

IPR2020-01598

Declaration of Henry Houh, Ph.D. Under 37 C.F.R. § 1.68 in Support of  
Petition for *Inter Partes* Review of U.S. Patent No. 9,578,369

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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HISENSE CO LTD.

Petitioner,

v.

MAXELL, LTD

Patent Owner.

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Case IPR2020-01598  
Patent No. 9,578,369

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**DECLARATION OF HENRY HOUH, Ph.D., UNDER 37 C.F.R. § 1.68 IN**  
**SUPPORT OF PETITION FOR *INTER PARTES* REVIEW OF U.S.**  
**PATENT NO. 9,578,369**

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Declaration of Henry Houh, Ph.D. Under 37 C.F.R. § 1.68 in Support of  
Petition for *Inter Partes* Review of U.S. Patent No. 9,578,369

I, Henry Houh, Ph.D. hereby declare as follows:

**I. INTRODUCTION**

1. I have been retained as an expert witness on behalf of Hisense Co. Ltd. (“Petitioner”) for the above-captioned Petition for *Inter Partes* Review (“IPR”) of U.S. Patent No. 9,578,369 (“the ‘369 patent”). My billing rate for my time in connection with this IPR at my standard consulting rate of \$650 per hour. My compensation is in no way dependent on the outcome of this matter.

2. I have been asked to provide my opinions regarding whether claims 1-18 (“the challenged claims”) of the ‘369 patent are invalid as anticipated and/or obvious. In preparing this declaration, I have reviewed the ‘369 patent, the file history of the ‘369 patent and its related patents, and numerous prior art references from the time of the alleged invention.

3. I have been advised and it is my understanding that patent claims in an IPR are given their meaning applying the district court “*Phillips*” approach to claim construction. As detailed below, I have analyzed the challenged claims under the *Phillips* construction.

4. In forming the opinions expressed in this declaration, I relied upon my education and experience in the relevant field of the art, and have considered the

viewpoint of a person having ordinary skill in the relevant art, as of September 26, 2007 that is the priority date listed on the face of the ‘369 patent for JP2007-248353 alleged to be the ancestor foreign priority application for the ‘369 patent.<sup>1</sup> My opinions directed to the invalidity of the challenged claims are based, at least in part, on the following prior art publications:

<b>Exhibit</b>	<b>Reference</b>	<b>Prior Art Date</b>
<b>1006</b>	U.S. Patent Pub. No. 2007/0165144 (“Bennett-2”)	Published July 19, 2007 from an application filed May 18, 2006 and qualifies as prior art under at least §102(a)/(e).
<b>1007</b>	U.S. Patent No. 9,247,175 (“Bennett-3”)	Issued January 26, 2016 from an application filed November 30, 2005 and qualifies as prior art under at

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<sup>1</sup> I understand that Petitioners do not concede that the challenged claims are entitled to this date.

		least §102 (a)/(b)/(e).
<b>1008</b>	U.S. Patent No. 8,321,898 ("Yuasa")	Issued November 27, 2012 from an application filed May 12, 2006 and qualifies as prior art under at least §102 (a)/(e).
<b>1009</b>	U.S. Patent No. 9,055,194 ("Cho")	Issued June 9, 2015 from an application filed November 30, 2006 and qualifies as prior art under at least §102 (a)/(e).

## **II. BACKGROUND AND QUALIFICATIONS**

5. My background and expertise that qualify me as an expert in the technical issues in this case are as follows:

6. As indicated on my *Curriculum Vitae* attached as **Exhibit A**, I received a Ph.D. in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology ("MIT") in 1998. I also received a Master of Science degree in Electrical Engineering and Computer Science in 1991, a Bachelor of



Science Degree in Electrical Engineering and Computer Science in 1989, and a Bachelor of Science Degree in Physics in 1990, all from MIT.

7. During my college studies, I focused on communications and data networking. I took specialized courses including graduate courses in telecommunications networks, optical communications, and data networking. I, along with other graduate students in a networking research group, maintained both the computer workstations and the networking devices in the research group.

8. I have worked in data networking and distributed multimedia systems on several occasions. As part of my doctoral research at MIT from 1991-1998, I worked as a research assistant in the Telemedia Network Systems (“TNS”) group at the Laboratory for Computer Science. The TNS group built a high-speed gigabit ATM network and applications which ran over the network, such as remote video capture (including audio), processing and display on computer terminals. In addition to helping design the core network components (such as the ATM switch), designing and building the high-speed ATM links, and designing and writing the device drivers for the interface cards, I also set up the group’s web server, which at the time was one of the first several hundred web servers in existence. Our high-speed data network carried multimedia data including video and audio data.

9. The TNS group was the first group to initiate a remote video display over the World Wide Web. Vice President Al Gore visited our group in 1996 and

received a demonstration of—and remotely drove—a radio-controlled toy car with a wireless video camera mounted on it; the video was encoded by TNS-designed hardware, streamed over the TNS-designed network and displayed using TNS-designed software.

10. Our video system featured a software toolkit that would be used to create custom interfaces for controlling and interacting with video. The toolkit included button components to fast-forward, pause, stop, and other controls such as a speed control and slider components. Our software could also be used to initiate the video playback interface on another computer.

11. I authored or co-authored twelve papers and conference presentations on our group's research. I also co-edited the final report of the gigabit networking research effort with Professor David Tennenhouse and Senior Research Scientist David Clark. David Clark is generally considered to be one of the fathers of the Internet Protocol and served as Chief Protocol Architect for the Internet. With its focus on networking, the group, including myself, set up and maintained the network and computer systems. These systems included the networking on the workstations and desktops, the distributed file system, desktops and workstations, setting up and maintaining the distributed file system (Network File System) and the authentication system (Network Information Service, formerly known as Yellow Pages). Our system allowed users to log into any of the group's

workstations using their username/password, which allowed access to the authenticated user's files, which would be virtually mounted on that workstation as a networked home directory.

12.I defended and submitted my Ph.D. thesis, titled "Designing Networks for Tomorrow's Traffic," in January 1998. As part of my thesis research, I analyzed local-area and wide-area flows to show a more efficient method for routing packets in a network, based on traffic patterns at the time. My thesis also addressed real-time streamed audio and video. The network traffic that I analyzed was IP protocol traffic, including UDP and TCP.

13.I have been involved in live streaming Voice over Internet Protocol ("VoIP") technologies since 1997 and have specific experience in designing and testing VoIP networks.

14.From 1997 to 1999, I worked at NBX Corporation, which was acquired by 3Com Corporation in 1999. During this time, I was a Senior Scientist and Engineer working in IP Telephony. NBX delivered the world's first fully featured business telephone system to run over a data network, the NBX100. NBX was one of the first business phone systems to be configurable via a web interface. Users and administrators had access to varying levels of configuration for the phone system.

15. As part of my work at NBX, I designed the core audio reconstruction algorithms for the telephones which depacketized the voice data and reconstructed the audio. In addition, I designed the voice data packet transmission algorithms. I created a system to capture and analyze network packets sent by devices in the NBX system for aid in testing and debugging. I also designed and validated the core packet transport protocol used by the phone system. In addition, I designed and oversaw the development of the underlying transport protocol used by the NBX100 phone system for reliable packet transport. That transport protocol is still used by the NBX100 system and its successors and is estimated to be used hundreds of millions of times daily. I wrote NBX's first demonstration IP software stack, which added the capability for utilizing the NBX100 phone system on an IP network. NBX first demonstrated a phone in the NBX100 system working over the Internet in 1998 at a trade show in Las Vegas. I was later the lead architect in designing NBX's next-generation highly scalable system, and, after NBX was acquired by 3Com, I did some work with 3Com's cable equipment division, including demonstrating a working NBX IP phone system over 3Com's cable equipment infrastructure using an early version of DOCSIS at a trade show in 1999. The NBX100 was the market's leading business phone system to run on a data network for several years following its introduction. During that time, I

became more familiar with the various standards and protocols relevant to the initiation of streaming content including video and audio.

16.I, along with two of NBX's founders, was awarded U.S. Patent No. 6,697,963 titled "Telecommunication method for ensuring on-time delivery of packets containing time-sensitive data," for some of the work we did while at NBX.

17.After NBX, I worked at Teradyne, a test tool company primarily focused on semiconductors. Teradyne had recently acquired Hammer, a company that specialized in load and functional testing for telecommunications systems. The Hammer product is well known as a telecom test tool. Teradyne spun out Hammer and several other internal divisions into an independent company called Empirix. I became Chief Technologist of the Hammer division of Empirix. Empirix was a leader in network testing and monitoring.

18.At Empirix, I laid out a new multi-year product vision for data network testing, secured internal funding for the effort, and led a team to deliver a new technology platform to the market in February 2001. This new product, PacketSphere, initially emulated network behavior so that wide-area VoIP connections could be tested in a lab. A later release allowed PacketSphere to generate high volumes of VoIP calls, including media streams, and to monitor the quality of VoIP voice streams. Later, the core technology was added to other

Empirix products such as Empirix's Hammer XMS to monitor thousands of VoIP media streams in real time to determine their quality. PacketSphere was Empirix's most successful new platform introduction. Companies purchased the PacketSphere product to emulate an Internet Protocol network to see the effects of deploying their product on the Internet prior to launch. PacketSphere received several industry awards.

19. During my time at Empirix, I presented lectures on VoIP and data network testing to companies including Lucent Labs (formerly AT&T Bell Labs). I was also invited to present several guest lectures in a software engineering course at MIT. Since then, I have also participated twice as a unit lecturer (two weeks) in an experimental course that was taught by an Institute Professor (the highest award that a MIT Professor can achieve) and sponsored by the Chairman of the MIT Corporation (MIT's board of trustees).

20. From 2004 to 2008, I was employed by BBN Technologies Corp., a technology research and development company located in Cambridge, Massachusetts. BBN Technologies is a world-renowned company with expertise in acoustics, speech recognition, and communications technology. BBN Technologies staff have pioneered many internetworking technologies and Internet applications, and built some of the world's largest government and commercial data networks.

21. My duties and responsibilities at BBN Technologies generally included commercialization of the technologies developed by BBN Technologies, which included spinning off companies and growing commercial businesses in-house. More particularly, I was involved in utilizing the award-winning AVOKE STX speech recognition technology to create the public audio/video search engine EveryZing (formerly known as PodZinger) which was spun out into a stand-alone company now known as RAMP, Inc. PodZinger won the 2006 MITX Technology Award for best Web 2.0 Application and was also named the 2006 Forbes Favorite Video & Audio Search Engine, beating out Google, Yahoo, and other companies. After managing the creation of the initial prototype system, PodZinger built out a full streaming audio and video search solution when I was the Vice President of Operations and Technology there. Our solution included hosting video and providing search results with an integrated video player that was used to control video playback and time tracked to the spoken words within the video by highlighting words in and automatically generated transcript as they were being played. I was also involved in the Boomerang Mobile Shooter Detection project as the Vice President of Engineering for the program. The Boomerang system was deployed to Iraq and Afghanistan, and was credited with saving many lives.

22. From 1989 to 1990, I worked at AT&T Bell Laboratories on optical computers. This work generated six peer-reviewed papers, and multiple U.S. and

European patent applications in which I was named as a co-author or inventor. I also interned at AT&T Bell Laboratories in 1987 and 1988. Additional relevant experience in the field of optical computers is listed in my *Curriculum Vitae*.

23.I am a named inventor on several patents and published patent applications that are related to the VoIP technology including: U.S. Patent No. 6,967,963, entitled “Telecommunication Method for Ensuring On-time Delivery of Packets Containing Time- Sensitive Data”; U.S. Patent Application Publication No. 20020015387, entitled “Voice Traffic Packet Capture and Analysis Tool for a Data Network”; U.S. Patent Application Publication No. 20020016708, entitled “Method and Apparatus for Utilizing a Network Processor as Part of a Test System”; U.S. Patent Application Publication No. 20020016937, entitled “Method and Apparatus for Utilizing a Network Processor as Part of a Test System”; and U.S. Patent No. 7,590,542, entitled “Method of Generating Test Scripts Using a Voice-Capable Markup Language.”

### **III. MATERIALS CONSIDERED FOR THIS DECLARATION**

24.In addition to my general knowledge, education, and experience, I considered the materials listed in **Exhibit B** in forming my opinions.



#### **IV. SUMMARY OF OPINIONS**

25. Based on my review of the ‘369 patent and its prosecution history, the other materials I have considered, and my knowledge and experience, my opinions are as follows:

- Claims 1-3, 6-7, 10-12 and 15-16 are obvious over Bennett-3.
- Claims 1-3, 6-7, 10-12 and 15-16 are obvious over Bennett-3 and Yuasa
- Claims 1-18 are obvious over Bennett-3 and Cho.
- Claims 1-18 are obvious over Bennett-3, Yuasa and Cho.

#### **V. OVERVIEW OF THE ‘369 PATENT, ITS PATENT FAMILY, AND ITS PROSECUTION HISTORY**

##### **A. Overview of the ‘369 patent.**

26. The application that became the ‘369 patent was filed October 21, 2015 and purports to claim priority to at least 4 ancestor U.S. applications and a Japanese application.

27. At a high level, the ‘369 patent is generally directed to a “portable terminal” used to interact and communicate with a display apparatus, such as a television. Ex. 1001 at title, Abstract. The ‘369 patent acknowledges that portable terminals, such as cellular phones, have previously been utilized to control displays, such as televisions. *Id.* at 1:20-2:14.

28. The ‘369 patent purports to address “a desire in which a content just being viewed by a portable terminal is to be passed to a video playback device to

continuously viewed the content thereon. This corresponds to, for example, a situation as follows. In a room in which the video playback device is installed, the user is viewing a program on a portable terminal and desires to pass the viewing of the program to the video playback device.” 2:33-40.

29. In other words, the ‘369 purports to attempt to be able to use a video playback device (such as a television) to view content previously viewed on the portable information terminal.

30. While the claims of the ‘369 (as discussed below), recite downloading “video” content from the Internet, the ‘369 specification is less descriptive on the point. The ‘369 describes a system in which a cellular phone is used to navigate to, for example, an Internet page with a specified URL. The URL is then transmitted to the television. *Id.* at Figure 12. The ‘369 is sparse on a description of actual “video” content such as a movie file. Rather, the ‘369 characterizes the “video” content as that video that is generated by the television itself in displaying the static contents of the web page identified by the URL. This is described by the ‘369 as:

The network communication unit 207 accesses the internet 104 using a communication protocol of, for example, HyperText Transfer Protocol (HTTP) to receive the homepage data of the internet site and outputs the data via the system control unit 202 to the internet browser 208. The

browser 208 constructs an image to be displayed as a homepage using the data, converts the image into a video signal to be inputted to the video processing unit 205, and outputs the signal thereto.

The video processing unit 205 converts the video signal from the browser 208 into a signal suitable for an input to the display unit 206 and outputs the signal thereto. The display unit 206 resultantly displays the homepage image. During the operation, if there exists data to be temporarily stored in the terminal, the internet browser 208 saves the data in the data saving unit 209 according to necessity.

Ex. 1001 at 8:62-9:10.

31.As issued, the ‘369 patent includes 18 claims. I have been asked to opine on the following claims in this Declaration, which I have included below:

<p>1. An information processing apparatus for displaying a content acquired via the internet, the information processing apparatus comprising:</p> <p>a communication unit arranged to conduct communication with a mobile terminal;</p> <p>a display unit arranged to display a video content; and</p> <p>a control unit arranged to control the display unit,</p>
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wherein the control unit is arranged to:

control the display unit to display a first video content;

control the display unit to terminate displaying of the first video content and to start displaying a second video content acquired via the internet when the communication unit receives first information from the mobile terminal, wherein the second video content is a same video content as a video content displayed on the mobile terminal before the mobile terminal sends the first information to the information processing apparatus, and wherein a state of displaying of the video content on the mobile terminal at a time when the first information is sent from the mobile terminal is taken over to a state of displaying of the second video content on the display unit at a time when the display unit starts displaying the second video content, based on the first information;

control displaying of the second video content on the display unit based on second information for operating the second video content displayed on the display unit when the communication unit receives the second information from the mobile terminal; and

control the display unit to terminate displaying of the second video content when the communication unit receives third information from the mobile terminal.

2. A display apparatus for displaying a content acquired via a broadcast signal or via the internet, the display apparatus comprising:

a communication unit arranged to conduct communication with a mobile terminal;

a display unit arranged to display a video content; and

a control unit arranged to control the display unit,

wherein the control unit is arranged to:

control the display unit to display a first video content acquired via the broadcast signal;

control the display unit to terminate displaying of the first video content and to start displaying a second video content acquired via the internet when the communication unit receives first information from the mobile terminal, wherein the second video content is a same video content as a video content displayed on the mobile terminal before the

<p>mobile terminal sends the first information to the display apparatus, and wherein a state of displaying of the video content on the mobile terminal at a time when the first information is sent from the mobile terminal is taken over to a state of displaying of the second video content on the display unit at a time when the display unit starts to display the second video content, based on the first information;</p> <p>control displaying of the second video content on the display unit based on second information for operating the second video content displayed on the display unit when the communication unit receives the second information from the mobile terminal; and</p> <p>control the display unit to terminate displaying of the second video content when the communication unit receives third information from the mobile terminal.</p>
<p>3. The display apparatus according to claim 2, further comprising:</p> <p>a video processing unit to conduct video processing to both a video content acquired via the broadcast signal and a video content acquired via the internet.</p>
<p>4. A display apparatus for displaying a content acquired via a broadcast</p>

signal or via the internet, the display apparatus comprising:

a communication unit arranged to conduct communication with a mobile terminal;

a display unit arranged to display a video content; and

a control unit arranged to control the display unit,

wherein the control unit is arranged to:

control the display unit to display a first video content acquired via the broadcast signal;

control the display unit to terminate displaying of the first video content and to start displaying a second video content acquired from an internet site via the internet when the communication unit receives first information including information relating to that the mobile terminal logs in to said internet site from the mobile terminal, wherein the second video content is a same video content as a video content which can be acquired by the mobile terminal after login authentication of said internet site and is displayed on the mobile terminal before the mobile terminal sends the first information to the display apparatus,

and wherein a state of displaying of the video content on the mobile terminal at a time when the first information is sent from the mobile terminal is taken over to a state of displaying of the second video content on the display unit at a time when the display unit starts to display the second video content, based on the first information;

control displaying of the second video content on the display unit based on second information for operating the second video content displayed on the display unit when the communication unit receives the second information from the mobile terminal; and

control the display unit to terminate displaying of the second video content when the communication unit receives third information from the mobile terminal.

5. The display apparatus according to claim 4, further comprising:

a video processing unit to conduct video processing to both a video content acquired via the broadcast signal and a video content acquired via the internet.

6. A display apparatus for displaying a video content acquired via a



broadcast signal or via the internet, the display apparatus comprising:

a communication unit arranged to conduct communication with a mobile terminal;

a display unit arranged to display a video content; and

a control unit arranged to control the display unit,

wherein the control unit is arranged to:

control the display unit to display a broadcast video content acquired via the broadcast signal;

control the display unit to terminate displaying of the broadcast video content and to start displaying an internet video content acquired via the internet when the communication unit receives first information from the mobile terminal, wherein the internet video content acquired via the internet is a same video content as an internet video content displayed on the mobile terminal before the mobile terminal sends the first information to the display apparatus, and wherein a state of displaying of the internet video content on the mobile terminal at a time when the first information is sent from the mobile terminal is

taken over to a state of displaying of the internet video content on the display unit at a time when the display unit starts to display the internet video content, based on the first information;

control displaying of the internet video content on the display unit based on second information for operating the internet video content displayed on the display unit when the communication unit receives the second information from the mobile terminal; and

control the display unit to terminate displaying of the internet video content and to start displaying the broadcast video content acquired via the broadcast signal when the communication unit receives third information from the mobile terminal.

7. The display apparatus according to claim 6, further comprising:

a video processing unit to conduct video processing to both a video content acquired via the broadcast signal and a video content acquired via the internet.

8. A display apparatus for displaying a content acquired via a broadcast signal or via the internet, the display apparatus comprising:

a communication unit arranged to conduct communication with a mobile terminal;

a display unit arranged to display a video content; and

a control unit arranged to control the communication unit and the display unit,

wherein the control unit is arranged to:

control the display unit to display a broadcast video content acquired via the broadcast signal;

control the display unit to terminate displaying of the broadcast video content and to start displaying an internet video content acquired from an internet site via the internet when the communication unit receives first information including information relating to that the mobile terminal logs in to the internet site from the mobile terminal, wherein the internet video content acquired via the internet site is a same video content as an internet video content which is acquired by the mobile terminal after login authentication of the internet site and is displayed on the mobile terminal before the mobile terminal sends the first information to the display apparatus, and wherein a state of displaying

of the internet video content on the mobile terminal at a time when the first information is sent from the mobile terminal is taken over to a state of displaying of the internet video content on the display unit at a time when the display unit starts to display the internet video content, based on the first information;

control displaying of the internet video content on the display unit based on second information for operating the internet video content displayed on the display unit when the communication unit receives the second information from the mobile terminal; and

control the display unit to terminate displaying of the internet video content and to start displaying the broadcast video content acquired via the broadcast signal when the communication unit receives third information from the mobile terminal.

9. The display apparatus according to claim 8, further comprising:

a video processing unit to conduct video processing to both a video content acquired via the broadcast signal and a video content acquired via the internet.

10. An information processing apparatus for displaying a content acquired

via the internet, the information processing apparatus comprising:

a communication unit arranged to conduct communication with a mobile terminal;

a display unit arranged to display a video content; and

a control unit arranged to control the display unit,

wherein the control unit is arranged to:

control the display unit to display a first video content;

control the display unit to terminate displaying of the first video content and to start displaying a second video content acquired via the internet when a first communication between the mobile terminal and the information processing apparatus is conducted, wherein the second video content is a same video content as a video content displayed on the mobile terminal before the first communication is conducted, and wherein a state of displaying of the video content on the mobile terminal at a time when the first communication is conducted is taken over to a state of displaying of the second video content on the display unit at a time when the display unit starts to display the second video

content, based on the first communication;

control displaying of the second video content on the display unit based on a second communication between the mobile terminal and the information processing apparatus for operating the second video content displayed on the display unit when the second communication is conducted; and

control the display unit to terminate displaying of the second video content based on a third communication between the mobile terminal and the information processing apparatus when the third communication is conducted.

11. A display apparatus for displaying a content acquired via a broadcast signal or via the internet, the display apparatus comprising:

a communication unit arranged to conduct communication with a mobile terminal;

a display unit arranged to display a video content; and

a control unit arranged to control the display unit,

wherein the control unit is arranged to:

control the display unit to display a first video content acquired via the broadcast signal;

control the display unit to terminate displaying of the first video content and to start displaying a second video content acquired via the internet when a first communication between the mobile terminal and the display apparatus is conducted, wherein the second video content is a same video content as a video content displayed on the mobile terminal before the first communication is conducted, and wherein a state of displaying of the video content on the mobile terminal at a time when the first communication is conducted is taken over to a state of displaying of the second video content on the display unit at a time when the display unit starts to display the second video content, based on the first communication;

control displaying of the second video content on the display unit based on a second communication between the mobile terminal and the display apparatus for operating the second video content displayed on the display unit when the second communication is conducted; and

control the display unit to terminate displaying of the second video content

when a third communication between the mobile terminal and the display apparatus is conducted.

12. The display apparatus according to claim 11, further comprising:

a video processing unit to conduct video processing to both a video content acquired via the broadcast signal and a video content acquired via the internet.

13. A display apparatus which for displaying a content acquired via a broadcast signal or via the internet, the display apparatus comprising:

a communication unit arranged to conduct communication with a mobile terminal;

a display unit arranged to display a video content; and

a control unit arranged to control the display unit,

wherein the control unit is arranged to:

control the display unit to display a first video content acquired via a broadcast signal;



control the display unit to terminate displaying of the first video content and to start displaying a second video content acquired from an internet site via the internet when a first communication between the mobile terminal and the display apparatus is conducted during the mobile terminal logs in to said internet site, wherein the second video content is a same video content as a video content which can be acquired by the mobile terminal after login authentication of said internet site and is displayed on the mobile terminal before the first communication is conducted, and wherein a state of displaying of the video content on the mobile terminal at a time when the first communication is conducted is taken over to a state of displaying of the second video content on the display unit at a time when the display unit starts to display the second video content, based on the first communication;

control displaying of the second video content on the display unit based on a second communication between the mobile terminal and the display apparatus for operating the second video content displayed on the display unit when the second communication is conducted; and

control the display unit to terminate displaying of the second video content when a third communication between the mobile terminal and the

display apparatus is conducted.

14. The display apparatus according to claim 13, further comprising:

a video processing unit to conduct video processing to both a video content acquired via the broadcast signal and a video content acquired via the internet.

15. A display apparatus which for displaying a video content acquired via a broadcast signal or via the internet, the display apparatus comprising:

a communication unit arranged to conduct communication with a mobile terminal;

a display unit arranged to display a video content; and

a control unit arranged to control the display unit,

wherein the control unit is arranged to:

control the display unit to display a broadcast video content acquired via the broadcast signal;

control the display unit to terminate displaying of the broadcast video

content and to start displaying an internet video content acquired via the internet when a first communication between the mobile terminal and the display apparatus is conducted, wherein the internet video content acquired via the internet is a same video content as an internet video content displayed on the mobile terminal before the first communication is conducted, and wherein a state of displaying of the internet video content on the mobile terminal at a time when the first communication is conducted is taken over to a state of displaying of the internet video content on the display unit at a time when the display unit starts to display the internet video content, based on the first communication;

control displaying of the internet video content on the display unit based on a second communication between the mobile terminal and the display apparatus for operating the internet video content displayed on the display unit when the second communication is conducted; and

control the display unit to terminate display of the internet video content and to start displaying a broadcast video content acquired via the broadcast signal when the a third communication between the mobile

terminal and the display apparatus is conducted.

16. The display apparatus according to claim 15, further comprising:

a video processing unit to conduct video processing to both a video content acquired via the broadcast signal and a video content acquired via the internet.

17. A display apparatus for displaying a content acquired via a broadcast signal or via the internet, the display apparatus comprising:

a communication unit arranged to conduct communication with a mobile terminal;

a display unit arranged to display a video content; and

a control unit arranged to control the communication unit and the display unit,

wherein the control unit is arranged to:

control the display unit to display a broadcast video content acquired via the broadcast signal;

control the display unit to terminate displaying of the broadcast video

content and to start displaying an internet video content acquired from an internet site via the internet when a first communication between the mobile terminal and the display apparatus is conducted during the mobile terminal logs in to said internet site from the mobile terminal, wherein the internet video content acquired via the internet site is a same video content as an internet video content which is acquired by the mobile terminal after login authentication of said internet site and is displayed on the mobile terminal before the first communication is conducted, and wherein a state of displaying of the internet video content on the mobile terminal at a time when the first communication is conducted is taken over to a state of displaying of the internet video content on the display unit at a time when the display unit starts to display the internet video content, based on the first communication;

control displaying of the internet video content on the display unit based on a second communication between the mobile terminal and the display apparatus for operating the internet video content displayed on the display unit when the second communication is conducted; and

control the display unit to terminate display of the internet video content and to start displaying the broadcast video content acquired via the

<p>broadcast signal when the a third communication between the mobile terminal and the display apparatus is conducted.</p>
<p>18. The display apparatus according to claim 17, further comprising:</p> <p>a video processing unit to conduct video processing to both a video content acquired via the broadcast signal and a video content acquired via the internet.</p>

**B. Overview of the Prosecution History of the ‘369 patent and Related Applications**

i. Prosecution History of the ‘369 patent

32.I have reviewed the prosecution history of the ‘369 patent in forming my opinions for purposes of this declaration.

33.As noted on its front cover, the’369 patent was at least the fifth application in a chain of continuation patents.

34.In the’369 prosecution, the Challenged Claims were added after an indefiniteness and double patenting rejection. EX-1002 at 0112-0125. After the applicant filed a terminal disclaimer, the Examiner allowed the claims.

35. The Notice of Allowance copies the discussion of prior art that the Examiner had included in the great-great-grandparent application (for the U.S. Pat.

No. 8,214,459 patent) in 2012. See EX-1015 at 0006-0008 (Notice of Allowance for U.S. Pat. No. 8,214,459).

36.The Examiner’s reasons for allowance discussed the Slotznick, Walker, and Goto references using the same language as was used in the ‘459 Notice of Allowance. The Examiner did not discuss any references submitted during the’369 prosecution. EX-1002 at 0047.

37.The Examiner’s statements regarding Slotznick, Walker, and Goto do not appear to have any relationship to the’369 claim elements. In fact, during the prosecution of the ‘459, the applicant had made numerous statements regarding these references.

38.For Slotznick in 2011, the applicant distinguished Slotznick because “there is no motivation or suggestion in Slotznick to transfer the viewing content back to the [] hand unit of the phone.” EX-1015 at 0016. The ‘369 claims do not recite any element requiring transferring video back to the handheld unit.

39.For the Walker reference, in 2011, the applicant distinguished Walker stating that “[t]here is no direct information transmission from one terminal to another terminal.” EX-1015 at 0015-0016.

40.For the Goto reference, in 2011, the applicant distinguished Goto by alleging that “Goto does not disclose or suggest transmitting the ‘history information’ described in paragraph [0047]-[0048] to an external device.” EX-1015 at 0029.

41.As discussed below, Bennett-3 discloses each of the features that were alleged to be missing in Slotznick, Walker, and Goto.

42.The lack of consideration of any references beyond Slotznick, Walker and Goto is consistent with the prosecution of the '369's other ancestors. In the parent patent, U.S. Pat. No. 9,197,917, the Examiner issued a single double-patenting rejection that the applicant overcame by filing a terminal disclaimer. EX-1012 at 0011-0014. The Examiner then incorporated the same comments regarding Slotznick, Walker, and Goto from the 2012 Notice of Allowance. EX-1012 at 0006-0007.

43.In the prosecution of the grandparent of the '369 (U.S. Patent No. 8,892,688) the Examiner allowed the claims on a first Office Action allowance and, again, cut/pasted the same passage from the 2012 prosecution into the Notice of Allowance. EX-1013 at 0010-0012.

## **VI. LEVEL OF ORDINARY SKILL IN THE PERTINENT ART**

44.I have been advised that there are multiple factors relevant to determining the level of ordinary skill in the pertinent art, including the educational level of active workers in the field at the time of the invention, the sophistication of the technology, the type of problems encountered in the art, and the prior art solutions to those problems.



45. It is my opinion that a person of ordinary skill in the art (“POSA” in September 2007 would have been familiar with display systems such as televisions (including remote controls) and information control and user interaction. A POSA would have a working knowledge of computing, networking, networking, and data representation. A POSA would have gained knowledge of these concepts through a mixture of training and work experience, such as by having a Bachelor’s degree in computer science, computer communications, electrical engineering, or equivalent degree, coupled with two years of experience; or by obtaining a Master’s degree in those fields with equivalent work experience being substituted for any formal education requirement.

## **VII. CLAIM CONSTRUCTION**

46. After reviewing the claim terms, I did not identify any specific terms for which a construction is necessary given the scope of the prior art. Under any reasonable construction of the terms (including, specifically, the Phillips construction), the prior art discussed herein discloses, or renders obvious, the elements of the challenged claims.

## **VIII. UNDERSTANDING OF THE LAW**

47. In expressing my opinions and considering the subject matter of the claims of the ‘369 patent, I am relying upon certain basic legal principles that have been explained to me. I have been informed by counsel that a patent claim is invalid as

anticipated under 35 U.S.C. § 102 if each element of that claim is present either expressly or inherently in a single prior art reference. I have also been informed that, to be an inherent disclosure, the prior art reference must necessarily disclose the limitation, and the fact that the reference might possibly practice or contain a claimed limitation is insufficient to establish that the reference inherently teaches the limitation.

48.I have been informed that a claimed invention is unpatentable under 35 U.S.C. § 103, if the differences between the invention and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. I have also been informed by counsel that the obviousness analysis takes into account factual inquiries including the level of ordinary skill in the art, the scope and content of the prior art, and the differences between the prior art and the claimed subject matter.

49.I have been informed by counsel that the Supreme Court has recognized several rationales for combining references or modifying a reference to show obviousness of claimed subject matter. Some of these rationales include the following: (a) combining prior art elements according to known methods to yield predictable results; (b) simple substitution of one known element for another to obtain predictable results; (c) use of a known technique to improve a similar device

(method, or product) in the same way; (d) applying a known technique to a known device (method, or product) ready for improvement to yield predictable results; (e) choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and (f) some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

50.Finally, I understand that secondary factors may be considered in an obviousness inquiry. I understand that these are also referred to as secondary considerations and may include evidence of long-felt need, failure of others, skepticism of those of skill in the art, licensing, commercial success, recognition in the industry, acquiescence, evidence of copying, and unexpected results. While these secondary considerations must be taken into account, they do not necessarily control the obviousness determination.

51.Moreover, for objective evidence of nonobviousness to be accorded substantial weight, I understand that the proponent of such evidence must establish a “nexus” between the evidence and the merits of the patent at issue. Specifically, I understand that the secondary consideration must be tied to the merits of the claimed invention of the patent at issue. Where the alleged secondary consideration results from something other than what is both claimed and novel, I

understand that there is no nexus to the merits of the claimed invention and the secondary considerations are thus not indicative of nonobviousness. I also understand that it is the patentee's burden to come forward with evidence that a nexus exists.

## **IX. SCOPE AND CONTENT OF THE PRIOR ART**

### **A. Bennett-3**

52.I note that Bennett-3 was not submitted to the PTO during the prosecution of the '369 claims.

53.Bennett-3 teaches using one or more hand-held portable terminals for remote controls to display video and control display apparatus such as televisions. Bennett-3's Abstract has a good description of this functionality:

A remote control with a built-in miniature television screen and sound system manages settings and display of media on an associated television screen. The remote control's user interface permits media guide perusal and channel selection for display on both of the main and miniature television screens. Media guides can be downloaded per request to, or cached within, the remote control for display on the miniature screen. The remote control supports media swapping between the main and

miniature television screens and associated sound systems. The sound system of the remote control includes built in speakers and external wired and wireless headphone support. Media and media guides may be located and downloaded from Internet servers via a web browser and associated search engine tailored for remote control usage. Transcoding functionality is employed at various network nodes, such as a set top box, remote control, an intranet or Internet linked device, and television.

Bennett-3 at Abstract.

54.Bennett-3's system is designed to work with a wide variety of known existing technologies. "The term "communicatively coupled", as may be used herein, includes wireless and wired, direct coupling and indirect coupling via one or more other component(s), element(s), circuit(s), or module(s). Inferred coupling (i.e., where one element is coupled to another element by inference) includes wireless and wired, direct and indirect coupling between two elements in the same manner as "communicatively coupled" Bennett-3 at 13:42-48.

55.Bennett-3's multiple "parallel television remotes" or "PTV remotes" use the known forms of communication with the television including infrared, wireless

RF, and Bluetooth. These communications can be direct or indirect going through pathways such as intranets and the Internet. Bennett-3 at 5:14-21; 6:62-7:12.

56. Bennett-3 repeatedly teaches that its PTV remotes can control the televisions to specify different videos (or the same video) for display on both the PTV remote and the associated television. Once the videos are being displayed, the user can “swap” the videos.

[A] first viewer watches video from a first channel being displayed on the PTV remote video screen 121, while a second viewer watches a second channel, that had been previously viewed on and selected via the PTV remote control 107, on the television video screen 187. Using a swap command delivered via one of a plurality of input interfaces 127, the first viewer may then cause the television video screen 187 to display the first channel, while the PTV remote video screen 121 displays the second.

Bennett-3 at 5:2-10.

[A] viewer may enter a command via the buttons 129 to display a television channel listing, i.e., a media guide, corresponding to available video channel broadcasts from

the TV broadcasting 163 of the video sources 101. ... the viewer may then deliver a second command to the processing circuitry 125 to cause selection of one of the media guide listings, i.e., a channel, for display on the television screen ... the processing circuitry 191 tunes to the selected channel, processes the channel video and audio, delivers the, processed video for display on the television screen ....

Bennett-3 at 6:5-25.

57.Bennett-3 describes an embodiment in which its PTV remotes download video content from the Internet for display:

[t]he viewer may enter a third command via the buttons 129 requesting a second media guide from another of the video sources 101, for example, an Internet based media server ... The processing circuitry 125 [of the remote control] responds by requesting the selected video from the media server of the video sources 101. As the selected video is received, the processing circuitry 125 delivers the video to the video driver 123 for display....

Bennett-3 at 6:26-44.

**B. Yuasa**

58. Yuasa teaches a content playback system in which a mobile terminal controls a display apparatus to display videos from broadcast and Internet sources.

For example, Yuasa teaches:

A content display-playback system includes a content providing apparatus, a content display-playback apparatus, and an operation control apparatus for controlling the apparatuses. On the basis of operation control by the control apparatus, content is transmitted from the providing apparatus to the display-playback apparatus for display and playback through a network. The control apparatus includes an input operation receiving unit for receiving an operation input, a control signal generating unit for generating a control signal for transmitting and receiving the content among the providing, display-playback, and control apparatuses in response to the operation input, and a storage unit for storing selection-history information. When the receiving unit receives an operation input for transmitting the



content from the providing apparatus to the display-playback apparatus, the generating unit generates a control signal for selecting a display-playback apparatus on the basis of the selection-history information and transmitting the content to the selected display-playback apparatus.

Yuasa at Abstract.

59. Yuasa repeatedly teaches that its “operation control apparatus” or remote controller is portable. E.g., claims 1, 6, 7, 9, 10, 11. This is shown in Figures 9-11, 15. As shown in Figure 15, there can be multiple operation control apparatus and they can be separate from traditional IR remotes.

**C. Cho**

60. Cho teaches the seamless migration of a streaming session from one device to another device. Cho at 6:32-39, Fig. 2. Cho teaches a user watching a video on a mobile terminal (phone) that can then push a button on the phone to exchange information with a television that allows the television to continue the video at the point of the phone’s presentation. Cho at 4:21-34. In this regard, Cho’s teachings are similar to Bennett-3’s teaching of transmitting the “identifier” information including the “offsets” for the videos swapped between the remote control and television.

**D. Bennett-2**

61. Bennett-2 teaches a system that is highly similar to Bennett-3 described above. Much of the disclosure and many of the Figures are virtually identical.

62. Bennett-2 adds further details about the control of the video downloaded by the television from the Internet by the PTV remote control. For example, Bennett-2 teaches the remote control's "functionalities may... comprise a 'seek' functionality, a 'pause' functionality, a 'play' functionality and a 'play slow' functionality." Bennett-2 at [0028].

**X. DETAILED INVALIDITY ANALYSIS**

63. For this Declaration, I have been asked to provide an opinion as to the challenged claims are obvious over the combinations of prior art as specified above.

64. As part of my obviousness analysis, I have considered the scope and content of the prior art, described above. Additionally, I considered whether any differences between the alleged invention and the prior art are such that the subject matter, as a whole, would have been obvious to a person having ordinary skill in the art at the time of the alleged invention. I have also considered the level of ordinary skill in the pertinent art in performing my analyses.

**A. Structure Of The Challenged Claims And My Analysis Below.**

65. The '369 patent independent claims have a similar structure of elements. The claims all recite a preamble with an "information processing unit" (claims 1, 10) or a "display apparatus" (claims 2, 4, 6, 8, 11, 13, 15, and 17). The claims then recite elements present and common in televisions for long prior to the '369 patent's earliest priority date: a "communications unit," a "display unit," and a "control unit." Finally, the independent claims recite a lengthy "wherein" clause that describes the how the "control unit" communicates with the remote control ("mobile terminal") and the results of that communication on the display of video on the display apparatus. The "wherein" clauses describe a "first," "second," and "third" information (claims 1-9) or communication (claims 10-18) from the remote control ("mobile terminal") to the television.

66. The independent claims have minor differences between themselves primarily related to the source of the video content (either "broadcast" or "via the internet"). For example, claim 1 claims, in the preamble "displaying a content acquired via the internet" whereas claim 2 recites "displaying a content acquired via a broadcast signal or via the internet." As noted below, these minor changes are not relevant to the invalidity analysis because the art herein discloses, or renders obvious, all of the permutations of elements (for example, both broadcast and Internet video").

67.The dependent claims all recite the same “video processing unit” element. See, for example, claims 3, 5, 7.

68.Finally, claims 4-5, 8-9, 13-14, and 17-18 require “information relating to that the mobile terminal logs in to said internet site” (claim 4) that can be used in the course of the processing.

69.In my analysis below, I detail claim 1 and then, for the other claims, only the differences for those claims.

**B. Ground 1: Claims 1-3, 6-7, 10-12 and 15-16 Are Obvious Over Bennett-3.**

70.As detailed below, it is my opinion that the claims 1-3, 6-7, 10-12 and 15-16 are obvious over Bennett-3.

**1. Bennett-3 Discloses The Elements Of The Challenged Claims.**

a) Claim 1

- i. Preambles: Information processing apparatus (claims 1 and 10) / display apparatus (all claims except claims 1 and 10) / for displaying a content acquired via the internet (all claims) / for displaying a content acquired via a broadcast signal (all claims except claims 1 and 10)

71.To the extent that the preamble is limiting, Bennett-3 discloses, or renders obvious, this element. Bennett-3 discloses a system in which an “information processing apparatus” or “display apparatus” displays content (video) acquired from both the Internet and via broadcast sources.

72. Bennett-3 teaches, for example, a television that can include a set top box as the information processing apparatus or display apparatus:

The television system 105 includes a television and possibly a set top box and audio reproduction system, depending on the particular installation. More specifically, the processing circuitry 191 of the television system 105 receives video and audio signals via one or more of the communication interfaces 171. The processing circuitry 191 delivers received video to the television screen 187 via a video driver 189, while simultaneously delivering the received audio to one or more of a speaker 181, audio output jack 183 (that supports, for example, a wired headset or audio system, and the communication interface 171 (that supports a wireless headset or audio system). As an alternative to control by the PTV remote control 107, input interfaces 173 such as a keypad allow direct control of the television system 105. The processing circuitry 191 also interacts with memory 177 and media storage 175.

The processing circuitry 191 uses program code stored within the memory 177 to conduct video processing, and to carry out commands received from the PTV remote control 107. The media storage 175 is used for short and longer-term storage to respectively support buffering and later playback of received video.

For example, a viewer may enter a command via the buttons 129 to display a television channel listing, i.e., a media guide, corresponding to available video channel broadcasts from the TV broadcasting 163 of the video sources 101. Such media guide may have been delivered previously or upon request from the TV broadcasting 163 providers. The processing circuitry 125 receives the command from the buttons 129, and responds to the command by delivering the media guide to the PTV remote video screen 121 via the video driver 123. Using the touchpad 131, the viewer may then deliver a second command to the processing circuitry 125 to cause selection of one of the media guide listings, i.e., a channel, for display on the television screen 187. The

processing circuitry 125 responds to the second command by delivering the second command to the processing circuitry 191 via the communication interfaces 147 and 171 and the communication pathway 103. Upon receipt of the second command, the processing circuitry 191 tunes to the selected channel, processes the channel video and audio, delivers the, processed video for display on the television screen 187, and delivers the processed audio, for example, to the speaker 181.

Thereafter, the viewer may enter a third command via the buttons 129 requesting a second media guide from another of the video sources 101, for example, an Internet based media server. The processing circuitry 125 responds by delivering the request to the media server of the video sources 101 via one of the communication interfaces 147 and the Internet 159. The media server responds by delivering the requested second media guide via the Internet 159 to the communication interfaces 147. The processing circuitry 125 receives then delivers the

second media guide to the video driver 123 for display on the PTV remote video screen 121. The viewer responds to the display by entering a fourth command that directs the processing circuitry 125 to display video selected via the second media guide. The processing circuitry 125 responds by requesting the selected video from the media server of the video sources 101. As the selected video is received, the processing circuitry 125 delivers the video to the video driver 123 for display while delivering the audio component of the video to the audio driver 151 for playback.

Lastly, for example, the viewer can enter a swapping command via the input interfaces 127. In response, the processing circuitry 125 and 191 coordinate to cause the video being displayed on the PTV remote video screen 121 and television video screen 187 to be swapped. In particular for example, the processing circuitry 125 sends a request to the processing circuitry 191 for identifiers associated with the video source, video selection being displayed, and current offset into the current video



selection, if appropriate, of the video being displayed by the television video screen 187. Upon receipt of the identifiers, the processing circuitry 125 sends all necessary of such types of identifiers associated with the video being displayed on the PTV remote video screen 121 to the processing circuitry 191. Having exchanged identifiers, the processing circuitry 125 and 191 use the exchanged identifiers to access and display the corresponding video and playback the associated audio, completing the swap.

Bennett-3 at 5:50-6:61. See also Figures 1, 2,

73. The “information processing apparatus” could also include the “entertainment system” that includes DVD and PVR storage.

74. The STB can be integrated: “In accordance with one embodiment of the present invention, the STB 223 can be part of the television.” Bennett-3 at 9:16-17.

75. As discussed above, Bennett-3 allows for any of a wide variety of sources of video to provide the video for both the PTV remote control and the television. These are shown in Figure 3A and include satellite video, cable video, UHF/VHF

video, Fiber TV, ad “Internet server.” This is described in Bennett-3 at 9:21-52. Figure 3B shows details about some of these sources. 9:53-10:6.

76. Furthermore, Fig. 6 specifically teaches about Internet sources and how the video from those sources can be displayed either in real-time or saved for later display:

FIG. 6 is a system level block diagram illustrating an embodiment of the present invention, wherein Internet is used as a video delivery mechanism for a video source based on control signals of a PTV remote. Any downloaded video from the Internet can be stored locally on a storage media and can be used at later point of time.

Internet delivery of a video is a more sophisticated way of receiving video information using a wireless link 637 and a modem 625. Video can also be received on a wire and using a wired modem 623.

Internet video source 627 comprises a plurality of video servers 629-633 located at different distant locations catered to users through an Internet proxy server 635.

Storage media 605 in a home theater will have two separate parts, namely local video sources 603 and remote video sources 611. A remote video source stored on remote storage media of the remote video sources 611 comes from UHF/VHF transmission, satellite TV provider, and Internet.

Local video sources 603 are basically the video channels that may be generated locally (e.g., using a camcorder camera, local video libraries, local cable transmissions, etc.). The required video formatting may be performed using the encoding and the transcoding circuits 607 and 609 respectively from local video sources 603 and remote video sources 611.

The use of different types of video sources using a PTV remote control is accomplished using video processing circuitry 613. The video processing circuitry 613 can select a particular video source, local or remote, using video source selection 615. The required video formatting is done again in encoding and transcoding

circuit 617, before receiving and presenting the formatted video on a PTV screen 619 or a TV screen 621.

Bennett-3 at 11:8-40.

77. At a minimum, the UHF/VHF is “broadcast” and the “Internet server” is internet. As discussed elsewhere, Bennett-3 expressly references “broadcast” video as well. “For example, a viewer may enter a command via the buttons 129 to display a television channel listing, i.e., a media guide, corresponding to available video channel broadcasts from the TV broadcasting 163 of the video sources 101. Such media guide may have been delivered previously or upon request from the TV broadcasting 163 providers.” Bennett-3 at 6:5-10.

78. Internet-sourced video is described throughout Bennett-3. E.g., 10:42-47.

79. When the television (including the “television system” with an integrated STB or PVR) displays video from these various sources, it is content (video) that is “acquired” from broadcast sources and from the Internet as recited in the elements.

80. The PTV remote control allows a user to specify any of these sources (separately) for display on either the television or the PTV remote itself. Bennett-3 at 6:5-61, 7:23-61.

81. Notably, Bennett-3’s claims (which are from the viewpoint generally of the remote control) include that the remote control is in communication with the

Internet and that the remote control can select different videos and control the video so as to be displayed on the screen of a television system. E.g., claim 1, 4, 5, 10.

ii. “Communication unit” (all claims)

82.Bennett-3 discloses, or renders obvious, this element which is a component in the “information processing apparatus” or “display apparatus” that provides for communication with a “mobile terminal” (which is acting, essentially, as a remote control).

83.Bennett-3 shows that both its television and its (possibly integrated) STB have “communication interfaces” (e.g., 171) which corresponds to this element and allows for Bennett-3’s television to communicate with the PTV remote control (mobile terminal). E.g., Bennett-3 at 5:49-64 (“The internal components of the television system 105 are identical with that of the PTV remote control 107. The television system 105 includes a television and possibly a set top box and audio reproduction system, depending on the particular installation. More specifically, the processing circuitry 191 of the television system 105 receives video and audio signals via one or more of the communication interfaces 171. The processing circuitry 191 delivers received video to the television screen 187 via a video driver 189, while simultaneously delivering the received audio to one or more of a speaker 181, audio output jack 183 (that supports, for example, a wired headset or

audio system, and the communication interface 171 (that supports a wireless headset or audio system). As an alternative to control by the PTV remote control 107, input interfaces 173 such as a keypad allow direct control of the television system 105.”).

84.Bennett-3’ specification also fully confirms that Bennett-3’ has this element and that the interface is used to bi-directionally communicate with the PTV remote. *E.g.*, Bennett-3 at Figures 1, 2, 4, 5, 8, 9 Abstract, 6:17-24 (“The processing circuitry 125 responds to the second command by delivering the second command to the processing circuitry 191 via the communication interfaces 147 and 171 and the communication pathway 103. Upon receipt of the second command, the processing circuitry 191 tunes to the selected channel, processes the channel video and audio, delivers the, processed video for display on the television screen 187, and delivers the processed audio, for example, to the speaker 181.”). Furthermore:

The PTV remote control 225 delivers control signals and receives video/audio via an antenna 231 and the wireless links 267 and 271. Also, control signals can be delivered via an infrared transceiver 230 to both or either of the television 221 and STB 223 via infrared transceivers 257 and 253, respectively.

The STB 223 may, for example, receive multiple video/audio channels from the video source 101 via communication pathway 103. The STB 223 has tuners 249, which are tuned to receive the video/audio channels. Three channels can be played simultaneously on the PTV remote's screen 233, television system screen 263 and STB screen 245.

As mentioned previously, the STB 223 and television system 221 may be controlled by the PTV remote 225 wirelessly. Also, the PTV remote control 225 may perform channel selection and tuning of the STB 223.

In an exemplary mode of operation, the three video devices 221, 223 and 225 indicated in FIG. 2 can also communicate with each other to accomplish the remote control operation using infrared signals by using the infrared transmitters/receivers (e.g., 230 on the PTV remote control 225, 253 on the STB 223, and 257 on the television system 221).

In one exemplary scenario, the STB 223 may perform video transcoding to suit its screen requirements. The PTV remote control 225 controls the reception of a plurality of TV channels available at the terminals of the communication pathway using a plurality of the channel tuners 249 available on the STB 223.

The PTV remote control 225 can sequentially access the video channels using their identifiers and peruse them and they can be saved to a memory. These channel identifier information can be retrieved by other viewers on their PTV remote device. And play them on their mini screen on a random choice. This ensures a policy by not allowing the viewers to access the complete video data repository i.e. video source 101 of FIG. 1.

In accordance with one embodiment of the present invention, the STB 223 can be part of the television 221. The input channels will come from the communication pathway 103 of FIG. 1. The STB 223 may then tune to



multiple channels and launch them on to PTV remote control and television screens 233 and 263.

Bennett-3 at 8:46-9:21.

- iii. “Display unit arranged to display a video content” (all claims)

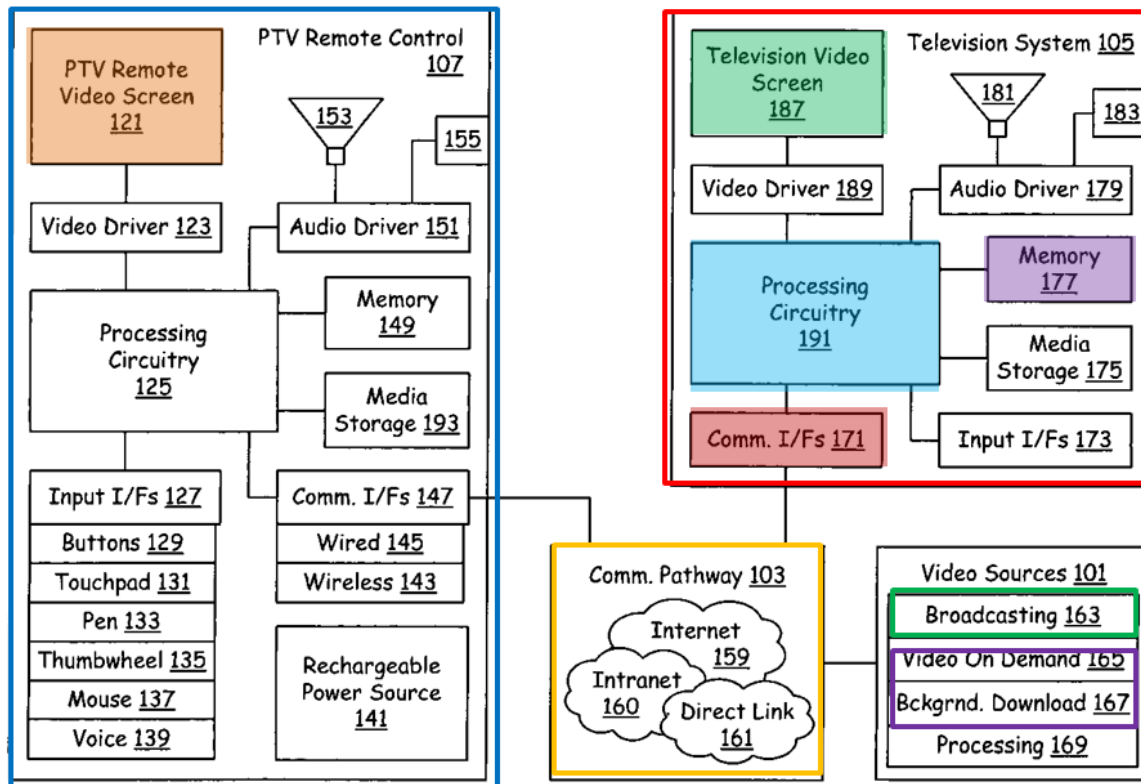
85.Bennett-3 discloses, or renders obvious, this element in the screen of its television that is shown in Figures 1, 2, 5. As discussed in the quotations above, Bennett-3’s television displays video from many sources including broadcast and Internet.

86.The television screen (e.g., elements 187, 263, 308, 413, 511, 621) is shown pervasively throughout Bennnett-3 as displaying video content from the many different sources. E.g., Bennett-3 at 5:56-62; 6:45-61, 8:42-45, claims 1-2, 9, 18 (referencing a first screen of a television system).

- iv. “a control unit arranged to control ” the display unit (all claims) / “to display a first video content” (claims 1 and 10) / “to display a first video content acquired via the broadcast signal” or “to display a broadcast video content” (all claims except claims 1 and 10)

87.Bennett-3 describes this element. Essentially, this element recites the control within the television that provides the requisite processing to display the content (whether it be broadcast or internet video). In claim 8 and 17, the control unit controls the “communication unit” as well.

88.Bennett-3 describes this control unit in its functional diagram in, for example, Figure 1 (annotated):



**Figure 1**

89.The control unit of the television would primarily be the processing circuitry 191. Bennett-3 describes that this circuitry block controls the television screen to display videos based on “control signals” received via the communication interfaces 171. Bennett-3 at Figs.. 1-3A, 3C, 6, 8-9; 5:53-6:25; *see also* Bennett-3 at 4:5-7, 8:5-7, 8:46-61, 11:8-40. The “processing circuitry” can be implemented in hardware and/or software. Bennett-3 at 4:61-67.

90.The processing circuitry interacts with, and receives commands from the communication interface. Bennett-3 at 5:48-63. However, it also interacts with other elements to achieve the task of displaying the video. For example, it uses program code within the memory (177) “to conduct video processing.” Bennett-3 at 5:64-6:4. It may also use the “media storage” to perform the function of displaying the video. Bennett-3 at 5:64-6:4.

91.The processing circuitry also interacts with the video driver (and the television screen) to display the video. Bennett-3 at 5:48-63.

92.Because the “control unit” is not precisely defined in terms of structure in the claims but is instead identified by its function, the functional aspect of Bennett-3’s disclosed “control unit” as identified above (corresponding to the claim) can include the processing circuitry as well as any, or all, of the components described above. This is particularly true because Bennett-3’s processing circuitry can be hardware, software or any combination thereof. It is this circuitry, and the related components taught in Bennett-3 as discussed herein, that provide the claimed functionality of the “control unit.” This circuitry is also depicted and described in part in Figure 3C and 10:7-20. As part of its functionality, the circuitry will perform transcoding to be able to fit the displayed video to the display. This is recited in Bennett-3’s claim 1 discussing the “first resolution configured for the first screen.”

93. Bennett-3 details how “control signals” are generated and transmitted to the television to cause channels to be displayed and control the display of the video content. *E.g.*, Bennett-3 at 6:5-25; 7:13-61 (ending in the statement that “the exchanged control information will be processing in the processing circuitry” to achieve the desired display described therein).

v. “mobile terminal” (all claims)

94. The Bennett-3 discloses, or renders obvious, this element in its disclosure of the one or more PTV remote controls that can be used to interact with, and control, the display of video on the television from the many sources.

95. The PTV remote control communicates with the television using bidirectional control signals as discussed above for the communication interface.

96. The control signals communicated to/from the PTV remote are over any form of direct or indirect link whether wired or wireless. “The PTV remote control 107 and the television system 105 communicate via a communication interface 147 that supports both wireless 143 and wired 145 communication according to proprietary and industry standard protocols making up the communication pathway 103. For example, the communication pathway 103 may comprise one or any wireless and wired combination of Internet 159, intranet 160 and direct link 161.” Bennett-3 at 5:14-21. This is reiterated repeatedly in Bennett-3 which emphasizes

the use of wireless signals such as Bluetooth. 6:62-7:11; 8:46-51, 13:42-48, FIGS. 1-3A, 5-9, claims 1-19.

97.The PTV remote control is handheld and multiple different handheld remotes can be used by different viewers. Bennett-3 at 5:1-13; 10:58-11:3, Figures 1, 2, 5.

98.In assessing what a “mobile terminal” may be, I have reviewed the specification of the ’369 patent that describes the mobile terminal in the following fashion: “[t]he mobile terminal 101 is a portable information processing terminal.” EX-1001 at 4:46-48.

99.The PTV remote is one such information processing terminal. The PTV remote includes input interface circuitry that accepts commands from controls (buttons, thumbwheel, touchpad...) and it has “processing circuitry” (which “may be implemented utilizing various hardware and/or software modules”) to execute programs stored in “memory” to process different information such as video, audio, and the display / selection of program guides. Bennett-3 at Figures 1-2, 3C, 4:61-6:3.

100. The information that the PTV remote processes includes the video as described above as well as channel guide information (referenced as “media guide”) that it downloads from, for example, the Internet to allow it to select video for display on the PTV remote and the controlled television. 6:6-44. As noted

above and elsewhere, the PTV remote issues control signals that control the operation of other devices such as the television and STB.

101. The PTV also allows for other forms of processing. For example, it displays video (from many sources) and outputs audio through its speakers or headphones. Bennett-3 at 5:18-35. Furthermore, the PTV remote control has a “rechargeable power source 141.” Bennett-3 at Figure 1. Rechargeable power sources are typically used in mobile devices that will need to be away from a more permanently supplied power source such as through a power cable connected to an outlet.

102. Given all of these factors (small portable handheld form factor, ability to process many different forms of information, generalized “processing circuitry,” generalized input and output capabilities (such as buttons, thumbwheels, displays) and ability to communicate with the Internet to download many different forms of content (channel guide information, video) and other devices for exchanging information and control signal, the PTV remote control is a “mobile terminal” within the meaning of the challenged claims. This is particularly true because the PTV remote exhibits all of the functionality required for such a mobile terminal by the claim language.

- vi. The Actions And Results Corresponding To The Transmission Of “First Information” Or A “First Communication” From The Mobile Terminal To

The Information Processing Apparatus / Display  
Apparatus As Recited In The “Wherein” Clause.

103. Bennett-3 discloses, or renders obvious, this element in the “swap” command and associated information that are transmitted from the PTV remote control to the television (either directly or indirectly as discussed above) to swap the videos currently being displayed on each of the devices.

104. The claim element recites:

control the display unit to display a first video content;

control the display unit to terminate displaying of the first video content and to start displaying a second video content acquired via the internet when the communication unit receives first information from the mobile terminal, wherein the second video content is a same video content as a video content displayed on the mobile terminal before the mobile terminal sends the first information to the information processing apparatus, and wherein a state of displaying of the video content on the mobile terminal at a time when the first information is sent from the mobile terminal is taken over to a state of displaying of the second video content on the display unit

at a time when the display unit starts displaying the second video content, based on the first information;

Claim 1.

105. As noted above, there are minor differences in the claims with respect to this element, but each of the different permutations are fully disclosed by Bennett-3.

106. Bennett-3 teaches these actions throughout its specification (and claims) including specifically at Bennett-3 at 5:50-6:61.

107. For the “control the display unit to display a first video content,” Bennett-3’s television and its control unit (as discussed above) performs this when the PTV remote control selects a video for display on the television.

More specifically, video sources 101 deliver video to a TV (Television) system 105, which will also be referred to herein as “media system 105,” and a PTV (“parallel TV”) remote control 107 via a communication pathway 103. Such video delivery from the video sources 101 occurs both for, and in response to, a viewer's selection via the PTV remote control 107. For example, some types of video are only delivered after they have been selected by the PTV remote control 107 for delivery,



while other types of video are delivered even though they have not been selected by the PTV remote control 107 but are only displayed upon selection.

In particular, the video sources 101 offer various types of video to be viewed by the PTV remote control 107 and the television system 105. The video sources 101 include TV broadcasting sources 163, video on demand sources 165 and background downloading sources 167. The TV broadcasting sources 163 include cable, fiber and satellite multiple-channel broadcast providers and single-channel broadcast stations. Such channel broadcasts are delivered via the communication pathway 103, and await selection of a channel by the PTV remote control 107 for display on a television video screen 187 and/or a PTV remote video screen 121. The video on demand sources 165 and the background downloading sources 167 also include such cable, fiber and satellite providers or various Internet based servers that provide unicast or multicast delivery of viewer-selected video. Unlike the video on demand sources 165, the background download sources

167 deliver video to the media system 105 for later “non-real time” playback.

Bennett-3 at 4:22-50.

108. The first video is displayed on the television after being selected by the PTV remote:

For example, a viewer may enter a command via the buttons 129 to display a television channel listing, i.e., a media guide, corresponding to available video channel broadcasts from the TV broadcasting 163 of the video sources 101. Such media guide may have been delivered previously or upon request from the TV broadcasting 163 providers. The processing circuitry 125 receives the command from the buttons 129, and responds to the command by delivering the media guide to the PTV remote video screen 121 via the video driver 123. Using the touchpad 131, the viewer may then deliver a second command to the processing circuitry 125 to cause selection of one of the media guide listings, i.e., a channel, for display on the television screen 187. The processing circuitry 125 responds to the second

command by delivering the second command to the processing circuitry 191 via the communication interfaces 147 and 171 and the communication pathway 103. Upon receipt of the second command, the processing circuitry 191 tunes to the selected channel, processes the channel video and audio, delivers the, processed video for display on the television screen 187, and delivers the processed audio, for example, to the speaker 181.

Bennett-3 at 6:5-25.

- vii. “control the display unit to terminate displaying of the first video content and to start displaying a second video content acquired via the internet when the communication unit receives first information from the mobile terminal, wherein the second video content is a same video content as a video content displayed on the mobile terminal before the mobile terminal sends the first information to the information processing apparatus,”

109. The actions corresponding to this element occur when the television receives the swap command from the PTV remote control.

110. First, the user may select a video for display on the PTV remote control that is different from the video currently being displayed on the TV:

Thereafter, the viewer may enter a third command via the buttons 129 requesting a second media guide from another of the video sources 101, for example, an Internet based media server. The processing circuitry 125 responds by delivering the request to the media server of the video sources 101 via one of the communication interfaces 147 and the Internet 159. The media server responds by delivering the requested second media guide via the Internet 159 to the communication interfaces 147. The processing circuitry 125 receives then delivers the second media guide to the video driver 123 for display on the PTV remote video screen 121. The viewer responds to the display by entering a fourth command that directs the processing circuitry 125 to display video selected via the second media guide. The processing circuitry 125 responds by requesting the selected video from the media server of the video sources 101. As the selected video is received, the processing circuitry 125 delivers the video to the video driver 123 for display while delivering the

audio component of the video to the audio driver 151 for playback.

Bennett-3 at 6:26-44.

111. Then, with the television displaying broadcast video (for example) and the PTV remote displaying Internet video (for example), the user may issue a “swap” command to swap the two videos:

Lastly, for example, the viewer can enter a swapping command via the input interfaces 127. In response, the processing circuitry 125 and 191 coordinate to cause the video being displayed on the PTV remote video screen 121 and television video screen 187 to be swapped. In particular for example, the processing circuitry 125 sends a request to the processing circuitry 191 for identifiers associated with the video source, video selection being displayed, and current offset into the current video selection, if appropriate, of the video being displayed by the television video screen 187. Upon receipt of the identifiers, the processing circuitry 125 sends all necessary of such types of identifiers associated with the

video being displayed on the PTV remote video screen 121 to the processing circuitry 191. Having exchanged identifiers, the processing circuitry 125 and 191 use the exchanged identifiers to access and display the corresponding video and playback the associated audio, completing the swap.

Bennett-3 at 6:45-61.

112. When the television receives the “swap” command (and the associated information as described above, the television will terminate displaying of the first video content (e.g., the broadcast video) and start displaying a second video content (e.g., the Internet video) acquired via the Internet which is the same video content as displayed on the PTV remote control (claimed mobile terminal) prior to the exchange of the swap command and associated information.

113. Bennett-3 discusses the specific details of this swap command (largely in the same terms as the quoted passages above) throughout the specification and specifically claims this swap command in each of its 18 claims. See Bennett-3 at Abstract, claims 1-18, 5:6-10, 7:46-62, 11:63-67, 13:31-36, Abstract, FIG. 7 (showing swap operation), FIG. 9 (element 919).

viii. “wherein a state of displaying of the video content on the mobile terminal at a time when the first

information is sent from the mobile terminal is taken over to a state of displaying of the second video content on the display unit at a time when the display unit starts displaying the second video content, based on the first information”

114. Bennett-3 also expressly discloses (and claims), or renders obvious, this action occurring as part of the first information (swap command and associated information).

115. As part of the swap command, the PTV remote control and television exchange “identifiers associated with the video source” on each device.

Lastly, for example, the viewer can enter a swapping command via the input interfaces 127. In response, the processing circuitry 125 and 191 coordinate to cause the video being displayed on the PTV remote video screen 121 and television video screen 187 to be swapped. In particular for example, the processing circuitry 125 sends a request to the processing circuitry 191 for identifiers associated with the video source, video selection being displayed, and current offset into the current video selection, if appropriate, of the video being displayed by the television video screen 187. Upon receipt of the identifiers, the processing circuitry 125 sends all

necessary of such types of identifiers associated with the video being displayed on the PTV remote video screen 121 to the processing circuitry 191. Having exchanged identifiers, the processing circuitry 125 and 191 use the exchanged identifiers to access and display the corresponding video and playback the associated audio, completing the swap.

Bennett-3 at 6:45-61.

116. These “identifiers” provide the necessary information for each device to take over a state of displaying the video from the other device. In particular, on the television, the “state of displaying of the video content on the mobile terminal at a time when the first information is sent from the mobile terminal is taken over to a state of displaying of the second video content on the display unit at a time when the display unit starts displaying the second video content, based on the first information.” This occurs because the television has the information for the video source (to acquire the video), the specific video selection being displayed on the PTV remote (which represents the exact video) and the “current offset” into the video selection which represents, for example, the specific time within the video that was being displayed on the PTV remote previously.



117. This identifier information allows the processing circuitry on the television to download and display the internet video at the point at which it was being displayed on the PTV remote. Bennett-3 at 7:13-62. See also Figures 7, 9; 13:31-36.

118. Notably, the '369 patent does not contain any such disclosure of being able to exchange the offset of video. Rather, at most, the '369 patent teaches the exchange of a URL which is just a static identifier that does not expressly, for example, identify a particular location or time within a displayed video.

119. Thus, with respect to this element, Bennett-3 has a far more robust description of the actions than exists in the '369 patent.

120. This aspect of Bennett-3 is disclosed in many places in Bennett-3. For example, the Bennett-3 claims specifically recite this “offset” information:

establish a new wireless communication link between the remote control device and the television system through the communication interface in response to a swap command, and exchange, across the new wireless communication link, current offsets associated with each of the first video and the second video.

Bennett-3 at claim 1. See also claim 9:

respond to receipt of the third user input by causing the first screen and the second screen to swap the respective media programs, the swap comprising:

transmission of **video identifiers** of the first media program displayed on the first screen to the second screen, and

transmission of **video identifiers** of the second media program displayed on the second screen to the first screen.

121. See also claims 13-14 (transmitting identifiers).

122. Bennett-3's claim 17 has all of the components:

17. The remote control infrastructure of claim 9, wherein the video identifiers comprise a **video source identifier**, **a video selection identifier**, and **a current offset into a current media program**.

123. Bennett-3 also references this swap identifiers as "identifier information." 7:3-50.

124. These identifiers can be sent directly through Bluetooth link. Bennett-3 at 6:65-7:2; 7:46-62.

125. After the television receives these identifiers, this information is “processed in the processing circuitry” to control the display unit on the television to display the video. E.g., Bennett-3 at 7:51-60.

126. In this fashion, this transmission of the swap command and the associate exchange of “identifiers” would teach, or render obvious, this element of taking over a state of the video on the mobile terminal.

- ix. “control displaying of the second video content on the display unit based on second information for operating the second video content displayed on the display unit when the communication unit receives the second information from the mobile terminal”

127. Bennett-3 discloses, and renders obvious, this element in the many different exchanges of “control signals” from the PTV remote control to the television to control the display of the video after it has been swapped to the PTV remote control as discussed above.

128. As an initial matter, I consulted the ’369 patent as to the meaning of this element. It appears that the ’369 patent attempts to describe this element as part of Figure 12 and in the specification at 15:9-31. These passages describe the actions that occur, and information / communications that occur from the remote control to the television after the alleged “second video” is being displayed on the television (which, in the ’369 is merely the display of a web page at a particular URL).

129. In particular, the '369 patent appears to describe only the actions of the typical remote control in this state with respect to the display of the page at the URL:

On the other hand, **after the transmission of the URL, the cellular phone enters a state in which the system control unit 301 is capable of operating the TV set,** which will be described later, by using part of the input unit 102. The display unit 305 presents a display to inform the user of operations which can be conducted by pressing keys as shown, for example, in the screen display 404 (step 505). **In this state in which the TV set can be operated, if the user presses an associated key of the input unit 102, an infrared-ray command which indicates an operation for the TV set** and which can be interpreted by the TV set designated in step 501 is sent via the infrared-ray transmitting and receiving unit 700 to the TV set. **The infrared-ray command includes information almost the same as that of an infrared-ray command sent from a remote control device of the TV set.** Therefore, in a situation wherein it is desired to

move a selection item of an internet site being displayed on the TV set or to determine a selection item, if the user operates the input unit 102 of the cellular phone to press a key corresponding to an operation information item shown in the screen display 404, the cellular phone sends an indication of the operation to the TV set (step 506). When the operation indication is received from the cellular phone, the TV set reflects the information of the indication in the screen display 406 displaying the internet and in the operation of the browser 208 (step 517).

369 patent at 15:9-35.

130. Thus, for this element, the '369 patent describes information "almost the same" as a typical remote control.

131. While in the channel surfing mode, the '369 discloses that certain commands related to surfing a web page can be transmitted. For example, the '369 describes:

When the data transmitting and receiving unit 210 receives the information and the signal of the operation

indication such as “move” or “select” from the cellular phone, the TV set reflects, under control of the system control unit 201, the information of the indication in the screen display 406 displaying the internet and in the operation of the browser 208 (step 517).

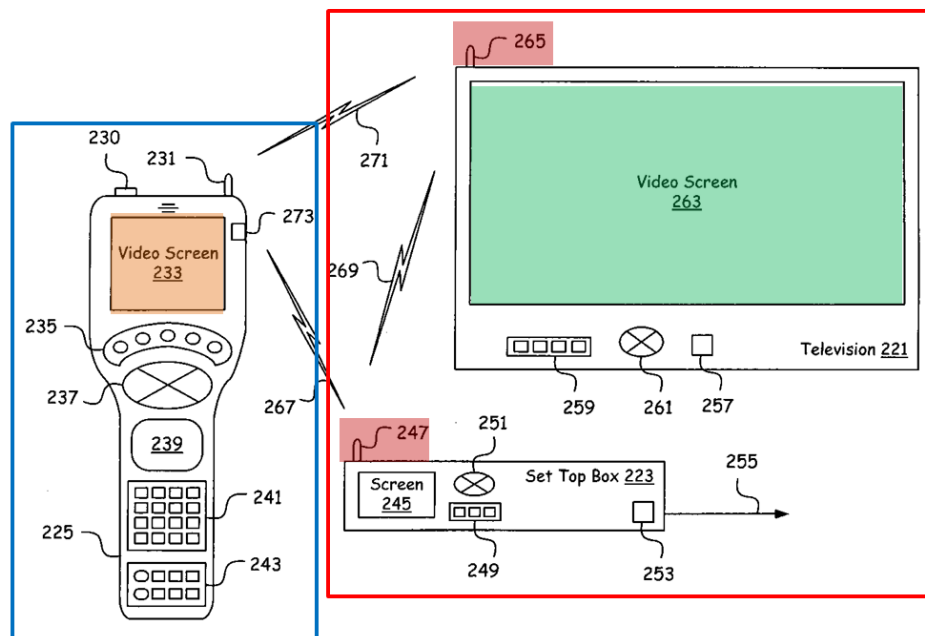
369 patent at 11:23-29.

132. These actions relate to Internet browsing, but do not appear to “control displaying of the second video content.” If these actions correspond to the claimed “control displaying of the second video content,” then that term must be construed very broadly because the information being displayed at that point (a static URL) is not video being downloaded from the Internet. Rather, it is a webpage that is downloaded and then the video is generated on the television.

133. Bennett-3 has a robust discussion of “control signals” that meet this claim element either individually or together as shown below.

134. In Bennett-3, after the second video (the Internet video) has been swapped to the television (which, as discussed above, may include an integrated STB), Bennett-3 teaches that “control signals” control the display of that swapped video.

135. In Figure 2 (annotated), Bennett-3 depicts these control signals between the various devices.



**Figure 2**

136. A comparison of the claim language against the disclosure of Bennett-3 shows that Bennett-3 expressly discloses, or renders obvious, this element:

369 claim language	Bennett-3 disclosure
" <u>control displaying of the second video content on the display unit based on second information</u> for operating the second video content displayed on the display unit when the	"The PTV remote control 225 has sets of buttons 235, 241 and 243 through which the <u>viewer may control the selection and display</u> of media guides and <u>video selections</u> on the video

communication unit receives the second information from the mobile terminal”	screens 233, 245 and 263. A rocker button 237 allows a viewer to browse up and down to <u>sample</u> or “surf” video <u>offerings</u> and adjust associated volume. For example, the viewer may select one of the buttons 235 to indicate that the subsequent commands will be directed to the television 221.” Bennett-3 at 8:24-27.
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137. Thus, Bennett-3 expressly discloses, or renders obvious, this element.

138. The PTV remote controls the video on the TV by transmitting “control signals” to the television. “The PTV remote control 225 delivers *control signals* ...via an antenna 231 and the wireless links 267 and 271. Also, *control signals* can be delivered via an infrared transceiver 230 to both or either of the television 221 and STB 223 via infrared transceivers 257 and 253....” Bennett-3 at FIG. 2, 8:2-51; 11:8-14. See also claims 1, 18.

139. These “control signals” constitute one form of the claimed “second information” or “second communication” as recited in this element.



140. These control signals can control any of the associated devices as shown in Figure 8 including the television and integrated STB as well as DVD's and the other devices described by Bennett-3 such as "PVR" or "personal video recorders." Bennett-3 at 4:51-60, 9:45-53 (describing control of these devices by the PTV remote controller).

141. Examples of this are shown in Figure 9 which shows (as with Figure 8), control of different devices and provides a specific example of some of the control of the display that may be performed by the remote. These include a "video mode selection 915," which, for example, can set the video to be color or black and white. *See* Bennett-3 at 13:8-36.

142. As a second form of "control signals" that meets this claim elements, Bennett-3 also teaches that PTV remote control transmits to the television information:

the PTV remote prompts the user for video setting information. This step includes the operations related to the fine-tuning, color setting, brightness control, etc., to optimize the picture displayed on the PTV. If the video setting is not selected, the control is simply transferred to the next step without doing anything to the picture.

Bennett-3 at 11:56-61, Figure 7.

143. This information controls the display modifying the display parameters on the television that impact the display.

144. As discussed above, the '369 teaching is that these remote commands are “almost the same” as known typical remote commands. Bennett-3 further describes the type of control features provided in typical, known, remote controls:

A typical remote control ... has a series of predefined buttons that, when selected, directly interact with a corresponding TV (“Television”) to perform a variety of tasks such as changing channels, adjusting TV settings, and controlling power to the TV.... A TV responds to transmissions received from a Remote by displaying on the TV's screen a selected channel, status or information, and/or a visual user interface for managing a control function. Upon receiving the visual user interface on the TV screen, the user may press further buttons on the Remote as needed to complete a task.

Bennett-3 at 1:39-55.

145. These commands to manage a “visual user interface on the TV screen” for a “control function” disclose this second information. Just as in the

‘369 ability to “move” or “select” the URL, the navigation of this visual user interface and control features disclose the ability to control the display of video based upon the operation.

146. Because Bennett-3 discloses that the PTV remote control may control many different forms of devices (DVD, PVR, ...) as discussed above, the PTV remote control would be understood to support the typical actions for those remote devices. For example, DVD and video recorders are well understood to have functions related to long-known actions such as “pause” or “fast forward” or “stop” or “slow” that are associated with the display of video. This is particularly true in light of Bennett-3’s disclosure that Internet video may be stored in the media storage (e.g., element 175) for display either buffered, in real-time, or for later display. Bennett-3 at 11:8-13; 6:2-4.

147. The “buffer[ing]” capabilities of the media storage also indicate that the PTV remote control supported these traditional well-known activities (pause, fast forward, ...) because those activities use buffering techniques to allow the user to pause the video, transit through the video at different speeds, or play in different directions from the standard mode in which video is displayed (and then discarded) as it is received.

148. The ability to “sample or ‘surf’” the video offering (as described in the quote above) using the controls of the PTV remote that are transmitted to the

television and integrated devices teaches the ability to skip through the video also discloses, or renders obvious, these well-known commands. To “sample” a video allows for a user to select portions of that video for review in an efficient manner. For example, the ability to fast-forward or reverse in a video allows for “sampling” of the video. Similarly, in context, Bennett-3’s discussing of “surf the video offering” also teaches the ability to, for example, skip (or fast forward) to the next video. These functionalities in Bennett-3, combined with the teachings of media storage, buffering, and internet downloads (as noted above) teach that the Bennett-3 PTV remote control transmitted “control signals” for these traditional, well-known functions to be implemented by the television such as pause, fast-forward, and reverse. These are one example of the claimed “second information” related to the display of the video content as recited in the claims.

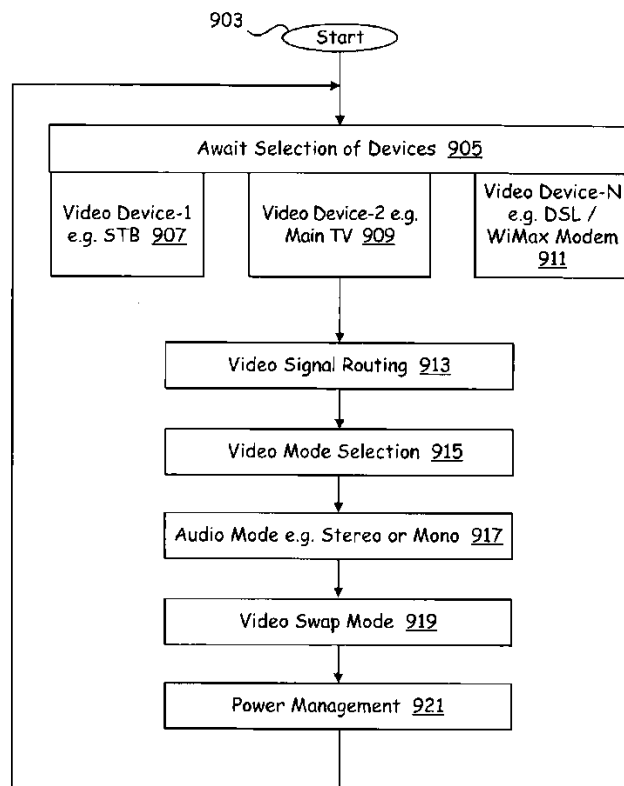
149. Separately, the control signals include “industry standard protocols” for controlling the television including any other integrated devices. Bennett-3 at 5:14-21; 8:2-6. These signals separately constitute the “second information” / “second communication” recited in the claims.

- x. “control the display unit to terminate displaying of the second video content when the communication unit receives third information from the mobile terminal.”

150. Bennett-3 discloses, or renders obvious, this element in its disclosure of the ability to send a second “swap” command and, also, in its ability to send a “power off” command to the television.

151. I note initially that, in the ‘369 patent, this “terminate” action appears to be the result of a command that causes the display of the television and the remote control to be swapped. This is described in Figure 12 in elements 507, 508, 509, 510, 517, 518, 519, and 520. It is also described in the ‘369 patent at, for example, 11:30-52. Thus, the disclosure of Bennett-3’s second “swap” command is extremely similar to the specification of the ‘369 patent.

152. As shown in FIG. 9 of Bennett-3 below, after a video swap at step 919 (the first swap described above for the “first information” element, the operation will go back to step 905 to wait for another user input, and another user input may be received to trigger an additional video swap at step 919 again. The swap command is described at 6:46-61.



**Figure 9**

153. Bennett-3 expressly explains a second swap action in addition to the Figure 9 teaching:

In an embodiment according to the present invention, **swapping of the channel may be performed** after the perusal of the channel contents. Such perusal can either be performed using picture-in-picture (PIP) or using the whole display. This option can again be controlled using

the PTV remote control, as in state 919, in video swap mode.

Bennett-3 at 13:31-36.

154. The video swap enables the video contents being displayed on the remote control and the TV to be swapped or switched back. Thus, when the second “swap” is commanded, display of the second video is terminated at the TV and swapped to the remote control (and the first video is swapped to the TV). This is precisely what the ’369 patent describes as noted above.

155. As discussed above for the “first information” element, Bennett-3 teaches this that the remote control and television exchange control signals necessary such as each device may take over the display of the video from the other device referenced, for example, as “identifiers,” “control information,” “identifier information.”

156. Bennett-3’s swap command (the second one) and the associated information would be a “third information” that causes the video to be terminated on the television display as claimed.

157. Bennett-3 teaches a separate third information that causes the television to terminate the video display: a command to “power-off” the

television. This is shown in FIG. 9 (element 921). It is also discussed in the specification:

In an embodiment according to the present invention, the power management options can be set or controlled remotely in state 921, to select the power management options. This feature is important where the power and hence battery life is the main concern, in certain applications.

Bennett-3 at 13:37-41;

A typical remote control (or “Remote” as used herein) has a series of predefined buttons that, when selected, directly interact with a corresponding TV (“Television”) to perform a variety of tasks such as changing channels, adjusting TV settings, and controlling power to the TV. Such direct interaction typically comprises one-way infrared transmissions from the Remote to the TV but may also involve radio frequency transmissions.

Bennett-3 at 1:39-43.



158. The “power management operation” in box 921 would include the ability to turn off the power. Bennett-3’s references to saving power and battery life confirms that the “off” would be an important command for the remote to be able to transmit to the television and other devices. This disclosure in element 921, for the power management options, would include the power options for both the PTV remote and the controlled devices because the PTV remote is described as being able to control the actions of both itself (in displaying video) and in the control signals/commands transmitted to the controlled devices.

159. Moreover, as shown in the quote at 1:39-43, this would be a well-known and typical command for a remote control to be able to transmit to its controlled devices. A POSA reading this disclosure would understand that the PTV remote would include this well-known functionality in light of these disclosures.

160. At a minimum, Bennett-3’s disclosures render obvious sending this power off command to the television.

161. A “power-off” command terminates the video display on the television and thus meets the claim requirements. The claim does not require any specific type of “information” other than the command itself and this power-off command would thus meet this limitation.

b) Claim 2.

162. Bennett-3 discloses, or renders obvious, this claim.

163. Claim 2 differs from claim 1 in that it claims a “display apparatus” rather than an “information processing apparatus.” Bennett-3’s television, including with the integrated STB, meets both of these limitations for the reasons discussed above with respect to the specific processing of Bennett-3. Bennett-3’s television processes information (e.g., the video displayed, the commands transmitted by the PTV remote, ...) as well as displays video from many sources as discussed above.

164. I note that the term “display apparatus” is used only in the ‘369 claims and does not appear in the specification. The term “information processing apparatus” does appear in the specification (e.g., at the beginning of the Background of the Invention).

165. Furthermore, claim 2 also recites that the displaying of video (in the preamble) is “via broadcast signal or via the internet.”

166. As discussed for claim 1 above, Bennett-3 discloses both of these sources for displaying video on its television system.

c) Claim 3. “3. The display apparatus according to claim 2, further comprising: a video processing unit to conduct video processing to both a video content

acquired via the broadcast signal and a video content  
acquired via the internet.”

167. Bennett-3 discloses, or renders obvious, this claim element which is repeated in the dependent claims 3, 5, 7, 9, 12, 14, 16, 18.

168. Bennett-3 discloses, or renders obvious, this element as at least part of Bennett-3’s processing circuitry in the TV as well as related functional blocks including the video driver and memory including the “program code.”

169. These components, either separately or together, comprise a video processing unit arranged to conduct video processing. This is shown in Bennett-3 at Figures 1-2; 4:33-47; 5:53-6:2 (“[t]he processing circuitry 191 also interacts with memory 177 and media storage 175. The processing circuitry 191 [of the TV] uses program code stored within the memory 177 **to conduct video processing**....”). This is a verbatim recitation of the function of the “video processing unit” in the claims.

170. Bennett-3’s processing including “decoders” for the video as well as “transcoding” and “fitting” (which formats for the specific screen size) from any of the sources (as detailed above. See Bennett-3 at Figure 3C, 10:7-20, 9:48-52, Abstract.

171. As discussed above, Bennett-3 teaches sources for video including broadcast signals and video content downloaded from the Internet. Bennett-3 at Figures 1, 3A, 4, 4:33-47.

d) Claim 6.

172. Bennett-3 discloses, or renders obvious, this claim.

173. Claim 6 differs from claim 1 in that it claims a “display apparatus” rather than an “information processing apparatus.” Bennett-3’s television, including with the integrated STB, meets both of these limitations for the reasons discussed above with respect to the specific processing of Bennett-3. Bennett-3’s television processes information (e.g., the video displayed, the commands transmitted by the PTV remote, ...) as well as displays video from many sources as discussed above.

174. I note that the term “display apparatus” is used only in the ‘369 claims and does not appear in the specification. The term “information processing apparatus” does appear in the specification (e.g., at the beginning of the Background of the Invention).

175. Furthermore, claim 6 also recites that the displaying of video (in the preamble) is “via broadcast signal or via the internet.” As discussed for claim 1 above, Bennett-3 discloses both of these sources for displaying video on its television system.

176. Claim 6 also requires that the “control unit” be required to “control the display unit to display a broadcast video content acquired via a broadcast signal” rather than a “first video content” as required in claim 1. The “wherein” clauses also replace the “first video content” in claim 1 with the “broadcast video content.” This is discussed in detail above regarding Bennett-3’s teachings of the many different sources, including broadcast, that the television displays.

e) Claim 7.

177. See claim 3 above.

f) Claim 10.

178. Bennett-3 discloses, or renders obvious, this claim.

179. Claim 10 differs from claim 1 in that it recites a “first communication” and “second communication” and “third communication” that are “conducted” between the “mobile terminal and the information processing apparatus” in place of the first/second/third information that is transmitted in claim 1.

180. With respect to Bennett-3’s disclosures as detailed above for claim 1 of the first/second/third information, there is no substantive difference for purposes of this claim related to Bennett-3’s disclosures. The first/second/third “information” as discussed above is transmitted in the context of a system that

allows for bidirectional communications to be conducted between the PTV remote and the television (either directly or indirectly as detailed above). Thus, with respect to Bennett-3's disclosure, it discloses this claim in the same fashion as it discloses claim 1.

g) Claim 11

181. Claim 11 is substantively the same as claim 2 above with the exception that claim 11 recites the "communication" being conducted that is discussed for claim 10 above.

182. Thus, for the same reasons as discussed in claims 2 and 10 above, claim 11 is disclosed, or rendered obvious, by Bennett-3 for the reasons as discussed in claim 1 above.

h) Claim 12

183. See this element in claim 3 above.

i) Claim 15.

184. For claim 15, the differences with respect to claim 1 are discussed in claims 6 above. Claim 15 replaces "information" with the "communications" as discussed in claim 10. Claim 15 also replaces "first video" with "broadcast video" as discussed in claim 6 above.

185. For the reasons discussed in claims 1, 6, and 15 above, Bennett-3 discloses, or renders obvious, all of the elements of this claim.

j) Claim 17.

186. See this element in claim 3 above.

**C. Ground 2: Claims 1-3, 6-7, 10-12 and 15-16 Are Obvious Over Bennett-3 And Yuasa.**

187. As detailed below, it is my opinion that the challenged claims are obvious over Bennett-3 and Yuasa.

188. Yuasa discloses a remote control (“portable operation control apparatus”) that displays video and send signals to control the display of a television (“a content display-playback apparatus”). Yuasa claims this configuration in claim 1.

189. In Yuasa, the user uses the remote control to designate and download video content from a wide variety of sources including broadcast and Internet sources—just like in Bennett-3. Yuasa at 8:27-32, 13:29-33.

190. Once the video content is being played on the television, Yuasa provides additional details related to control the operation and display of that video content.

191. As discussed above, Bennett-3 contains extensive details on various aspects of controlling the video on the television. Yuasa expressly discloses the actions of “starting, stopping, and pausing playback” of the video on the television. Yuasa at 12:39-45.

192. The proposed combination is to incorporate into Bennett-3 these actions expressly disclosed in Yuasa. As discussed above for Ground 1, Bennett-3’s PTV remote control provides for the standard features found in remote controls



to control devices such as televisions and set top boxes. However, Bennett-3 does not recite actions such as “pause,” “forward,” or “stop” in those exact words – although it does disclose the concepts as discussed above.

193. To the extent that it is argued that the claimed “second” and/or “third” information (or communications) are not disclosed in Bennett-3, Yuasa provides such express disclosure to fill any gaps with respect to how the information/communication meets the elements of the claims.

194. Furthermore, Yuasa confirms that its “remote controller” is portable and contains well-known elements such as a CPU, wireless communication elements, headphone terminals and display used for their known and intended purposes. Yuasa at Figures 1, 6-10, 12:46-13:32, claim 1.

195. Thus, Bennett-3 combined with Yuasa renders obvious every element of claims 1-3, 6-7, 10-12 and 15-16 and the combination of such elements as recited in the claims.

### **1. Yuasa Discloses Various Elements Of The Challenged Claims.**

#### **i. The “first information” / “first communication” (all claims)**

196. Yuasa teaches that a first information (or communication) is sent from a mobile terminal (remote control) to a television causing the television to display a chosen content. Yuasa’s operation is shown in, for example, FIGS. 16A-B. At the top of FIG. 16A, the “Display-playback apparatus” (e.g., television) will “play

back content A” (operation 205). The “operation control apparatus” (remote control) allows a user to display and select “content B” (operations S208-209). The remote control then “Request Playback of Content B” to the television (operations S216-217). Yuasa’s content comes from “broadcasting” or “the Internet.” EX-1008 at 8:27-42.

197. In FIG. 16B, Yuasa’s television stops playing video content A at operation S221, and starts playing video content B at operation S224. EX-1008 at 20:51-22:7.

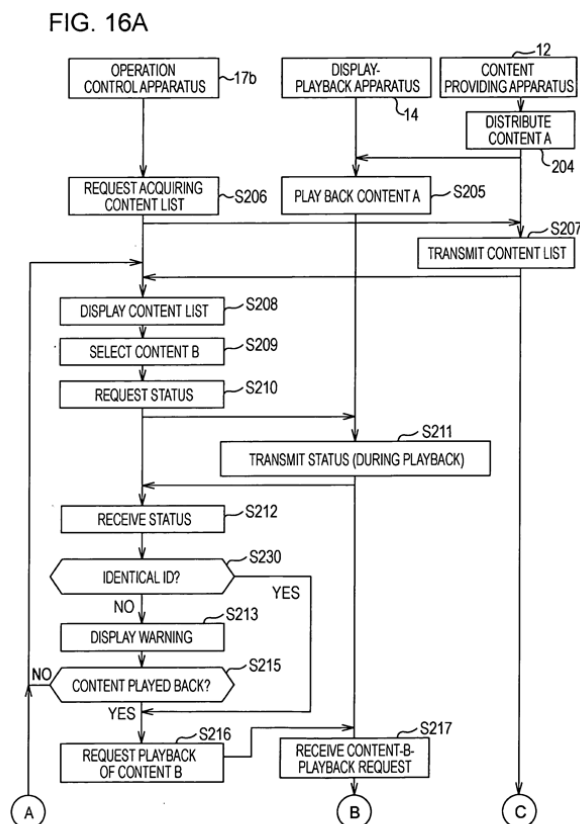
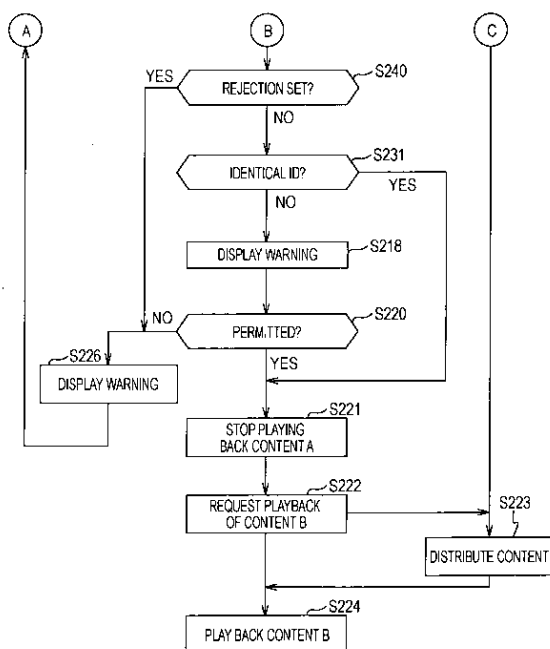


FIG. 16B

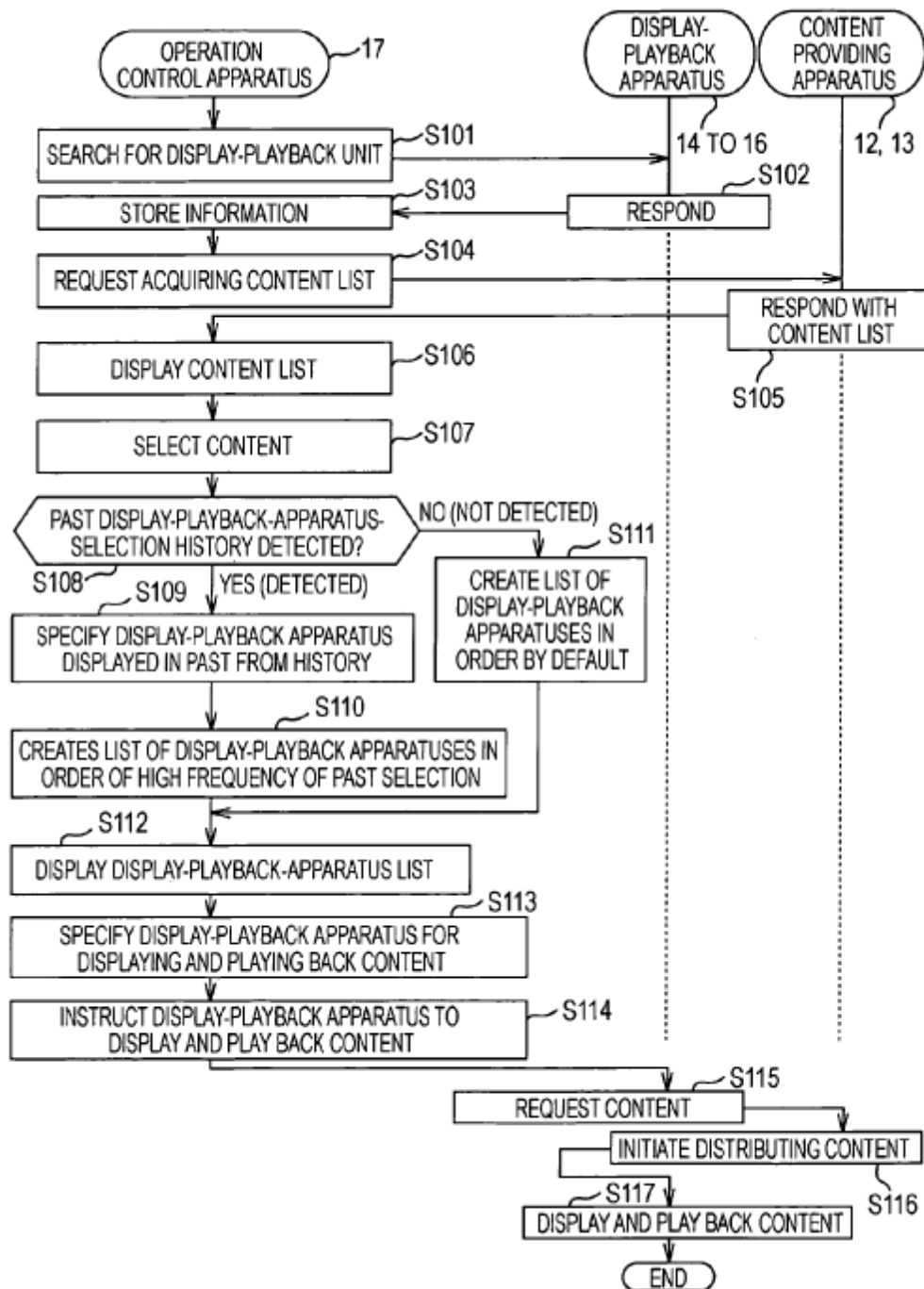


198. Yuasa's Figures 12 and 13 also show how a user selects content (e.g., S107) using the remote control ("operation control apparatus"), that selection is then transmitted to the television ("display playback apparatus") which retrieves it from a "content providing apparatus"). As shown in Figure 12, the remote control allows for the selection of content and then it will "instruct display apparatus to display and playback content" (S114). This action transmits the necessary parameters to the television for it to "request content" (S115) and then "display and playback content" (S117).

199. This operation is very similar, and analogous, to how Bennett-3 describes the ability of the PTV remote to review the media guide information and

select video for display on either the remote control or the controlled display apparatus (television).

FIG. 12



200. Yuasa teaches that this “content” is acquired via broadcast and Internet sources:

In the content providing apparatus 12 in the content display-playback system 10, video and audio content (hereinafter referred to as “content”), received in a home through BS (broadcasting satellite) digital broadcasting, CS (communication satellite) digital broadcasting, analog terrestrial broadcasting, and the Internet, is stored as streaming data in the content storage unit 22, which is formed by a mass storage medium such as a hard disk.

Yuasa at 8:27-42.

201. Thus, with respect to this element, Yuasa and Bennett-3 have highly similar discloses that both allow for the selection and display of various content from many sources.

ii. “second information” / “second communication”  
(all claims)

202. Yuasa discloses, or renders obvious, this element in addition to Bennett-3’s disclosures above.

203. Yuasa discloses expressly the type of action that Bennett-3 is discussing with respect to “sample” or “surf” as discussed in detail above

(including all of the discussion of “second information” for Bennett-3, not just these quotes).

204. In Yuasa, display of the content that has been selected for display on the playback apparatus television 14 is controlled based on playback operation signals received from the remote control 17, where the video content was selected by the mobile control 17 as discussed above. These “playback signals” including “pausing playback” which corresponds to the claimed “second information” (“second communication”) because such control the display on the television by, for example, causing the display on the television to “pause.” This is one form of the controls referenced in Bennett-3 above related to such actions as “buffering,” sampling, or surfing the video.

205. The “display playback apparatus” in Yuasa is shown in Figure 5 and, like with Bennett-3, it includes a communication interface (for communicating with the remote control), video processing units (41-43) a display (44), processing circuitry / CPU, and various forms of memory which, for example, are used to store data for processing. Yuasa at 9:53-11:3.

206. Yuasa describes explicitly these well-known operations that a POSA would understand have existed since at least the 1980’s for such video playback.

207. First, the remote selects a particular “display-playback-apparatus” (e.g., television) to control. Yuasa at 12:23-38. Then, the remote sends “operation signals” to effectuate different actions for the playback on that television:

[T]he control signal generation unit 62 generates, not only playback operation signals for playing back, stopping, and pausing content on the content display unit 63 of the operation control apparatus 17 itself, but also *operation signals* such as *starting*, stopping, and *pausing* playback of the content *in each of the display-playback apparatuses 14 to 16 in which displaying is selected.*”.

Yuasa at 12:39-45.

208. Yuasa describes this operation as “streaming” which a POSA would understand to encompass the actions (as described in Bennett-3) for video display and control of the stream with traditional functions such as described in Yuasa:

Accordingly, the operation control apparatus 17 includes an input operation reception unit 60 for receiving an operation input from the user, a control signal generation unit 62 whose one function is a video-information-transmission/reception-signal generating function for generating an operation signal for transmitting video

information among the apparatuses in response to the operation input, and a content display unit 63 for displaying video information played back by streaming in response to the operation signal generated by the control signal generation unit 62.

Yuasa at 11:28-38. See also 8:28-42; 9:10-11.

209. “The display-playback apparatus 14 operates as a streaming playback functional unit by using the above functional units in the following manner. The network interface 40 is used to establish connection to the home network 11, and the network interface 40 is used to receive the streaming data (content data). The content decoding unit 42 is used to decode the content data, and the content playback unit 43 is used to play back the content data played back by the content decoding unit 42. The content display unit 44 is used to display video of the content played back by the content display unit 44 and the content audio output unit 45 is used to output audio associated with the video.” 9:53-64.

210. This teaching is similar to Bennett-3’s teaching of the ability of the television system to stream and play back content including the buffering, surfing, sampling, and later play back.

- iii. Third information / communicate that terminates the video display



211. Yuasa discloses, or renders this element obvious, particularly in combination with Bennett-3.

212. As discussed above for the “second information,” one of Yuasa’s commands for controlling the video includes “stopping” the video. Such an action would terminate the video display.

213. Notably, Yuasa distinguishes between “pausing” which, arguably, could retain the video image being displayed on the screen at the point at which the video was “paused,” and “stopping.” Yuasa at 12:43. However, in contrast, a POSA would understand the “stopping” action to terminate the display of the video by completely stopping the display – particularly in the context of Yuasa’s disclosure including its discussion of “streaming” and its reference to “pausing” as discussed above.

214. The “stopping” operation signal generated by the remote control and transmitted to Yuasa’s television is an additional “third information” / “third communication” from the remote to the television that terminates display of the video as recited in the claims.

215. As with Bennett-3, Yuasa also discloses that the television can receive a “power on/off” command via an “operation signal” from the remote control. Yuasa at 10:8-13. Such an operation signal is also a “third” information / communication that terminates the display of the video on the television.

216. Thus, Bennett-3 combined with Yuasa discloses, or at minimum render obvious, other elements of claims 1-3, 6-7, 10-12 and 15-16, in the same manner as described above in Ground 1.

**2. A POSA Would Have Been Motivated To Combine Bennett-3 With Yuasa's Functionality With A Reasonable Expectation Of Success.**

217. A POSA would have been motivated to combine the functionality described above in Yuasa for controlling the display of the television based upon various information into Bennett-3's system for many reasons as discussed below.

218. The combination of Bennett-3 with Yuasa's disclosure herein would apply aspects of Yuasa's control of the video as it is being displayed into Bennett-3's system to provide the express recitation of such actions as "pausing" or "stopping" the video in Bennett-3's system as it is displayed on the television.

219. Implementing Yuasa's technology into Bennett-3's PTV remote and television would be a straight-forward application of applying existing technology for its known purposes. Yuasa already has the components, such as a CPU, communication units, and video display units in its television and remote control that Bennett-3 utilizes in implementing its technology. Moreover, the technology in Bennett-3 relies upon known technology used for its intended purpose.

220. The modification would be as simple as modifying the PTV remote control and television to send/receive the specific commands (e.g., pause and play

and stop) recited in Yuasa. Bennett-3 already describes how such commands are sent via control signals. Moreover, given that Bennett-3 already provides extensive disclosure of “sample” and “surf” and “buffer” the video as well as the ability for the television to play the video back at a later time, Bennett-3 already has the infrastructure for such commands and appears to describe the commands. Yuasa just explicitly puts a name to those commands.

221. To the extent not fully already disclosed in Bennett-3, there are advantages implementing Yuasa’s stop/start/pause functionality as part of Bennett-3’s systems. Such functionality facilitates the playback, sampling, and surfing abilities of Bennett-3. This allows for a better user experience and, as noted in Bennett-3, allows for playback at a later time of Internet-sourced video. Such time-shifting and the controls for pausing provide the user convenient features to control when the viewer watches a video or in case the viewer is interrupted or needs to take a break when watching a video.

222. A POSA would recognize the benefits of providing such well-known functionality that consumers would have expected to see present in 2007 because this functionality had been in wide-scale use since at least the 1980s (if not earlier) in the form of various recording devices such as VCR, DVD, and the later DVR / PVR functionalities for such branded devices as TiVo.

223. Bennett-3's hardware relies upon the type of equipment already used by Yuasa to implement these functions. It needs processing capacity, memory (to store the video content), and communications unit to communicate between the remote and television. Yuasa and Bennett-3 both describe all of these aspects in their description their video systems.

224. Moreover, the fact that the systems have such similar description in their video sources (wide variety of broadcast, cable, satellite and Internet sources) further would motivate a POSA to consider Yuasa's technology in combination with Bennett-3 as described herein. Both references reflect well-known technologies and a POSA would be motivated to combine complementary aspects of their disclosure, as is proposed herein.

225. Given the Bennett-3 teachings above about the various controls of the second information discussed above, a POSA would recognize Yuasa's teachings as being applicable to Bennett-3's system.

226. Furthermore, another reference by the Bennett inventors, Bennett-2, provides an express motivation to add to Bennett-3 the Yuasa functionality of controlling the video with well-known video playback commands such as "starting, stopping, and pausing playback of the content" on the television. Yuasa at 12:39-45.

227. Bennett-2 has highly similar to disclosure to Bennett-3 but includes additional express functionalities for the remote control and the controlled television. Bennett-2 expressly recites the remote control's "functionalities may... comprise a 'seek' functionality, a 'pause' functionality, a 'play' functionality and a 'play slow' functionality." Bennett-2 at [0028].

228. Bennett-2 supplies an express motivation. Bennett-2 expressly incorporated Bennett-3 by reference. Bennett-2 at [0002]. Bennett-3 and Bennett-2 have the same inventorship, were assigned to the same company (Broadcom) and are related to analogous art about controlling a television using a remote control with a built-in display. The overlap is highlighted by highly similar Figures. For example, Bennett-3's Figure 1 is substantively identical to Bennett-2's Figure 7 and Bennett-3's Figure 2 depiction of the PTV remote is substantively identical to the same remote depicted in Figure 6 of Bennett-2.

229. Bennett-2 teaches largely the same functionality as highlighted for Bennett-3. For example, Bennett-2 (like Bennett-3) teaches a remote control that: (a) displays its own separate video content (Bennett-2 at FIGS. 1-7, 9; [0039], [0041], ; (b) uses a "swap" command to swap video between the television and remote (Bennett-2 at [0033], [0036]); (c) can use infrared and RF communications to control a television and set-top box (STB) that can be integrated with the television (Bennett-2 at [0025-0026], [0033-0034]); (d) displays content from the

Internet or broadcast sources (Bennett-2 at [0035], [0049-0052]) and (e) performs “standard functionalities” of remote controls (Bennett-2 at [0036]).

230. Bennett-2 supplies an express motivation to combine Yuasa’s known playback functionalities into Bennett-3 because other POSA’s had already contemplated and described such a functionality combination. A POSA would evaluate the various options proposed by the Bennett inventors and recognize that those inventors had identified a need for, and a solution to, a system that provided the ability to perform traditional video control actions such as those found in VCR’s, the actions such as ‘seek’ functionality, a ‘pause’ functionality, a ‘play’ functionality and a ‘play slow’ functionality.” Bennett-2 at [0028].

231. Indeed, these actions (seek, pause, play, play slow) are descriptive of the functionalities of Bennett-3 described in above for the ability to buffer and play back video either at the time of receipt or later as well as the ability to “sample” and “surf” the video content using these commands.

232. The user advantages of implementing Yuasa’s functionality include a better user experience – the same reason that such features (sample, surf, pause, play, ...) have been present in consumer display devices for at least 40 years.

233. A POSA would have a reasonable expectation of success in adding the express features of Yuasa into Bennett-3 which describes the functionality, if not the express words, provided by Yuasa. Both use similar well-known forms of

communication (infrared and RF). Bennett-3 already describes the type of “control signals” that are exchanged between the remote control and the television corresponding to Yuasa’s “operation signals.” These control signals are processed by the “processing circuitry” (which may be any combination of hardware and software) in the remote and the television. This type of “processing circuitry” in Bennett-3’s remote control and television provides the flexibility to implement the Yuasa actions. The television also has media storage memory where the video can be stored while the actions (such as pause or play) are occurring as does the (integrated) set top box. *E.g.*, Bennett-3 at Figures 3C, 6, 5:32-34, 5:65-6:4 (storage allows “later playback of received video”), 9:53-57, 10:7-20, 10:54-58, 11:12-14.

234. The expectation of success is further enhanced by Bennett-3’s discussion of being able to play back internet video and then also to “sample” and surf that video content using the commands on the PTV remote control as discussed above.

235. A POSA would have a reasonable expectation of success also because both Bennett-3 and Yuasa describe their base stations with similar components such as CPU’s executing software, memory, and connections for communications. Both Bennett-3 and Yuasa describe their systems as downloading from the same type of video sources.





**D. Ground 3: Claims 1-18 Are Obvious Over Bennett-3 And Cho.**

236. In this Ground, Bennett-3's system is augmented with related functionality described by Cho. When combined, this functionality renders obvious claims 1-18.

237. Cho describes a system being able to use a television to continue watching video at the point at which the video was previous displayed on a mobile phone:

A method and a device for switching a media renderer to another media renderer while a client performs streaming playback of content of a server are provided.

Accordingly, a first client that performs streaming playback of the content transmits playback environment information and a URL of the content to the second client, and the second client transmits the received information and information about features of the second client to the server and requests the corresponding content which has the optimized format for the second client from the server. Therefore, a user can continue to watch the media content through a new media renderer in

existing playback environment setting without additional manipulation.

Cho at Abstract.

238. In one of Cho's embodiment, the "first client" is a mobile phone that then sends the necessary information to a television (the second client) to pick up the display of video at the point at which it was displayed on the mobile phone.

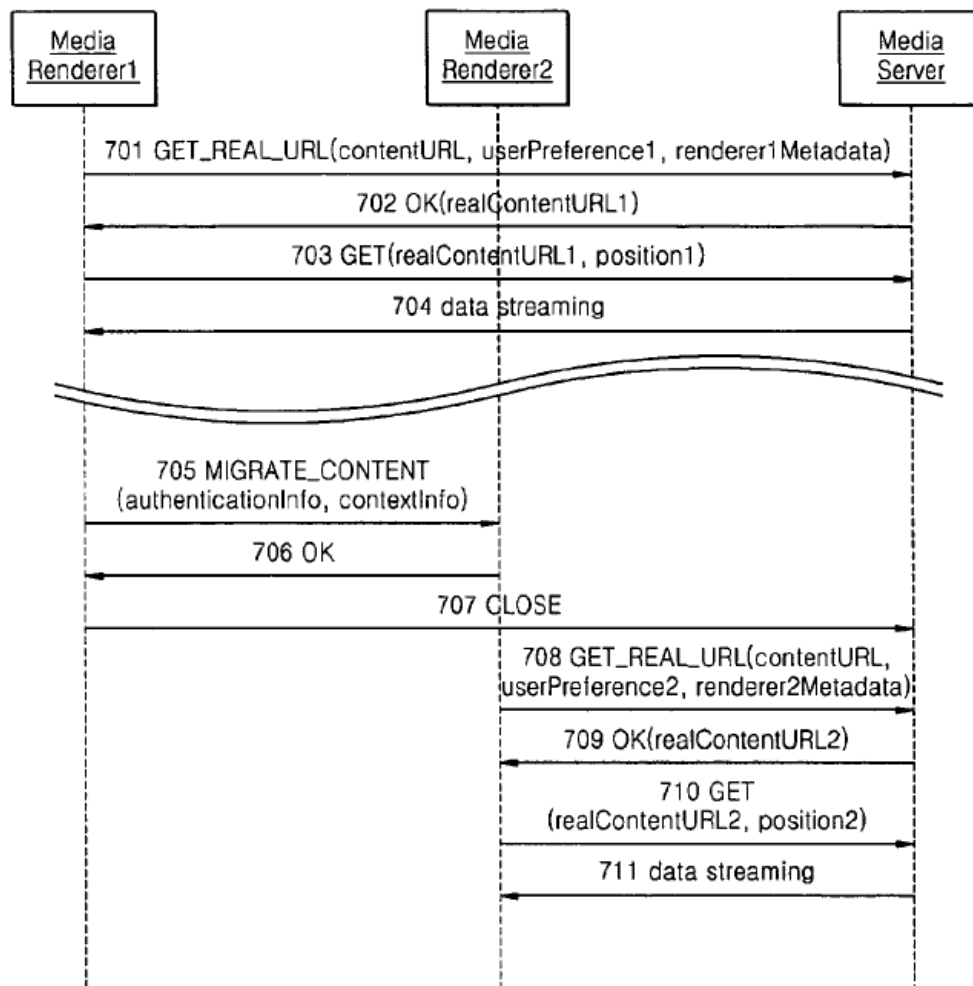
239. Cho describes two relevant transmissions of data from the phone to the television related to the '369 claims.

240. First, Cho sends "contextInfo" which allows the television to identify the content and load the content at the point being watched by the mobile phone.

241. Second, Cho transmits "authenticationInfo" from the mobile phone to the television which provides the information needed for the television to "login" to an Internet site in case the content is protected by authentication measures.

242. For example, Cho's Figure 6 (at element 705) depicts this login information in the "authenticationInfo" field transmitted with the "contextInfo" field:

FIG. 6



243. This information in the authenticationInfo corresponds to the claimed login information.

244. Cho describes this authentication information:

the playback environment information may include information about a current playback position, volume, caption setting, a URL of the currently played content,

*authentication information for access to the currently played content*, and the like. The transmitter 512 transmits the playback environment information generated by the generator 511 to the second renderer 530.

Cho at 5:28-34;

The first renderer, MediaRenderer1, requests a second renderer, MediaRenderer2, to play the content which the first renderer MediaRenderer1 is playing, by using the message <MIGRATE\_CONTENT>, while playing the content (operation 705). The message <MIGRATE\_CONTENT> includes playback environment information contextInfo and authentication information authenticationInfo for access to the corresponding streaming.

Cho at 6:32-39.

245. Cho teaches the seamless migration of a streaming session from one device to another device. Cho teaches a user watching a video on a mobile terminal (phone) that can then push a button on the phone to exchange information

with a television that allows the television to continue the video at the point of the phone's presentation.

246. In this regard, Cho's teachings are similar to Bennett-3's teaching of transmitting the "identifier" information including the "offsets" for the videos swapped between the remote control and television.

247. Cho adds disclosure pertaining to claims 4-5, 8-9, 13-14, and 17-18 that relates to "login" information used by the mobile phone in accessing the video on, for example, an internet site.

248. Cho bolsters Bennett-3 by adding details about: (1) "first information" sent from mobile to TV for content migration for claims 1-18; and (2) login or authentication information in the "first information" for claims 4-5, 8-9, 13-14, and 17-18. If Patent Owner argues that the claimed "mobile terminal" requires a "mobile phone," Cho expressly discloses a mobile phone operating to control a television that includes functionality analogous to Bennett-3 and which could readily incorporate the functionality of Bennett-3's PTV remote control.

249. Claims 4-5, 8-9, 13-14 and 17-18 are substantively identical to claims 2-3, 5-6, 11-12, and 15-16 (respectively) discussed in Bennett-3 with respect to all elements except for the "login" element discussed below. Thus, for other elements, the Bennett-3 and Cho combination relies upon the Ground 1 analysis.

250. Bennett-3 supplies the same functionality described in Ground 1. The modification is simply to add certain functionality. This modification merely applies known and existing technology from Cho for its intended purpose in the same environment and field (mobile devices providing video to televisions for display).

251. Bennett-3 combined with Cho discloses, or at minimum render obvious, every element of claims 1-18.

**1. Cho discloses “first information” as required in the claims that provides the ability to “take over” the state of the video as well as includes login information for claims 4-5, 8-9, 13-14, 17-18.**

252. In challenged claims 4, 8, 13, and 17, (and their dependent claims 5, 9, 14, 18) the claims recite various permutations of the first information (or communication) including login information for accessing content. For example, claim 4 recites:

control the display unit to terminate displaying of the first  
video content and to start displaying a second video  
content acquired from an internet site via the internet  
when the communication unit receives first information  
including information relating to that the mobile terminal  
logs in to said internet site from the mobile terminal,  
wherein the second video content is a same video content

as a video content which can be acquired by the mobile terminal after login authentication of said internet site and is displayed on the mobile terminal before the mobile terminal sends the first information to the display apparatus, and wherein a state of displaying of the video content on the mobile terminal at a time when the first information is sent from the mobile terminal is taken over to a state of displaying of the second video content on the display unit at a time when the display unit starts to display the second video content, based on the first information;

253. Cho discloses this “login” information in the form of its “authenticationInfo” as discussed above. Cho’s “***authentication information for access to the currently played content***,” (EX-1009 at 5:29-33) corresponds to the claimed “mobile terminal longs to said internet site” because it allows the television to log into the site and access the content.

254. Furthermore, with respect to the ability of the “first information” to allow the television to take over a state of displaying, Cho discloses this information (sent in the first transmission as discussed above with the

authentication information) in the form of its “contextInfo” which is part of the “playback environment” that Cho transmits from the phone to the television:

[t]he streaming unit 534 plays the content based on the playback environment information of the first renderer 510, which is transmitted from the receiver 533, and thus, the playback environment of the first renderer 510 is maintained. That is, the content is played from the playback position of the first renderer 510 when the first renderer 510 requests the second renderer 530 to play the content, and the playback environment including volume, caption setting, screen ratio and the like is maintained.

EX-1009 at 5:51-59; see also EX-1009 at 10:25-31, claim 1-7

(streaming playback “from the playback position”).

255. Thus, in the same transmission (corresponding to the first information / communication), Cho discloses information that allows the television to seamlessly migrate the content by providing the playback position and the environment and also sends the login information recited in claims 4, 8, 13, and 17.

256. Notably, Cho’s authentication information matches the only reference to “login” in the ’369 patent specification. See ’369 patent at 17:36-38 (“the mobile



terminal 101 is displaying a screen after the login of an internet site for which authentication is required.”); see also’369 at 17:65-18:11, 18:37, 19:49-20:3 (all referencing “authentication”).

257. For claims 13-14 and 17-18, which require transition of video “during the mobile terminal logins to said internet site,” Cho’s mobile device was already authenticated and logged into the internet site during the time of the seamless migration – which is what allows for the seamless migration because the viewer was already viewing the video on the phone. The playback environment information includes URL of the currently played content at the mobile. A POSA would recognize that Cho discloses, or renders obvious, that the “first communication” between mobile and TV is conducted when the mobile is in a logged-in state of the Internet site. Cho at 4:21-41; 5:36-59. This was one of the purposes of the “seamless” migration so that a user would not have to terminate the mobile video session and then search (and do “additional operations”) to resume the video. *E.g.*, Cho at 1:37-2:15.

**2. A POSA Would Be Motivated To Combine Bennett-3 And Cho With A Reasonable Expectation Of Success.**

258. A POSA would be motivated to combine these references by incorporating functionality and structure from Cho’s method and system of “switching media renders” into Bennett-3’s system.

259. First, the combination of Cho's "playback environment" which provides implementation alternatives and details of Bennett-3's "identifiers associated with the video source, video selection being displayed, and current offset into the current video selection." (Bennett-3 at FIG. 1, 6:45-61). The motivation to combine this aspect of Cho arises from the similarity of its disclosures and functionality to those of Bennett-3. In both references, the mobile device is operating to "swap" its video onto the television. In order to accomplish this task, both references describe (in different words) the transmittal of the information necessary for the television to start display of the video at the point previously displayed on the mobile device. A POSA would recognize that Cho provided additional details regarding the specific transmissions that supplement Bennett-3's disclosures.

260. Separately, a POSA would be motivated to include in Bennett-3's "first information" (swap command and related information described above), Cho's playback environment information includes authentication information for access to the currently played content (an implementation feature of the "control signals" / "control information" not detailed in Bennett-3). EX-1007 at 6:45-61; 7:23-62. A POSA would recognize the advantages that Cho provides in transmitting authentication login information for use in accessing internet videos. By 2007, many of the sites on the Internet that provided video content would have

required some form of login or authentication. This was done for well-known reasons such as for revenue generation by the video-providing site, for copyright protection to allow only licensed users to access the video content, and to track viewing history for a particular user.

261. A POSA would recognize the advantages of Cho's disclosure of including the login information with the video identifiers described in Bennett-3. The "swap" command in Bennett-3 cannot be accomplished without such login information if the video content was in a protected site. As the user is utilizing the PTV remote control, the remote would be the natural input device for such login information. After being input into the PTV remote (so that it could access the internet video in the first instance), the transmission of the login information as part of the swap command would be a natural extension to the swap command to allow it to more efficiency execute its intended purpose in all instances, including when faced with an internet site requiring authentication or login information.

262. Cho is analogous art that is combinable for additional reasons. Both Cho and Bennett-3:

- Teach the "media switching" or "media swapping" between media renders like mobile and TV each has a screen for displaying the video content.

- Teach that “media switching” or “media swapping” can happen during video streaming from e.g. Internet.
- Are assigned to industry leaders in the telecommunications / cellular industry (Broadcom / Samsung).

263. Moreover, a POSA would have had a reasonable expectation of success in such a combination because the information being added from Cho to Bennett-3’s “identifier” information is consistent with the information already disclosed in Bennett-3 and information that could readily be processed by the processing circuitry, program code, memory and communication interfaces present in Bennett-3. In both references, this functionality is implemented by well-known, standard components that are all operating with their known and intended functions and purposes. There would be nothing about the addition of this information from Cho that would negatively impact Bennett-3’s performance.

**E. Ground 4: Claims 1-18 Over Bennett, Yuasa, And Cho**

264. This combination of Bennett-3, Yuasa, and Cho renders obvious claims 1-18.

265. This combination merely combines the two combinations discussed in Grounds 2 and 3.

266. With respect to Ground 2, this combination relates to augmenting the “second” and “third” information / communications from Bennett-3’s PTV remote with additional information from Yuasa as discussed above.

267. Separately, this Ground 4 relates to also augmenting Bennett-3’s “first” information with the “login” information as discussed in Ground 3 from Cho.

268. The combination involves separate augmentations of Bennett-3 that would not impact each other. Specifically, the addition of the Yuasa second/third information would not impact the addition of the Cho information (for the “first” information). These are separate transmissions that would not impact each other.

269. The motivations to combine would be the same as cited for Grounds 2 and 3 because this relates to combining separate functionalities for each of Ground 2 and 3.

270. There would be a reasonable expectation of success in the joint combination for the reasons cited in Grounds 2 and 3. These are separate functionalities that are augmented into Bennett from Yuasa and Cho that would not impact each other.

**XI. SECONDARY CONSIDERATIONS DO NOT REBUT THE PRIMA FACIE CASE OF OBVIOUSNESS**

271. In my opinion, secondary considerations do not rebut the prima facie case of obviousness for at least two reasons. *First*, I have not seen any evidence

of any secondary consideration to date. Indeed, the patent applicant never proffered such evidence during prosecution of the '369 patent. To the extent patent owner seeks to proffer secondary considerations evidence in this proceeding, I reserve the right to comment on such evidence.

272. *Second*, I do not believe that the patent will be able to establish a nexus between any secondary consideration and the challenged claims. I have been advised that a nexus does not exist where the alleged secondary consideration results from something other than what is both claimed and novel in the claims. As I explained above, there is nothing novel in the claims. Indeed, all claim elements are disclosed in the prior art. Thus, I do not see a basis for the patent owner to assert that there is a nexus between any secondary consideration and the claims..

## **XII. CONCLUSION**

273. I may utilize the documents cited and/or listed herein, or portions of those documents, as exhibits at any hearing or trial in this proceeding. I may further prepare and use exhibits that summarize portions of my testimony or key terms or concepts presented therein, or other demonstrative exhibits, at any hearing or trial in this proceeding.

274. I reserve the right to supplement my testimony and this report in response to any judicial determinations, in response to the opinions expressed by

the patent owner's experts in this proceeding, and/or in light of additional evidence or testimony brought forth at trial or otherwise brought to my attention after the date of my signature below.

275. I hereby declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct, and that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true. I understand that willful false statements are punishable by fine or imprisonment or both. *See* 18 U.S.C. § 1004.

September 10, 2020

A handwritten signature in cursive script, reading "Henry Houh", is written over a horizontal line.

Henry Houh

# **EXHIBIT A**



# Henry H. Houh

henry.houh@gmail.com  
cell: 781-325-8273

## Education

### **Massachusetts Institute of Technology, Cambridge, MA**

- PhD in Electrical Engineering and Computer Science, February 1998. "Designing Networks for Tomorrow's Traffic," thesis supervised by Professor David Tennenhouse and Professor John Guttag. GPA 4.7/5.0
- Master of Science in Electrical Engineering and Computer Science, February 1991. "Demonstration of a laser repetition rate multiplier," thesis. GPA 4.5/5.0
- Bachelor of Science in Electrical Engineering and Computer Science, June 1989. "Boundary element analysis of arbitrarily shaped dielectric structures," thesis. GPA 4.7/5.0
- Bachelor of Science in Physics, February 1990. GPA 4.7/5.0

## Experience

### **BlocksCAD Inc. (H3XL spin-out)**

- 2014 - present: Founder and member of Board of Directors. BlocksCAD is a visual Computer-Aided Design (CAD) program, designed to teach children mathematics and geometric visualization. BlocksCAD is being used in U.S. schools and worldwide in maker spaces, with 350,000+ users. BlocksCAD was selected to be part of the LearnLaunch 2017 Boost Accelerator, the MIT Play Labs 2018 Summer Accelerator, and the MassChallenge 2018 Boston Cohort. Recipient of DARPA DSO grant in 2014, and SBIR grant from the USDA in 2019.

### **H3XL Inc. d/b/a Einstein's Workshop (formerly Lexington Robotics)**

- 2009 - present: Founder and President. Started local league providing science and engineering education programs based on LEGO Mindstorms, LEGO WeDo, and FIRST LEGO League. In 2012, grew program into a full science, technology, engineering and math enrichment program and creative/maker space, in 7,000 square feet of space. Serve 2,000+ kids and families annually. As of end of 2017, have delivered an estimated

120,000 student-instruction-hours of STEM courses. Principle Investigator for 2-year DARPA grant to improve 3D Computer Aided Design tool developed in-house for the purposes of teaching 8 year olds and up 3D CAD.

### **Houh Consulting Inc. / Independent Consultant**

- 2009 - present: Technical consultant specializing in Social Networking, Web 2.0, Web Site Development, Data Networking, Optical Networking, Telecommunications, Media Streaming and Voice Over IP. Clients include: Akin Gump Strauss Hauer & Feld LLP, Arnold & Porter Kaye Scholer LLP, BBN, Baker Botts LLP, Barnes & Thornburg LLP, BBN Technologies, Beus Gilbert McGroder PLLC, Bracewell LLP, Christensen O'Connor Johnson Kindness PLLC, Cooley LLP, Covington & Burling LLP, Cozen O'Connor P.C., DLA Piper, Davis Polk & Wardwell LLP, Desmarais LLP, Duane Morris LLP, Erise IP, P.A., Faegre Baker Daniels LLP, Finnegan, Henderson, Farabow, Garrett & Dunner, LLP, Fish & Richardson P.C., Goldman Ismail Tomaselli Brennan & Baum LLP, Haynes and Boone, LLP, Kaye Scholer, Kellogg Huber Hanson Todd Evans & Figel PLLC, Klarquist Sparkman, LLP, McCarthy Tetrault LLP, McGuireWoods LLP, Morgan, Lewis & Bockius LLP, Munger Tolles & Olson LLP, Orrick, Herrington & Sutcliffe LLP, O'Melveny & Myers LLP, Orrick, Herrington & Sutcliffe LLP, Paul Hastings LLP, Paul, Weiss, Rifkind, Wharton & Garrison LLP, Perkins Coie LLP, Quinn Emanuel Urquhart & Sullivan, LLP, Sidley Austin LLP, Sterne, Kessler, Goldstein & Fox PLLC, Troutman Sanders LLP, Venable LLP, Weil, Gotshal & Manges LLP, Wiley Rein LLP, Wilmer Cutler Pickering Hale and Dorr LLP, and Winston & Strawn LLP.

### **Eons**

- 2008 - 2009: Chief Technology Officer. Created product that Eons acquired from BBN Technologies. Integrated BBN product with Eons social networking platform and significantly increased the Eons group creation rate. Helped evaluate advertisement platform offerings and rolled out the "Boom Network" advertising network. Eons raised \$32 million from General Catalyst Partners, Charles River Ventures, Sequoia Capital, and Intel Capital.

### **BBN Technologies**

- 2007 - 2008: Delta Division, Vice President of Technology. Grew "Boomerang" counter-sniper project engineering team and significantly de-risked \$10 million worth of product deliveries. Boomerang was a significant asset leading to the acquisition of BBN by Raytheon in 2009. Created new business plan and grew team; launched new fully-featured social networking web site in 5 months. Served as lead expert witness in patent infringement lawsuit, resulting in \$58 million jury award to client; verdict for patents I testified on were upheld on appeal which resulted in a \$120 million settlement.
- 2004 - 2007: Delta Division, Director of Technology, responsible for commercializing IP and creating new businesses. Hired and grew division's initial engineering team. Wrote three business plans, two of which are funded and active. For call center business plan, acted as general manager, hiring and managing engineering team, inside sales team, and

identifying and recruiting a new general manager. Identified and recruited other key employees to Delta Division, including senior members of team leading to successful internal sales growth and spin-outs of projects. Contracted by BBN to BBN spin-out PodZinger as VP of Operations and Technology. Identified sales team for counter-sniper system, leading to \$10 million dollars of new sales within 6 months and \$100+ million in additional orders in the following two years.

### **PodZinger Inc. (BBN spin-out, also known as EveryZing and now RAMP)**

- 2006: Vice President of Operations and Technology. Significantly upgraded capability of consumer-facing search site and redeployed web site from company to co-location facility. Identified key portions of infrastructure for upgrading and cost reduction. Helped write business plan, evaluating advertisement models of revenue. Hired in operations replacement and phased back to BBN.

### **Commonwealth Capital**

- 2004: Entrepreneur-in-residence (informally), performed technical due diligence on business plans, brainstormed ideas for new businesses with venture partner. With venture partner, left for portfolio company BBN to form core of commercialization team.

### **Empirix, Inc./Teradyne, Inc.**

- 2001 - 2004: Chief Technologist, Engineering Manager, Web Application Test Group. Researched potential new product areas; developed product plan and prototype. Responsible for three new and existing products. Managed off-shore development team. Chief architect for all web testing products. Re-architected core testing product, helped write javascript interpreter. Provided technical vision for core product.
- 2000 - 2001: Chief Technologist, Communication Infrastructure Test Group. Responsible for incorporating new technology internally, tracking new technologies, technical evaluation of partnerships and potential acquisitions. Helped develop division strategy. Developed plans which formed core capabilities for successful new products introduced in 2004-5.
- 2000 - 2001: Engineering Manager, Communications Infrastructure Test Group. Execution of new product plan developed in prior role. Grew team from four existing engineers to team of over 30 on immediate team and over 40 on project. Delivered new platform in one year. Platform and derivatives accounted for large portion of booked products for the division within 2 years and is currently (2008) a key portion of new product offerings.
- 2000: Empirix was formed as a spin-out of Teradyne in January 2000. Reported to CEO in carve-out of Empirix from Teradyne.
- 1999: (Teradyne) Director of Business Development, Software Test Units. Reported directly to Chairman of the Board/Founder and then to general manager of software test unit (6 divisions of Teradyne). Evaluated and researched acquisition and partnership candidates. Internally assessed technology position in market and gaps in product lines.

Worked with senior division staff to develop new product strategies. Attended internal Teradyne divisional board meetings. Chairman served as my mentor.

### **3Com Corporation/NBX Corporation**

- 1999: Software Engineer 5. Continued work after 3Com acquisition of NBX. Built cross-division relationships for new products and research directions. NBX was acquired by 3Com in March 1999.
- 1997 - 1999: (NBX) Senior Scientist and Engineer. Work in IP Telephony. Architected next-generation product. Protocol design and validation for core protocol now used tens of millions of times daily. Led team in integration of IP protocols into current product. Designed audio reconstruction algorithms. Developed applications for bug analysis and diagnosis of system problems. Implementation of network simulator. Work on collaborative projects with external partners. Worked to identify gaps in product. Representative at numerous trade shows. Innovated novel methods of using product.

### **MIT Department of Electrical Engineering and Computer Science, Cambridge, MA**

- 1991 - 1998: Research assistant, Telemedia Network Systems Group. Design, development, and implementation of Gigabit ATM network for distributed multimedia system. Studied host interface design issues. ATM network simulation.
- Spring 1989, Fall 1990, Spring 1995: Teaching assistant, Computation Structures digital systems course. (Spring 1995 Head TA)
- 1988 - 1989: Head laboratory teaching assistant for Computation Structures. Responsibilities included writing and revising lab assignments, and maintaining the lab.
- 1987: Laboratory teaching assistant for Computation Structures.
- 1987: Design, construction, and programming of 16-bit computer.

### **Agora Technology Group, Incorporated**

- 1994 - 1996: Founder and CEO. Conceived and oversaw development of targeted advertising-supported Web sites. Responsible for company's vision and direction. Attended the first two WWW Conferences, presenting a workshop and paper at the first, and appearing on the "Commercialization and Economics of the Web" panel and chairing the "Where Commercial Services and the Web Are Headed" panel at the second. Sold company intact; is currently an operating stand-alone company.

### **AT&T Bell Laboratories, Holmdel, NJ**

- 1989 - 1990: Implementation of cascable all-optical fiber logic gate. Modelocking of all-fiber erbium laser. Construction of modelocked laser repetition rate booster. Strong optics laboratory and fiber optic experience.
- Summer 1988, 1987: Research in integrated optics. Analysis of rectangular waveguides using microwave modeling. Fabrication of integrated optical components.

# Honors

- MIT Alumni Association Great Dome Award, 2010, Baker 60<sup>th</sup> Anniversary Reunion Co-Chair (highest group award given by MIT Alumni Association)
- MIT Alumni Association Presidential Citation Award (now known as Great Dome), 2008, Member of MIT Chairman's Salon committee
- MIT Alumni Association Bronze Beaver Award, 2007 (highest individual award given by MIT Alumni Association)
- MIT Alumni Association Volunteer Honor Roll, February 2004
- MIT Alumni Association Lobdell Award, 1999
- Boston Museum of Science Gold Pin for 1000 hours of Volunteer Service, April 1999
- MIT Alumni Association Presidential Citation Award (now known as Great Dome), 1997, Member of Alumni Online Communications Committee

# Patents and Patent Publications

- U.S. Patent #9,697,231, H. Houh, J. Stern, R. Spina, M. Meteer, "Methods and apparatus for providing virtual media channels based on media search," July 4, 2017.
- U.S. Patent #9,697,230, H. Houh, J. Stern, "Methods and apparatus for dynamic presentation of advertising, factual, and informational content using enhanced metadata in search-driven media applications," July 4, 2017. See also WO2007056485.
- U.S. Patent #7,975,296, L. Apfelbaum, H. Houh, T. Mayberry and G. Friedman, "Automated security threat testing of web pages," July 5, 2011. See also US20030159063, WO2003067405.
- U.S. Patent #7,877,736, H. Houh and J. N. Stern, "Computer language interpretation and optimization for server testing," January 25, 2011. See also US20050138104, WO2005043300.
- U.S. Patent #7,801,910, H. Houh and J. N. Stern, "Method and apparatus for timed tagging of media content," September 21, 2010. See also US20070112837, US20090222442, WO2007056535.
- U.S. Patent #7,590,542, D. C. Williams, W. C. Hand, H. Houh, A. R. Seeley, "Method of Generating Test Scripts Using a Voice-Capable Markup Language," September 15, 2009. See also EP1530869, US20030212561, WO2003096663.
- U.S. Patent #6,967,963, H. H. Houh, P. Anderson, C. Gadda, "Telecommunication method for ensuring on-time delivery of packets containing time-sensitive data," November 22, 2005. See also EP1060400, WO2000033092, CA2318774.
- U.S. Patent #5,144,375, M. C. Gabriel, H. H. Houh, N. A. Whitaker, "Sagnac Optical Logic Gate," September 1, 1992. Also issued as European Patent # EP0456422, July 23, 1997, German Patent #DE69126913, August 28, 1997
- U.S. Patent Application Publication No. 20020015387, "Voice Traffic Packet Capture and Analysis Tool for a Data Network" (Abandoned in 2007)

- U.S. Patent Application Publication No. 20020016708, “Method and Apparatus for Utilizing a Network Processor as Part of a Test System” (Abandoned in 2007)
- U.S. Patent Application Publication No. 20020016937, “Method and Apparatus for Utilizing a Network Processor as Part of a Test System.” (Abandoned in 2007) See also WO2002011413.
- U.S. Patent Application Publication No. 20070106646, “User-directed navigation of multimedia search results” (Abandoned in 2009)
- U.S. Patent Application Publication No. 20070106660, “Method and apparatus for using confidence scores of enhanced metadata in search-driven media applications” (Abandoned in 2009)
- U.S. Patent Application Publication No. 20070106685, “Method and apparatus for updating speech recognition databases and reindexing audio and video content using the same” (Abandoned in 2015)
- U.S. Patent Application Publication No. 20070118873, “Methods and apparatus for merging media content” (Abandoned in 2015)
- U.S. Patent Application Publication No. 20090222442, “User-directed navigation of multimedia search results” (Abandoned in 2016)
- U.S. Patent Application 11/395,732, “Search snippet creation for audio and video data” (Abandoned in 2009)
- U.S. Patent Application 11/774,931, “Methods and apparatus for managing a social networking web site”
- U.S. Patent Application 11/774,947, “Methods and apparatus for organizing media files”
- U.S. Patent Application 11/774,956, “Methods and apparatus for managing an online event”
- U.S. Provisional Patent Application 61/086,909, “Measuring and ranking relationship activity”
- U.S. Provisional Patent Application 61/086,914, “Detecting media object commonality”
- U.S. Provisional Patent Application 61/086,904, “Message categorization based on message characteristics”
- U.S. Provisional Patent Application 61/086,905, “Photo tagging to request action”

## **Trials, Testimony and Depositions**

- Case No. 1:06CV682 (CMH/BRP), Verizon vs. Vonage, U.S. District Court for the Eastern District of Virginia, filed expert report, was deposed and testified at trial.
- Case No. 1:08CV157 (CMH/TRJ), Verizon vs. Cox, U.S. District Court for the Eastern District of Virginia, was deposed and testified at trial.
- Case No. 5:09-cv-476, Two-Way Media vs. AT&T, U.S. District Court for the Western District of Texas, filed expert report, testified at trial.
- Case No. 2:10-cv-248 (RAJ/FBS), ActiveVideo Networks vs. Verizon, U.S. District Court for the Eastern District of Virginia, filed expert report and was deposed as an expert witness.

- Case No. 1:11-cv-00880-TSE-JFA, Bear Creek Technologies, Inc. vs. Verizon Services Corp., et al, U.S. District Court for the Eastern District of Virginia, was deposed as an expert witness.
- Case No. 3:10-CV-298-BBC, AlmondNet, Inc. vs. Microsoft Corp., U.S. District Court for the Western District of Wisconsin, filed expert report.
- Case No. 6:10-cv-00597, Guardian Media Technologies, Ltd. Vs. AT&T Operations, Inc. et al., U.S. District Court for the Eastern District of Texas, Tyler Division, filed expert report.
- Case No. ESCV2010-02282C, The Octopus Solution LLC v. Gary Brown et al., Essex, MA Superior Court, testified at trial.
- Investigation No. 337-TA-882, In the matter of Certain digital media devices, including televisions, Blu-ray disc players, home theater systems, tablets and mobile phones, components thereof and associated software, U.S. International Trade Commission, filed expert reports, was deposed and testified at hearing.
- Investigation No. 337-TA-995, In the matter of Certain communications or computing devices, and components thereof, U.S. International Trade Commission, filed expert reports, and was deposed.
- Case No. 8:12-cv-122-LES-TDT, Prism Technologies LLC v. AT&T Mobility LLC, U.S. District Court for the District of Nebraska, filed expert report, was deposed and testified at trial.
- Case No. 11-2684 (JWL), Sprint Communications Co., L.P., v. Comcast Cable Communications, LLC, et al., U.S. District Court for the District of Kansas, filed expert report and was deposed.
- Case No. 11-2686 (JWL), Sprint Communications Co., L.P., v. Time Warner Cable, Inc., et. al., LLC, et al., U.S. District Court for the District of Kansas, filed expert report, was deposed, and testified at trial.
- Case No. 12-487 (SLR), Cox Communications, Inc., et al., v. Sprint Communications Company L.P., et al., U.S. District Court for the District of Delaware, filed expert report and was deposed.
- Case IPR 2014-00039, Microsoft Corporation v. B.E. Technology LLC, U.S. Patent No. 6,628,314. Submitted declaration and cross-examined in deposition.
- Case IPR 2014-00086, Apple, Inc. v. Evolutionary Intelligence, LLC, U.S. Patent No. 7,010,536. Submitted declaration and cross-examined in deposition.
- Case No. 6:11-CV-421, Stragent, LLC v. Intel Corporation, U.S. District Court for the Eastern District of Texas, Tyler Division, deposed and testified at trial as a fact witness.
- IPR2014-01366, IPR2014-01367, IPR2014-01368, Samsung et al. v. Straight Path, submitted IPR declarations and was deposed.
- IPR2015-1006, IPR2015-1007, Cisco v. Straight Path, submitted IPR declarations.
- IPR2014-01457, IPR2014-01459, Microsoft v. Biscotti, submitted IPR declaration and was deposed.
- IPR2016-00302, Apple v. Nonend, submitted IPR declaration.
- IPR2014-00812, Yelp and Twitter v. Evolutionary Intelligence, submitted IPR declaration.
- IPR2015-00307, Cisco v. AIP, submitted IPR declaration.
- Microsoft v. Acacia, submitted IPR declaration.

- IPR2015-00342, AT&T Mobility LLC and Cellco Partnership d/b/a Verizon Wireless v. Solocron, submitted IPR declaration.
- Mediatube v. Bell Canada, Canadian Federal Court, submitted expert report and testified at trial.
- CBM2016-00036, Google v. At Home Bondholder's Liquidating Trust, submitted CBM declaration.
- IPR2016-01198, IPR2016-01201, Apple, Inc. v. VoIP-Pal.com, Inc., submitted IPR declaration and was deposed.
- Case No. 3:14-cv-2824-VC, Trend Micro Incorporated v. Rpost Holdings, Inc., et al, submitted expert report and was deposed
- Akamai v. Limelight Networks, IPR2016-01631, IPR2016-01711, IPR2017-00249, IPR2017-00349, submitted IPR declarations and was deposed
- Hyperlinc Technologies v. Verizon Sourcing, No. 650151/2015 New York Supreme Court, submitted declaration and was deposed
- Cascades Streaming Technologies v. Big Ten Networks, submitted expert reports and was deposed
- Klaustech, Inc. v. Google LLC., Case No. 4:10-CV-05899-JSW (N.D. Cal.), submitted expert report and was deposed
- Cisco v. Uniloc, IPR2017-00198, IPR2017-00058, submitted IPR declarations and was deposed.
- Cisco v. Uniloc, IPR2017-00597, submitted IPR declaration and was deposed
- Twitter v. Youtoo Technologies, LLC, IPR2017-01133, IPR2017-01131, submitted IPR declarations and was deposed
- Taser International Inc. (now Axon Enterprise, Inc.) v. Digital Ally Inc., IPR2017-00375, submitted IPR declaration and was deposed
- Taser International Inc. (now Axon Enterprise, Inc.) v. Digital Ally Inc., IPR2017-00376, IPR2017-00515, IPR2017-00775, submitted IPR declarations
- HTC Corporation v. IPA Technologies, IPR2018-00306, IPR2018-00307, submitted IPR declaration
- Hulu v. Soundview, IPR2018-00864, IPR2018-01023, submitted IPR declarations and was deposed
- XpertUniverse v. Cisco, 3:17-cv-3848, U.S. District Court for Northern District of California, submitted declaration in support of claim construction and was deposed
- Improved Search v. Microsoft, C.A. No. 16-cv-650-JFB-SRF (Del.), submitted declaration in support of claim construction
- Apple v. Uniloc, IPR2018-00361, IPR2018-00394, IPR2018-00395, IPR2019-00700, IPR2019-00701, IPR2019-01667, submitted IPR declarations
- LG Electronics v. Uniloc, submitted IPR declaration
- SRC Labs and Saint Regis Mohawk Tribe v. Microsoft, 2:18-cv-00321-JLR, U.S. District Court for Western District of Washington at Seattle, submitted declaration in support of claim construction and was deposed
- Verizon Wireless v. Barkan Wireless IP Holdings LP, submitted IPR declarations
- Verizon Wireless and Samsung Electronics America Inc. v. Barkan Wireless IP Holdings LP, IPR2019-199, IPR2019-200, IPR2019-234, IPR2019-631, IPR2019-632, submitted IPR declarations



- Samsung Electronics America Inc. v. Barkan Wireless IP Holdings LP, IPR2019-100, submitted IPR declaration
- Cisco Systems Inc. v. Meetrix IP LLC, IPR2019-539, IPR2019-540, IPR2019-541, IPR2019-542, IPR2019-543, IPR2019-544, submitted IPR declarations
- GMG Products LLC v. Traeger Pellet Grills LLC, PGR2019-24, PGR2019-34, PGR2019-35, PGR2019-36, submitted PGR declaration and was deposed
- Uniloc 2017 LLC v. Google LLC, 2:18-cv-00502-JRG-RSP, U.S. District Court for the Eastern District of Texas, Marshall Division, submitted declaration in support of claim construction
- Microsoft Corporation v. Uniloc 2017 LLC, IPR2020-00102, IPR2020-00103, submitted IPR declarations
- Microsoft Corporation and HP Inc. v. Synkloud Technologies, LLC, IPR2020-00316, IPR2020-01031, IPR2020-01032, IPR2020-01269, IPR2020-01270, IPR2020-01271, submitted IPR declarations
- Seven Networks, LLC v. Apple Inc., 2:19-cv-115-JRG, U.S. District Court for the Eastern District of Texas, Marshall Division, submitted declaration in support of claim construction
- Unified Patents Inc. v. Ortiz & Associates Consulting, LLC, IPR2019-00743, submitted IPR declaration
- Uniloc 2017 LLC v. Apple Inc., 3:19-cv-01905-JD, U.S. District Court for the Northern District of California, San Francisco Division, submitted declaration in support of claim construction and was deposed
- AMC Networks, Inc. et al v. Sound View Innovations, LLC, IPR2020-00482, submitted IPR declaration
- Case No. 1:17-cv-01734-RGA, Sprint Communications Co., L.P., v. Charter Communications, Inc., et al., U.S. District Court for the District of Delaware, filed expert report and was deposed.
- CommScope Technologies LLC et al. v. Barkan Wireless IP Holdings LP et al., IPR2020-00827, IPR2020-00829, IPR2020-00831, IPR2020-00833, IPR2020-00835, IPR2020-00838, submitted IPR declarations
- Cisco Systems Inc. v. Monarch Networking Solutions LLC, IPR2020-01226, submitted IPR declaration
- CoolTV Network.com v. Blackboard, Inc., Facebook, Inc., International Business Machines Corporation, Kaltura, Inc., Limelight Networks, Inc., Microsoft Corporation, Ooyala, Inc., Snap, Inc., and Trapelo Corp., submitted declaration in support of claim construction and was deposed
- Facebook, Inc. v. Onstream Media Corporation, IPR2020-01507, IPR2020-01508, IPR2020-01525, IPR2020-01527, IPR2020-01528, submitted IPR declarations

## Publications

- “IP switching: server driven flow classification,” H. H. Houh, *Proceedings of the Washington University Workshop on Integration of IP and ATM*, November 1996.

- “Aurora at MIT,” D. D. Clark, H. H. Houh, and D. L. Tennenhouse, Editors, *MIT Laboratory for Computer Science Technical Report 673*, December 1995.
- “ViewStation Applications: Implications for Network Traffic,” C. J. Lindblad, D. Wetherall, W. Stasior, J. F. Adam, H. H. Houh, M. Ismert, D. Bacher, B. Phillips, and D. L. Tennenhouse, *IEEE Journal of Selected Areas in Communications*, 1995.
- “The VuNet Desk Area Network: Architecture, Implementation, and Experience,” H. H. Houh, J. F. Adam, M. Ismert, C. J. Lindblad, and D. L. Tennenhouse, *IEEE Journal of Selected Areas in Communications*, 13 (4), May, 1995.
- “Reducing the Complexity of ATM Host Interfaces,” H. H. Houh and D. L. Tennenhouse, Hot Interconnects II Symposium Proceedings, Stanford, August 11-12, 1994.
- “Media-intensive data communications in a ‘desk-area’ network,” J. F. Adam, H. H. Houh, M. Ismert, and D. L. Tennenhouse, *IEEE Communications*, August 1994.
- “ViewStation Applications: Intelligent Video Processing Over A Broadband Local Area Network,” C. J. Lindblad, D. J. Wetherall, W. Stasior, B. Phillips, D. Bacher, J. Adam, H. Houh, M. Ismert, and D. L. Tennenhouse, Proceedings of the 1994 USENIX Symposium on High-Speed Networking, Oakland, CA, August 1994.
- “The Media Gateway: Live Video on the World Wide Web,” H. H. Houh, C. J. Lindblad, J. Soo, D. L. Tennenhouse, and D. J. Wetherall, Workshop at the 1994 World Wide Web Conference, Geneva, Switzerland, May 1994.
- “Active Pages: Intelligent Nodes on the World Wide Web,” H. H. Houh, C. J. Lindblad, and D. J. Wetherall, Proceedings of the 1994 World Wide Web Conference, Geneva, Switzerland, May 1994.
- “Wavelength Division vs. Code Division Access Methods for Optical Networks,” H. H. Houh, Area Exam Paper, May 1993.
- “Experience with the VuNet: A Network Architecture for a Distributed Multimedia System,” J. F. Adam, H. H. Houh, D. L. Tennenhouse, Proceedings of the 18th Conference on Local Computer Networks, pp. 70-76, September 1993
- “The VudBoard: A Simple DMA Interface,” H. H. Houh, Proceedings of the 4th Gigabit Minijam, January 1994.
- “A Software-Oriented Approach to the Design of Media Processing Environments,” D. L. Tennenhouse, J. Adam, D. Carver, H. Houh, M. Ismert, C. Lindblad, W. Stasior, D. Weatherall, D. Bacher, and T. Chang., submitted to the International Conference on Multimedia Computing and Systems, May 1994.
- “A Network Architecture for Distributed Multimedia Systems,” J. F. Adam, H. H. Houh, M. Ismert, and D. L. Tennenhouse, submitted to the International Conference on Multimedia Computing and Systems, May 1994.
- “The Viewstation Collected Papers,” D. L. Tennenhouse, J. Adam, C. Compton, A. Duda, D. Gifford, H. Houh, M. Ismert, C. Lindblad, W. Stasior, R. Weiss, D. Wetherall, D. Bacher, D. Carver, and T. Chang, MIT Laboratory for Computer Science Technical Report, MIT/LCS/TR-590, November 1993.
- “A System's Perspective of the Sagnac Fiber Logic Gates and Their Possible Applications,” A. Huang, N. Whitaker, C. Gabriel, H. Avramopoulos, P. M. W. French, H. H. Houh, and I. Chuang, *Applied Optics*, September 10, 1994

- “Complete Switching in a Three-Terminal Sagnac Switch,” H. Avramopoulos, P. M. W. French, M. C. Gabriel, H. H. Houh, N. A. Whitaker, T. Morse, IEEE Phot. Tech. Lett. **3** (3), 235
- “Complete Switching in a Three-Terminal Sagnac Switch,” H. Avramopoulos, P. M. W. French, M. C. Gabriel, H. H. Houh, N. A. Whitaker, IEEE/LEOS Annual Meeting, Paper PDP-13, November 1990
- “All-optical phase-locked oscillator,” N. A. Whitaker, Jr., H. H. Houh, H. Avramopoulos, T. F. Morse, IEEE/LEOS Annual Meeting, Paper ELT2.4/MOO3, November 1990
- “Passive modelocking of an all-fiber erbium laser,” H. Avramopoulos, H. H. Houh, N. A. Whitaker, M. C. Gabriel, T. F. Morse, IEEE/LEOS Conference on Optical Amplifiers and their Applications, Paper PDP-8, August 1990
- “Transverse modes, waveguide dispersion, and 30ps recovery in submicron GaAs/AlAs microresonators,” J. L. Jewell, S. L. McCall, A. Scherer, H. H. Houh, N. A. Whitaker, A. C. Gossard, and J. H. English, Appl. Phys. Lett. **55** (1), July 3, 1989

## Leadership, Activities and Interests

- Leadership
  - Discovery Museums (Acton, MA)
    - Science and Technology Advisory Council, 2012 - present
  - MIT Alumni Association Board of Directors
    - K-12 STEM Initiatives Co-chair, 2013 - 2017
    - Awards Committee Chair, 2012 – 2014
    - Awards Committee, 3 year term, 2011 - 2014
    - Vice President, 2 year term, 2004 - 2006
    - Board Member, 2 year term, 1997 - 1999
  - MIT Club of Boston
    - Board of Directors, 2006 - 2011
    - K-12 Initiatives Chair, 2009 - 2012
    - VP of Communications, MIT Club of Boston, 2003 - 2006
    - Past-President, MIT Club of Boston, 2002 - 2003
    - President, MIT Club of Boston, 2001 - 2002
    - President-Elect, MIT Club of Boston, 2000 - 2001
    - VP of Programs, MIT Club of Boston, 1999 - 2000
    - Activities Super-Chair, MIT Club of Boston, 1998 - 1999
  - MIT Enterprise Forum of Cambridge, Inc.
    - Past Chair, 2009 – 2011
    - In-NOW-vation Co-chair, 2010
    - Chair, 2007 - 2009
    - Vice Chair, 2005 - 2007
    - Executive Board Member, 2002 - 2011
    - Winter Workshop Co-Chair, February 2007 - conceived idea for conference, which sold-out and produced largest attendance numbers in recent memory

- Spring Workshop Co-Chair, Spring 2004
  - Membership Committee Chair, Fall 2003 - 2006
  - 25th Anniversary Dinner Chair, Fall 2003
  - As Membership Chair and Board Member, started Special Interest Groups in 2004; a SIG won the MIT Presidential Citation award, the MIT Alumni Association's highest award for organizations, in 2006
- Estabrook Elementary School PTA
  - Advisory committee to the superintendent on PCB issue, 2010-2011
  - 4<sup>th</sup> Grade after-school science program co-organizer, 2010-2012
  - 4<sup>th</sup> and 5<sup>th</sup> Grade before-school Math Olympiad co-organizer, 2009-2013
  - 5<sup>th</sup> Grade BBQ and Yearbook Committee, 2011, 2013
  - Family Math Night volunteer, 2008-2012
- Tau Beta Pi National Engineering Honor Society
  - Advisor, MA B Chapter at MIT, 2003 - present
  - District Director (National Officer), Tau Beta Pi, New England Area, 1991 - 2003
  - President, MA B Chapter at MIT, Fall 1988 - Spring 1989
  - Laureate award, 1989
- MIT Class of 1989
  - Secretary, five consecutive 5 year terms, 1989 - 2014
  - 30-year Reunion Committee, 2019
  - 25-year Reunion Committee, 2014
  - 20-year Reunion Committee and Gift Committee, 2009
  - 15-year Reunion Committee and Gift Committee, 2004
  - 10-year Reunion Committee and Gift Committee, 1999
  - 5-year Reunion Committee, 1994
  - Interim Treasurer, 1993 - 1994
  - Instituted annual senior class career fair, now raising over \$100,000 annually for senior class activities, Fall 1988
- Strong, consistent record of leadership dating to high school
- Acting
  - ‘21’ (Sony Pictures), credited as “Chinatown Dealer,” 2007, Kevin Spacey's movie about the MIT Blackjack Team inspired by “Bringing Down the House” by Ben Mezrich, opened nationwide on March 28, 2008. 21 was the number one movie in US for two weeks and number one globally for one week. 21 also topped the DVD sales, Blu-ray sales and DVD rental charts.
  - Spring Lake Theater Company, first New York-area off-broadway production of “A Chorus Line,” played role of Mark, Summer 1990
- Former member of the MIT Blackjack team
- Producer for 10,000 Maniacs’ 2013 album “Music from the Motion Picture”
- Executive Producer for 10,000 Maniacs’ 2015 album “Twice Told Tales”
- Violist, violist, harpist, guitarist, singer, actor: played in many amateur/semi-professional groups including Reading Symphony Orchestra, MIT Summer Philharmonic Orchestra, Freisinger Chamber Orchestra, Merrimack Valley Philharmonic, Longwood Symphony, MIT Symphony, and Somerville Community Chorus
- Violist, “Coming Home” album by Karen Phillips, 2014

- Erdos-Bacon number of 7
- Erdos-Bacon-Sabbath number of 11