UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMCAST CABLE COMMUNICATIONS, LLC,
Petitioner

v.

TOUCHSTREAM TECHNOLOGIES, INC.
Patent Owner

Patent No. 11,048,751
Filing Date: August 25, 2017
Issue Date: June 29, 2021
Title: PLAY CONTROL OF CONTENT ON A DISPLAY DEVICE

Inter Partes Review No.: IPR2024-00324

DECLARATION OF DAVID B. LETT

IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.100 *et seq.*

Declaration in Support of Petition 2 of 2

TABLE OF CONTENTS

Page

1. INTRODUCTION 1
2. PROFESSIONAL BACKGROUND AND QUALIFICATIONS 1
3. MATERIALS CONSIDERED 7
4. UNDERSTANDING OF APPLICABLE LEGAL STANDARDS 11
5. THE RELEVANT ART AND LEVEL OF ORDINARY SKILL IN THE RELEVANT ART 15
6. CLAIM CONSTRUCTION 16
7. OVERVIEW OF THE ’751 PATENT 21
   - 7.1. Prosecution History 22
   - 7.1.1. Prosecution History of the ’998 Application 22
   - 7.1.2. Prosecution History of the ’289 Patent 23
   - 7.1.3. Prosecution History of the ’195 Patent 23
   - 7.1.4. Prosecution History of the ’751 Patent 25
8. OVERVIEW OF THE PRIOR ART 27
   - 8.1. Streaming Formats and VOD 27
   - 8.2. Media Players 28
   - 8.3. Applications on TVs and STBs 30
   - 8.4. Device Casting 31
   - 8.5. Remote Viewing 31
   - 8.6. File Extensions and MIME Types 33
   - 8.7. Application Programming Interfaces (APIs) 35
   - 8.8. Look-Up Tables (LUTs) 36
   - 8.9. U.S. Pat. No. 9,490,998 – Danciu (Ex. 1112) 37
   - 8.10. U.S. Pub. No. 2009/0172757 – Aldrey (Ex. 1115) 50
   - 8.11. U.S. Pub. No. 2004/0078812 – Calvert (Ex. 1111) 55
   - 8.12. U.S. Pub. No. 2009/0248802 - Mahajan (Ex. 1114) 62
9. OPINIONS WITH RESPECT TO THE ’751 PATENT 66

9.1 DANCIU IN VIEW OF MAHAJAN AND/OR DANCIU IN VIEW OF MAHAJAN AND CALVERT RENDERS CLAIMS 1-20 OBVIOUS....66

9.2 ALDREY IN VIEW OF MAHAJAN RENDERS CLAIMS 1-20 OBVIOUS....116

10. CONCLUSION....149

CLAIM LISTING APPENDIX....150

I, David B. Lett, declare that I have personal knowledge of the facts set forth in this declaration and, if called to testify as a witness, could and would do so competently.

1. INTRODUCTION

1. I have been retained as an expert witness on behalf of the Petitioner, Comcast Cable Communications, LLC, for the above-referenced *inter partes* review proceeding.

2. I have been asked to provide a declaration regarding certain matters pertaining to U.S. Patent No. 11,048,751 ("the '751 Patent") (Ex. 1101) and the unpatentability grounds set forth in the Petition for this proceeding. My experience with television distribution systems, Set Top Boxes (STBs), Electronic Program Guides (EPGs), Video on Demand (VOD), and content delivery systems provides me with an understanding of the subject matter described and claimed in the '751 Patent.

3. I am being compensated at my usual consulting rate of $350 per hour for my work on this matter. My compensation is in no way dependent upon my opinions or testimony or the outcome of this proceeding. I have no financial interest in the party or in the outcome of this proceeding.

2. PROFESSIONAL BACKGROUND AND QUALIFICATIONS

4. I am a technical consultant and product development industry veteran with expertise in electronics, software, hardware, video, audio, and data

communications, having led product development organizations in cable, satellite, consumer electronics, home automation, asset tracking, remote tank logistics, and alarm industries. My current curriculum vitae is attached as Ex. 1103 and some highlights follow.

5. I earned my B.S. in Electrical Engineering (1982) with high honors from the University of Tennessee in Knoxville, Tennessee. I also attended the Georgia Institute of Technology from 1986 to 1987, completing 40% of the required degree hours for the M.S. Electrical Engineering program.

6. From 1982 to 1985, I worked at Scientific Atlanta as an Electrical Engineer designing video, audio, and data communications equipment for the cable television industry. I designed software and hardware including addressable data transmitters, video sync suppression scramblers, transaction format converters, and data channel monitors for addressable Cable Television systems and Set Top Boxes.

7. From 1983 to 1985, while working at Scientific Atlanta, I also worked as an Assistant Professor at DeVry Institute of Technology, teaching courses in electronics and microprocessor hardware/software.

8. From 1985 to 1990, I worked at Wegener Communications as a Senior Electrical engineer, designing satellite communications equipment including forward error correction (FEC) coding systems, PSK modems, and analog control systems for RF modulators and PSK demodulators. I was promoted to the Hardware

Engineering Manager, where I managed product development of video, audio, and data satellite receivers, modulators, graphics display systems, DSP-based compandors, FSK and PSK satellite modems, multiplexers, forward error correction (FEC) codecs, RF upconverters and downconverters, and baseband analog and digital processing components.

9. In 1990, I returned to Scientific Atlanta, which was acquired by Cisco in 2006. I worked as Engineering Manager running the set top box engineering group where I was promoted to Director and Vice President during my tenure until 2011. I led the design of many cable set top boxes and systems through the evolution of analog video, addressability, downloadable software, electronic program guides, digital video, VOD, software applications, high-definition TV, DVR, DOCSIS, full spectrum tuners, and multiroom DVR. These systems implemented various technologies including DOCSIS 1/2/3 and hybrid gateways, 802.11, IPTV, DVR, cable modems, ADSL, VDSL, DVB-T/C/S, bootloaders, factory diagnostics, application frameworks, Nagra, DRMs, conditional access, secure microprocessors, device management, Android, Adobe Flash, Linux, DVD play/record, MPEG-4, MPEG-2, H.264, NTSC, PAL, DAVIC, MoCA, high-performance CPUs, cablecards, network processors, HDMI, multiple video/audio display interfaces, 2D/3D graphics, multiple RF tuners, and full spectrum tuners.

10. From 2011 to 2016, I worked for EchoStar Technologies, which served as the product development organization for sister company DISH Network. I served as Vice President of Engineering and was the Head of the Atlanta research and development center. I led the development of satellite set top boxes, consumer electronic equipment, and a home automation and security system. Technologies used included video/audio, IoT, H.265, HEVC, 3D, Satellite, wireless, MoCA, transcoding, embedded C Linux applications, mobile applications (IOS and Android), SaaS, web applications (Javascript, HTML), BSS/OSS, AWS cloud storage, 2-way video/audio streaming, authentication, and VoIP.

11. In 2016, I started an independent consulting business in technology and intellectual property projects. I have consulted in various technology areas and industries including consumer electronics, Internet of Things (IoT), cable, satellite, television, media, and cryptocurrency.

12. From 2019 to 2022, I worked as Chief Technology Officer for Telular, an Ametek company. I was responsible for the development of Industrial Internet of Things (IIoT) recurring revenue solutions, combining wireless technologies, purpose-built hardware, and SaaS in the commercial telematics, security and home automation markets and sold under the SkyBitz and Telguard brands.

13. My record of professional service includes awards on products I designed and developed from several organizations in my field of expertise, including Best of Show, Technology Emmy, and Best of Innovations.

14. I am a named inventor on 86 patents and published patent applications corresponding to the areas of my professional work. The patents and published applications involving video and audio technologies include:

- U.S. Patent No. 9,882,736 titled "Remote Sound Generation for a Home Automation System"
- U.S. Patent No. 9,615,139 titled "Determining Device That Performs Processing of Output Pictures"
- U.S. Patent No. 8,549,567 titled "Media Content Sharing Over a Home Network"
- U.S. Patent No. 8,161,388 titled "Interactive discovery of display device characteristics"
- U.S. Patent Nos. 8,120,924, 7,240,217, 6,785,817, 6,564,324, 6,212,278, and 5,440,632 titled "Reprogrammable Subscriber Terminal"
- U.S. Patent No. 7,908,625 titled "Networked Multimedia System"
- U.S. Patent Nos. 7,861,272 and 7,849,486 titled "Networked Subscriber Television Distribution"
- U.S. Patent Nos. 7,774,820 and 7,069,578 titled "Settop Cable Television Control Device and Method Including Bootloader Software and Code Version Table for Maintaining and Updating Settop Receiver Operating System Software"
- U.S. Patent No. 5,771,064 titled "Home Communications Terminal having an Applications Module"

- U.S. Patent No. 5,715,515 titled "Method and Apparatus for Downloading On-Screen Graphics and Captions to a Television Terminal"
- U.S. Patent No. 5,657,414 titled "Auxiliary Device Control for a Subscriber Terminal"
- U.S. Patent No. 5,592,551 titled "Method and Apparatus for Providing Interactive Electronic Programming Guide"
- U.S. Patent No. 5,539,822 titled "System and Method for Subscriber Interactivity in a Television System"
- U.S. Patent No. 5,357,276 titled "Method of Providing Video On Demand with VCR Like Functions"
- U.S. Patent Application Publication Nos. 2004/0068753 and 2008/0072272 titled "Video Transmission Systems and Methods for a Home Network"
- U.S. Patent Application Publication No. 2004/0133911 titled "Subscriber Network in a Satellite System"

15. I have a general understanding of the U.S. patent prosecution process and of the novelty and non-obviousness requirements for patentability.

16. I believe that my extensive industry experience and educational background qualify me as an expert in the relevant field of multimedia content management retrieval and distribution systems. I am knowledgeable of the relevant skill set that would have been possessed by a hypothetical person of ordinary skill in the art at the time of the invention of the '751 Patent, which I (as I discuss below) understand is late 2010 or early 2011.

3. MATERIALS CONSIDERED

17. In formulating my opinion, I reviewed and considered U.S. Pat. No. 11,048,751 to Strober (Ex. 1101), as to which I am offering my opinion regarding the validity of certain claims, as discussed herein.

18. In preparing this declaration, I also reviewed and considered the Petition and the file history of the '751 Patent (included in Ex. 1104) as well as the following references:

- Ex. 1103: Curriculum Vitae of David B. Lett
- Ex. 1105-10: Omitted
- Ex. 1111: U.S. Pub. No. 2004/0078812 ("Calvert")
- Ex. 1112: U.S. Pat. No. 9,490,998 ("Danciu")
- Ex. 1113: U.S. Prov. App. No. 61/411,386 ("Danciu Provisional")
- Ex. 1114: U.S. Pub. No. 2009/0248802 ("Mahajan")
- Ex. 1115: U.S. Pub. No. 2009/0172757 ("Aldrey")
- Ex. 1112-19: Omitted
- Ex. 1120: Joint Claim Construction Statement, *Touchstream Technologies, Inc. v. Google LLC*, 6:21-cv-00569-ADA (WDTX) (Feb. 8, 2022)
- Ex. 1121: Exhibit 1 to Joint Disputed Claim Terms Charts, *Touchstream Technologies, Inc. v. Vizbee, Inc.*, 1:17-cv-06247-PGG-KNF (SDNY) (Aug. 6, 2018)
- Ex. 1122: Jury Instructions, *Touchstream Technologies, Inc. v. Google LLC*, 6:21-cv-00569-ADA (WDTX) (July 21, 2023)

- Ex. 1123-29: Omitted
- Ex. 1130: U.S. Pub. No. 2002/0104096 ("Cramer")
- Ex. 1131: U.S. Pat. No. 7,356,575 ("Shapiro")
- Ex. 1132: U.S. Pat. No. 7,269,842 ("Estipona")
- Ex. 1133: U.S. Pub. No. 2004/0267899 ("Rahman")
- Ex. 1134: U.S. Pub. No. 2004/0098533 ("Henshaw")
- Ex. 1135: U.S. Pub. No. 2004/0172656 ("Kim")
- Ex. 1137: U.S. Pat. No. 7,343,419 ("Robinson")
- Ex. 1138-40: Omitted
- Ex. 1141: CODING OF MOVING PICTURES AND AUDIO, *MPEG-4 Overview* (Int'l Org. Standardisation 2002)
- Ex. 1142: Robert Godwin-Jones, *Digital Video Update: YouTube, Flash, High-Definition*, 11 LANGUAGE LEARNING & TECH. 16, 17 (2007)
- Ex. 1143: John C. Paolillo et al., *A Network of Social Media Platform History: Social Structure, Dynamics and Content on YouTube*, PROC. 52ND HAWAII INT'L CONF. ON SYS. SCIS., 1, (2019)
- Ex. 1144: *YouTube Opens Internet Video to Masses; Serving 3 Million Videos Daily and Growing, YouTube Unveils a Fast, Fun, and Easy Service for Consumers to Broadcast Original Video*, MARKET WIRE, Dec. 15, 2005
- Ex. 1145: *Hulu Debuts via Private Beta and on Distribution Partners AOL, Comcast, MSN, MySpace and Yahoo!; Company Announces Major Licensing Deals with Metro-Goldwyn-Mayer Studios Inc. and Sony Pictures Television; Providence Equity Partners Makes Strategic Investment in News Corporation/NBC Universal Online Video Joint Venture*, BUS. WIRE, Oct. 29, 2007
- Ex. 1146: *Blockbuster Offers Cheaper Online Rental*, ASSOCIATED PRESS, Jun. 13, 2007

- Ex. 1147: *Adobe Delivers Flash Player 9 With H.264 Video Support; HD Quality Web Video and Audio Now Available With Adobe Flash Player Update*, BUS. WIRE, Dec. 4, 2007

- Ex. 1148: *Microsoft Unveils Silverlight to Power the Next Generation of Media Experiences on the Web; Leading Media Companies and Solution Providers Announce Support for New Solution for Video and Interactivity on Mac- and Windows-Based Web Browsers*, PR NEWSWIRE US, Apr. 16, 2007

- Ex. 1149: *Former Apple Multimedia Pioneers Unveil WebTV; New Company Brings Internet to Television Viewers*, PR NEWSWIRE, Jun. 12, 1996

- Ex. 1150: *Netflix, TiVo Team Up After 4-Year Courtship*, ASSOCIATED PRESS, Oct. 30, 2008

- Ex. 1151: *TiVo and Amazon.com Announce New Service Enabling Amazon Unbox Video Download to TiVo; TiVo Subscribers Will Soon Be Able to Watch Amazon Unbox Movies and TV Shows on Their TVs*, BUS. WIRE, Feb. 7, 2007

- Ex. 1152: *Wall Crumbling Between Televisions and Computers*, AGENCE FRANCE PRESSE – ENGLISH, Jan. 8, 2009

- Ex. 1153: ENHANCED TV BINARY INTERCHANGE FORMAT 1.0, *ETV* (OpenCable Specifications, Nov. 25, 2009)

- Ex. 1154: *Award-Winning Sonos™ Digital Music System Begins Shipping to Customers*, PR NEWSWIRE US, Jan. 27, 2005

- Ex. 1155: *Sonos Introduces the Sonos™ ZonePlayer ZP80*, PR NEWSWIRE, Jan. 4, 2006

- Ex. 1156: *Sonos Introduces the Sonos Controller for iPhone; Free Application Lets Music Lovers Control Leading Multi- Room Music System from Their iPhone*, PR NEWSWIRE, Oct. 28, 2008

- Ex. 1157: *AT&T Opens R&D Lab in Cambridge, England*, BUS. WIRE, Feb. 10, 1999

- Ex. 1158: *Microsoft Releases Windows NT 4.0 Terminal Server Edition*, M2 PRESSWIRE, Jun 16, 1998

- Ex. 1159: *TeamViewer: TeamViewer 3.0 Beta Published; Next Generation of the Popular Remote Support Software*, M2 PRESSWIRE, Aug. 27, 2007

- Ex. 1160: *3am Labs Announces $10 Million Series A Financing; McNamee Lawrence & Co. Acts as Exclusive Financial Advisor to 3am Labs*, BUS. WIRE, Nov. 16, 2004

- Ex. 1161: *Expertcity's GoToMyPC Product Wins A People's Choice Award At Upside Events' Showcase 2001*, INTERNET WIRE, Feb. 1, 2001

- Ex. 1162: *TV2Me(R) Goes Global By Partnering With Leading Asian Online Entertainment Company; Manila-Based ESL Adds Sales and Marketing Muscle to Bring Pioneering Place Shifting Technology to Wider Market*, PR NEWSWIRE US, May 16, 2006

- Ex. 1163: *CES Innovations 2005 Award and Red Herring Finalist for 100 Most Innovative Companies are Latest Commendations for Sling Media*, BUS. WIRE, Nov. 11, 2004

- Ex. 1164: Final Written Decision, *IPR2022-00795* (Sep. 27, 2023)

- Ex. 1165: Patent Owner Response, *IPR2022-00795* (Jan. 13, 2023)

- Ex. 1166: Omitted

- Ex. 1167: *Progressive Networks Launches the First Commercial Audio-On-Demand System Over the Internet*, BUS. WIRE, Apr. 10, 1995

- Ex. 1168: *Progressive Networks' RealVideo Launched With Wide Industry Support*, PR NEWSWIRE EUROPE, February 10, 1997

- Ex. 1169: Omitted

- Ex. 1170: U.S. Prov. App. No. 61/477,998

- Ex. 1171: U.S. Pat. No. 8,904,289 to Strober ("the '289 Patent")

- Ex. 1172: Certified Copy of Prosecution History of U.S. Pat No. 8,904,289
- Ex. 1173: U.S. Pat. No. 9,767,195 to Strober ("the '195 Patent")
- Ex. 1174: Certified Copy of Prosecution History of U.S. Pat. No. 9,767,195
- Ex. 1175: U.S. Pat. No. 11,048,751 to Strober ("the '751 Patent")
- Ex. 1176: Certified Copy of Prosecution History of U.S. Pat. No. 11,048,751
- Ex. 1177: U.S. Pat. No. 8,356,251 to Strober ("the '251 Patent")
- Ex. 1178: Certified Copy of Prosecution History of U.S. Pat. No. 8,356,251
- Ex. 1179: (Omitted)
- Ex. 1180: My analysis of Danciu Claim 1 in view of Danciu Provisional
- Ex. 1181: Annotated Copy of Danciu Provisional in view of Danciu

4. UNDERSTANDING OF APPLICABLE LEGAL STANDARDS

19. Although I am not an attorney, I have a general understanding of the applicable legal standards pertaining to the patentability issues presented in this proceeding. I understand that the Petitioner is challenging the patentability of the claims of the '751 Patent based on the following grounds:

- Claims 1-20 as obvious under pre-AIA 35 § 103(a) based on Danciu in View of Mahajan and/or Danciu in View of Mahajan and Calvert.
- Claims 1-20 as obvious under pre-AIA § 103(a) based on Aldrey in View of Mahajan.

20. I understand that, in this *inter partes* review, Petitioner has the burden of proving that each challenged claim is unpatentable by a preponderance of the evidence.

21. I understand that to be valid, a patent claim must be "novel," and is invalid if "anticipated" by a single prior art reference. I further understand a reference anticipates if it discloses each and every element as arranged in the claim so as to enable a person of ordinary skill in the art to make and use the claimed invention without undue experimentation.

22. I understand that a patent claim is unpatentable if, at the time of the invention, it would have been obvious to one of ordinary skill in the art to combine the teachings of the prior art to yield the patent claim. It is my understanding that this determination is made after weighing the following factors: (1) the level of ordinary skill in the pertinent art; (2) the scope and content of the prior art; (3) the differences between the prior art as a whole and the claim at issue; and (4) as appropriate, other objective considerations identified below.

23. It is my understanding that the prior art and claimed invention should be viewed through the knowledge and understanding of a person of ordinary skill in the art – one should not use his or her own insight or hindsight in deciding whether a claim is obvious. I further understand that a claim may be rendered obvious if a person of ordinary skill in the art can implement the claimed invention as a

predictable variation of a known product. I further understand that a person of ordinary skill in the art is presumed to have knowledge of the relevant prior art at the time of the claimed invention, which comprises any prior art that was reasonably pertinent to the particular problems the inventor faced.

24. I understand that a showing of obviousness requires some articulated reasoning with a rational underpinning to support the combination of the references. I understand that in consideration of the issue of obviousness it is important to identify whether a reason existed at the time of the invention that would have led a person of ordinary skill in the pertinent art to combine elements of the references in a way that yields the claimed invention.

25. I understand that a claim may be considered unpatentable for obviousness for various reasons. I have been informed that the following exemplary rationales may support a finding of obviousness:

(A) combining prior art elements according to known methods to yield predictable results;

(B) substituting one known element for another to obtain predictable results;

(C) use of a known technique to improve similar devices in the same way;

(D) applying a known technique to a known device ready for improvement to yield predictable results;

(E) choosing from a finite number of identified, predictable solutions with a reasonable expectation of success;

(F) known work in a field that prompts variations in the work in the same or a different field that leads to predictable results; and

(G) some teaching, suggestion, or motivation in the prior art that would have led a person of ordinary skill in the art to modify a prior art reference or combine multiple prior art references or teachings to arrive at the claimed invention.

26. I understand that various objective or "real world" factors may be indicative of non-obviousness. I understand that such factors include:

(A) the commercial success of the claimed invention;

(B) the existence of a long-felt, unresolved need for a solution to the problem solved by the claimed invention;

(C) failed attempts to solve the problem solved by the claimed invention;

(D) copying of the claimed invention;

(E) unexpected results of the claimed invention;

(F) praise for the claimed invention by others in the relevant field; and

(G) willingness of others to accept a license under the patent because of the merits of the claimed invention.

27. It is my understanding that the prior art references themselves may provide a suggestion, motivation, or reason to combine, but other times the link may be based on the common sense of the person of ordinary skill in the pertinent art. I further understand that obviousness analysis recognizes that market demand, rather than scientific literature, often drives innovation, and market demand is sufficient motivation to combine references.

28. It is my understanding that a particular combination may be proven obvious merely by showing that it was obvious to try the combination. For example, common sense is a good reason for a person of ordinary skill to pursue known options when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions.

29. I further understand that a proper obviousness analysis focuses on what was known or obvious to a person of ordinary skill in the art, not just the patentee. Accordingly, it is my understanding that any need or problem known in the field at the time of invention and addressed by the patent can provide a reason for combining the limitations in the manner claimed.

5. THE RELEVANT ART AND LEVEL OF ORDINARY SKILL IN THE RELEVANT ART

30. I understand that obviousness is determined from the vantage point of a person of ordinary skill in the relevant art at the time of the alleged invention ("POSITA"). The '751 Patent is directed to controlling the presentation of content

on a display device, and I agree that this represents the relevant field of art. *See* Ex. 1101, Abstract. I understand that a person of ordinary skill in the art is one who is presumed to be aware of all pertinent art, thinks along conventional wisdom in the art, and is a person of ordinary creativity.

31. I believe that a person of ordinary skill in the art of the '751 Patent at the time of the alleged invention of the '751 Patent would have a degree in computer or electrical engineering, computer science, information systems, or a similar discipline, along with three-to-four years of experience with the design and/or implementation of network-based content delivery systems, such as video-on-demand (VOD), cable systems, and Internet video streaming. I worked in the relevant field with such persons at, and leading up to, the time of the alleged invention of the '751 Patent, and thus, I am familiar with the knowledge that such persons had at the time (*i.e.*, late 2010).

32. All of my statements in this declaration regarding what a person of ordinary skill in the art would have known, understood, appreciated, been motivated to do, etc., refer to a person of ordinary skill in the art in late 2010, before the earliest claimed priority date of the '751 Patent (which, as I discuss below, is April 21, 2011).

6. CLAIM CONSTRUCTION

33. I understand that my analysis requires an understanding of the scope of the claims of the '751 Patent. I understand that claim terms subject to *inter partes*

review, absent some other definition provided in the patent, are given their ordinary meaning to a person of ordinary skill in the art in light of the patent specification. Therefore, in my analyses given below, I have assumed that all claim terms are given their ordinary interpretation as would have been understood by a POSITA reading the patent specification as of the priority date.

34. I understand that Application No. 15/687,249 ("the '249 Application"), which eventually became the '751 Patent, was filed on August 25, 2017. It is further my understanding that the '249 Application was the fourth in a chain of applications claiming priority to an application filed on April 21, 2011. It is my understanding that the '751 Patent is entitled to a priority date of the filing date of the earliest application from which the '751 Patent claims priority, *i.e.*, April 21, 2011.

35. It is my understanding that in an IPR of claims 1, 2, and 5-9 of U.S. Patent No. 8,356,251 ("the '251 Patent"), in the same family tree as and involving similar claims to the present, the panel of Administrative Patent Judges found that the term "'media player' refers to software and not to a hardware device." Ex. 1164, 13. The panel did not expressly construe any other terms of claims 1, 2, and 5-9 of the '251 Patent. Ex. 1164, 13.

36. It is my understanding that in an IPR of the '251 Patent, involving similar claim terms to the present, Patent Owner characterized certain claim terms. Regarding the claim term "media player," Patent Owner asserts "[c]onsidering the

intrinsic record, including the file history, an ordinary artisan would have understood the ordinary and customary meaning of 'media player' in the '251 patent refers to application software and does not encompass hardware devices." Ex. 1165, 13. Additionally, Patent Owner asserts, "[t]he term 'programming code,' which appears in claim 1 of the '251 patent, should be construed as 'computer program instruction(s) encoded for execution by a data processing apparatus (such as a computer processor).'" Ex. 1165, 16.

37. It is my understanding that in a Civil Action in the District Court for the Southern District of New York, Patent Owner proposed, for claim terms of the '251 Patent (in the same family tree as and involving similar claim terms to the present), the following constructions:

Term/Phrase	Patent Owner's Proposed Construction
"synchronization code"	"No construction necessary. This term should be given its plain and ordinary meaning, which is 'an identifier that can be used to facilitate a connection between two or more devices.'" Ex. 1121, at 1.
"storing"/"store"	"No construction necessary. This term should be given its plain and ordinary meaning, which is 'placing in a location for subsequent use.'" Ex. 1121, at 2.
"programming code"	"No construction necessary. This term should be given its plain and ordinary meaning, which is 'instructions for a computer.'" Ex. 1121, at 4.
"universal playback control command"	"No construction necessary. This term should be given its plain and ordinary

	meaning, which is 'command for controlling playing of content.'" Ex. 1121, at 6.
"playback control command"	"No construction necessary. This term should be given its plain and ordinary meaning, which is 'command for controlling playing of content.'" Ex. 1121, at 6.
"media player"	"No construction necessary. This term should be given its plain and ordinary meaning, which is 'a computer application operable to present content and control presentation of content.'" Ex. 1121, at 7.
"assigning, by a server system, a synchronization code to the display device; receiving, in the server system, a message from a personal computing device that is separate from the server system and separate from the display device, wherein the message includes the synchronization code"	"Associating identification information of a display device based on information that is received by the server from a personal computing device that allows communication among the server system and the different devices." Ex. 1121, at 11.
"a synchronization code assigned by the server system to the display device and received by the server system in a message from the personal computing device"	"The server system associates identification information of a content presentation device based on information provided to the server system from a personal computing device." Ex. 1121, at 12.
"a synchronization code that was assigned to the display device by a server system, the server system subsequently storing, based on a message from a personal computing device that is separate from the server system and the display device, an association between the display device and the personal computing device, the message from the personal computing device including the synchronization code"	"The server system associates identification information of a content presentation device based on information provided to the server system from a personal computing device that allows communication among the server system and the different devices." Ex. 1121, at 12-13.

38. It is my understanding that in a Civil Action in the District Court for the Western District of Texas, Patent Owner proposed the following claim constructions:

Term/Phrase	Patent Owner's Proposed Construction
"universal command"	"plain and ordinary meaning - no construction needed alternatively, plain and ordinary meaning, which is 'a standard command used for controlling playback of media content such as play or pause'" Ex. 1120, at 2.
"unique identification code assigned to the content presentation device" and "synchronization code assigned to the content presentation device"	"plain and ordinary meaning - no construction needed alternatively, plain and ordinary meaning which is '[unique identification code] / [synchronization code] associated with a content presentation device'" Ex. 1120, at 2.
"identifying, [by the server system,] programming code corresponding to the action control command, wherein the programming code is for controlling presentation of the content presentation device using the particular media player"	"plain and ordinary meaning - no construction needed alternatively, plain and ordinary meaning for 'programming code' which is 'instructions that the media player can recognize and execute'" Ex. 1120, at 3.

39. It is my understanding that in a Civil Action in the District Court for the Western District of Texas, the U.S. District Judge gave all terms of claim 1 of the '251 Patent (in the same family tree as and involving similar claim terms to the present) their plain and ordinary meaning. Ex. 1122, p. 19.

7. OVERVIEW OF THE ’751 PATENT

40. The ’751 Patent states that it relates to “creation, storage, manipulation and access of media playlists used in conjunction with display devices and control of the display devices.” Ex. 1101, 1:24-26.

41. The alleged invention of the ’751 Patent relates to controlling playing of content on a display device. Ex. 1101, 3:13-56, 6:5-25, 7:4-9. The system of the ’751 Patent includes a personal computing device 20 (**blue**), a display 23 (**red**), and a server system 24 (**green**).

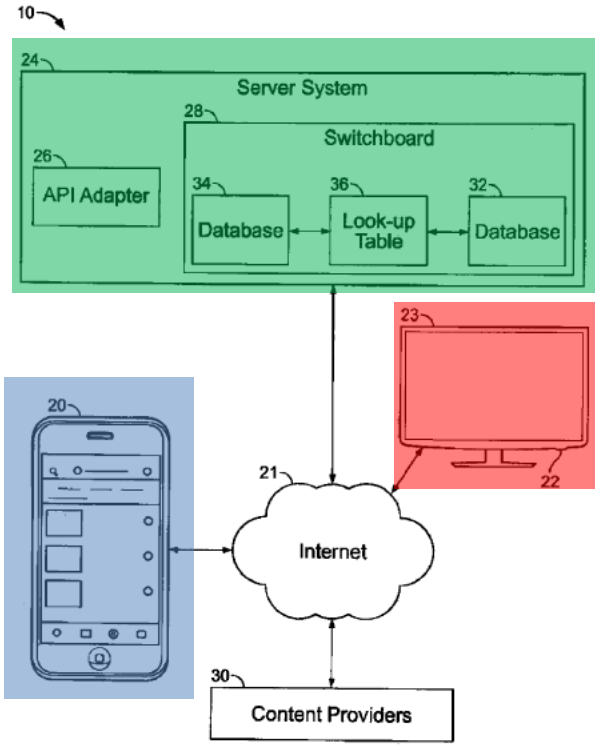


FIG. 1

Ex. 1101, Fig. 1 (annotated)

42. A user may use the personal computing device 20 (*e.g.*, a smartphone) to control content on the display device 23. Ex. 1101, 3:13-21, 4:4-10, 4:39-51, 5:59-6:4, 7:4-15, 7:55-8:5, 8:21-28, 8:54-65. The personal computing device 20 and the display device 23 may be connected to and communicate via a network, for example the Internet 21. Ex. 1101, 3:13-15, 3:26-30. The server system 24 connected to the network may facilitate control of the content on the display device 23. Ex. 1101, 3:24-30, 3:54-56, 4:23-31, 4:43-45, 4:56-63, 5:15-24, 5:44-58, 6:22-25, 6:42-48, 6:65-7:3, 7:8-13, 7:37-61, 8:20-27, 8:50-53, 9:16-24, 9:33-51.

7.1. Prosecution History

43. The '751 Patent was filed as Application No. 15/687,249 on August 25, 2017. Ex. 1101, 1. The '751 Patent is a continuation of Application No. 13/532,546 (U.S. Pat. No. 9,767,195 ("the '195 Patent")), which is a continuation-in-part of Application No. 13/157,821 (U.S. Pat. No. 8,904,289 ("the '289 Patent")), which claims priority to U.S. Provisional Application No. 61/477,998 ("the '998 Application") filed on April 21, 2011. *Id.*, 1-2. The prosecution histories of these applications are discussed below.

7.1.1. Prosecution History of the '998 Application

44. The '998 Application was filed on April 21, 2011, as a provisional patent application. Ex. 1170, 35. A Filing Receipt was mailed on May 6, 2011. *Id.*

7.1.2. Prosecution History of the ’289 Patent

45. The ’289 Patent was filed on June 10, 2011 as Application No. 13/157,821 (“the ’821 Application). Ex. 1171, 1.

46. A Non-Final Office Action rejected all of the claims. Ex. 1172, 178-225. Claims 1-12 were rejected as being directed to non-statutory subject matter. *Id.*, 180. Claims 1-43 were rejected over prior art. *Id.*, 181-224. In response, the originally filed claims were canceled for new claims. *Id.*, 303-308.

47. Subsequently, claim 53 was amended and a terminal disclaimer was filed over U.S. Pat. No. 8,356,251. *See id.*, 322-323, 327-328.

48. A Final Office Action allowed claims 44-58 and rejected claims 59-61 as directed to non-statutory subject matter. *Id.*, 335-339.

After amending claim 59 to include “at least one processor,” *id.*, 363-364, a Notice of Allowance issued on July 8, 2014. *Id.*, 369=376. The ’289 Patent issued on December 2, 2014. *Id.*, 464.

7.1.3. Prosecution History of the ’195 Patent

49. The ’195 Patent was filed as Application No. 13/532,546 (“the ’546 Application”) on June 25, 2012. Ex. 1174, 47. On its face, the ’195 Patent claims priority as a continuation-in-part of the ’289 Patent. Ex. 1173, 1. The ’195 Patent and the ’289 Patent have different Specifications and Drawings. *Compare* Ex. 1173 *with* Ex. 1171.

50. In response to a Non-Final Office Action rejecting the claims on prior art grounds, Applicant amended independent claims 1 and 13. Ex. 1174, 193-198. In its Remarks, Applicant states:

> The present application describes, among other things, a method of presenting content on a display device. The method can include, in some implementations, various steps performed by a display host (*e.g.*, 22 in FIG. 1), some of which are in response to communications from a display device (*e.g.*, 23 in FIG. 1) and some of which are in response to messages sent by a switchboard server system (*e.g.*, 24 in FIG. 1) in response to a message originating in a handheld Internet-enabled personal computing device (*e.g.*, 20 in FIG. 1). The method can facilitate using the personal computing device to control content that is presented on the display device. Various messages regarding what content to play, what media player (*i.e.*, computer software application) to use, and/or what play control commands to execute, are transmitted from the personal computing device to the switchboard system (*e.g.*, by way of a network such as the Internet), which then forwards a corresponding message to the virtual display host for execution.

Id., 199.

51. In response to an Office Action finally rejecting of all of the claims over prior art, Applicant again amended independent claims 1 and 13 and added new independent claim 28. *Id.*, 270-274, 276-277.

52. Subsequently a Non-Final Office Action rejected all of the claims over prior art. *Id.*, 288-322. In response, Applicant canceled independent claim 1, amended independent claims 13 and 28, and added new independent claim 30. *Id.*, 524, 526-528, 531-534.

53. A Notice of Allowance issued on May 8, 2017. *Id.*, 547-556. The '546 Application issued as the '195 Patent on September 19, 2017. *Id.*, 610.

7.1.4. Prosecution History of the '751 Patent

54. The '751 Patent was filed as Application No. 15/687,249 ("the '249 Application") on August 25, 2017, as a continuation of the '195 Patent.[1] Ex. 1104, 55.

55. A Non-Final Office Action rejected all of claims 1-20 on prior art grounds. *Id.*, 63-74. In response, Applicant traversed. *Id.*, 161-168. Discussing cited prior art reference U.S. Pub. No. 2012/0130971 ("Morris"), Applicant alleges that Morris fails to describe the claim element "*receiving, from the remote server device, a first message that includes* ***at least one command*** ***<u>in a first format</u>****, wherein the first message is received based at least in part on a second message including* ***at least one command*** ***<u>in a second format</u>*** *having been sent from the associated remote computing device*" because "Morris merely describes (1) that a *portable computing device* can generate a message that 'may include information identifying a network address . . . corresponding to the particular media content item' and (2) that ***the very same message*** generated by the *portable computing device* can be . . . 'sent . . . to an

[1] The '751 Patent claims priority as a continuation of the '195 Patent. However, the '751 Patent has different Drawings and a different Written Description from the '195 Patent. *Compare* Ex. 1175 *with* Ex. 1173. The '751 Patent Drawings and Written Description appear to be substantially similar to those of the '289 Patent. *Compare* Ex. 1175 *with* Ex. 1171.

application server that provides media content to a set top box device.'" *Id.*, 168-170 (quoting Morris) (emphasis in original).

56. A Final Office Action rejected all claims under the previous grounds. *Id.*, 176-190. Following an interview on June 25, 2019,[2] Applicant amended the claims in response to the Final Office Action. *Id.*, 234-241.

57. A Notice of Allowance issued on April 2, 2020. *Id.*, 431. An Issue Notification was mailed on July 22, 2020. *Id.*, 554. On the same day, Applicant filed a Petition to Withdraw an Application from Issue After Payment of the Issue Fee. *Id.*, 674-675.

58. A second Notice of Allowance issued on September 3, 2020. *Id.*, 684. Subsequently, Applicant filed a second Petition to Withdraw an Application from Issue After Payment of the Issue Fee. *Id.*, 711-712. Applicant filed a Terminal Disclaimer over Application No. 16/917,095 in response to a Non-Final Office Action. *Id.*, 826-827.

59. A third Notice of Allowance Issued on May 26, 2021. *Id.*, 844. The '249 Application issued as the '751 Patent on June 29, 2021. *Id.*, 892.

[2] The record is unclear on the date of the interview. The Applicant-Initiated Interview Summary issued by the Office on July 10, 2019 indicates June 25, 2019 as the date of the interview. Ex.1104, 212-213. Whereas, the Summary of Examiner Interview in Applicants response indicates June 26, 2019 as the date of the interview. *Id.*, 233.

8. OVERVIEW OF THE PRIOR ART

8.1. Streaming Formats and VOD

60. Media access via the internet was ubiquitous by 2010. As early as the late 1990s and early 2000s, Internet streaming media was widely accessible. Progressive Networks (now RealNetworks) introduced the RealAudio Player and format in 1995, enabling audio streaming over the internet. *See, e.g.,* Ex. 1167. In 1997, Progressive Networks introduced the RealVideo format, expanding its services into video streaming. *See, e.g.,* Ex. 1168. The rapidly increasing commercially available Internet speeds during this time precipitated a boom in video-on-demand (VOD) and streaming media offerings and correspondingly the creation of many different media formats, platforms, and players.

61. By the early to mid-2000s, many multimedia formats were available for downloading and streaming on-demand content via the Internet. See, e.g., Ex. 1130, [0007], [0014], [0015], [0018], [0069], [0273]. The different formats varied by, for example, compression methods and player compatibility. *See, e.g.*, *id.*, [0015], [0018], [0273]; *see also, e.g.*, Ex. 1131, 1:33-50, 7:5-12, 28:36-55. Some of the prominent multimedia formats of that time include MPEG Audio Layer III (MP3) (*see, e.g.*, Ex. 1131, 28:36-51, 30:3-27, 31:1-9), RealNetwork's RealAudio (*see, e.g.*, Ex. 1131, 11:65; *see also, e.g.*, Ex. 1132, 4:62-67) and RealVideo (*see, e.g.*, Ex. 1132, 4:62-67), Microsoft's Windows Media formats including Windows Media Video (WMV) (*see, e.g.*, Ex. 1131, 7:5-12, 13:17-24; *see also, e.g.*, Ex. 1133,

[0033]) and Windows Media Audio (WMA) (*see, e.g.*, Ex. 1134, [0002], [0033]; *see also, e.g.*, Ex. 1130, [0183]; *see also, e.g.*, Ex. 1133, [0033]), Apple's QuickTime (MOV) (*see, e.g.*, Ex. 1131, 1:33-50, 7:5-12, 11:35-67, 28:36-51; *see also, e.g.*, Ex. 1130, [0007], [0014], [0022]), Flash (*see, e.g.*, Ex. 1133, [0004]), MPEG-2 and MPEG-4 (*See, e.g.*, Ex. 1141).

8.2. Media Players

62. Some media formats were supported by multiple media players. *See, e.g.*, Ex. 1135, [0005]. Other media formats, however, were proprietary and required proprietary media players for playback. *See, e.g.*, Ex. 1135, [0004], [0013]; *see also, e.g.*, Ex. 1130, [0018]. For example, RealPlayer and QuickTime were proprietary players. *See, e.g.*, Ex. 1135, [0005], [0013]. Therefore, it was well known by this time that different media players may be needed for accessing media in different formats. *See, e.g.*, *id.*

63. Media players were available as standalone software. *See, e.g.*, Ex. 1130, [0018]. By the early to mid-2000s, it was well known to have multiple media players on a single device for accessing and playing different media formats. *See, e.g.*, *id.* In addition to standalone media players, by the early 2000s, it was well known that web browsers could execute media players, often referred to as browser plug-ins, to access web-embedded media. *See, e.g.*, *id.,* [0015]. Additionally, it was well known by this time that web browsers (e.g., Netscape and Internet Explorer)

would load different media player plug-ins to access different media in different formats. *See, e.g.*, *id.,* [0011], [0014]. For example, Adobe Flash Player was a widely used browser plug-in during this time. *See e.g.*, Ex. 1142. It enabled interactive multimedia content, animations, games, and video playback embedded within web pages. *Id.* Flash was used on YouTube's video streaming platform upon its launch in 2005. *Id.* Apple's QuickTime browser plug-in enabled access to QuickTime MOV videos directly from web browsers. *See, e.g.*, Ex. 1130, [0014], [0015], [0019]. Similarly, the RealPlayer and Windows Media Player plug-ins enabled access to Real media and Windows Media content directly from web browsers. *See, e.g.*, *id.*

64. Popular services began offering browser-accessible streaming content in the mid-2000s. YouTube (2005) (*see, e.g.*, Ex. 1143; *see also, e.g.*, Ex. 1144), Hulu (2007) (*see, e.g.*, Ex. 1145), and Netflix (2007) (*see, e.g.*, Ex. 1146) all began offering on-demand streaming services in the early to mid-2000s. Many of these platforms used different media players. For example, YouTube (*see, e.g.*, Ex. 1142) and Hulu leveraged Adobe's Flash Player (*see, e.g.*, Ex. 1147; *see also, e.g.*, Ex. 1142). Netflix used a media player based on Microsoft Silverlight (*see, e.g.*, Ex. 1148). It was well known that a web browser would load any of these various different players depending on the content provider accessed.

8.3. Applications on TVs and STBs

65. By 2010 it was well known that televisions (TVs), set-top boxes (STBs), and digital video recorders (DVRs) could execute software for various purposes, including web browsing and media streaming. For example, WebTV was introduced in 1996. *See, e.g.*, Ex. 1149. WebTV was an STB that allowed users to browse the internet and access email using their TV. *See, e.g.*, *id.* In 2008, TiVo, a popular DVR brand, introduced streaming Netflix and YouTube access to their devices in addition to the already offered Amazon Unbox (a VOD service). *See, e.g.*, Ex. 1150; *see also, e.g.*, Ex. 1151. During this time, TV manufacturers, including, for example, Samsung, LG, Panasonic, Sony, and Toshiba, were producing Internet-enabled TVs. At least by 2010, some of these Internet TVs had access to a plethora of content streaming services and games via downloadable software applications. *See, e.g.*, Ex. 1152.

66. Around this time, a consortium of technology companies began developing Enhanced TV Binary Interchange Format (EBIF) applications. EBIF allowed for the creation and deployment of interactive applications on STBs. EBIF aimed to enhance the viewing experience by enabling interactive applications while watching TV programming. *See, e.g.*, Ex. 1153.

8.4. Device Casting

67. Device casting, the process of wirelessly transmitting or streaming media content from one device to another, was well-known by 2010. Casting typically involves leveraging wireless technology like Wi-Fi to connect a source device and a target device. The user typically "casts" the content from the source device to the target device without a physical connection. For example, in 2005, Sonos released its Digital Music System. *See, e.g.*, Ex. 1154. The Sonos system comprised a controller, a player, and a storage device (with a media library), all wirelessly connected. The Sonos system allowed users to access their media library from the controller wirelessly and cast media from the storage device to the player. In addition to casting and control, in 2006, Sonos enabled, from its controller, access to and control of Internet radio and various online audio services like Rhapsody and Audible.com. *See, e.g.*, Ex. 1155. The Internet media selected from the wireless controller was streamed to the player via the Internet. In 2008, Sonos released a smartphone application turning any supported smartphone into a wireless controller. *See, e.g.*, Ex. 1156.

8.5. Remote Viewing

68. Remote computer access is a technology that allows a user to access and control a computer, its desktop environment, applications, and files from a remote location using another device. By 2010, the concept of remote computing

was well known. For example, in the late 1990s, the Olivetti & Oracle Research Lab (later acquired by AT&T) created the Virtual Network Computing (VNC) system. VNC allows users to remotely access and control a computer's desktop environment over a network. *See, e.g.*, Ex. 1157. Additionally, in the 1990s, Microsoft introduced the Windows Terminal Server Edition. *See, e.g.*, Ex. 1158. Terminal Server provided a solution in which applications are executed on the server and remotely displayed on the client. *See, e.g.*, *id.* In addition to the above, by the mid-2000s, at least the following remote computing solutions were commercially available: TeamViewer (*see, e.g.* Ex. 1159), LogMeIn (*see, e.g.* Ex. 1160), and GoToMyPC (*see, e.g.* Ex. 1161). In addition to the remote desktop services mentioned above, remote control of standalone media applications was also well-known by 2010. For example, iTunes Remote App and Unified Remote were available and well-known by 2010.

69. In 2003 TV2ME introduced a product to enable one to control and watch TV live from their own cable or satellite Set Top Box subscription sent over the internet, later called space shifting or place shifting. *See, e.g.* Ex. 1162. This was followed by similar products from a number of companies, for example the first edition of the Slingbox came to market in late 2005. *See, e.g.* Ex. 1163. These products used computers or mobile apps to control playing of content on a display device. Ex. 1101, 3:14-56, 6:5-25, 7:4-15, 7:21-27, 7:32-9:56. The place shifting systems included a personal computing device, a display (connected to a place

shifting product), and a server system similarly to the ’751 Patent that allowed a user to use the personal computing device to control content on the display device just like the ’751 Patent Ex. 1101, 3:13-21, 4:4-8, 4:39-51, 5:59-6:4, 7:4-15, 7:55-8:5, 8:12-29, 8:54-65.

8.6. File Extensions and MIME Types

70. By 2010, it was well known that file extensions (typically the three characters after the last period in a filename, e.g., “.mp3”) could be used to identify the format of a file and the software necessary to access it. The concept of file extensions can be traced back to the 1970s and 1980s with the development of operating systems such as CP/M and later MS-DOS. These systems used file extensions to indicate the type of content stored in a file and the associated software needed to open it. This system transitioned to the web as it developed during the 1990s.

71. Additionally, in the early days of the Internet, Multipurpose Internet Mail Extensions (MIME) types were introduced as a standard way to classify files on the Internet based on their nature and format. MIME was initially developed to extend the capabilities of email messages beyond plain text, allowing for the inclusion of multimedia. MIME provided a way to label different types of content within email messages using MIME types. The MIME standard extended to web

content generally, enabling web servers to identify the type of files they were sending to browsers.

72. MIME is a two-part identifier that consists of a primary type and a subtype, separated by a forward slash (/). An extension is a suffix of characters appended to the end of a file name, usually after a period. Examples of some of the MIME types and extensions of the file formats described above and used before 2010 are included in the following table:

Media Format	**MIME Type**	**Extensions**
MP3	audio/mpeg	.mp3
RealAudio (RA)	audio/x-pn-realaudio	.ra, .rm, .ram
RealVideo (RV)	video/vnd.rn-realvideo	.rv, .rmvb
Windows Media Audio	audio/x-ms-wma	.wma
Windows Media Video	video/x-ms-wmv	.wmv
QuickTime MOV	video/quicktime	.mov
Flash Video	video/x-flv	.flv
MPEG-2 Audio and Video	audio/mpeg, video/mpeg	.mpeg, .mpg

73. Since their inception, extensions and MIME types have been used to identify the correct program to open or access a specific file. For example, it was well known that a browser would look at the MIME type and/or extension of an embedded media file to identify which program or plug-in to load for file access. *See, e.g.*, Ex. 1137, 1:47-52, 4:54-7:8. If a browser identifies a MIME type or

extension for which it does not have a supporting plug-in, it may indicate an error and prompt the user to download and install a supporting plug-in.

8.7. Application Programming Interfaces (APIs)

74. By 2010, it was well known that software could be split into different applications. An Application Programming Interface (API) is a set of rules, protocols, and tools that allows different software applications to communicate with each other. APIs allow for the integration of functionalities from one application into another. The concept of APIs can be traced to the 1960s and 1970s when programmers created reusable code libraries to perform specific tasks. These libraries allowed developers to encapsulate complex operations into manageable functions. A well-known and fundamental part of APIs is API procedure calls. An API procedure call requests a specific function provided by an API that developers can use to interact with a software library or service. API procedure calls allow developers to request specific actions or services from the API, enabling them to integrate external functionality into their own applications. By 2010, it was well known that API procedure calls could be used to perform a wide range of tasks, including, for example, retrieving data from remote servers and sending data to a service.

75. The term Application Programming Interfaces was used at least as early as the 1970s. In the 1980s, operating systems like UNIX popularized the use

of libraries that exposed interfaces for hardware interactions. APIs gained even more prominence in the 1990s with the rise of Graphical User Interfaces (GUIs). The Windows API (WinAPI), provided by Microsoft, provided developers a way to create applications that could interact with the Windows Operating System and its graphical elements.

76. As the Internet gained prominence in the 1990s and early 2000s, APIs started to be used for web-based interactions. For instance, the Simple Object Access Protocol (SOAP) was developed to define APIs for remote procedure calls over the Internet. Additionally, Representational State Transfer (REST) was popularized as a lightweight way to design APIs for web services. The explosion of the Internet and mobile applications of the early to mid-2000s led to an increased demand for APIs. By 2010 many technology companies, such as Google, Facebook (2007), and Twitter (2006), opened their platforms through APIs, allowing developers to integrate their services into third-party applications.

8.8. Look-Up Tables (LUTs)

77. A look-up table (LUT) is a simple data structure technique for associating pieces of data. LUTs were used before the advent of the modern computer. For example, LUTs were used in ancient civilizations to speed up hand calculations of complex functions. More contemporarily, LUTs were one of the earliest functionalities implemented in computer science. In modern computer

science and engineering, LUTs are essentially tables that map input values (keys) to corresponding output values (values). LUTs, therefore, can be understood to comprise key-value pairs. Each key is associated with a specific value, which can be any kind of data. By 2010, it was well known that LUTs could be used as a database technique to speed up data retrieval, reduce computational load, simplify complex logic, and cache frequently accessed data.

8.9. U.S. Pat. No. 9,490,998 – Danciu (Ex. 1112)

78. U.S. Pat. No. 9,490,998 to Danciu et al. ("Danciu") indicates on its face that it was filed on March 7, 2011, as Application No. 13/041,964 which claims priority to, and incorporates by reference, U.S. Provisional Application No. 61/411,386 filed on November 8, 2010 ("Danciu Provisional"). Ex. 1112, p.1. I understand that the Danciu Patent qualifies as prior art under pre-AIA 35 U.S.C. § 102(e) because its filing date (March 7, 2011) is before the earliest priority date of the '751 Patent (April 21, 2011). It is my opinion that Danciu Provisional provides written description support for at least one independent claim of Danciu and provides written description support for the disclosure relied on in Danciu. Indeed, upon reviewing a version of Danciu Provisional noting its correspondence to Danciu (Ex. 1181), I find the disclosures have no meaningful substantive differences – the changes are minor edits for clarity, such as the omission of "remote control 80" which appears to be erroneously included in Figure 4 of Danciu Provisional. Further

analysis of how Danciu Provisional provides support of claim 1 in Danciu is attached as Ex. 1180. Thus, I also understand that Danciu qualifies as prior art under pre-AIA 35 U.S.C. § 102(e) as of its priority date (November 8, 2010). Additionally, I also understand that neither Danciu nor Danciu Provisional were considered during prosecution of the '751 Patent. Ex. 1101, pp. 1-4.

79. Much like the '751 Patent, Danciu generally relates to network-server assisted control of content on a network-connected display device via a network-connected controller. *See* Ex. 1113, Abstract, [0001], [0004], [0018], [0019]; Ex. 1112, Abstract, 1:9-10, 1:39-50, 3:13-55. Danciu states that its disclosure relates to "techniques for controlling networked devices, such as personal computers, tablet computers, cellular phones, televisions, and gaming consoles." Ex. 1113, [0001]; Ex. 1112, 1:9-10. Danciu further states that its disclosure is "directed to techniques for exchanging information between a networked device, such as a network-enabled television, and web-enabled device, such as a remote control, via a network service (e.g., a 'cloud service'). Ex. 1113, [0004]; Ex. 1112, 1:39-50. "In an example, the web-enabled device can transmit control information via the network service to the networked device to control playback of media content (e.g., audio and/or video content) on the networked device." Ex. 1113, [0004]; Ex. 1112, 1:43-46.

80. Danciu further describes that techniques of its disclosure "relate to a network service or 'cloud service' that acts as an intermediary between a remote

control device and a controlled device." Ex. 1113, [0018]; Ex. 1112, 3:14-16. "For example, the network service may receive commands from a remote control and transmit the commands to a controlled device." Ex. 1113, [0018]; Ex. 1112, 3:16-18. Danciu describes that its "remote control may include a remote control application executing on a mobile device, such as a cellular telephone or a tablet computer." Ex. 1113, [0018]; Ex. 1112, 3:21-24. "The controlled device may include any Internet-connected device capable of receiving commands, such as an Internet-connected television, a set top box, a personal video recorder, a gaming console, or other networked device." Ex. 1113, [0018]; Ex. 1112, 3:24-28.

81. Figure 1 of Danciu is a block diagram of a "networked environment" Ex. 1113, [0024], Fig. 1; Ex. 1112, 4:58-59, Fig. 1. Danciu's "networked environment 10 includes remote control 14 [(**blue**)] that communicates with controlled device 18 [(**red**)] via network 22 and servers 24A-24N" (**green**). Ex. 1113, [0024]; Ex. 1112, 4:58-64.

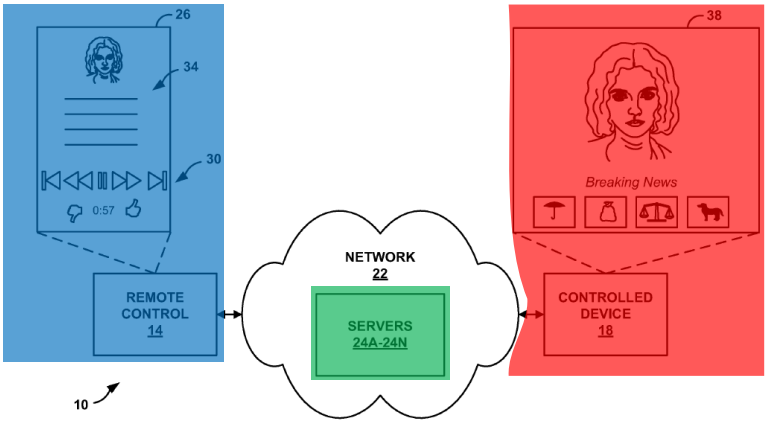


FIG. 1

Ex. 1112, Fig. 1 (annotated)

82. Danciu's remote control can be, for example, mobile phones, personal digital assistants (PDAs), laptop computers, portable gaming devices, portable media players, e-book readers, watches, and desktop computers. Ex. 1113, [0024]; Ex. 1112, 5:1-8. Danciu's controlled devices may include network-enabled televisions and set top boxes. Ex. 1113, [0027]; Ex. 1112, 5:42-44.

83. Danciu's remote control may include a user interface to present information to a user such as "controls 30 and information 34 associated with content being played on controlled device 18." Ex. 1113, [0026]; Ex. 1112, 5:31-33. The controls may include, for example, "fast forward, reverse, skip ahead or back, play, stop, move to new content, etc." Ex. 1113, [0026]; Ex. 1112, 5:33-36. Additionally,

the information presented to the user may include, for example, content playback information and content playlist information. Ex. 1113, [0026]; Ex. 1112, 5:37-41.

84. Danciu describes that the controlled device may include a display for content. Ex. 1113, [0028]; Ex. 1112, 5:64-6:13. The "controlled device 18 receives one or more messages from remote control 14 via network 22 and servers 24 to alter the content that is rendered on display 38 of controlled device 18." Ex. 1113, [0028]; Ex. 1112, 5:66-6:2.

85. Danciu explains that messages from the remote control may contain control information for controlling and/or altering one or more functions of the controlled device. *See* Ex. 1113, [0025], [0066], [0074], [0075], [0078], [0083]; Ex. 1112, 5:13-28, 14:37-64, 16:47-67, 17:21-29, 18:27-41. The control information may include, for example, "stop playback, begin next playback item, etc." Ex. 1113, [0074], [0078]; Ex. 1112, 16:47-55, 17:26-29. Additionally, Danciu's server may "process and/or repackage the control information of the message into a new message." Ex. 1113, [0075]-[0078]; Ex. 1112, 16:55-17:43, 18:36-38.

86. Danciu explains that the data servers include data repositories for storing information such as "identification numbers, session identifiers, and any other information required to carry out data transfer between remote control 14 and controlled device 18." *See* Ex. 1113, [0006], [0007], [0030], [0064], [0070], Fig. 5; Ex. 1112, 2:6-19, 2:20-35, 6:40-49; 13:62-65, 15:59-16:6, Fig. 5. "[T]he data

repositories of servers 24 may be structured as one or more tables, databases, linked lists, radix trees, Google File Systems, Google BigTable database systems, or other suitable data structure." Ex. 1113, [0030], [0064]; *see* Ex. 1112, 6:46-49; 14:6-9.

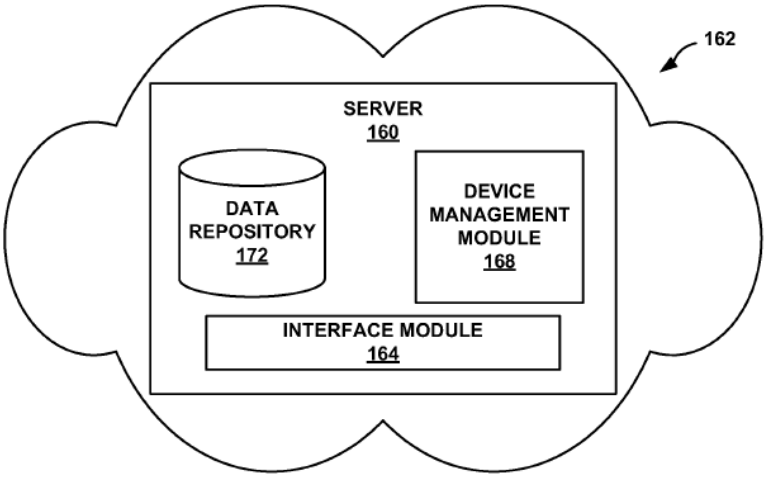


FIG. 5

Ex. 1112,, Fig. 5

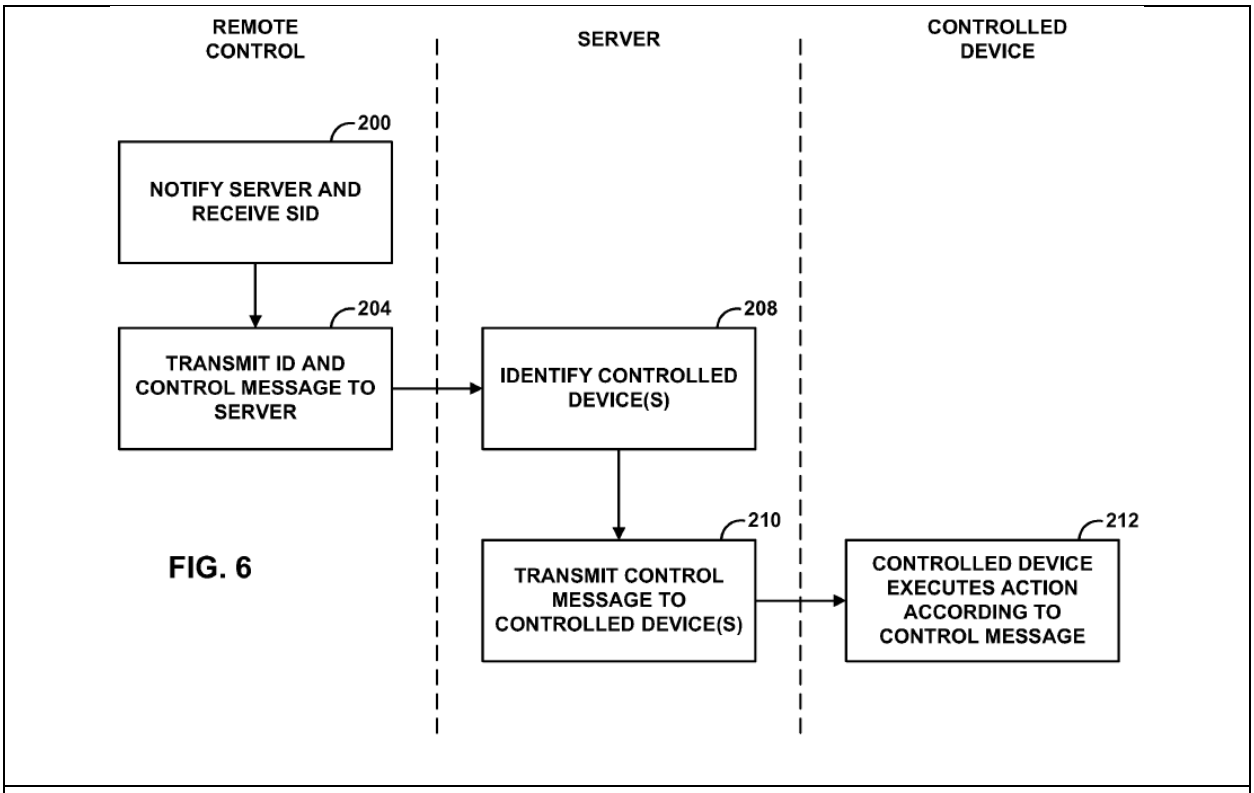
87. Danciu describes that its network and servers "facilitate an exchange of data" by operating as an intermediary between the remote control and controlled device. *See* Ex. 1113, [0018], [0023], [0031]; Ex. 1112, 3:14-25, 4:46-57, 6:50-55. Additionally, the servers may "pair" the remote control and controlled device so that "information and commands" can be transmitted between the remote control and the controlled device. *See* Ex. 1113, [0019], [0021]-[0023], [0025], [0027], [0031], [0036]-[0040], [0050], [0061], [0065], [0068]-[0070], [0076]; Ex. 1112, 3:34-4:57, 5:13-28, 5:42-63, 6:50-7:10, 7:59-8:58, 10:63-11:6, 13:16-32, 14:10-36, 15:28-16:6,

17:1-12. For example, the remote control and controlled device may notify the servers that they are connected to the network and available for pairing. *See* Ex. 1113, [0031], [0061], [0065]; Ex. 1112, 6:60-64, 13:19-22, 14:10-16. Danciu states that its "[s]ervers may assign unique identification numbers to each authorized remote control 14 and controlled device18." *See* Ex. 1113, [0021], [0022], [0031], [0035], [0037], [0064], [0065]-[0067], [0073], [0081]; Ex. 1112, 4:4-6, 4:32-45, 7:6-8, 7:61-63, 8:15-19, 13:62-14:9, 14:21-36, 14:37-47, 16:24-46, 17:66-18:16. Further, "[t]o pair remote control 14 and controlled device 18, servers 34 may create a session that includes all of the issued unique identification numbers." *See* Ex. 1113, [0021], [0022], [0031], [0035], [0037], [0065], [0066], [0079]; Ex. 1112, 4:4-13, 4:32-45, 7:6-11, 7:59-67, 8:11-34, 14:18-64, 17:44-43.

88. Danciu further describes that QR codes can be used to pair remote controls and controlled devices. *See* Ex. 1113, [0022], [0038], [0039], [0061], [0069], [0073]; Ex. 1112, 4:32-45, 8:23-45, 13:27-32, 15:42-51, 16:32-41. For example, a controlled device, "may present a user with a QR code that identifies a session that has been created by servers 68." *See* Ex. 1113, [0022], [0038], [0061], [0069]; Ex. 1112, 4:32-39, 8:23-34, 13:27-32, 15:42-51. "The user may scan the QR code with one of remote controls 62." *See* Ex. 1113, [0022], [0038], [0061], [0069]; Ex. 1112, 4:32-39, 8:23-34, 13:27-32, 15:42-51. "Upon scanning the QR code, remote control 62A transmits a message to servers 68 requesting that servers 68 issue

remote control 62A a unique identification number and add remote control 62A to the session associated with the QR code, thereby pairing remote control 62A with controlled device 64A." *See* Ex. 1113, [0022], [0038], [0061], [0069]; Ex. 1112, 4:32-39, 8:23-34, 13:27-32, 15:42-51.

89. Danciu describes that its servers receive messages from the remote control and controlled device and route messages to members of the session. *See* Ex. 1113, [0019]-[0021], [0032], [0033], [0075], [0078], [0079], [0083], [0087], Figs. 6-9; Ex. 1112, 3:34-4:20, 7:17-29, 7:36-40, 16:61-65, 17:35-40, 17:49-55, 18:34-19:32, Figs. 6-9. For example a user may select a control on the remote control to alter content on the displayed device. Ex. 1113, [0032]; Ex. 1112, 7:19-21. In response, the remote control may transmit a message to the server identifying the remote control. *See* Ex. 1113, [0025], [0032], [0074]; Ex. 1112, 5:13-28, 7:12-29, 16:47-54. Referring to the device identifiers, the server may route the message to the appropriate controlled device which executes the appropriate action. *See* Ex. 1113, [0019]-[0021], [0032], [0033], [0075], [0078], [0079], [0083], [0087], Figs. 6-9; Ex. 1112, 3:34-4:20, 7:17-29, 7:36-40, 16:61-65, 17:35-40, 17:49-55, 18:34-32, Figs. 6-9.


REMOTE CONTROL
SERVER
CONTROLLED DEVICE
200
NOTIFY SERVER AND RECEIVE SID
204
TRANSMIT ID AND CONTROL MESSAGE TO SERVER
208
IDENTIFY CONTROLLED DEVICE(S)
210
TRANSMIT CONTROL MESSAGE TO CONTROLLED DEVICE(S)
212
CONTROLLED DEVICE EXECUTES ACTION ACCORDING TO CONTROL MESSAGE
FIG. 6

Ex. 1112, Fig. 6

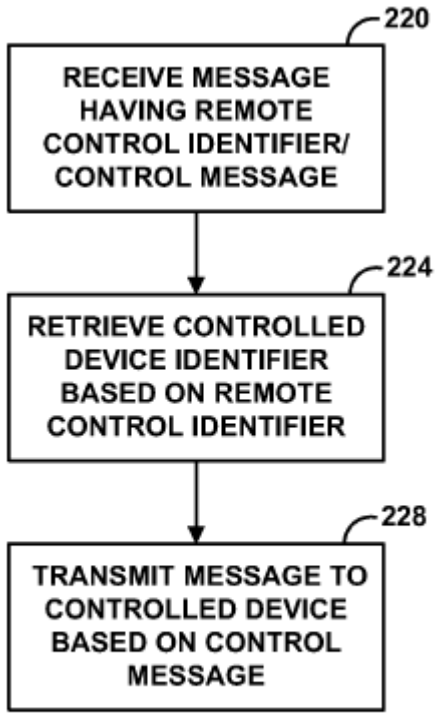


FIG. 7

Ex. 1112, Fig. 7

90. Danciu Figure 2 illustrates an environment having multiple remote controls and controlled devices connected via a network and servers. Ex. 1113, [0034], Fig. 2; Ex. 1112, 7:41-47, Fig. 2. Danciu describes that more than one remote control to be paired with a single controlled device, and a single remote control to be paired with more than one controlled device. *See* Ex. 1113, [0039]-[0040]; Ex. 1112, 8:35-58. Further, the plurality of remote controls and controlled devices can be different makes and models and configured in different ways. Ex. 1113, [0034]; Ex. 1112, 7:41-58.

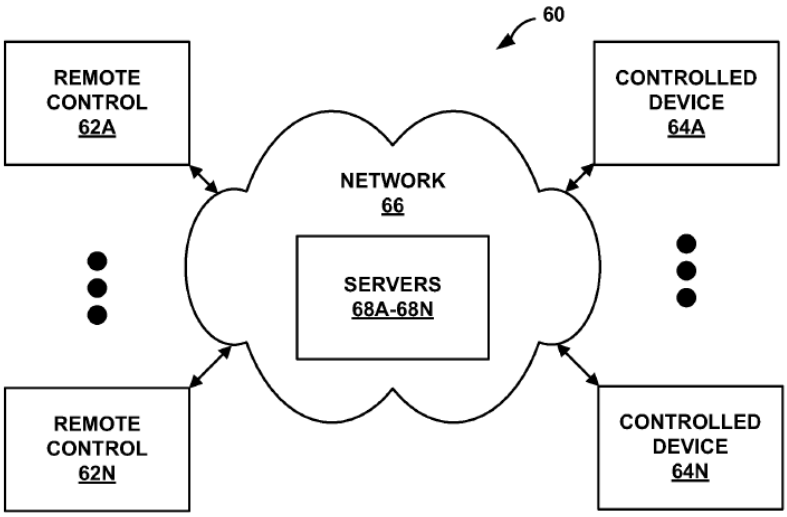


FIG. 2

Ex. 1112, Fig. 2

91. Danciu describes that the remote control may execute one or more applications including, for example, "a remote control application, web browsers, e-mail, programs to retrieve stock quotes, programs to search for restaurants, programs that retrieve current and future weather information, games, a program to search the internet, a program that provides news, a program that provides maps, and other programs." *See* Ex. 1113, [0044]-[0048]; Ex. 1112, 10:11-16.

92. Danciu explains that the remote control application may allow a user to initiate commands being sent to a controlled device via the server, and to initiate contact with the server for pairing the remote control and controlled device. Ex. 1113, [0049]-[0050]; Ex. 1112, 10:45-11:6. Additionally, the remote control application may be a server application accessible via, for example, a web browser. *See* Ex. 1113, [0049], [0081]; Ex. 1112, 10:56-62, 18:3-8.

93. Figure 4 of Danciu is a block diagram of a controlled device. Ex. 1113, [0051], Fig. 4, Ex. 1112, 11:7-21, Fig. 4. The controlled device may be configured to transmit data/requests and receive data/responses from the servers. *See* Ex. 1113, [0059]; Ex. 1112, 12:50-59. The controlled device may be used to "navigate to a web page on the Internet in order to display the content hosted by the web page (e.g., YouTube®, Hulu®, Netflix®, other subscription or non subscription based video content). Ex. 1113, [0052]; Ex. 1112, 11:31-35. Further, the controlled device may be configured to present audio and/or video content from "a cable service provider, a satellite television provider, content accessible via the World Wide Web, or other content providers." Ex. 1113, [0053]; Ex. 1112, 11:41-44.

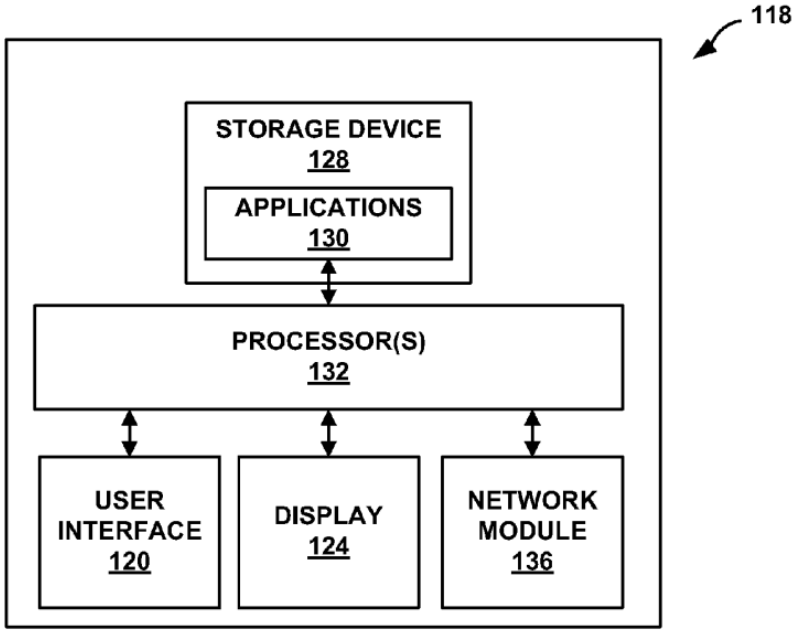


FIG. 4

Ex. 1112, Fig. 4

94. Danciu describes, as illustrated in reproduced Figure 4, the controlled device (e.g., "network-enable television" or a "set top box") may store and execute applications. *See* Ex. 1113, [0027], [0055]; Ex. 1112, 5:42-45, 11:56-67. Applications on the controlled device can be preinstalled or "downloaded by a user from a server via a network, such as servers 24 and network 22 shown in Figure 1." Ex. 1113, [0027], [0055]; Ex. 1112, 5:42-45, 11:56-67.

95. Danciu describes many examples of applications that may execute on the controlled device including "an application for displaying television content provided by a satellite or cable provider, an application for displaying content hosted on the World Wide Web, a web browser application, a social networking application, an e-mail application, programs to retrieve stock quotes, programs to search for restaurants, programs that retrieve current and future weather information, games, a program to search the Internet, a program that provides news, a program that provides maps, and other programs executed by processor 132." Ex. 1113, [0058]; 12:32-49.

96. Danciu states that its "[c]ontrolled device 118 may be used . . . in conjunction with a remote control." Ex. 1113, [0060]; Ex. 1112, 13:4-15. To this end, Danciu describes that "storage device 92," of the remote control, "may store application instructions associated with a video application or web browser

application for displaying video content from the World Wide Web (e.g., YouTube® content, Hulu® content, Netflix® content, etc.)," and cause the display device to display content to the user. Ex. 1113, [0004], [0025], [0060], [0066], [0074], [0075], [0078], [0083]; Ex. 1112, 1:39-50, 5:13-28, 13:4-15, 14:37-64, 16:47-67, 17:21-29, 18:27-41.

8.10. U.S. Pub. No. 2009/0172757 – Aldrey (Ex. 1115)

97. U.S. Pub. No. 2009/0172757 to Aldrey ("Aldrey") indicates on its face that it was published on July 2, 2009, from Application No. 11/966,652. Ex. 1115, p.1. I understand that Aldrey qualifies as prior art to the '751 Patent under pre-AIA § 102(b) because Aldrey published more than one year prior to the earliest priority date (April 21, 2011) of the '751 Patent. I also understand that Aldrey was not considered during prosecution of the '751 Patent. Ex. 1101, pp. 1-4.

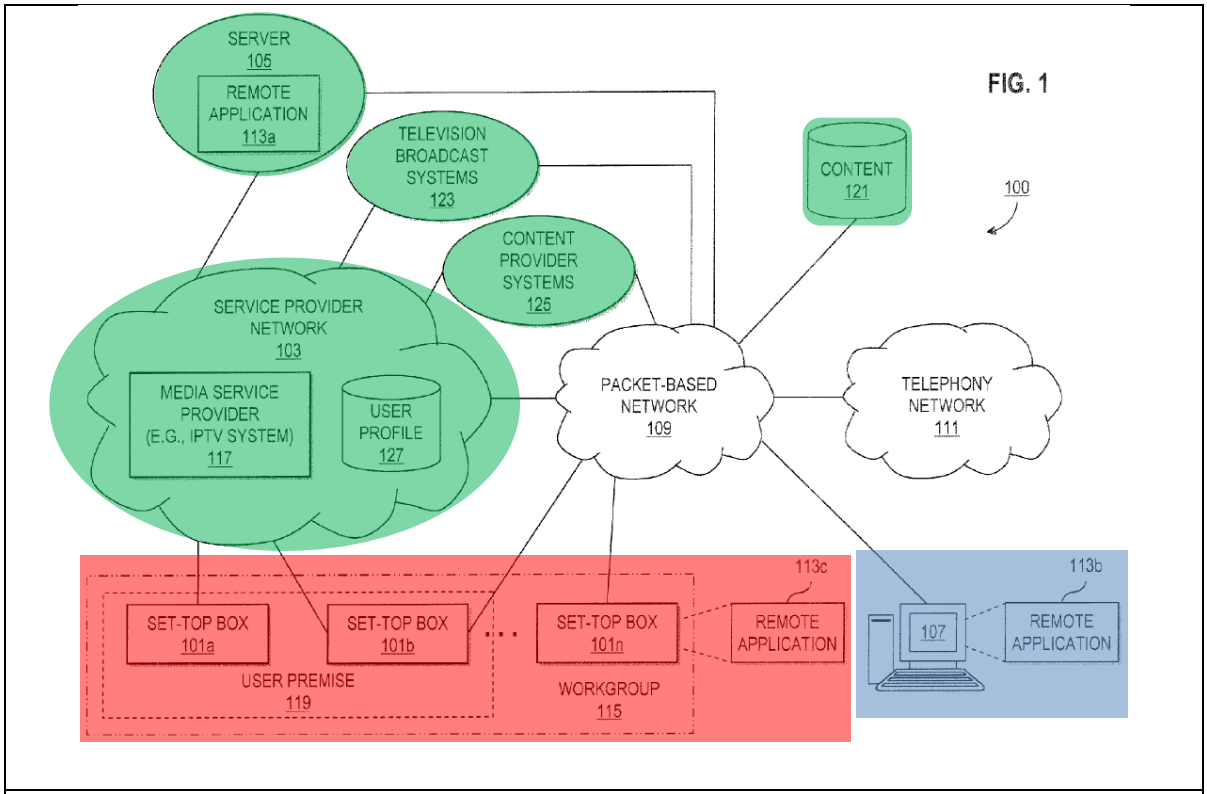
98. Much like the '751 Patent, Aldrey generally relates to a system for network-server assisted control of content on a network-connected display device via a network-connected controller. Ex. 1115, Abstract, [0013], [0014], [0018], [0019]. As Aldrey states:

> an individual . . . may, via a client-user interface (such as a web-based application 113a implemented on server 105, a computing application 113b executed on, for instance, a PC, or a media based application 113c operating on, for example, STB 101n), access one or more media based devices (e.g., STBs 101a-101n) logically associated with one another . . . so as to control, configure, or otherwise

> program STBs 101a-101n in real-time from an "online" or "networked" session.

Ex. 1115, [0019].

99. Aldrey Figure 1, illustrates "a system capable of providing remote set-top box management." Ex. 1115, [0013]. Aldrey's system allows remote control of media content on one or more network-connected set-top boxes (STB) (**red**) via one or more end terminals 107 (**blue**) over a network as facilitated by one or more servers (**green**).



Ex. 1115, Fig. 1 (annotated)

100. Aldrey describes that the end terminal may execute a remote application. Ex. 1115, [0026]. The remote application may make content available

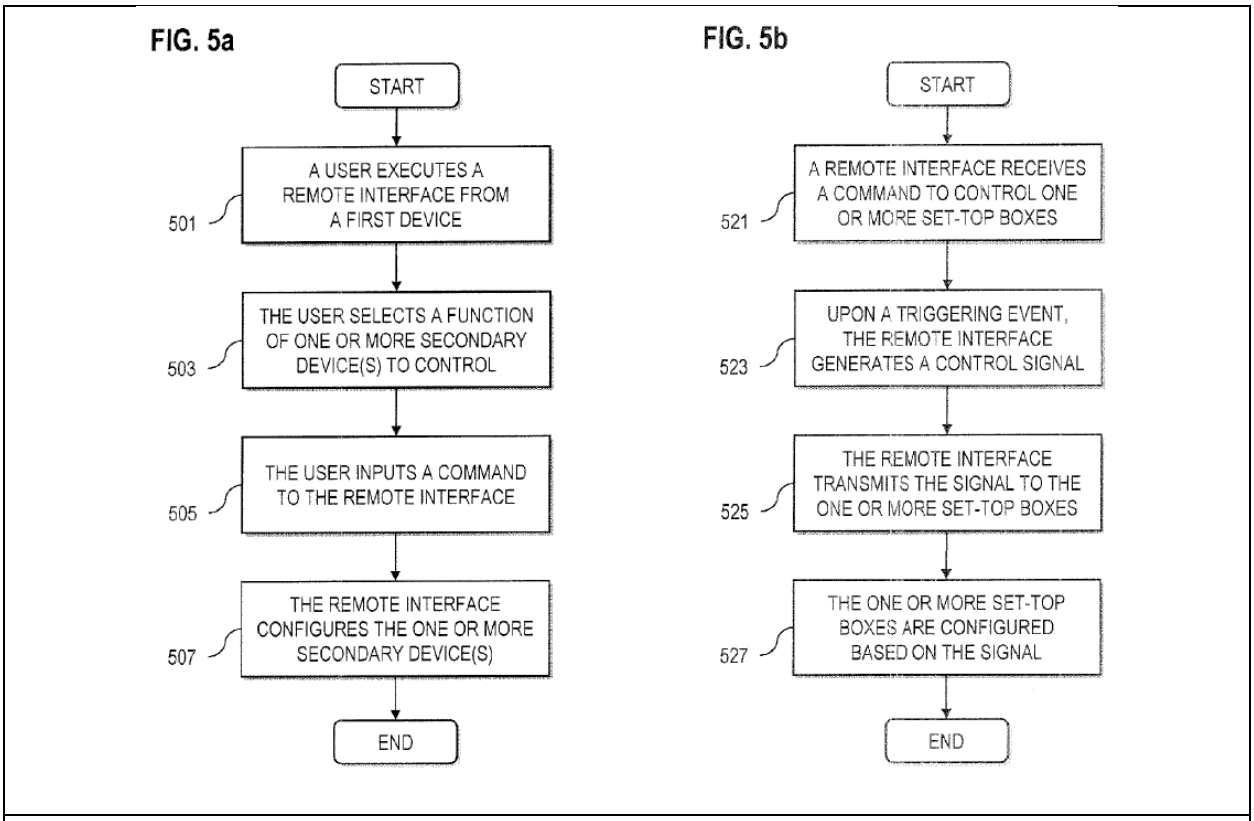
at the STBs, "such as content retrieved over a data network, e.g., stored at content repository 121." Ex. 1115, [0020]. Aldrey's content may include "AV content (e.g., broadcast television programs, VOD programs, AOD programs, pay-per-view programs, IPTV feeds, DVD related content, etc.), pre-recorded media content, data communication services content (e.g., commercials, advertisements, videos, movies, songs, images, sounds, etc.), Internet services content (streamed audio, video, or pictographic media), and/or any other equivalent media form." Ex. 1115, [0021].

101. Aldrey describes that its STB may be any device capable of processing audio/video content for a user, such as "a television set, a digital video disc (DVD) player, a video-enabled phone, an AV-enabled personal digital assistant (PDA), and/or a personal computer (PC), as well as other like technologies and customer premises equipment (CPE)." Ex. 1115, [0012].

102. Aldrey's STBs can receive and/or transmit content and control commands from multiple sources. Ex. 1115, [0020], [0032], [0035]-[0039], [0042], [0043], [0044], [0046], [0048], [0082], [0086]. Aldrey's control commands may, for example, specify a content selection, and Aldrey's remote applications may "enable users to make content available at one or more STBs." Ex. 1115, [0020], [0046], [0048], [0082]. Aldrey describes that, in response to the commands, media content may be presented, including, for example, "displaying," "playing," "rewinding," and "forwarding." Ex. 1115, [0044]. Additionally, Aldrey describes that selecting an

identifier of a media content item "may cause the content item to be retrieved from an associated link." Ex. 1115, [0060].

103. Aldrey, Figures 5a and 5b, illustrate processes for the control of one or more STBs. Ex. 1115, [0008].



Ex. 1115, Figs. 5a, 5b

104. Aldrey explains that its servers 105 may receive one or more commands from the end terminal 107 for controlling one or more STBs. Ex. 1115, [0030]. Aldrey describes that its remote interface may receive a command to control one or more of the STBs. Ex. 1115, [0079], [0083]. Subsequently, The STBs may receive one or more control signals, and the STBs may be configured based on the received

control signals. Ex. 1115, [0082], [0086]. Further, Aldrey explains that the process for controlling the one or more STBs may be effectuated "either directly or indirectly via server 105 and/or MSP 117." Ex. 1115, [0080].

105. Aldrey describes using metadata appended to its control commands to facilitate the remote control system. Ex. 1115, [0036], [0037]. Particularly, Aldrey describes that metadata appended to the control commands may include information about the selected content, for example, "file name, type," "titles," and "access methods," wherein the metadata may be used "for control or guiding purposes." Ex. 1115, [0036]. Additionally, metadata may include information that describes "characteristics of content-bearing entities" to assist in the discovery and control of the media content. Ex. 1115, [0037].

106. Aldrey describes a method for authenticating its devices for use in its system. Ex. 1115, [0039], [0040], [0051], [0052], [0063], [0065]-[0067], [0074]. The authentication may require "a user name and password, a key access number, a unique machine identifier (e.g., media access control (MAC) address), etc., as well as a combination thereof." Ex. 1115, [0039], [0051], [0067]. Additionally, Aldrey contemplates utilizing one device of the system to authenticate with a second device of the system. As Aldrey states, "authentication procedures on a first device (e.g., STB 101a) may identify and authenticate a second device (e.g., terminal 107) and/or

third device (STB 101b-101n) communicatively coupled to, or associated with, the first device." Ex. 1115, [0040], [0051].

8.11. U.S. Pub. No. 2004/0078812 – Calvert (Ex. 1111)

107. U.S. Pub. No. 2004/0078812 to Calvert ("Calvert") indicates on its face that it was published on April 22, 2004, from Application No. 10/250,640. Ex. 1111, p. 1. I understand that Calvert qualifies as prior art to the '751 Patent under pre-AIA § 102(b) because Calvert published more than one year prior to the earliest priority date (April 21, 2011) of the '751 Patent. I also understand that Calvert was not considered during the prosecution of the '751 Patent. Ex. 1101, pp. 1-4.

108. Calvert describes a system for aggregating audio and video content from multiple sources into a unified listing for selection and delivery to a playback device. Ex. 1111, Abstract, [0020]-[0044], Figs. 1-7. Content aggregator 102 (**green**) has multiple media services available to it that include audio and/or video content. Ex. 1111, [0020]-[0021], [0024]-[0025], Figs. 1-2. The media services may be in a variety of formats (e.g., RealMedia, QuickTime, Windows Media) and may be live (e.g., a television station broadcast) or prerecorded (e.g., a movie on demand). Ex. 1111, [0021]. Upon request, content aggregator 102 may provide a listing of available services to playback device 202 (**red**) which displays the listing on display device 222. Ex. 1111, [0025]-[0027], [0033]-[0038], Figs. 2-4.

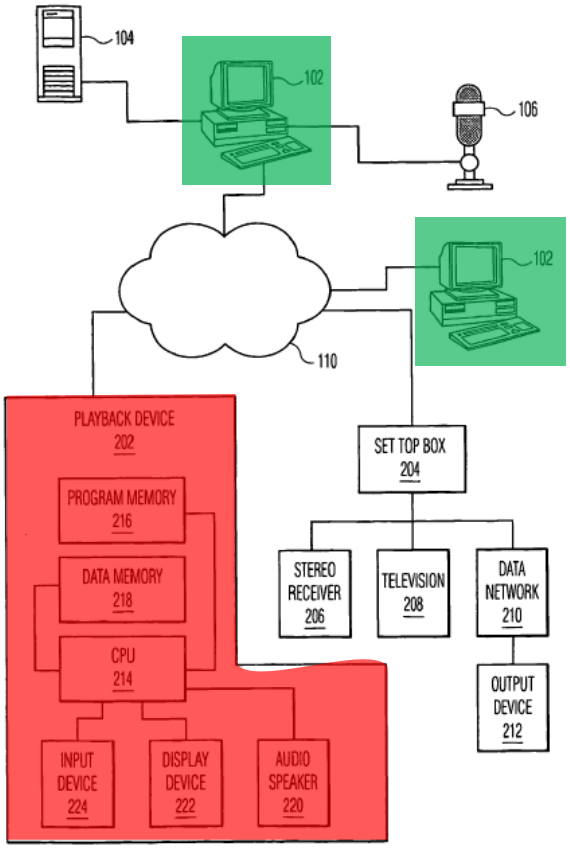


FIG. 2

Ex. 1111, Fig. 2 (annotated)

109. Calvert describes that users may receive media services in the form of streaming media. Ex. 1111, [0005]. Software on the user's device, for example, "REALPLAYER™, MACROMEDIA PLAYER™, and MP3PRO™" process the media into an "audio/video signal for playback on an output device (computer, receiver, stereo, television set)." Ex. 1111, [0005]. Calvert describes that the "Internet provides a listener with the ability to access thousands of media services" which may be accessed using a link (e.g., a URI) to a file on a website or by "using a media player that receives streaming feeds of media services." Ex. 1111, [0006].

110. Accordingly, Calvert explains, that its disclosure relates to enabling the "indexing and acquisition of media services from a plurality of content aggregators." Ex. 1111, [0008]. Further, "[a] listing of media services is generated by the indexing of available media services from the plurality of content aggregators." Ex. 1111, [0008]. Additionally, Calvert describes that its disclosure relates to "the retrieval and output of a selected media service available from the plurality of content aggregators to a playback device." Ex. 1111, [0008].

111. Calvert explains that its media services may be available in a plurality of different formats, and played back via one of a plurality of media players. As Calvert states, "media services may purport to a type of media file format (e.g., REALAUDIO®, REALMEDIA®, APPLE QUICKTIME®, MICROSOFT® WINDOWS MEDIA™ FORMAT, MPEG-2 LAYER III AUDIOM and MP3®) that is played back via a media player (REALPLAYER®, WINAMP®, and MICROSOFT® WINDOWS MEDIA™ PLAYER)." Ex. 1111, [0021].

112. Calvert describes that its "[p]layback device 202 communicates with content aggregator 102 to request a listing of media services available from content aggregator 102 and to receive media services." Ex. 1111, [0025], [0027]. Calvert explains that its communications may comprise "procedural calls" formatted through the use of an API. Ex. 1111, [0025]. This API may "comprises a series of

functions that are used by a program or device to initiate a specific action." Ex. 1111, [0025].

113. Calvert describes a sample data structure for communications between its playback device and content aggregator that comprises "media service menus, the locations (URIs) and types of media service formats (Real Audio, Microsoft Media Player, MP3) available from the providers of the media services that correspond to a stylesheet." Ex. 1111, [0031]. Calvert describes a three-level document object model (DOM) data structure and "Multipurpose Internet Mail Extensions (MIME) compliant classes and object types are used to define the objects available." Ex. 1111, [0031].

114. Calvert explains that using the DOM "allows playback device 202 to support new document types and media formats." Ex. 1111, [0032]. "For example, a new content aggregator uses a new multimedia player to play back available media services." Ex. 1111, [0032]. "Playback device 202, when requesting a media service from the new content aggregator, will read the corresponding DOM and locate the new multimedia player (either by a [sic] embedded locator in the DOM or by referring to an external database)." Ex. 1111, [0032]. "Playback device 202 then requests a codec (update) for the new media player, which is stored once the codec is received." Ex. 1111, [0032].

115. Calvert describes that the playback device requests and receives a lists of media services from content aggregators. Ex. 1111, [0033], [0037], Fig. 9. As illustrated in Figure 9 (reproduced below), Calvert's different media services can be associated with different player applications ("apps") (**purple**) Ex. 1111, Fig. 9 . The user selects the media service from the list. Ex. 1111, [0038].

900

```
<?xml version ="1.0"?>
<!--MEDIAMATCH_CONTENT_LIST-->
<!DOCTYPE list [
        <!ELEMENT mediaservice (location, media_title, player_app, performer, genre, copyright)>
        <!ELEMENT location (#PCDATA)>
        <!ELEMENT media_title (#PCDATA)>
        <!ELEMENT player_app (#PCDATA)>
        <!ELEMENT performer (#PCDATA)>
        <!ELEMENT genre (#PCDATA)>
        <!ELEMENT copyright (#PCDATA)>

]>
<list>

        <mediaservice>
        <location>http://www.musictesters.com/buggy/travoltaswing.MP3</location>
                <media_title>TravoltaSwing</media_title>
                <player_app>MP3</player_app>
                <performer>Travolta_John</performer>
                <genre>Bluegrass</genre>
                <copyright>1989</copyright>
        </mediaservice>
        <mediaservice>
                <location>121.12.113.331</location>
                <media_title>The_Big_Sleep</media_title>
                <player_app>MPEG_4</player_app>
                <performer>Bogart_Humphrey</performer>
                <genre>Mystery</genre>
                <copyright>1946</copyright>
        </mediaservice>
        <mediaservice>
                <location>111.345.44.332</location>
                <media_title>Steve_Dahl</media_title>
                <player_app>RealAudio</player_app>
                <performer>Dahl_Steve</performer>
                <genre>Talk_SHow</genre>
                <copyright>2001</copyright>
        </mediaservice>
</list>
```

FIG. 9

Ex. 1111, Fig. 9 (annotated)

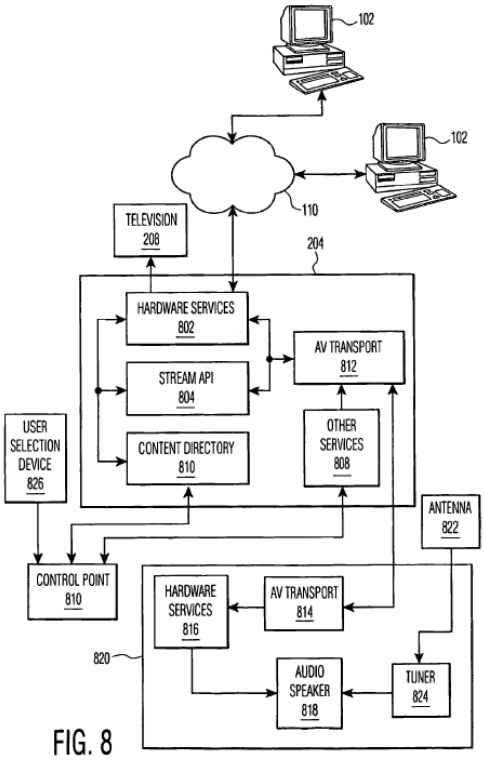
116. Calvert states that the request for a media service may be an HTTP or MIME compliant request. Ex. 1111, [0040]. "Along with standard HTTP redirect processing HTTP processor API 404 analyzes the HTTP response header to determine whether the response is a stream, media file, or other type of multimedia format (e.g., a REALPLAYER® based stream, a non-streamed MP3 file, or a video signal). Once the determination is made, HTTP processor API 404 accepts data comprising the selected media service." Ex. 1111, [0040].

117. Calvert explains that its content adapter processes the received media service data depending on information in the response, for example, "indicating the format of the media service, the corresponding playback application 608, output requirements of the media service." Ex. 1111, [0041]. Once processed, the data is "sent to player application 608 (media player) that outputs or "plays" media service data." Ex. 1111, [0042].

118. Calvert also describes combining lists of media services retrieved from multiple content aggregators. Ex. 1111, [0052]-[0058]. Calvert describes a request to multiple content aggregators for a list of media services by executing a call that builds a set of commands used to access the different content aggregators. Ex. 1111, [0052]-[0055], [0057].

119. Referring to Figure 8, Calvert describes that a control point connected to a set top box can transmit a command to the set top box to display the available

media services on a connected display. Ex. 1111, [0063]. Calvert describes that the displayed available media services can be used as an electronic programming guide. Ex. 1111, [0063]. Further, the media services can be selected from the listing of services via a selection device. Ex. 1111, [0064]. The selection device transmits signals to the control point. Ex. 1111, [0064]. The control point formats and sends a request for the media service to the content aggregator. Ex. 1111, [0064]. The content aggregator receives the request and transmits data comprising the media service. Ex. 1111, [0065]. The media service is processed and output. Ex. 1111, [0066]-[0067].



Ex. 1111, Fig. 8

8.12. U.S. Pub. No. 2009/0248802 - Mahajan (Ex. 1114)

120. U.S. Pub. No. 2009/0248802 to Mahajan et al. ("Mahajan") was filed as Application No. 12/060,620 on April 1, 2008 and published on Oct. 1, 2009. Ex. 1114, p. 1. I understand that Mahajan is prior art under 35 U.S.C. § 102(b) because its publication date (Oct. 1, 2009) is more than a year before the earliest priority date of the '751 Patent (April 21, 2011).

121. Mahajan discloses a client-server collaboration session wherein user commands (**orange**) may be forwarded from a server (**blue**) for controlling media content (**purple**) that is playing on a client device (**red**). Ex. 1114, [0011]-[0013], Fig. 1, Fig. 2, Fig. 4.

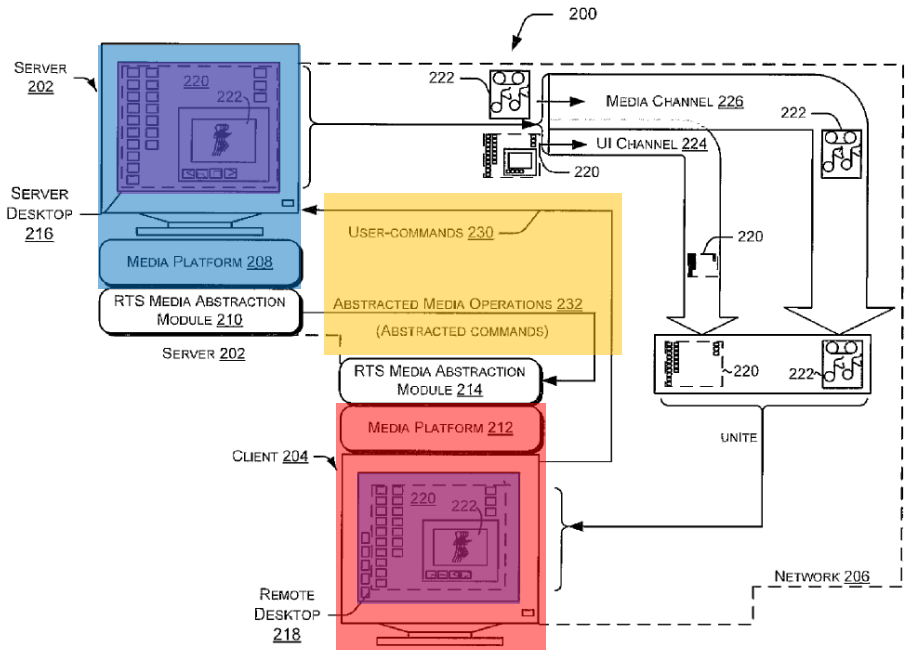


Fig. 2

Ex. 1114, Fig. 2

122. Ex. 1114, [0011]-[0013], Fig. 1, Fig. 2, Fig. 4. Mahajan's media content can be in different formats. Ex. 1114, [0012]. The media content can be processed by a "media player that employs one or more media platforms configured to handle the format of the media file." Ex. 1114, [0012]. Mahajan's media content may be processed by the client based on commands forwarded from the server. Ex. 1114, [0012]-[0014].

123. Mahajan describes that media players can perform media operations such as playback commands. Ex. 1114, [0011]-[0014], [0021]-[0023], [0034]-[0037], [0039], [0040], [0049], [0050], [0060]-[0063], [0072]. The commands may be platform specific, and the client and server may not support the same commands. Ex. 1114, [0011]-[0014], [0021], [0022], [0035]-[0037], [0060]-[0063]. Accordingly, Mahajan describes an abstraction functionality "allowing media sessions to be effectively conveyed in a collaboration session between server and client. Ex. 1114, [0013], [0014], [0022], [0023], [0025], [0036], [0037]-[0040], [0045], [0046], [0050], [0060]-[0063] .

124. In particular, Mahajan describes a system in which user generated playback commands are received at the server. Ex. 1114, [0021], [0034], [0035], [0049]-[0050]. The server may determine whether the client supports the source media format. Ex. 1114, [0050]. Mahajan's system abstracts the playback commands and converts the playback commands from server platform specific commands to

generic playback commands. Ex. 1114, [0013], [0014], [0022], [0024], [0036], [0038], [0039], [0042]. Mahajan describes that in certain cases, the generic playback commands may be understood by the client. Ex. 1114, [0024]. The abstracted generic media playback commands may additionally be translated into client platform specific media playback commands. Ex. 1114, [0013], [0014], [0022], [0036], [0040], [0042], [0063], Fig. 3, Fig. 5.

125. Mahajan, Figure 3 depicts an API for command abstraction and conversion between a server and a client. Ex. 1114, [0037]-[0043], Fig. 3. Mahajan describes the use of mapping tables to facilitate the command abstraction and conversion. Ex. 1114, [0038], [0040]. The commands may be "in response to one or more actions that may be specific to events associated with the playback of media files." Ex. 1114, [0037].

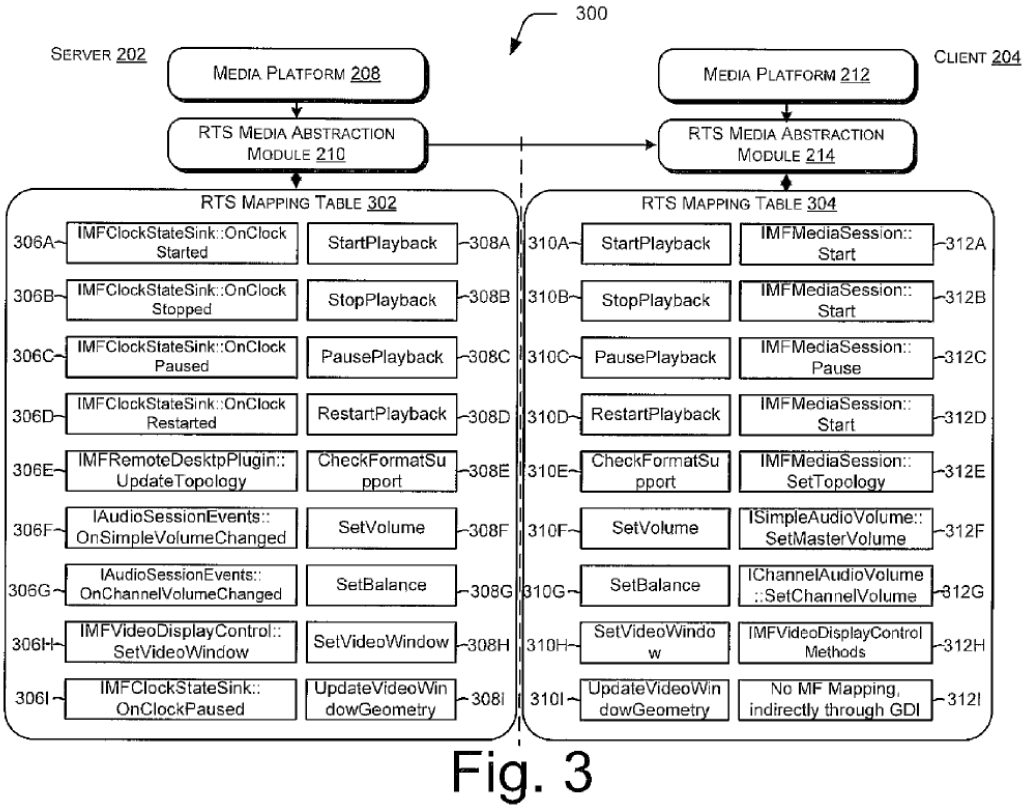


Fig. 3

Ex. 1114, Fig. 3

126. Mahajan describes, for example, how "pause" or "restart" command is translated from a first type of media application command (e.g., a Media Foundation platform command "IMFClockStateSink::OnClockPaused") to a second type of media application command (e.g., a DShow platform command "IMFMediaSession::Pause"). Ex. 1114, [0039], [0040], Fig. 3. For example, Mahajan describes how the Media Foundation platform command is converted into a generic "StartPlayback" command using a first mapping table. Ex. 1114, [0039]. The generic "StartPlayback" command is subsequently converted to a DShow

platform specific "play" command based on a second mapping table. Ex. 1114, [0040].

9. OPINIONS WITH RESPECT TO THE '751 PATENT

9.1 DANCIU IN VIEW OF MAHAJAN AND/OR DANCIU IN VIEW OF MAHAJAN AND CALVERT RENDERS CLAIMS 1-20 OBVIOUS

127. The following section provides a limitation by limitation analysis showing how Danciu in view of Mahajan and/or Danciu in view of Mahajan and Calvert renders claims 1-20 obvious. To help illustrate how the disclosures of these references map to the claim limitations, I have color coded some of my remarks and some figures in the noted art below.

9.1.1 Independent Claim 1

128. Elements [1A]-[1F] are rendered obvious by Danciu in view of Mahajan and Danciu in view of Mahajan and Calvert.

a. [1A]: "A non-transitory computer storage medium storing computer-useable instructions that, when used by a first computing device, cause the first computing device to perform operations comprising:"

129. I have been informed that the preamble is not limiting. That aside, it is my opinion that Danciu teaches the preamble. Danciu discloses a controlled device 18 (**red**), which may be a computing device such as an Internet-connected television, set-top box (STB), or personal video recorder (DVR), connected via network 22, which includes servers 24A-24N (**green**), to a remote control 14 (**blue**). Ex. 1112, 5:42-63.

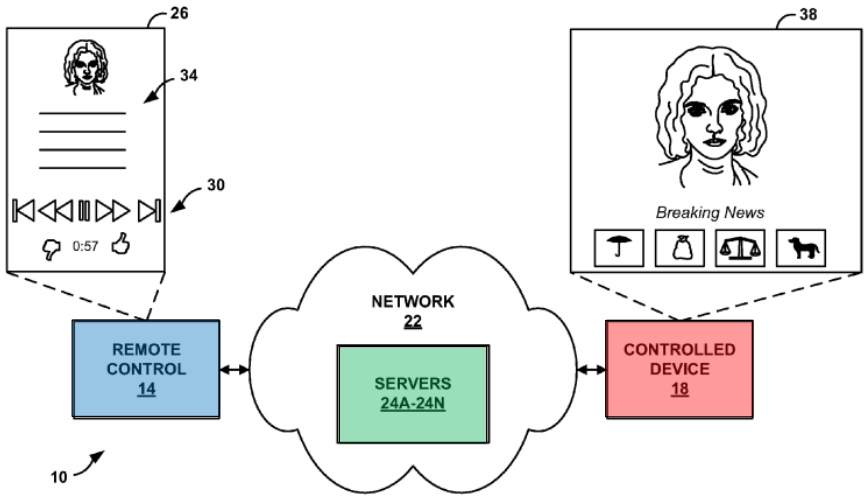


FIG. 1

Ex. 1112, Fig. 1 (annotated)

130. Danciu discloses that controlled device 18, or 118 as shown in Figure 4 below, is a computing device that includes one or more processors 132. Ex. 1112, 11:7-13. The one or more processors 132 execute program instructions stored on a non-transitory/tangible storage medium (such as RAM, ROM, or electronic storage media of storage device 128) in order to perform operations. Ex. 1112, 12:1-16.

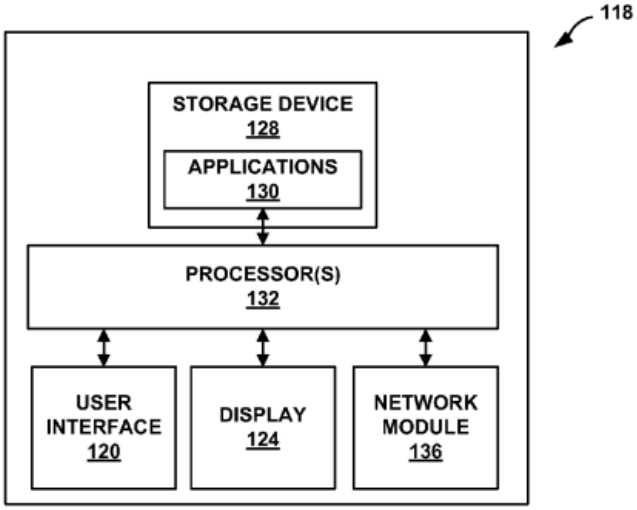


FIG. 4

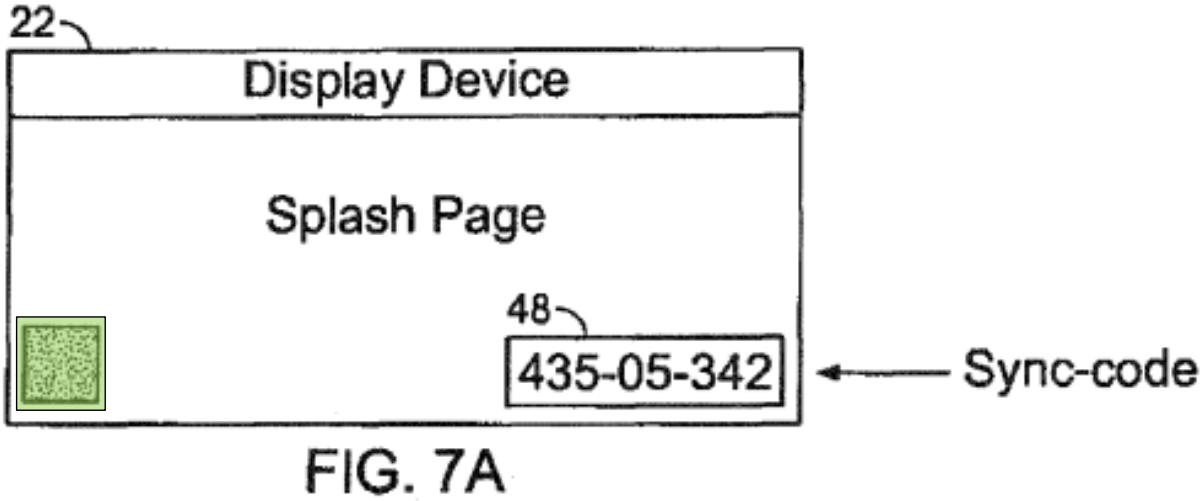
Ex. 1112, Fig. 4

131. Therefore, in my opinion, Danciu teaches limitation [1A].

b. [1B]: "obtaining a synchronization code associated with the first computing device, wherein the associated synchronization code is stored on a remote server device;"

132. It is my opinion that Danciu teaches the elements of limitation [1B]. Danciu discloses that a "network service may assign each remote control and each controlled device a unique identifier" for pairing. Ex. 1112, 4:4-13, 6:41-7:10. Danciu discloses one example where the controlled device presents a user with a QR code, which the user can scan with the remote control 14. Ex. 1112, 4:36-45, 8:23-49, 13:16-32, 15:28-58. The remote control 14 may be a mobile device such as a phone, a non-portable device such as a desktop computer, or any other suitable device. Ex. 1112, 5:1-12. The QR code provided by the controlled device

("associated with the first computing device") to the remote control ("a second computing device"), may be considered as a synchronization code because it synchronizes a session that the remote control wishes to join. This is consistent with the '751 Patent, which states that "the synchronization code 48 can be displayed, for example, on a splash page of the display device as text on the screen or as an image such as a QR code [**green**] and can be entered into the mobile phone 20, for example, manually by the user or by scanning the code into the mobile phone," just as Danciu describes. Ex. 1101, 5:25-40, Fig. 7A.



Ex. 1101, Fig. 7A (annotated)

133. Finally, the QR code is stored on the server in Danciu. Danciu teaches that the QR code "identifies a session that has been created by servers 68." Ex. 1112, 8:26-27. And this session is "maintained by the network service." Ex. 1112, 4:39-

41. Danciu also teaches that the QR code is generated by the device management module 168, which is stored on the servers. Ex. 1112, 15:38-58, Fig. 5.

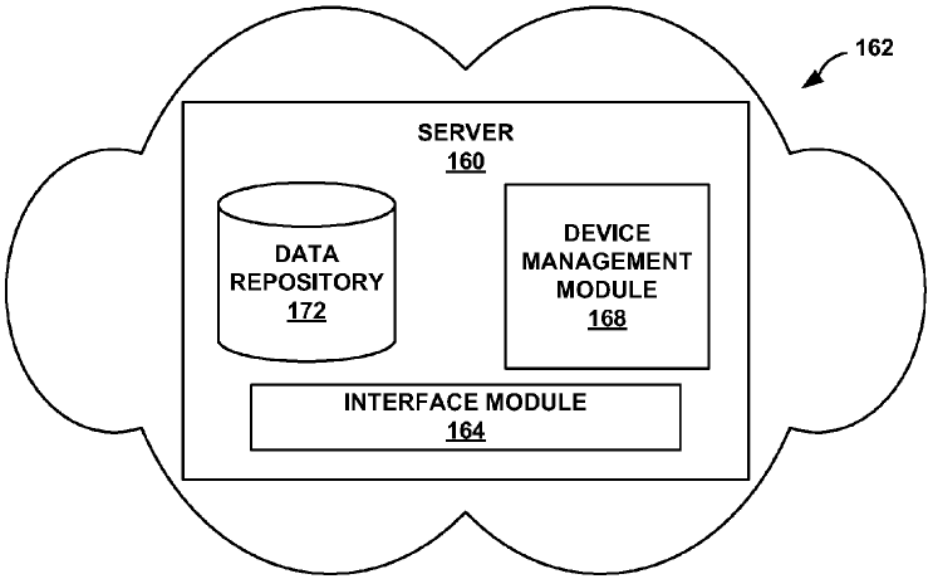


FIG. 5

Ex. 1112, Fig. 5

134. Thus, A POSITA reading Danciu's disclosure would understand that the QR code is thus generated by the claimed "remote server device" and stored in memory on the remote server device, at least during the process of generating the code.

135. Therefore, in my opinion, Danciu teaches limitation [1B].

c. [1C]: "providing the synchronization code to a second computing device in communication with the remote server device, wherein the provided synchronization code causes the remote server device to store an association between the first computing device and the second computing device;"

136. As discussed above regarding limitation [1B], Danciu discloses that a "network service may assign each remote control and each controlled device a unique identifier" that is used in pairing. Ex. 1112, 4:4-13, 6:41-7:10; *see* Section 9.1.1(b), *supra*. Danciu explains one example where the controlled device ("a first computing device") presents a user with a QR code which the user can scan with the remote control 14 ("a second computing device"). Ex. 1112, 4:36-45; 8:23-49, 13:16-32, 15:28-58. The remote control 14 may be a mobile device such as a phone, a non-portable device such as a desktop computer, or any other suitable device. Ex. 1112, 5:1-12. By displaying the QR code for scanning by the remote computing device, the controlled device is "providing" the QR code to the remote control.

137. Danciu further teaches the claim element "wherein the provided synchronization code causes the remote server device to store an association between the first computing device and the second computing device." Specifically, Danciu teaches that "Upon scanning the QR code, remote control 62A transmits a message to servers 68 requesting that servers 68 issue remote control 62A a unique identification number and add remote control 62A to the session associated with the QR code, thereby pairing remote control 62A with controlled device 64A." Ex. 1112,

8:29-34. This creates a unique identifier for the session between the remote control and the controlled device. Ex. 1112, 4:4-36, 7:6-10, 8:11-22. The session identifiers and other session information are stored on a data repository of the servers. Ex. 1112, 6:50-55, 13:62-14:1, 15:28-41, 15:59-16:6. For example, Danciu discloses that "device management module 168 identifies and stores associations of remote controls 62 and controlled devices 64 to facilitate repeat communication between remote controls 62 and controlled devices 64." Ex. 1112, 15:34-36, Fig. 5. As another example, Danciu discloses that "As shown in FIG. 5, server 160 may be comprised as a single unit with … a data repository 172" and "an entry within data repository 172 may identify an association between a remote control and a controlled device." Ex. 1112, 13:40-43, 14:2-4.

138. Therefore, it is my opinion that Danciu teaches limitation [1C]

d. [1D]: "receiving, from the remote server device, a first message that includes at least one command in a first format, the first message being received based at least in part on the stored association and on a second message including at least one command in a second format having been sent from the associated second computing device;"

139. It is my opinion that Danciu teaches the elements of limitation [1D].

140. The remote control 14 (**blue**) described in Danciu provides commands ("for example, fast forward, reverse, skip ahead or back, play, stop move to new content, etc.") via servers 24 (**green**) for controlling content being played on

controlled device 18 (**red**). Ex. 1112, 5:29-37. The controlled device 18 ("the first computing device") receives messages including commands ("a first message that includes at least one command in a first format") via the servers ("from the remote server device") derived from the commands sent by the remote control ("a second message including at least one command in a second format having been sent from the associated second computing device") to alter content displayed on the display of the controlled device. Ex. 1112, 5:64-6:2, 10:45-53.

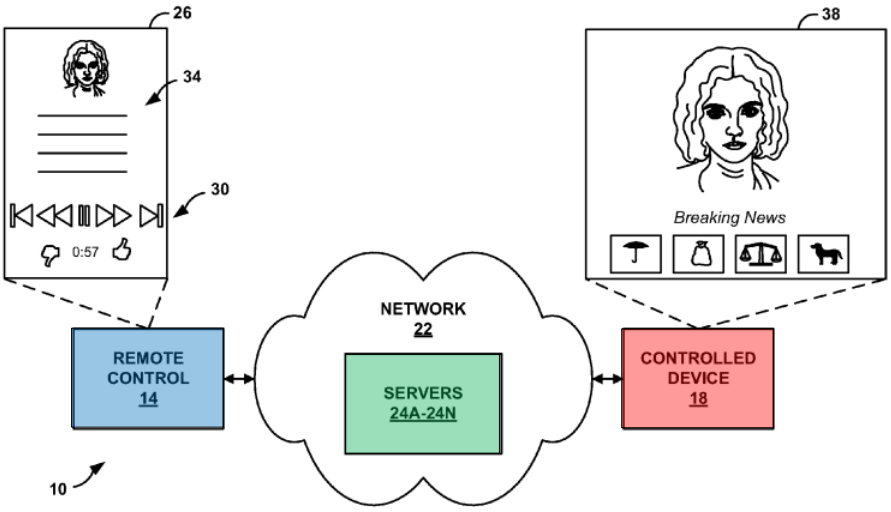


FIG. 1

Ex. 1112, Fig. 1 (annotated)

141. Based on Danciu's disclosure, the received first message is "received based at least in part on the stored association" because the messages are routed by the servers using the unique identifiers associated with the session information. Ex. 1112, 7:17-29. Danciu teaches that, upon scanning the QR code, the remote control

sends a message requesting that the remote control "be included in the session identified in the QR code." Ex. 1112, 8:11-34, 15:42-58. Then, according to Danciu, the servers direct the messages in that session from the remote control to the controlled device. Ex. 1112, 6:50-60, 7:17-29, 10:45-53, 16:24-17:12. Danciu further describes that "For example, server 24 may query a database of stored identification numbers to determine which controlled device is associated with the session that includes the remote control identifier. Server then transmits the control information to the intended controlled device 18 (210)." Ex. 1112, 16:56-61.

142. Danciu teaches "the first message being received based at least in part on the stored association and on a second message including at least one command in a second format having been sent from the associated second computing device." Danciu discloses that using the session identification numbers, Danciu's servers "route the messages to other members of the session. For example, a user may actuate one of controls 30 of remote control 14 to alter the content displayed on display 38 of controlled device 18." Ex. 1112, 7:17-20. In Danciu's disclosure, there may be separate messages from the remote control to the server, and from the server to the controlled device. Ex. 1112, 16:24-17:10, 17:21-43. For example, when the server receives a message from the remote control that is intended for the controlled device, "server 24 may process and/or repackage the control information of the message into a new message." Ex. 1112, 16:63-67. In this way, the message from

the remote control to the server is thus "a second message including at least one command in a second format having been sent from the associated second computing device." The message from the remote control to the server can include "data intended to alter the operation of controlled device 18" such as "stop playback of content, move to other content, etc." which may be processed or repackaged into another message which then can be sent to the controlled device. Ex. 1112, 16:52-67. Thus, after reformatting the message, the server then sends the claimed "a first message that includes at least one command in a first format."

143. To the extent that the patent owner may argue that Danciu does not explicitly disclose how to implement transmission of commands from a server to a client, in my opinion, it would have been obvious to a POSITA in view of Mahajan. Mahajan discloses a client-server collaboration session in which a user may enter commands (**orange**) to a server (**blue**) for controlling content (**purple**) that is playing on a client device (**red**). Ex. 1114, [0011]-[0013], Fig. 1, Fig. 2, Fig. 4. The system accomplishes this by translating generic commands to platform-specific media playback commands that can be understood by the client's media player application. Ex. 1114, [0012]-[0013], [0022], [0035]-[0036], [0041], Fig. 3, Fig. 5. Furthermore, a POSITA would have understood Mahajan's disclosure to teach that the command pathways between the client and server are bidirectional. In this way, commands may also be sent from the client to the server.

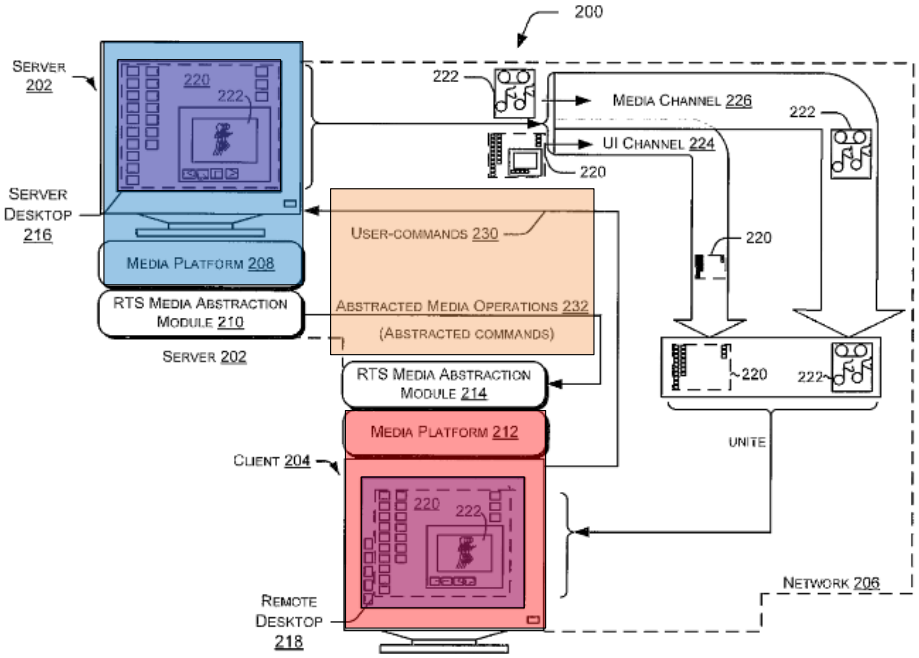


Fig. 2

Ex. 1114, Fig. 2 (annotated)

144. Thus, based on the disclosure in Mahajan, 1) commands for a type of media playing application on the server are received at a server, 2) the commands are translated into a generic or abstracted command corresponding to the first type of media playing application, 3) the abstracted command is transmitted to the client, 4) the client interprets the generic commands for a selected first type of media playing application, and 5) the commands are executed by the first type of media playing application. Ex. 1114, [0035]-[0036], Figs. 1, 2. Mahajan states that "[a] more detailed example for accomplishing the media command abstraction in a remote terminal session is described below in relation to FIG. 3." Ex. 1114, [0036].

Figure 3 shows an API for translating between commands received at a server 202 (**blue**) to a client 204 (**red**):

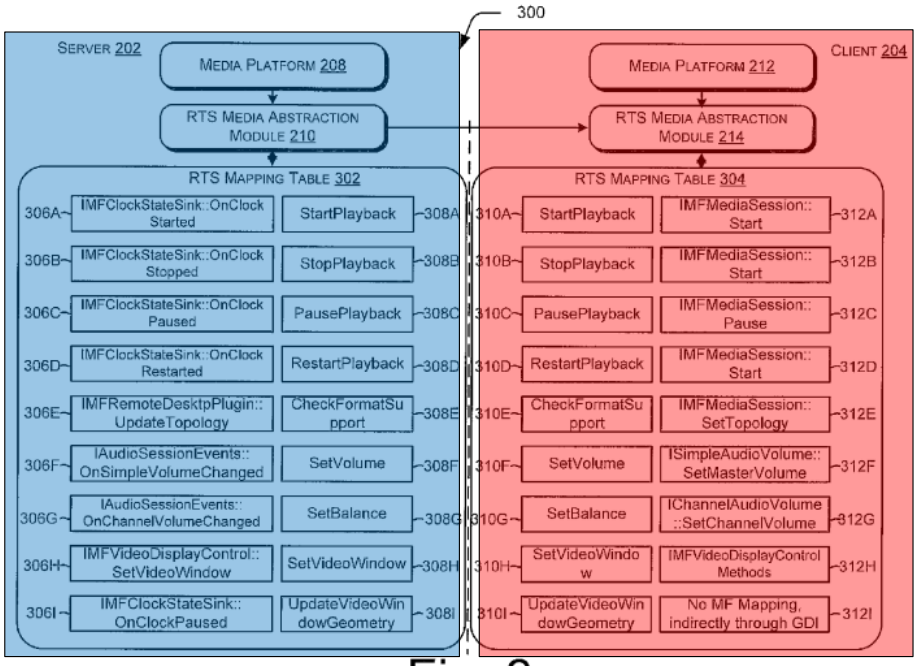
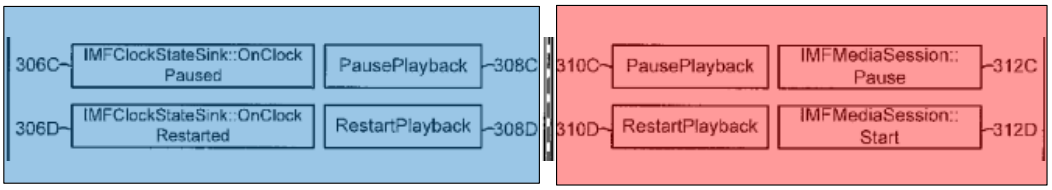


Fig. 3

Ex. 1114, Fig. 3 (annotated)

145. These commands show how, for example, a "pause" or "restart" command is translated from a first type of media application command (e.g., a Media Foundation platform command "IMFClockStateSink::OnClockPaused") to a second type of media application command (e.g., the corresponding DShow platform command "IMFMediaSession::Pause"). Ex. 1114, [0037]-[0043], Fig. 3.



Ex. 1114, Fig. 3 (annotated)

146. Mahajan further describes that these commands "may be specific to events associated with the playback of media files" such as "when a media file is accessed for playback by one or more users at the client." Ex. 1114, [0037]. The '751 Patent describes how a user of its system uses similar commands:

> The message from the mobile phone 20 contains a transmission code that includes data regarding the user information (e.g., user identification or account number), the secondary display it wants to connect to (e.g., television set 22 with display 23), the location and name of the media player for the selected video, **the command (e.g., play, pause, rewind, etc.)**, and the video file to be acted upon.
>
> ***
>
> Therefore, in the illustrated implementation, a universal adapter 26 is provided to interpret and convert a standard or **universal command (e.g., play, pause, etc.)** into the specific command recognized by the media player.

Ex. 1101, 4:45-51, 6:10-13 (emphasis added).

147. Furthermore, in the Touchstream-Google case, the Patent Owner stated that the plain and ordinary meaning of "universal command" is "a standard

command used for controlling playback of media content **such as play or pause**." Ex. 1120, p. 2 (emphasis added). Therefore, messages containing the commands, which are particular to the media content playing on the type of media playing application of the server, include a "a first message that includes at least one command in a first format."

148. In my opinion, based on the teachings of Mahajan, a POSITA would have been motivated to implement Danciu's system, comprising a remote control sending commands to a controlled device via a server, using known techniques for sending commands for media playback between a server and a client, as taught by Mahajan. Mahajan and Danciu, describe a system in which a user can command media on a controlled device to "play," "stop," etc. Ex. 1114, [0014]; Ex. 1112, 5:29-41. A POSITA would have understood that Mahajan's server-command teachings could be implemented on Danciu's remote control, particularly because both disclosures reference those devices as being a mobile phone. Ex. 1112, 5:1-28; Ex. 1114, [0017]. It is my opinion that a POSITA would have been motivated to apply Mahajan's teachings of converting or translating commands since a POSITA would have understood Danciu's remote control, which may be a portable device such as a cell phone, to likely employ applications different from Danciu's controlled device, which may be a set top box or personal video recorder. Ex. 1112, 5:1-6:13.

149. In this way, combining Mahajan with Danciu would have been nothing more than applying a known technique (Mahajan's system for sending commands) to a known device (Danciu's remote control system) ready for improvement to yield predictable results (Danciu's remote control would translate commands associated with a first type of media playing application to a generic format, and transmit them to the controlled device, which would translate them to a command associated with a second type of media playing application for execution). Mahajan teaches a system similar to the one in Danciu where commands are sent from a remote device to control media playback on another device.

150. Additionally, a POSITA would have had the skills and knowledge to implement support for sending commands to different devices in Danciu's system by incorporating the ability for a remote control to translate commands from those associated with a first type of media playback application to another type of command such that they can be understood by the controlled device, as taught by Mahajan. The improvements described by Mahajan are directed to the context of a commonly encountered computing environment at the time. Ex. 1114, [0016]. Thus, a POSITA would have expected success in applying Mahajan's teaching to the Danciu system, which is similar to the system in Mahajan.

151. Therefore, in my opinion, Danciu-Mahajan teaches limitation [1D].

e. [1E]: "selecting a first media player application from a plurality of media player applications based at least in part on the first format of the first message, the first media player application being selected to play a first piece of content referenced in the received first message; and"

152. In my opinion, Danciu in view of Mahajan and Danciu in view of Mahajan and Calvert teach the elements of limitation [1E].

153. Danciu teaches that the controlled device receives commands that are understood and acted upon. Ex. 1112, 5:29-37, 7:17-29. For example, in Danciu, the controlled device may have the ability to select a program to view content from YouTube, Netflix, or Hulu based on received commands. Ex. 1112, 11:22-35, 12:32-49, 16:55-67, 17:21-43. Based on this disclosed ability, it would have been obvious to a POSITA that for a device to playback content on a particular application in response to a command, the device would need to select that application to playback the content.

154. Danciu teaches "the first media player application being selected to play a first piece of content referenced in the received first message." The received messages include a session identifier (SID) and control information generated by the remote control for the controlled device. Ex. 1112, 14:13-64. "For example, a user may actuate one of controls 30 of remote control 14 to alter the content displayed on display 38 of controlled device 18." Ex. 1112, 7:17-29. "[The] user interface 26 [of the remote control 14] may display controls 30 and information 34 associated with

content being played on controlled device 18." Ex. 1112, 5:31-33. The controlled device may display content such as YouTube, Hulu, Netflix, or other such video content services. Ex. 1112, 11:31-35.

155. Figure 1 of Danciu shows a user interface 26 of the remote control (**blue**) displaying the same content (**purple**) as that depicted on the display 38 on the controlled device (**red**).

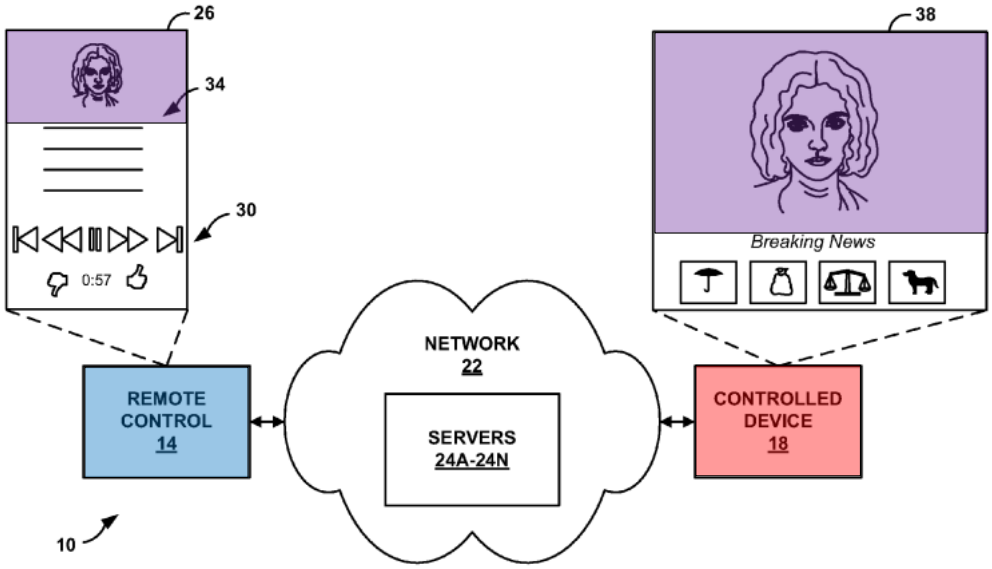


FIG. 1

Ex. 1112, Fig. 1 (annotated)

156. To the extent that it is argued that Danciu does not explicitly state that this is the same content (**purple**), it is my opinion that a POSITA would have understood that this is the same content in view of the depiction in Figure 1 and the context of Danciu as a whole, especially because Danciu teaches that the "controls

30 and information 34" are "associated with content being played on controlled device 18." Ex. 1112, 5:29-41. Also, a POSITA would have understood that when a user "actuate[s] one of controls 30 of remote control 14 to alter the content displayed on display 38 of controlled device 18," as stated in Danciu, the controls are for the claimed "first piece of content" that is to be played on the controlled device. Ex. 1112, 7:16-29. Also, Danciu teaches that "[r]emote control 75 may include a remote control application (e.g., a remote control application stored with applications 94 stored in storage device 92) that allows a user to initiate commands being sent to a controlled device, such as controlled device 18 shown in FIG. 1." Ex. 1112, 10:45-49, 16:47-54, 17:21-43, Fig. 3. Therefore, a POSITA would also have understood that Danciu teaches "the first media player application being selected to play a first piece of content referenced in the received first message," because the remote device ("the second computing device") sends commands for a video application, which may be a web browser, presenting the content displayed on the controlled device ("the first computing device").

157. In Danciu-Mahajan, the system selects the first type of media playing application from the plurality of media playing application types based on the data source and the capabilities of the client, as taught by Mahajan. Ex. 1114, [0050]. Mahajan teaches an example where "the server 402 determines the sources media format to be MPEG IV" and then the "server's RTS media abstraction module 420

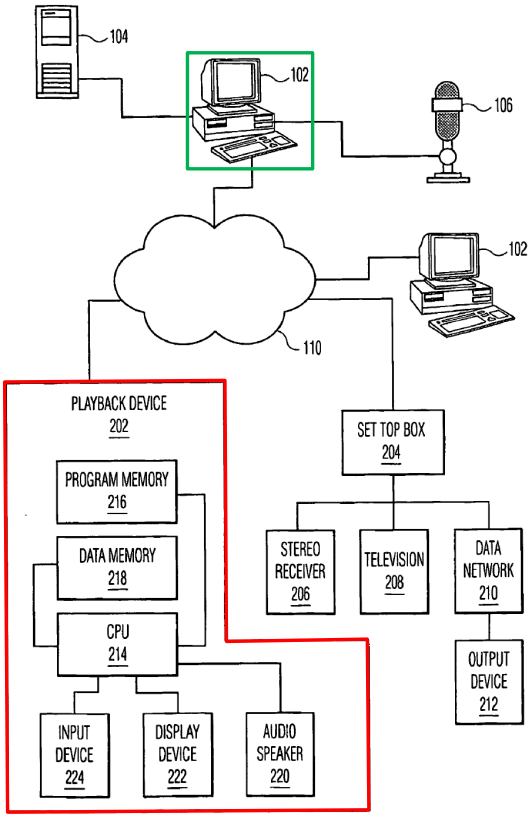
can query whether the client, such as the client 404, supports the MPEG IV media format." Ex. 1114, [0050]. The client then utilizes information from the server to determine the answer, and "the client 404 may determine that it has a media platform, such as media platform 408 that supports the media format." Ex. 1114, [0050].

158. Once a command is received, those commands "are associated with platform specific commands." Ex. 1114, [0063], Fig. 5 (step 508). Thus, the system selects the first type of media playing application (e.g., a Dshow platform operating on the client) in response to receiving the commands in the received set of messages. Ex. 1114, [0037]-[0043], [0059]-[0063], Figs. 3, 5. The commands are parsed, at least in part, by determining that the media platform of the client supports a media format associated with the piece of content. Ex. 1114, [0050].

159. Next, to the extent that it is argued that Danciu-Mahajan does not teach "the first media player application being selected to play a first piece of content referenced in the received first message," I note that it was known before the priority date of the '751 Patent to select between a plurality of media players based on messages referencing a piece of content as shown in Calvert.

160. As discussed above in Section 8.11, Calvert discloses a system for making content available from multiple media services via content aggregator 102 (**green**) in a way that playback device 202 (**red**) can request, receive, and output the

content to a display device 222 and/or audio speaker 220. Ex. 1111, [0020]-[0021], [0024]-[0027], [0030]-[0044], Figs. 1-4, 6.

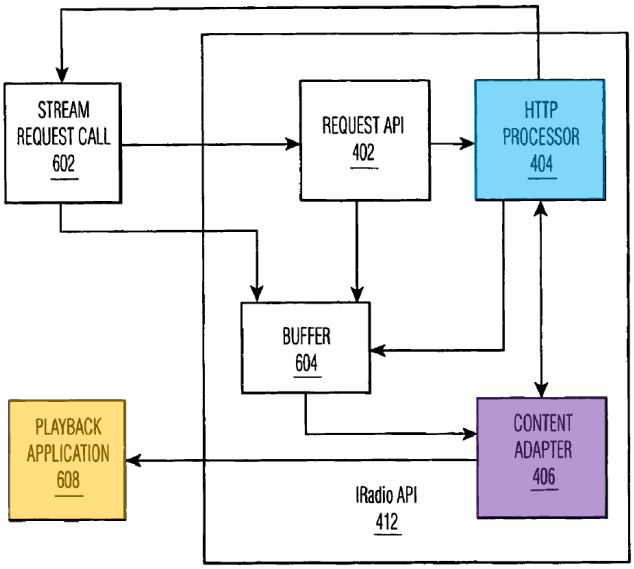


Ex. 1111, Fig. 2 (annotated)

161. The content in Calvert may be in a variety of media formats such as RealMedia, Apple QuickTime, and Microsoft Windows Media, which may require different corresponding media player applications, such as RealPlayer, QuickTime Player, and Microsoft Windows Media Player to output the content. Ex. 1111, [0021], [0042]-[0043].

162. Calvert describes selecting from this plurality of media players based on information received in a message from the content aggregator and/or the media

service provider. Ex. 1111, [0040]. Calvert describes that after receiving a response from the media service provider, the HTTP processor 404 (**light blue**) and Content Adapter 406 (**purple**) analyze the response to determine "the format of the media service, the corresponding playback application 608," as well as "output requirements of the media service." Ex. 1111, [0040]-[0042], Fig 6. Based on that determination, the media service data is then sent to the appropriate player application 608 (**orange**). Ex. 1111, [0040]-[0044], Fig. 6.



Ex. 1111, Fig. 6 (annotated)

163. Calvert also describes that the content aggregator 102 may transmit data parameters to the playback device 202 indicating the available media service formats (e.g., RealAudio, Microsoft Media Player, MP3) available from the various media service providers including before a particular piece of content is selected. Ex. 1111, [0030]-[0032]. Playback device 202 may store this information in a Data Object

Model (DOM) and read the DOM to determine what media player is used by a media service. Ex. 1111, [0031]-[0032]. If the media player is new, the playback device reads the corresponding DOM and requests an update for the new media player. Ex. 1111, [0032].

164. In my opinion, based on Calvert, a POSITA would have understood that a media playing application, such as an application running on the controlled device, could include multiple media players. A POSITA also would have understood that which media player to use for a particular item of content could be determined based on information included in a message regarding the content from the remote control to the controlled device. A POSITA would also have understood that information about what media player corresponds to a particular piece of content could be supplied to the controlled device before a user selects the piece of content, and thus information on the corresponding media player could be included in the message from the remote control to the controlled device. A POSITA would have been motivated to implement Danciu-Mahajan's system in view of Calvert's teachings to support multiple media players and select between them in order to provide more options for playing back content to Danciu-Mahajan's users. A POSITA would have been further motivated to include support for multiple media players in view of Danciu's disclosure that multiple media players, including YouTube, Hulu, and Netflix, should be supported. Ex. 1112, 11:22-25, 12:32-49,

16:55-67, 17:21-43. The routine use of multiple media player applications to support streaming media of different formats would have provided a POSITA with motivation to employ such players as additional applications in the system of Danciu.

165. Combining Calvert with Danciu would be merely using known techniques (supporting multiple media players for streaming content) to improve similar devices (the server-based streaming video systems in Danciu-Mahajan and Calvert) in the same way (selecting between media players based on the format of the content). Calvert teaches a system similar to the system disclosed in Danciu where information is received indicating what content is available, a user selects from that content, and a server provides information to the playback device regarding how to access and output the content.

166. Additionally, a POSITA would have had the skills and knowledge to implement support for multiple media players in Danciu's system, as taught by Calvert, by incorporating into Danciu the ability to select between multiple media players based on information received in messages from the server. Thus, a POSITA would have expected success in applying Calvert's teaching to the similar Danciu system.

167. Therefore, in my opinion, Danciu-Mahajan and Danciu-Mahajan-Calvert teaches limitation [1E].

f. [1F]: "controlling how the selected first media player application plays the referenced first piece of content based on a first command of the at least one command in the first format having been included in the received first message."

168. It is my opinion that Danciu in view of Mahajan teaches the elements of limitation [1E].

169. Danciu describes that "[c]ontrolled device 18 receives the control message and performs the appropriate action." Ex. 1112, 7:16-29. More specifically, in response to commands, "[p]rocessor 120 then executes the video or web browser application and causes display 124 to display content to the user." Ex. 1112, 13:4-32, 5:29-37, 5:64-6:2, 16:55-67, 17:21-43. And, bringing in the teachings of Mahajan, those commands comprise commands for the first type of media player application that are executed by the receiving device. Ex. 1114, [0014], [0021]-[0022], [0037]-[0040], [0047]-[0050], [0053], [0063].

170. Therefore, in my opinion, Danciu-Mahajan and Danciu-Mahajan-Calvert teach [1F].

9.1.2 Dependent Claim 2: "The non-transitory computer storage medium of claim 1, wherein each command of the at least one command in the second format is a universal command."

171. In my opinion, Danciu in view of Mahajan and Calvert teaches the elements of claim 2.

172. As I previously discussed above about [1D], Danciu-Mahajan and Danciu-Mahajan-Calvert teach a system in which commands are translated into a universal format for transmission to a client device. Ex. 1114, [0037]-[0043], [0063], Figs. 2-3, 5. The commands are a "universal command" because the devices do not need to be aware of all possible media platforms, and can instead convert genericized commands into platform-specific commands as appropriate. Ex. 1114, [0042]. The genericized commands are converted via the RTS media abstraction module of the server before being sent from the server's platform-specific media command (which the client may not be able to understand) to a genericized media command (which the client can receive and recognize).

173. Therefore, in my opinion, Danciu-Mahajan and Danciu-Mahajan-Calvert teaches claim 2.

9.1.3 Dependent Claim 3: "The non-transitory computer storage medium of claim 2, wherein the first format is different than the second format."

174. In my opinion, Danciu-Mahajan and Danciu-Mahajan-Calvert teach claim 3.

175. Danciu discloses that using the session identification numbers, Danciu's servers "route the messages to other members of the session. For example, a user may actuate one of controls 30 of remote control 14 to alter the content displayed on display 38 of controlled device 18." Ex. 1112, 7:16-20. In Danciu's

disclosure, there may be separate messages from the remote control to the server, and from the server to the controlled device. Ex. 1112, 16:24-17:10, 17:21-43. For example, when the server receives a message from the remote control that is intended for the controlled device, "server 24 may process and/or repackage the control information of the message into a new message." Ex. 1112, 16:63-67. In this way, the message from the remote control to the server is thus "a second message including at least one command in a second format having been sent from the associated second computing device." The message from the remote control to the server can include "data intended to alter the operation of controlled device 18" such as "stop playback of content, move to other content, etc." which may be processed or repackaged into another message which then can be sent to the controlled device. Ex. 1112, 16:52-67. Thus, after processing/repackaging (i.e., reformatting) the message, the server then sends the claimed "a first message that includes at least one command in a first format."

176. Therefore, it is my opinion that Danciu-Mahajan and Danciu-Mahajan-Calvert teaches claim 3.

9.1.4 Dependent Claim 4: "The non-transitory computer storage medium of claim 1, wherein the second message is sent from the associated second computing device to the remote server device."

177. As I discuss above for [1D], Danciu's remote control 14 (**blue**) provides commands ("for example, fast forward, reverse, skip ahead or back, play, stop move

to new content, etc.") via servers 24 (**green**) for controlling content being played on controlled device 18 (**red**). Ex. 1112, 5:29-37. In doing so, the controlled device 18 ("the first computing device") receives messages including commands ("a first message that includes at least one command in a first format") via the servers ("from the remote server device") derived from the commands sent by the remote control ("wherein the second message is sent from the associated second computing device to the remote server device") to alter content displayed on the display of the controlled device. Ex. 1112, 5:64-6:2, 10:45-53.

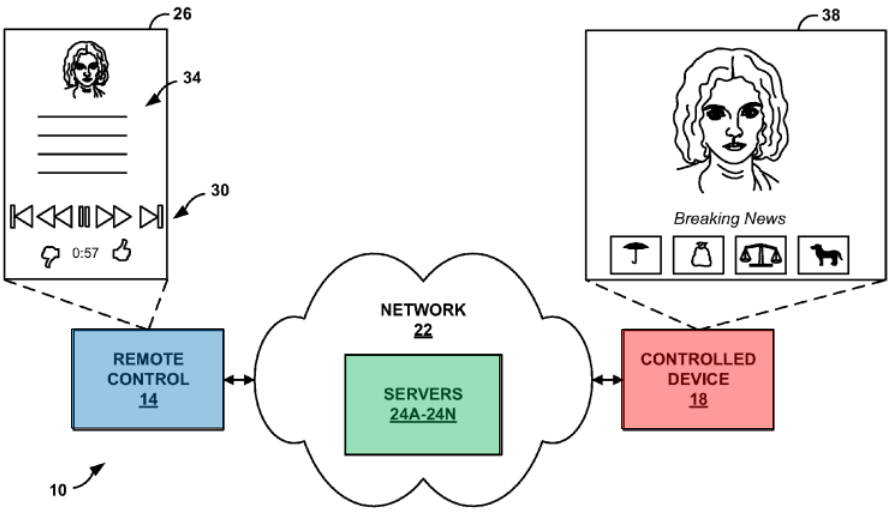


FIG. 1

Ex. 1112, Fig. 1 (annotated)

178. Therefore, in my opinion, Danciu-Mahajan and Danciu-Mahajan-Calvert teaches claim 4.

9.1.5 Dependent Claim 5: "The non-transitory computer storage medium of claim 1, wherein the remote server device is configured to convert the at least one command in the second format into the at least one command in the first format based at least in part on the second message including therein a reference to the first piece of content."

179. In my opinion, Danciu in view of Mahajan teaches the elements of claim 5.

180. Mahajan shows an API for translating between commands received at a server (**blue**) to a client (**red**):

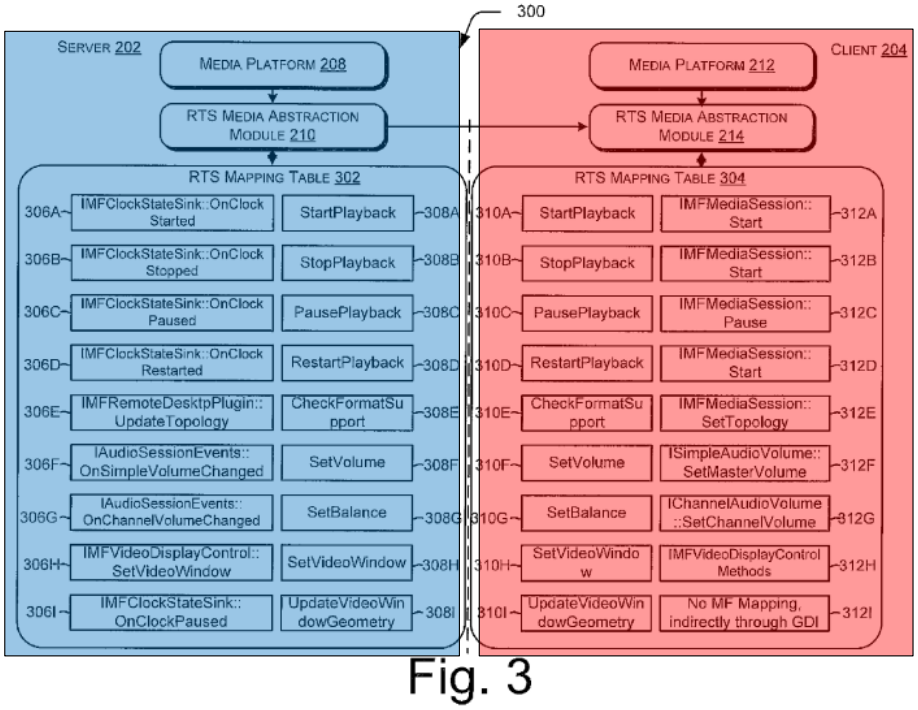
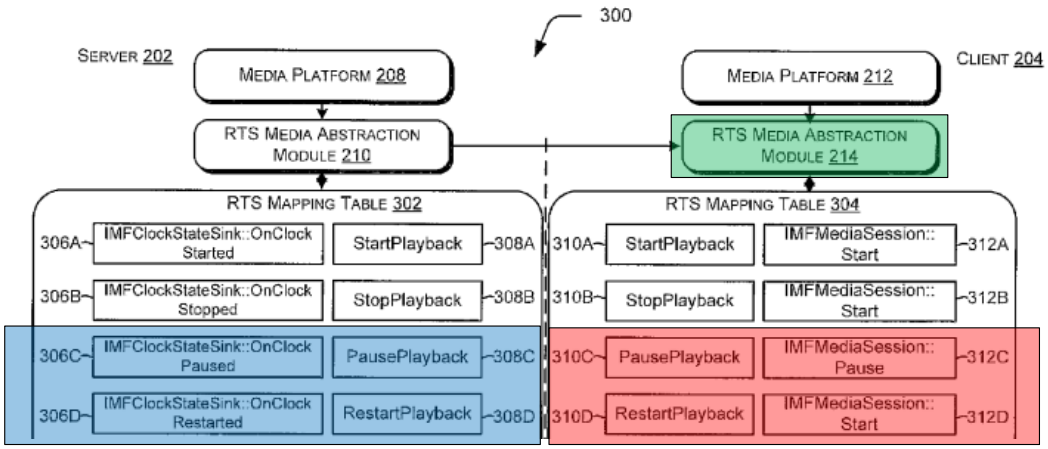


Fig. 3

Ex. 1114, Fig. 3 (annotated)

181. The API in Mahajan contains various commands including, for example, to "pause" or "restart" content on a remote media application command (e.g., a Media Foundation platform command

"IMFClockStateSink::OnClockPaused") or a first type of media application command (e.g., the corresponding DShow platform command "IMFMediaSession::Pause"). Ex. 1114, [0037]-[0043], Fig. 3. Mahajan also shows that the client's RTS Media Abstraction module (an API converter, **green**) converts the commands received by the client (**red**) from the server (**blue**). Ex. 1114, [0037]-[0043], [0063], Figs. 3, 5.



Ex. 1114, Fig. 3 (annotated)

182. Based on this disclosure, a POSITA would have understood that the described RTS Media Abstraction Module is a software intermediary that converts commands from one interface, such as a genericized interface, into another interface, such as the interface of the first type of media playback application).

183. Further, it is my opinion that it would have been obvious to a POSITA that the RTS Media Abstraction Module could be located on Mahajan's client or

server or on an intermediary device. Mahajan describes the system as operating using a "collaboration media abstraction layer 130" that is responsible for translating commands. Ex. 1114, [0022]-[0023]. Mahajan further states that the distribution manager 418 and multimedia component 446, which include the RTS Media Abstraction modules, can make use of a "virtual channel connection" as part of a "distributed topology." Ex. 1114, [0051]. Based on Mahajan's disclosures that the system can operate in a distributed environment, it would have been obvious to a POSITA that one or more RTS Media Abstraction Modules could operate at a server, such as servers 24A-24N. Ex. 1114, [0018], [0058], [0078]. In my opinion, also, a POSITA would also understand that in order for this conversion to occur, the server would be "configured" to do so.

184. These commands "may be specific to events associated with the playback of media files" such as "when a media file is accessed for playback by one or more users at the client." Ex. 1114, [0037]. In this way, messages containing the commands, which are particular to the media content playing on the type of media playing application of the server, are converted "based at least in part on the second message including therein a reference to the first piece of content."

185. To the extent that it is argued that Danciu-Mahajan does not disclose converting a command "based at least in part on the second message including therein a reference to the first piece of content," it is taught by Calvert. Calvert

describes selecting from a plurality of media players based on information received in a message from the content aggregator and/or the media service provider. Ex. 1111, [0030]-[0033], [0040]-[0044], Fig. 6. The selection may be based on metadata, which can include the title of the content to be delivered. Ex. 1111, [0038], [0056].

186. Therefore, in my opinion, Danciu-Mahajan and Danciu-Mahajan-Calvert teaches claim 5.

9.1.6 Dependent Claim 6: "The non-transitory computer storage medium of claim 1, wherein the remote server device is configured to convert the at least one command in the second format into the at least one command in the first format based at least in part on a reference to the first media player application having been included in the second message."

187. In my opinion, Danciu in view of Mahajan teaches the elements of claim 6.

188. As I discussed above for limitation [1E], Danciu in view of Mahajan teaches that the system selects the first type of media playing application from the plurality of media playing application types based on the data source and the capabilities of the client, as taught by Mahajan. Ex. 1114, [0050]. Mahajan teaches an example where "the server 402 determines the sources media format to be MPEG IV" and then the server's RTS media abstraction module 420 can query whether the client, such as the client 404, supports the MPEG IV media format." Ex. 1114, [0050]. Accordingly, "the client 404 may determine that it has a media platform, such as media platform 408 that supports the media format." Ex. 1114, [0050].

189. As I discussed above for claim 5, Mahajan teaches that the server converts generic media playback commands into client platform specific media playback commands as embodied by the RTS Media Abstraction Modules. Ex. 1114, [0013]-[0014], [0022], [0036], [0039]-[0042], [0063], Figs. 3, 5. It is my opinion that it would have been obvious to a POSITA that the RTS Media Abstraction Module could be located on Mahajan's client or server or on an intermediary device. A POSITA would also understand that in order for this conversion to occur, the server would be "configured" to do so.

190. To the extent that the Patent Owner argues that Danciu-Mahajan does not teach dependent claim 6, it is my opinion that it is disclosed by Danciu-Mahajan-Calvert. As I discussed above for [1E], Calvert discloses selecting between multiple media players based on information received in a message regarding the selected content. Ex. 1111, [0040]. Calvert describes information regarding the media player which corresponds to a piece of content being sent in advance of selection of the content. Ex. 1111, [0030]-[0032]. Thus, when a user selects content using the remote control, information on the corresponding media player may be included with the command selecting the content ("at least one command in the second format") in the message from remote control to the controlled device ("the second message"), in processing/formulating the command from the remote control by the server into a command to send to the controlled device ("at least one command in the first

format"), that command may be selected based on the information about the corresponding media player ("a reference to the first media player application").

191. Therefore, it is my opinion that Danciu-Mahajan and Danciu-Mahajan-Calvert teach claim 6.

9.1.7 Dependent Claim 7: "The non-transitory computer storage medium of claim 1, wherein the first media player application is selected based at least in part on the received first message including therein a reference to the first media player application."

192. In my opinion, Danciu in view of Mahajan teaches claim 7.

193. As I discussed above for limitation [1E], Danciu in view of Mahajan teaches that the system selects the first type of media playing application from the plurality of media playing application types based on the data source and the media player application running on the client, as taught by Mahajan. Ex. 1114, [0050].

194. To the extent that the Patent Owner argues that Danciu-Mahajan does not teach claim 7, in my opinion, it is disclosed by Danciu-Mahajan-Calvert. As discussed above regarding limitation [1E] and claim 6, a POSITA would have understood that in Danciu-Mahajan-Calvert, information on the media player corresponding to a selected piece of content may be included in the message from the remote device to the controlled device. Thus, the controlled device of Danciu-Mahajan-Calvert can select the appropriate media player application based on information in the message received from the server ("the received first message including therein a reference to the first media player application").

195. Thus, Danciu-Mahajan and Danciu-Mahajan-Calvert teach claim 7.

9.1.8 Dependent Claim 8: "The non-transitory computer storage medium of claim 1, wherein controlling how the selected first media player application plays the referenced first piece of content includes an execution of the first command."

196. As I discussed above for [1F], Danciu teaches that, in response to commands, "[p]rocessor 120 then executes the video or web browser application and causes display 124 to display content to the user." Ex. 1112, 13:4-32, 5:29-37, 5:64-6:2, 7:17-29, 16:55-67, 17:21-43. And, in view of Mahajan's disclosure, those commands comprise commands for the first type of media playing application that are executed by the receiving device. Ex. 1114, [0014], [0021]-[0022], [0037]-[0040], [0047]-[0050], [0053], [0063].

197. Therefore, Danciu-Mahajan and Danciu-Mahajan-Calvert teaches claim 5.

9.1.9 Dependent Claim 9: "The non-transitory computer storage medium of claim 1, the operations further comprising: retrieving the first media player application from a remote content provider based on a determination that the first media player application is not already selected."

198. Calvert discloses that when a new media player application that is not already present (and thus not already selected) on the playback device is required to output content, the playback device may request, locate, and store (i.e., install) the required media player on the playback device. Ex. 1111, [0032].

199. Therefore, in my opinion, Danciu-Mahajan-Calvert teaches claim 9.

9.1.10 Dependent Claim 10: "The non-transitory computer storage medium of claim 9, wherein the remote content provider is associated with the referenced first piece of content."

200. As I discussed above for claim 9, Calvert discloses retrieving a new media player application. Calvert discloses that the ("remote") content provider uses a new multimedia player from the content provider to play back available media services ("referenced first piece of content") and playing a media service from content aggregator ("associated with the referenced first piece of content") in step 310. Ex. 1111. [0032], [0043], Fig. 3. It would have been obvious to a POSITA that the new media player could be retrieved from the provider of the content. For example, it was well known that providers of media players frequently provide sample content to test or demonstrate the capabilities of their media players.

201. Therefore, it is my opinion that Danciu-Mahajan-Calvert teaches claim 10.

9.1.11 Dependent Claim 11

a. [11A]: "The non-transitory computer storage medium of claim 1, the operations further comprising:"

202. As I discussed above in Section 9.1.1, Danciu-Mahajan and Danciu-Mahajan-Calvert teach all of the limitations of claim 1.

b. [11B]: "based on the stored association and while the first media player application is selected, receiving, from the remote server device, a third message that includes at least one command in a third format, wherein the third message is received based at least in part on a fourth message including at least one other command in the second format having been sent from the associated second computing device; and"

203. In my opinion, Danciu-Mahajan and Danciu-Mahajan-Calvert teach all elements of [11B].

204. Danciu teaches that devices join sessions, and those devices, in a session, can send multiple messages and commands on an ongoing basis. Upon scanning the QR code, the remote control sends a message requesting that the remote control "be included in the session identified in the QR code." Ex. 1112, 15:42-58; 8:11-34. Then, the servers direct the messages in that session (including "a second message including at least one command in a second format") from the remote control to the controlled device. Ex. 1112, 6:50-60, 7:17-29, 10:45-53, 16:24-17:12. For example, once a session is created, Danciu explains that "[t]he session may be maintained by a device management module . . . to efficiently route the messages from remote control 14 to controlled device 18." Ex. 1112, 17:49-52. In my opinion, given this disclosure, a POSITA would have understood that the remote control may send an additional (e.g., "fourth") message would in the same format as an earlier (e.g., "second") message. This message may then be repackaged by the server into

a new message with a format corresponding to the command ("a third message that includes at least one command in a third format"). Ex. 1112, 16:63-67.

205. Therefore, it is my opinion Danciu-Mahajan and Danciu-Mahajan-Calvert teach limitation [11B].

c. [11C]: "selecting a second media player application from the plurality of media player applications based at least in part on the third format of the third message, the second media player application being selected to play a second piece of content referenced in the third message."

206. As I discussed above for [1E], Danciu-Mahajan and Danciu-Mahajan-Calvert teach selecting a media player application from a plurality of media player applications. And a POSITA would have understood that a "second media player" could be selected based on the command and information in the "third message" just as the first media player was selected based on information in the first message.

207. Therefore, in my opinion, Danciu-Mahajan and Danciu-Mahajan-Calvert teach limitation [11C].

9.1.12 Independent Claim 12

a. [12A]: "A computer-implemented method for remotely presenting various types of content, comprising:"

208. Element [12A] is obvious for at least the same reasons as discussed above for [1A]. *See* 9.1.1.a. Again, I have been informed that the preamble is not limiting, but it is my opinion that Danciu teaches the preamble. Danciu discloses a

controlled device 18 (**red**), which may be a computing device such as a set-top box (STB) or personal video recorder (DVR), connected via network 22, including servers 24A-24N (**green**), to a remote control 14 (**blue**). Ex. 1112, 5:42-63.

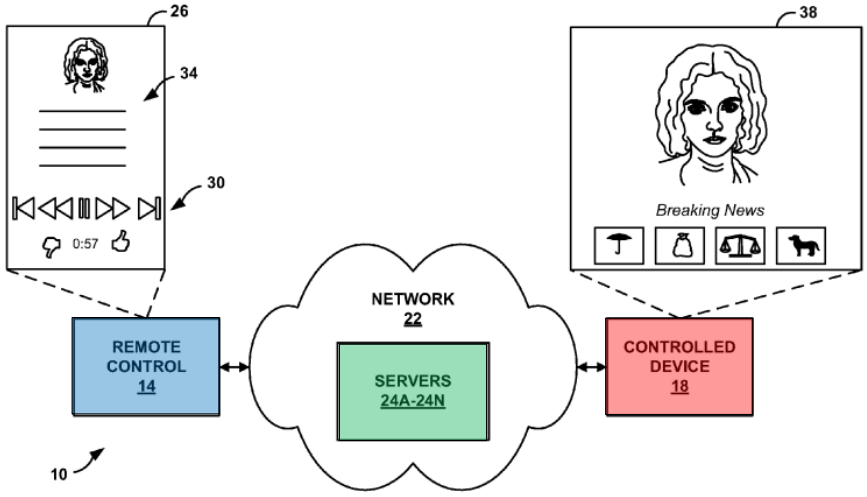


FIG. 1

Ex. 1112, Fig. 1 (annotated)

209. Therefore, it is my opinion that Danciu-Mahajan and Danciu-Mahajan-Calvert teach limitation [12A].

b. [12B]: "obtaining, by a content presentation device, a synchronization code associated with the content presentation device, wherein the associated synchronization code is stored on a remote server device:"

210. Element [12B] is obvious for at least the same reasons as I discussed above for [1B]. *See* 9.1.1.b.

c. [12C]: "providing, by the content presentation device, the synchronization code to a remote computing device in communication with the remote server device, wherein the provided synchronization code causes the remote server device to store an association between the content presentation device and the remote computing device;"

211. Element [12C] is obvious for at least the same reasons as I previously discussed above regarding [1C]. *See* 9.1.1.c.

d. [12D]: "receiving, by the content presentation device and from the remote server device, a first message that includes at least one command in a first format, the first message being received based at least in part on the stored association and on a second message including at least one command in a second format having been sent from the associated remote computing device;"

212. Element [12D] is obvious for at least the same reasons as I discussed above for limitation [1D]. *See* 9.1.1.d.

e. [12E]: "selecting, by the content presentation device while a connection between the content presentation device and the remote server device is maintained, a first media player application from a plurality of media player applications based at least in part on the first format of the first message, the first media player application being selected to play a first piece of content referenced in the received first message;"

213. Element [12E] is obvious for at least the same reasons as I discussed above for [1E]. *See* 9.1.1.e.

f. [12F]: "controlling, by the content presentation device, how the selected first media player application plays the referenced first piece of content based on a first command of the at least one command in the first format having been included in the received first message;"

214. Element [12F] is obvious for at least the same reasons as I discussed above for element [1F]. *See* 9.1.1.f.

215. Therefore, it is my opinion that Danciu-Mahajan and Danciu-Mahajan-Calvert teach claim 12.

9.1.13 Dependent Claim 13: "The computer-implemented method of claim 12, wherein the first media player application is selected based further in part on the received first message including therein a reference to the first media player application."

216. Dependent claim 13 is obvious in consideration of Danciu-Mahajan and Danciu-Mahajan-Calvert for at least the reasons that I discussed above for claim 12, and also for the reasons I discussed above for claim 7. *See* 9.1.7, 9.1.12.

217. Therefore, it is my opinion that Danciu-Mahajan and Danciu-Mahajan-Calvert render claim 13 as obvious.

9.1.14 Dependent Claim 14: "The computer-implemented method of claim 12, the operations further comprising: selecting the first media player application based on a determination that a second media player application is currently selected."

218. Dependent claim 14 is rendered obvious by Danciu-Mahajan and Danciu-Mahajan-Calvert as I discussed above for claim 12, and also for the reasons discussed above for claim 9. *See* 9.1.9, 9.1.12.

9.1.15 Dependent Claim 15: "The computer-implemented method of claim 12, further comprising: retrieving, by the content presentation device, the selected first media player application from a remote content provider based on the first format of the first message."

219. Calvert discloses that when a new media player application that is not already present on the playback device is required to output content, the playback device may request, locate, and store (*i.e.*, install) the required media player on the playback device. Ex. 1111, [0032]. Calvert describes that information about where to locate a new media player for installation is contained in Document Object Module information received from the content aggregator. Ex. 1111, [0030]-[0032]. In my opinion, it would have been obvious to a POSITA that the information could be similarly conveyed to the gateway/STB/DVR 111 in the first message.

220. In my opinion, therefore, Danciu-Mahajan-Calvert teaches claim 15.

9.1.16 Dependent Claim 16: "The computer-implemented method of claim 12, wherein the remote server device is configured to convert the

at least one command in the second format into the at least one command in the first format based at least in part on a reference to the first media player application having been included in the second message, and wherein the first media player application is selected based further on the at least one command in the first format having been converted from the second format."

221. It is my opinion that Danciu-Mahajan and Danciu-Mahajan-Calvert disclose claim 16.

222. As discussed above in Sections 9.1.1.d and 9.1.1.e, Danciu teaches using session identification numbers to "route the messages to other members of the session. For example, a user may actuate one of controls 30 of remote control 14 to alter the content displayed on display 38 of controlled device 18." Ex. 1112, 7:17-21. Based on Danciu's disclosure, there may be separate messages from the remote control to the server, and from the server to the controlled device. Ex. 1112, 16:24-17:12, 17:21-43. For example, when the server receives a message from the remote control intended for the controlled device, "server 24 may process and/or repackage the control information of the message into a new message." Ex. 1112, 16:63-67. The received messages comprise a session identifier (SID) and control information generated by the remote control for the controlled device. Ex. 1112, 14:13-64; Ex. 1114, [0050].

223. To the extent that the Patent Owner argues that Danciu-Mahajan does not teach the additional features of claim 16, I am of the opinion that they are taught by Calvert. As discussed above in Section 9.1.1.e, Calvert discloses selecting

between multiple media players based on information received in a message regarding the selected content. In particular, Calvert describes information about the media player that corresponds to a piece of content being sent prior to selection of the content. Ex. 1111, [0030]-[0032]. Thus, based on this disclosure, when a user selects content using the remote control, information on the corresponding media player may be included with the command selecting the content ("at least one command in the second format") in the message from remote control to the controlled device ("the second message"), in processing/formulating the command from the remote control by the server into a command to send to the controlled device ("at least one command in the first format"), and that command may be selected based on the information about the corresponding media player ("a reference to the first media player application"). Furthermore, as discussed above in Section 9.1.12.e, the media player application is selected based on the command from the remote server that was formulated from the command from the remote device 117.

224. A I discussed above for claim 5 Mahajan teaches that the server converts generic media playback commands into client platform specific media playback commands as embodied by the RTS Media Abstraction Modules. Ex. 1114, [0013]-[0014], [0022], [0036], [0040], [0042], [0063], Fig. 3, Fig. 5. It is my opinion that it would have been obvious to a POSITA that the RTS Media Abstraction

Module could be located on Mahajan's client or server or on an intermediary device. A POSITA would also understand that in order for this conversion to occur, the server would be "configured" to do so.

225. Therefore, it is my opinion that Danciu-Mahajan and Danciu-Mahajan-Calvert teach claim 16.

9.1.17 Independent Claim 17

a. [17A]: "A content presentation device comprising:"

226. Element [17A] is obvious for at least the same reasons as I discussed above for [1A]. *See* 9.1.1.a. Again, I have been informed that the preamble is not limiting, but that aside my opinion is that Danciu discloses the preamble. Danciu discloses a controlled device 18 (**red**), which may be a computing device such as a set-top box (STB) or personal video recorder (DVR), connected via network 22, which includes servers 24A-24N (**green**), to a remote control 14 (**blue**). Ex. 1112, 5:42-63.

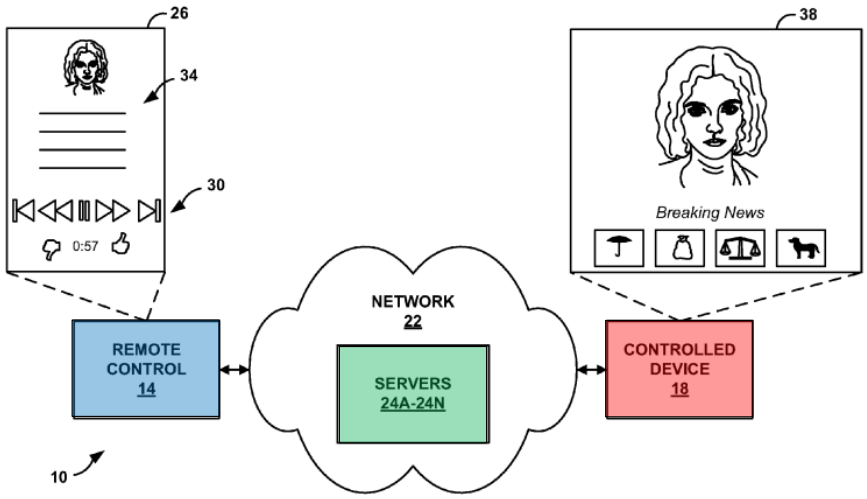


FIG. 1

Ex. 1112, Fig. 1 (annotated)

227. Thus, in my opinion, Danciu-Mahajan and Danciu-Mahajan-Calvert teach [17A].

b. [17B]: "a display;"

228. Danciu discloses a controlled device 18 (**red**), which includes a display 38 (**purple**). Ex. 1112, 5:42-6:13, 11:7-21.

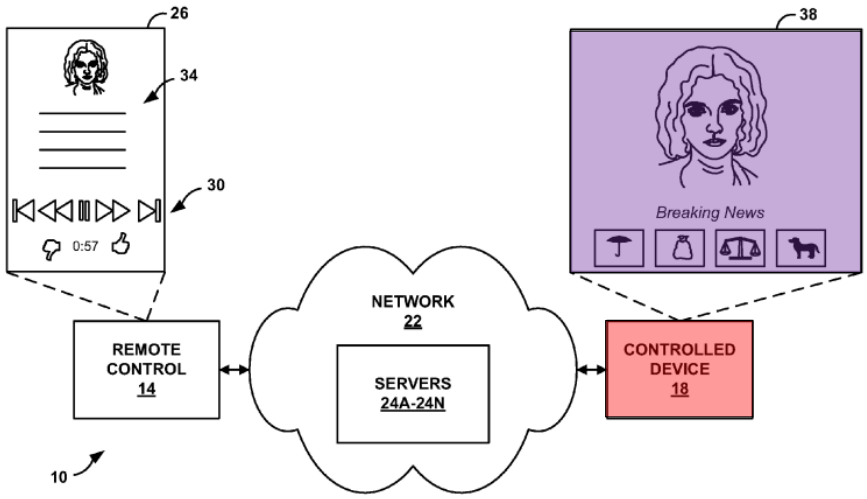


FIG. 1

Ex. 1112, Fig. 1 (annotated)

229. Therefore, in my opinion, Danciu teaches limitation [17B].

c. [17C]: "at least one processor;"

230. Controlled device 18, or 118 as shown in Figure 4 below, is a computing device that includes one or more processors 132 for executing program instructions stored on a non-transitory/tangible storage medium (e.g., RAM, ROM, or electronic storage media of storage device 128) to perform operations. Ex. 1112, 12:1-16.

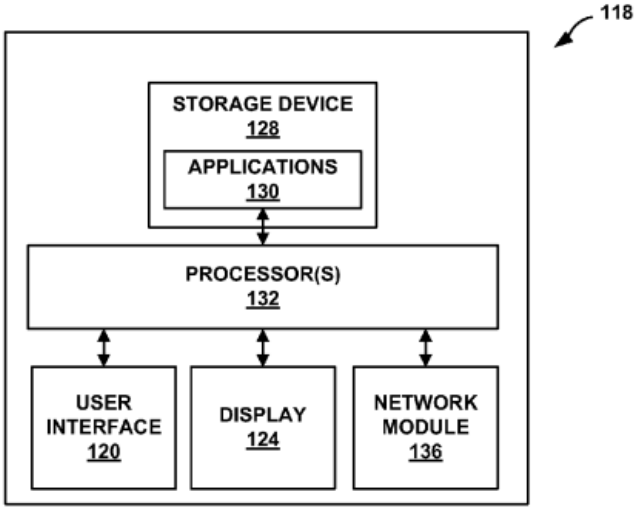


FIG. 4

Ex. 1112, Fig. 4

231. Therefore, it is my opinion that Danciu teaches limitation [17C].

d. [17D]: "at least one computer storage media storing computer-usable instructions that, when used by the at least one processor, cause the at least one processor to;"

232. Controlled device 18, or 118 as shown in Figure 4 below, is a computing device that includes one or more processors 132 for executing program instructions stored on a non-transitory/tangible storage medium (e.g., RAM, ROM, or electronic storage media of storage device 128) to perform operations. Ex. 1112, 12:1-16.

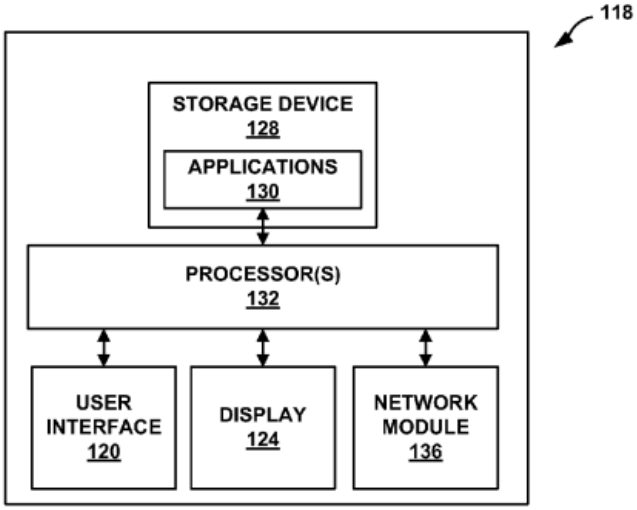


FIG. 4

Ex. 1112, Fig. 4

233. Therefore, it is my opinion that Danciu teaches limitation [17D].

e. [17E]: "obtain a synchronization code associated with the content presentation device, wherein the associated synchronization code is stored on a remote server device;"

234. In my opinion, element [17E] is obvious for at least the same reasons as discussed above for [1B]. *See* 9.1.1.b.

f. [17F]: "provide the synchronization code to a remote computing device in communication with the remote server device, wherein the provided synchronization code causes the remote server device to store an association between the content presentation device and the remote computing device;"

235. In my opinion, element [17F] is obvious for at least the same reasons as discussed above for [1C]. *See* 9.1.1.c.

g. [17G]: "receive, from the remote server device, a first message that includes at least one command in a first format, the first message being received based on the stored association and on a second message in the second format sent from the associated remote computing device;"

236. In my opinion, [17G] is obvious for at least the same reasons as discussed above for [1D]. *See* 9.1.1.d.

h. [17H]: "select a first media player application from a plurality of media player applications based on the first format of the first message, the first media player application being selected to play a first piece of content referenced in the received first message; and"

237. It is my opinion that element [17H] is obvious for at least the same reasons as I discussed above for [1E]. *See* 9.1.1.e.

i. [17I]: "control how the selected first media player application plays the referenced first piece of content based on a first command of the at least one command in the first format having been included in the received first message."

238. In my opinion, [17I] is obvious for at least the same reasons as I discussed above for [1F]. *See* 9.1.1.f.

9.1.18 Dependent Claim 18: "The content presentation device of claim 17, wherein the first media player application is configured to recognize each command of the at least one command in the first format."

239. In my opinion, Danciu in view of Mahajan teaches the elements of claim 18.

240. Danciu teaches that control commands received by the controlled device are understood by that device to take appropriate action, such as to "play" or "stop" the content. Ex. 1112, 5:29-37, 7:17-29. In view of Mahajan, and as described above in Section 9.1.1.d, a POSITA would have understood that those commands would be received in a genericized form, which would be recognizable by the first type of media player application after processing by the abstraction layer of the receiving device. Ex. 1114, [0014], [0022]-[0024], [0037-[0040], Fig. 2.

241. In my opinion, it would be obvious to a POSITA that in order to "recognize each command of the at least one command in the first format", the "first media player application" would be "configured" to do so.

242. It is my opinion, therefore, that Danciu-Mahajan and Danciu-Mahajan-Calvert teach claim 18.

9.1.19 Dependent Claim 19: "The content presentation device of claim 17, wherein the second message is sent from the associated second computing device to the remote server device."

243. In my opinion, claim 19 is rendered obvious by Danciu-Mahajan and Danciu-Mahajan-Calvert for at least the reasons discussed above for claim 17, and discussed for claim 4. *See* 9.1.1.f, 9.1.4, 9.1.17.

9.1.20 Dependent Claim 20: "The content presentation device of claim 18, wherein the first media player application is selected based further on

the received first message including therein a reference to the first media player application."

244. In my opinion, claim 20 is rendered obvious by Danciu-Mahajan and Danciu-Mahajan-Calvert for at least the reasons discussed above for claim 17, and also for the reasons discussed regarding claim 7. *See* 9.1.1.f, 9.1.7, 9.1.17.

9.2 ALDREY IN VIEW OF MAHAJAN RENDERS CLAIMS 1-20 OBVIOUS

245. The following section provides a limitation by limitation analysis showing how Aldrey in view of Mahajan renders claims 1-20 obvious. To help illustrate how the disclosures of these references map to the claim limitations, I have color coded some of my remarks and some figures in the noted art below.

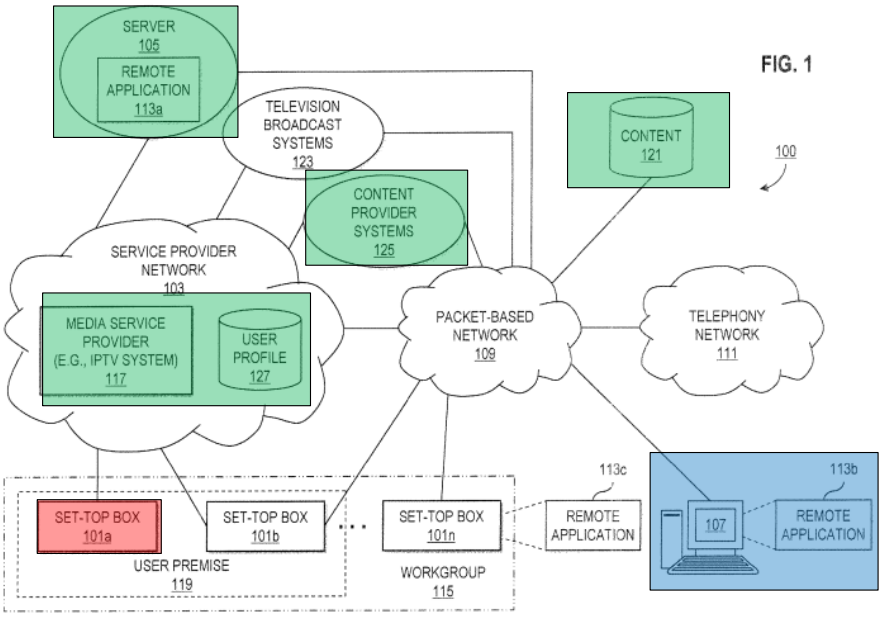
9.2.1 Independent Claim 1

a. [1A]: "A non-transitory computer storage medium storing computer-useable instructions that, when used by a first computing device, cause the first computing device to perform operations comprising:"

246. I have been informed that the preamble is not limiting. That said, it is my opinion that Aldrey teaches the preamble.

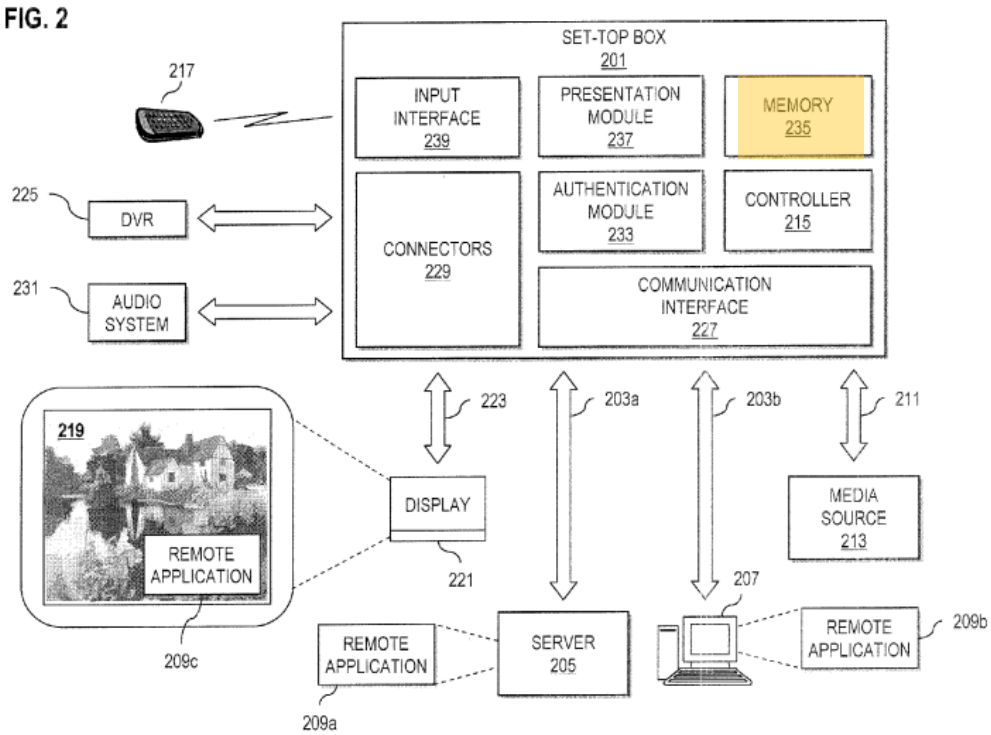
247. Aldrey discloses a STB 101 (a "first computing device", **red**) connected via a service provider network 103 to multiple servers including media service provider (MSP) 117 system, user profile repository 127 server, remote management server 105, third-party content provider systems 125, content residing repository server 121, and remote application server 113a (a "remote server device", **green**) to a remote application 113b running on an end terminal 107 (a "second

computing device", **blue**). Ex. 1115, [0018]-[0023], [0025]-[0026], [0029]-[0030], Fig. 1.



Ex. 1115, Fig. 1 (annotated)

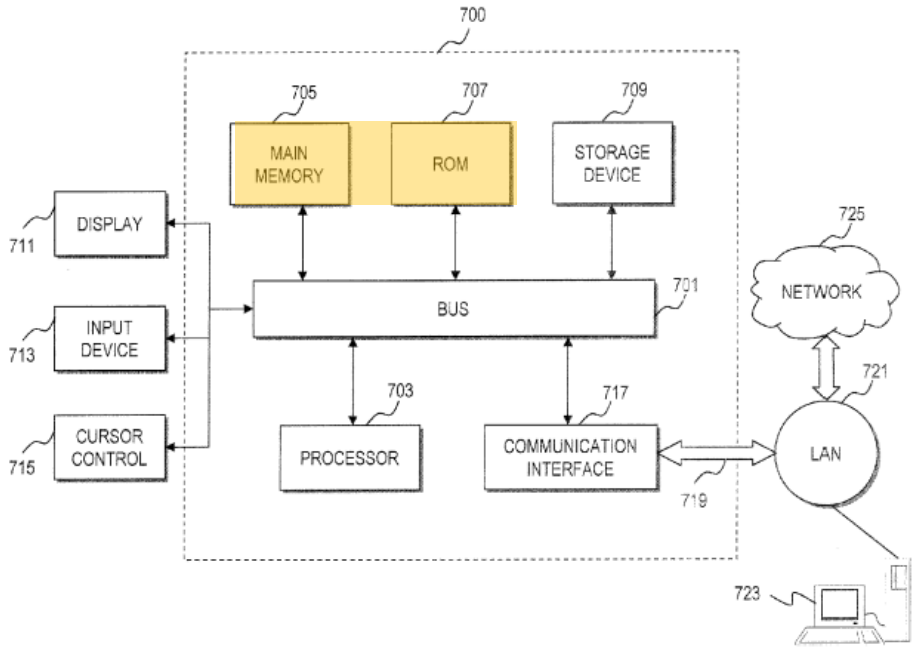
248. Aldrey also discloses that the STB 201 ("first computing device") is a computing device with computer storage medium memory 235 (**orange**) that would be obvious to a POSITA to have "computer-useable instructions" to perform "operations". For example, "STB 201 may comprise any suitable technology to receive one or more control commands (e.g., signals 203*a* and 203*b*) from a sever 205." Ex. 1115 [0042], Fig. 2.



Ex. 1115, Fig. 2 (annotated)

249. Aldrey also teaches that the STB 201 may comprise computing hardware with a processor that executes instructions in memory (orange). Ex. 1115, [0043], [0088]-[0096], Fig. 7.

FIG. 7



Ex. 1115, Fig. 7 (annotated)

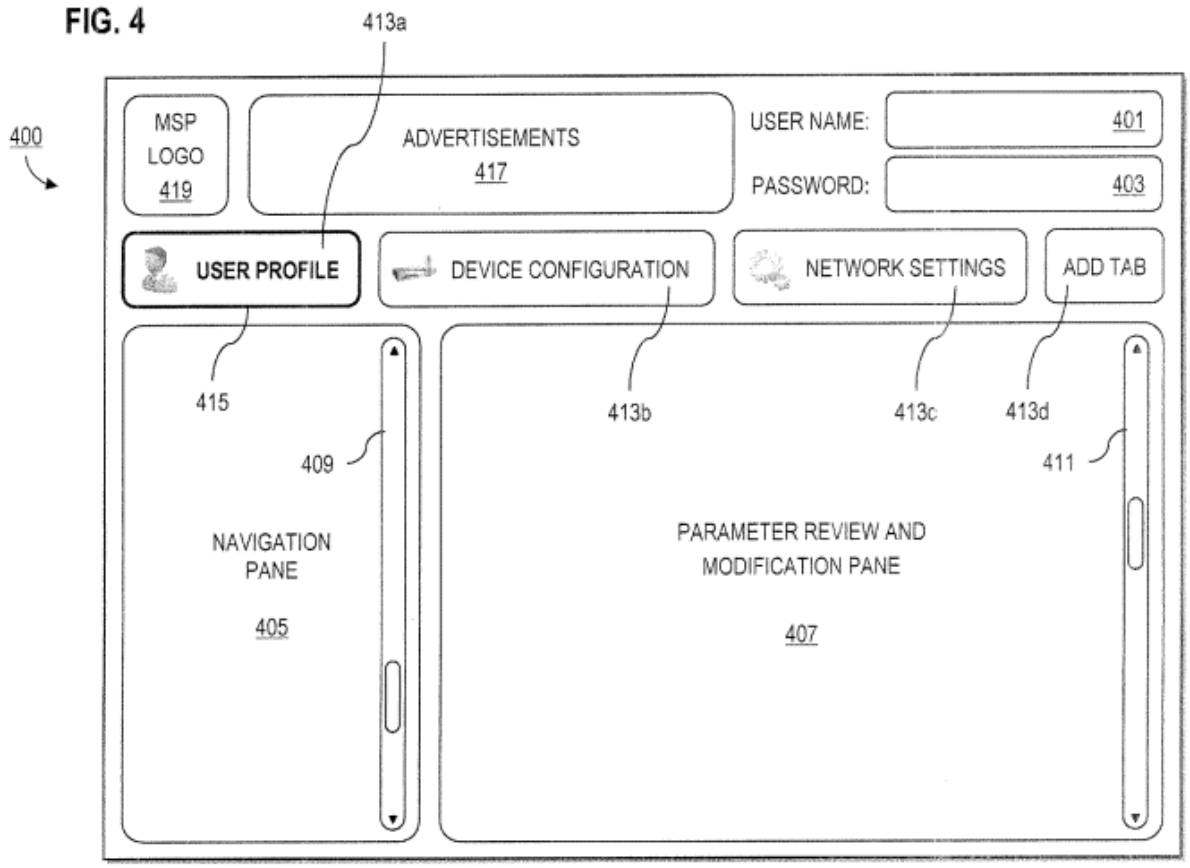
250. Therefore, in my opinion, Aldrey teaches limitation [1A].

b. [1B]: "obtaining a synchronization code associated with the first computing device, wherein the associated synchronization code is stored on a remote server device;"

251. In my opinion, Aldrey teaches [1B].

252. Aldrey discloses a user interface 400 "wherein an authenticated subscriber may directly review and modify user profile information and/or network settings." Ex. 1115, [0067]-[0071]. This user interface may be executed on any device, including a STB. Ex. 1115, [0031]-[0032], [0067], Fig. 4. Remote

applications 209a-209c operate on devices remote from the STB, such as a server or an end terminal. Ex. 1115, [0042], Fig. 2.



Ex. 1115, Fig. 4

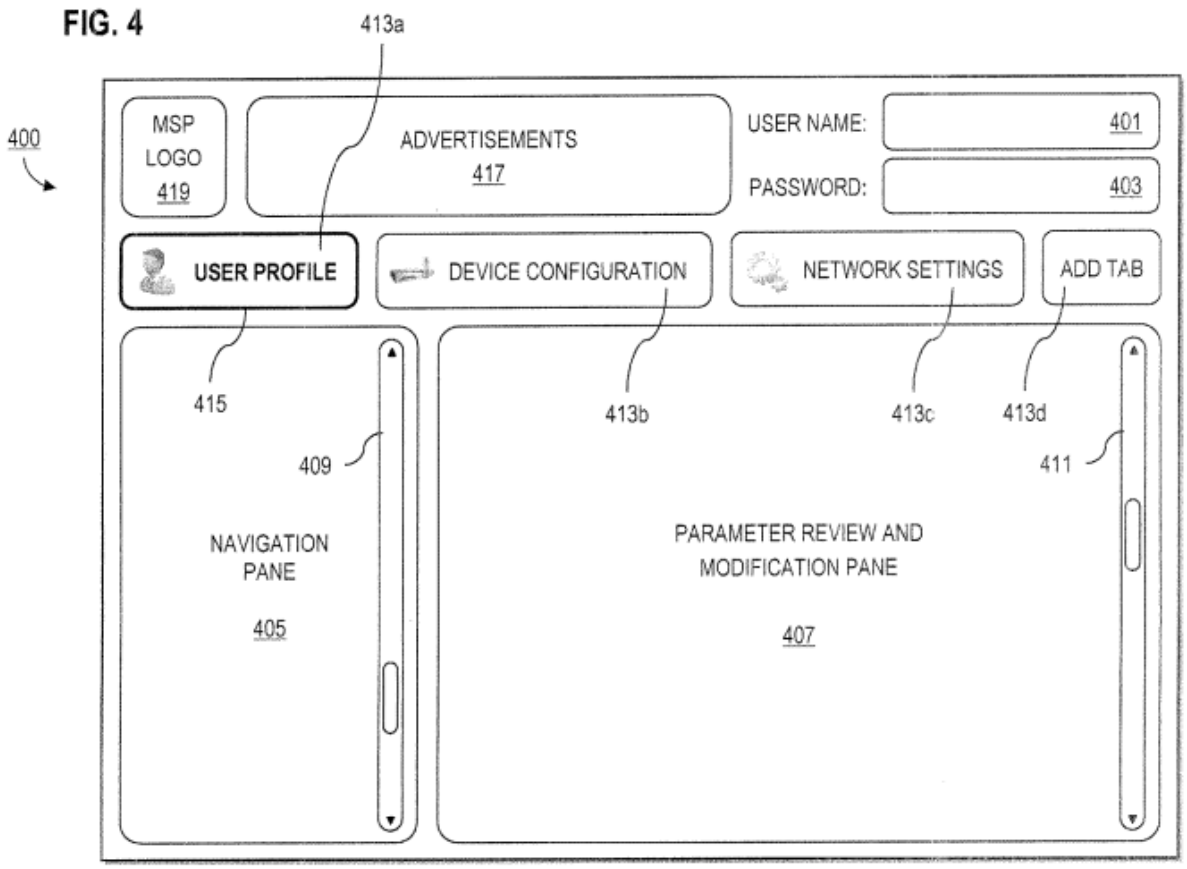
253. A user using the user interface may register one or more devices by entering in device information including for example a "device type, serial number, registration number, MAC address, phone number, communications link, etc.," any of which may be a "synchronization code" as claimed. Ex. 1115, [0064]. Using this device information, "MSP 117, server 105, and or one or more remote applications *209a-209c* may obtain configuration parameters and user interface information." Ex.

1115, [0064]. This information is stored in the user profile repository 127 ("stored on a remote server device"). Ex. 1115, [0057]-[0066].

254. Therefore, in my opinion, Aldrey teaches limitation [1B].

c. [1C]: "providing the synchronization code to a second computing device in communication with the remote server device, wherein the provided synchronization code causes the remote server device to store an association between the first computing device and the second computing device;"

255. As I discussed above for [1B], Aldrey teaches that a user interface can be provided to the user on an end terminal ("a second computing device") which involves registration of user profile information and/or configuration data ("an association") allowing the user to access, via an end terminal, devices identified in the user profile repository, including a STB ("first computing device"). Ex. 1115, [0042], [0064]-[0072], Fig. 2, Fig. 4.



Ex. 1115, Fig. 4

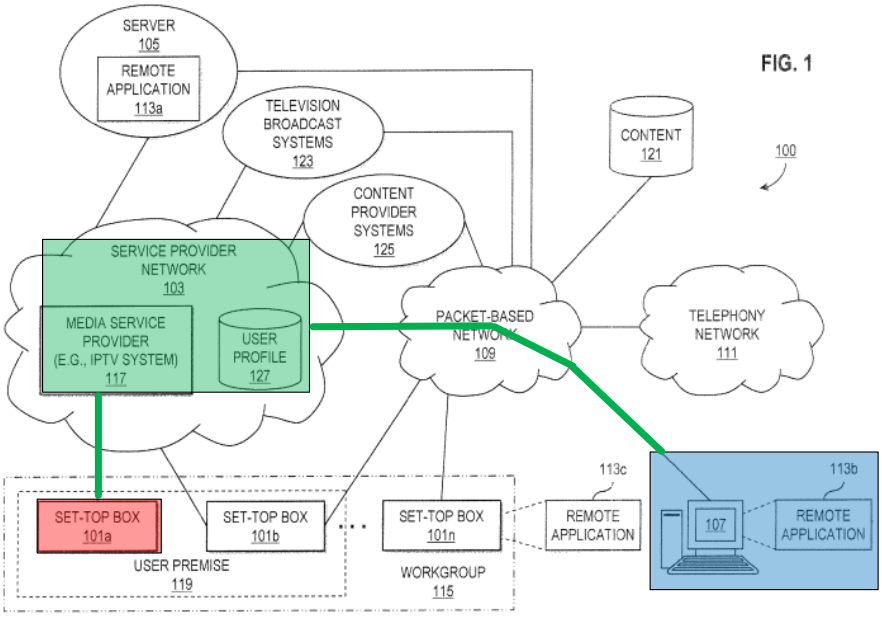
256. The end terminal may access the unique identifier, which may be included in a list of subscribers, when modifying or interacting with a user profile at an end terminal. Ex. 1115, [0065]-[0066].

257. Therefore, in my opinion, Aldrey teaches limitation [1C].

d. [1D]: "receiving, from the remote server device, a first message that includes at least one command in a first format, the first message being received based at least in part on the stored association and on a second message including at least one command in a second format having been sent from the associated second computing device;"

258. In my opinion, Aldrey teaches the elements of limitation [1D].

259. Aldrey teaches that "A remote application (e.g., remote application *113a*) permits users to easily, effectively, and intuitively convey control commands for configuring a plurality of STBs *101a-101n*, wherein the control commands affect configuration data relating to such parameters as parental controls, available channel information, favorite channels specified by the user, program recording settings, viewing history, and/or software loaded in the respective STBs *101a-101n*, as well as other suitable control parameters." Ex. 1115, [0020]. Therefore, Aldrey teaches a STB 101 (**red**) receiving commands from a remote application running on an end terminal 107 (**blue**). Ex. 1115, [0018]-[0023], [0025]-[0026], Fig. 1. Aldrey further teaches that "connections [**green**] between the STBs *101a-101n* and the end terminal(s) 107 may be established directly or through server 105 and/or MSP 117." Ex. 1115, [0039], [0025], [0035]-[0036], [0048].



Ex. 1115, Fig. 1 (annotated)

260. Based on Aldrey, a user that is accessing user interface menus based on the registered information from the STB ("based at least in part on the stored association") may send a set of messages to be received at the STB. Ex. 1115, [0063]-[0067]. These messages, which include a set of commands, satisfy [1D]. Ex. 1115, [0019]-[0020].

261. To the extent that it is argued that Aldrey does not show at least one command in a first format and at least one command in a second format, my opinion is that these are taught by Mahajan. As I discussed above in Section 9.1.1.d, Mahajan teaches implementation details regarding transmitting commands from a server (e.g., an end terminal) to a client (e.g., a STB). For example, Mahajan's Figure 3 shows

an API for translating between commands received at a server (**blue**) to a client (**red**):

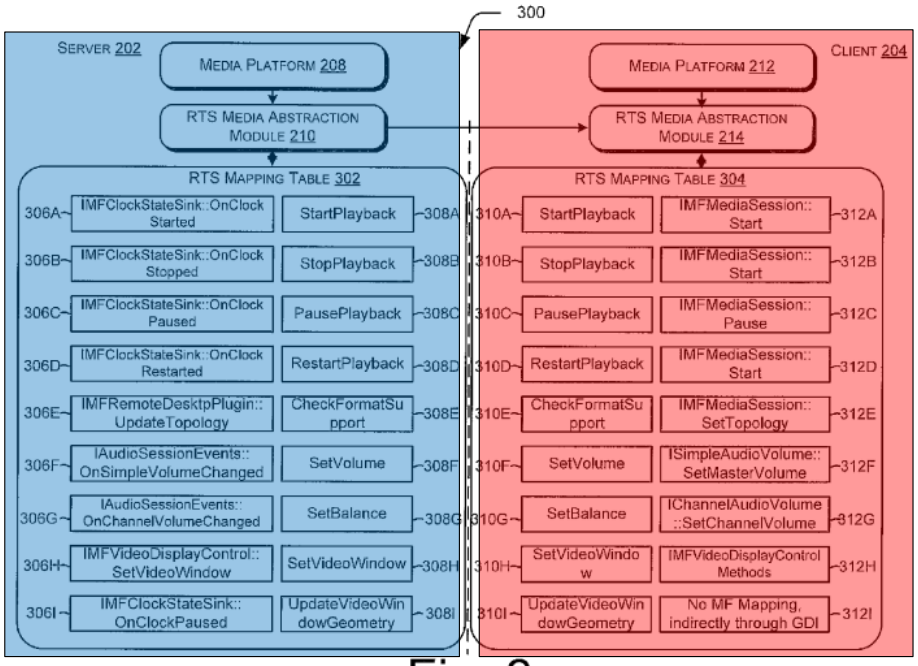
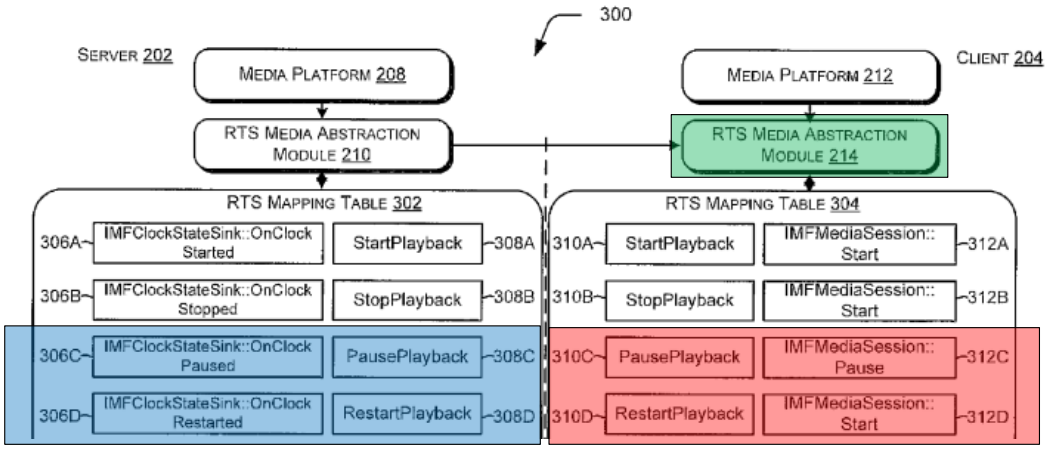


Fig. 3

Ex. 1114, Fig. 3 (annotated)

262. The disclosed API has commands including, for example, to "pause" or "restart" content on a remote media application command (e.g., a Media Foundation platform command "IMFClockStateSink::OnClockPaused") or a first type of media application command (e.g., the corresponding DShow platform command "IMFMediaSession::Pause"). Ex. 1114, [0037]-[0043], Fig. 3. The RTS Media Abstraction module of the client (an API converter, **green**) converts the commands received by the client (**red**) from the server (**blue**). Ex. 1114, [0037]-[0043], [0063], Fig. 3, Fig. 5.



Ex. 1114, Fig. 3 (annotated)

263. In my opinion, a POSITA would have understood that the RTS Media Abstraction Module is a software intermediary that converts commands from one interface (e.g., a genericized interface) into another (e.g., the interface of the first type of media playback application).

264. Furthermore, it would have been obvious to a POSITA that the RTS Media Abstraction Module could be located on the client, server, or on an intermediary device. Mahajan describes the system as operating using a "collaboration media abstraction layer 130" that is responsible for translating commands. Ex. 1114, [0022]-[0023]. Mahajan further states that the distribution manager 418 and multimedia component 446, which include the RTS Media Abstraction modules, can make use of a "virtual channel connection" as part of a "distributed topology." Ex. 1114, [0051]. Based on Mahajan's disclosure that the

system can operate in a distributed environment, it would have been obvious to a POSITA that one or more RTS Media Abstraction Modules could operate at a server, such as in Service Provider Network 103. Ex. 1114, [0018], [0058], [0078].

265. These commands "may be specific to events associated with the playback of media files" such as "when a media file is accessed for playback by one or more users at the client." Ex. 1114, [0037]. In this way, messages containing the commands, which are particular to the media content playing on the type of media playing application of the server, are "the first message being received based at least in part on the stored association and on a second message including at least one command in a second format."

266. In my opinion, based on the teachings of Mahajan, a POSITA would have been motivated to implement Aldrey's system, including an end terminal that sends commands to a STB, using known techniques for sending commands for media playback between a server and a client, as taught by Mahajan. Mahajan, like Aldrey, teaches a system in which a user can command media on a controlled device. Ex. 1114, [0014]; Ex. 1115, [0020], [0025], [0029]-[0030]. In my opinion, a POSITA would have understood that Mahajan's server-command teachings could be implemented on Aldrey's end terminal remote control, particularly because both disclosures reference those respective devices being a mobile phone. Ex. 1115, [0026]; Ex. 1114, [0017]. Also, a POSITA would have been motivated to apply

Mahajan's disclosures of command conversion because a POSITA would have understood that from reading Aldrey that Aldrey's end terminal, which may be a portable device such as a cell phone, would likely employ different applications than Aldrey's STB. Ex. 1115, [0023]-[0026].

267. Combining Mahajan with Aldrey would have been nothing more than applying a known technique (Mahajan's system for sending commands) to a known device (Aldrey's web-based UI control system) ready for improvement to yield predictable results (Aldrey's end terminal would translate commands associated with a first type of media playing application to a command associated with a second type of media playing application on a STB). Mahajan and Aldrey teach similar systems in which commands are sent from a remote device to control media playback on another device.

268. Additionally, a POSITA would have had the skills and knowledge to implement support for sending commands to different devices in Aldrey's system by incorporating into Mahajan the ability for an end terminal to translate commands from those associated with a first type of media player application to another type of command such that they can be understood by a STB, as taught by Mahajan. The improvements described in Mahajan are directed to the context of a commonly encountered computing environment at the time. Ex. 1114, [0016]. Thus, a POSITA

would have expected success in applying Mahajan's teaching to the Aldrey system, which is similar to the Mahajan system.

269. Therefore, in my opinion, Aldrey and Aldrey-Mahajan teach limitation [1D].

e. [1E]: "selecting a first media player application from a plurality of media player applications based at least in part on the first format of the first message, the first media player application being selected to play a first piece of content referenced in the received first message; and"

270. In my opinion, Aldrey teaches limitation [1E].

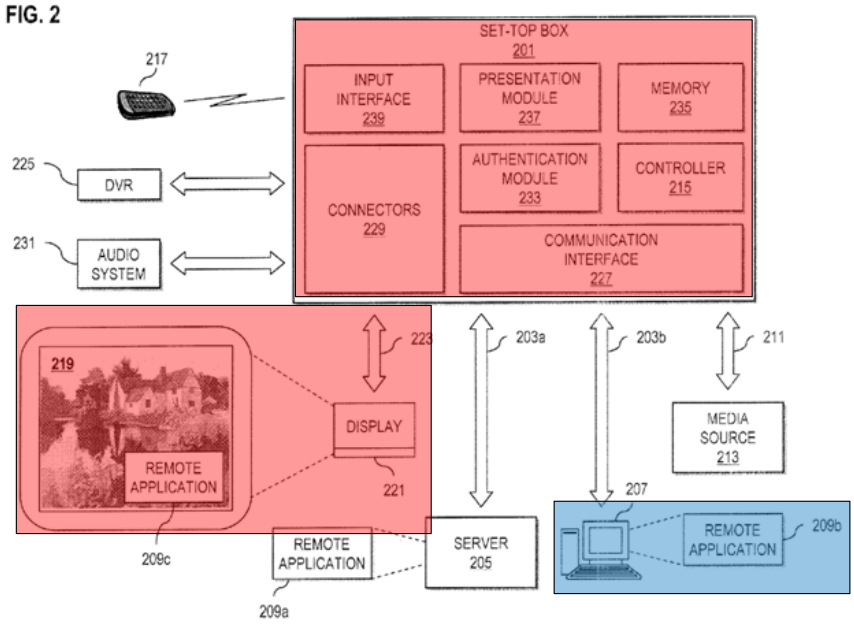
271. As I previously described above for limitation [1D], Aldrey teaches receiving a set of commands. Aldrey further teaches that, when receiving data streams, "the data streams may include content received in response to user commands specifying: broadcast channels to be made available, a list of media content to be recorded, an on-demand program (e.g., VOD, AOD, etc.) to be received, or other content available over a data network to be retrieved, such as content from an audio and/or video sharing site." Ex. 1115, [0053]. In my opinion, a POSITA would have understood this disclosure in Aldrey to teach that the command specifies a media player application and a particular piece of content associated with a particular type of media player application, and that the corresponding type of media player application should therefore be selected in response to the command.

272. Thus, in my opinion, Aldrey teaches [1E].

f. [1F]: "controlling how the selected first media player application plays the referenced first piece of content based on a first command of the at least one command in the first format having been included in the received first message."

273. In my opinion, Aldrey teaches the elements of limitation [1F].

274. Aldrey teaches that the messages control a STB to play media. Ex. 1115, [0020], [0025], [0029]-[0030]. For example, Aldrey describes that "Presentation of the media content may be in response to a command received from one or more remote applications *209a-209c* and include: displaying, recording, playing, rewinding, forwarding, toggling, selecting, zooming, or any other processing technique that enables users to experience media content." Ex. 1115, [0042]-[0050], Fig. 2. Aldrey shows an example of the STB 201 (**red**) displaying content on a display 221 in response to commands from a remote application running on an end terminal 207 (**blue**). "Thus, under arrangements of FIGS. 1 and 2, a user may, in real-time, remotely control and/or configure one or more STBs (e.g., STBs 101*a*-101*n*), as well as establish and/or modify a user profile or other subscription service, from any location have connectivity to system 100, via an STB (e.g., 101*n*), end terminal 107, or server 105 application, at any given point in time." Ex. 1115, [0061].



Ex. 1115, Fig. 2 (annotated)

275. Therefore, in my opinion, Aldrey teaches limitation [1F].

9.2.2 Dependent Claim 2: "The non-transitory computer storage medium of claim 1, wherein each command of the at least one command in the second format is a universal command."

276. In my opinion, Aldrey in view of Mahajan teaches all of the elements of claim 2.

277. As discussed above for limitation [1D], Aldrey-Mahajan describes a system in which commands are translated into a universal format for transmission to a client device. Ex. 1114, [0037]-[0043], [0063], Fig. 3, Fig. 5. The commands are in a universal format because the devices do not need to be aware of all possible media platforms, and can instead convert genericized commands into platform-

specific commands as appropriate. Ex. 1114, [0042]. The genericized commands are converted via the RTS media abstraction module of the server before being sent from the server's platform-specific media command (which the client may not be able to understand) to a genericized media command (which the client can receive and recognize).

278. Therefore it is my opinion that Aldrey-Mahajan teaches claim 2.

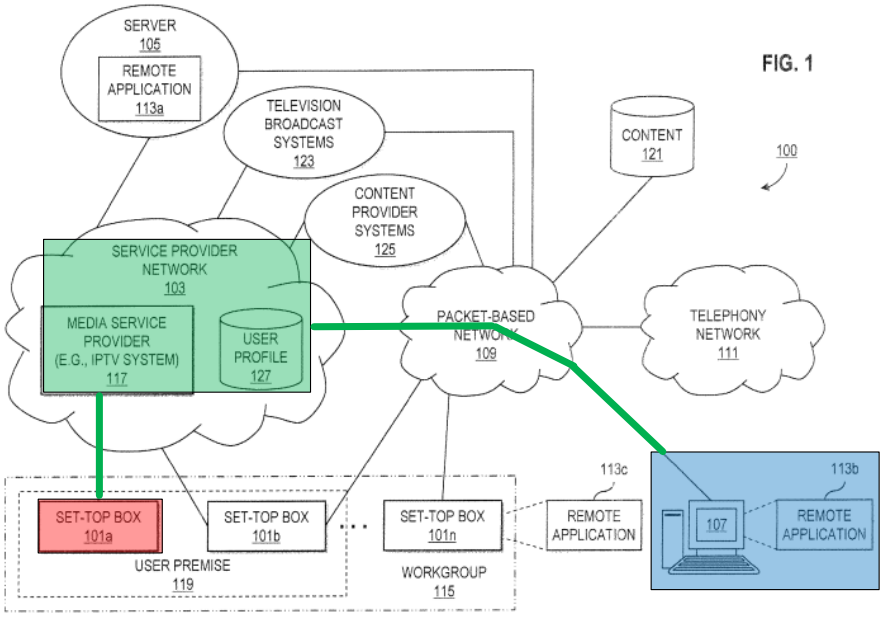
9.2.3 Dependent Claim 3: "The non-transitory computer storage medium of claim 2, wherein the first format is different than the second format."

279. As discussed above in Section 9.2.1.d, it would have been obvious to a POSITA that one or more RTS Media Abstraction Modules could operate at a server, such as in Service Provider Network 103. Ex. 1114, [0018], [0022], [0023], [0037]-[0043], [0058], [0063], [0078]; Ex. 1115, [0018]-[0023], [0025]-[0026], [0029]-[0030]. And in my opinion, a POSITA would have been motivated to apply Mahajan's teachings of command conversion because a POSITA would have understood that Aldrey's end terminal, which may be a portable device such as a cell phone, would likely employ different applications than Aldrey's STB. Ex. 1115, [0023]-[0026]. Thus, the message formatted for an application on the portable device is in the second format, and the message formatted for an application on the STB is in the first format different from the second format.

280. Therefore, it is my opinion that Aldrey-Mahajan teaches claim 3.

9.2.4 Dependent Claim 4: "The non-transitory computer storage medium of claim 1, wherein the second message is sent from the associated second computing device to the remote server device."

281. As discussed above regarding limitation [1D], Aldrey teaches a STB 101 (**red**) receiving commands from a remote application running on an end terminal 107 (**blue**). Ex. 1115, [0018]-[0023], [0025]-[0026], Fig. 1. Aldrey further teaches that "connections [**green**] between the STBs 101*a*-101*n* and the end terminal(s) 107 may be established directly or through server 105 and/or MSP 117." Ex. 1115, [0039], [0025], [0035]-[0036], [0048].

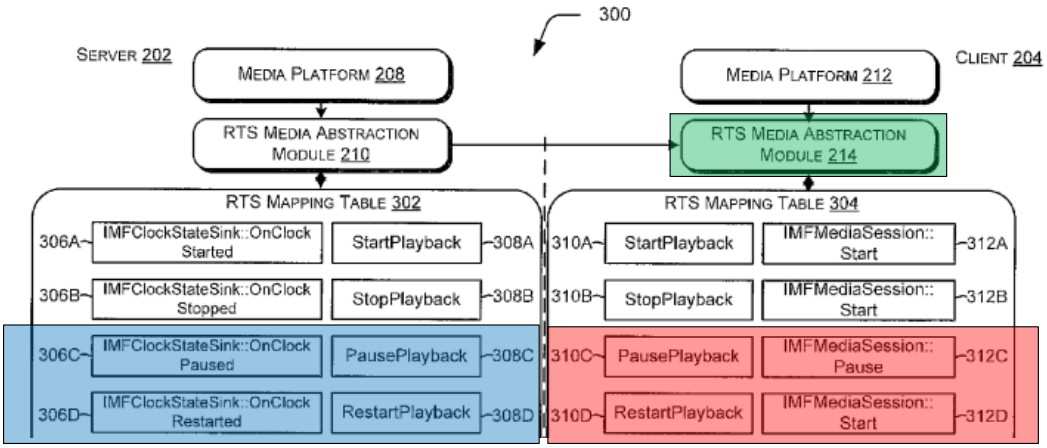


Ex. 1115, Fig. 1 (annotated)

282. Therefore, in my opinion Aldrey-Mahajan teaches claim 4.

9.2.5 Dependent Claim 5: "The non-transitory computer storage medium of claim 1, wherein the remote server device is configured to convert the at least one command in the second format into the at least one command in the first format based at least in part on the second message including therein a reference to the first piece of content."

283. My opinion is that Aldrey in view of Mahajan teaches claim 5. Mahajan shows that the client's RTS Media Abstraction module (an API converter, **green**) converts the commands received by the client (**red**) from the server (**blue**). Ex. 1114, [0037]-[0043], [0063], Fig. 3, Fig. 5.



Ex. 1114, Fig. 3 (annotated)

284. Based on this disclosure, a POSITA would have understood that the described RTS Media Abstraction Module is a software intermediary that provides converts commands from one interface, such as a genericized interface, into another interface, such as the interface of the first type of media playback application.

285. These commands "may be specific to events associated with the playback of media files" such as "when a media file is accessed for playback by one or more users at the client." Ex. 1114, [0037]. In this way, messages containing the commands, which are particular to the media content playing on the type of media playing application of the server, are converted "based at least in part on the second message including therein a reference to the first piece of content."

286. Therefore, it is my opinion that Aldrey-Mahajan teaches claim 5.

9.2.6 Dependent Claim 6: "The non-transitory computer storage medium of claim 1, wherein the remote server device is configured to convert the at least one command in the second format into the at least one command in the first format based at least in part on a reference to the first media player application having been included in the second message."

287. As I discussed above for limitation [1E], Aldrey in view of Mahajan teaches that the system selects the first type of media playing application from the plurality of media playing application types based on the data source and the capabilities of the client, as taught by Mahajan. Ex. 1114, [0050]. Mahajan teaches, as an example, "that the server 402 determines the sources media format to be MPEG IV" and then the "server's RTS media abstraction module 420 can query whether the client, such as the client 404, supports the MPEG IV media format." Ex. 1114, [0050]. The client then utilizes information from the server to determine the answer, and, "the client 404 may determine that it has a media platform, such as media platform 408 that supports the media format." Ex. 1114, [0050].

288. Therefore, in my opinion, Aldrey-Mahajan teaches claim 6.

9.2.7 Dependent Claim 7: "The non-transitory computer storage medium of claim 1, wherein the first media player application is selected based at least in part on the received first message including therein a reference to the first media player application."

289. As I discussed above for limitation [1E], Aldrey in view of Mahajan teaches that the system selects the first type of media playing application from the plurality of media playing application types based on the data source and the capabilities of the client, as taught by Mahajan. Ex. 1114, [0050].

290. Therefore, it is my opinion that Aldrey-Mahajan teaches claim 7.

9.2.8 Dependent Claim 8: "The non-transitory computer storage medium of claim 1, wherein controlling how the selected first media player application plays the referenced first piece of content includes an execution of the first command."

291. As I discussed above for limitation [1F], Aldrey teaches controlling media player software and associated hardware in response to commands. Ex. 1115, [0020], [0025], [0029]-[0030], [0042]-[0050]. And in view of Mahajan, those commands include commands for the first type of media playing application that are executed by the receiving device. Ex. 1114, [0014], [0021]-[0022], [0037]-[0040], [0047]-[0050], [0053], [0063].

292. Therefore, it is my opinion that Aldrey-Mahajan teaches claim 8.

9.2.9 Dependent Claim 9: "The non-transitory computer storage medium of claim 1, the operations further comprising: retrieving the first media player application from a remote content provider based on

a determination that the first media player application is not already selected."

293. In Aldrey's disclosure, the system may retrieve content from an external source in response to commands. Ex. 1115, [0053]. Also, Aldrey discloses that applications, which could be media players, and associated information may be accessed by a STB or end-terminal based on user profile information stored on servers. Ex. 1115, [0058], [0060]. This includes subscription information for subscription services. Ex. 1115, [0058]. Also, it would have been obvious to a POSITA that the new media player could be retrieved from the provider of the content. For example, it was well known that providers of media players frequently provide sample content to test or demonstrate the capabilities of their media players. Also, it was well known that different media providers use/require different and sometimes proprietary media players. It was well known that in addition to the content, these media providers provide their media player every time a content request is made.

294. Therefore, in my opinion, Aldrey-Mahajan teaches claim 9.

9.2.10 Dependent Claim 10: "The non-transitory computer storage medium of claim 9, wherein the remote content provider is associated with the referenced first piece of content."

295. As I discussed above for claim 9, Aldrey discloses retrieving a new media player application. Aldrey also teaches that the content may be from "an audio and/or video sharing site." Ex. 1115, [0053].

296. Therefore, in my opinion Aldrey-Mahajan teaches claim 10.

9.2.11 Dependent Claim 11

a. [11A]: "The non-transitory computer storage medium of claim 1, the operations further comprising:"

297. As discussed above in Section 9.2.1, Aldrey-Mahajan teaches the limitations of claim 1.

b. [11B]: "based on the stored association and while the first media player application is selected, receiving, from the remote server device, a third message that includes at least one command in a third format, wherein the third message is received based at least in part on a fourth message including at least one other command in the second format having been sent from the associated second computing device; and"

298. Aldrey teaches that devices join sessions, and that those devices in a session can send multiple messages and commands on an ongoing basis. Ex. 1115, [0019]. Upon authenticating with an authentication model, a session for controlling a STB may be instigated. Ex. 1115, [0039]. Given this disclosure, a POSITA would have understood that the remote control may send an additional (e.g., "fourth") message would in the same format as an earlier (e.g., "second") message. Ex. 1114, [0018], [0058], [0078]; *see* 9.2.1.d and 9.2.3.

299. Therefore, it is my opinion that Aldrey-Mahajan teaches limitation [11B].

c. [11C]: "selecting a second media player application from the plurality of media player applications based at least in part on the third format of the third message, the second media player application being selected to play a second piece of content referenced in the third message."

300. As discussed above for limitation [1E], Aldrey-Mahajan teaches selecting a media player application from a plurality of media player applications. *See* 9.2.1.e. A POSITA would have understood that a "second media player" could be selected based on the command and information in the "third message" just as the first media player was selected based on information in the first message.

301. Therefore, in my opinion, Aldrey-Mahajan teaches limitation [11C].

9.2.12 Independent Claim 12

a. [12A]: "A computer-implemented method for remotely presenting various types of content, comprising:"

302. Again, although I have been informed that the preamble is not limiting, it is my opinion that Aldrey teaches it for the reasons discussed above regarding limitation [1A]. *See* 9.2.1.a.

b. [12B]: "obtaining, by a content presentation device, a synchronization code associated with the content presentation device, wherein the associated synchronization code is stored on a remote server device;"

303. In my opinion, element [12B] is obvious for at least the same reasons as I discussed above for limitation [1B]. *See* 9.2.1.b.

c. [12C]: "providing, by the content presentation device, the synchronization code to a remote computing device in communication with the remote server device, wherein the provided synchronization code causes the remote server device to store an association between the content presentation device and the remote computing device;"

304. In my opinion, element [12C] is obvious for at least the same reasons as I discussed above for limitation [1C]. *See* 9.2.1.c.

d. [12D]: "receiving, by the content presentation device and from the remote server device, a first message that includes at least one command in a first format, the first message being received based at least in part on the stored association and on a second message including at least one command in a second format having been sent from the associated remote computing device;"

305. In my opinion, element [12D] is obvious for at least the same reasons as I discussed above for limitation [1D]. *See* 9.2.1.d.

e. [12E]: "selecting, by the content presentation device while a connection between the content presentation device and the remote server device is maintained, a first media player application from a plurality of media player applications based at least in part on the first format of the first message, the first media player application being selected to play a first piece of content referenced in the received first message; and"

306. In my opinion, element [12E] is obvious for at least the same reasons as discussed above for limitation [1E]. *See* 9.2.1.e.

f. [12F]: "controlling, by the content presentation device, how the selected first media player application plays the referenced first piece of content based on a first command of the at least one command in the first format having been included in the received first message."

307. In my opinion, element [12F] is obvious for at least the same reasons as discussed above for limitation [1F]. *See* 9.2.1.f.

9.2.13 Dependent Claim 13: "The computer-implemented method of claim 12, wherein the first media player application is selected based further in part on the received first message including therein a reference to the first media player application."

308. It is my opinion that claim 13 is rendered obvious by Aldrey-Mahajan for at least the reasons discussed above for claim 12, and also for the reasons discussed above for claim 7. *See* 9.2.7, 9.2.12.

9.2.14 Dependent Claim 14: "The computer-implemented method of claim 12, the operations further comprising: selecting the first media

player application based on a determination that a second media player application is currently selected."

309. It is also my opinion that claim 14 is rendered obvious by Aldrey-Mahajan for at least the reasons discussed above for claim 12, and also for the reasons discussed above for claim 9. *See* 9.2.9, 9.2.12.

9.2.15 Dependent Claim 15: "The computer-implemented method of claim 12, further comprising: retrieving, by the content presentation device, the selected first media player application from a remote content provider based on the first format of the first message."

310. Aldrey discloses that its system may retrieve content from an external source in response to commands. Ex. 1115, [0053]. Aldrey also discloses that applications and associated information may be accessed by a STB or end-terminal based on user profile information stored on servers. Ex. 1115, [0058], [0060]. This includes subscription information for subscription services. Ex. 1115, [0058]. Also, it would have been obvious to a POSITA that the new media player could be retrieved from the provider of the content. For example, it was well known that providers of media players frequently provide sample content to test or demonstrate the capabilities of their media players. Also, it was well known that different media providers use/require different and sometimes proprietary media players. It was well known that in addition to the content, these media providers provide their media player every time a content request is made. For example, web browsers at the time commonly utilized JAVA- or Flash-based players that were supplied in whole or

part when loading a page. Where the first format of the first message comprises an authenticated message with authenticated information, the selection of a media player application based on the authentication is "based on the first format of the first message."

311. Therefore, in my opinion, Aldrey-Mahajan teaches claim 15.

9.2.16 Dependent Claim 16: "The computer-implemented method of claim 12, wherein the remote server device is configured to convert the at least one command in the second format into the at least one command in the first format based at least in part on a reference to the first media player application having been included in the second message, and wherein the first media player application is selected based further on the at least one command in the first format having been converted from the second format."

312. In my opinion, Aldrey-Mahajan teaches the limitations of claim 16 for at least the reasons I discussed above for claim 6. *See* 9.2.6. Also, a POSITA would have understood that when converting commands, as taught by Mahajan, the selection of the media player application corresponds to the resulting command for that application, after having been converted from the second format into the first format.

313. Therefore, it is my opinion that Aldrey-Mahajan teaches claim 16.

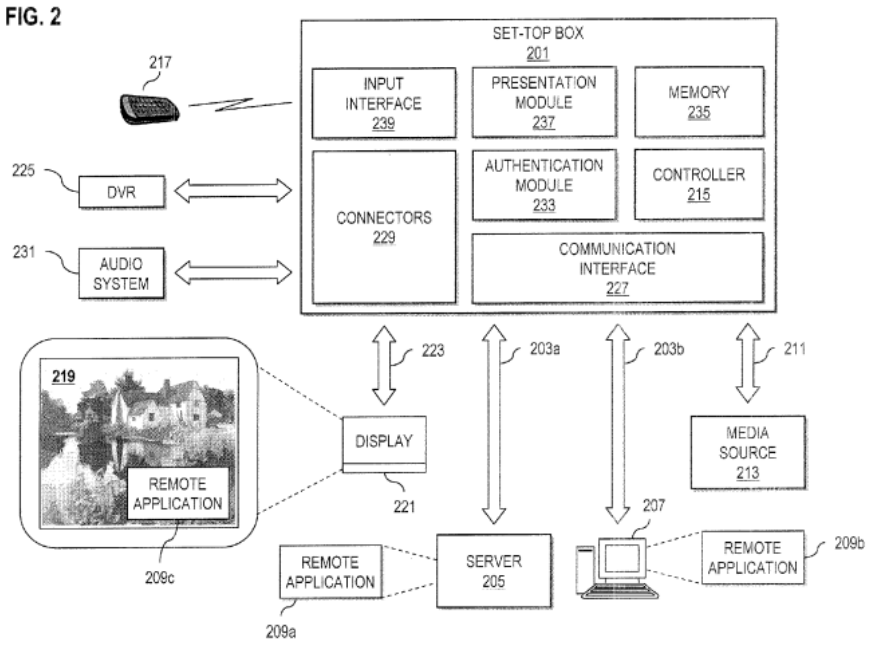
9.2.17 Independent Claim 17

a. [17A]: "A content presentation device comprising:"

314. Again, I have been informed that preambles are not limiting. That aside, my opinion is that Aldrey teaches it for the reasons discussed above for limitation [1A]. *See* 9.2.1.a.

b. [17B]: "a display;"

315. Aldrey discloses that the STB has an associated display. Ex. 1115, [0044]-[0047], Fig. 2.



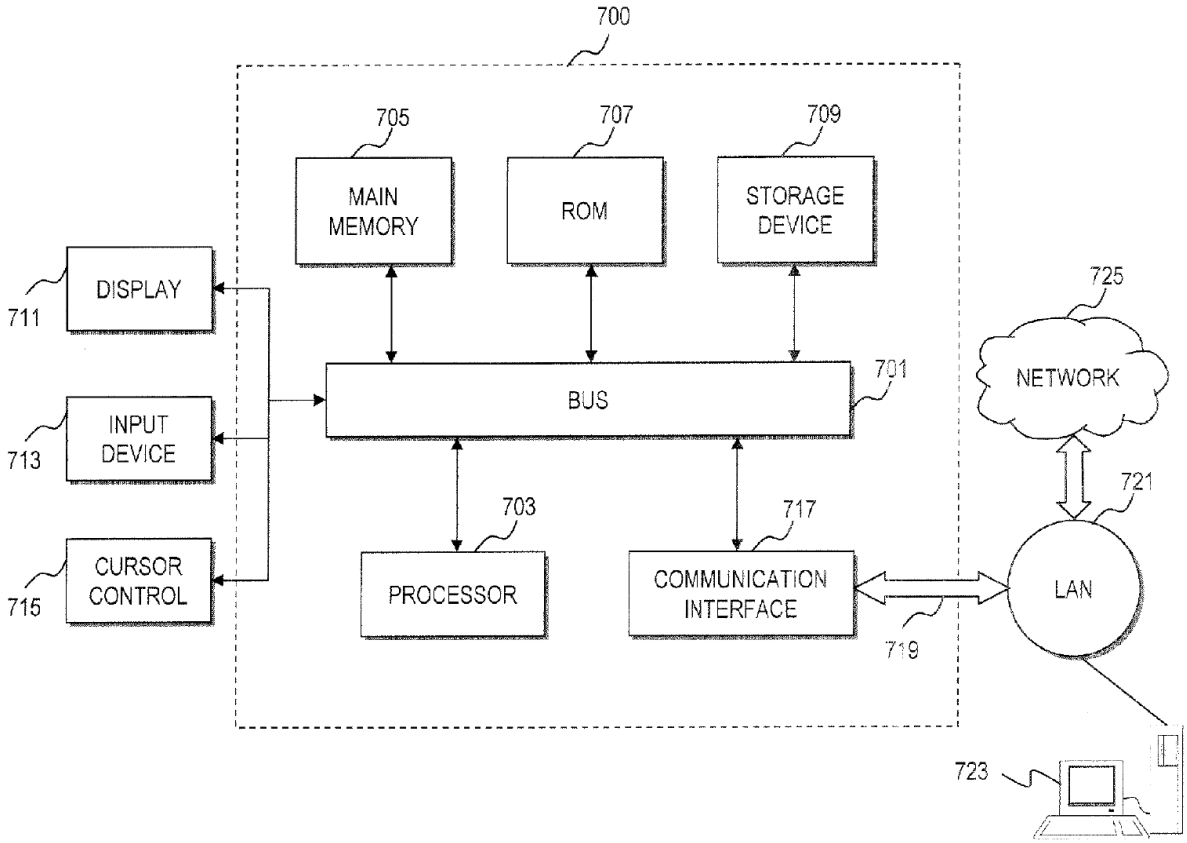
Ex. 1115, Fig. 2

316. Thus, Aldrey teaches limitation [17B].

c. [17C]: "at least one processor; and"

317. Aldrey teaches that the STB 201 ("content presentation device") may comprise computing hardware with a processor that executes instructions in memory, and this would also have been understood by a POSITA. Ex. 1115, [0043], [0088]-[0096], Fig. 7.

FIG. 7



Ex. 1115, Fig. 7

318. Therefore, it is my opinion that Aldrey teaches limitation [17C].

d. [17D]: "at least one computer storage media storing computer-usable instructions that, when used by the at least one processor, cause the at least one processor to:"

319. Aldrey teaches that the STB 201 ("content presentation device") may comprise computing hardware with a processor that executes usable instructions, and this would be understood by a POSITA. Ex. 1115, [0043], [0088]-[0096], Fig. 7.

320. Therefore, in my opinion, Aldrey teaches limitation [17D].

e. [17E]: "obtain a synchronization code associated with the content presentation device, wherein the associated synchronization code is stored on a remote server device;"

321. In my opinion, element [17E] is obvious for at least the same reasons as I discussed above for limitation [1B]. *See* 9.2.1.b.

f. [17F]: "provide the synchronization code to a remote computing device in communication with the remote server device, wherein the provided synchronization code causes the remote server device to store an association between the content presentation device and the remote computing device;"

322. In my opinion, element [17F] is obvious for at least the same reasons as discussed above for limitation [1C]. *See* 9.2.1.c.

g. [17G]: "receive, from the remote server device, a first message that includes at least one command in a first format, the first message being received based on the stored association and on a second message in the second format sent from the associated remote computing device;"

323. In my opinion, element [17G] is obvious for at least the same reasons as I discussed above for limitation [1D]. *See* 9.2.1.d.

h. [17H]: "select a first media player application from a plurality of media player applications based on the first format of the first message, the first media player application being selected to play a first piece of content referenced in the received first message; and"

324. In my opinion, element [17H] is obvious for at least the same reasons as discussed above for limitation [1E]. *See* 9.2.1.e.

i. [17I]: "control how the selected first media player application plays the referenced first piece of content based on a first command of the at least one command in the first format having been included in the received first message."

325. In my opinion, element [17I] is obvious for at least the same reasons as discussed above for [1F]. *See* 9.2.1.f.

9.2.18 Dependent Claim 18: "The content presentation device of claim 17, wherein the first media player application is configured to recognize each command of the at least one command in the first format."

326. In my opinion, Aldrey in view of Mahajan teaches the elements of claim 18.

327. Aldrey teaches that control commands received by the controlled device are understood by that device to take appropriate action, such as to "play" or "stop" the content. Ex. 1115, [0055], [0056]. In view of Mahajan, and as described above in Section 9.2.1.d, a POSITA would understand that those commands would be received in a genericized form, which would be recognizable by the first type of media player application upon processing by the abstraction layer of the receiving device. Ex. 1114, [0014], [0022]-[0024], [0037]-[0040], Fig. 2.

328. Therefore, Aldrey-Mahajan teaches claim 18.

9.2.19 Dependent Claim 19: "The content presentation device of claim 17, wherein the second message is sent from the associated second computing device to the remote server device."

329. In my opinion, claim 19 is rendered obvious by Aldrey-Mahajan for at least the reasons discussed above for claim 17, and also for the reasons discussed above for claim 4. *See* 9.2.17, 9.2.4.

9.2.20 Dependent Claim 20: "The content presentation device of claim 18, wherein the first media player application is selected based further on the received first message including therein a reference to the first media player application."

330. In my opinion, claim 20 is rendered obvious by Aldrey-Mahajan for at least the reasons I discussed above for claim 17, and also for the reasons discussed above for claim 7. *See* 9.2.17, 9.2.7.

10. CONCLUSION

331. All of the statements made in this declaration of my own knowledge are true. All statements made based on information and belief are believed to be true. I declare under penalty of perjury that the foregoing is true and correct.

Dated: 12/20/2023 By: David B. Lett

David B. Lett

CLAIM LISTING APPENDIX

U.S. Pat. No. 11,048,751

Designation	Claim Language
Claim 1	
[1A]	1. A non-transitory computer storage medium storing computer-useable instructions that, when used by a first computing device, cause the first computing device to perform operations comprising:
[1B]	obtaining a synchronization code associated with the first computing device, wherein the associated synchronization code is stored on a remote server device;
[1C]	providing the synchronization code to a second computing device in communication with the remote server device, wherein the provided synchronization code causes the remote server device to store an association between the first computing device and the second computing device;
[1D]	receiving, from the remote server device, a first message that includes at least one command in a first format, the first message being received based at least in part on the stored association and on a second message including at least one command in a second format having been sent from the associated second computing device;
[1E]	selecting a first media player application from a plurality of media player applications based at least in part on the first format of the first message, the first media player application being selected to play a first piece of content referenced in the received first message; and
[1F]	controlling how the selected first media player application plays the referenced first piece of content based on a first command of the at least one command in the first format having been included in the received first message.
Claim 2	
2	2. The non-transitory computer storage medium of claim 1, wherein each command of the at least one command in the second format is a universal command.
Claim 3	

Designation	Claim Language
3	3. The non-transitory computer storage medium of claim 2, wherein the first format is different than the second format.
Claim 4	
4	4. The non-transitory computer storage medium of claim 1, wherein the second message is sent from the associated second computing device to the remote server device.
Claim 5	
5	5. The non-transitory computer storage medium of claim 1, wherein the remote server device is configured to convert the at least one command in the second format into the at least one command in the first format based at least in part on the second message including therein a reference to the first piece of content.
Claim 6	
6	6. The non-transitory computer storage medium of claim 1, wherein the remote server device is configured to convert the at least one command in the second format into the at least one command in the first format based at least in part on a reference to the first media player application having been included in the second message.
Claim 7	
7	7. The non-transitory computer storage medium of claim 1, wherein the first media player application is selected based at least in part on the received first message including therein a reference to the first media player application.
Claim 8	
8	8. The non-transitory computer storage medium of claim 1, wherein controlling how the selected first media player application plays the referenced first piece of content includes an execution of the first command.
Claim 9	
9	9. The non-transitory computer storage medium of claim 1, the operations further comprising: retrieving the first media player application from a remote content provider based on a determination that the first media player application is not already selected.
Claim 10	

Designation	Claim Language
10	10. The non-transitory computer storage medium of claim 9, wherein the remote content provider is associated with the referenced first piece of content.
Claim 11	
[11A]	11. The non-transitory computer storage medium of claim 1, the operations further comprising:
[11B]	based on the stored association and while the first media player application is selected, receiving, from the remote server device, a third message that includes at least one command in a third format, wherein the third message is received based at least in part on a fourth message including at least one other command in the second format having been sent from the associated second computing device; and
[11C]	selecting a second media player application from the plurality of media player applications based at least in part on the third format of the third message, the second media player application being selected to play a second piece of content referenced in the third message.
Claim 12	
[12A]	12. A computer-implemented method for remotely presenting various types of content, comprising:
[12B]	obtaining, by a content presentation device, a synchronization code associated with the content presentation device, wherein the associated synchronization code is stored on a remote server device;
[12C]	providing, by the content presentation device, the synchronization code to a remote computing device in communication with the remote server device, wherein the provided synchronization code causes the remote server device to store an association between the content presentation device and the remote computing device;
[12D]	receiving, by the content presentation device and from the remote server device, a first message that includes at least one command in a first format, the first message being received based at least in part on the stored association and on a second message including at least one command in a

Designation	Claim Language
	second format having been sent from the associated remote computing device;
[12E]	selecting, by the content presentation device while a connection between the content presentation device and the remote server device is maintained, a first media player application from a plurality of media player applications based at least in part on the first format of the first message, the first media player application being selected to play a first piece of content referenced in the received first message; and
[12F]	controlling, by the content presentation device, how the selected first media player application plays the referenced first piece of content based on a first command of the at least one command in the first format having been included in the received first message.
Claim 13	
13	13. The computer-implemented method of claim 12, wherein the first media player application is selected based further in part on the received first message including therein a reference to the first media player application.
Claim 14	
14	14. The computer-implemented method of claim 12, the operations further comprising: selecting the first media player application based on a determination that a second media player application is currently selected.
Claim 15	
15	15. The computer-implemented method of claim 12, further comprising: retrieving, by the content presentation device, the selected first media player application from a remote content provider based on the first format of the first message.
Claim 16	
16	16. The computer-implemented method of claim 12, wherein the remote server device is configured to convert the at least one command in the second format into the at least one command in the first format based at least in part

Designation	Claim Language
	on a reference to the first media player application having been included in the second message, and wherein the first media player application is selected based further on the at least one command in the first format having been converted from the second format.
Claim 17	
[17A]	17. A content presentation device comprising:
[17B]	a display;
[17C]	at least one processor; and
[17D]	at least one computer storage media storing computer-usable instructions that, when used by the at least one processor, cause the at least one processor to:
[17E]	obtain a synchronization code associated with the content presentation device, wherein the associated synchronization code is stored on a remote server device;
[17F]	provide the synchronization code to a remote computing device in communication with the remote server device, wherein the provided synchronization code causes the remote server device to store an association between the content presentation device and the remote computing device;
[17G]	receive, from the remote server device, a first message that includes at least one command in a first format, the first message being received based on the stored association and on a second message in the second format sent from the associated remote computing device;
[17H]	select a first media player application from a plurality of media player applications based on the first format of the first message, the first media player application being selected to play a first piece of content referenced in the received first message; and
[17I]	control how the selected first media player application plays the referenced first piece of content based on a first command of the at least one command in the first format having been included in the received first message.
Claim 18	

Designation	Claim Language
18	18. The content presentation device of claim 17, wherein the first media player application is configured to recognize each command of the at least one command in the first format.
Claim 19	
19	19. The content presentation device of claim 17, wherein the second message is sent from the associated second computing device to the remote server device.
Claim 20	
20	20. The content presentation device of claim 18, wherein the first media player application is selected based further on the received first message including therein a reference to the first media player application.