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UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA

Before The Honorable Haywood S. Gilliam, Judge

|               |   |                    |
|---------------|---|--------------------|
| OpenTV, Inc., | ) |                    |
|               | ) |                    |
| Plaintiff,    | ) |                    |
|               | ) |                    |
| VS.           | ) | NO. C 14-01622 HSG |
|               | ) |                    |
| Apple, Inc.,  | ) |                    |
|               | ) |                    |
| Defendant.    | ) |                    |
|               | ) |                    |

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San Francisco, California  
Wednesday, April 15, 2015

**TRANSCRIPT OF PROCEEDINGS**

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1           **THE CLERK:** We're calling C. 14-1622, *OpenTV Inc., et*  
2 *al. versus Apple, Inc.* Counsel, please step forward and state  
3 your appearances for the record please.

4           **MR. IVEY:** Good morning, Your Honor. Jerrold F. Ivey  
5 from Finnegan, on behalf of OpenTV and Nagra. With me at  
6 counsel's table, also from Finnegan, Smith Brittingham,  
7 Rob McCauley, and Stephen Kabakoff. From OpenTV we have  
8 Brian Platt and we have Dr. Benjamin Bederson. And in the  
9 gallery we also have Dr. Tim Williams. This afternoon,  
10 Dr. Bederson will be helping with the presentation.

11           **THE COURT:** All right. Good morning, Mr. Ivey.

12           **MR. IVEY:** Thank you.

13           **MS. SIMMONS:** Good morning, Your Honor.  
14 Luann Simmons, with O'Melveny & Myers, for the defendant and  
15 counter-plaintiff Apple. I'm joined at counsel table by  
16 Ryan Yagura and Brian Cook, also from O'Melveny, and  
17 Dr. Brad Myers and Dr. Charles Knutson, who are our experts in  
18 this matter.

19           **THE COURT:** All right. Good morning, Ms. Simmons.

20           **MS. SIMMONS:** Good morning.

21           **THE COURT:** We're here for the technology tutorial.  
22 I got your submission about the planned agenda for the day,  
23 which sounds find to me. Unless there's anything we need to  
24 discuss preliminarily, I'll turn it over to the parties to  
25 begin.

1           **MR. IVEY:** Thank you, Your Honor.

2           On behalf of OpenTV and Nagra, this will be our  
3 nonadversarial tutorial with regard to the three patents in  
4 this case, which have to do with the '033 patent, the '229  
5 patent, and the '287 patent. As I mentioned a moment ago,  
6 Dr. Bederson will be making the presentation with regard to the  
7 '287 patent, with the assistance of Mr. Kabakoff.

8           A few words, Your Honor, about the historical setting of  
9 the case, and with regard to the companies that are the parties  
10 here, as well. And, Your Honor, as we're going through the  
11 presentation, we have notebooks for the Court --  
12 (Whereupon a document was tendered to the Court.)

13           **MR. IVEY:** -- and for the clerk, and for the other  
14 side.

15           **THE COURT:** Sounds good. Thanks.

16           **THE CLERK:** Is it one set? Is it a set of three?  
17 Because last time I think I --

18           **MR. IVEY:** One set for --

19           **THE CLERK:** -- separated them, and it was two sets  
20 for the Judge.

21           **MR. IVEY:** It's all just one set for each of the  
22 patents today. So --

23           **THE CLERK:** I'll give you all of these.

24           **THE COURT:** It does look like this is three sets.

25           **THE CLERK:** It is three sets. Okay.

1           **THE COURT:** I see. Yeah. So I just need a binder,  
2 and one clipped stack?

3           **MR. IVEY:** Yes, Your Honor, that's correct.

4           All right. Your Honor, as I mentioned a moment ago, the  
5 parties in this case are, of course, OpenTV and Nagravision.

6           And we'd like to offer a word about the Kudelski Group,  
7 which is what these two parties are a part of. The  
8 Kudelski Group is a world leader in digital security, among  
9 other things. It employs more than 3,000 people around the  
10 world. It is responsible for, among other things, security  
11 content delivered to over 130 million active smart cards and  
12 other types of devices. And it also produces, integrated into  
13 150 million devices, types of technology for video-on-demand,  
14 personal video recording, and enhanced TV applications.

15           Nagravision, itself, is a cable and satellite-systems  
16 developer which supplies systems and technology to products  
17 involving cable and satellite TV, digital television, and  
18 Internet security.

19           And OpenTV is basically a software developer that, among  
20 other things, develops programs for TV operating systems and  
21 digital advertising systems. As we mentioned here on the  
22 slide, this company and this group are responsible for bringing  
23 in revenue of more than \$1 billion per year.

24           As to the '033 patent, as the first of the three that  
25 we'll be talking about this morning, this patent basically

1 refers to an Internet filtering system for filtering data  
2 transferred over the Internet, utilizing immediate and deferred  
3 action filters. And the immediate and deferred action filters  
4 are something we'll talk about for a bit. Basically this is  
5 going to be, for short, for want of a better shorthand term,  
6 parental-controls types of technology. It's not simply limited  
7 to that, but that's basically the type of filtering that's at  
8 issue.

9 Now, the historical setting with regard to this basically  
10 begins with the fact that in the early 1990s through to the mid  
11 1990s, the use of Internet technology, the Internet, itself,  
12 and the registration of domain names essentially exploded. And  
13 what you see on the slide here is that from the period of about  
14 January 1981, there were approximately 9,300 registered  
15 Internet domains. And by July of 1997 there were over  
16 1.3 million registered domains.

17 In the context of that, we'll talk about a couple of  
18 documents that were important, one of which is shown here on  
19 the screen, which is the IWC report, which is it Internet  
20 Working Group report to Senator Leahy of the  
21 United States Congress. And the other is the Communications  
22 Decency Act of 1996.

23 And, moving to Slide Number 6, what you see here is a  
24 little bit of the information that was produced by this Center  
25 for Democracy and Technology in this Internet Working Group, in

1 conjunction with efforts by a number of parties to try to  
2 figure out how to deal with the flood of information over the  
3 Internet that contained no basic restraints with regard to what  
4 people could see, and what kind of technologies or other types  
5 of information were being shown to whomever they were shown by.  
6 So what you had was a problem of how to deal with particularly  
7 the question of indecent material being transmitted across the  
8 Internet.

9       And one of the problems that occurred, and the reason for  
10 this working group and other people to come together to try to  
11 come up with solutions, was the difficulty in the original  
12 applications of how to apply decency standards fell to these  
13 servers; to the Internet providers, AOL, CompuServe, and  
14 similar types of companies. It quickly became clear that the  
15 burden on those content providers was completely impossible and  
16 unworkable. There was no way, for example, for AOL or another  
17 company to determine what might be decent in one city; between  
18 one household and another; between one state and another;  
19 between one country and another.

20       And in addition to that, the other thing that was  
21 happening was, as the Internet exploded, the sources of  
22 information -- the providers and other people who were putting  
23 in content on the Internet -- changed every second, so that  
24 around the world you'd have new types of information coming in,  
25 so that if you could have figured out a practical way to set up

1 a sort of a standard of decency at one of these servers, their  
2 ability to shut off information would have been defeated almost  
3 instantaneously by the fact that you could simply make some  
4 adjustments, and the Internet would then accept the material in  
5 another format.

6 The solution that was brought into being by the pioneering  
7 visionaries of the '033 patent, which is Mr. William Duvall and  
8 Matthew Kendall; involved the development of the '033 patent,  
9 which basically created a user-based system for filtering,  
10 otherwise known, more or less, as parental-controls-type  
11 technology.

12 And what we show here is that this technology was first  
13 given to the commercial market by a company called "SurfWatch,"  
14 which created software being installed on computers to enable  
15 parents to monitor what their children were seeing and sending  
16 out.

17 Spyglass acquired SurfWatch. Spyglass was originally the  
18 assignee of the '033 patent, and was a pioneer with regard to  
19 web-browsing technology and what was referred to as "Mosaic."  
20 And that technology was incorporated into Internet Explorer 1.0  
21 which was primarily based upon the source code that Microsoft  
22 Windows 95 licensed from Spyglass.

23 Moving on to Slide Number 8, what you'll see here is  
24 basically a rendition of parental controls. And what we'll  
25 talk about as we move forward is that these controls have a way



1 of operating.

2 But I want to make one note, Your Honor, with regard to  
3 the '033 patent; and that is while this technology was  
4 essentially developed and spurred into existence by the idea of  
5 giving parents control and enabling them to protect their  
6 children from Internet content that they found was undesirable,  
7 the patent also does refer to Internet filtering at the  
8 server-based system. And that you will find in the patent at  
9 column 8.

10 So what you see here, Your Honor, with Slide Number 9 is a  
11 description of how the filtering could work. And recall we  
12 used the words "immediate" and "deferred" a few moments ago.  
13 What the '033 technology allows is for the mother in this  
14 particular scenario to say that she wants to block certain  
15 information going out from her child, as the person who is  
16 using the computer system and trying to work on the Internet or  
17 use the internet. And what that does is it's an immediate  
18 filtering for something I think we've got here, called  
19 "homeworkcheat.com." And since she doesn't want that kind of  
20 technology being sought by the young man, she basically puts an  
21 immediate block on that, which stops it as an outgoing  
22 convenient. Therefore, it never gets to a server, and there's  
23 no way to return information requested for that particular  
24 message.

25 The other way that this system works is to defer the

1 filtering until a later moment, which is when the information  
2 is coming in from a server or from another computer to the  
3 user's home. And what happens now is that the filtering will  
4 block the incoming message on a deferred basis. And that's  
5 basically depicted here, by showing the outgoing message goes  
6 out; but as it comes back, it's blocked at the home, and it  
7 doesn't show up on the screen. There's no way to read that  
8 information. It's not allowed.

9 Now, a few words, Your Honor, about --

10 **THE COURT:** Just one --

11 **MR. IVEY:** I'm sorry Your Honor?

12 **THE COURT:** One point of clarification; it may be  
13 premature. But based on the description that you just gave, is  
14 the idea that the immediate blocking is on an outgoing message,  
15 but deferred is on incoming?

16 **MR. IVEY:** Yes, Your Honor. So what happens is  
17 you've got an interaction. On the outgoing message what  
18 happens is as soon as the young man types in the information,  
19 the system filters at that level and says that message can't go  
20 out. I'm not going to allow that. It's blocked.

21 In other circumstances what will happen is there may be a  
22 set of filters that are set by the parent, so that various  
23 types of information -- wherever they're coming from, and  
24 however they seem to be coming into the house -- are not  
25 allowed in. So it might be that this is sent out without

1 solicitation, or it might be something where the young man  
2 types in information. And you may have had the experience of  
3 typing in a particular Internet site, and you get information  
4 about all kinds of things, some of which you wanted, and some  
5 of which you can't imagine why it actually came through.

6 What this does is it basically sets filters. So as that  
7 information comes back into the system, it is blocked. It's  
8 not allowed in at that point. So that's a decision which would  
9 be deferred and may occur later on in the process; maybe  
10 immediately during this part of it, but it could be quite a bit  
11 later during other sessions with regard to the Internet.

12 A word about the ISO, which is the International Standards  
13 Organization, and how it interrelates with the '033 patented  
14 technology. As shown in Slide Number 10, the ISO is an  
15 international standards-setting organization. And basically  
16 what it did was it created a standardized format for network  
17 protocols: The information going back and forth,  
18 communications among different computers and in a different  
19 networks.

20 The system here -- or the protocol -- is known by a  
21 variety of names. They're all basically synonymous. And  
22 they're shown here as the ISO protocol model, the ISO OSI  
23 reference model, the OSI reference model, and the OSI model.  
24 All of those are, as I say, synonymous. The OSI, which it  
25 refers to here, is the open systems interconnection -- OSI --

1 model.

2       When the '033 patent -- when it was filed in 1996, the ISO  
3 had defined and depicted in an open-source system, an  
4 interconnection model -- the OSI -- for communicating over  
5 networks. It describes a set of rules that the devices can  
6 follow when communicating over a network with one another.  
7 And, as noted, it was referred to by various names.

8       The key point here, Your Honor, is to show how filtering  
9 software of the '033 patent works with and interacts with this  
10 basic system of rules and depictions in conjunction with the  
11 ISO protocol model here.

12       And the other point that's key is that this technology --  
13 this set of standards -- was known in the art in 1996 to  
14 persons of skill in the art. So it was well known at that  
15 point. And I don't think there's any dispute about that.

16       One other thing I'll talk about for just a moment, in  
17 terms of the way that this information works and how the  
18 filtering occurs at two different places, one of which is  
19 relevant for this patent, and one of which is relevant with  
20 regard to prior art that was distinguished and is therefore not  
21 a part of the '033 patent. And that has to do with the idea of  
22 messages and packets, which you'll see here on Slide Number 11.

23       A few basics are -- one fundamental point is that is a  
24 difference -- a significant difference -- between a message and  
25 a data packet.

1       What you see is in the blue box here is a message, which  
2 is an application-level message. And that will be important  
3 for a moment -- in a moment, as I'll mention.

4       And what happens with a message is that it is a block of  
5 data or information. The objective is to send that data or  
6 information over the Internet. And the Internet, itself, is  
7 what's referred to as a "packet-switched network," which is to  
8 say that when you send data or information across the Internet  
9 from one computer to another, that information is broken into  
10 smaller packets. You'll hear the word "broken down,"  
11 "segmented," "packetized." All of those terms are synonymous  
12 with regard to what's happening here. Essentially, it's a  
13 deconstruction of the message for purposes of making it easier  
14 and quicker for transmission. And those, then, smaller packets  
15 are sent through a series of routers across the Internet.

16       So a message is deconstructed into a series of these  
17 packets, which you'll see in blue, packetized, as I mentioned,  
18 where each packet has a corresponding header, which you'll see  
19 in yellow here, under HDR. These headers include information  
20 for individualized transmission, such as orders for reassembly,  
21 addressing information, sender addresses, destination  
22 addresses, and so forth. It is not the information of the  
23 message, itself. This is information that helps the  
24 packetization move those packets through the process across the  
25 Internet.

1       The process includes deconstruction and reassembly. And  
2 what you'll see at the bottom here is there will be further  
3 segmenting of these packets as the system works its way through  
4 the protocol, as we'll show in just a moment, which brings us  
5 back to the ISO protocol that we were just speaking about as we  
6 look at Slide Number 12.

7       And what we have here in conjunction with the '033  
8 patented technology, which is software that I'll talk about in  
9 a moment, is the ISO protocol model. And what it does is it  
10 defines seven layers or levels. They're used synonymously as a  
11 framework. And it does not require that each level is  
12 necessarily present in any particular application of this  
13 particular protocol. And it also encompasses the idea that you  
14 could have many protocols within a given layer or level of the  
15 technology to accomplish some of the ends of packetizing, and  
16 so forth.

17           **THE COURT:** So is what you're saying that it's up to  
18 seven layers, but you wouldn't necessarily need to have all  
19 seven layers?

20           **MR. IVEY:** Yes, Your Honor. That's correct.

21           **THE COURT:** Is there any minimum?

22           **MR. IVEY:** That's -- that's beyond my expertise. My  
23 understanding is that it's flexible, but I don't know what the  
24 minimum level of layers would be.

25       The protocol, itself, conceptualized, was a seven-layer

1 protocol; but the point is it's a flexible protocol which could  
2 be implemented in a variety of different ways.

3 **THE COURT:** Fair enough.

4 **MR. IVEY:** The top layer which you see here is the  
5 application layer at seven. And that application-protocol  
6 layer contains the information of the messages we spoke about  
7 just a moment ago. And this will be important for the  
8 filtering under the '033 technology.

9 The common application-level protocols included, at the  
10 time of the '033 patent, things that you see there in the  
11 middle, such as the HyperText Transport Protocol, HTTP; the  
12 File Transfer Protocol, FTP; or other user-level applications;  
13 for example, things like the web browser or media players would  
14 be included in that area.

15 Now, what you'll see when we show the animation sequence  
16 is the effort to turn this application-level message into  
17 something that can be transmitted across the Internet, and then  
18 reconstructed at another destination. So what you'll see now  
19 is -- we're showing the basics of this, where you start with  
20 the application. And it automatically works its way through  
21 all of the layers down until the first layer, which is a  
22 physical layer.

23 And now what will happen is there will be a communication  
24 medium, where the information that's been packetized -- and  
25 we'll show this a little bit more in a moment -- goes across to

1 where it's going to be reassembled from the bottom up.

2 And what you'll wind up doing is reassembling the message  
3 so at the end of the day, what you have at the application  
4 level again is a readable message for the user or the server.

5 **THE COURT:** And so we've got, in application-level  
6 messages, those bullet points for HTTP, FTP, and user  
7 application. Is IP address ever potentially one of those  
8 bullets at that level; layer seven, layer six level?

9 **MR. IVEY:** It's an excellent question, Your Honor.

10 No. The IP level is the TCP/IP level type of header. And  
11 I'll show you where that ST is, but it's going to be basically  
12 be where you see the second gray area at the lower levels,  
13 three and four, there.

14 **THE COURT:** Okay.

15 **MR. IVEY:** Now, one other thing to note here,  
16 Your Honor, with regard to the message-based filtering that we  
17 just talked about is that the prior art, according to the  
18 inventors, was distinguished with regard to the these packet  
19 filters. In other words, there's something called "packet  
20 filtering." And that does occur at the TCP/IP level.

21 And your question anticipated this particular point. What  
22 this does is it operates at the lower-level protocols, such as  
23 we see in three and four. And these basic lower-level  
24 protocols include packetized information -- headers, and so  
25 forth -- which include such things as information for the



1 source or destination addresses, port numbers, and so forth.

2           **THE COURT:** And when we say "lower layers," is that  
3 four down to one?

4           **MR. IVEY:** The lower levels here are three and four.

5           **THE COURT:** That's --

6           **MR. IVEY:** That's where these packetized filterings  
7 could occur. And what you have there is the ability to  
8 basically -- using the packetized headers, you can filter data  
9 at that point; but what you'd be doing is filtering on a much  
10 more, shall we say, less-nuanced system with regard to what  
11 information is actually being allowed or stopped.

12           So, for example, a child who's using an Internet might  
13 very well say, "I'd like to look up some information about some  
14 things I saw on Nat Geo Wild." And in that process the issues  
15 of hunting, mating, and so forth might be things that,  
16 educationally speaking, he should be able to see; but because  
17 of the fact that it might contain certain words in that  
18 packetized heading, that kind of filter would block and  
19 disallow all of that information, regardless of whether it's  
20 stuff that actually qualifies as things that mom and dad would  
21 say are indecent, or not of redeeming social value.

22           So what the filters do at the message level is allow the  
23 filtering software to go in at the application message level,  
24 look at the information in the message, and decide whether what  
25 you're looking at is indecent, or whether this is something

1 which would help with a biology project at school, for example.

2           **THE COURT:** I see. And the process you've just  
3 described of actually examining the content of the message  
4 happens in layers seven and six?

5           **MR. IVEY:** Yes, Your Honor.

6           **THE COURT:** And the filtering that happens in layers  
7 four and three, you're saying, is based on header information?

8           **MR. IVEY:** Packetized header information.

9           **THE COURT:** Okay.

10           **MR. IVEY:** Yes. And that is prior art which is  
11 distinguished over in this patent through the prosecution  
12 history. That's clearly disclaimed with regard to the '033  
13 technology.

14           **THE COURT:** Okay.

15           **MR. IVEY:** That's not the type of filtering we're  
16 interested in.

17           **THE COURT:** All right. I see.

18           **MR. IVEY:** So what we'll show now, Your Honor, is --

19           And I have to give credit to my animators with regard to  
20 doing this for me, because I didn't do it myself.

21           We go back to the basics we had in Slide 13 with the ISO  
22 layers for the protocol model. And what you'll now see is that  
23 application-level message being packetized, and going through  
24 the system. So you actually see the packets being developed,  
25 consistent with what we showed a few slides earlier, with the

1 packetization and the further packetization, as the segmenting  
2 continues to make the message more easy to transmit, and then  
3 reassembled.

4       So here you start with the message at layer seven. It  
5 works its way down. You're seeing the packets there. There  
6 will be further packetization. And this process can continue  
7 itself, and so on, and so on, as necessary to create the  
8 packets that make this transmission more efficient.

9       At this point what happens is once it's sufficiently  
10 packetized, the communications medium allows the physical layer  
11 to send it over to the other physical layer, where it can begin  
12 the reassembly process. It works its way back up. And now you  
13 see the message is once again readable and understandable at  
14 the application-level message.

15       Now, just to remind Your Honor very, very briefly with  
16 regard to what we talked about in Slide Number 9, you'll recall  
17 we had the immediate and the deferred filtering. What I'm  
18 going to show you now with regard to this particular ISO  
19 protocol and the packetization process is essentially a  
20 behind-the-scenes look at what you're seeing with mom and son  
21 sitting at the computer unit there.

22       And what happens now is we go back to the same figure we  
23 had before. We're now at Figure 15. And what we show is the  
24 addition of the '033 patent's filtering intelligent software  
25 being brought into the process to show where the filtering will

1 occur in the immediate sense on an outgoing message. So now  
2 what happens is you start with your application-level message.  
3 And you want to block that. So the filtering is now set to  
4 stop that message from going out. As it moves here, the  
5 presentation level will not allow it to go any farther. It's  
6 blocked, and it does not go any further than that. That's an  
7 outgoing block.

8 **THE COURT:** So it gets to the presentation layer, but  
9 not further?

10 **MR. IVEY:** Conceptually, that's --

11 Well, physically, that's what you're seeing here.

12 Conceptually, it's basically -- these are kind of peer  
13 levels: Seven and six. And the filtering is occurring at  
14 those levels. So whether it's exactly in between them or right  
15 in there is not particularly the point. Recall that this is  
16 where these HTTP, FTP, and web-browser types of information are  
17 basically readable. And that's where the filtering is done on  
18 the message and the information in the message.

19 Now, to show what happens on an incoming message, which is  
20 basically still going to work on the '033 patented technology  
21 at the user's computer -- so now what's going to happen is  
22 you'll have information go through. And it will show the  
23 server now creating a message it's going to send back. The  
24 packetization occurs. And you'll see that moving down with  
25 further segmentation to the point where it's now ready to

1 transfer across the communications medium.

2 And when it comes back up --

3 I think I moved that (indicating) a little too fast.

4 The point is as it's built back into the application-level  
5 message, the filtering intelligent software now blocks the  
6 message from coming into the home user's screen. And so that's  
7 the incoming block.

8 **THE COURT:** And your point of view is that the  
9 incoming block is deferred actual filter?

10 **MR. IVEY:** Yes. It could be immediate, but it can  
11 also be deferred.

12 **THE COURT:** It could be either --

13 **MR. IVEY:** Yes.

14 **THE COURT:** -- even for an incoming message?

15 **MR. IVEY:** Yes. For an incoming message, yes, that's  
16 correct.

17 All right. Now -- so to show -- the bottom line here with  
18 regard to what we're making a distinction about here is that  
19 what you'll see in Slide Number 17 is filtering based on  
20 information is an application-level message filtering.

21 And what you see here in this particular document goes  
22 back to the original scenario we used with mom and son at the  
23 computer. And basically what we have here is the  
24 [www.homeworkcheats.com](http://www.homeworkcheats.com) and other data which she does not want  
25 to allow. That's what the filtering software is operating on

1 at that application level.

2 The decision process is therefore at that level. The data  
3 packets are not where the IP -- where this application-level  
4 filtering occurs.

5 This is a different type of -- what you're seeing here is  
6 the IP addresses and the data in the packets below that. And  
7 there will be subpackets, as you've also seen already. But  
8 that's the TCP/IP type of filtering, if there's going to be any  
9 filtering of that kind, at all. That is not what is going on  
10 with the '033 patent.

11 **THE COURT:** Let me just make sure I understand that.  
12 So your point is that the filtering is based on the data block  
13 here, rather than the yellow header blocks?

14 **MR. IVEY:** Correct. What you have is packetized  
15 headers, which helped to tell the packets where they're going  
16 to be sent, from whom, where they're going to be reassembled,  
17 and so forth; but the information in this application-level  
18 message is not readable at that level. It's been broken down  
19 already.

20 So the filtering with regard to the message, itself,  
21 occurs in that higher level -- level seven -- which you see  
22 with the URL address [www.homeworkcheats.com](http://www.homeworkcheats.com).

23 **THE COURT:** Just to be sure, Slide 17 is showing both  
24 types of filtering?

25 **MR. IVEY:** No.

1 I talked about both types of filtering.

2 What it's showing is that the filtering at this particular  
3 level occurs with regard to the application-level message.  
4 This is a message filtering protocol. It is not based upon the  
5 IP addresses, or the port numbers, or other types of  
6 information that are found in headers of the packets.

7 **THE COURT:** I see.

8 **MR. IVEY:** That's the point.

9 One final thing that we'll mention here, Your Honor, with  
10 regard to the interrelationship between OSI and TCP/IP is that  
11 there is, in fact, an interrelationship. They're not mutually  
12 exclusive technologies.

13 And, in fact, what you have with -- what we show here from  
14 the Figure 1-18 in Tanenbaum's reference book is a general  
15 framework that can be customized. The OSI and TCP/IP  
16 demonstratives are not mutually exclusive, as I mentioned. And  
17 basically what you'll see, for example, in this particular  
18 figure is that there is no layer six and seven in the TCPI  
19 [sic] model as shown here before customization.

20 And the levels of the host to network, as TCP/IP shows on  
21 the right bottom, are basically a combination of levels one and  
22 two on the data-link and physical levels of the OSI model.

23 The point is that this can be customized so that the  
24 software can add in the higher-level filtering functionality.  
25 And that's what the '033 patent does as one configuration of

1 adding software to alter the configuration of the TCP/IP  
2 protocol.

3           **THE COURT:** What's the difference between ISO and  
4 OSI?

5           **MR. IVEY:** Well, they're basically synonymous. And,  
6 as I mentioned, I think what we have here is the OSI or ISO  
7 protocol -- they're used interchangeably.

8           To illustrate the point finally here, what you see now is  
9 the filtering intelligent software being added into the  
10 protocol. And what it would then do is bring in an ability to  
11 filter at the application-level messaging level, the  
12 presentation and session-related levels. And the software  
13 therefore builds into the demonstrative protocol the necessary  
14 higher levels of presentation and session to implement the  
15 filtering protocols and controls that are shown in the '033  
16 patent.

17           That's the presentation and tutorial with regard to the  
18 '033 patent, Your Honor.

19           If I could move very quickly through, because I've got an  
20 expert here who wants to talk a little bit, as well.

21           **THE COURT:** Sure.

22           **MR. IVEY:** We have -- the second patent is the '229  
23 patent, which is entitled, "The Convergence of Interactive  
24 Television and Wireless Technologies" to the inventor,  
25 Vincent Dureau.



1 This basically involves a system and method of utilizing  
2 user profiles for interactive TV and wireless technologies.

3 To basically show the background of the technology here,  
4 you start with the idea that traditional media was essentially  
5 passive. A consumer didn't really have the ability to interact  
6 with the message and the content being brought across, for  
7 example, to a television. You could change the channel or turn  
8 off the television, but there was no interaction with the  
9 programming, itself.

10 In the early 2000 time period when the '229 patent was  
11 developed you have what's called "interactive media," which  
12 allows for requesting of information and receipt of information  
13 based upon active input by the user. And so now what you'll  
14 see here is that the -- if the user wants interactive media,  
15 they can send out a request for it, and then that media  
16 information or programming can be sent back.

17 This basically -- to just make clear a few points here,  
18 it's that this technology is not limited to set-top boxes or to  
19 televisions. The patent is clear at column 5, lines 60 through  
20 67, that it can also contemplate and utilize cell phones and  
21 mobile computers. And it also mentions that you can use  
22 personal computers.

23 And these are depicted in Figure 1, where you'll see that  
24 the --

25 We're going to highlight these for you.

1       At the bottom left-hand corner you have 305. And that's  
2 going to be multiple devices, including, as I mentioned, cell  
3 phones and -- and mobile computers. On the right side over  
4 there, you will also see a personal computer, which is  
5 denominated as 306. So a variety of devices can be used in  
6 this interactive environment.

7       And in addition to that, the transmission of the media is  
8 not limited to a cable television or to a set-top box, as such.  
9 It can be, as you'll see in Item 17 here, which is now  
10 encapsulated in red, various types of transmission media,  
11 including satellite-based media, cable-based media,  
12 terrestrial-based media, or a combination of those media, one  
13 or all. And that's basically discussed more fully at column 5,  
14 lines 54 through 58.

15       It's also important to note, Your Honor, that while the  
16 term "broadcast station" is used here, this is not limited to  
17 what we would call "FCC-regulated broadcasters." It can be  
18 private content providers, such as a private source; the  
19 *Wayne's World* type of set up where somebody's got the ability  
20 to get on the Internet and send their information around; or  
21 you could have local access providers who are also providing  
22 information across the network. So a variety of different  
23 types of providers can also work within this type of  
24 interactive system.

25       What you see at Slide 23 is basically an interactive

1 television. And it has a variety of selection processes that  
2 can be chosen by the user. And in this particular example, it  
3 chooses -- the user chooses Amazon television, which then  
4 directs them to other menus which allow for the purchase of  
5 rental movies or other types of display content, videos. And  
6 what you'll then see is that selection. The person selects *Elf*  
7 in this particular case.

8 A couple of other basic premises which I'll just point  
9 out. There are simple terminology issues; that is, the  
10 "pushing" and "pulling" is basically the requesting and  
11 receiving of information.

12 Pushing of information is basically where the broadcast  
13 station or the broadcaster -- the provider -- pushes  
14 information; sends information that's unsolicited, essentially,  
15 to the user, which could be the television, the computer, or  
16 the mobile device. And that's done without a request.

17 Similarly, pulling information would now be that there  
18 would be a request made by the user for content, and that the  
19 content would then have a response from the broadcaster that  
20 sends the requested information.

21 The pull and push concepts also apply in the context, as I  
22 mentioned, of other types of devices which are contemplated in  
23 the '229 patent, such as mobile devices here. And the pushing  
24 and the pulling of information are used in essentially the same  
25 manner. This is basically confirmed as the way that these

1 terms are used within the patent, itself, as you'll see at  
2 column -- I believe it's 6, lines 61 through 64, which works in  
3 conjunction with Figure 3. And it's also discussed at column  
4 2, lines 55 through 57. And it's basically the same  
5 push-and-pull concept.

6 Now, from that point, we then move into the actual  
7 innovative aspect of this particular patent, which has to deal  
8 with these user profiles. And what you'll see here in column 7  
9 at lines 18 through 36 is basically a user profile which sets  
10 in a number of categories.

11 And, Your Honor, with the Court's permission, I'm going to  
12 move over a little bit closer so I can see what I'm reading.

13 **THE COURT:** Certainly.

14 **MR. IVEY:** I apologize. My eyesight's tough in this  
15 regard.

16 What you'll see at the top left here is a user profile  
17 highlighted now. And that corresponds with areas in Figure 3,  
18 where you see the profile 330, 330B, and 330A.

19 The user profile then creates user-entered information.  
20 And that information can include such things as birthdates,  
21 other credit-card information, Social Security number,  
22 memberships, et cetera.

23 The next aspects of this is the -- is the user history as  
24 a part of this profile. And basically this is developed on the  
25 viewing habits of the particular person who's interacting with

1 the system. Preferences can include locations which are surfed  
2 on the World Wide Web, for example; so the browser, in addition  
3 to just using television.

4 And finally what the user profile includes is  
5 physical-location information. And that basically tracks the  
6 movements of the particular user of the technology. And it can  
7 include, as you will also see a little farther down in  
8 column 7 -- I believe it's after -- this shows lines 30. But  
9 if you went through lines 30 through 36, you'd see examples for  
10 the use of this particular technology by the user at a  
11 restaurant, for example, or at an Internet café.

12 Those things would then be used to build the profile which  
13 allows for an enhanced experience between the user and the  
14 server, or the provider of the content.

15 And the final slide we have here with regard to both the  
16 mobile devices and the set-top-type system, which could  
17 include, for example, a monitor, television, or a computer, is  
18 you use this profile which will continue to build. It becomes  
19 more robust as it's used, so that you have here, for example,  
20 in the profile, the location, use history.

21 And now what we add is a request for the movie *Frozen*.  
22 That now appears in the user profile.

23 And now in response to that, as the profile's being built  
24 and there's an interaction between the server provider and  
25 user, there could be content pushed out to the server or to

1 the -- I'm sorry -- to the user or to the mobile device here,  
2 where you have something that shows, because of that selection  
3 of the movie *Frozen*, there's a belief that the person might be  
4 interested in further review of that. So what you have is a  
5 coupon for friends and family -- 25 percent off -- to view this  
6 same technology, this same movie, in another medium at another  
7 occasion.

8 And those are basically the two presentations that I have  
9 responsibility for. And at this point I'll turn it over to  
10 Mr. Kabakoff.

11 **THE COURT:** All right.

12 **MR. KABAKOFF:** Thank you, Your Honor.

13 My name's Steven Kabakoff. I just want to briefly  
14 introduce the '287 patent and Dr. Benjamin Bederson, who'll  
15 present OpenTV's technical tutorial for this patent.

16 As you can see in the title of patent, the '278 patent is  
17 directed to a method for asynchronously drawing images on a  
18 display. At the time of this patent, when a computer program  
19 changed the appearance of a graphical element on the screen,  
20 that graphical element would be immediately redrawn. And, for  
21 a computer program having a lot of graphics, that could consume  
22 a lot of processing time and processing resources, which would  
23 slow the overall operation of the computer program.

24 The '287 patent provides a technique for asynchronously  
25 displaying graphic objects, in which the graphic objects are

1 not immediately redrawn after every graphical change. This  
2 allows for optimizations in the drawing process, and for the  
3 computer program to run faster and more efficiently.

4 Dr. Bederson will explain the technology of the '287  
5 patent in more detail. He is a Professor at the University of  
6 Maryland in the Computer Science Department, with over 25 years  
7 of experience in graphical user interface technology, and  
8 object-oriented system programming.

9 (Reporter requests clarification.)

10 **MR. KABAKOFF:** His technical qualifications are  
11 described in paragraphs 2 to 7 of his declaration submitted in  
12 Docket Number 107-1, and in his CV, which is Docket Number  
13 107-2, which should be handed to Your Honor this morning with  
14 the hard copy of the presentation.

15 And with that, I will introduce Dr. Bederson.

16 **THE COURT:** Thank you.

17 **DR. BEDERSON:** Thank you, Steven.

18 Hello.

19 **THE COURT:** Good morning.

20 **DR. BEDERSON:** So if you look at the screen, you will  
21 see a representation of a computer system that may be something  
22 that looks familiar to a kind of technology you may have used,  
23 yourself: A screen containing icons.

24 In the '287 patent and the way that these kinds of screens  
25 are typically implemented, there are graphic objects, which are

1 software components that represent the underlying icons. Those  
2 graphic objects contain two core elements. They contain data  
3 characteristics or attributes of the objects, and methods or  
4 functions or code that executes to do tasks related to those  
5 objects; for example, drawing them.

6 A separate important concept is the concept of a drawing  
7 area. The way that these systems would typically draw these  
8 icons on the screen is to figure out or to decide which portion  
9 of the screen needs to be redrawn -- representing the drawing  
10 area -- and then go ahead and figure out what needs to be drawn  
11 in order to update that. And that drawing area doesn't  
12 necessarily need to correspond to individual graphic objects.

13 So, diving in a little bit deeper, these graphic objects  
14 have data that can contain various attributes: The content,  
15 color, position. And I'd looked at Figure 2 from the '287  
16 patent to illustrate this. And you can look at, for example,  
17 the first button on the top. That has some content, some text.

18 And if you were to -- you could redraw it. That would --  
19 which you would use one of the methods for. Or you could click  
20 on it -- right? -- which would select that button. So there  
21 are functions or methods that are associated with those  
22 graphical objects.

23 And each of the elements on the screen in Figure 2 are  
24 represented by a graphical object. And when I say "each of  
25 those elements on the screen," I really mean all of them,



1 including the overall menu, which contains the smaller objects.  
2 And even the screen, itself, is a graphical object.

3 So these objects can be organized hierarchically, as is  
4 illustrated in Figure 3 in the patent. And I'll just walk you  
5 through a couple of those.

6 So the screen at the top in orange represents literally  
7 the whole computer screen, which contains things like a menu.  
8 And the menu contains things like buttons. And even that  
9 button is represented by individual elements, each of which are  
10 graphic objects.

11 So going back to the illustration that consists of what  
12 might look more familiar, the overall screen -- the entire  
13 thing -- is one graphic object which contains smaller graphic  
14 objects, such as these icons.

15 A fundamental part of any kind of graphical user interface  
16 in a computer system like this is that you need to be able to  
17 draw those graphic objects. And so it's important to recognize  
18 that there are lots of different events or things that can  
19 trigger when those objects need to be redrawn. The most basic:  
20 When you create -- when an application creates a new object, it  
21 needs to be drawn in order to show up on the screen.

22 Or similarly, if you delete or remove an object, then you  
23 need to redraw the area of the screen that that object was at  
24 before, so you can -- right? -- draw the stuff that was  
25 underneath that object.

1        Similarly, you can change the attribute of an object, like  
2        its color, which would require redrawing. Changing the  
3        ordering of an object. In that previous illustration, there  
4        was a clock that was underneath the menu. If you were to raise  
5        the clock so it got rendered on top of the menu, then you would  
6        have to redraw essentially the overlapping portion, to make  
7        sure that the clock got redrawn on the top.

8                **THE COURT:** And so the '287 patent includes the idea  
9        of creating a new graphic object, as well as altering  
10       already-existing objects?

11               **DR. BEDERSON:** I don't think it explicitly describes  
12       that -- that particular activity, but it describes the general  
13       process of drawing objects, which -- in my view, I think  
14       includes creating new objects.

15               So anyway, other options: Changing the orders of layers,  
16       or just an application might choose to redraw an object because  
17       it wants to be assured that it was rendered properly. All  
18       examples.

19               So let me just dive in again, since this redrawing is  
20       important, to just briefly say how that -- different ways that  
21       a code or an application might structure that redrawing. So if  
22       redraw is one of those methods in a graphic object, one way to  
23       structure the code would be to have the redraw method call out  
24       to some other code to do the actual rendering, like draw the  
25       actual squares or circles or pixels on the screen. So when it

1 calls out to some low-level graphics routines.

2       Alternatively, it could take the code that does that  
3 low-level graphics routines, and include it directly inside of  
4 the redraw method, itself.

5       Another way to do it would be if you wanted to have  
6 animation, even of the kind that you see on the slides here,  
7 you might have your redraw method call an animation routine;  
8 some higher-level routines, which, in itself, would be  
9 implemented by calling those same underlying lower-level  
10 graphics routines.

11               **THE COURT:** It may be too much to ask, to ask for it  
12 to be simple, but what is a low-level graphic routine?

13               **DR. BEDERSON:** Generally, I would say that it is  
14 the -- sort of the deepest level that actually results in  
15 things getting rendered on the screen. So it might be sort of  
16 the very lowest level saying, you know, "Turn a particular  
17 pixel -- a dot -- on to a particular color"; but you also might  
18 have some slightly -- some -- I'll call them "primitives," like  
19 drawing a line or a rectangle or a circle, I think, also would  
20 probably count as low-level graphics routines.

21               **THE COURT:** And then just what's an example of a  
22 high-level graphic routine, by contrast?

23               **DR. BEDERSON:** I think of animation as a natural one,  
24 which would typically be implemented by calling the same  
25 low-level graphics routines multiple times, in order for that,

1 you know, square, for example, to appear here, then here, then  
2 here, then here, then here, then here.

3 **THE COURT:** I see.

4 **DR. BEDERSON:** Steven mentioned that the core problem  
5 that the patent is addressing is to solve the problem that, if  
6 you were to redraw something immediately upon the trigger every  
7 time, then that could result in performance problems.

8 And a simple example of this which you may have  
9 experienced yourself, especially in older computer systems, if  
10 you were to use a mouse and click on an object, a graphical  
11 object on a screen, and drag it -- drag the object, especially  
12 if it was a complex object, you might find that you moved your  
13 mouse quickly, but the object kind of lags behind. Right? You  
14 let go of the mouse, and the object keeps on moving until it  
15 catches up. That typically often is a result of the computer  
16 not keeping up, because it's trying to do so much painting, so  
17 much rendering to respond to these many, many mouse events.

18 And so the general approach of the patent to address that  
19 problem is to optimize what portion of the screen is redrawn,  
20 and when it is redrawn, so that not only -- well, so that  
21 object in that example might keep up with the mouse, but in  
22 general, the result would be that the user would perceive that  
23 the system was more responsive, typically because the system  
24 was more responsive.

25 Two more concepts I want to walk you through. One is the

1 concept of optimizing these drawing areas. So in this case,  
2 which I illustrate from figure from the patent, there are four  
3 graphic objects: A, B, C, and D. You'll note that D is  
4 entirely contained in C, so when you're deciding to draw -- if  
5 you were to draw the areas associated with each of those four  
6 objects, that would be inefficient, because when you drew the  
7 screen area associated with C, you already would have ended up  
8 rendering or drawing object D.

9 So a simple efficiency mechanism is just to draw the  
10 screen areas associated with A, B, and C, because when you draw  
11 C, it will look at the object -- the graphic objects that  
12 overlap that screen area, determine that that includes C and D,  
13 and you render C and D. So it would be wasteful for them to go  
14 into a fourth thing, which is to explicitly draw D.

15 Just one more example very briefly. Again, if you have  
16 four objects -- A, B, C, and D -- which overlap in different  
17 ways, A and B overlap a lot. So an optimized approach to  
18 rendering these is to take the screen area that combines A and  
19 B, and draw that screen area, which would result in determining  
20 which objects overlap that screen area in drawing A and B, but  
21 you could do that with a single screen area.

22 On the other hand, C and D are far enough apart that it  
23 would actually be a bad choice to pick the area that combines C  
24 and D, because you'd end up drawing a lot of white space. So  
25 instead, you're better off actually just specifically drawing

1 the areas C and D.

2 All right. Last thing. I just want to sort of put this  
3 all together and show you how this technology could work as a  
4 whole. So again I'll illustrate it from the patent. This is  
5 sort of that same version, Figure 5, illustrating again the  
6 menu and clock. And we're going to move the clock from the  
7 bottom right further, higher up on the screen. Figure 1 shows  
8 one way that these steps can be combined.

9 And so what you start with is a request to change some  
10 graphic attributes, which might be to change the position or  
11 the data in the graphic object of the menu, to say, "I want its  
12 position to be different." But this could be any graphic  
13 attribute. Maybe you're changing the color or something else.

14 **THE COURT:** And is there any technical meaning or  
15 definition for "request," as opposed to "instruction," or  
16 "notification"? You know, that -- does "request" have a  
17 technical meaning? If that's outside the scope, that's fine.  
18 I'm just curious.

19 **DR. BEDERSON:** Yeah. I think I wasn't thinking about  
20 it in the context of today.

21 **THE COURT:** That's all right.

22 **DR. BEDERSON:** Yeah. So that request gets -- when  
23 you make that request, you then have to determine which drawing  
24 areas you need to redraw in order to result in moving the  
25 clock. And, slightly counterintuitively, you actually have to

1 redraw the place where the clock was, and the place where the  
2 clock is. You have to draw where it was, because when you move  
3 the clock, you have to redraw the portion of what was behind  
4 the clock.

5 Then you take those two areas, and you're going to add  
6 those to the drawing list. These are the areas that need to be  
7 drawn. And then you go through this optimization step. In  
8 this particular case, because those areas were not tightly  
9 overlapping, this would be like that last example, where we  
10 would actually leave both drawing areas on the list.

11 **THE COURT:** When you say "these areas," you mean the  
12 old block, and the new block?

13 **DR. BEDERSON:** Correct. Those two red drawing areas  
14 that represent the two portions of the screen that need to be  
15 redrawn.

16 Then that sort of -- that part of the technology does its  
17 thing. Takes -- there's an opportunity for other activities in  
18 the computer system to occur. Maybe it responds to a network  
19 request. Maybe something else happens. But this is part of  
20 what enables the system to appear responsive to the user,  
21 because other things can be going on. It isn't necessarily  
22 blocked.

23 And then the application --

24 Let me get this language right. Sorry.

25 -- issues an update request, which takes, I guess, the

1 list of drawing areas from the drawing list, and then goes  
2 through the process of rendering them, which, generally  
3 speaking, uses that hierarchy of graphical objects to determine  
4 which graphical objects overlap the drawing areas, and redraws  
5 those graphical objects.

6 And I'll just end by saying this is one particular  
7 example, but there are other ways that the technology could  
8 work. So on that top left box, instead of modifying a  
9 graphical attribute -- like its position -- this would be a  
10 case where creating a new object would result in all of the  
11 rest of the same things. We might create, like, ten new  
12 objects. And then decide you want to render them all together  
13 at once later, rather than having to render them all one at a  
14 time.

15 Similarly, in the bottom left where you issue that update  
16 request, you might decide that the application might want to  
17 update the entire screen, or it might just want to update a  
18 portion of the screen, or it might decide that you want to  
19 update it immediately, or maybe you want to say, "I want this  
20 to happen soon," but the actual updating happens a little bit  
21 later.

22 **THE COURT:** I see. So two questions. So here in  
23 this schematic -- so the application program there at the upper  
24 left -- what's the relationship between the application program  
25 and the UIMS?



1           **DR. BEDERSON:** So the UIMS is the user interface  
2 management system. And that typically is the libraries or the  
3 underlying function provided by the -- could be by the  
4 operating system, or maybe by some toolkit that is provided  
5 that provides general-purpose support for things like drawing  
6 lists, optimization, low-level graphics routines.

7           And the application would be the application that uses  
8 that library. So Microsoft Word is an app, or a web browser  
9 are applications that might use an underlying UIMS.

10           **THE COURT:** I see. And then just in the Figure 1  
11 that we're looking at -- so the actual drawing of the objects  
12 occurs at the Box 348 stage?

13           **DR. BEDERSON:** Correct.

14           **THE COURT:** All right. This was very helpful.

15           We've run over a little bit. And I'll allow Apple to make  
16 its presentation on a similar time frame. And then I may have  
17 some follow-up questions for one side or the other.

18           Madam court reporter, do you need a short break?

19           **REPORTER:** No, thank you, Your Honor.

20           **THE COURT:** All right. Why don't we have Apple  
21 proceed, then.

22           (Whereupon a document was tendered to the Court.)

23           **THE CLERK:** Thank you. Does the Judge need all four?  
24 Does he need one of each?

25           **MS. SIMMONS:** It's multiple. It's four copies of the

1 same thing.

2           **THE CLERK:** Okay. Oh. Four copies of the same  
3 thing?

4           **MS. SIMMONS:** Yes, ma'am.

5           **THE CLERK:** Okay.

6           **MS. SIMMONS:** And the different presentations are  
7 separated by tabs.

8           **THE CLERK:** Okay. Perfect. Thank you. Just wanted  
9 to clarify.

10           **MS. SIMMONS:** Thank you. Perfect.

11           **MR. COOK:** Can you switch over to the other monitor?

12           **THE CLERK:** Sure. There you go (indicating).

13           **MS. SIMMONS:** Good morning, Your Honor.

14 Luann Simmons again, for Apple.

15           I'm going to go in the same order that counsel for OpenTV  
16 went in, starting with the '033 patent. As the title implies,  
17 and as we heard from the previous discussion, the '033 patent  
18 is related to the idea of Internet filtering. So for today's  
19 presentation, we'd like to talk a bit about the field generally  
20 of Internet filtering, what that means, and then a brief  
21 background of the claimed invention.

22           So starting with Internet filtering -- some of this we can  
23 go through a little bit quickly. I don't want to be repetitive  
24 of what Counsel presented; but the idea here was that, of  
25 course, using the Internet, clients' computers are able to

1 transmit and receive messages from servers, to and from servers  
2 on the Internet. And this includes all sorts of data, some of  
3 which it might be desirable to be able to filter either when  
4 it's going out or when it's coming in.

5 So the '033 patent sought to address this issue by  
6 providing some mechanism for being able to decide what's going  
7 to be allowed to go in, what's going to be allowed to come  
8 back. You know, in both directions, how can we try to filter  
9 some of this content?

10 So I'll skip through this. We've got the concept, I  
11 think, down about what the filtering means; but I will point  
12 out that the idea of the '033 patent applies both to, as I  
13 believe Your Honor mentioned during opposing counsel's  
14 presentation, messages going out and content coming back. So  
15 it's in both directions. It's intended to be a flexible filter  
16 that can work in either direction.

17 So breaking it down a little bit -- so we've got the high  
18 level that messages are and data are transmitted over the  
19 Internet. And we'd like to be able to filter them.

20 So breaking down what we mean by messages being  
21 transmitted over the Internet, as the '033 patent tells us, the  
22 TCP/IP protocol is the protocol that is used. And it's pretty  
23 much universally used for transmitting messages over the  
24 Internet among computers. So the idea is TCP/IP is what is  
25 defining how we're able to packetize the messages, as Counsel

1 referred to; how we're able to address them; how we get them  
2 from one place to another and back over the Internet.

3 And an important point here is that, as the name implies  
4 here, TCP/IP is an actual protocol, as opposed to the OSI  
5 model, which is a conceptual model. We're going to talk about  
6 that in a second, but that that is an important distinction.  
7 TCP/IP is an actual protocol that is used by actual products,  
8 as opposed to OSI, which is a model.

9 So, as I mentioned, one of the responsibilities of the  
10 TCP/IP protocol is to be able to transmit a message to a  
11 destination; to an intended destination.

12 In order to be able to do that, TCP/IP has to know how to  
13 identify the destination resource. So this is done using  
14 network addresses. And some of the network addresses that  
15 we're familiar with -- of course, we could have the IP address,  
16 itself, which the protocol defines as being in this particular  
17 format of four different numbers separated by periods. And  
18 this is actually the IP address of this Court's website.

19 And I could also represent that address -- so I could  
20 identify that resource: This Court's website on the  
21 Internet -- using a more user-friendly address: A domain name,  
22 which is something we're a little bit more accustomed to  
23 seeing. And that's the `cand.uscourts.gov`.

24 Then I could further use a way to designate a destination  
25 or a resource on the Internet using a URL. And really all that

1 is, is that I've now added a little bit more information. I've  
2 said, well, I'm going to give you maybe a particular subfolder  
3 under the domain name of the Northern District of California  
4 website. And sometimes these -- these groupings of URLs that  
5 are all sort of subfolders off of the same domain name -- are  
6 referred to as a "family of URLs."

7       So one thing that you'll notice here is that I've got the  
8 IP address. And I mentioned that's the actual address that  
9 TCP/IP is going to use for identifying the resource. And then  
10 I said, but we can use these more user-friendly names that are  
11 actually, you know, words that we can understand and remember a  
12 little bit easier.

13       TCP/IP provides for -- or actually, it's a different  
14 protocol; but there's a protocol that provides for translating  
15 those kind of English network addresses into the TCP/IP address  
16 that's ultimately going to be used to route the message. And  
17 that's -- you may have heard of it. It's called a DNS system.  
18 It's a domain-name system. And that's a system of servers that  
19 basically has a bunch of tables where -- I know that you've  
20 registered your domain name for the Northern District of  
21 California. And I have a look-up table. And I can figure  
22 out -- if I'm the DNS server, I can figure out what the IP  
23 address is for that domain name.

24       So we've illustrated here that the computer system -- the  
25 client computer will send that domain name out to the DNS

1 system. It will send back the IP address. And then TCP/IP has  
2 the address that it needs to use to route the information  
3 correctly.

4 So we've talked about TCP/IP, which is the protocol, as we  
5 talked about, for transport. And, as Counsel mentioned, TCP/IP  
6 works with higher-level protocols at the application level,  
7 like HTTP. HTTP is a familiar one. Other applications exist,  
8 like e-mail, that's going to be able to transmit data over the  
9 Internet. And it has its protocol, as well.

10 We'll use HTTP as an example. That's the protocol that  
11 says, "Here's how I process this information." When a user  
12 types in, for example, this domain name, and the sub web page  
13 of a rules.html, the user's saying, essentially, "I'd like to  
14 see the rules web page from the Northern District website." So  
15 HTTP is going to process that, and then work with -- excuse  
16 me -- TCP/IP, the lower-level protocol, to make sure that that  
17 information gets sent off correctly to this Court's website,  
18 and that the proper Web page comes back.

19 And I have to echo the thank-you for the animation folks,  
20 because I would never have been able to do this (indicating),  
21 so I appreciate their help with this.

22 Now, breaking this down a little bit, I'd like to focus a  
23 bit on the actual information that is sent across by TCP/IP  
24 when I've typed in this request to look at the rules page.  
25 This is where we start to look at the packets. And that's what

1 we've symbolized here. And Counsel referred to packets as just  
2 another way of referring to the data that's being sent across.  
3 It's formulated in a certain way. And it's generally referred  
4 to as a "packet."

5       Once the message is being sent across -- and here, this is  
6 an outgoing message that we were looking at -- the packet can  
7 include some of the information that we've represented here.  
8 It will have a lot of other info; but at a minimum, it's going  
9 to include the actual data, which is the request to go out and  
10 get this web page with the rules information from the  
11 Northern District website.

12       It will include the destination address, which is the IP  
13 address of the Northern District website. And, as we mentioned  
14 previously, it knows that address because it took the domain  
15 name in words, and sent that out to a DNS server. And the DNS  
16 server looked up cand.uscourts.gov and said, "Oh, this  
17 corresponds to this address," and sent it back.

18       It knows its own sending address, which it might need to  
19 use for some information.

20       And then it also includes what's called a "port." And a  
21 port is information that -- that identifies -- it's essentially  
22 used to identify the application that is requesting or sending  
23 this information, so that I know where to send it back to. So  
24 you can think of a port sort of like an extension at an office.  
25 So the IP address is the main number that I dial into that

1 maybe ends in 8000 or something; and then the port is going to  
2 be the more-specific extension that I'm going to use to get  
3 back to, in this example, HTTP.

4 So I know: Go back to this computer. That's the address.

5 And then once I get to that computer, TCP/IP will know:

6 Oh, I see what port this is. HTTP, which is used for  
7 browsers -- that's the application that's listening for data to  
8 come in on that port. So that's where it it's going to go.

9 **THE COURT:** And how many ports are there on a  
10 computer? Is it potentially an infinite number?

11 **MS. SIMMONS:** I believe it is not infinite. And I  
12 believe it is 256, but I would need to consult.

13 **DR. KNUTSON:** I think it's thousands.

14 **MS. SIMMONS:** It's thousands. Ha, ha. That's why  
15 it's good that I turned around.

16 And typically, certain ports are associated with a  
17 particular protocol. So Port 80 is generally going to be  
18 associated with HTTP. And you can look up tables that will  
19 identify what these usual or typical correspondences are, so  
20 that you'll know, oh, Port 80 -- that's HTTP. SMTP, the  
21 protocol for e-mail, is going to use a different port.

22 So it's just another way of getting down to a lower level,  
23 you know; not to confuse the issue of the layers in the TCP/IP  
24 stack -- but to a different granularity of how I'm going to  
25 identify where I need to send this message.



1       Okay. So we've talked now a bit about the data that's  
2 being sent around on the Internet; what the messages look like.

3       And then the idea of the technology that's at issue in the  
4 '033 patent is that we want to do some filtering on this data.  
5 So the idea is that I could filter at a most fundamental  
6 level -- is how I would refer to it -- on information like the  
7 port or the address. And the specification of the '033 patent  
8 clearly describes being able to filter on both of these kinds  
9 of information that are in the packet. This is -- the reason I  
10 say it's the most fundamental kind of way of filtering is  
11 because it's a very broad brush. Everything that's coming off  
12 of Port 80, for example, I'm going to filter and I'm going to  
13 block.

14       That might mean I'm an extraordinarily cautious parent,  
15 and anything coming out of HTTP -- meaning anything coming out  
16 of my browser -- I'm not letting it go out. I don't care where  
17 it's going; I'm shutting it down. I'm not sure why you would  
18 have an Internet connection at that point, but maybe you're  
19 allowing e-mail.

20       Or maybe I'm going to filter based on the destination  
21 address. So I might have a list of IP addresses that  
22 correspond to domain names that I know to contain  
23 adult-appropriate, you know, information or data. And so I'm  
24 going to block anything that goes to that domain name by the  
25 address.

1 And so we've shown in the animation that in my filtering  
2 table, the IP address of this destination server was okay,  
3 because it said "allow" in my filter. So I let that through,  
4 and I let the data come back.

5 By contrast, I might send a message to an IP address for a  
6 server that I have decided I don't want to allow traffic going  
7 to.

8 And I should note -- I believe Your Honor brought this up  
9 in the earlier presentation -- the filters in the patent are  
10 described as being able to work equally in either direction.  
11 So they're flexible enough so that I could filter on the IP  
12 address going out; I could filter on the IP address coming in.  
13 Either way.

14 Same with a port. I could do either. Either direction.

15 But as Counsel --

16 Oh, I should note that this is -- you know, as Your Honor  
17 can imagine, there are --

18 Whoops. Sorry. I went too fast.

19 -- multiple different variations that you could make on  
20 this kind of fundamental approach to filtering. I could filter  
21 on only the port, not caring about what the destination address  
22 is. I could filter only on the address, and not the port. I  
23 could filter on the domain name. Any combinations of those you  
24 can imagine, I could filter on to try to have flexibility in my  
25 filtering.

1 As Counsel referred to, this level of filtering -- this  
2 sort of fundamental level on address, and network address, and  
3 port -- might not offer the kind of flexibility that I want. I  
4 might need to go to a more granular level of filtering.

5 So, for example, I might have a domain name called  
6 "ourschool.edu," which is a fine domain name, as far as I can  
7 tell. And so I don't really want if to filter on that whole  
8 domain name; but if I'm restricted to only addresses, for  
9 example, I'm going to restrict everything from that domain  
10 name.

11 And it might be the case that what I'd really like to do  
12 is -- there's a subfolder called "History." Maybe I've got my,  
13 you know, action plan for the students. I've got reference  
14 materials in that folder. I want them to be able to get that  
15 to that; but I don't want them to get to my "Answers"  
16 subfolder, where I've got my answers for my test. So I need a  
17 more flexible filter that goes to a more granular level, which  
18 might include searching for words in the data that's either  
19 going out or coming back. Maybe I search for the word  
20 "history," and I say I'm going to allow anything for that  
21 purpose that has that filter -- that word in it, but I'm going  
22 to block anything that has the word "answers" in it. That way,  
23 I've achieved a lower level of granularity in the filtering,  
24 and I can be a little bit more selective about what I'm letting  
25 go in and out.

1 And, as I believe Counsel also referred to, this is even  
2 more important when you're talking about potentially, say,  
3 objectionable material for children, because, you know, website  
4 providers got smart about the idea of filtering at the basic  
5 level of an address, and said, "Okay. Well, I'm going to call  
6 my domain name something that sounds great," like -- we've  
7 given you an extreme example here, obviously, for illustration  
8 purposes, but I could have a domain name, "Safe for kids." I  
9 would have no reason to think I need to block that at the  
10 domain level; but what if I've hidden some stuff underneath  
11 there that I don't want you to be able to get to? I don't want  
12 my children to be able to see. So I've allowed this domain  
13 name through, but I'm going to search for a pattern. So I'm  
14 going to do a filter at a more granular level on, say, the word  
15 "porn." And then I would catch this, and I would be able to  
16 block it.

17 And the specification of the '033 patent describes that  
18 you can actually filter on all sorts of different kinds of  
19 information other -- in addition to just the basic level of the  
20 address and the port, such as maybe the command that you're  
21 using. I'm going to go get something, as opposed to maybe just  
22 posting something. Maybe I have a preference for one or the  
23 other being allowed. I could search for a text pattern in the  
24 data. I can even do a filter for whether the message is going  
25 in or out. I might be able to determine that, say, by looking

1 at the sender address. If it's mine, that means it's outgoing.  
2 If it's not mine, it means it's incoming. So I could filter  
3 based on the direction.

4 And then I can decide, based on my -- whatever the compare  
5 directive is I've set up in my filter, whether -- what action  
6 to do. And I can specify the action as blocking or allowing.

7 **THE COURT:** And, in Mr. Ivey's terminology that he  
8 discussed with the blue block here, is part of the information  
9 in the header, and part in the message packet?

10 **MS. SIMMONS:** That's a great question. So when we  
11 look at the protocol, I'll break that down in a little bit more  
12 clear fashion, but depending on what layer you're at in the  
13 TCP/IP protocol stack, some information might be characterized  
14 as a "header," and the rest is characterized as "data" or  
15 "payload data," sometimes, it's referred to.

16 All of the information, though, is available. I can see  
17 all of it. It's not like the information that is in the data  
18 is now not accessible at that layer. It is.

19 It's just that the reason it's considered a header or the  
20 reason we refer to information that's added at that layer as a  
21 header is because that's information that that layer of the  
22 protocol has decided I'm responsible -- for example, at the IP  
23 layer, I'm responsible for making sure this message gets to the  
24 intended destination. So I'm responsible for adding in the IP  
25 address, in addition to the data that's already been added by

1 the other layers. So I'm kind of sticking it at the beginning.  
2 So it's a header in that sense, but at that layer you can still  
3 access all of the data.

4 So depending -- that was a long answer to your question,  
5 because what part of this might be classified as a header  
6 versus the data depends on which layer you're at.

7 **THE COURT:** Oh, I see. All right.

8 **MS. SIMMONS:** So the way we've shown it here as sort  
9 of all being separated out, you could think -- could be thought  
10 of is at the lowest layer; at the link layer. But as I  
11 mentioned, all of this data is available at every layer.

12 I should also mention that the filtering that we've  
13 shown -- we've kind of shown the filtering out, separate from  
14 the client computer.

15 As described in the '033 patent, the filtering process can  
16 happen outside of the client computer -- maybe on your router  
17 that you're using to send messages out and get information back  
18 from the Internet -- or it could occur actually on the  
19 computer, itself. So the patent describes it as being flexible  
20 in that regard.

21 So turning to -- and maybe this will go more directly to  
22 the question Your Honor just asked. Turning to the TCP/IP  
23 protocol layers -- so I'm starting with TCP/IP protocol. As I  
24 mentioned, that is an actual protocol, as opposed to the OSI  
25 model.

1       The TCP/IP protocol itself has only four layers. It has  
2 the application layer, which is at the highest level that  
3 interacts with, for example, HTTP.

4       It has the transport layer, which is where the TCP header  
5 is added in.

6       And I can step through this. Actually, why don't I start  
7 back up at the beginning? What we're illustrating here is the  
8 rules.html web page that was requested in the earlier example  
9 by the user. This is showing you or illustrating how that web  
10 page will be delivered back; will be sent out from the server.  
11 So the server has figured out you wanted to see rules.html, and  
12 it's starting to prepare it to be sent back to the client  
13 computer. So we can show --

14       Oop. Sorry. I'm not sure what I did. Thank you.  
15 Apologies.

16       So at the highest level, we're interacting with HTTP. And  
17 this is where HTTP will add in its header to the data that I  
18 already had collected: The rules web page. And that's going  
19 to include whatever information HTTP needs to be able to  
20 process and properly display this information.

21       Then it goes down to the next layer. And, as you can see,  
22 everything from the layer above turns into data.

23       And I just keep adding, at each layer as I go down, some  
24 additional information that that layer is responsible for  
25 providing to make sure that the message will ultimately be able

1 to be properly transmitted using the TCP/IP protocol over the  
2 Internet.

3           **THE COURT:** Okay. I see what you're saying. So the  
4 same information can be header information or payload  
5 information, depending on the stage?

6           **MS. SIMMONS:** That's correct. That is correct.

7           So at the TCP layer, I'm going to add in my TCP header.  
8 And that's going to include things like the port number that we  
9 talked about earlier, which makes sense, because that's the  
10 layer directly adjacent to the application layer. So now I  
11 know what -- I'm at the transport layer. I know what  
12 application is requesting this data or is sending this data.  
13 So I'm responsible for making a notation of that, so that we're  
14 able to properly route the message to the correct application  
15 on the other end.

16           Then I go down to the Internet layer, or IP. This is  
17 where the IP part of the TCP/IP protocol functions. And this  
18 is where information like the IP address of the destination  
19 resource is added to the header.

20           And then finally in the TCP/IP protocol I get to the  
21 bottom layer, which is the link layer. And this is the actual  
22 physical layer that handles the actual connections between the  
23 hardware on both ends of the connection. So this is actually  
24 what sends off the bit stream.

25           And as Counsel alluded to, and as I'm sure Your Honor has



1 seen in briefing, it is OpenTV's position that the OSI model is  
2 relevant to the claim-construction issues; and it's, of course,  
3 Apple's position that it's not.

4 And we'll discuss. Appropriate for discussion next week  
5 during the claim construction.

6 But just to put things in context -- and I believe Counsel  
7 displayed this: This figure from the Tanenbaum treatise on the  
8 computer networks that tries to show a rough mapping between  
9 OSI, the model, and TCP/IP, the protocol. Couple of points  
10 that are important to make here. Again, most of this  
11 discussion, I think, is more appropriate for the claim  
12 construction; but to put this into context, as I mentioned, OSI  
13 is a model.

14 And I believe Your Honor asked about if there was a  
15 distinction between ISO and OSI. And I think people use that  
16 interchangeably when they're referring to the model, but ISO is  
17 actually the standards organization that came up with this  
18 model. And OSI is the model, itself.

19 And it is important also, I think, to note that there's no  
20 relationship between TCP/IP, the protocol, and OSI, the model,  
21 in the sense that TCP/IP wasn't derived from the OSI model.  
22 It's not based on the OSI model, nor is the reverse true. And,  
23 in fact, TCP/IP was developed in 1973. The OSI model was not  
24 developed until 1983. So TCP/IP actually came first. And work  
25 on both the model and protocol proceeded concurrently. They

1 just -- one is not a derivative of the other. So that's why we  
2 refer to this as a "rough mapping" between the two.

3 So the OSI model really sought to conceptually come up  
4 with layers that you might need when you're going to  
5 communicate with resources over a network.

6 TCP/IP, when it implemented its actual protocol, decided  
7 there were only four layers needed.

8 So, as you can see, the presentation of session layers  
9 that were thought about in the OSI model, TCP/IP determined  
10 were unnecessary. And, in fact, all of the functionality that  
11 was contemplated for the presentation and session layers could  
12 just be handled at the application layer, which is why TCP/IP  
13 didn't include those layers.

14 **THE COURT:** Didn't you just say that TCP/IP came  
15 first?

16 **MS. SIMMONS:** It did. It did. And so this is me  
17 just trying to give a rough mapping between the two, because --  
18 you're right. That's an excellent point. And so I was  
19 inarticulate in the way I just described that, because I made  
20 it sound like they made a decision based on OSI; and that's not  
21 correct. It is the fact that -- the functionality that was  
22 contemplated for the presentation of session level is handled  
23 in the application level in TCP/IP. It's not that they decided  
24 to do it that way. So that's a -- thank you for clarifying.

25 **THE COURT:** Sure.

1           **MS. SIMMONS:** And the other point to make is that the  
2 name is a little bit different, but Layer 3 in the OSI model is  
3 the network layer. And that's referred to as the "Internet  
4 Layer" on TCP/IP, as we discussed on the previous slide.  
5 That's where the IP address is added into the information. And  
6 that's where the IP address is managed or handled. That's the  
7 layer responsible for the IP address.

8           **THE COURT:** So Level 3 of TCP/IP?

9           **MS. SIMMONS:** That's correct.

10          Oh, I'm sorry. I think it's actually Level 2.

11          So it's three of seven on OSI, but it would be the second  
12 level up in TCP/IP, because there are only four.

13          **THE COURT:** I see. So Internet?

14          **MS. SIMMONS:** Right.

15          So we will, I'm sure, hear a lot more about that during  
16 the claim-construction hearing.

17          I wanted to provide just one more minute on the background  
18 of the invention. I think we're all in agreement that the  
19 claimed invention is directed to filtering messages that are  
20 transmitted over the Internet, and that the idea was that, as  
21 the specification describes, I can filter at what I was  
22 referring to as this fundamental layer -- the IP address, or  
23 the port, for example, or any of the other network addresses  
24 that can be used to represent the IP address -- or, as the  
25 specification describes, I can filter at a more granular level,

1 using what the patent refers to as a "deferred-action filter,"  
2 based on something like maybe a textual match. I look for a  
3 string of text in the data.

4 And the patentee, during prosecution, characterized that  
5 one of the key and important parts of the claimed invention  
6 that the patentee argued distinguished the invention over the  
7 prior art was this use of two different filters to offer a very  
8 highly selective filtering methodology, as the patentee  
9 describes it.

10 And I've shown the claim language here. These are -- as  
11 Your Honor is aware, the two terms that will be discussed next  
12 week are these two terms that describe these two levels of  
13 filtering.

14 And as you know, Apple's position is that, notwithstanding  
15 the use of a word like "immediate," which certainly in everyday  
16 usage is going to conjure up some idea of a timing requirement,  
17 that's actually not the way the claims ended up being written.  
18 So while perhaps that may have been originally contemplated by  
19 the patentee, the claims themselves do not require any sort of  
20 timing differentiation between these two types of filters. So  
21 we'll talk about that next week.

22 And I think that's all I had on the '033, unless  
23 Your Honor had questions.

24 **THE COURT:** Just one. So just in going back to  
25 slide -- what is it? -- 24, so do you have anything to add on

1 the question of where you think the immediate -- at what  
2 stage -- so if we're looking at either TCP/IP or OSI, where  
3 does the immediate-action filter slot, and where does the  
4 deferred-action filter slot, in your view?

5 **MS. SIMMONS:** So based on our reading of the  
6 specification and the other intrinsic evidence, again, you  
7 know, putting aside the normal human reaction to the word  
8 "immediate," the specification actually provides evidence that  
9 the distinguishing feature between the two filters is that one  
10 is based on -- the immediate one is based on network addresses  
11 and ports. So it would be operating at the transport and the  
12 Internet layer of the TCP/IP protocol stack, at 4 and 3.

13 Now, it could operate even lower, because that information  
14 is accessible even at this lowest level: This link level. But  
15 it needs to be at least down from transport, Internet, and  
16 down.

17 **THE COURT:** I see.

18 **MS. SIMMONS:** And then the second filter --  
19 I'm sorry.

20 **THE COURT:** So the first -- so immediate interview is  
21 at the transport/Internet stage?

22 **MS. SIMMONS:** And lower.

23 **THE COURT:** And lower. Okay.

24 **MS. SIMMONS:** The idea being that the specification  
25 describes one type of filter being capable of filtering on

1 network address and port -- and those are at these layers --  
2 and the other kind of filter being able to filter on any other  
3 data that's in the message. So it could actually operate at  
4 any of the other layers. It could even operate at the lower  
5 layers by just doing some sort of text search.

6 **THE COURT:** And so does that mean that in your view,  
7 the deferred filter could operate at any of the four levels in  
8 TCP/IP?

9 **MS. SIMMONS:** Yes. I think that's fair to say.

10 I think I would step back for a second and note that the  
11 claims, themselves -- neither the claims nor the specification  
12 draw any distinction between the filters based on the layers at  
13 which they're operating. And, in fact, they don't even -- the  
14 OSI model is not even discussed in the specification or the  
15 claims. TCP/IP is discussed, but it's not discussed in terms  
16 of: These filters operate at these levels, and the others  
17 operate at the other levels.

18 Really what the specification talks about is the kind of  
19 information that can be used in the two different kinds of  
20 filters. And so this is me extrapolating out to say, well,  
21 that information is available at these layers. But the claims,  
22 themselves, don't limit the applicability in any way to a  
23 particular layer or other layers.

24 **THE COURT:** Okay. I see. All right. I think that's  
25 all of the questions I have about the '033 patent.

1           **MS. SIMMONS:** Thank you. I'll hand it over to my  
2 colleague Ryan Yagura.

3           **MR. YAGURA:** Good morning, Your Honor. My name is  
4 Ryan Yagura. I'll be presenting Apple's technology tutorial on  
5 the '229 patent.

6           The '229 patent is entitled "Convergence of Interactive  
7 Television and Wireless Technologies." And it was filed in  
8 October 15th of 2002. Then it had a prolonged prosecution  
9 period of nine years, and did not issue until March 1st, 2011.  
10 As the title of the patent implies, the patent focuses on the  
11 field of interactive television, and so that's where we'll be  
12 directing our technology tutorial today.

13           So I thought it would be helpful if we talked a little bit  
14 about the field of television, and interactive television  
15 specifically, and then leverage the building blocks we talk  
16 about there to talk a little bit about the background of the  
17 purported invention.

18           So starting from the earlier days, Your Honor may recall  
19 that broadcast stations had large antennas on top of the  
20 building. And they would send out a broadcast signal over the  
21 airwaves. And there would be multiple channels included in  
22 that broadcast signal. And it would reach a variety of homes  
23 in an area. And we'd call that area a "broadcast area" or a  
24 "broadcast region." And so in the broadcast area, all of the  
25 TVs in the homes would have rabbit-ear antennas, named for

1 their shape, that would receive all of the different signals.  
2 And the circuitry inside the television would decode,  
3 demodulate, and then tune to a particular channel. And the  
4 user would select that channel by using the knobs.

5 And so in this particular example, the broadcast station  
6 is sending all four television channels or the programs on  
7 those channels to all four television sets in this broadcast  
8 area. And the users are selecting to one or tuning to one with  
9 their TV.

10 So fast-forward to more modern days. Broadcast stations  
11 are still very similar, in that they still send out signals to  
12 a wide range of televisions in a broadcast area. And that area  
13 may be a subscriber area or a geographic region.

14 But now users have a set-top box -- and they're often  
15 supplied by the broadcaster -- that are capable of receiving  
16 these signals. So now that these signals are coming in digital  
17 format -- meaning there are a bunch of packets of data --  
18 the set-top box will accumulate those data.

19 And you can see here that they're each receiving a bundle  
20 of, say, 500 channels. And within that bundle, there are these  
21 sub gray areas, which each represent individual channels that  
22 the set-top box receives. And those can be sent over by  
23 various means. Today, the transport means are over the  
24 airwaves still, but it could also be by satellite or by cable  
25 connection.



1       And so users in different households will now use their  
2 set-top box to basically select a channel. And so here the  
3 users have selected the channel -- the CBS channel, CNN, ABC,  
4 NBC. But any of them could select any particular channels.

5       So broadcast stations still work in a similar manner.  
6 They still broadcast out to everybody, but the mechanism -- the  
7 specific technology used to receive them has changed a little  
8 bit.

9       I'd like to talk a little bit about how the set-top box  
10 works. So the broadcast station, again, is sending the  
11 television signals, which are a bundle of several hundred  
12 channels, in most cases, to the set-top box.

13       And the user will select a channel. In this case, let's  
14 just take Channel 2. And the set-top box will decode the  
15 signals, and tune to the selected channel. And once that's  
16 happened, it will go ahead and show the user the TV show that's  
17 on Channel 2.

18       Drilling down a little bit into the set-top box, itself --  
19 so the set-top box is actually receiving a stream of packets of  
20 data. And so in this case, let's take a simple example of a  
21 three-channel world, where there's three different streams of  
22 packets for the programs on these three channels. And the user  
23 is going to select the green channel. And so now, again, the  
24 broadcast station is sending packets of data to all of the  
25 set-top boxes that it's connected to, but the set-top box in

1 this case is going to select and decode and tune to the green  
2 packets. And it's going to present the program that's on NBC.  
3 The other packets -- the red and the green [sic] channel  
4 packets -- are still coming to the set-top box, but it's  
5 essentially ignoring them.

6 Now, talking a little bit about interactive television  
7 systems, the very early instantiations of these were simply --  
8 you had a set-top box. And back in the day, you might remember  
9 TiVo and variety of set-top boxes like that. The user would  
10 essentially use a remote, and would send a command to the  
11 set-top box. For example, I want to record a particular  
12 program at a particular time. And the set-top box would take  
13 that command, and go ahead and schedule the program for  
14 recording. And when that time slot came, it would record the  
15 program. And it would perhaps show the user a visual cue that  
16 it was being recorded, like in the right-hand lower corner of  
17 this screen.

18 It was apparent to both the broadcast stations and the  
19 companies that made the set-top boxes and companies that  
20 offered services like TiVo that there was data that could be  
21 collected on users who were using this type of functionality.  
22 And so in this particular example, the broadcaster is tracking  
23 the programs that the user is recording, but it could also be  
24 the programs that the user is viewing.

25 And so the question is: What could the broadcasters do

1 with that data?

2 This data now formed the very rudimentary beginnings of  
3 user profiles. In other words, the broadcaster or the box  
4 manufacturer or the TiVo service would now know what programs  
5 the consumer was interested in.

6 What would they do with this user-profile data?

7 And one of the answers was that they would use it to find  
8 a way to market to us, as individual users.

9 And so there are two different ways that I think Mr. Ivey  
10 had pointed to for broadcasters to do this. One was push  
11 notifications, and the other was pull notifications.

12 So, taking a really simple example of push and pull  
13 notifications, if you were to shop at REI, they would ask you  
14 for your e-mail address. And if you were to provide it, then  
15 the company would send you, on a basis -- they would push out  
16 to you advertisements on goods, notifications of new products  
17 and discounts. Those are beyond your control. And so this is  
18 information that's being pushed to you.

19 On the other hand, if you don't give them your e-mail  
20 address, but you're looking for a product, you may log on to  
21 the web browser, and you may search for those products, and  
22 pull to you advertisements on those exact same products.

23 So this would be an example of a case in which the  
24 broadcaster realizes that the user is either recording or  
25 viewing a certain program. And so the broadcaster is now

1 pushing a notification of similar programs to the viewer's  
2 right-hand corner of their screen. So this is a push example.

3 Alternately, the user may use the button on the remote  
4 control to request examples of programs that are similar to the  
5 program that the user is watching. So this would be an example  
6 of a pull notification.

7 I'd like to add just one last wrinkle to the equipment.  
8 We've talked now about the broadcast station, the set-top box,  
9 and the TV. It's also possible for users to interact with  
10 these systems using other types of devices. So in this case,  
11 I've chosen a laptop. So a user may be outside of the home,  
12 may log into the broadcaster's website, and may elect to set  
13 his or her set-top box to record a given program at a time.

14 So the computer -- so after the user has set a program to  
15 record on the laptop, the laptop would send that instruction to  
16 the broadcast station, which would convey it then to the  
17 set-top box. And it would cause the TV to record the program  
18 at a given time.

19 So these are the types of systems that have been long  
20 available, and the kinds of things that had started out in the  
21 nineties. And obviously, over time, they've progressed. But  
22 these are the basic building blocks of the interactive  
23 television system.

24 **THE COURT:** And just for timing purposes, I don't  
25 know how much more you've got in terms of this patent, as

1 opposed to the third. I think I'll try to keep the time  
2 roughly equivalent for the two sides.

3           **MR. YAGURA:** Yes, Your Honor. I will be brief.  
4 That's all I have in the nature of the background of the  
5 interactive television.

6           I just wanted to talk briefly about the background of the  
7 purported invention. And so the specification describes the  
8 system in two parts. And this is the abstract of the '229  
9 patent. It says that it is a interactive television system  
10 that is configured to create or update a user profile in  
11 response to a first access mode. And an access mode is just  
12 the way that the user uses the system to do something.

13           So let's just take, for example, the user decides to log  
14 into the Internet, and purchase a pair of shoes. The system  
15 would then take that into account, and update the user's  
16 profile; that the user, for example, buys shoes.

17           Then the second part of the system is when that user  
18 accesses the system a second time in a different way. So let's  
19 take a simple example of just watching television. The  
20 interactive television system will take the data from the user  
21 profile that the user bought shoes, and will transmit some data  
22 to the user. So, for example, it might send the user a shoe  
23 ad.

24           And, just skipping forward quickly, so the basic building  
25 blocks of the patent that we'd earlier discussed are there

1 are -- there's a remote unit, which is identified as a fixed  
2 unit or a mobile unit. A mobile unit could be, like, a  
3 smartphone. The fixed unit could be a computer, as we  
4 discussed. Set-top box, which is the set-top box we showed  
5 earlier in the tutorial. And a broadcast station, which, again  
6 sends out the content. And the user profile that we discussed  
7 that broadcasters often collect could be stored in a variety of  
8 different places, according to the patent.

9 So I'd like to go back to the model that we did: The  
10 building blocks that we discussed, which were the display, the  
11 set-top box, and the computer on the one hand, and the  
12 broadcast station on the other.

13 So the patent talks about having -- about updating the  
14 user profile, responsive to a first user activity on a first  
15 device. And in this case let's just take an example. The user  
16 logs into a computer, as the first device, and buys some pairs  
17 of shoes, as the first activity, on the website Zappos.com. So  
18 the first device is the computer. The first activity is  
19 purchasing shoes over the Internet. And then the set-top box  
20 would update the user's profile with that purchase.

21 Now, the patent talks about a second user activity. And  
22 just to make it really simple again, the user uses the set-top  
23 box, as a second device, just to watch TV, as the second  
24 activity.

25 The parties are going to discuss in great detail next week

1 the next two limitations. And this is kind of the crux of the  
2 issue. But the patent talks about: The first and the second  
3 user activities have to be -- one, has to be related to  
4 television viewing, and the other has to be unrelated to  
5 television viewing. And either could be -- the first activity  
6 could be the -- it could be the unrelated activity. The second  
7 activity could be the related activity, and vice versa,  
8 according to the patent.

9 But just sticking with our first example, we'll say the  
10 first activity is buying shoes over the Internet, and the  
11 second activity is watching TV. So the system -- the patent  
12 then discusses that the system would access the user's profile  
13 when the user starts watching TV, and would then transmit some  
14 information, based on the updated profile, to the user. In  
15 this example, we're going to just say it shows a shoe-sale ad  
16 on the television.

17 Now, again, next week we're going to get into great detail  
18 about what activities constitute related and unrelated to  
19 television viewing; but like all good television shows, I'll  
20 leave Your Honor with a cliffhanger. So one example here is  
21 that the user purchases *Mad Men* DVDs online to watch that show  
22 in the future; or it could even log in through the television  
23 to purchase CDs or DVDs about television shows. Then the  
24 broadcast station would update the user profile to say, okay,  
25 the user just bought *Mad Men* DVDs.

1       Then the user's second activity is it starts to watch TV.  
2 And then the system sends an advertisement about the upcoming  
3 season or the last season of *Mad Men* that's coming on.

4       And so that was question that we'll discuss in greater  
5 detail next week. I'm sure there are a lot of other examples  
6 we'll be raising.

7       If there are any other questions I can answer, I'd be  
8 happy to do so.

9               **THE COURT:** All right. I don't think so. Thank you.

10              **MR. YAGURA:** With that, I'd like to introduce  
11 Dr. Brad Myers, who's going to be presenting Apple's tutorial  
12 '287 patent. Dr. Myers received his B.S. and his M.S. from  
13 M.I.T., and his Ph.D. from the University of Toronto. And  
14 after leaving there, he started teaching at Carnegie Mellon.

15       He developed the Amulet and Garnet user interface  
16 management systems, the main of which is the prior art to the  
17 '287 patent in this case. And he's been recognized by IEEE and  
18 the Association for Computing Machinery as a Fellow. And he's  
19 also been elected to the Computer-Human Interactive Academy, or  
20 the CHI Academy, for his contributions to the field of user  
21 interfaces. And when he was elected to the CHI Academy, he was  
22 one of only 25 members in the world who was so elected.

23       With that, I'll hand it over to Dr. Myers.

24              **THE COURT:** And, Doctor, so you've got something on  
25 the order of about 10 to 15 minutes to work with.



1           **DR. MYERS:** Okay.

2           **THE COURT:** I'm hoping that will be sufficient.

3           **DR. MYERS:** Yep. Not a problem. Thank you.

4           So I've been asked to talk about the '287 patent filed  
5 June 28th, 1994, and issued October 15th, 1996. And the  
6 general field is computer graphics; and in particular, what  
7 sometimes called "object-based computer graphics" or  
8 "object-oriented computer graphics."

9           And the idea here is that the graphical objects are  
10 represented by a set of attributes; a table of attributes. And  
11 the table lists all of the properties that you need to know in  
12 order to draw and keep track of those objects.

13          So in this case it has a shape that's a square, a corner  
14 location or a position, a height, a width, and a color. One of  
15 the key advantages of this design is that if the programmer or  
16 an application program wants to change a property, all it has  
17 to do is set the value. So here we're going to set the color.  
18 It's going to change from red to blue. And as a result of that  
19 change of the attribute, the picture, itself, changes on the  
20 screen. Similarly, if you want to change the size, you would  
21 just set the height and width attributes, and that would cause  
22 the object to change, as well.

23          If you have a variety of objects, then of course you would  
24 have a variety of these tables; one for each of the objects.  
25 And they're in a particular order. And that's because the

1 objects on the screen are in a particular order; in this case,  
2 from back to front. And it's important to keep track of this  
3 order, and keep everything in the right way, so that when you  
4 need to change something, you know how to redraw them.

5       So in this case we're going to move the red circle, which  
6 is Circle 1. And, as you can see, that overlaps a couple of  
7 other objects. So when we try to move it, first we erase the  
8 bounding area here; what's called a "boundary box." And that  
9 leaves a hole in the screen, which is not what you want. You  
10 want the blue and the green objects to be redrawn. And it's  
11 important to redraw them from back to front; so that way, it  
12 will repair the damage, and it will look the right way after  
13 it's repaired. So the blue one is drawn first. And then the  
14 green one is drawn afterwards. And that results in the screen  
15 looking correct in that area.

16       But remember, we were moving the circle up to here. And  
17 so now we have to draw the circle in its new position. The  
18 same thing happens. We erase the area where it's going to go.  
19 We draw from back to front. We draw the blue square, and then  
20 the red circle. And so in that way, we have updated the screen  
21 to now reflect correctly the objects in their new place.

22       Notice also that the orange circle did not have to be  
23 redrawn. It's completely independent of both of the boundary  
24 areas, and so it did not participate in that particular  
25 activity.

1       And similarly if the circle, itself, is deleted -- and  
2 there are a variety of other things that could happen -- when  
3 you delete this, no objects actually have to be redrawn. We  
4 can just erase the boundary-box area, and then nothing else  
5 needs to happen, because no objects overlap that region.

6       So we've just been talking about circles and squares, but  
7 all of the objects on the screen are composed of these simple  
8 primitives at the lowest level: Lines, boxes, circles, text,  
9 curves, et cetera. These low-level primitives are composited  
10 up in order to create higher-level objects, like the car.

11       And the operation is exactly the same as we saw before.  
12 If we want to move the yellow circle away, that damages that  
13 area of the screen. And it gets redrawn from back to front,  
14 using the primitive drawing objects. And then the circle is  
15 redrawn in the new place.

16       The software that described in the patent to handle this  
17 kind of thing -- the patent calls it "user interface management  
18 systems," or "UIMS." And this is a collection of software that  
19 handles the graphics, and also typically handles the mouse and  
20 input; but for the purposes of this patent, it's mainly  
21 interesting to look at what it does for the graphical objects  
22 and for the data that's used to keep track of the graphical  
23 objects.

24       And that's as opposed to the application program, which is  
25 something like PowerPoint or Keynote, that displays -- that

1 actually asks for those objects to be displayed. In this case,  
2 it's just a red box.

3 So the patent makes a big distinction between what it  
4 calls the "prior systems," where, when you try and make an  
5 attribute change like changing the square to blue, then that  
6 change is sent over to the UIMS, which then updates the table;  
7 and immediately and automatically that results in the object  
8 being redrawn. So this is claimed to be a problem.

9 And the patent's claimed invention is that it adds a new  
10 step; that the application program is now in charge of deciding  
11 when to do the redraw. So in the algorithm described in the  
12 patent, we have changed an attribute, as before. It changes  
13 the data in the table, as before. But now, instead of  
14 redrawing the area -- that doesn't happen -- it stays red. And  
15 the application gets to decide at what time later it wants to  
16 have the screen redrawn. And it calls this update message. At  
17 that point, the update image instruction instructs the UIMS to,  
18 at this point, cause a redraw. And the UIMS then, at that  
19 point, redraws the objects.

20 And this is very clearly described in the specification as  
21 an important part of what the inventor thought was his  
22 invention. Here's a quote. It says, "By allowing the  
23 application program to control the timing of the redrawing of  
24 the screen in response to changes in attributes of the graphic  
25 objects, the application programmer may optimize the perceived

1 response of the application program."

2 And a short distance later it says the same thing again.  
3 Making the screen updates asynchronous from the graphic object  
4 attribute changes, and placing the screen updates under the  
5 control of the application program, along with some other  
6 things, optimizes the perceived response of the application  
7 program.

8 And this separation -- this asynchronous operation -- is  
9 described very clearly in Figure 1. The patent says that  
10 Figure 1 is a diagram partially in flowchart form and partially  
11 in memory layout form illustrating operation of a processing  
12 system incorporating the present invention.

13 And you'll see that this asynchronous operation is  
14 fundamental to the way this works, as well. The first step is  
15 the application program changes a graphical attribute. And  
16 that's Box 302: Change graphic attribute.

17 The application is allowed to then do other tasks. So  
18 this may be changing other attributes, or it can be something  
19 totally independent. It doesn't have anything to do with  
20 graphics.

21 And then sometime later, the application program issues  
22 the update request. And this is a step at which the drawing  
23 actually happens in Box 348, as you noticed before.

24 And these steps correspond exactly to the steps that are  
25 listed in the claim.

1       So Step 1 is receiving a drawing request from the  
2 application program. And that corresponds directly to this  
3 changed graphic attribute in Box 302.

4       The next step is determining a drawing area of the image  
5 in response to the received drawing request, which corresponds  
6 to: Determine drawing area. Box 342.

7       Inserting a new entry representing the drawing area into a  
8 list of a plurality of entries, each representing their  
9 respective drawing areas. And that's right there.

10       And then receiving an image update request from the  
11 application program.

12       It's important that this request is specifically mentioned  
13 as from the application program. As you pointed out, that's  
14 the first column. Application program. That corresponds to  
15 Box 304. Issue update request.

16       Retrieving one of the plurality of entries representing  
17 the drawing areas of the list.

18       And then finally at this step, requesting that the  
19 respective graphic objects be redrawn if any portion of the  
20 graphic object lies within the drawing area represented by the  
21 retrieved entry.

22       So just by way of summary, we've got these two separate  
23 steps. The graphic attributes are changed, but no drawing to  
24 the screen occurs. And that's the first three steps.

25       Then some other stuff can happen. And then

1 asynchronously, later, the redrawing happens as a result of the  
2 issue update request.

3           **THE COURT:** And the redrawing, itself, happens at  
4 Box 348?

5           **DR. MYERS:** Correct.

6           **THE COURT:** And, well, that's the same question I  
7 asked the OpenTV's expert, and with the same caveat that if  
8 it's outside the scope, I understand. But is there a technical  
9 meaning of "request," as compared to something like "command"  
10 or "instruction" or "notification"? Are those terms of art, in  
11 your experience?

12           **DR. MYERS:** I think they're not terms of art.

13           The reason that we proposed a construction different from  
14 the word "request" is, in normal English, it seemed like  
15 "request" had the connotation that it could be ignored or it  
16 could be handled later. So if I request you to do something,  
17 you might say, "Okay," and then sometime later, you might get  
18 around to it. Or you might say, "Well, I'll think about it."

19           Whereas "notification" or "command" has more of a  
20 connotation of: It has to be done.

21           And because of the claimed invention having this very  
22 clear separation of when the different actions have to happen,  
23 it seems like it was very useful to be clear to the jury that  
24 the first set of operations has to happen in response to the  
25 first attribute-changing step. And the second set of three

1 things has to happen in response to the update request coming  
2 from the application program.

3 **THE COURT:** All right. Thank you.

4 So I don't have any follow-up questions with regard to  
5 that patent. Again, I appreciate the presentation from both  
6 sides. Very helpful.

7 **DR. MYERS:** Thank you.

8 **THE COURT:** So we'll be back here next week for two  
9 purposes. One, the claim-construction hearing; and before  
10 that, the hearing on the motion to -- what is it? -- supplement  
11 the invalidity contentions?

12 **MR. IVEY:** Yes, Your Honor.

13 **MR. BRITTINGHAM:** Well, actually, to be accurate,  
14 it's supplementing our disclosure under the Local Patent Rules  
15 of documents relating to conception. So it's not the  
16 invalidity contention.

17 **THE COURT:** Okay. All right. Thanks for the  
18 clarification.

19 So in terms of the process for the claim-construction  
20 hearing -- and I'm interested in the parties' perspective on  
21 this -- my inclination would be to have the presentations focus  
22 term by term. So, in other words, we would have one side  
23 present on a term, then the other, as opposed to having entire  
24 presentations as to all of the terms by each side.

25 I can see that there might be some inefficiency in that



1 with regard to the '287 patent, because there are so many terms  
2 that do seem interrelated, and so that one might counsel for a  
3 different approach. But I'm interested in your take as to how  
4 you think that sort of structure of the hearing would work.

5 **MR. IVEY:** Your Honor, I generally prefer the back  
6 and forth, because it's a little easier in terms of making sure  
7 that you get, as opposed to two ships passing in the night, an  
8 actual head-to-head discussion of each of the terms. As you  
9 mentioned, with the '287 there may be a need to modify that;  
10 but I think the Court, in its discretion, can do that as it  
11 needs to.

12 **THE COURT:** That makes sense.

13 **MS. SIMMONS:** Agreed. I think it makes sense to go  
14 back and forth. And there might be a few terms across the  
15 three patents that are logically grouped together based on  
16 their relationships. So perhaps the parties could meet and  
17 confer, as we did with respect to this presentation, and  
18 propose an agenda for Your Honor.

19 **THE COURT:** That makes sense to me.

20 **MR. IVEY:** That's fine.

21 **THE COURT:** Well, thanks to the parties. Very, very  
22 informative, well-put-together presentation. So thank you.

23 Anything else we should discuss today?

24 **MR. IVEY:** Your Honor, on our side we'll say, "Stay  
25 tuned." We have some things to say next week. Other than

1 that, no.

2           **THE COURT:** How did I know that would be the  
3 response?

4 All right. Anything further?

5           **MR. IVEY:** No, Your Honor.

6           **MS. SIMMONS:** No, Your Honor.

7           **THE COURT:** All right. Thank you.

8           **MS. SIMMONS:** Thank you very much.

9 (At 11:54 a.m. the proceedings were adjourned.)

10 I certify that the foregoing is a correct transcript from the  
11 record of proceedings in the above-entitled matter.

12  
13 

14 April 16, 2015

15 Signature of Court Reporter/Transcriber      Date  
Lydia Zinn