software in the form of code embodied on machine-readable medium or generically as hardware that is "capable of performing certain operations" and "configured or arranged in a certain manner." *See, e.g.*, '300 Patent, 10:1-5; '879 Patent, 11:1-5. Defendants identify the above limitations subject to the indefiniteness section, particularly to the extent the specification of the patent in which the claim limitation appears fails to disclose adequate

corresponding structure for the claimed function to a person of ordinary skill in the art. *See Williamson*, 792 F.3d at 1352 (explaining that if a person of ordinary skill in the art would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim, a means-plus-function clause is indefinite). Defendants reserve the right to amend its invalidity contentions should Plaintiff or the Court identify any additional or different structure corresponding to each of these claimed functions.

E. Subject Matter Eligibility Contentions

The Asserted Claims are directed to abstract ideas and lack an inventive concept, and they are therefore ineligible for patent protection under the subject matter requirements of Section 101 of the Patent Act. In accordance with the Standing Order Regarding Subject Matter Eligibility Contentions issued by this Court on July 25, 2019, Defendants submit their subject matter eligibility contentions concurrently herewith as Exhibits A-24, B-21, C-22, and D-14.

F. Other Grounds of Invalidity

Defendants reserve the right to assert that the Asserted Claims are invalid under 35 U.S.C. § 102(a), (b), (f) and/or (g) in the event Defendants obtain evidence (i) concerning prior art publications and systems through on-going discovery, including that which is subject to any third-party subpoenas; (ii) concerning any on-sale or public use bars, or any products or devices offered for sale or sold that render one or more of the Asserted Claims obvious; or (iii) that the named inventors of the patents-in-suit, did not invent (either alone or in conjunction with other parties) or first conceive of the subject matter claimed in the patents-in-suit. Should Defendants obtain such evidence of the latter, they will provide the name of the person(s) from whom and the circumstances under which the invention or any part of it was derived, and/or the circumstances surrounding the conception of the invention before the patent application.

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Defendants reserve the right to supplement these disclosures based on further investigation and discovery.

III. DOCUMENT PRODUCTION ACCOMPANYING INVALIDITY CONTENTIONS—P.R. 3-4

Documents required to be produced under the Docket Control Order (Dkt. No. 27) and Patent Local Rule 3-4 are being produced to Truesight under a separate letter or will be made available for inspection. By way of example, Samsung has separately produced documents or produces concurrently with service of these Invalidity Contentions prior art references and materials at least at SAMSUNG_TRUESIGHT_0000015899 – SAMSUNG_TRUESIGHT_0000025393, SAMSUNG_TRUESIGHT_0000036312 – SAMSUNG_TRUESIGHT_0000036356, and SAMSUNG_TRUESIGHT_0000039102 – SAMSUNG_TRUESIGHT_0000040025 and Samsung has made available source code for inspection. Defendants reserve the right to produce and rely on additional documents relating to their products in view of, for example, additional information revealed during discovery regarding the content of Truesight's allegations and/or amendments to Truesight's Infringement Contentions.

IV. OTHER PRIOR ART

In addition to the prior art references that Defendants have specifically discussed in these Invalidity Contentions, Defendants identify each reference produced and cited in the accompanying document production of the same date. All of these references are relevant prior art, and Defendants reserve the right to rely on them based on its continuing research and analysis of the Asserted Claims, accused instrumentalities, and the prior art.

Defendants further reserve the right to supplement these Invalidity Contentions once discovery into the original assignees, named inventors, and other third parties can take place, including as to the full scope of the named inventors.

In addition, until all prior art references available to the named inventors are identified or produced and they are deposed, it is impossible to know all aspects of what the named inventors learned from prior art sources (or from collaborations with others) and what they independently contributed to the claimed subject matter. Defendants will supplement these Invalidity Contentions if and when more information becomes available.

V. PRIOR ART INDEX

In addition to those references cited in prior sections, Defendants hereby cite the following additional references as being relevant to the subject matter claimed in the Asserted Patents. ***In addition, Defendants incorporate by reference all references found on the face of the Asserted Patents and/or in the prosecution history of the Asserted Patents or patent family.*** Defendants reserve the right to rely on one or more of the following references as anticipatory references under 35 U.S.C. §102, as further evidence of obviousness under 35 U.S.C. §103, as background references demonstrating the state of the art, as a limitation upon the doctrine of equivalents, or for any other purpose. Based on further investigation and discovery, based on positions that Plaintiff may take regarding the scope of the asserted claims, and/or based on the Court's claim construction, Defendants reserve the right to revise these contentions and to rely on these references to prove the invalidity of the Asserted Patents in a manner consistent with this Court's Rules and with the Federal Rules of Civil Procedure.

A. Patents & Published Patent Applications

1. U.S. Patent No. 8,949,879

Patent or Patent Publication Number	Prior Art Provision	Filing Date	Issuance or Publication Date	Short Name (e.g., inventor)
U.S. Pat. Pub. 2004/0123135	102(b)	December 10, 2003	June 24, 2004	Goddard 135

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Patent or Patent Publication Number	Prior Art Provision	Filing Date	Issuance or Publication Date	Short Name (e.g., inventor)
U.S. Pat. Pub. 2009/0300671	102(b)	May 30, 2008	December 3, 2009	Scott
U.S. Pat. Pub. 2009/0307718	102(b)	June 6, 2008	December 10, 2009	Tong
U.S. Pat. Pub. 2010/0146536	102(a), (e)	November 14, 2005	June 10, 2010	Craner 536
U.S. Pat. No. 7,747,680	102(a), (e)	October 30, 2007	June 29, 2010	Ravikumar
U.S. Pat. No. 7,765,565	102(a), (e)	April 4, 2006	July 27, 2010	Ogawa
U.S. Pat. Pub. 2010/262990	102(a), (e)	April 14, 2009	October 14, 2010	Nishida
U.S. Pat. Pub. 2008/127243	102(b)	June 26, 2006	May 29, 2008	Furutani
U.S. Pat. Pub. 2010/0031283	102(b)	March 10, 2008	February 4, 2010	Kageyama
JP Pat. Pub. 2009/017013	102(b)	July 2, 2007	January 22, 2009	Hirotaka
KR Pat. Pub. 2007/0069413	102(b)	December 28, 2005	July 3, 2007	Yong
KR Pat. Pub. 2008/0086199	102(b)	March 22, 2007	September 25, 2008	Young
U.S. Pat. Pub. 2001/0039657	102(b)	April 27, 2001	November 8, 2001	Fopeano
U.S. Pat. Pub. 2005/0086692	102(b)	October 17, 2003	April 21, 2005	Dudkiewicz
U.S. Pat. Pub. 2009/0116817	102(b)	October 24, 2008	May 7, 2009	Kim 817
U.S. Pat. Pub. 2011/0067048	102(e)	November 19, 2010	March 17, 2011	Barton
U.S. Pat. No. 6,275,268	102(b)	August 4, 1999	August 14, 2001	Ellis
U.S. Pat. No.	102(b)	August 9, 2000	July 26, 2005	Herrington

Patent or Patent Publication Number	Prior Art Provision	Filing Date	Issuance or Publication Date	Short Name (e.g., inventor)
6,922,843				
U.S. Pat. No. 6,662,365	102(b)	August 17, 1999	December 9, 2003	Sullivan 365
U.S. Pat. No. 7,950,032	102(e)	December 30, 1999	May 24, 2011	Lynch
U.S. Pat. No. 8,006,260	102(e)	October 16, 2001	August 23, 2011	Leung 260
U.S. Pat. Pub. 2007/0245398	102(b)	April 12, 2006	October 18, 2007	Roden
U.S. Pat. No. 8,935,717	102(e)	October 22, 2004	January 13, 2015	Jarman 717
U.S. Pat. No. 8,566,871	102(e)	July 15, 2005	October 22, 2013	Knowles 871
U.S. Pat. Pub. 2009/0300671	102(b)	May 30, 2008	December 3, 2009	Scott
U.S. Pat. No. 8,006,279	102(e)	December 10, 2004	August 23, 2011	Damm 279
U.S. Pat. No. 8,984,550	102(e)	October 25, 2010	March 17, 2015	Craner 550
U.S. Pat. Pub. 2010/0097324	102(a)	October 20, 2008	April 22, 2010	Anson
U.S. Pat. Pub. 2009/204984	102(b)	December 15, 2008	August 13, 2009	Nagai
U.S. Pat. No. 5,550,575	102(b)	May 4, 1994	August 27, 1996	West
U.S. Pat. No. 6,701,523	102(b)	September 16, 1999	March 2, 2004	Hancock
U.S. Pat. No. 8,856,818	102(e)	November 17, 2009	October 2, 2014	Emerson
U.S. Pat. No. 6,643,715	102(b)	May 24, 2000	November 4, 2003	Arthur
U.S. Pat. No. 6,684,240	102(b)	December 15, 1999	January 27, 2004	Goddard 240
U.S. Pat. No.	102(e)	April 8, 2011	July 17, 2018	Tran 676

Patent or Patent Publication Number	Prior Art Provision	Filing Date	Issuance or Publication Date	Short Name (e.g., inventor)
10,027,676				
U.S. Pat. Pub. 2011/0283311	102(e)	May 14, 2010	November 17, 2011	Luong
U.S. Pat. Pub. 8,006,279	102(e)	December 10, 2004	August 23, 2011	Damm 279
U.S. Pat. Pub. 8,566,855	102(e)	December 2, 2008	October 22, 2013	Wong
U.S. Pat. No. 8,955,029	102(e)	October 22, 2010	February 10, 2015	Lewis
U.S. Pat. No. 10,311,714	102(e)	August 12, 2010	June 4, 2019	Huang 714

2. U.S. Patent No. 8,898,803

Patent or Patent Publication Number	Prior Art Provision	Filing Date	Issuance or Publication Date	Short Name (e.g., inventor)
U.S. Pat. Pub. 2008/0263634	102(b)	July 2, 2008	October 23, 2008	Kirkland
U.S. Pat. Pub. 2009/0083412	102(a), (e)	September 20, 2007	March 26, 2009	Olaiya
U.S. Pat. Pub. 2011/0138486	102(e)	December 7, 2009	June 9, 2011	White
US Pat. Pub. 2006/0190410	102(b)	February 23, 2006	August 24, 2006	Harper
US Pat. Pub. 2010/0169652	102(a), (e)	October 29, 2009	July 1, 2010	Butler
U.S. Pat. No. 8,600,062	102(e)	July 20, 2010	December 3, 2013	Rae
U.S. Pat. Pub. 2009/0049464	102(a), (e)	February 12, 2008	February 19, 2009	Kang
U.S. Pat. Pub. 2009/0117846	102(a), (e)	November 5, 2007	May 7, 2009	Mavrakakis
U.S. Pat. Pub. 2009/0187654	102(a), (e)	September 23, 2008	July 23, 2009	Raja

Patent or Patent Publication Number	Prior Art Provision	Filing Date	Issuance or Publication Date	Short Name (e.g., inventor)
U.S. Pat. Pub. 2003/0078986	102(b)	October 22, 2001	April 24, 2003	Ayers
WO Pat. Pub. 2008/068514	102(b)	December 10, 2007	June 12, 2008	Hulbert
JP Pat. No. 4,281,467 (certified translation available)	102(a)	August 22, 2003	June 17, 2009	Shinoda
JP Pat. Pub. 2009/048715 (certified translation available)	102(a)	August 21, 2007	March 5, 2009	Hasegawa
U.S. Pat. Pub. 2010/0005492	102(a), (e)	March 18, 2009	January 7, 2010	Takano
U.S. Pat. Pub. 2005/0033855	102(b)	August 5, 2003	February 10, 2005	Moradi
U.S. Pat. Pub. 2007/0136487	102(b)	September 19, 2006	June 14, 2007	Woo
EP Pat. Pub. 2113880A2	102(a)	April 27, 2009	November 4, 2009	Srage
JP Pat. Pub. 2005/216008	102(b)	January 29, 2004	August 11, 2005	Tozaki
KR Pat. Pub. 2007/0074231	102(b)	January 9, 2006	July 12, 2007	Sean
KR Pat. No. 100,889,156	102(a)	August 16, 2001	March 17, 2009	Koyata
U.S. Pat. Pub. 2011/001598	102(e)	July 17, 2009	January 20, 2011	Curtis
U.S. Pat. Pub. 2004/0078229	102(b)	May 30, 2003	April 22, 2004	Gay
WO Pat. Pub. 2007/111196	102(a)	March 20, 2007	August 13, 2009	Kuroda
JP Pat. Pub. 2003/196921	102(b)	December 21, 2001	July 11, 2003	Sako
JP Pat. Pub. 2009/152952	102(a)	December 21, 2001	July 9, 2009	Tanimoto

Patent or Patent Publication Number	Prior Art Provision	Filing Date	Issuance or Publication Date	Short Name (e.g., inventor)
JP Pat. Pub. 2005/026977	102(b)	July 1, 2003	January 27, 2005	Ibe
KR Pat. Pub. 2005/0087654	102(b)	February 27, 2004	August 31, 2005	Kim 654
KR Pat. Pub. 2001/0079083A	102(b)	June 12, 2001	August 22, 2001	Park
KR Pat. Pub. 2006/0035934A	102(b)	October 21, 2004	April 27, 2006	Jung
EP Pat. No. 2,114,046	102(a)	April 29, 2009	November 4, 2009	Srage
U.S. Pat. Pub. 2006/0143481	102(b)	February 24, 2006	June 29, 2006	Morten
U.S. Pat. Pub. 2005/0227773	102(b)	September 24, 2004	October 13, 2005	Lu
WO Pat. Pub. 2008/021594A2	102(b)	May 8, 2006	February 21, 2008	Shen
U.S. Pat. Pub. 2008/029445	102(b)	August 3, 2006	February 7, 2008	Russcher
U.S. Pat. Pub. 2010/0299443	102(e)	September 23, 2008	November 25, 2010	Hu
U.S. Pat. Pub. 2005/0165911	102(b)	January 14, 2004	July 28, 2005	Homiller
U.S. Pat. Pub. 2009/0063699	102(e)	August 8, 2007	March 5, 2009	Chapweske
U.S. Pat. Pub. 2006/0015633	102(b)	July 21, 2005	January 19, 2006	Gemmell
U.S. Pat. Pub. 2009/0031384	102(e)	July 24, 2007	January 29, 2009	Brooks
U.S. Pat. Pub. 2010/0319017	102(e)	June 16, 2009	December 16, 2010	Cook
U.S. Pat. 9.485.467	102(e)	August 6, 2009	November 1, 2016	Kunigita 467
WO 2010/023828	N/A	August 6, 2009	March 4, 2010	Kunigita 828
JP Pat. Pub. 2008/311795	102(b)	June 12, 2007	December 25, 2008	Hayashi

Patent or Patent Publication Number	Prior Art Provision	Filing Date	Issuance or Publication Date	Short Name (e.g., inventor)
JP Pat. Pub. 2002/341864	102(b)	May 16, 2001	November 29, 2002	Torimura
JP Pat. Pub. 2004/159057	102(b)	November 6, 2002	June 3, 2004	Hayashi
U.S. Pat. Pub. 2006/0156348	102(b)	December 16, 2005	July 13, 2006	Tanabe
U.S. Pat. Pub. 2008/005025	102(b)	June 15, 2006	January 3, 2008	Legere
JP Pat. Pub. 2006/521713	102(b)	December 16, 2003	September 21, 2006	Singer
U.S. Pat. Pub. 2009/0013359	102(b)	June 10, 2008	January 8, 2009	Butler
U.S. Pat. Pub. 2008/0294453	102(b)	May 23, 2008	November 27, 2008	Baird-Smith
U.S. Pat. Pub. 2009/0241156	102(e)	November 26, 2008	September 24, 2009	Nishida

3. U.S. Patent No. 9,595,300

Patent or Patent Publication Number	Prior Art Provision	Filing Date	Issuance or Publication Date	Short Name (e.g., inventor)
KR Pat. Pub. 2007/0069413	102(b)	December 28, 2005	December 5, 2007	Yong
KR Pat. Pub. 2008/0086199	102(b)	March 22, 2007	September 25, 2008	Young
U.S. Pat. Pub. 2009/0116817	102(a), (e)	October 24, 2008	May 7, 2009	Kim 817
JP Pat. Pub. 2005/303742	102(b)	April 13, 2004	October 27, 2005	Isaka
U.S. Pat. Pub. 2005/125428	102(b)	October 4, 2004	June 9, 2005	Kang 428
U.S. Pat. Pub. 2005/086266	102(b)	October 27, 2004	April 21, 2005	Kang 266
U.S. Pat. Pub.	102(b)	February 1,	August 7, 2008	Kobayashi

Patent or Patent Publication Number	Prior Art Provision	Filing Date	Issuance or Publication Date	Short Name (e.g., inventor)
2008/187294		2008		
KR Pat. Pub. 2008/072455	102(b)	February 2, 2007	August 6, 2008	Kim 455
U.S. Pat. Pub. 2009/282454	102(e)	May 8, 2008	November 12, 2009	Ekstrand
U.S. Pat. Pub. 2005/044489	102(b)	June 11, 2003	February 24, 2005	Yamagami
U.S. Pat. Pub. 2005/069283	102(b)	September 23, 2004	March 31, 2005	Mitsuyu
KR Pat. Pub. 2007/0075731	102(b)	January 16, 2006	July 24, 2007	Seoung
U.S. Pat. Pub. 2003/0122966	102(b)	December 24, 2002	July 3, 2003	Markman
U.S. Pat. No. 6,711,741	102(b)	April 7, 1999	March 23, 2004	Yeo
U.S. Pat. No. 8,019,195	102(e)	July 30, 2002	September 13, 2011	Shiiyama 195
U.S. Pat. Pub. 2003/0026594	102(b)	July 30, 2002	February 6, 2003	Shiiyama 594
U.S. Pat. No. 8,875,023	102(e)	December 27, 2007	October 28, 2014	Cronin 023
JP Pat. Pub. 2008/311847	102(a)	June 13, 2007	December 25, 2008	Ebato
JP Pat. Pub. 2009/124298	102(a)	November 13, 2007	June 4, 2009	Shimada
KR Pat. No. 100,813,047	102(b)	December 12, 2005	March 14, 2008	Suk
KR Pat. No. 100,845,233	102(b)	June 15, 2007	July 9, 2008	Hoon
JP Pat. Pub. 2008/167256	102(b)	December 28, 2006	July 17, 2008	Kuroiwa 256
U.S. Pat. Pub. 2008/0168499	102(b)	January 4, 2008	July 10, 2008	Kuroiwa 499
U.S. Pat. No.	102(e)	January 4, 2008	November 12, 2020	Kuroiwa 395

Patent or Patent Publication Number	Prior Art Provision	Filing Date	Issuance or Publication Date	Short Name (e.g., inventor)
8,316,395				
U.S. Pat. Pub. 2009/0083781	102(a), (e)	September 21, 2007	March 26, 2009	Linjun
KR Pat. No. 100,827,129	102(b)	October 28, 2006	May 2, 2008	Park
U.S. Pat. Pub. 2008/0141160	102(b)	December 7, 2006	June 12, 2008	Vahtola
U.S. Pat. Pub. 2009/0313545	102(e)	June 4, 2009	December 17, 2009	Kim 545
U.S. Pat. No. 8,213,764	102(e)	November 30, 2007	July 3, 2012	Kuroiwa 764
U.S. Pat. Pub. 2006/0080716	102(b)	March 15, 2005	April 13, 2006	Nishikawa 716
U.S. Pat. No. 8,875,022	102(e)	August 13, 2007	October 28, 2014	Yun 022
U.S. Pat. No. 7,904,814	102(e)	December 13, 2001	March 8, 2011	Errico 814
U.S. Pat. No. 8,019,195	102(e)	July 30, 2002	September 13, 2011	Shiiyama 195
U.S. Pat. Pub. 2009/0083781	102(a)	September 21, 2007	March 26, 2009	Yang
U.S. Pat. No. 8,375,332	102(e)	January 20, 2006	February 12, 2013	Park
U.S. Pat. No. 8,422,857	102(e)	September 23, 2009	April 16, 2013	Kashima
U.S. Pat. No. 8,566,879	102(e)	September 28, 2004	October 22, 2013	Nishikawa 879
U.S. Pat. No. 2002/0186234	102(b)	April 17, 2001	December 12, 2002	Van De Streek
U.S. Pat. No. 2008/0229204	102(b)	March 12, 2007	September 18, 2008	Johnson

4. U.S. Patent No. 8,745,749

Patent or Patent Publication Number	Prior Art Provision	Filing Date	Issuance or Publication Date	Short Name (e.g., inventor)
U.S. Pat. Pub. 2002/0080190	102(b)	December 14, 2001	June 27, 2002	Hamann
U.S. Pat. No. 6,611,907	102(b)	October 19, 2000	August 26, 2003	Maeda
CN Pat. No. 100,468,438C (certified translation available)	102(b)	September 20, 2006	March 11, 2009	Lu
U.S. Pat. No. 7,603,533	102(b)	June 17, 2005	October 13, 2009	Tsypliaev
U.S. Pat. No. 7,921,262	102(e)	December 18, 2003	April 5, 2011	Dash
U.S. Pat. No. 7,370,165	102(b)	December 27, 2001	May 6, 2008	Meharchand
U.S. Pat. No. 6,789,192	102(b)	June 13, 2003	September 7, 2004	Hirota
U.S. Pat. No. 6,590,778	102(b)	August 4, 2000	July 8, 2003	Hojo
U.S. Pat. No. 6,922,343	102(b)	May 16, 2003	July 26, 2005	Nakanishi
U.S. Pat. No. 7,143,261	102(b)	October 8, 2004	November 28, 2006	Maeda 261
U.S. Pat. No. 7,900,007	102(e)	June 28, 2005	March 1, 2011	Toyama
U.S. Pat. No. 8,161,225	102(e)	August 3, 2004	April 17, 2012	Maeda 225
U.S. Pat. Pub. 2007/0183179	102(b)	August 3, 2004	August 9, 2007	Maeda 179
U.S. Pat. No. 8,351,356	102(e)	June 11, 2009	January 8, 2013	Nishioka 356
U.S. Pat. No. 8,576,704	102(e)	March 17, 2010	November 5, 2013	Nishioka 704
U.S. Pat. No.	102(b)	August 17, 2000	November 16, 2004	Cedar 148

Patent or Patent Publication Number	Prior Art Provision	Filing Date	Issuance or Publication Date	Short Name (e.g., inventor)
6,820,148				
U.S. Pat. No. 7,350,714	102(b)	May 17, 2006	April 1, 2008	Wallace
U.S. Pat. No. 8,019,942	102(e)	November 28, 2007	September 13, 2011	Harari 942
U.S. Pat. Pub. 2008/0067255	102(b)	November 28, 2007	March 20, 2008	Harari 255
U.S. Pat. No. 8,188,764	102(e)	March 18, 2010	May 29, 2012	Weiss
U.S. Pat. No. 8,392,614	102(e)	July 27, 2009	March 5, 2013	Pinto
U.S. Pat. No. 7,886,123	102(e)	January 12, 2009	February 8, 2011	Ito 123
U.S. Pat. Pub. 2009/0125672	102(b)	January 12, 2009	May 14, 2009	Ito 672
JP Pat. Pub. 2008/294883A	102(b)	May 28, 2007	December 4, 2008	Abe
U.S. Pat. No. 7,908,476	102(e)	January 10, 2007	March 15, 2011	Kandasamy 476
U.S. Pat. Pub. 2008/0165957	102(b)	January 10, 2007	July 10, 2008	Kandasamy 957
U.S. Pat. Pub. 2009/0268902	102(b)	April 25, 2008	October 29, 2009	Fascenda 902
U.S. Pat. Pub. 2010/0031063	102(a), (e)	July 31, 2009	February 4, 2010	Fascenda 063
EP Pat. Pub. 1998/270	102(b)	May 31, 2007	December 3, 2008	Lachmund
U.S. Pat. Pub. 2009/319791	102(a), (e)	May 20, 2009	December 24, 2009	Aiyoshi
KR Pat. No. 101,506,578	102(e)	July 17, 2008	March 30, 2015	Choi
KR Pat. Pub. 2006/0132016A	102(b)	April 12, 2005	December 20, 2006	Philips
JP Pat. Pub.	102(b)	July 1, 2003	January 27, 2005	Kuroda

Patent or Patent Publication Number	Prior Art Provision	Filing Date	Issuance or Publication Date	Short Name (e.g., inventor)
2005/025426				
JP Pat. Pub. 2010/114579	102(a)	November 5, 2008	May 20, 2010	Kasahara
JP Pat. Pub. 2005/208785	102(b)	January 21, 2004	August 4, 2005	Emura
U.S. Pat. No. 7,593,900	102(b)	February 23, 2004	September 22, 2009	Okabayashi
U.S. Pat. No. 8,156,304	102(e)	December 4, 2009	April 10, 2012	Friedman
U.S. Pat. Pub. 2008/0098193	102(b)	December 1, 2006	April 24, 2008	Im
U.S. Pat. Pub. 2008/0010451	102(b)	November 6, 2006	January 10, 2008	Holtzman
CN Pat. Pub. 101,882,058	102(a)	May 26, 2010	November 10, 2010	Li
U.S. Pat. Pub. 2003/0140245	102(b)	September 27, 2002	July 24, 2003	Dahan
U.S. Pat. Pub. 2011/0202740	102(e)	February 17, 2010	August 18, 2011	Grisinthwaite
U.S. Pat. Pub. 2004/0242029	102(b)	July 16, 2002	December 2, 2004	Nakamura
U.S. Pat. Pub. 2007/0043924	102(b)	October 30, 2006	February 22, 2007	Ito 924
U.S. Pat. Pub. 2006/0154648	102(b)	January 12, 2006	July 13, 2006	Oh
U.S. Pat. No. 7,487,367	102(b)	November 17, 2003	February 3, 2009	Belnet
U.S. Pat. Pub. 2006/0195672	102(b)	February 19, 2004	August 31, 2006	Inoue
U.S. Pat. Pub. 2008/0147964	102(b)	October 4, 2007	June 19, 2008	Chow
U.S. Pat. No. 8,874,981	102(e)	October 27, 2010	October 28, 2014	Liu
U.S. Pat. Pub.	102(a), (e)	January 25, 2007	December 10, 2009	Endoh

Patent or Patent Publication Number	Prior Art Provision	Filing Date	Issuance or Publication Date	Short Name (e.g., inventor)
2009/0307489				
U.S. Pat. Pub. 2007/0033341	102(b)	October 17, 2005	February 8, 2007	Hashimoto
JP Pat. Pub. 2007/164240	102(b)	December 9, 2005	June 28, 2007	Yamamoto
U.S. Pat. Pub. 2010/0243736	102(a), (e)	March 30, 2009	September 30, 2010	Chou
U.S. Pat. No. 8,510,838	102(e)	April 8, 2009	August 13, 2013	Sun
U.S. Pat. Pub. 2006/0184806	102(b)	February 16, 2005	August 17, 2006	Luttman
JP Pat. Pub. 05274221	102(b)	March 30, 1992	October 22, 1993	Sawazaki
U.S. Pat. Pub. 2008/0109630	102(b)	December 15, 2006	May 8, 2008	Watanabe
U.S. Pat. No. 8,543,371	102(e)	March 23, 2009	September 24, 2013	Maeda 371
U.S. Pat. No. 7,177,108	102(b)	June 1, 2004	February 13, 2007	Payne
U.S. Pat. No. 5,781,750	102(b)	January 11, 1994	July 14, 1998	Blomgren
U.S. Pat. Pub. 2008/0212770	102(b)	December 20, 2005	September 4, 2008	Satou
U.S. Pat. Pub. 2005/0213767	102(b)	April 18, 2005	September 29, 2005	Matsukawa ’767
U.S. Pat. Pub. 2012/0272065	102(e)	February 10, 2009	October 25, 2012	Matsukawa
U.S. Pat. Pub. 2007/0300052	102(b)	June 19, 2007	December 27, 2007	Jevans
U.S. Pat. Pub. 2010/0268948	102(a), (e)	February 24, 2010	October 21, 2010	Matsukawa 948
U.S. Pat. Pub. 2005/0216755	102(b)	February 25, 2004	September 29, 2005	Lipsky
U.S. Patent Pub.	102(b)	December 30, 2005	February 22, 2007	Qawami

Patent or Patent Publication Number	Prior Art Provision	Filing Date	Issuance or Publication Date	Short Name (e.g., inventor)
2007/0043667				
U.S. Pat. No. 7,343,493	102(b)	March 28, 2002	March 11, 2008	Challener
JP Pat. No. 4,463,320	102(a)	June 12, 2009	May 19, 2010	Hiromichi
U.S. Pat. No. 9,183,357	102(e)	September 18,2009	November 10, 2015	Harada 357
U.S. Patent Pub. 2010/0275036	102(a)	September 18,2009	October 28, 2010	Harada 036
U.S. Pat. No. 7,979,915	102(e)	February 6, 2006	November 12, 2011	Nakano 915
U.S. Pat. Pub. 2008/0152137	102(b)	February 6, 2006	June 26, 2008	Nakano 137
U.S. Pat. No. 7,895,405	102(e)	March 13, 2009	February 22, 2011	Ebara
JP Pat. Pub. 2005/346378	102(b)	June 2, 2004	December 15, 2005	Tagaki
U.S. Pat. Pub. 2007/0145135	102(b)	December 28, 2005	June 28, 2007	Jogand-Coulomb
CN Pat. Pub. 2011/14241	102(b)	September 21, 2007	September 10, 2008	Ouyang
U.S. Pat. Pub. 2008/0030963	102(b)	August 4, 2006	February 7, 2008	Middlekauff
U.S. Pat. No. 7,284,089	102(b)	September 27, 2004	October 16, 2007	Gallivan
U.S. Pat. No. 6,886,083	102(b)	September 4, 2002	April 26, 2005	Murakami
U.S. Pat. No. 6,948,016	102(b)	May 19, 2004	September 20, 2005	Cedar 016
U.S. Pat. No. 7,069,369	102(b)	March 16, 2004	June 27, 2006	Chou 369
EP Pat. No. 1,552,370	102(b)	October 16, 2003	July 13, 2005	Mylly

Patent or Patent Publication Number	Prior Art Provision	Filing Date	Issuance or Publication Date	Short Name (e.g., inventor)
U.S. Pat. No. 6,9735,19	102(b)	June 3, 2003	December 6, 2005	Estakhri
U.S. Pat. No. 7,092,256	102(b)	April 26, 2002	August 15, 2006	Salazar
U.S. Pat. Pub. 2006/0245307	102(b)	June 8, 2004	November 2, 2006	So
JP Pat. Pub. 2005/309606	102(b)	April 19, 2004	November 4, 2005	Nadamoto
JP Pat. Pub. 2006/086561	102(b)	September 14, 2004	March 30, 2006	Eto
U.S. Pat. Pub. 2007/0098168	102(b)	August 22, 2006	May 3, 2007	Sung
JP Pat. Pub. 2004/364048	102(b)	June 5, 2003	December 24, 2004	Tanaka
JP Pat. Pub. 2004/135233	102(b)	November 26, 2003	July 15, 2004	Sudo
U.S. Pat. Pub. 2006/0008970	102(b)	July 8, 2005	January 12, 2006	Oggioni
U.S. Pat. Pub. 2005/0060464	102(b)	September 3, 2003	March 17, 2005	Alva
U.S. Pat. Pub. 2007/0045426	102(b)	August 30, 2006	March 1, 2007	Shiota 426
CN Pat. Pub. 2010/35574	102(b)	February 1, 2007	March 12, 2008	Zhang
U.S. Pat. No. 7,409,477	102(b)	September 3, 2003	August 5, 2008	Wyatt
U.S. Pat. Pub. 2003/0140129	102(b)	January 24, 2002	July 24, 2003	Livnat
U.S. Pat. Pub. 2006/0218324	102(b)	March 25, 2005	September 28, 2006	Zayas
U.S. Pat. Pub. 2008/0245878	102(b)	March 18, 2008	October 9, 2008	Shiota 878
JP Pat. Pub. 2007/122241	102(b)	October 26, 2005	May 17, 2007	Shioda

Patent or Patent Publication Number	Prior Art Provision	Filing Date	Issuance or Publication Date	Short Name (e.g., inventor)
EP Pat. No. 2,249,276	102(a)	April 23, 2010	November 10, 2010	Kuster
U.S. Pat. Pub. 2007/0204166	102(b)	January 4, 2007	August 30, 2007	Tome
U.S. Pat. No. 7,810,133	102(a), (e)	August 25, 2003	October 5, 2010	Carter
U.S. Pat. Pub. 2010/0064341	102(a), (e)	March 27, 2006	March 11, 2010	Aldera
JP Pat. Pub. 2005/260374	102(b)	March 9, 2004	September 22, 2005	Okabayashi

B. Publications

1. U.S. Patent No. 8,949,879

Title	Prior Art Provision	Author and Publisher	Date of Publication
Sony DVD Manual	102(b)		2007

2. U.S. Patent No. 8,898,803

Title	Prior Art Provision	Author and Publisher	Date of Publication
"Distributing Films via USB Flash Drive"	102(b)	Eliot Van Buskirk, Wired	March 11, 2007
Microsoft and Netflix Unveil Partnership to Instantly Stream Movies and TV Episodes to the TV via Xbox LIVE	102(b)		July 14, 2008
Digital Kiosk Downloads with First Trial Units at Selected Blockbuster Stores	102(a)		November 16, 2009

3. U.S. Patent No. 9,595,300

Title	Prior Art Provision	Author and Publisher	Date of Publication
Sony DVD Manual	102(b)		2007
SanDisk SD Card Product Manual ("SD Product Manual")	102(b)	San Disk	November 2004
SD Memory Card Specifications, Part 2, File System Specification, Version 1.0 and SD Memory Card Specifications, Parts 1-10, V1.01, (April 15, 2001) ("SD Spec V1.01"), available at https://d1.amobbs.com/bbs_upload782111/files_5/armok01111826.pdf. ("SD Spec-2")	102(b)	SD Group	February 2000
SD Memory Card Specifications, Part 3, Security Specification, Version 1.0 and SD Memory Card Specifications, Parts 1-10, V1.01, (April 15, 2001) ("SD Spec V1.01"), available at https://d1.amobbs.com/bbs_upload782111/files_5/armok01111826.pdf. ("SD Spec-3")	102(b)	SD Group	February 2000
Scientific Atlanta Explorer 8000 Manual	102(b)	Scientific Atlanta	October 2003
Getting Started with Scientific Atlanta Explorer 8000	102(b)	Scientific Atlanta	June 2004

4. U.S. Patent No. 8,745,749

Title	Prior Art Provision	Author and Publisher	Date of Publication
Content Protection for eXtended Media Specification ("CPXM")	102(a)	4Centity	September 27, 2010
SD Product Manual	102(b)	San Disk	November 2004
SD Spec-2	102(b)	SD Group	February 2000
SD Spec-3	102(b)	SD Group	February 2000
Hello Android, Introducing Google's Mobile Development Platform ("Cupcake")	102(b)	Google	May 26, 2008
Android Application Development	102(b)	Rick Rogers, John Lombardo, Zigurd Mednieks, Blake Meike	May 2009
https://android.googlesource.com/platform/sdk/+/55a2c71f27d3e0b8344597c7f281e687cb7aeb1b/sdkmanager/libs/sdklib/src/com/android/sdklib/avd/AvdManager.java	102(b)	Meike	April 7, 2009
Reconfigurable Caches and their Application to Media Processing	102(b)	Parthasarathy Ranganathan, Sarita Adve, Norman P. Jouppi	June 2000
Running Linux	102(b)	Matthias Kalle Dalheimer, Terry Dawson, Lar Kaufman, Matt Welsh	December 2002
Steven Hand, Operating Systems II, Michaelmas Term 2005	102(b)	Steven Hand	2005
Principles of Database Buffer Management	102(b)	Wolfgang Effelsberg, Theo Haerder	December 1984
Storage-Aware Caching: Revising	102(b)	University of Wisconsin, Madison	January 2002

Caching for Heterogeneous Storage Systems			
An Extension of the Performance of a Database Manager in a Virtual Memory System Using Partially Locked Virtual Buffers	102(b)	Richard S. Bric, Stephen W. SHERMAN	June 1997
Development of a Programming Model for the AEGIS Secure Processor	102(b)	Massachusetts Institute of Technology	May 2005
Image recognition on an Android mobile phone	102(b)	Ive Billiauws, Kristiaan Bonjean	2009
SAN System Design and Deployment Guide	102(a)	Vmware	May 2010
Understanding Full Virtualization, Paravirtualization, and Hardware Assist	102(b)	Vmware	2007
A Short Theory of Multiprogramming	102(b)	P.J. Denning	1995
Tech Note 23: Using the Microsoft Device Emulator	102(a)	NS Basic Corporation	February 23, 2010
A History of Operating Systems	102(b)	Andrew Tanenbaum	2002
Booting an Operating System	102(a)	Paul Krzyzanowski	September 14, 2010
Enhancing Security of Linux-based Android Devices	102(b)	Aubrey-Derrick Schmidt, Hans-Gunther Schmidt, Jan Clausen, Ahmet Camtepe, Sahin Albayrak, Kamer Ali Yüksel, Osman Kiraz	January 2008
Create SD Card in Android Emulator and copy files into, in Eclipse, Emulator and	102(b)	Erik	October 25, 2009

DDMS			
Developing Secure Mobile Applications for Android	102(b)	Jesse Burns	October 2008
Toshiba SD Card Specification	102(b)	Toshiba	February 10, 2003

C. Products and Systems

Defendants' investigation and discovery for prior art systems remains ongoing, and Defendants reserve the right to identify and rely upon additional prior art system references. In particular, Defendants reserve the right to rely on any prior art systems that are described in the patent and publication prior art listed above or that was developed, sold, or manufactured by the original assignees or authors of the patent and publication references above. Defendants are diligently seeking and will continue to diligently seek documents from third parties in discovery to demonstrate such third parties' earlier dates of invention under 35 U.S.C. § 102(g) and/or prior art offers for sale and public uses of products embodying the claimed invention under 35 U.S.C. § 102(b) or under 35 U.S.C. § 102(a).

In addition, Defendants reserve the right to rely on the following systems that are prior art to the Asserted Patents under at least 35 U.S.C. §§ 102(a), (b) and/or (g). Invalidity claim charts for these references are attached as Exhibits A-23, B-16 through B-20, B-22, C-21, and D-13, D-15.

Defendants reserve the right to supplement these Invalidity Contentions with further information and documentation, if and when it becomes available. The products, components, systems, and methods listed below constitute prior art under 35 U.S.C. § 102 because they were invented, designed, developed, reduced to practice and/or in public use, or on sale, and/or in the public's knowledge prior to the priority date of the Asserted Patents. Furthermore, none of the

products, components, systems, and methods listed below were abandoned, suppressed, or concealed. To support Defendants' position that following systems are prior art, Defendants reserve the right to rely on the following sources of evidence.

1. U.S. Patent No. 8,949,879

Prior Art Reference	Sources
RCA DTA800B1	Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to the RCA DTA800B1. The RCA DTA800B1 qualifies as prior art under § 102 because it was either (1) known or used by others in the U.S at least by September 18, 2008; (2) in public use or on sale in the United States no later than September 18, 2008 or (2) reduced to practice in the United States no later than February 21 2007 without being abandoned, suppressed, or concealed. The RCA DTA800B1 was likely in public use or on sale in the U.S. and/or reduced to practice in the United States by or before September 18, 2008. To support RCA DTA800B1's substantive disclosures and status as prior art under § 102, Defendants reserve the right to rely on the following sources of evidence: • RCA DTA800B1 Manual ("DTA800B1 Manual") • DVD Architect - creating DVD Menus, YouTube Video, December 28, 2008 https://www.youtube.com/watch?v=sUyzJZvBsrI ("DTA800B1 Instructional Video") • Audioholics Digital Converter Box Comparison & Shootout, https://www.audioholics.com/how-to-

	shop/digital-converter-box-comparison-shootout, May 3, 2009. ("The Audioholics Review") • RCA DTA800B1 (available for inspection) Defendants reserve the right to rely on other sources of evidence identified as discovery and Defendants' investigation progresses. At the time of these contentions, RCA has not yet produced any discovery, and we reserve the right to supplement the contentions based on review of those productions, if any. The substantive disclosures of the RCA DTA800B1 as compared to the limitations of the Asserted Claims is provided in the claim charts attached hereto.

2. U.S. Patent No. 8,898,803

Prior Art Reference	Sources
Netflix Streaming	Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to Netflix Streaming. Netflix Streaming qualifies as prior art under § 102 because it was either (1) known or used by others in the U.S at least by January 16, 2007; (2) in public use or on sale in the United States no later than January 16, 2007 or (2) reduced to practice in the United States no later than January 16, 2007 without being abandoned, suppressed, or concealed. Netflix Streaming was likely in public use or on sale in the U.S. and/or reduced to practice in the United States by or before January 16, 2007. To support Netflix Streaming's substantive

	disclosures and status as prior art under § 102, Defendants reserve the right to rely on the following sources of evidence: • *NETFLIX OFFERS SUBSCRIBERS THE OPTION OF INSTANTLY WATCHING MOVIES ON THEIR PCs*, Netflix Media Center, January 16, 2007 ("Netflix Press Release") • Netflix Privacy Policy, February 5, 2007. ("Netflix Privacy Policy") • Rico Chiu, et. al., *NETFLIX: Entering the Video on Demand Industry through Providing Streaming Movies*, March 7, 2007 ("Chiu") • Nate Anderson, *Netflix offers streaming movies to subscribers*, January 16, 2007 ("Anderson") Defendants reserve the right to rely on other sources of evidence identified as discovery and Defendants' investigation progresses. At the time of these contentions, Netflix, Inc. has not yet produced any discovery, and we reserve the right to supplement the contentions based on review of Netflix Inc.'s production, if any. The substantive disclosures of Netflix Streaming, as compared to the limitations of the Asserted Claims is provided in the claim charts attached hereto.
Amazon Unbox and Amazon Video on Demand	Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to Amazon Unbox and Amazon Video on Demand. Amazon Unbox and VOD qualify as prior art under § 102 because they were either (1) known or used by others in the U.S at least by September 2, 2008; (2) in public use or on sale in the United States

	no later than September 2, 2008 or (2) reduced to practice in the United States no later than September 2, 2008 without being abandoned, suppressed, or concealed. Amazon Unbox and VOD were likely in public use or on sale in the U.S. and/or reduced to practice in the United States by or before September 2, 2008. To support Amazon Unbox and Amazon Video on Demand's substantive disclosures and status as prior art under § 102, Defendants reserve the right to rely on the following sources of evidence: • *Amazon.com Launches Amazon Unbox(TM), a Digital Video Download Service with DVD-Quality Picture*, Amazon Press Center, September 7, 2006 ("Amazon 2006") • *Amazon Customers Can Now Instantly Watch Ad-Free Movies and TV Shows on Macs, PCs and Compatible Sony BRAVIA Televisions Starting Today on Amazon Video On Demand*, Amazon Press Center, September 2, 2008 ("Amazon 2008") • *Amazon.com Privacy Notice*, Amazon, Oct. 1, 2008 ("Amazon Privacy Notice"). • *Video On Demand Tips & Troubleshooting*, Amazon, Dec. 29, 2008 ("Amazon VOD Help") Defendants reserve the right to rely on other sources of evidence identified as discovery and Defendants' investigation progresses. At the time of these contentions, Amazon.com, Inc. has not yet produced any discovery, and we reserve the right to supplement the contentions based on review of Amazon.com, Inc.'s production, if any. The substantive disclosures of Amazon

	Unbox and Amazon Video on Demand, as compared to the limitations of the Asserted Claims is provided in the claim charts attached hereto.
YouTube	Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to YouTube. YouTube qualifies as prior art under § 102 because it was either (1) known or used by others in the U.S at least by February 12, 2009; (2) in public use or on sale in the United States no later than February 12, 2009 or (2) reduced to practice in the United States no later than February 12, 2009 without being abandoned, suppressed, or concealed. YouTube was likely in public use or on sale in the U.S. and/or reduced to practice in the United States by or before February 12, 2009. To support YouTube's substantive disclosures and status as prior art under § 102, Defendants reserve the right to rely on the following sources of evidence: • Jefferson Graham, *Video websites pop up, invite postings*, USA Today, Nov. 21, 2005 ("Graham") • *YouTube Goes Offline*, YouTube Official Blog, Feb. 12, 2009 ("YouTube Press Release") • Daniel Ionescu, *YouTube Introduces Video Download Feature*, Jan. 19, 2009 ("Ionescu") • *YouTube Privacy Policy*, YouTube, Jul. 21, 2008 (YouTube Privacy Policy") • *Video Issues: Choppy video*, YouTube Help Center, Nov. 14, 2008 ("Video Issues").

	• *Higher Quality Videos: Viewing Higher Quality Videos*, YouTube Help Center, Nov. 14, 2008 ("Higher Quality Videos"). Defendants reserve the right to rely on other sources of evidence identified as discovery and Defendants' investigation progresses. At the time of these contentions, Google LLC has not yet produced any discovery, and we reserve the right to supplement the contentions based on review of Google LLC's production, if any. The substantive disclosures of YouTube, as compared to the limitations of the Asserted Claims is provided in the claim charts attached hereto.
Blockbuster Express Digital	Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to Blockbuster Express Digital. Blockbuster Express Digital qualifies as prior art under § 102 because it was either (1) known or used by others in the U.S at least by November 10, 2009; (2) in public use or on sale in the United States no later than November 10, 2009 or (2) reduced to practice in the United States no later than November 10, 2009 without being abandoned, suppressed, or concealed. Blockbuster Express Digital was likely in public use or on sale in the U.S. and/or reduced to practice in the United States by or before November 10, 2009. To support Blockbuster Express Digital's substantive disclosures and status

	as prior art under § 102, Defendants reserve the right to rely on the following sources of evidence: • Robert Wilonsky, *Blockbuster Has Seen the Future (Again): Renting Movies Via Kiosk for $2 On an SD Card*, Dallas Observer, Nov. 10, 2009 ("Wilonsky I") • Robert Wilonsky, *Do You Like to Do It Yourself? How Blockbuster Ended Up in the Self-Service Biz.*, Dallas Observer, Nov. 10, 2009 ("Wilonsky II") • Chris Dannen, *Blockbuster to Rent Movies on SD Cards, but Why?*, Fast Company, Nov. 9, 2009 ("Dannen") Defendants reserve the right to rely on other sources of evidence identified as discovery and Defendants' investigation progresses. At the time of these contentions, NCR Voyix Corp. has not yet produced any discovery, and we reserve the right to supplement the contentions based on review of NCR Voyix Corp.'s production, if any. The substantive disclosures of Blockbuster Express Digital, as compared to the limitations of the Asserted Claims is provided in the claim charts attached hereto.
DivX Stage6	Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to DivX Stage6. DivX Stage6 qualifies as prior art under § 102 because it was either (1) known or used by others in the U.S at least by April 23, 2007; (2) in public use or on sale in the United States no later than April 23, 2007 or (2) reduced to practice in the United States no later than April 23, 2007 without being abandoned, suppressed, or concealed. DivX Stage6 was

	likely in public use or on sale in the U.S. and/or reduced to practice in the United States by or before April 23, 2006. To support DivX Stage6's substantive disclosures and status as prior art under § 102, Defendants reserve the right to rely on the following sources of evidence: • *About Us*, DivX Stage6, Dec. 12, 2007 ("Stage6 About Us"). • *Terms of Use*, DivX Stage6, Dec. 13, 2007 ("Stage6 ToU"). • *Privacy Policy*, DivX Stage6, Dec. 14, 2007 ("Stage6 Privacy Policy"). • *What the heck just happened?*, Stage6 Blog, Sep. 13, 2007 ("Stage6 Blog Post"). • *Stage6 FAQs*, DivX Stage6, Dec. 11, 2007 ("Stage6 FAQ"), • *UMG Recordings, Inc. v. DivX, Inc.*, No. CV 07-06835, Dkt. 91 (C.D. Cal. Dec. 22, 2008) ("FAC"),*UMG Recordings, Inc. v. DivX, Inc.*, No. CV 07-06835, Dkt. 91-6 (C.D. Cal. Dec. 22, 2008) ("FAC Ex. E"), • DIVX-SAMSUNG000142-59 ("Press Guide"), • DIVX-SAMSUNG000341, • DIVX-SAMSUNG000360, • DIVX-SAMSUNG000364, • DIVX-SAMSUNG000429-58 ("Marketing Overview"), and • DIVX-SAMSUNG000541.
Spotify	Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to Spotify. Spotify qualifies as prior art under § 102 because it was either (1) known or used by others in the U.S

	at least by May 27, 2009; (2) in public use or on sale in the United States no later than May 27, 2009; or (3) reduced to practice in the United States no later than May 27, 2009 without being abandoned, suppressed, or concealed. Spotify was likely in public use or on sale in the U.S. and/or reduced to practice in the United States by or before May 27, 2009. To support Spotify's substantive disclosures and status as prior art under § 102, Defendants reserve the right to rely on the following sources of evidence: • "Spotify for iPhone preview" July 24, 2009, available at https://www.youtube.com/watch?v=QNCb1IdmJ_0 ("iPhone Preview"). • "Spotify mobile demo for Google Android" May 27, 2009, available at https://www.youtube.com/watch?v=7ALGPknOsiU ("Android Preview"). • "Spotify for Symbian preview" September 7, 2009, available at https://www.youtube.com/watch?v=ipygzjcEyRU ("Symbian Preview"). • "Developer Sandbox Interviews: Spotify" May 31, 2009, available at https://www.youtube.com/watch?v=Z5whfaLH1-E ("Google I/O Interview"). • Charles Arthur, *Play on demand: Spotify appears to have created a successful version of the universal jukebox – and best of all, it's legal*, The Guardian, January 28. 2009 ("Arthur"). • Nate Lanxon, *Spotify v. Sky Songs: Sound quality blind test*, CNET, October 19, 2009 ("Lanxon"). • *Spotify Privacy Policy*, Spotify, October 7, 2008 ("Spotify Privacy Policy").

3. U.S. Patent No. 9,595,300

Prior Art Reference	Sources
Sony DVD Architect 4.0	Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to Sony DVD Architect 4.0. Sony DVD Architect 4.0. qualifies as prior art under § 102 because it was either (1) known or used by others in the U.S at least by February 21 2007; (2) in public use or on sale in the United States no later than February 21 2007 or (2) reduced to practice in the United States no later than February 21 2007 without being abandoned, suppressed, or concealed. Sony DVD Architect 4.0 was likely in public use or on sale in the U.S. and/or reduced to practice in the United States by or before February 21 2007. To support Sony DVD Architect 4.0's substantive disclosures and status as prior art under § 102, Defendants reserve the right to rely on the following sources of evidence: • Sony DVD Architect 4.0 Manual, February 21, 2007 ("DVD Architect Manual") • DVD Architect - creating DVD Menus, YouTube Video, July 30, 2007 https://www.youtube.com/watch?v=nfuS9diB45c ("Instructional Video") Defendants reserve the right to rely on other sources of evidence identified as discovery and Defendants' investigation progresses. At the time of these contentions, Sony and Magix

	GMBH or its affiliates have not yet produced any discovery, and we reserve the right to supplement the contentions based on review of those productions, if any. The substantive disclosures of Sony DVD Architect 4.0, as compared to the limitations of the Asserted Claims is provided in the claim charts attached hereto.
Scientific Atlanta Explorer 8000HD Home Entertainment Server	Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to Scientific Atlanta Explorer 8000HD. Scientific Atlanta Explorer 8000HD qualifies as prior art under § 102 because it was either (1) known or used by others in the U.S at least by June 30, 2004; (2) in public use or on sale in the United States no later than June 30, 2004 or (2) reduced to practice in the United States no later than June 30, 2004 without being abandoned, suppressed, or concealed. Scientific Atlanta Explorer 8000HD was likely in public use or on sale in the U.S. and/or reduced to practice in the United States by or before February 21 2007. To support Scientific Atlanta Explorer 8000HD's substantive disclosures and status as prior art under § 102, Defendants reserve the right to rely on the following sources of evidence: • Explorer 8000HD Home Entertainment Server User's Installation Guide ("Explorer 8000 Installation Guie") • Getting Started with the Explorer 8000 and 8000HD DVR ("Explorer 8000 Manual")

	Defendants reserve the right to rely on other sources of evidence identified as discovery and Defendants' investigation progresses. At the time of these contentions, Scientific Atlanta has not yet produced any discovery, and we reserve the right to supplement the contentions based on review of those productions, if any. The substantive disclosures of Scientific Atlanta Explorer 8000HD, as compared to the limitations of the Asserted Claims is provided in the claim charts attached hereto.

4. U.S. Patent No. 8,745,749

Prior Art Reference	Sources
Android SDK	Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to Android SDK. Android SDK qualifies as prior art under § 102 because it was either (1) known or used by others in the U.S at least by May 2009; (2) in public use or on sale in the United States no later than May 2009 or (2) reduced to practice in the United States no later than May 2009 without being abandoned, suppressed, or concealed. To support Android SDK's substantive disclosures and status as prior art under § 102, Defendants' reserve the right to rely on the following sources of evidence:

	• Hello Android, Introducing Google's Mobile Development Platform, Ed Burnette, May 26, 2008 ("Cupcake") • *Android Application Development*, Rick Rogers, John Lombardo, Zigurd Mednieks, Blake Meike, May 2009 Defendants reserve the right to rely on other sources of evidence identified as discovery and Defendants' investigation progresses. At the time of these contentions, Android SDK has not yet produced any discovery, and we reserve the right to supplement the contentions based on review of Android SDK's production, if any. The substantive disclosures of Android SDK, as compared to the limitations of the Asserted Claims is provided in the claim chart attached hereto.
SanDisk SD Cards	Products, components, systems, and methods invented, designed, developed, reduced to practice, and/or in public use or on sale related to SanDisk SD Cards. SanDisk SD Cards qualify as prior art under § 102 because it was either (1) known or used by others in the U.S at least by November 2004; (2) in public use or on sale in the United States no later than November 2004 or (2) reduced to practice in the United States no later than November 2004 without being abandoned, suppressed, or concealed. To support SanDisk SD Cards' substantive disclosures and status as

	prior art under § 102, Defendants' reserve the right to rely on the following sources of evidence: • *SD Memory Card Specification, Part 2, File System Specification*,V1.0, (Feb. 2000) • *SD Memory Card Specification, Part 3, Security Specification*,V1.0, (Feb. 2000) • SanDisk SD Card Product Manual, Version 2.2, (Nov. 2004) ("SD Product Manual") • *SD Memory Card Specifications, Parts 1-10,* V1.01, (April 15, 2001) ("SD Spec V1.01"), available at https://d1.amobbs.com/bbs_upload782111/files_5/armok01111826.pdf. • SDSDH-1024, listed for sale on Amazon.com, available at https://www.amazon.com/SanDisk-SDSDH-1024-901-Secure-Digital-Package/dp/B00065AO0K. • SanDisk 1GB SD Card (Mar. 13, 2003), available at https://www.dpreview.com/articles/2870925953/sandisk1gbsdcard. • 64MB and 128MB SanDisk Cards for sale (June 8, 2003), available at https://web.archive.org/web/20030608142637/http:/www.circuitcity.com/productsearch.jsp?c=2&b=b&category=

	Memory+Products&department=Cameras+and+Camcorders. • 64MB and 128MB SanDisk Cards for sale (Nov. 29, 2003), available at https://web.archive.org/web/20031129222836/http:/www.circuitcity.com/productsearch.jsp?c=2&b=b&category=Memory+Products&department=Cameras+and+Camcorders. Defendants reserve the right to rely on other sources of evidence identified as discovery and Defendants' investigation progresses. At the time of these contentions, SanDisk has not yet produced any discovery, and we reserve the right to supplement the contentions based on review of SanDisk's production, if any. The substantive disclosures of SanDisk SD Cards, as compared to the limitations of the Asserted Claims is provided in the claim chart attached hereto.

Defendants reserve the right to rely on other sources of evidence identified as discovery and Defendants' investigation progresses.

Dated: December 17, 2024

/s/ Ryan M. Nishimoto

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CERTIFICATE OF SERVICE

I hereby certify that on December 17, 2024, a true and correct copy of the foregoing document was served by electronic mail on all counsel of record.

/s/ Douglas L. Clark
Douglas L. Clark