

Sony Interactive Entertainment LLC v. Intellectual Pixels Limited

IPR2021-00237
Patent 10,681,109

Patent Owner Intellectual Pixels Limited
March 10, 2022

Asserted Grounds

Ground	Claims	Basis for Challenge
I	1, 3-12	Obvious over Wiltshire and Saha
II	2	Obvious over Wiltshire, Saha, and Chen
III	6, 11, 12	Obvious over Wiltshire, Saha, and PC Magazine (EX1007)

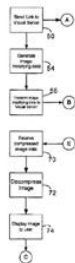
Petitioner's Invalidity Theories Fail

- No "compressing the at least one updated image" (claims 1, 8) (Ground I)
- No "server [that] transmits the updated image as a [compressed] frame" (claims 1, 8) (Ground I)
- No "mobile device" (claims 6, 11, 12) (Grounds I, III)
- No motivation to combine PC Magazine with Wiltshire and Saha (claims 6, 11, 12) (Ground III)
- No motivation to combine Chen with Wiltshire and Saha (claim 2) (Ground II)

No "Compressing The At Least One Updated Image"

 US010681109B2	
(12) United States Patent Kent et al.	(10) Patent No.: US 10,681,109 B2 (45) Date of Patent: *Jun. 9, 2020
(54) IMAGE DISPLAY SYSTEM WITH VISUAL SERVER	(58) Field of Classification Search CPC H04L 65/607; H04N 21/23412 See application file for complete search history.
(71) Applicant: Intellectual Pixels Limited, Surrey (GB)	(56) References Cited
(72) Inventors: Osman Kent, Surrey (GB); David R. Baldwin, Surrey (GB); Nicholas J. N. Murphy, Surrey (GB)	U.S. PATENT DOCUMENTS
(73) Assignee: INTELLECTUAL PIXELS LIMITED, Chertsey, Surrey (GB)	5,550,962 A 8/1996 Nakamura et al. 5,742,289 A 4/1998 Taylor et al. (Continued)
(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days. This patent is subject to a terminal disclaimer.	FOREIGN PATENT DOCUMENTS
(21) Appl. No.: 15/638,020	JP 10-015245 A 1/1998 JP 2000-022847 A 2/2000 WO 00/77739 A1 12/2000
(22) Filed: Jun. 29, 2017	OTHER PUBLICATIONS
(65) Prior Publication Data US 2017/0366599 A1 Dec. 21, 2017	"U.S. Appl. No. 10/037,688, Advisory Action dated May 10, 2007", 3 pgs. (Continued)
Related U.S. Application Data	Primary Examiner — Yves Dalencourt (74) Attorney, Agent, or Firm — Kwan & Olynyk LLP
(63) Continuation of application No. 14/192,789, filed on Feb. 27, 2014, now Pat. No. 9,699,238, which is a (Continued)	(57) ABSTRACT
(51) Int. Cl. G06F 15/16 (2006.01) H04L 29/08 (2006.01) (Continued)	An image display system with one or more client computers in selective communication with a visual server having image processing capabilities. The client computer generates image-modifying data corresponding to a generated image, and transmits the data to the visual server. The visual server receives the image-modifying data, generates a modified image based upon the image-modifying data, and transmits the modified image as compressed data to the client. The client decompresses the modified image data and displays the modified image. In the system, the visual server and client can provide a sequential display of modified frames on client to support animation with complex 3-dimensional graphics.
(52) U.S. Cl. H04L 67/00 (2013.01); A63F 13/12 (2013.01); A63F 13/25 (2014.09); G06T 9/00 (2013.01); (Continued)	

18 Claims, 4 Drawing Sheets



SONY 1001

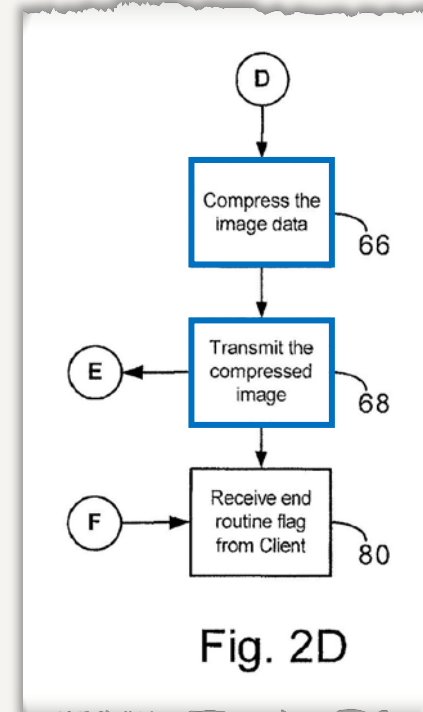
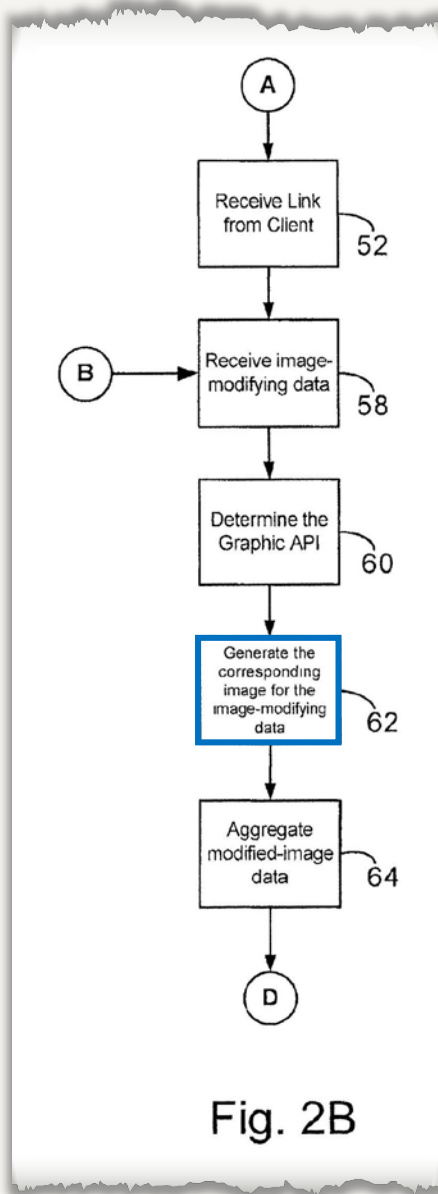
1. A method of hosting an interactive software application 55 comprising:
 running at a server the interactive software application;
 receiving at the server user input signals from a client device, wherein the user input signals are used to control updating of the state of the interactive software 60 application;
 generating at least one updated image at the server in response to updating the state of the interactive software application; and
 compressing the at least one updated image and transmitting the compressed updated image to the client device, 65 wherein the server transmits the updated image as a compressed frame that can be decompressed and displayed as an updated image at the client device.

EX1001, 9:55-10:2 (highlighting added)

8. An image display system, comprising:
 a server having a processor and memory configured to execute an interactive software application and further configured for:
 30 receiving at the server user input signals from a client device, wherein the user input signals are used to control updating the state of the interactive software application;
 35 generating at least one updated image at the server in response to updating the state of the interactive software application running on the server by the user input signals; and
 compressing the at least one updated image and transmitting the compressed updated image to the client device, 40 wherein the server transmits the updated image as a frame and wherein the client device is configured for decompressing of the compressed updated image and displaying the updated image on a display coupled to the client device.
 45

EX1001, 10:27-45 (highlighting added)

No "Compressing The At Least One Updated Image"



No “Compressing The At Least One Updated Image”

“[T]he sequential nature of the claim steps is apparent from the plain meaning of the claim language and nothing in the written description suggests otherwise.”

Mantech Envtl. Corp. v. Hudson Envtl. Servs., Inc.,
152 F.3d 1368, 1376 (Fed. Cir. 1998)

No “Compressing The At Least One Updated Image”

Petition for *Inter Partes* Review of U.S. Patent 10,681,109

DOCKET NO.: 2214362-00124US1

Filed on behalf of Sony Interactive Entertainment LLC

By: Joseph F. Haag, Reg. No. 42,612

Wilmer Cutler Pickering Hale and Dorr LLP

2600 El Camino Real, Suite 400

Palo Alto, CA 94306

Email: joseph.haag@wilmerhale.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Sony Interactive Entertainment LLC
Petitioner

v.

Intellectual Pixels Limited
Patent Owner

Case IPR2021-00237

**PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 10,681,109
UNDER 35 U.S.C. § 312 AND 37 C.F.R. § 42.104**

First, Wiltshire discloses “compressing the at least one updated image and transmitting the compressed updated image to the client device.” Wiltshire

Petition (Paper 3) at 27 (highlighting added)

No "Compressing The At Least One Updated Image"

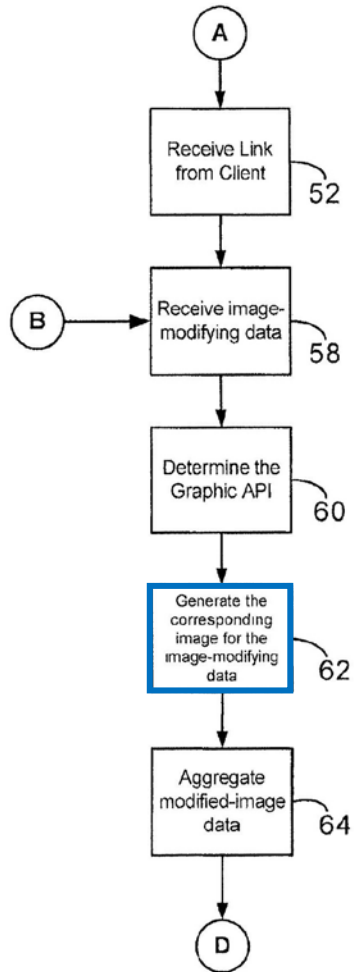


Fig. 2B

EX1001, Fig. 2B (annotated)

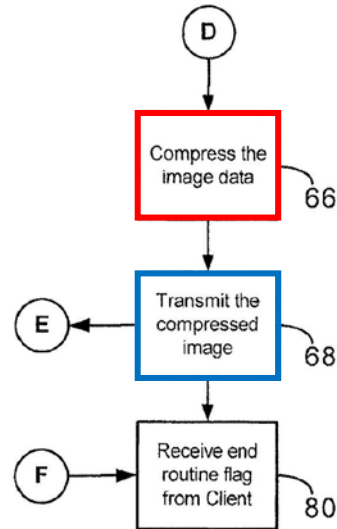


Fig. 2D

EX1001, Fig. 2D (annotated)

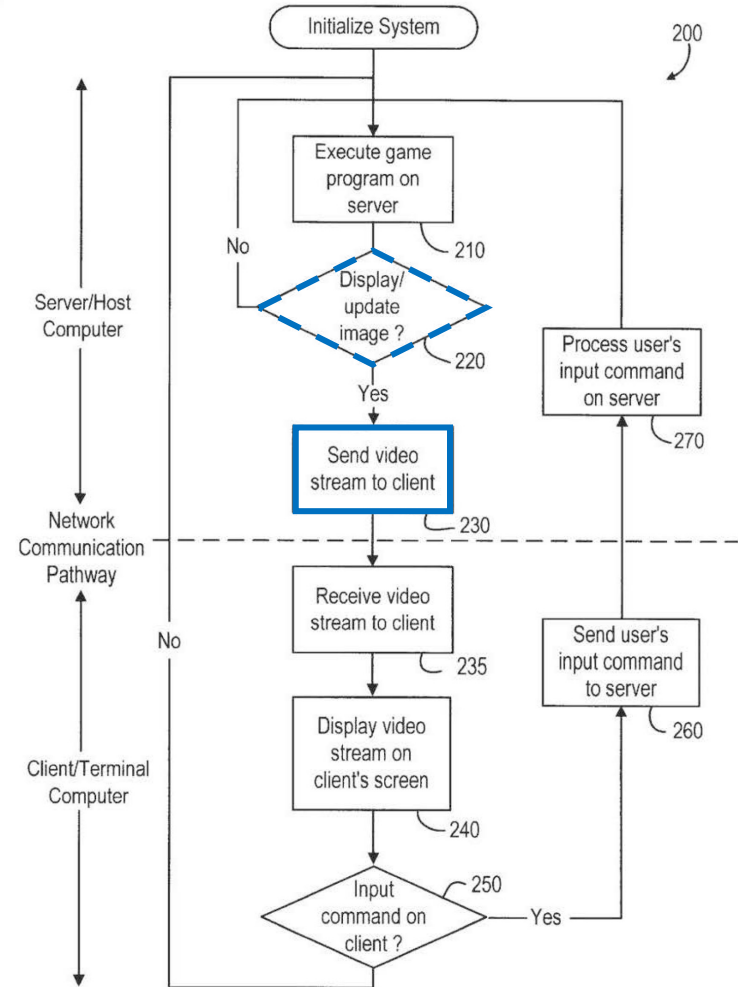


Fig. 2

Wiltshire - EX1004, Fig. 2 (annotated)

No "Compressing The At Least One Updated Image"

is executed on server/host computer 110 in stage 210. Stage 220 then determines whether an image is to be displayed on the screen of client/terminal computer 120, in which case operation 200 proceeds to stage 230. Otherwise, operation 200 proceeds to stage 250. In stage 230, an image is sent from server/host computer 110 to client/terminal computer 120. The image may include any type of graphical information including a bitmap, a JPEG file, a TIFF file or even an encoded audio/video stream such as a compressed video MPEG stream. The image is generated by game computer

Wiltshire - EX1004, 7:9-18 (highlighting added)

Moreover, in some embodiments, images for use by computer gaming system 100 are preloaded into a memory of client/terminal computers 120 to further reduce the amount of communication network bandwidth required.

Wiltshire - EX1004, 8:8-11 (highlighting added)

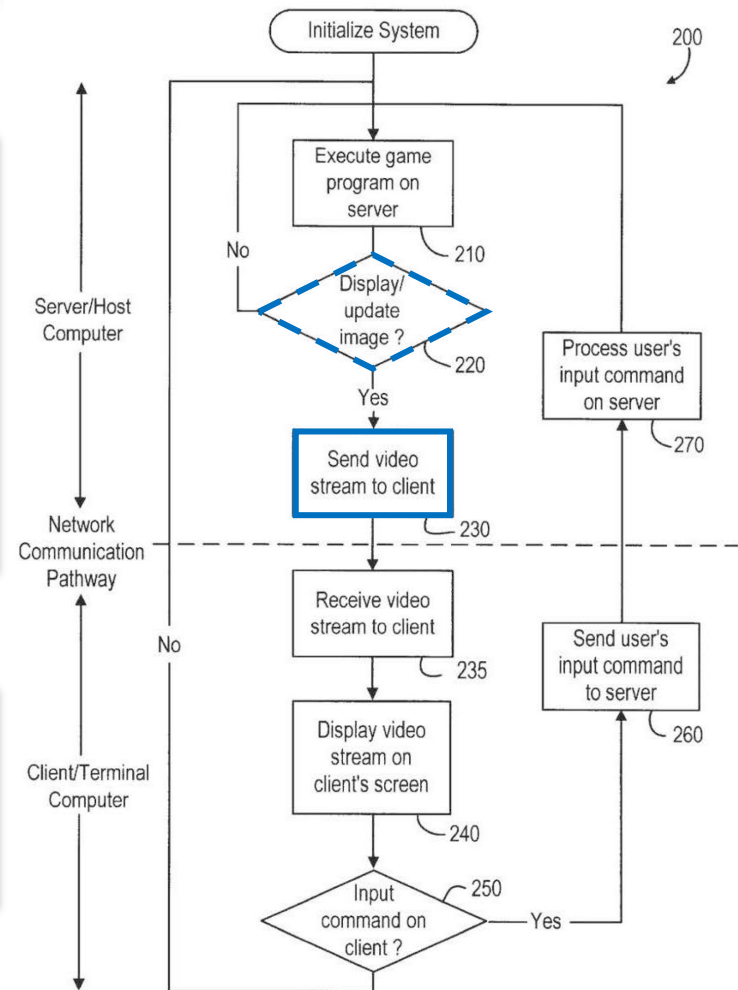
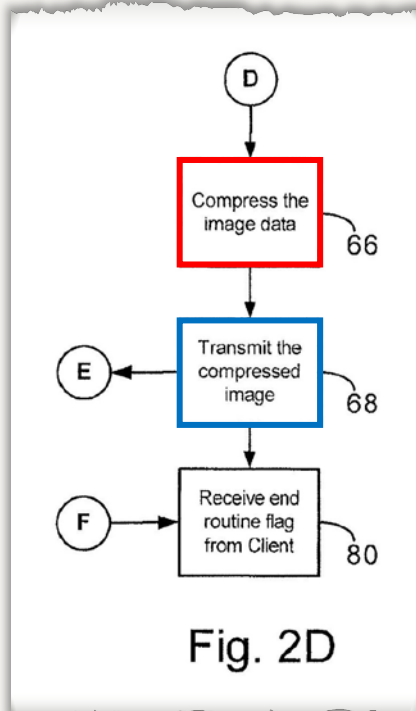
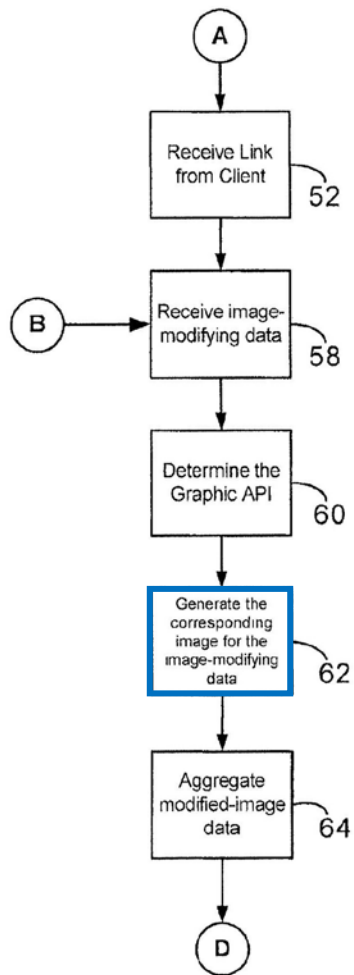


Fig. 2

Wiltshire - EX1004, Fig. 2 (annotated)

No "Compressing The At Least One Updated Image"



EX1001, Fig. 2D (annotated)

EX1001, Fig. 2B (annotated)

10 MB/s. This bandwidth requirement can be further reduced using data compression techniques to about 100 KB/sec.

Wiltshire - EX1004, 7:62-64

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(12) United States Patent Kent et al.

(10) Patent No.: US 10,681,109 B2
(45) Date of Patent: *Jun. 9, 2020

(54) IMAGE DISPLAY SYSTEM WITH VISUAL SERVER

(71) Applicant: Intellectual Pixels Limited, Surrey (GB)

(72) Inventors: Osman Kent, Surrey (GB); David R. Baldwin, Surrey (GB); Nicholas J. N. Murphy, Surrey (GB)

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(52) U.S. Cl. CPC 1104L 67/00 (2013.01); A63F 13/12 (2013.01); A63F 13/25 (2014.09); G06T 9/00 (2013.01); (Continued)



(58) Field of Classification Search
CPC 1104L 65/607; H04N 21/23412
See application file for complete search history.

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(Continued)

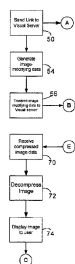
Primary Examiner — Yves Dalencourt

(74) Attorney, Agent, or Firm — Kwan & Olynyk LLP

(57) ABSTRACT

An image display system with one or more client computers in selective communication with a visual server having image processing capabilities. The client computer generates image-modifying data corresponding to a generated image, and transmits the data to the visual server. The visual server receives the image-modifying data, generates a modified image based upon the image-modifying data, and transmits the modified image as compressed data to the client. The client decompresses the modified image data and displays the modified image. In the system, the visual server and client can provide a sequential display of modified frames on client to support animation with complex 3-dimensional graphics.

18 Claims, 4 Drawing Sheets



SONY 1001

1. A method of hosting an interactive software application 55 comprising:

running at a server the interactive software application;
receiving at the server user input signals from a client device, wherein the user input signals are used to control updating of the state of the interactive software 60 application;

generating at least one updated image at the server in response to updating the state of the interactive software application; and

compressing the at least one updated image and transmitting the compressed updated image to the client device, wherein the server transmits the undated image as a compressed frame that can be decompressed and displayed as an updated image at the client device.

EX1001, 9:55-10:2 (highlighting added)

8. An image display system, comprising:
a server having a processor and memory configured to execute an interactive software application and further configured for:

receiving at the server user input signals from a client device, wherein the user input signals are used to control updating the state of the interactive software application;

generating at least one updated image at the server in response to updating the state of the interactive software application running on the server by the user input signals; and

compressing the at least one updated image and transmitting the compressed updated image to the client device, wherein the server transmits the updated image as a frame and wherein the client device is configured for decompressing of the compressed updated image and displaying the updated image on a display coupled to the client device.

EX1001, 10:27-45 (highlighting added)

No “Server [That] Transmits The Updated Image As A [Compressed] Frame”

Claim term	IPL’s position	Sony’s positions
frame	a single instance of the display	(1) picture (Petition); (2) represents a single instance in time of a video sequence or animation (Reply)

No “Server [That] Transmits The Updated Image As A [Compressed] Frame”

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SONY INTERACTIVE ENTERTAINMENT LLC,
Petitioner,

v.

INTELLECTUAL PIXELS LIMITED,
Patent Owner.

Case No. IPR2021-00237
U.S. Patent No. 10,681,109

DECLARATION OF DR. JOHN C. HART IN SUPPORT OF
PATENT OWNER'S RESPONSE TO PETITION FOR
INTER PARTES REVIEW

IPL EX20
Sony v. IPL - IPR2021-00237

the term “frame” in Claims 1 and 8 of the ’109 Patent also refers to the additional context of a “frame” representing the visual output of an interactive software application. *See, e.g.*, ’109 Patent at 9:62-64 (Claim 1: “generating at least one updated image at the server in response to updating the state of the interactive software application”), 10:35-38 (Claim 8: “generating at least one updated image at the server in response to updating the state of the interactive software application running on the server by the user input signals”). Thus, a POSITA would have understood the term “frame” as used in the ’109 Patent to mean something more than simply an “image” or a “picture.”

Hart Decl. – EX2009, ¶ 45 (highlighting added)

46. For example, the term “frame” would have been understood by a POSITA reading the claims in the context of the ’109 Patent specification to refer to the *entire* display and not a first portion of the display to be combined with a second portion of the display. The ’109 Patent Description of the Related Art discloses a specific example from the prior art where a first portion of the display is produced by a server and combined with a second portion of the display produced by the client.

Hart Decl. – EX2009, ¶ 46 (highlighting added)

No "Server [That] Transmits The Updated Image As A [Compressed] Frame"

(12) United States Patent Kent et al.

(10) Patent No.: **US 10,681,109 B2**
(45) Date of Patent: ***Jun. 9, 2020**

(54) **IMAGE DISPLAY SYSTEM WITH VISUAL SERVER**

(71) Applicant: **Intellectual Pixels Limited, Surrey (GB)**

(72) Inventors: **Osman Kent, Surrey (GB); David R. Baldwin, Surrey (GB); Nicholas J. N. Murphy, Surrey (GB)**

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(58) **Field of Classification Search**
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See application file for complete search history.

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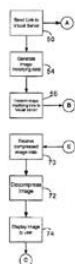
Primary Examiner — Yves Dalcourt

(74) Attorney, Agent, or Firm — Kwan & Olynick LLP

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18 Claims, 4 Drawing Sheets



SONY 1001

server functions primarily as a database server. For example, in a client-server method based on a hybrid image transmission and geometry transmission approach, the server unit maintains a low level-of-detail database and a high level of detail database. For each frame of a real-time image stream, images are generated from both the low level-of-detail and high level-of-detail database. The difference between the two images is computed using known methods of image processing. The client unit contains only a low level-of-detail geometric database and renders this database for each frame, and the difference image computed on the sever is compressed and transmitted to the client in real-time which decompresses and composites it together with the image generated by the client from the low level-of-detail database.

EX1001, 2:1-14 (highlighting added)

If the system 10 is displaying a series of images on the client 16, 18, 20, such as in multimedia animation, the visual server 12 transmits the modified image to the client 16, 18, 20 as a frame, and preferably but not necessarily, the client

EX1001, 6:63-66 (highlighting added)

No "Server [That] Transmits The Updated Image As A [Compressed] Frame"

US010681109B2

(12) United States Patent

Kent et al.

(10) Patent No.: US 10,681,109 B2

(45) Date of Patent: *Jun. 9, 2020

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Primary Examiner — Yves Dalencourt
(74) Attorney, Agent, or Firm — Kwan & Olynick LLP

18 Claims, 4 Drawing Sheets

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Block 996

Block 998

Block 1000

SONY 1001

“the visual server and client can provide a sequential *display of modified frames on client*”

EX1001, Abstract (emphasis added)

“The present invention further includes a method of displaying an image on a client”

EX1001, 4:17-32

“If the system 10 is *displaying a series of images on the client* ..., the visual server 12 transmits the modified image to the client 16,18,20 *as a frame*”

EX1001, 6:63-7:1 (emphases added)

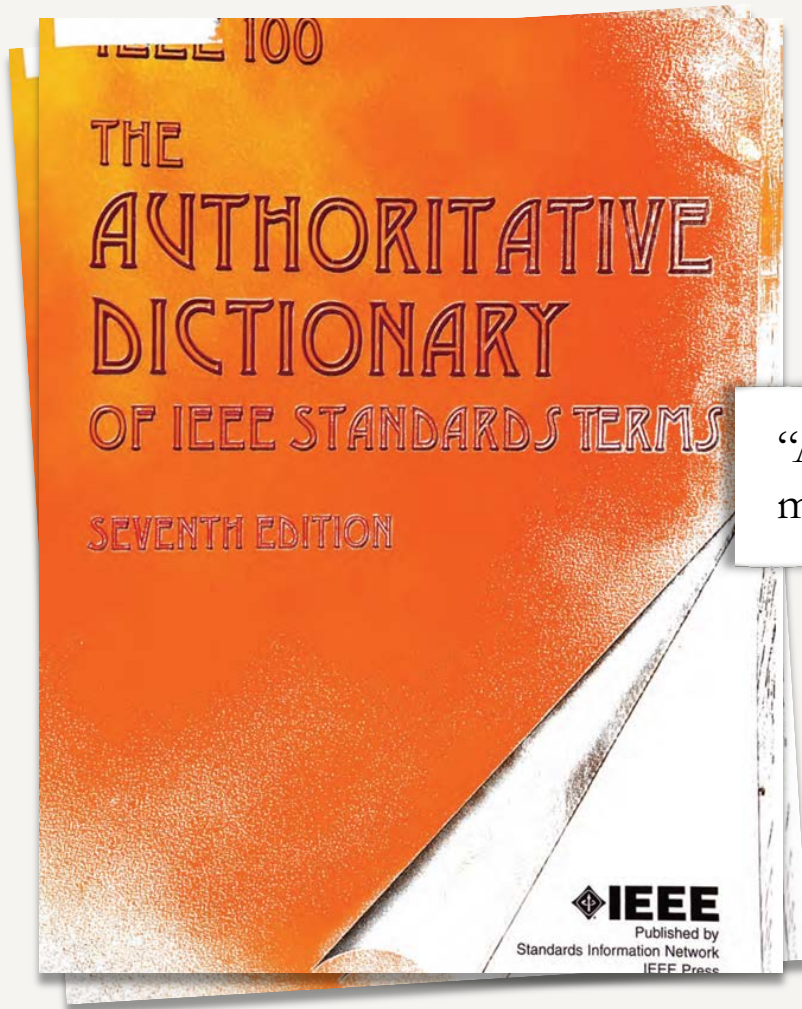
“... the client successfully received and *displayed the frame.*”

EX1001, 8:29-30 (emphasis added)

POR (Paper 17) at 12-15; Sur-Reply (Paper 26) at 4-5
Demonstrative Exhibit – Not Evidence

16

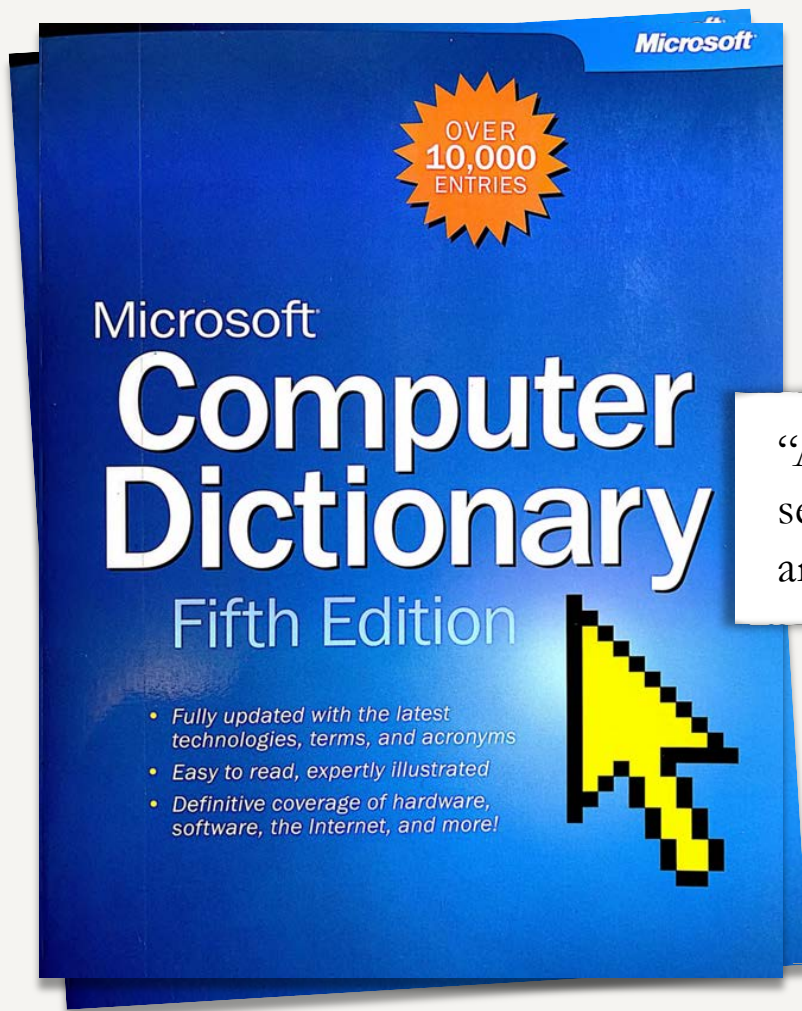
No “Server [That] Transmits The Updated Image As A [Compressed] Frame”



“A single display image analogous to a frame in a motion picture.”

IEEE Dictionary - EX2002, 3 (display frame)

No "Server [That] Transmits The Updated Image As A [Compressed] Frame"



"A single screen-sized image that can be displayed in sequence with other, slightly different, images to create animated drawings."

Microsoft Computer Dictionary - EX2003, 3

No "Server [That] Transmits The Updated Image As A [Compressed] Frame"

(12) United States Patent Yamada

(10) Patent No.: US 6,929,549 B1
(45) Date of Patent: Aug. 16, 2005

(54) GAME MACHINE SYSTEM WITH SERVER DEVICE, DISPLAY DEVICE, AND GAME EXECUTING DEVICE CONNECTED BY EXTERNAL COMMUNICATION LINE AND METHOD OF USING THE SYSTEM

(75) Inventor: Akhiro Yamada, Saitama (JP)

(73) Assignee: Sony Corporation, Tokyo (JP)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/697,554

(22) Filed: Oct. 26, 2000

(30) Foreign Application Priority Data
Nov. 2, 1999 (JP) P11-312073

(51) Int. Cl. A63F 9/22

(52) U.S. Cl. 463/42

(58) Field of Search 463/40, 42, 41

(56) References Cited

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Examiner's Affidavit.*

Examiner's Affidavit, Jun. 27, 2002.*

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(<http://computerhops.com/help/bus.htm>).*

* cited by examiner

Primary Examiner—Jessica Harrison

Assistant Examiner—Corbett Coburn

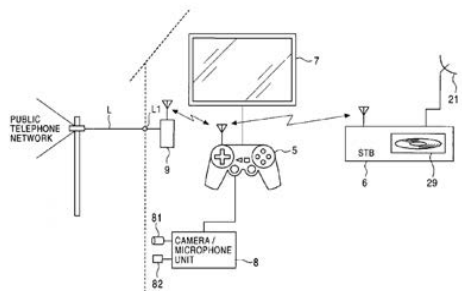
(74) Attorney, Agent, or Firm—Oblon, Spivak, McClelland,

Masor & Neustadt, P.C.

(57) ABSTRACT

The present game machine system allows a user to enjoy, at home, games according to supplied game software at low cost. The game machine system includes a game machine, an STB, and a television receiver, which are connected to each other via a digital bus that is external to them all. The STB receives game software transmitted via digital broadcasting and stores the received game software on a hard disk in the STB. The game machine executes a game while accessing the hard disk to read the game software as required. An image generated by the game machine and image data such as a background image output from the STB are supplied to the television receiver via the digital bus and a game image is displayed on the screen of the television receiver.

32 Claims, 11 Drawing Sheets



IPL EX2005
Sony v. IPL, IPR2021-00237

"The *MPEG decoder* 52 decompresses image data such as a background image and a character image used in the game, supplied from the STB 6 via the wireless communication."

Yamada - EX2005, 19:33-35 (emphasis added),
cited in EX2004, 289

No “Server [That] Transmits The Updated Image As A [Compressed] Frame”

“Yamada does not teach or suggest ‘compressing the at least one updated image and transmitting the compressed updated image to the client device’ much less transmitting the ‘updated image as a compressed frame’. First, there is absolutely no **mention of a ‘frame’ in Yamada**. Second, **there is nothing to suggest that Yamada first generates a frame of image data and then compresses that frame prior to transmitting it to a remote client device**.

EX2004, 273 (emphases added)

“[A]n applicant’s argument that a prior art reference is distinguishable on a particular ground can serve as a disclaimer of claim scope even if the applicant distinguishes the reference on other grounds as well.”

Andersen Corp. v. Fiber Composites, LLC, 474 F.3d 1361, 1374 (Fed. Cir. 2007)

“[D]isavowing statements ... does not require the applicant to parrot back language used by the examiner when clearly and deliberately responding to a particular grounds for rejection.”

Biogen Idec, Inc. v. GlaxoSmithKline LLC, 713 F.3d 1090, 1096 (Fed. Cir. 2013)

Fuchs Depo. – EX2010, 66:16-18 (highlighting added)

No “Server [That] Transmits The Updated Image As A [Compressed] Frame”

Petition for *Inter Partes* Review of U.S. Patent 10,681,109

DOCKET NO.: 2214362-00124US1
Filed on behalf of Sony Interactive Entertainment LLC
By: Joseph F. Haag, Reg. No. 42,612
Wilmer Cutler Pickering Hale and Dorr LLP
2600 El Camino Real, Suite 400
Palo Alto, CA 94306
Email: joseph.haag@wilmerhale.com

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

Sony Interactive Entertainment LLC
Petitioner

v.

Intellectual Pixels Limited
Patent Owner

Case IPR2021-00237

PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 10,681,109
UNDER 35 U.S.C. § 312 AND 37 C.F.R. § 42.104

Saha provides an overview of the two “predominant MPEG standards” at the time of Wiltshire’s filing in 1998: MPEG-1 and MPEG-2. Ex. 1005, 2:5-14 (“MPEG-2 standard is similar to the MPEG-1 standard, but includes extensions to cover a wider range of applications, including ... HDTV”). Saha explains that these MPEG standards describe an encoder to generate compressed “frames” (also called “pictures”). Ex. 1005, 2:19-35 (“MPEG compression ... encode[s] or *compress[es] frames* in the sequence.... An MPEG stream includes three types of pictures, referred to as the Intra (I) *frame*, the Predicted (P) *frame*, and the Bi-directional Interpolated (B) *frame*. The I (intra) frames ... are generally only *moderately compressed*. Predicted frames ... *receive a fairly high amount of compression* ... Bi-directional pictures include the *greatest amount of compression*....”); 1:64-2:1 (MPEG uses “*interframe and intraframe compression techniques*.”); Ex. 1002 ¶¶ 49, 88.

Petition (Paper 3) at 28-29 (highlighting added)

No "Server [That] Transmits The Updated Image As A [Compressed] Frame"

(12) **United States Patent**
Wiltshire et al.

(10) **Patent No.:** US 6,409,602 B1
(45) **Date of Patent:** Jun. 25, 2002

(54) **SLIM TERMINAL GAMING SYSTEM**

(75) **Inventors:** Michael S. Wiltshire; James J. Lisenbee, both of Reno, NV (US); Jayant S. Karmarkar, Aptos, CA (US); Timothy A. Wiltshire, Reno, NV (US)

(73) **Assignee:** New Millennium Gaming Limited, Reno, NV (US)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** 09/199,529
(22) **Filed:** Nov. 24, 1998

Related U.S. Application Data

(63) Continuation-in-part of application No. 09/187,135, filed on Nov. 6, 1998, now abandoned.

(51) **Int. Cl.7** A63F 13/00

(52) **U.S. Cl.** 463/42; 463/16

(58) **Field of Search** 463/16, 18, 19, 24, 26, 27, 29, 36, 37, 38, 39, 40, 41, 43, 707/1, 2, 3, 101, 102, 104, 501, 513; 700/91, 92, 93; 273/148 B

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(List continued on next page.)

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Bricker, et al., "Experience With DREGS", Proceedings of the Summer 1987 UNSENI Conference, pp. 471-481 (Jun. 8-12, 1987).

Vanderheiden, "Anywhere anytime (* anyone) access to the next-generation WWW", Computer Networks and ISDN Systems 29, pp. 1439-1446 (1997).

(List continued on next page.)

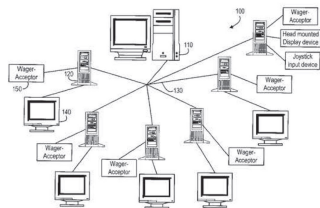
Primary Examiner—Jessica J. Harrison

(74) **Attorney, Agent, or Firm**—Skjerven Morrill MacPherson LLP; Fabio E. Marino

(57) **ABSTRACT**

A computer gaming system and method of operation thereof are provided that both drastically reduce the cost of gaming stations and allow contemporaneous access to multiple game programs from a single gaming station. The computer gaming system of the present invention allows for transparent modifications and upgrades to the gaming programs by executing gaming programs on a server/host computer connected to a plurality of client/terminal computers via communication pathways. Each client/terminal computer comprises a client/terminal program that allows input and output streams of the gaming program executed on the server/host computer to be separated and redirected to the client/terminal computers. Since the gaming programs are executed entirely on the server/host computer, with only wagering input and display output operations being executed on the client/terminal computers, the cost of the hardware and software required for each client/terminal computer is greatly reduced. A patron of a client/terminal computer can access any of the gaming programs executed on the server/host computer. Modifications and upgrades of the gaming programs only need to be performed on the server/host computer. By using a stereo head-mounted display together with a joystick input device and wireless communication pathways, the present invention allows a patron to participate in a mobile gaming environment.

29 Claims, 18 Drawing Sheets



SONY 1004

200 proceeds to stage 250. In stage 230, an image is sent from server/host computer 110 to client/terminal computer 120. The image may include any type of graphical information including a bitmap, a JPEG file, a TIFF file or even an encoded audio/video stream such as a compressed video MPEG stream. The image is generated by game computer program 112 and passed to server/host interface program 114. In turn, the image is transferred over communication pathways 130 to client/terminal computer 120 via the network services provided by server operating system 116. The

Wiltshire - EX1004, 7:13-22
(highlighting added)

No “Server [That] Transmits The Updated Image As A [Compressed] Frame”

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SONY INTERACTIVE ENTERTAINMENT LLC,
Petitioner,

v.

INTELLECTUAL PIXELS LIMITED,
Patent Owner.

Case No. IPR2021-00237
U.S. Patent No. 10,681,109

DECLARATION OF DR. JOHN C. HART IN SUPPORT OF
PATENT OWNER'S RESPONSE TO PETITION FOR
INTER PARTES REVIEW

IPL EX2009
Sony v. IPL - IPR2021-00237

87. Dr. Fuchs at ¶ 91 of his declaration concludes that “a POSITA would have known that MPEG includes ‘compressed frames’ and provides a method for both compression of frames and decompression of compressed frames.” However, because Dr. Fuchs understands “frame” to simply mean picture or image, his opinion does not address whether MPEG generates compressed “frames” as required by the claims of the ’109 Patent. MPEG simply compresses the series of images that are input to the algorithm. As such, MPEG does not change the nature of the input images that are not “frames” into “frames” through compression. If a series of images that are not “frames” are input to the MPEG algorithm, they will not be “compressed frames” at the output. I disagree that MPEG alone generates compressed “frames” as that term is used in the ’109 Patent without regard to whether the input images are “frames.”

Hart Decl. – EX2009, ¶ 87 (highlighting added);
see also *id.*, ¶ 86

Petitioner's Invalidity Theories Fail

- ✓ No "compressing the at least one updated image" (claims 1, 8) (Ground I)
- ✓ No "server [that] transmits the updated image as a [compressed] frame" (claims 1, 8) (Ground I)
- No "mobile device" (claims 6, 11, 12) (Grounds I, III)
- No motivation to combine PC Magazine with Wiltshire and Saha (claims 6, 11, 12) (Ground III)
- No motivation to combine Chen with Wiltshire and Saha (claim 2) (Ground II)

No "Mobile Device"

United States Patent Kent et al.

(10) Patent No.: **US 10,681,109 B2**
(45) Date of Patent: ***Jun. 9, 2020**

(54) **IMAGE DISPLAY SYSTEM WITH VISUAL SERVER**

(71) Applicant: **Intellectual Pixels Limited, Surrey (GB)**

(72) Inventors: **Osman Kent, Surrey (GB); David R. Baldwin, Surrey (GB); Nicholas J. N. Murphy, Surrey (GB)**

(73) Assignee: **INTELLECTUAL PIXELS LIMITED, Chertsey, Surrey (GB)**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.
This patent is subject to a terminal disclaimer.

(21) Appl. No.: **15/638,020**

(22) Filed: **Jun. 29, 2017**

(65) **Prior Publication Data**

US 2017/0366599 A1 Dec. 21, 2017

Related U.S. Application Data

(63) Continuation of application No. 14/192,789, filed on Feb. 27, 2014, now Pat. No. 9,699,238, which is a (Continued)

(51) Int. Cl. **G06F 15/16** (2006.01)
H04L 29/08 (2006.01)
(Continued)

(52) U.S. Cl. **H04L 67/00** (2013.01); **A63F 13/12** (2013.01); **A63F 13/25** (2014.09); **G06T 9/00** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC H04L 65/607; H04N 21/23412
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

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5,742,289 A 4/1998 Taylor et al.
(Continued)

FOREIGN PATENT DOCUMENTS

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"U.S. Appl. No. 10/037,688, Advisory Action dated May 10, 2007",
3 pgs.

(Continued)

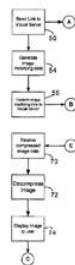
Primary Examiner—Yves Dalencourt

(74) Attorney, Agent, or Firm—Kwan & Olynyk LLP

(57) **ABSTRACT**

An image display system with one or more client computers in selective communication with a visual server having image processing capabilities. The client computer generates image-modifying data corresponding to a generated image, and transmits the data to the visual server. The visual server receives the image-modifying data, generates a modified image based upon the image-modifying data, and transmits the modified image as compressed data to the client. The client decompresses the modified image data and displays the modified image. In the system, the visual server and client can provide a sequential display of modified frames on client to support animation with complex 3-dimensional graphics.

18 Claims, 4 Drawing Sheets



SONY 1001

6. The method as recited in claim 1 wherein the client device is a mobile device.

EX1001, 10:19-20 (highlighting added)

11. The image display system of claim 8 wherein the interactive software application is a game and wherein the client device is a mobile device.

12. The image display system of claim 10 wherein the interactive software application is a game and wherein at least one of the plurality of client devices is a mobile device.

EX1001, 10:54-59 (highlighting added)

No “Mobile Device”

Claim term	IPL's position	Sony's position
mobile device	handheld computing device	Includes a portable laptop computer

No "Mobile Device"

US010681109B2

(12) **United States Patent**
Kent et al.

(10) **Patent No.:** US 10,681,109 B2
(45) **Date of Patent:** *Jun. 9, 2020

(54) **IMAGE DISPLAY SYSTEM WITH VISUAL SERVER**

(71) Applicant: **Intellectual Pixels Limited**, Surrey (GB)

(72) Inventors: **Osman Kent**, Surrey (GB); **David R. Baldwin**, Surrey (GB); **Nicholas J. N. Murphy**, Surrey (GB)

(73) Assignee: **INTELLECTUAL PIXELS LIMITED**, Chertsey, Surrey (GB)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.
This patent is subject to a terminal disclaimer.

(21) Appl. No.: **15/638,020**

(22) Filed: **Jun. 29, 2017**

(65) **Prior Publication Data**
US 2017/0366599 A1 Dec. 21, 2017

Related U.S. Application Data

(63) Continuation of application No. 14/192,789, filed on Feb. 27, 2014, now Pat. No. 9,699,238, which is a (Continued)

(51) **Int. Cl.**
G06F 15/16 (2006.01)
H04L 29/08 (2006.01)
(Continued)

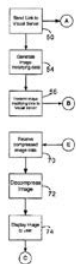
(52) **U.S. Cl.**
CPC: **H04L 67/00** (2013.01); **A63F 13/12** (2013.01); **A63F 13/25** (2014.09); **G06T 9/00** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC: **H04L 65/607**; **H04N 21/23412**
See application file for complete search history.

(56) **References Cited**
U.S. PATENT DOCUMENTS
5,550,962 A 8/1996 Nakamura et al.
5,742,289 A 4/1998 Naylor et al.
(Continued)
FOREIGN PATENT DOCUMENTS
JP 10-015345 A 1/1998
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WO 0077739 A1 12/2000
OTHER PUBLICATIONS
U.S. Appl. No. 10/037,688, Advisory Action dated May 10, 2007, 3 pgs.
(Continued)
Primary Examiner — Yves Dalencourt
(74) Attorney, Agent, or Firm — Kwan & Olynyk LLP

(57) **ABSTRACT**
An image display system with one or more client computers in selective communication with a visual server having image processing capabilities. The client computer generates image-modifying data corresponding to a generated image, and transmits the data to the visual server. The visual server receives the image-modifying data, generates a modified image based upon the image-modifying data, and transmits the modified image as compressed data to the client. The client decompresses the modified image data and displays the modified image. In the system, the visual server and client can provide a sequential display of modified frames on client to support animation with complex 3-dimensional graphics.

18 Claims, 4 Drawing Sheets



SONY 1001

Therefore, for reasons of cost, size, and power consumption, sophisticated three dimensional graphics are not available on common consumer client devices such as personal digital assistants (PDAs) mobile telephones and set-top boxes used to decode cable and satellite television signals. 30

EX1001, 3:26-30 (highlighting added)

Another exemplary clients are PDA 18, such as a Palm Pilot or a Handspring Visor, which has a display screen 26, and cellular telephone 20, which includes a display screen 28.

EX1001, 5:51-53 (highlighting added)

“[A] patent applicant need not expressly state ‘my invention does not include X’ to indicate his exclusion of X from the scope of his patent because ‘the patentee’s choice of preferred embodiments can shed light on the intended scope of the claims.’”

Trustees of Columbia Univ. v. Symantec Corp.,
811 F.3d 1359, 1364 (Fed. Cir. 2016)

No “Mobile Device”

“The construction of the term ‘mobile device’ proffered by [patent owner] of ‘a mobile communication device, such as a mobile telephone handset or Personal Digital Assistant ...’ is, in our view, consistent with the descriptions of the term as it is used in the Specification, and does not impermissibly import limitations from various embodiments.”

Rothschild Mobile Imaging Innovations, LLC v. Mitek Sys., Inc.,
IPR2016-00457, Paper 8 at 10 (P.T.A.B. July 27, 2016)

No “Mobile Device”

“The Court understands that under its customary meaning, a ‘mobile device’ is distinct from a ‘portable device’ in that the ‘mobile device’ is a handheld device whereas a ‘portable device’ would encompass a device such as a laptop computer.”

U.S. Auto. Ass’n v. Wells Fargo Bank, N.A., No. 2:18-cv-366-JRG,
2019 WL 3423652, at *11 (E.D. Tex. July 29, 2019)

No “Mobile Device”

“The Court ... construes ‘mobile device’ to mean ‘computing device that is handheld in its ordinary use.’”

Uniloc 2017 LLC v. Google LLC, No. 2:18-CV-00493-JRG-RSP,
2020 WL 339802, at *21 (E.D. Tex. Jan. 20, 2020)

No "Mobile Device"



MOBILE COMPUTERS AND MOBILE DEVICES

A mobile computer is a personal computer you can carry from place to place. Similarly, a mobile device is a computing device small enough to hold in your hand. The most popular type of mobile computer is the notebook computer.

Notebook Computers

A notebook computer, also called a laptop computer, is a portable, personal computer designed to fit on your lap. Notebook computers are thin and lightweight, yet can be as powerful as the average desktop computer. Notebook computers usually are more expensive than desktop computers with equal capabilities.

On a typical notebook computer, the keyboard is on top of the system unit, and the display attaches to the system unit with hinges (Figure 1-15). These computers weigh on average between 2.5 and 9 pounds, which allows users easily to transport the computers from place to place. Most notebook computers can operate on batteries or a power supply or both.

EX2007, 24 (highlighting added)

Mobile Devices

Mobile devices, which are small enough to carry in a pocket, usually store programs and data permanently on memory inside the system unit or on small storage media such as memory cards. You often can connect a mobile device to a personal computer to exchange information. Some mobile devices are Internet-enabled, meaning they can connect to the Internet wirelessly.

Three popular types of mobile devices are handheld computers, PDAs, and smart phones.

EX2007, 25 (highlighting added)

No “Mobile Device”

Volume 16, No. 27, Pages 174132 to 174222
September 5 - September 16, 2000

FCC Record

A comprehensive compilation of decisions,
reports, public notices and other documents
of the Federal Communications Commission
of the United States.



SONY 1027
Sony v. IPL
IPR2021-00237

“mobile telephones and other handheld computing devices”

EX1027, 37

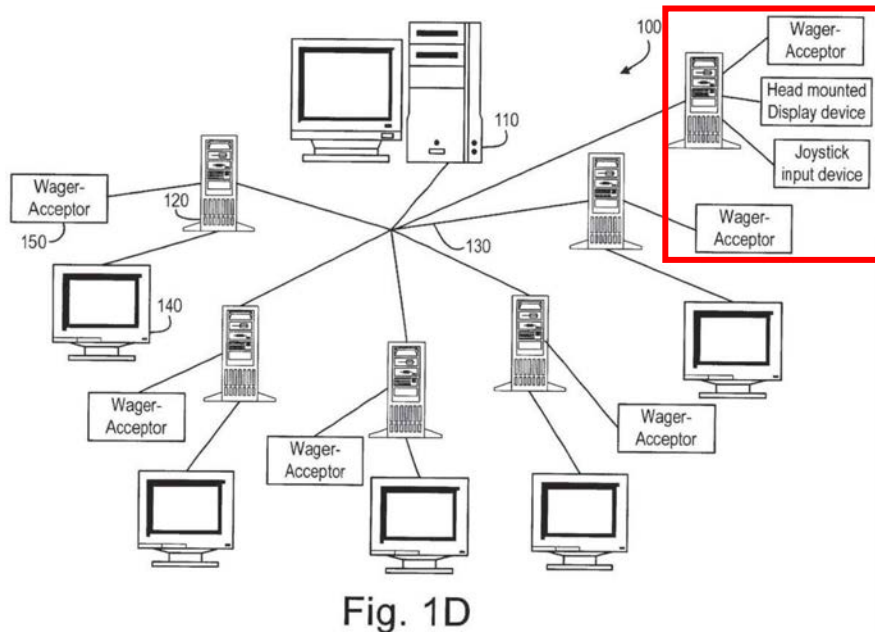
“Several PDAs, also referred to as handheld devices or palm pilots”

EX1027, 66

“mobile telephones *and other handheld devices* to access the Internet, *as well as laptop computers and printers without cables*”

EX1027, 9 (emphases added)

No “Mobile Device”



Wiltshire – EX1004, Fig. 1D (annotated)

We are also not persuaded by Petitioner’s argument that a person of ordinary skill in the art would have understood Wiltshire’s disclosure of wireless communication pathways as directed to the use of mobile devices, such as laptops. *Id.* The mention of “wireless communication pathways” in Wiltshire is brief and relates to the use of “a stereo head-mounted display together with a joystick input device . . . allow[ing] a patron to participate in a mobile gaming environment.” Ex. 1004, code (57). As Patent Owner points out, Wiltshire’s Figure 1D depicts the client device with these features as the *same* client computer as the other client computers but without the separate display that is shown connected to the other client computers. *Id.* at Fig. 1D; Prelim. Resp. 26–27 (annotating Fig. 1D). Each of the client devices shown in Figure 1D is also similarly connected to a “Wager-Acceptor,” and the examples of the communication pathway 130 between the server and each of the client devices listed in Wiltshire are all wired network interfaces. Prelim. Resp. 28; Ex. 1004, 5:31–44 (listing various 1000 base-T switches and CAT-5 twisted pair cabling).

Institution Decision (Paper 13) at 34-35
(highlighting added)

No "Mobile Device"



PIPELINE

Groovy Portables

The rumor mill proved correct: At New York's recent MacWorld trade show, Apple CEO Steve Jobs took the wraps off the company's much-ballyhooed **iBook portable computer**. Targeted squarely at consumers and students, the new **iBook portables** will sell for \$1,599 and start shipping in September.

The new iBook itself isn't square, though. It has curved edges and corners, with rubber figuring

prominently in the design. The curves and the Austin Powers-like colors are intended to project a distinctly hip image. The 6.6-pound iBook will be available in two translucent color schemes—tangerine and blueberry—and will have a 12.1-inch TFT display with a resolution of 800 by 600 pixels, an ATI Rage graphics chip, a 300-MHz G3 processor, a CD-ROM drive, 32MB of RAM (expandable to 160MB), a built-in modem, USB and 10/100 Ethernet ports, and a full-size keyboard. The operating system is Mac OS 8.6. Jobs touted the battery life as over 6 hours (Mac OS 8.6 includes advanced power-management schemes).

Just as many **portable PCs** are shipping with wireless technologies, iBook users can roam up to 150 feet from \$299 base stations that plug into telephone jacks (users must also purchase \$100 cards for their iBooks to communicate with the base stations). Dubbed AirPort, the wireless technology is radio-based and has a data-transfer rate of 11 Mbps. Apple developed the wireless components in partnership with Lucent.



APPLE'S AIRPORT Wireless networking on a shoestring.

PC Magazine - EX1007, 10

(highlighting added)

Petitioner's Invalidity Theories Fail

- ✓ No "compressing the at least one updated image" (claims 1, 8) (Ground I)
- ✓ No "server [that] transmits the updated image as a [compressed] frame" (claims 1, 8) (Ground I)
- ✓ No "mobile device" (claims 6, 11, 12) (Grounds I, III)
- No motivation to combine PC Magazine with Wiltshire and Saha (claims 6, 11, 12) (Ground III)
- No motivation to combine Chen with Wiltshire and Saha (claim 2) (Ground II)

No Motivation To Combine PC Mag. With Wiltshire And Saha

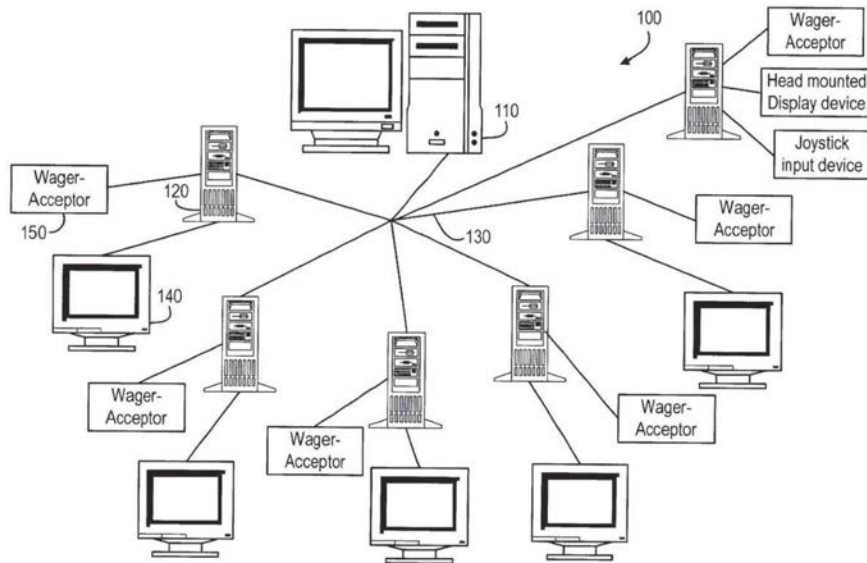


Fig. 1D

Wiltshire - EX1004, Fig. 1D

“Wiltshire’s system is directed at *commercial gaming* where gaming stations include ‘a display device, a *wager or bet-acceptor*, and controls such as buttons, keyboards, levers or the like,’ and support casino games.”

Institution Decision (Paper 13) at 33-34
(emphases added)

No Motivation To Combine PC Mag. With Wiltshire And Saha

(12) **United States Patent**
Wiltshire et al.



US006409602B1

(10) **Patent No.:** US 6,409,602 B1
(45) **Date of Patent:** Jun. 25, 2002

(54) **SLIM TERMINAL GAMING SYSTEM**

(75) **Inventors:** Michael S. Wiltshire; James J. Ljurnbee, both of Reno, NV (US); Jayant S. Karmarkar, Aptos, CA (US); Timothy A. Wiltshire, Reno, NV (US)

(73) **Assignee:** New Millennium Gaming Limited, Reno, NV (US)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** 09/199,529

(22) **Filed:** Nov. 24, 1998

Related U.S. Application Data

(63) **Continuation-in-part of application No. 09/187,135, filed on Nov. 6, 1998, now abandoned.**

(51) **Int. Cl.:** A63F 13/00

(52) **U.S. Cl.:** 463/42; 463/16

(58) **Field of Search:** 463/16, 18, 19, 24, 26, 27, 29, 36, 37, 38, 39, 40, 41, 43, 707/1, 2, 3, 101, 102, 104, 501, 513; 700/91, 92, 93; 273/148 B

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(List continued on next page.)

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Vanderheiden, "Anywhere anytime (* anyone) access to the next-generation WWW", Computer Networks and ISDN Systems 29, pp. 1439-1446 (1997).

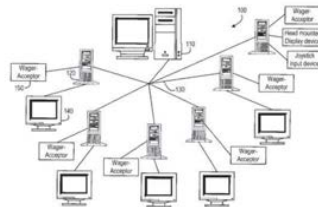
(List continued on next page.)

Primary Examiner—Jessica J. Harrison
(74) **Attorney, Agent, or Firm**—Skjerven Morrill MacPherson LLP, Fabio E. Marino

(57) **ABSTRACT**

A computer gaming system and method of operation thereof are provided that both drastically reduce the cost of gaming stations and allow contemporaneous access to multiple game programs from a single gaming station. The computer gaming system of the present invention allows for transparent modifications and upgrades to the gaming programs by executing gaming programs on a server/host computer connected to a plurality of client/terminal computers via communication pathways. Each client/terminal computer comprises a client/terminal program that allows input and output streams of the gaming program executed on the server/host computer to be separated and redirected to the client/terminal computers. Since the gaming programs are executed entirely on the server/host computer, with only wagering input and display output operations being executed on the client/terminal computers, the cost of the hardware and software required for each client/terminal computer is greatly reduced. A patron of a client/terminal computer can access any of the gaming programs executed on the server/host computer. Modifications and upgrades of the gaming programs only need to be performed on the server/host computer. By using a stereo head-mounted display together with a joystick input device and wireless communication pathways, the present invention allows a patron to participate in a mobile gaming environment.

29 Claims, 18 Drawing Sheets



SONY 1004

25 The present invention provides a computer gaming system and method of operation thereof that both drastically reduces the cost and substantially increases the tamper resistance of individual gaming stations. The computer

Wiltshire - EX1004, 2:22-25
(highlighting added)

10 Embodiments described above illustrate but do not limit the invention. In particular, the invention is not limited to any particular game. In fact, any casino game or other non-casino games where players play against each other for money with the house taking a percentage of the stake for providing the game. Games such as chess, backgammon,

Wiltshire - EX1004, 12:10-13
(highlighting added)

No Motivation To Combine PC Mag. With Wiltshire And Saha

17 Q. Okay. In 2019 which of these machines
18 did you see, or did you see both of them?

19 A. To the best of my recollection, I think
20 it was a video slot machine.

21 Q. Okay. Can you describe for me about
22 how big the video slot machine you played on
1 was?

2 A. I think it was as big as a traditional
3 slot machine. Bigger than a breadbox.

4 Q. Okay. When was the last time -- well,
5 let me back up for a second.

6 When you say as big as a traditional
7 slot machine, what do you mean? You know, about
8 how big?

9 Maybe a foot and a half tall?

10 A. Physically, it looked like an
11 old-fashioned mechanical slot machine, but I
12 suspect the innards were very small.

13 Q. Right.

14 A. I think that it was, you know, a video
15 display made to look like a slot machine with
16 touchscreen buttons. So I couldn't say what the
17 innards were, because it was in a package that
18 was floor-mounted and came up to four feet tall
19 or something like that.

Fuchs Depo. - EX2010, 58:17-59:19 (highlighting added)

20 Q. Okay. When was the last time you think
21 you saw a video poker machine?

22 A. I may have seen a video poker machine
1 in 2019, but I don't think I played it.

2 Q. Okay.

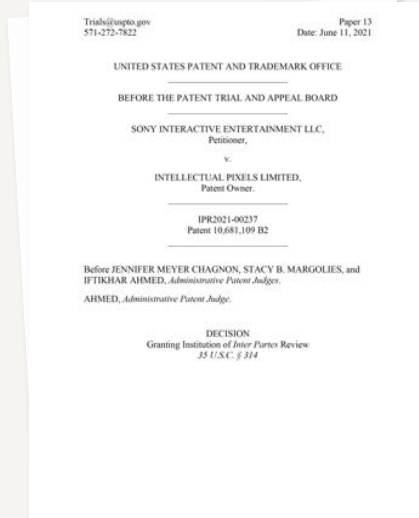
3 A. I think it was similar in size.

4 Q. Okay. Similar in size.

5 A. Yeah, similar in size in that I
6 think -- it was in a container which was on the
7 floor, but I suspect that since it had a
8 touchscreen, it may have been very compact
9 inside.

Fuchs Depo. - EX2010, 59:20-60:9
(highlighting added)

No Motivation To Combine PC Mag. With Wiltshire And Saha



Based on the current record, we are persuaded by Petitioner's argument that using a laptop for a client device would have been just one of a finite number of known options contemplated by an ordinarily skilled artisan for use in Wiltshire's system and would have been a predictable and identified option that was obvious to try. Pet. 69 (citing Ex. 1002 ¶ 220).

Institution Decision (Paper 13) at 39

“It is not enough to assert that the prior art provides two options and that it would have been predictable to implement either. An obviousness rationale generally requires some identification of ‘a design need or market pressure to solve a problem’ before looking at the ‘finite number of identified, predictable solutions.’”

Palo Alto Networks, Inc. v. Finjan, Inc., IPR2015-01979, Paper 62 at 62-63 (P.T.A.B. Mar. 15, 2017) (quoting *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007))

“[O]bviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed invention.”

Belden Inc. v. Berk-Tek LLC, 805 F.3d 1064, 1073 (Fed. Cir. 2015)
(bold added)

Petitioner's Invalidity Theories Fail

- ✓ No "compressing the at least one updated image" (claims 1, 8) (Ground I)
- ✓ No "server [that] transmits the updated image as a [compressed] frame" (claims 1, 8) (Ground I)
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- No motivation to combine Chen with Wiltshire and Saha (claim 2) (Ground II)

No Motivation To Combine Chen With Wiltshire And Saha

The Development and Standardization of Asymmetrical Digital Subscriber Line

Walter Y. Chen, Motorola

ABSTRACT It has been almost a decade since the original proposal of ADSL was brought to the attention of a telecommunication standards body. During that time, the idea of ADSL has been modified and refined to fit market demand, many generations of ADSL chip set have been developed, and numerous trials have been conducted to prove its viability. In this article, the early development and standardization efforts of ADSL are reviewed. This is followed by a discussion of practical issues such as central office network interface and customer premises configuration options. These issues have not been addressed extensively but implied by standards documents. The effect of in-house wiring and recent industry-wide standardization activities are then briefly addressed.

An asymmetrical digital subscriber line (ADSL) is one of a variety of digital subscriber line (DSL) [1] systems built upon the existing twisted-pair telephone subscriber loop plant. DSL is a broadband transmission system utilizing spectrum resources beyond the 3.3 kHz voice channel. In other words, when making a conventional telephone connection, the voice channel is very much defined and, therefore, the signal bandwidth is limited by central office (CO) terminal equipment in terms of switch line cards. That is why the transmission throughput of a voice band modem is capped at approximately 50 kbps. On the other hand, in contrast to the voiceband modem, the installation of DSL transceivers is also required at the CO end of the telephone loops. Therefore, the deployment of a DSL system demands an initial investment at the COs.

Since there are so many different versions of DSL systems, people have used the name xDSL, where x stands for any version. There are four DSL systems that are closely related to standardization. The first standardized DSL system was called DSL and is the physical layer of the ISDN basic rate access channel [2]. This physical layer is characterized by a transmission throughput of 160 kbps based on a two bit per quaternary (2B1Q) line code for a coverage of resistance design loops of up to 18,000 ft. Main signal processing techniques involved are decision feedback channel equalization (DFE) and echo cancellation (EC). The second DSL system specified by a technical report from a standards committee is the high-bit-rate digital subscriber line (HDSL) [3]. Deployed in a pair, HDSL is promoted as the repeater-less T1 technology. HDSL is characterized by a transmission throughput of 800 kbps on each telephone subscriber loop, also based on a 2B1Q line code for coverage of a carrier serving area (CSA). Main signal processing techniques involved are the same as those of the ISDN basic rate access channel, but at five times the processing speed.

The third standardized system is ADSL [4]. Most recently, issue 2 of the standard has been released. The fourth system being developed is the very-high-speed digital subscriber line (VDSL) [5]. It is characterized by downstream (from a CO to a telephone subscriber) transmission throughputs of 13, 26, or 52 Mbps. Both discrete multitone (DMT) and carrierless amplitude and pulse modulation (CAP) line codes are consid-

ered. Concurrently, the standardization of single-pair HDSL (SHDSL) is also underway [6]. SHDSL is designed to deliver T1 transmission throughput over a single twisted-pair telephone loop over the CSA serving range. A coding gain of about 5 dB is necessary to achieve this transmission performance objective. In addition, signal spectral shaping and placement are also carefully

engineered for obtaining an optimal performance. There are also a few other names for DSL systems promoted by individual companies and industry groups. ISDN DS (DSL) is a variant application of the ISDN basic rate access channel physical layer technology. Instead of connecting two 64 kbps B channels and one 16 kbps D channel, the whole transmission throughput of an ISDN 160 kbps is linked to backbone data network with or without traffic concentration. Symmetrical digital subscriber line (SDSL) is a single-pair application of the basic HDSL technology. Depending on the serving distance, the transmission throughput of an SDSL can be lower or higher than the original design objective of 800 kbps. Rate adaptive digital subscriber line (RADSL) is characterized by the CAP line code with transmission capabilities similar to those of the DMT line code-based standardized ADSL. The transmission throughputs of RADSL vary from few hundred kilobits per second to a few megabits per second in the downstream direction.

At the time ADSL was developed, the broadband service in the mass residential market was thought to be video on demand. A minimum of T1 transmission throughput was required to deliver a compressed video channel. HDSL is capable of T1 transmission throughput. However, the need for two pairs and the CSA range limitation may prove prohibitive in certain areas where a significant portion of customers are beyond 12,000 ft or where the number of pairs per living unit are less than two. In other words, the objective of ADSL was to cover a serving distance of up to 18,000 ft on a single twisted-pair telephone subscriber loop with a T1 transmission throughput at 1.544 Mbps. This transmission throughput performance can only be achieved by avoiding the effect of near end crosstalk (NEXT) noise. ADSL avoids the effect of NEXT by all signal spectra at opposite directions within different frequency bands: the upstream (from a subscriber to a CO) signal spectrum is located right above the voice band; the downstream signal spectrum is located above that of the upstream.

EARLY DEVELOPMENT OF ADSL

Observing that many services needed greater transmission rates from the CO to the subscriber than in the other direction, Dr. Joseph Lechleider proposed the idea of asymmetrical

An asymmetrical digital subscriber line (ADSL) is one of a variety of digital subscriber line (DSL) [1] systems built upon the existing twisted-pair telephone subscriber loop plant. DSL is a broadband transmission system

Chen - EX1006, 4 (highlighting added)

Researchers realized that for residential applications, a POTS service, where the traditional telephone service can be provided whether the ADSL is on or off, was more practical than ISDN service. After sharing ideas among Bellcore, the regional Bell operating companies, and other leading industry and academic DSL proponents, ADSL was proposed as having the traditional duplex POTS channels, occupying the fre-

Chen - EX1006, 5 (highlighting added)

APPENDIX: THE EFFECT OF IN-HOUSE WIRING

Chen - EX1006, 8

IEEE Communications Magazine • May 1999

No Motivation To Combine Chen With Wiltshire And Saha

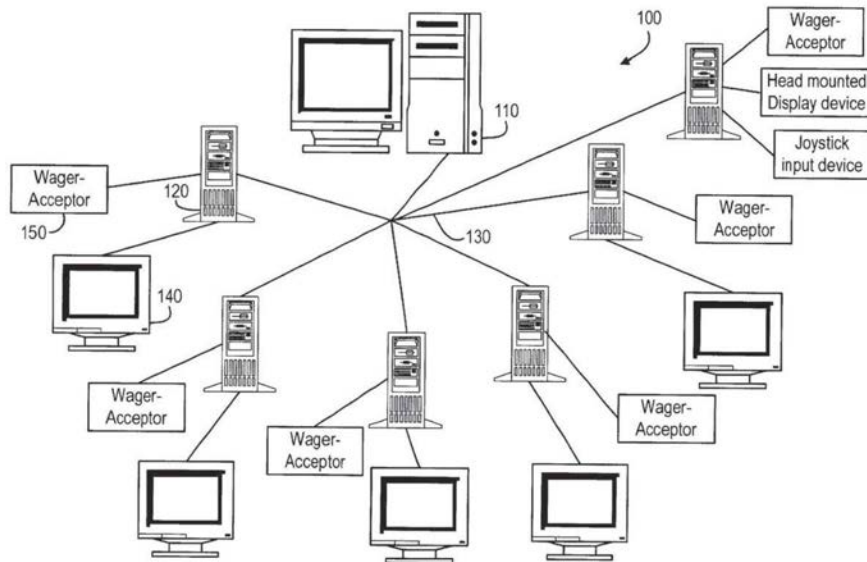


Fig. 1D

Wiltshire - EX1004, Fig. 1D

“Wiltshire’s system is directed at *commercial gaming* where gaming stations include ‘a display device, a *wager or bet-acceptor*, and controls such as buttons, keyboards, levers or the like,’ and support casino games.”

Institution Decision (Paper 13) at 33-34
(emphases added)

No Motivation To Combine Chen With Wiltshire And Saha

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SONY INTERACTIVE ENTERTAINMENT LLC,
Petitioner,
v.
INTELLECTUAL PIXELS LIMITED,
Patent Owner.

Case No. IPR2021-00237
U.S. Patent No. 10,681,109

PATENT OWNER'S RESPONSE TO
PETITION FOR INTER PARTES REVIEW

to support such an assertion. To close this gap, Petitioner would have to either depart from Chen's teaching of use of ADSL in residences or supplement Wiltshire's disclosure with placing clients in residences. Petitioner argued neither, and neither is supported by this record. *Panduit*, 810 F.2d at 1568 ("[A] prior patent must be

POR (Paper 17) at 59 (highlighting added)

Petitioner's Reply to Patent Owner's Response
IPR2021-00237
DOCKET NO.: 2214362-00124US1
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Sony Interactive Entertainment LLC,
Petitioner,
v.
Intellectual Pixels Limited,
Patent Owner

Case IPR2021-00237
U.S. Patent No. 10,681,109

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

First, Patent Owner relies on two false premises to argue against motivation to combine: (1) that Wiltshire is limited to commercial casino establishments, and (2) that Chen is limited to residential applications. POR, 53-59. Neither is correct. As explained above, Wiltshire is not limited to casinos and instead teaches use of its system in a variety of gaming contexts, including playing games like Doom at home. Section II.F. Conversely, Chen discloses more than just ADSL in residential contexts, but also for business applications like accessing database records and tele-education.⁶ Ex. 1006, 69; ID, 44. Further, it was well known that

Reply (Paper 22) at 26 (highlighting added)

No Motivation To Combine Chen With Wiltshire And Saha

Ex. 1002 ¶ 193). Petitioner asserts that Chen describes the ADSL standard, which discloses a first bandwidth of 16-64 kb/s for upstream transmissions and second bandwidth of 1.544 Mb/s for downstream transmissions. *Id.* at 59-60 (citing Ex. 1006, 69; Ex. 1001, 6:14-16; Ex. 1002 ¶ 195).

Institution Decision (Paper 13) at 40-41 (highlighting added)

1 Chen discloses that ADSL provides a
2 downstream bandwidth of 1.544 megabits per
3 second; correct?

4 A. That's correct.

5 Q. Okay. According to Chen, a single pair
6 of copper wires using ADSL can provide 1.5,
7 roughly, megabits per second of downstream
8 bandwidth; correct?

9 A. That's correct.

Fuchs Depo. - EX2010, 70:1-9

No Motivation To Combine Chen With Wiltshire And Saha

second. As mentioned in Chen, a POSITA would understand that an MPEG stream may require rates of at least 1.3 megabits per second (a megabit is approximately a million bits), which is many times greater than the typical 8 or 16 bits per second required for transmitting a user input command. Ex. 1006 (Chen), 69 (“The CCITT H.261 recommendation and the ISO Moving Picture Experts Group (MPEG) recommendation both provide full motion video at rates of around *1.3 Mb/s.*”). Thus, a POSITA would understand that sending compressed updated

Fuchs Decl. – EX1002, ¶ 200 (highlighting added)

(citing Ex. 1018, code (57)). Dr. Fuchs further testifies that a person of ordinary skill in the art would have understood that sending compressed updated images from Wiltshire’s server to the client requires higher bandwidth of at least 1.3 Megabits per second when an MPEG stream is used. *Id.* (citing Ex. 1006, 69). Dr. Fuchs testifies that a person of ordinary

Institution Decision (Paper 13) at 44-45 (highlighting added)

No Motivation To Combine Chen With Wiltshire And Saha

8/17/2021 Sony Interactive Entertainment, LLC v. Intellectual Pixels Limited Henry Fuchs, Ph.D.

Page 1

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

SONY INTERACTIVE ENTERTAINMENT LLC,)
)
PETITIONER,) CASE NO.
) IPR2021-00237
v.)
)
INTELLECTUAL PIXELS LIMITED,)
) US PATENT NO.
PATENT OWNER.) 10,681,109
)

VIDEOTAPED DEPOSITION OF HENRY FUCHS, PH.D.
TAKEN REMOTELY VIA ZOOM VIDEOCONFERENCE
TUESDAY, AUGUST 17, 2021

Reported by Audra E. Cramer, CSR No. 9901

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IPL EX20

Sony v. IPL - IPR2021-002

2 But still, that statement is true that
3 the "Wiltshire's stated bandwidth requirements
4 be as low as 100 kilobytes per second," which is
5 a correct one -- okay? -- which is well under

Fuchs Depo. - EX2010, 15:2-5 (highlighting added);
see also Fuchs Decl. - EX1002, ¶ 224

10 Q. Sure.

11 Wiltshire discloses that you can reduce
12 a video stream using data compression techniques
13 to about 100 kilobytes per second; correct?

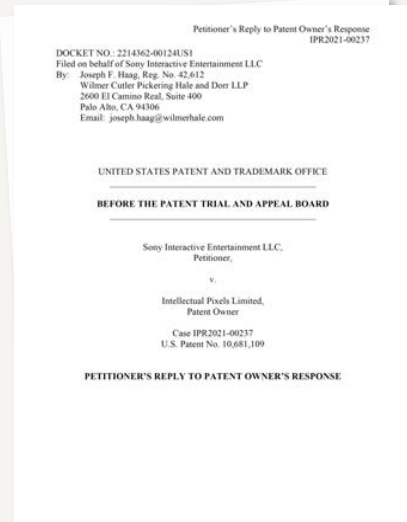
14 A. That's correct. Wiltshire here on
15 Column 7, line 62, says, "This bandwidth
16 requirement can be further reduced using data
17 compression techniques to about 100 kilobytes
18 per second." Exactly right.

19 Q. And 100 kilobytes per second is .8, or
20 eight-tenths, of a megabit per second; correct?

21 A. Yes.

Fuchs Depo. - EX2010, 74:10:21 (highlighting added)

No Motivation To Combine Chen With Wiltshire And Saha



61-62. But Wiltshire discloses a system that can be used with only one client computer. Ex. 1004, claim 1 (“*one* or more client/terminal computers”); Ex. 1025,

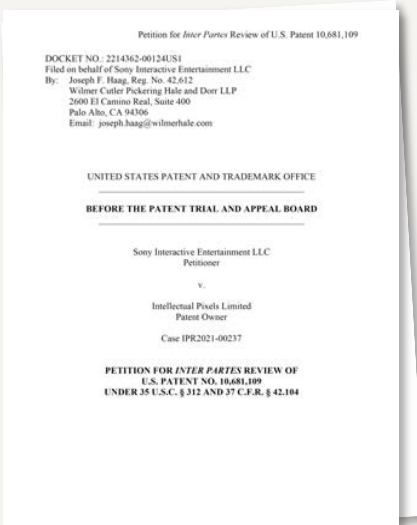
Reply (Paper 22) at 27 (highlighting added)

Ex. 1004, Figure 1A; 3:62-66 (“Computer gaming system 100 includes a *server/host computer 110* connected to a plurality of remote client/terminal computers 120 via network interface 115 and communication pathways 130.”);

Petition (Paper 3) at 20-21 (challenged claim 1 (highlighting added))

First, Wiltshire describes using a communication pathway between the server and clients such as the Internet, and Chen teaches that ADSL is an “ideal

Petition (Paper 3) at 61 (challenged claim 2 (highlighting added))



Petitioner's Invalidity Theories Fail

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