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UNITED STATES INTERNATIONAL TRADE COMMISSION

In the Matter of:	)	Investigation No.
CERTAIN MOBILE DEVICES	)	337-TA-750
AND RELATED SOFTWARE	)	

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BEFORE THE

UNITED STATES INTERNATIONAL TRADE COMMISSION

In the Matter of:	)	Investigation No.
CERTAIN MOBILE DEVICES	)	337-TA-750
AND RELATED SOFTWARE	)	

Hearing Room A

United States

International Trade Commission

500 E Street, Southwest

Washington, D.C.

Friday, September 30, 2011

VOLUME V

The parties met, pursuant to the notice of the Judge, at 9:00 a.m.

BEFORE: THE HONORABLE THEODORE R. ESSEX

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P R O C E E D I N G S

(9:00 a.m.)

JUDGE ESSEX: Let's come to order.

Complainants, where are we at?

MR. POWERS: We are beginning our rebuttal case, Your Honor.

JUDGE ESSEX: All right. We don't have anything to take up before your rebuttal case?

MR. POWERS: No, Your Honor.

JUDGE ESSEX: All right. Then let's begin.

MR. FERGUSON: Good morning, Your Honor.

JUDGE ESSEX: Good morning.

MR. FERGUSON: We call back to the stand Dr. Vivek Subramanian.

JUDGE ESSEX: Good morning, Doctor.

THE WITNESS: Good morning.

JUDGE ESSEX: I would remind you, you have previously been sworn in this case and you are still under oath as you take the stand here.

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Whereupon--

VIVEK SUBRAMANIAN,

a witness, called for examination, having previously been duly sworn, was examined and testified further as follows:

JUDGE ESSEX: Please be seated.

THE WITNESS: I understand, Your Honor.

JUDGE ESSEX: All right.

MR. FERGUSON: Thank you, Your Honor. We did distribute Dr. Subramanian's rebuttal notebooks already, so those should be up there with you.

DIRECT EXAMINATION

BY MR. FERGUSON:

Q. Good morning, Dr. Subramanian.

A. Good morning.

Q. You should have a binder in front of you that contains your rebuttal witness statement. Do you have that?

A. Yes, I do.

Q. And is that marked CX-569C?

A. Yes, it is.

Q. And can you turn, please, to the last page of this document and let us know if that

is your signature?

A. Yes, it is.

Q. And it is dated September 6th; is that right?

A. That's correct.

Q. And did you give the answers to the questions that were posed in this rebuttal witness statement?

A. Yes, I did.

MR. FERGUSON: Pass the witness, Your Honor.

CROSS-EXAMINATION

BY MR. DeFRANCO:

Q. Good morning, Doctor.

A. Good morning.

Q. We're going to speak this morning about invalidity issues relating to the '607 patent; is that correct?

A. I understand.

Q. The '607 patent is up on the screen. Obviously you spent a lot of time with this patent in your work on this case.

Now, let's turn to the background of the invention section of this patent. And you are aware generally, Doctor, that the

background section gives some information about the state of the art prior to what's set forth as the invention in a given patent. Is that fair?

A. That is certainly one of the things that is often placed in the background section.

Q. Part of the purpose of the background is to tell people who want ultimately to find out about the scope of the invention as to what was done by others before. Fair enough?

A. Yes, that's reasonable.

Q. A bit of information? This is the starting point, this is the background of what's in the field. Fair enough?

A. Are you referring specifically to this or the background section generally?

Q. Generally, generally.

A. Yes, I think generally background sections do contain information about what was already in the field at the time.

Q. You said specifically to this. This background generally did the same thing, didn't it, for the '607 patent? It gives some information about what was in the field prior to the invention that's later set forth?

A. Yes, some of that information is certainly contained in the background of the '607 patent.

Q. Now, you have seen many patents. It is common in patents to not only discuss the prior art generally, but sometimes to specifically reference certain pieces of prior art. You have seen that in patents before?

A. I have.

Q. An example, in many of the patents we have looked at in this case for different reasons, the background would say something about the prior art, and then it would say, well, here is an example of this patent and what it discloses, here is an example of that patent and what it discloses, that sort of thing; is that correct?

A. I have certainly seen that in numerous patents. To be honest, sitting here right now, I would have to look at the patents to confirm that that exists, but I certainly agree that it is generally true.

Q. And then they go on, patents often go on to say, now, there is the prior art, let's discuss the advance in this particular patent?

A. Yes, that's a structure that's quite common.

Q. Now, just for the record, the '607 patent talks about the field, but it doesn't specifically call out any prior art references in particular. Is that fair?

A. You mean within the background of the invention section?

Q. Yes, sir.

A. Yes, there are no specific references called out in the background of the invention section and discussed within the text of the same.

Q. Okay. But it does talk about what was in the field at the time, and I would like to walk through that just a little bit. Okay?

So if we start off in the first paragraph, it talks about -- actually, there are two sections I should point out, the field of the invention and the description of related part. Do you see that?

A. I do see those two sections.

Q. The first paragraph under the description of the related art, that is very general background about different types of

input devices; is that correct?

A. Yes, that's a reasonable way of describing that paragraph.

Q. For example, lines 14 to 16 talks about buttons, keys -- buttons or keys, mice, track balls, touch pads, joy sticks, and then touchscreens and the like. Do you see that?

A. Yes, I do see that language.

Q. We care more, of course, about touchscreens. The next sentence reads, "touchscreens, in particular, are becoming increasingly popular because of their ease and versatility of operation as well as their declining price."

Do you see that?

A. Yes, I see that language.

Q. You don't disagree with that, do you?

A. No, I generally don't disagree with that.

Q. So let's move on a little bit to keep walking through the background. If we go down, Ryan, to line 24, that's fine. The background section goes on in the next paragraph and states, "touchscreens typically include a touch panel, a controller, and a software driver."

Do you see that?

A. Yes, I see that language.

Q. And then the next paragraph, if we go down, Ryan, if you could move down to the next paragraph, it says, "there are several types of screen technologies including resistive, capacitive, infrared, surface acoustic wave, electromagnetic, near-field imaging, et cetera."

Do you see that?

A. I do.

Q. Now, that's a survey of the different types of touchscreens that were available in the field at the time, sir?

A. That's a listing of the various types that were generally available at that time, yes.

Q. Okay. But in this case, in particular, we're interested in one particular type. Would you point that out for us?

A. Which type?

Q. Yes, which type.

A. In general, this patent is specifically focused on capacitive touchscreens.

Q. And of course, in this case, we have talked about two different types of capacitive touchscreen devices. Would you tell us what those two types are?

A. Certainly. Broadly, we have talked about capacitive touchscreens that are so-called self-capacitive touchscreens and capacitive touchscreens that are mutual capacitive touchscreens.

Q. And then the next paragraph, I don't think, is terrifically important unless there is something you want to say about it. It talks about one of the technologies we're not interested in here, do you see that, sir, surface acoustic wave technologies? Do you see that, sir?

A. In the paragraph starting at line 34?

Q. Yes.

A. I apologize, starting at line 50?

Q. Yes, I'm sorry, line 50.

A. That is one of the technologies that it talks about in that paragraph, but certainly the first line is about surface acoustic wave technologies.

Q. Okay. The last paragraph, I believe

it is fair to say, is sort of the segue I was alluding to earlier. In other words, the background has discussed what was in the field generally and then it goes on to say, now, here is the problems with what's out there, what's in the field.

Do you see that, sir? Do you want to take a look at that?

A. I see that section.

Q. Well, let's -- that's great, Ryan. Thanks.

So let's just take a minute or two and go through the rest of the background section. The first sentence says, "one problem found in all of these technologies is that they are only capable of reporting a single point even when multiple objects are placed on the sensing surface."

Do you see that?

A. I do.

Q. It says, "that is, they lack the ability to track multiple points of contact simultaneously."

Do you see that, sir?

A. I do.

Q. That's what we have been referring to in this case as multi-point or multi-touch? I am not sure which word you prefer. The ability to sense when two different touch points are being placed on a given screen?

A. You can use either. I will understand what you mean. If I don't understand, I will certainly ask you for clarification.

Q. So it is fair, isn't it, to say that the inventors or the patent applicants at that time at that portion of the background section were saying, this is what the prior art is lacking, it is lacking the ability to sense two touch points at one time, also known as multi-touch; is that fair?

A. This was one of the problems that the patent identified in the description on description of the related art with respect to the technologies available at the time.

Q. Yes.

A. And that includes the technologies that we have listed previously.

Q. Exactly. That's the first problem, right, that it discusses in this background section, right, the ability -- the lack of the

ability in the prior art to sense two touch points; that is, to have multi-touch?

A. Yes, that is one problem that the patent says is found in all of these technologies, where these technologies refers to resistive, capacitive, et cetera, as we have discussed previously.

Q. Okay. Then it goes on and it gives a little bit more information. I think that's what you were alluding to. It says, "in resistive and capacitive technologies, an average of all simultaneously occurring touch points are determined and a single point which falls somewhere between the two, between the touch points is reported."

Do you see that?

A. I do.

Q. And I think that's something that you have discussed a bit earlier in this case. That's an elaboration on what was discussed earlier in the paragraph; that is, the lack of the ability of the prior art to distinguish between two touch points.

Is that fair, sir?

A. Yes, that is.

Q. Okay. And I think the last bit of that paragraph is not particularly relevant, unless there is something you wanted to say about it. Now --

A. So there is a relevance to that as well, but --

Q. Okay. But not to capacitive necessarily, is there, sir, in that last sentence? It is referring to different technologies, surface wave and infrared? Do you see that?

A. That particular section is specifically talking about surface wave and infrared technologies, where it says it is impossible to discern the exact position of multiple touch points that fall in the same horizontal or vertical lines due to masking.

However, the issues associated with masking exist in capacitive technologies as well.

Q. Okay. But it doesn't -- in that sentence, for what it is worth, it is talking about surface wave and infrared in particular with respect to that issue; is that fair?

A. Yes, I agree with that.

Q. And then the last paragraph goes on to say that these problems are particularly problematic in tablet PCs, where one hand is used to hold the tablet and the other is used to generate touch events.

Do you see that, sir?

A. I see that sentence.

Q. Okay. Now, a tablet is -- we all know what a tablet is. It is like a tablet device like an iPad device, is that how you think of a tablet?

A. With respect to what we're referring to here, yes.

Q. Okay. And why don't we just show -- Ryan, maybe you can just leave column 2 and put the first page of figures on the left-hand side.

Now, in that paragraph, it references figures 1A and 1B. Do you see that? It says, "holding a tablet 2 causes the thumb 3 to overlap with the edge of the touch sensitive surface of the touchscreen."

Do you see that, sir?

A. Yes, I see that language.

Q. Generally, it is depicting the

problems in the prior art with respect to the lack of the ability to sense multiple touches using a tablet device and someone using two fingers.

Do you see that?

A. Actually, what this section is describing is how tablets are affected by the problems that we have discussed in the prior art section.

Q. Better put, okay.

Now, by the way, you were here for Mr. Hotelling's testimony?

A. Yes.

Q. At the beginning of the case?

A. Yes, I was.

Q. And I believe he said something to the effect of the project -- that the development project for a product that Apple had in mind at the time that led to the inventions in the '607 patent was a tablet-like device.

Do you remember that?

A. Yes.

Q. It wasn't a phone or anything else, he specifically said it was a tablet. Do you recall that, sir?

A. In terms of the origination of the project, yes, I believe that's true.

Q. Okay. So to summarize, sir, we have been through the background section. We have looked at some of the figures that are referenced.

We have discussed the capacitive disclosure relating to capacitive technologies. Nothing in the background section says anything to the effect that multi-touch was available in some form prior to this patent. Is that fair?

A. No, I disagree. It says that there are problems with having multiple touches. That's as far as it goes. If you are asking me, is there explicit disclosure of a system that accurately detects multiple touches, yes, I agree that didn't exist.

Q. There is no specific disclosure of a multi-touch device in the background section?

A. Of a system that can accurately detect multiple touches? Absolutely, I agree.

Q. And there certainly is no disclosure of a system that solved the problem of being able to detect multiple touches; is that fair, sir?

A. In the background?
Q. Yes.
A. Yes, I agree.
Q. Okay. Let's turn to one of the prior art references in this case that's been discussed a bit, the SmartSkin reference. Obviously you have spent a lot of time with that.
Let's put up on the screen RDX-28.002. A little bit of background for the record, sir. This is one of the prior art references that Motorola is relying on in this case for its invalidity assertions.
You're aware of that?
A. Yes, I believe it was also cited within the patent.
Q. And there should be a date, Ryan, in the lower left, if you can blow it up at the bottom. It says published in April 20 to 25th, 2002.
Do you see that, sir?
A. I do.
Q. And you were here for Mr. Hotelling's testimony, you're aware that this is -- the SmartSkin device is one of the devices that the

inventors were aware of in the course of their development work that led to the '607 patent, sir?

A. In the time frame over which the project ran, I do understand that they were aware of the SmartSkin device somewhere in that period.

Q. Okay. Now, let's turn to the next slide, which is RDX-28.003. And this slide is actually -- it is a slide within a slide or there is a slide within this slide. It is CDX-009.037, which if I have it right, this is the demonstrative in which you set forth the contours of your view as to what was lacking in the SmartSkin reference.

Is that fair?

A. Yes, I believe that's right.

Q. And I want to understand something. It says multi-touch under Motorola's construction. You're saying that SmartSkin lacked multi-touch under Motorola's construction in this case?

A. Under specific aspects of Motorola's construction, yes.

Q. And at least part of the basis for

your opinion is that multi-touch would require scanning every sensor location across the plane of a touch panel at exactly the same instance in time?

A. Under Motorola's construction?

Q. Yes.

A. Yes.

Q. Okay. Now, for infringement purposes in this case, I want to talk about how this relates to your infringement analysis.

It was your testimony earlier that the Motorola accused products met the multi-touch limitation under Motorola's construction; is that right?

A. Yes, I believe so.

Q. For example, you said that Motorola's accused products met the multi-touch aspect of the preamble of the claim 1, for example, of the asserted claims in this case?

A. Could you point me to the specific section of my --

Q. Sure. Let's put up question 260 and the answer, please, Ryan.

Do you see there, sir, in the first sentence, "the accused products also satisfy

this limitation," and we're talking about the preamble in the question, "under Motorola's proposed construction for the same reasons discussed with respect to the preamble under Apple's proposed constructions." Do you see that?

A. With respect to this question, yes, I see that.

Q. The way that is phrased, if I have it correct, under either party's construction, the multi-touch limitation in your infringement analysis is met, as it is set forth in the preamble; is that fair?

A. Could I have my report that has this, so I can look at the question it is referring to?

Q. Sure, absolutely.

A. It is not this one. It is not this one -- it's not in the rebuttal report. This is in the initial witness statement. And you said question 260?

Q. Yes, sir.

A. I see that.

Q. Okay. Just a couple of examples as to why you found infringement of this limitation.

You said that the Motorola accused products recognize multiple touches and have the abilities to use multi-touch gestures; is that correct? I believe that's right in that paragraph that you are taking a look at.

A. Yes, it is there.

Q. You have also said that the accused Motorola products recognize certain gestures; is that correct, sir? And if you take a look at this section, this answer where it reads, "for example," do you see that? Do you see there some examples?

A. Yes.

Q. Of what is done in the Motorola products that led you to find infringement of the multi-touch aspects of claim 1?

A. Yes.

Q. For example, you pointed out pinch to zoom; is that correct?

A. That is correct.

Q. You pointed out that the hardware is necessarily arranged in a certain way to meet the multi-touch limitation; is that correct, sir?

A. That's correct.

Q. Let's turn to the next slide, please, Ryan. Now, when we turn to the SmartSkin reference, obviously you don't find that the SmartSkin reference is anticipatory, as Motorola found; is that correct?

A. I do not find that.

Q. And is part of your rationale for that, sir, the fact that, in your opinion, SmartSkin does not have the ability to recognize multiple touches under Motorola's construction?

A. With respect to Motorola's construction, SmartSkin does not have the ability to detect them at exactly the same time since it scans.

If the intent of Motorola's construction is to indicate that it has to happen at exactly the same time, then it would not meet it under Motorola's construction.

Q. Let's take a look at part of the disclosure in the SmartSkin reference. It says -- and you have been through this reference in detail before, right, sir?

A. I have reviewed this reference.

Q. Let's -- you know what, let's put up

-- Ryan, could you put up the first page of JTX-367.001. Let's put this -- we're going to spend a few minutes on this. Let's put this reference in perspective and go through the abstract like we went through a bit of the background of the '607 patent, okay? Fair enough?

A. I understand.

Q. Could you blow up the abstract, please, Ryan.

The first sentence says, sir, "This paper introduces a new sensor architecture for making interactive surfaces that are sensitive to human hand and finger gestures."

Do you see that, sir?

A. I do.

Q. And there is some disclosure -- we will get to it -- there is some text, there is some figures that show using finger touches or finger gestures. Is that fair enough, sir?

A. You mean within the examples within SmartSkin?

Q. Yes.

A. Yes, there is some descriptions of that.

Q. The next sentence goes on and reads, "the sensor recognizes multiple hand positions and shapes and calculates the distance between the hand and the surface by using capacitive sensing and a mesh-shaped antenna."

Do you see that, sir?

A. I do.

Q. "In contrast to camera-based gesture recognition systems, all sensing elements can be integrated within the surface and this method does not suffer from lighting and occlusion problems."

Do you see that, sir?

A. I see that language as well.

Q. And I think the last couple of sentences are a bit more compelling. It says, "this paper describes a sensor architecture, as well as two working prototype systems: A table-size system and a tablet-size system."

Do you see that, sir?

A. I do.

Q. There has been references several points during the course of this hearing about the table-size system, but you don't dispute, sir, that this reference, the SmartSkin

reference, also disclosed a tablet-sized system; is that fair?

A. That's correct.

Q. And it goes on to say, "it also describes several interaction techniques that would be difficult to perform without this architecture."

Do you see that, sir?

A. I see that language.

Q. So let's go back to RDX-28.004, which shows a blowup of figure 2 and some text relating to figure 2.

So there has been a bit of discussion about figure 2 in this case, but at least this portion says at the bottom, "the system time-dividing transmitting signal sent to each of the vertical electrodes and the system independently measures values from each of the receiver electrodes."

Do you see that, sir?

A. I see that language. This is in reference to the -- this is the second paragraph of the discussion of figure 2.

Q. Yes. And it says, "these values are integrated to form two-dimensional sensor

values, which we called proximity pixels. Once these values are obtained, algorithms similar to those used in image processing, such as peak detection, connect region analysis, and template matching, can be applied to recognize gestures."

Do you see that, sir?

A. I believe you misread it. It is connected region analysis, but otherwise I think you read it correctly.

Q. And then the conclusion at least in that paragraph says, "as a result, the system can recognize multiple objects." In parens, for example, hands. If the granularity of the mesh is dense, the system can also recognize the shapes of the objects. Do you see that, sir?

A. There is no "also," but otherwise you read it correctly.

Q. You don't dispute -- thanks for that. You don't dispute that is specific disclosure that's set forth in the SmartSkin reference?

A. That language is there, yes.

Q. Now, is it your opinion that that doesn't disclose the ability -- well, would you

say, sir, that the disclosure in figure 2 and the related text sets forth a mutual capacitance system?

A. The disclosure in figure 2 and the related text is certainly a system that exploits mutual capacitance.

Q. And it is your testimony, sir, that -- well, do you believe this does not disclose the ability to detect multiple touches?

A. With respect to the detection of multiple touches alone, no, I haven't taken that position.

Q. Okay. What's your position with respect to multiple touches?

A. With respect to SmartSkin?

Q. Yes, sir.

A. With respect to Apple's construction, I have not taken a position that SmartSkin does not disclose the ability to detect multiple touches in the system shown in figure 2.

With respect to Motorola's construction, if Motorola's construction is intended to mean that detection has to occur at exactly the same time, then it does not meet the requirements of that construction.

Q. Okay. But if detection does not have to occur at exactly the same time, again, then you would find disclosure of that element in this reference for either construction; is that fair?

A. So you are asking me to start from the hypothetical that Motorola's construction does not require detection --

Q. If that were the case, yes.

A. I understand. If Motorola's construction does not require detection to occur at exactly the same time, then I believe at least with respect to this portion, where we are just talking about the ability to detect multiple touches, then figure 2 shows that.

Q. Okay. Now, generally, we have been through this in detail before, I am sure you have read it many times.

Figure 2 and the associated text in SmartSkin, would you say that that discloses a mutual capacitance touch system that is configured to recognize the relative positioning of two different objects?

A. Could I have the question again, please?

Q. Would you read it back?

THE REPORTER: "Question: Figure 2 and the associated text in SmartSkin, would you say that that discloses a mutual capacitance touch system that is configured to recognize the relative positioning of two different objects?"

THE WITNESS: I have no disagreement with that statement with respect to figure 2.

BY MR. DeFRANCO:

Q. Just for the record, I don't want to belabor it. I want to move through some of the figures in the SmartSkin reference that depict that visually.

Let's turn to the next slide. Figure 7, for example, shows a person using two hands to move objects, to move around the SmartSkin surface and move two images.

Do you see that?

A. Figure 7, if we look at the left, it shows two halves of this image apart from each other. And then the right-hand side of figure 7 shows that they have been pushed together. So that's what it calls concatenating two objects.

The object is actually, as you can see from figure 7, projected from a camera above. And that's why you actually see the projection on the person's fingers.

Q. Okay. And then if we move on to figure 10, figure 10 shows a hand on the screen and then it shows a two-fingered gesture. Do you see that, sir?

A. On the top row of figure 10, yes, I agree.

Q. And that two finger gesture is reminiscent, wouldn't you say, of the pinch to zoom sort of gesture, just generally?

A. No. I mean, there is certainly a starting point for two fingers you could use to proceed into a pinch to zoom. This is a static image. It doesn't actually show the pinching.

Q. Okay. And then the figure 13, do you see that it states there two-finger gestures can be used to pick up objects? Do you see that, sir?

A. Yes, I see that.

Q. And would you say that these figures that are shown here are generalized examples of multi-touch gestures in the SmartSkin

reference?

A. These are certainly some of the gestures that are discussed within the SmartSkin reference and, indeed, I do agree that these do involve multiple touches.

Q. Let's talk a bit about transparency and your opinion about what is or what is not disclosed in the SmartSkin reference with respect to transparency. Okay?

A. I understand.

Q. Let's go to slide RX-28.006. Again, sir, in the discussion in this hearing about SmartSkin, and this particular paragraph about transparency, and obviously you think there is some shortcomings as to the scope of the disclosure of this particular paragraph; is that fair enough?

A. It is my opinion that there are significant deficiencies with respect to this paragraph. This paragraph is a discussion -- it falls within the section on future work.

Q. I'm sorry, I didn't mean to cut you off. We're going to go through your issues. I just wanted to set that premise, okay?

A. I understand.

Q. But my point is that hopefully there are some things we can agree on. And I just want to establish that first, okay?

A. I don't know if we will or not.

Q. Okay. Well, let's give it a shot, okay? So in this paragraph, can we at least agree that it is disclosing the use of a transparent sensor such as can be manufactured or etched using ITO?

A. In fact, this section discloses the possibility in future work of using transparent electrodes in a SmartSkin sensor that could be obtained by using ITO.

Q. Okay. You are referring to, I believe, the beginning of the section. And I didn't mean to not point that out to you, but you said that before at the hearing, that the future, I believe the future -- let's put that up.

If you put the entire -- go back to the entire page, Ryan. I want to point out what the Doctor is referring to. Conclusion and directions for future work.

I think that's what you are referring to, sir, that the section that talks about

transparent electrodes, electrodes that could be made out of transparent materials such as ITO, that falls in a section of the SmartSkin reference that's entitled conclusions and directions for future work. Do you see that?

A. It does. It is not in a section that's related to what they have done. In fact, specifically it will not work with figure 2.

Q. Now, sir, you don't dispute, though, again, figure 2 discloses a mutual capacitance device?

A. That's correct.

Q. Okay. So I just want to make sure, though, when you are referring to future work, what that says in that paragraph about ITO, you don't dispute that that's an accurate statement as to what the article reference had said at the time?

A. I mean, if you are asking me, do the words indium tin oxide appear in that section, the answer is yes. However, it is my opinion for detailed technical reasons that that will not -- that firstly, that is in a future work section and that will not work with respect to

the mutual capacitance system of figure 2.

Q. Okay. But let's go back. Can you blow up that particular paragraph?

Now, by the way, sir, you're aware that a person can apply for a patent without actually having made a prototype that's covered by each and every claim of a particular patent; is that true?

A. With respect to prototyping, absolutely.

Q. Right. For example, as we have seen during this hearing by way of example, patents often have many dependent claims, right?

A. Yes.

Q. For example, dependent claims can branch off an independent claim and lay out individually different materials that can be used for a particular aspect of an invention. Is that fair?

A. Yes, that's certainly possible.

Q. And one of the reasons for that is the inventors want to make sure that they don't have a claim that's so broad that it is going to be invalidated by the prior art, so if it comes time for an assertion, they can point to

one that's a bit more specific and would hopefully avoid the prior art, while at the same time capturing the accused device. Fair enough?

A. I can't comment on the inventor's intent for doing what they do, but that would certainly be an outcome of having narrower claims being dependent on broader independent claims.

Q. And this patent, in particular, the '607 patent, before we get back to SmartSkin, it discusses ITO, doesn't it?

A. Yes, there are claims that mention ITO. And within the spec, it talks about ITO.

Q. Well, I don't think there are claims that specifically -- well, let me go back.

It discusses ITO in the specification in a number of places, correct?

A. Yes.

Q. But it doesn't specifically reference any other type of transparent material, does it?

A. I'd have to check. Give me one second. And by transparent, you mean transparent conductor, not glass or plastic or

glass member?

Q. Yes, yes.

A. I believe that's right. I believe that says with a transparent conducting medium such as indium tin oxide, but it doesn't offer other alternatives that do exist, but the only one it specifically calls out as an example is ITO.

Q. Right. Were there other alternatives at that time that existed to use as a transparent conductive material?

A. Yes.

Q. In the devices we're talking about?

A. Yes.

Q. None of those are disclosed?

A. Explicitly disclosed?

Q. Yes.

A. Beyond the statement -- beyond the statement saying such as, yes, I agree. The only specific disclosure of a particular material is ITO.

Q. And in your deposition, if I have it right, you talked about characteristics of ITO specifically that are -- that one needs to consider in determining exactly how to

implement or use ITO in a mutual capacitance device that's intended to have multi-touch capabilities.

Do you recall that, sir?

A. I recall discussing the properties of ITO in the context of how it would behave in various systems.

Q. Right. Sure. Right? I mean, things like thickness, the width, the shape are considerations, right, for how ITO is going to behave in a particular implementation? Isn't that fair?

A. Generically, yes.

Q. Resistance, you referred to resistance. The resistance of the material itself impacts other characteristics that may be relevant to the use in the particular device, sir. Is that correct?

A. That's absolutely true, because the resistivity of ITO is quite poor.

Q. Right. And certain characteristics or features that are relevant to its transparency are a function of resistivity; isn't that true, sir?

A. If you are asking me, is there a

tradeoff between transparency and resistance, the answer is yes. If you are asking me if there is a tradeoff between transparency and resistivity, that's not necessarily true.

Q. Okay. Yes, between resistance, there is a tradeoff with transparency; is that correct, sir?

A. Yes, in the specific case where you reduce resistance by increasing thickness, you degrade transparency.

Q. And some of the other characteristics are capacitance, you said, correct?

A. ITO on its own is a conductor. When we talk about capacitance of it, it would be when configured in some other system.

Q. But control, in terms of -- I am simply asking in terms of the considerations that go into designing a transparent multi-touch system using ITO, you list the characteristics, one is control of the capacitance of the particular device at issue; is that fair?

A. Of the various capacitances of the device at issue, yes, that would be true.

Q. Yes.

A. There is not a single capacitance.

Q. I apologize for speaking over you.

The capacitance of the ITO that's being used is part of that, isn't it?

A. Capacitance is measured between -- is a measure of -- capacitance is, in fact, defined as DQ/DV, it is how much charge changes for a given change in voltage. So there has to be a reference.

You can't talk about the capacitance of ITO on its own.

Q. Yes, no, absolutely. But in determining DQ over DV, you take into consideration the capacitance effect of the ITO?

A. If you are talking about a capacitor which includes one or more terminals made of ITO, then in the calculation you would take into account the area, among other things, of the ITO.

Q. And in designing a particular product, you are certainly going to take into account the area of the ITO and how it impacts capacitance of the device overall.

A. Yes, I agree with that.

Q. Dispersion, you also mentioned dispersion as another characteristic. Can you tell us what dispersion is?

A. Certainly. Dispersion is the change in capacitance as a function of frequency and more specifically it is the change in dielectric constant as a function of frequency.

Q. Okay. Another characteristic, another variable that needs to be taken into account when designing a mutual capacitance transparent device that has multi-touch capability; is that fair?

A. I'm sorry, I didn't understand the question.

MR. DeFRANCO: Would you read it back?

THE REPORTER: "Question: Okay. Another characteristic, another variable that needs to be taken into account when designing a mutual capacitance transparent device that has multi-touch capability; is that fair?"

THE WITNESS: Again, I still don't understand the question.

BY MR. DeFRANCO:

Q. I'm sorry, I was talking about dispersion. Dispersion is another one of those

characteristics that needs to be taken into account in designing a mutual capacitance multi-touch device that is transparent. Fair enough?

A. Yes, I agree with that.

Q. Those three characteristics relate or are all factors in the implementation of ITO -- using ITO; is that fair enough?

A. In such a device?

Q. Yes.

A. With respect to such a device, you do consider the characteristics we talked about. Dispersion is actually more related to the dielectric, not to the ITO itself.

Q. But it is a factor?

A. In terms of doing the design of a mutual capacitance system, you would consider dispersion.

Q. Yes. And the characteristics that we discussed, to the extent they relate or are impacted by ITO, the same would be true of other materials that could be used as a conductor in a given device?

A. If you are asking me, do the properties of the conductor affect the ability

to implement a system, the answer is absolutely, yes.

Q. Well, you said that -- we agreed, at least, that ITO is discussed or disclosed in the '607 patent, right?

A. Yes.

Q. And you agreed that there were no other examples of a transparent conductive material specifically disclosed. Is that correct?

A. The only specific example was ITO, yes.

Q. And I think you said there are other examples in the field.

A. You mean, am I aware of other materials?

Q. Yes.

A. Yes. In fact, I work on them. That's how I know about them.

Q. And as of your deposition -- by the way, you have never yourself designed or made a mutual capacitance multi-touch device using ITO; is that correct?

A. I have never made one.

Q. You have never done that yourself?

A. I have never made one myself. That's absolutely true.

Q. My question, going back, simply is the characteristics that you identified for us, resistance, capacitance, dispersion, relating to the material in a multi-touch sensor, those would vary based on the material, wouldn't they, sir? They would be different for ITO versus some other conductive material that you might consider?

A. Resistance will certainly vary. Capacitance in the structure, if you use the same area, will not vary very much. In fact, it probably won't vary at all. And dispersion is primarily dependent on the dielectric, not on the conductor itself.

Q. Okay. Now, but it is your opinion, sir, that prior to the '607 patent, one of skill in the art would not know how to properly, correctly or effectively deposit ITO for use as an electrode in a mutual capacitance, multi-touch device that could detect more than one touch. Is that correct?

A. To realize said device, yes, I agree.

Q. And, again, part of your criticism of

SmartSkin is that it doesn't teach one of skill in the art how to do the -- how to do that, excuse me, in the section where it talks about using transparent ITO as the sensor in a multi-touch device; is that fair?

A. That is certainly one of my criticisms.

Q. Okay. Let's be fair. Let's talk about the '607 patent, okay? Let's put it on the same playing field.

Ryan, let's bring up -- I have made some slides of this last night just to move forward through this a little more quickly. We're going to put up different sections of the patent, rather than having to refer you to it.

Ryan, let's turn first to RDX-006. And I will tell you, sir, what I would like to do is look through for every reference of ITO in the patent. If there is something I am missing, something that comes to mind, feel free to look at the spec itself, but I tried to capture the relevant sentences that discussed ITO and a bit around it to put it in context.

A. I understand.

Q. Fair enough? But you are certainly

free to refer to anything else. So, Ryan, we should have RTX-007. I guess that's 6. Sorry about that.

So, this is column 5, lines 27 to 67 of the '607 patent. Do you see that?

A. Yes.

Q. This, if I have it right, is the first reference to ITO in the '607 patent and it says, "in order to produce a transparent touchscreen, the capacitance sensing nodes are formed with a transparent conductive medium such as indium tin oxide (ITO)."

Do you see that, sir?

A. I do.

Q. And, again, before you mentioned, it says such as, implying there are others, but certainly it doesn't disclose any others; is that right?

A. It does not disclose any other than explicitly disclosing indium tin oxide, but that is provided in an exemplary fashion.

Q. Okay. And, by the way, it goes on to discuss self-capacitance, sensing arrangements and patterns for the remainder of that paragraph and then we also put the beginning of

the next paragraph there, sir, excuse me, that discusses mutual capacitance.

Do you see that?

A. I see those paragraphs.

Q. Okay. Now, it is fair to say, though, in this first discussion, there are no specific details about how to implement or use ITO in a mutual capacitance multi-touch device that's transparent, is there, sir?

A. Well, beyond saying that in a mutual capacitance system, you have groups of spatially separated lines formed on two different layers, there is no additional disclosure beyond what's already shown on the screen.

Q. That's all that's said there, right? It doesn't discuss some of the characteristics we talk about earlier, like impact on resistance?

A. These paragraphs do not mention resistance, capacitance -- well, they do mention capacitance, but they do not mention resistance or dispersion.

Q. And they don't give any other details about the ITO, right? I mean, it is fair to

say, isn't it, that at least based on this paragraph alone, somebody skilled in the art who is trying to replicate the mutual capacitance device that can sense multiple touches would need to do some experimentation, wouldn't they?

A. If you're asking me if they have never deposited ITO before and they had to deposit it, would they have to learn how to tune the deposition parameters? Yes, I agree. The key point is, however, the system of the '607 patent actually will work because the disclosure of the circuitry allows it to work with ITO.

Q. Okay. But at least in terms of -- we're talking now about depositing the ITO, the shape of the ITO, the thickness of the ITO, other characteristics of the ITO, how transparent it is going to be based on the resistivity, those factors we discussed earlier, those details are not disclosed in this portion; is that fair?

A. In the paragraphs you have got on the screen in RDX-28.007, I agree completely.

Q. Let's turn to RDX-28.008. Again, sir,

marching through just the ITO disclosures in the '607, this is the next one we found. It says, "The electrodes 102 and sense traces 106 can be made from any suitable transparent conductive material. By way of example, the electrodes 102 and traces 106 may be formed from indium tin oxide."

This one is a little different, sir. It doesn't say it on the slide, but I believe this is referring to the self-capacitance embodiment. Nevertheless, it is discussing ITO. Do you see that, sir?

A. This section is discussing ITO.

Q. And then when it -- when it refers to any suitable transparent -- any suitable transparent conductive material, again, it gives an example, the one example is ITO. Do you see that, sir?

A. The explicitly called out material is indeed ITO.

Q. Now, the first sentence, as long as we're here, says the electrodes and traces may be placed on the member using any suitable patterning technique, including, for example, deposition, etching, printing and the like.

Do you see that, sir?

A. I do.

Q. Now, that's -- when it says any suitable patterning technique, is that referring to the fact that those patterning techniques were known in the field at the time?

A. With respect to these, yes.

Q. With respect to the way to deposit ITO on a substrate. Is that fair?

A. With respect to how to deposit -- actually, here it is specifically pattern -- how to pattern ITO on a substrate, it is making clear that there are multiple ways to do that and they were known at the time.

Q. Okay. You could do it by deposition, etching, and printing and the like, but it doesn't discuss any specific processes for doing that deposition, the etching, or the printing. Is that fair?

A. If by that you mean, does it give the details on how to do the deposition, how to do the etching, how to do the printing? Yes, I agree, there is no further detail provided.

Q. And would you agree that how the deposition is done, how the etching is done,

how the printing is done may affect the physical characteristics of the ITO?

A. You mean such as resistivity, et cetera?

Q. Yes.

A. Yeah, they do.

Q. Now, do you recall being asked at your deposition, sir, to explain where in the '607 patent the inventors teach or disclose how to create ITO electrodes as claimed in the patent?

A. I recall some discussion of that.

Q. And do you recall saying that there is a fairly substantive discussion in column 10, sir?

A. Yes.

Q. And do you recall --

A. Well, I don't recall saying specifically that, but it certainly would be a section I would refer to.

Q. Well, we can put it up. The answer that I have, sir, and this is at your transcript 220, line 12 to 211, line 16, you were asked: Well, I guess let me ask you, where in the '607 patent do they teach or even disclose how to create ITO electrodes as

claimed in the asserted claims of the patent?

And I don't mean to test you, sir. You are welcome to look at your transcript of course. It says: Well, there is one fairly substantive discussion in column 10.

Do you see that, sir?

A. I don't, but I have no reason to doubt I said that.

Q. Why don't we put that up on the screen, Ryan. Why don't you get the next question and answer. Go down to line 16, please.

So we have put, this is continuous, it is just two different pages. That's why there is two different boxes.

A. I understand.

Q. The top question, sir, is what I just asked you.

"Question: Well, I guess, let me ask you, where in the '607 patent do they teach or even disclose how to create ITO electrodes as claimed in the asserted claims of the patent." Do you see that, sir?

A. I see that question.

Q. It is a general question, you were

asked to identify the ITO disclosure in the '607 patent. Do you remember that?

A. That appears to be the case.

Q. And it appears to be the case, doesn't it, that you pointed specifically to the discussion in column 10 that we just took a look at. Isn't that correct, sir?

A. That's true.

Q. And not that you doubted this, but just so it is clear, you called that at the time a fairly substantive discussion. Is that correct, sir?

A. That is what I said.

Q. And, in fact, you went down in response to the next question, you specifically read that portion of column 10 as part of your answer to set forth what you viewed at the time as a fairly substantive discussion. Is that correct?

A. That's true.

Q. Okay. Let's turn to the next disclosure of ITO in the '607 patent. And this should be on slide 009. It is the '607 patent, column 12, lines 35 to 45.

Do you see in this paragraph again it

is talking about the touchscreen, it works its way down to ITO at the end, but it begins, "the touchscreen 134 includes a transparent electrode layer that is positioned over a glass member 138."

Do you see that, sir?

A. I see that language.

Q. Now, it says at the end, "in most cases, the electrode layer 136 is disclosed on the glass member 138 using transparent -- sorry, "using suitable transparent conductive materials and patterning techniques such as ITO and printing."

Do you see that?

A. Yes, I do.

Q. Once again, the only suitable conductive material disclosed is ITO; is that correct, sir?

A. In terms of the example provided, yes. The only example provided is ITO.

Q. And the example provided here is in terms of the deposition technique in this particular instance, it is patterning techniques using a printing method. Is that fair?

A. That's correct.

Q. Okay. It doesn't say anything more about printing, it just says that's one of the techniques that can be used. Is that correct, sir?

A. In the sentence you have provided, yes, it only says you can use printing. It doesn't give any details.

Q. So let's move on to the next reference in the '607 patent. This is slide 10. It should have column 13, line 62 to column 14, line 5.

A. I see that.

Q. And, again, sir, this portion of the specification, and if I have it correctly, this is referring to figure 9 of the patent, there has been some time spent in the case on figure 9. I probably should have started there. Ryan, do you mind putting up figure 9 of the '607 patent for a moment.

Just for reference purposes, sir, do you recall figure 9?

A. I do recall figure 9.

Q. And figure 9 is a mutual capacitance example where we have drive and sense lines; is

that correct, sir?

A. Yes, I agree with that.

Q. So let's go back, Ryan, to RDX-28.010. Again, the last sentence in this section after pointing out the different lines in figure 9, it says, "furthermore, the lines 52 can be made from any suitable transparent conductive material. By way of example, the lines may be formed from indium tin oxide." Do you see that, again, sir?

A. I believe the lines are 152, not 52, but otherwise you read it correctly.

Q. Yes, sir. Thank you.

Now, let's take a look at RDX-010. And this is column 14, lines 60 to column 15, line 23. Okay. The good news is this is the last reference. It is a bit longer, but I just want to work through it for a moment.

Okay, you have seen this portion before?

A. Yes.

Q. I want you to have it in mind. I see you are reading it. When you are done kind of going through it, would you let me know?

A. Certainly. I have read it.

Q. Let's just read in for the record the first couple of lines. It says, "as mentioned above, the lines in order to form semi-transparent conductors on glass, film or plastic, may be patterned with an ITO material."

Do you see that?

A. Yes.

Q. Now, by the way, this says glass, film, or plastic. Are those different types of materials on which ITO can be placed using the techniques that were discussed earlier such as etching or printing?

A. Etching doesn't place the ITO. Etching removes the ITO. But with respect to could you deposit ITO on glass, film, or plastic as called out here, the answer is yes.

Q. Yes. You are right, sir. The ITO is deposited and then the portions of the ITO film that are not going to be used in the final configuration of the device are etched away. Is that correct, just like you etched away glass to make a pattern? Is that true?

A. Yes, that's a reasonable description.

Q. And the characteristics of the

substrate material, be it glass or film or plastic, that's going to affect the deposition process and the process that's used to create the resulting pattern, if it is etching, for example. Isn't that true, sir?

A. There is some impact of the substrate on the deposition. It depends -- the amount of impact depends on the deposition technique, et cetera.

Certainly usually you can get higher quality ITO on glass than you do on plastic, for example.

Q. But if you are using plastic, for example, there is -- the characteristics of plastics varies widely in terms of the features that a polymer engineer or a chemical engineer would discuss. Isn't that true? You know that, sir, right?

A. For better or worse, I have been working on plastic based electronics for many years now and, yes, the properties of the plastic do impact the layers that are put on top of it.

Q. Properties are things such as hardness; is that correct?

A. Yes.

Q. And those properties are impacted or those properties need to be taken into consideration in the manufacturing process, for example, when you are depositing the ITO layer. Isn't that true?

A. When you are integrating your system, in other words, you are figuring out how you are going to do the deposition, the space within which you can choose the deposition characteristics you want to use do depend on the properties of the substrate.

Q. Okay. And the use of the device itself -- well, I'm sorry.

Not only do the characteristics of the substrate affect the deposition process, there are also characteristics of the substrate that must be taken into account when the device itself is ultimately used. Is that fair?

A. You mean in terms of the design of the device, the overall device?

Q. Yes, sir.

A. Yes. That's true.

JUDGE ESSEX: Pardon me. Let me interrupt you just a moment.

I read this as well, and I am reading the paragraph, it is talking about in order to prevent the aforementioned problem, the dead areas between the ITO may be filled, and I don't see the dead areas as an aforementioned problem in that. It doesn't make sense to me. Can you help me out with that at all?

THE WITNESS: Certainly, Your Honor. Actually, it is easy to do it with a figure. So we can do it with figure 9, if we could have figure 9, I can explain from there.

Actually, let's use figure 10. That's even better.

So, Your Honor, if you look at figure 10, each of these (indicating) represents a stripe of ITO.

JUDGE ESSEX: Right.

THE WITNESS: So in this example, we deposit a blanket film of ITO that covers the entire plastic. And then we etch it out from certain regions to form these lines. So now what you are left with if you were to look at the sheet of plastic, you have some regions that have ITO.

JUDGE ESSEX: Right.

THE WITNESS: And other regions that don't. Now, it turns out the refractive index, an optical property of a material, is different for ITO and for plastic and is different for ITO and for air.

It is also -- let's say you were then going to put this in a sandwich where, for example, you put a glue layer on top and then sandwich them together. Well, it may be different for the ITO to the glue.

So now you have a problem. You are looking at a sheet of plastic. Some regions, the light is going through ITO, which has one refractive index. And the other regions, it is going through glue, which has a different refractive index.

And so the eye perceives a shimmer because there is a variation in refractive index. So the dead area discussion is referring to the areas between the ITO where the ITO was removed.

JUDGE ESSEX: Okay. So it is a poorly written paragraph then? It didn't talk about the refractive -- all right. The problem of the dead areas wasn't mentioned until it came

up with filling those areas up, and --

THE WITNESS: Yes, Your Honor. I think the reason they called it -- they hadn't explained what dead areas were before, but in the previous paragraph they discussed etching away the ITO. So that etching process creates the dead areas.

JUDGE ESSEX: Okay. I'm sorry for the interruption. Go ahead.

BY MR. DeFRANCO:

Q. So going back and following up on His Honor's comment, it says in the second paragraph, "in order to prevent the aforementioned problem, the dead areas between the ITO may be filled with index matching materials." Do you see that, sir?

A. With indexing matching materials, yes, I see that.

Q. Yes. I am having a little trouble reading this morning.

It doesn't disclose any specific index matching materials, does it, sir?

A. You mean a specific example of an indexing matching material?

Q. Yes.

A. That's true, it does not.

Q. And ITO, again, as you said earlier, I believe you said was the transparency is going to be a function of resistivity; is that correct?

A. The parameters that affect transparency also have resistivity.

Q. Okay. So you could, based on the way your system is designed and the way the ITO is deposited, the way the ITO is etched away, if etching is used, all of that may ultimately affect the transparency of the ITO when it is in the completed device, is that fair?

A. The way the ITO is deposited --

Q. Let me ask a better question. I'm sorry.

A. That's fine.

Q. There are characteristics of the ITO itself that impact the transparency; is that right?

A. Yes, that's true.

Q. There are certainly different brands, types, versions of ITO on the market. There was back in the 2003 time frame, wasn't there?

A. There are certainly different

manufacturers who brand their ITO with their respective brand names.

Q. Right.

A. And they have different properties.

Q. Different properties, different types, different costs, different characteristics. Is that true?

A. If by -- I don't know what exactly you mean by types, but they certainly have different properties and they are targeted at different costs and they are available in different substrates.

Q. And they have different transparencies?

A. Yes.

Q. And they have different properties?

A. That's true as well.

Q. And all of that is going to impact the transparency when the ITO is ultimately used in any device, such as a pad or a phone. Isn't that true?

A. Yes, that's true.

Q. And this is talking about somehow you have got to come up with an index matching material that is going to appear to the user

that the transparency is uniform. Is that correct?

A. That is the goal of this section, yes.

Q. Okay. And, in other words, you don't want somebody to look at their pad or their phone and see some sort of hint or trace of the ITO lines, that would be unappealing to a user of the device. Is that fair?

A. Certainly that's the general problem that they are trying to address, yes.

Q. Okay. So after all the work that's done to design a device, to pick the ITO, to figure out the characteristics you need to choose the brand with a certain transparency, to deposit it, to etch it away, you have got to figure out, if you choose to do so, what indexing material to use to put in between the lines to make sure that that unpleasant effect doesn't occur. Is that fair, sir?

A. Yes, I generally agree with that.

Q. Okay. And you will agree it is going to take a little bit of experimentation for somebody skilled in the art to figure out exactly what indexing material to use to achieve that result in a particular device. Is

that correct?

A. If you are given an unknown system, you would have to measure its properties and do some experimentation. It is not a significant amount with respect to that.

Q. Okay. But you will agree that in this particular implementation, the inventors didn't disclose what indexing material they used, did they?

A. That's true.

Q. They didn't disclose how they were able to choose a proper or appropriate indexing material; isn't that correct?

A. Beyond saying that you could use an index, a matched index material?

Q. Yes.

A. I agree. I mean, that does give the guideline. It says you would use a matched index material but, yes, I agree, beyond that, they haven't said what material to use, for example.

Q. Okay. And somebody skilled in the art would take that guideline and determine what indexing material to use in their own configuration?

A. Yes.

Q. So going back, we started to talk about the disclosure of ITO in this particular section and just to finish up on that, it says, "as mentioned above, the lines in order to form semi-transparent conductors on glass, film, or plastic, may be patterned with an ITO material."

Do you see that?

A. You are reading the first line again?

Q. Yes.

A. Yes.

Q. Then it goes on, "this is generally accomplished by depositing an ITO layer over the substrate surface, and then by etching away portions of the ITO layer in order to form the lines."

Do you see that, sir?

A. I do.

Q. And it says, "as should be appreciated, the areas with ITO tend to have lower transparency than the areas without ITO." Do you see that, sir?

A. I do.

Q. We have discussed that at length. And

that phrase, doesn't it imply it should be appreciated by somebody in the art who has used ITO before; is that correct?

A. Oh, yes. You mean someone of skill in the art who read it would know what that means? Yes.

Q. Yes. Okay. So we have walked through now, sir, I believe, if I have it right, all the portions of the '607 specification that specifically reference ITO. Is that fair?

A. With respect to the referencing of ITO itself, that's true. We haven't looked at the circuit, for example.

Q. We haven't looked at the circuit, but at least in discussing ITO, its properties, what particular brand or type should be used, dispersion characteristics, resistivity characteristics, its impact on the capacitance, all of those issues with respect to ITO itself, we have covered the portions of the '607 patent that in any way discuss ITO; is that correct, sir?

A. With respect to the discussion of ITO itself, that is true. We haven't discussed how that's impacted by the circuit choices that you

make.

Q. Okay. There are other design choices that may impact the type of ITO and the characteristics that it has that are used in a particular device; is that fair?

A. There are certainly design choices. There is also a sort of fundamental circuit topology choices, which are not simple design choices.

Q. Correct. And those are -- all of those are going to impact a particular ITO that's used in the device and how it is deposited and the ultimate configuration?

A. They will. And more generally, they may determine whether you can use ITO or not.

Q. And how would one skilled in the art determine whether they can use ITO or not in a particular configuration, by experimenting?

A. Certainly one thing you could do if you were given a particular circuit topology would be do a significant amount of experimentation. And in some cases, it wouldn't work, and then you would essentially be driven to do invention, come up with a new topology that does work.

Q. Now, let's talk a little bit about another feature that you say is lacking in the SmartSkin reference. I believe another one is you don't believe that SmartSkin discloses a concept of layering and how that's covered in the elements of the asserted claims of the '607 patent?

A. With respect to specific layers, that's true.

Q. And in your opinion, generally, sir -- why don't we put up question number 118 and the answer. And here, sir, you say the layer limitations are those limitations that require the use of two different layers of conductive lines in the touch sensor. All of the asserted claims require these limitations.

Do you see that?

A. These layer limitations, yes, I see that.

Q. And you go on to say those are lacking in SmartSkin; is that right?

A. I say that the limitations that are missing are identified in this particular CDX.

Q. Now, is it also your opinion, sir, that SmartSkin doesn't disclose layers because

it uses a copper mesh?

A. You are talking about in relation to figure 2? That's true.

Q. Yes. Well, figure 2 of SmartSkin, you are referring to?

A. Correct.

Q. Let's put up figure 2 and let's put up a paragraph that we haven't looked at yet, which should all be in slide 28.012.

Let's go through the same drill, sir. Let's see what you and I can agree upon with respect to figure 2, its disclosure as set forth in the figure itself and the related text of the SmartSkin article. Okay?

You will agree with me, won't you, that SmartSkin discloses a grid of transmitter and receiver electrodes. Isn't that fair?

A. Yes, those are called out in the second sentence of the paragraph on RDX-28.012.

Q. And that is shown in figure 2 as well, isn't it? Can you point that out for us?

A. Certainly. If you are referring to the grid of transmitter and receiver electrodes using the language on RDX-28.002, the grid it is specifically referring to, it is

specifically referring to with respect to figure 2 is this grid of vertical and horizontal copper wires.

Q. And is it your opinion that the sensor grid of electrodes in SmartSkin as shown in figure 2 could not be implemented as having one layer for the drive electrodes and having a different layer for the sense electrodes?

A. I understand the question. Could I have the CDX that you referred to or that I referred to earlier in reference to the question and answer you put up, please?

Q. You mean your -- where I said this is what you said was lacking?

A. Yes.

Q. Sure, sure.

A. Thank you.

Q. It is a small fee. Let me find it. It should be slide 003. Is that the one you wanted to see, sir?

A. Yes. Thank you. No, it was the one in answer to the -- was this the one I referenced in the question you put up? I can find it. If you put the question up again, I can find it. I have the binder in front of me.

Q. Was it from your witness statement? I'm sorry.

A. I believe so.

Q. Okay. So let's find -- let's see if we can get that back. Hold on.

A. I have them in front of me now if you want.

Q. You have the paragraph?

A. Yes. The question is up there and I found the --

Q. Got it. Great. Is that what you wanted to refer to, sir?

A. Yes, thank you.

Q. Okay. Now, my question was, sir, is it your testimony that the sensor grid that is the drive lines and the sense lines that are shown in figure 2 of the SmartSkin reference could not be implemented in a device that had different layers for each?

A. With respect to layers as used in claims 1 and 10, for example? Yes, that's correct.

Q. Yes. And your opinion for that is because it is a copper mesh to create the capacitance nodes; is that correct?

A. These are copper, and that is one of the reasons for my opinion, yes.

Q. But you will agree, won't you, that based on the disclosure of figure 2 in the SmartSkin reference, the use of copper wires in a mutual capacitance device could take on a variety of configurations, couldn't it?

A. You mean if you are using copper wires, could you do them in different ways?

Q. Yes.

A. Generally, yes, I agree, you could use copper in different ways.

Q. Okay.

A. In this system.

Q. Well, specifically, for example, you could use copper wires in a mutual capacitance configuration where the layers for the drive and sense lines are spatially separated, couldn't you?

A. You could use copper wires such that the wires are separated. Those would not meet the layer requirement of the claims.

Q. But you could -- you could use them in separate layers? In other words, outside of a mesh configuration, couldn't you, sir?

A. If you are using layers outside of what it means in the claims, where there are specific characteristics tied to the layers, yes, I agree you could have them spatially separated. That's possible.

Q. We're just talking generally. Apart from the claims right now, one skilled in the art -- it is your testimony, isn't it, that one skilled in the art at the time was aware that copper wires could be used in mutual capacitance, not only in a mesh configuration but on spatially separated layers as well; isn't that true?

A. Independent of the claim language, without attributing the additional characteristics imposed on layers by the claims, yes, I agree they could be spatially separated and if you want to call those layers independent of the claim language, I agree with that statement.

Q. Okay. Let's turn to another document, the related patent application to the SmartSkin reference. You're aware of that reference, sir, right?

A. Yes.

Q. And this is what's been referred to in the case as a Rekimoto Japanese patent application. You're aware of that, sir?

A. I am. I believe he is the lead author.

Q. Let's put on the screen, please, RDX-28.013.

Sir, this Rekimoto reference, this is from one of the Sony engineers who also authored or coauthored the SmartSkin article that we talked about earlier. Do you recall that, sir?

A. Yes, I believe so.

Q. And this is one of the references that Motorola relies on as prior art for its position that the asserted claims of the '607 patent are invalid in this investigation. You're aware of that, sir?

A. Yes, I'm aware that this is one of the pieces of art that Motorola relies on.

Q. By the way, the prosecution history in this case is pretty voluminous, just in terms of number of pages. Is that correct?

A. It does have a large number of pages.

Q. It has got -- for example, it has got

a copy of at least many if not most, possibly all -- I didn't check -- but many of the articles that are cited on the front of the -- or towards the beginning of the '607 patent as prior art; is that correct?

A. There are certainly some of them. I also have not checked if all of them are there.

Q. Okay. I counted, and we have been through this, it is over 300 references cited in the front of the '607 patent.

A. I believe that's correct.

Q. And the examiner read many of those references in considering this application. Is that fair?

A. Certainly I would assume the examiner did.

Q. And the vast majority -- you will see, we can put something up, and I will represent to you that at the end of the several pages of references -- why don't we put it up, so I get this right, Ryan.

It is page 5 of the '607 patent at the end of the reference list. One more page. Blow that up.

Do you see there, sir, it says cited

by the examiner?

A. You mean with -- just the phrase, yes, I see the phrase.

Q. Okay. Now, if I have it right, and the number is not particularly important, if you look through the list of five pages of references, I think there is about ten or so that are starred as having been cited by the examiner. And my question simply is it your understanding that those are references that the examiner had found in a search and cited as part of this patent application process? Is that fair?

A. I think what it does mean is that these were references that were cited by the examiner. I can't say how they went about finding them, but they were certainly cited.

Q. That's fair enough. And the majority, maybe all of the rest of the 300-plus references were cited by the applicants. Is that fair?

A. By that you mean they were provided by the applicant during the prosecution process?

Q. Yes.

A. Yes, I agree with that.

Q. Now, I'm sure you have been through the prosecution history and know it all by heart, as I do, but the citations took place over the course of the prosecution of the '607 patent, the citations to -- I'm sorry. Let me start again. That's a poor start.

You're aware of something called an information disclosure statement, sir?

A. Yes.

Q. Called an IDS, that's where the applicants will send in a form that lists all the references they're aware of. You are aware of that?

A. Yes.

Q. And I think there was an early one with something less than 300 references on which one of the SmartSkin references, I believe the article that we discussed, was disclosed. If you don't recall that, it is fine. If you do --

A. I believe I recall that being disclosed.

Q. And then there were later IDSs that discussed additional references. At some point toward the end, Rekimoto was disclosed on a

separate IDS by the applicants. Are you aware of that, sir?

A. Which Rekimoto are you referring to now?

Q. The one that -- the Japanese patent application that we looked at.

A. Yes, I believe so.

Q. Now, I didn't see -- and if you did, I would like you to point it out for me -- I didn't see any specific discussion by the applicants about SmartSkin, the article, Rekimoto, the Japanese patent application in particular. Do you understand my question, sir?

A. I understand. You are asking me if there is any explicit discussion of those two pieces of art.

Q. Right. For example, you have seen prosecution histories sometimes, although there is not requirement, an applicant may say here is a particularly pertinent reference out of all of those that are disclosed, not only that, you should focus on these particular portions, and here is why our invention is different than what's disclosed in those paragraphs.

Fair enough?

A. I have seen patents that contain that information -- or applications that contain that applications.

Q. Right. And applicants often sometimes explain why a particular portion of a reference doesn't disclose what they are claiming as their invention. You have seen that, too, sir, right?

A. Yes.

Q. For example, they may say look at this section on this article, it says X, Y, and Z, and I am one skilled in the art, let me tell you how this is different from what I am claiming as my invention. Right? You have seen that before, sir?

A. I haven't seen that specific language, but conceptually, I agree that general concept does exist in patent applications.

Q. There are reasons to do that, for example, you can imagine maybe there is a reference that sounds good and the inventors may want to go out of their way to defuse that before the rejection when the patent examiner sees it? Is that a possibility or don't you

know?

A. That is certainly a reasonable reason to do that. I couldn't look into some other applicant's head and see what his reasons were.

Q. It is certainly a reasonable reason to do that to also help the Patent Office a bit when there is a large volume of references for the patent examiner to wade through, isn't that fair?

A. That would be another reason to do it. Again, I mean, I'm not able to look into an applicant's head and predict his intent.

Q. But that's a reasonable explanation as to why you might want to do that? You have seen that occur in prosecution histories other than the '607, is that fair?

A. I have seen that occur. I don't -- I can't comment on the intent for why it did occur.

Q. Okay.

A. But it is an explanation that you have postulated and I have no reason to disagree with it.

Q. And going back to where I started, you didn't see any of that in the prosecution

history of the '607 patent; is that fair, with respect to SmartSkin or the Rekimoto, the Japanese patent application. Is that fair, sir?

A. Yes, I think that's fair.

Q. And one of the reasons that, again, if you can't speculate, fine, but one of the reasons that applicants -- well, let me start again. Let me ask a better question.

I take it you have also seen in prosecution histories that there is back and forth on particular references between the patent examiner and the applicant's attorney about the scope of disclosure of particular references; is that correct?

A. Yes.

Q. And I take it you have seen that there could be a rejection based on the examiner's interpretation or reading of a reference and particular portions that he or she thinks are relevant as invalidating art, either alone or together with some other reference. Is that fair?

A. Yes.

Q. And it is common also to have the

inventors come back and say I'm skilled in the art as well, here is the work I'm doing, let me explain to you why someone else skilled in the art, in my opinion, would not read that paragraph to have the same disclosure as you are reading it to have? Have you seen that?

A. I can't recall if I have specifically seen that, but it certainly sounds like something that could happen.

Q. But, again, none of that discussion occurred in your review from what you have seen of the prosecution history of the '607 patent, is that fair, sir?

A. With respect to these references? With respect to Rekimoto?

Q. Exactly. With respect to SmartSkin and Rekimoto.

A. Yes, that didn't explicitly happen, I agree.

Q. The first IDS, I can put it on the screen, but my memory of the first IDS in the prosecution history showed a list of other sources and articles that had the web location of the article that was being referenced.

Do you recall that, sir?

A. I don't specifically. Maybe you could put it up. I don't doubt you, but I don't recall specifically.

Q. Okay. Do you recall, sir, that there were a couple for which no web site location was provided and one of those was the SmartSkin article?

A. No, again, as I said, I don't recall the specifics of the IDS. If you pull it up or if you want to represent that that is the case, I am happy to proceed.

Q. Okay. No, I will represent that that's the case. If we find a mistake, somebody will correct me.

But you are aware, sir, that the inventors in this case at some point prior to filing their patent application were aware of the Sony, they were aware of the Sony web site that contained information about the SmartSkin project that Sony was working on at the time. Do you recall that?

A. Well, given that you have represented that the web link was provided, that would make sense.

Q. I'm representing to you, sir, that

there was an e-mail between the inventors, which I can show you, and I want to be clear, I am not --

A. I understand. I thought we were still talking about the IDS.

Q. Let me start back. It is my fault for the confusion.

Segueing away from the prosecution history, going to the record relating to communications with the inventors, you're aware that there was an e-mail from one inventor to the other saying, you know, identifying the SmartSkin article. Are you aware of that, sir?

A. Yes.

Q. And you're aware, sir, that that e-mail contained a link to the web where the article could be found; is that correct?

A. Yes, I believe so.

Q. Okay. And that that link showed generally the information about the work that the Sony engineers were doing at the time. Do you recall that? You have been to that link, haven't you?

A. I have.

Q. You have seen the SmartSkin article

we're talking about is there, haven't you seen that, sir?

A. Yes.

Q. You have seen that that link discloses the patent applications that were in play at the time. Do you recall that?

A. I don't know. You mean it lists the patent applications?

Q. Let me -- let me ask a different question.

That link is where the video that's been shown in this case is available, you're aware of that, sir?

A. The video?

Q. The video of the SmartSkin?

A. Yes.

Q. Now, let's turn back to the Rekimoto patent application we were discussing earlier. We started with RDX-28.013. Just to put this back in context, that's the Japanese patent application relating to the work of the Sony engineers who were involved in the SmartSkin project back in the 2003 time frame, sir; is that correct?

A. Sorry, could I have the question

again, please?

Q. I will just reask it. Just for reference sake, this is the Japanese patent application by Mr. Rekimoto, one of the Sony engineers working on the SmartSkin project in the 2002, 2003 time frame; is that correct?

A. Yes, the application date of this appears to be May 21st, 2001.

Q. Okay. And the publication date, as long as we're talking about dates, is November 29th, 2002. Do you see that in the upper right?

A. Yes.

Q. Okay. Now, the next slide, to save time, we have put the two side-by-side. We have put next to figure 2 of the SmartSkin reference, figure 1 of the Rekimoto.

Do you see that, sir?

A. I see them side-by-side, yes.

Q. And there is some similarity between the overall configuration and structures of the mutual capacitance devices shown in those two figures, would you say that much?

A. There are similarities, for example, both definitely use a voltage amplifier in the

read circuit.

Q. Okay. So let's turn to slide RDX-28015. Now, this is figure 9 from the Rekimoto patent application. Do you see that, sir?

A. Yes, but to be clear, I remember there were two versions going around. And I believe the certified version has slightly different language. Isn't it organic display from the non-certified version and electromagnetic is what it said on the certified version?

Q. We will take a look at that at the break, sir, and confirm. I don't -- is there a material difference?

A. Well, actually, I think organic is the right language. I think -- but I do believe just because there are two things floating around, we should make sure if we're talking about the certified one, we're using the right figures.

And if the figures are correct, I am happy to proceed. Either way, I do believe it should really be organic, even if it says electromagnetic.

Q. We will confirm that and make sure

we're talking about the same version that you have in mind.

A. All right.

JUDGE ESSEX: Do you have a bit more with this witness?

MR. DeFRANCO: Yes, Your Honor.

JUDGE ESSEX: Then this might be a good time to take a break. I will let you confirm that so you can come back and have the right figures.

We're in recess until a couple minutes before the hour. And, Doctor, I urge you not to talk to others about your testimony.

THE WITNESS: I understand, Your Honor.

(A recess was taken at 10:41 a.m., after which the trial resumed at 10:58 a.m.)

JUDGE ESSEX: Go back on the record. Are we ready?

MR. DeFRANCO: Yes, Your Honor.

JUDGE ESSEX: Proceed.

BY MR. DeFRANCO:

Q. Let's go back for a second, Doctor, to a topic that we discussed shortly before the break. That's the disclosure of SmartSkin in

the prosecution history. And Ryan, let's just put up that information disclosure reference that I referred to earlier. It is JX-005.0077.

For the record, sir, this is an example of an information disclosure statement, this particular one is out of the prosecution history for the '607 patent. You have seen this before; is that right?

A. Yes, I have.

Q. And as you and I discussed, there is a number of references disclosed. Ryan, if you would go to the next page. That's the signature from the patent attorney, we can move on to the list of references, it is the first list, and if you turn over to the next page, Ryan, I believe at the top, if you can blow that up, you see that that's the Rekimoto article that we looked at earlier, sir. Do you see that?

A. Yes.

Q. And later on, I believe there is another copy of this where the boxes are checked off indicating that the examiner considered the references that are disclosed here. Do you recall that, sir?

A. Not specifically, but I have no reason to disagree.

Q. Okay. And I referenced web site locations for some of the references that were cited. You don't see one disclosed here, a web site location for the Sony work that was done including the article and the video that we generally mentioned before, sir, is that correct?

A. You mean outside of the direct reference to the article? There doesn't appear to be any other reference to Sony here.

Q. Okay. And we said later on, the Japanese patent application we discussed was also disclosed and considered. Do you remember that?

A. I remember us talking about the Japanese article.

Q. All right. Just -- have you seen the video that was available at the time of the SmartSkin?

A. I have seen a video, yes.

Q. It was shown once in this case. I would like to just bring it up again as long as we're at this point and go through it briefly.

(Video playing.)

Hold it for one second, Ryan. What we just saw, sir, with fingers moving, is that sort of the pinch to zoom that we talked about?

A. The gesture is similar to the gesture of the pinch to zoom. That is not the pinch to zoom obviously.

Q. It is a similar gesture in the way that appears?

A. In terms of the way the fingers move, it appears to be a two-finger gesture that involves changing the spacing between the two fingers.

Q. And there is, there is movement of a figure based on multiple touches on a mutual capacitance device; is that fair, sir?

A. Yes, I agree with that.

Q. Let's keep going with the video, please.

(Video playing.)

We have manipulation of a different -- this is manipulation of a Mac, do you see that, sir, making it larger with two fingers and moving it around?

A. Yes, and you will see the projected

features on the back of his hand because the image is coming from on top.

Q. That's right. The image itself is projected down but the fingers are actually doing the manipulation through the circuitry that's part of this mutual capacitance device itself; is that fair?

A. The fingers are running on the surface of this opaque device, and then there is circuitry connected to it, specifically the voltage detection circuitry, and then there is associated circuitry to ultimately determine what gets projected from the projector on top.

Q. Okay. It is not -- this is not a transparent configuration. Is that what you are saying, sir?

A. That is exactly what I am saying, among other things.

Q. But it is a mutual capacitance with multi-touch as we can see from this video?

A. Yes, I agree with that.

Q. Let's finish it up, Ryan, please.

(Video playing.)

That's it. Thanks.

So just to follow up on one other

point, sir, before the break, let's bring up RDX-3.016. This is the e-mail. You have seen this e-mail before, haven't you, sir? This is an e-mail from the inventor, one of the inventors on the '607 patent, Mr. Strickon, to the Q79 brainstorming groups that included the other two inventors. You were here for that testimony?

A. I was. By the way, should this be on the confidential record? Sorry.

Q. That's probably the case. Let's take that down.

A. Sorry. I know it is not my job, but I noticed the C, so --

Q. Yes. I appreciate that. We will come back to that.

JUDGE ESSEX: We're going on the confidential record?

MR. DeFRANCO: I don't think it is worth the time, Your Honor. We will move on.

JUDGE ESSEX: All right. We're not going on the confidential record, gentlemen.

MR. DeFRANCO: We're going to skip it. Thanks.

BY MR. DeFRANCO:

Q. Now, let's go back to RDX-28.015. This is the figure and portion of the text from the Japanese patent application that we were talking about, sir. Do you recall that before the break?

A. I do.

Q. And you had --

A. This is part of the text, not all of it.

Q. Certainly. This is part of the text that relates to the figure, figure 9, that is shown there from the Rekimoto Japanese patent application; is that correct, sir?

A. It is part of it. Really the description associated with figure 9 runs all the way to paragraph 68.

Q. Well, feel free to refer to any other additional text, if you need to.

A. Thank you.

Q. This -- for the record, your question about the source of this, this is the version of the Japanese patent application that was included with the certified file history of the '607 patent. Are you with me?

A. I understand.

Q. There was in this case exactly as you said, there was a certified translation prepared of the individual prior art references. And if you prefer to refer to that, I can put that piece up or if this is acceptable, we can work off this slide. Either way is fine.

A. I can work off this slide, since I know the differences between the two.

Q. Okay. Now, when we talk about this Rekimoto patent application, you will see there that it refers to figure 9 as it schematically depicts the cross-sectional of a non-contact user input device 1 that is constituted so as to be united with a display device comprising an electroconductive polymer-based light emitting element, which is to say, an organic LED.

Do you see that, sir?

A. I do.

Q. And it goes on to say, "as shown in this figure, an electrode layer and a cathode electrode layer comprising an electroconductive polymer are stacked with an insulating layer comprising an organic material therebetween."

Do you see that, sir?

A. I do.

Q. And this particular text and the figure in this prior art reference is disclosing the layers of the drive and the sense lines in the prior art; is that correct, sir?

A. No, this is disclosing layers of an organic LED and it says you can modulate an AC signal on to the organic LED to measure capacitance.

In fact, the cathode is categorically not transparent, even today. Nobody knows how to make a transparent cathode for an OLED. If we did, it would be a huge deal. I have been working on OLEDs for more than a decade. There is categorically no transparent cathode layer for an OLED that exists today.

Q. At least this shows a separate layer configuration, wouldn't you say that much, sir?

A. Independent of transparency?

Q. Yes, independent of transparency?

A. Yes, I agree with that.

Q. Okay. Now, let's bring up RDX-016, please. Actually, let's first start with

question 121 and the answer, so we can get some reference, please, Ryan, in the Doctor's rebuttal witness statement.

Now, this simply shows, sir, that in your opinion the glass member limitations are those limitations that require the use of glass or plastic elements in the sensor structure; is that correct?

A. Yes.

Q. So if we go back down, Ryan, to RDX-28.016, this is the paragraph that talks about the layout of the electrodes in the SmartSkin reference and then also the use of transparent ITO to the conductive elements. Do you see that, sir?

A. The top version does say that other layouts are possible. The bottom version is from the future work, it is not -- it doesn't actually work in the system disclosed.

Q. Right. The system disclosed doesn't actually use ITO; is that correct?

A. It doesn't and, in fact, it couldn't.

Q. But it does disclose a possibility of using transparent ITO as electrodes in a mutual capacitance device, doesn't it, sir?

A. Actually, what it says is for future work, the work that should be done is to develop these. It doesn't say it will work. It doesn't say it can be done. It says this is the work that needs to be done. It is discussing future inventions that need to happen.

Q. It talks about at least for these individuals the possibility of their future work including substituting ITO as the conductive material.

A. It says that these are future directions that people could pursue and certainly that list of people would likely include the authors saying we may want to do this.

Q. Okay. And they actually say we may want to do this in the context of a flat panel display. Do you see that, sir?

A. By saying it can be mounted in front of a flat panel display?

Q. Yeah. It says because most of today's flat -- let me back up.

This is the -- I am in the bottom portion of the ITO section. Do you see that?

A. I do.

Q. It says, "this sensor can be mounted in front of a flat panel display or on a rear-projection screen." Do you see that, sir?

A. I see that.

Q. Okay. It says, "because most of today's flat panel displays rely on active-matrix and transparent electrodes, they can be integrated with SmartSkin electrodes."

Do you see that, sir?

A. I do.

Q. Okay. Now, let's go back to where we were a moment ago, the Rekimoto patent application. Let's bring up slide 28-017. And this slide, again, this has the version of the Rekimoto translation that is in the certified prosecution history. And if there is something else you would like to refer to in that, sir, please do so, of course.

Do you see paragraphs 24 and 25 there talk about stacking of an anode electrode layer and a cathode electrode layer?

A. Yes, and that's referring to the discussion of figure 9, which I have already told you is not transparent.

Q. Okay. But it goes on to say that the reason for doing this is combining the sensor with an LCD display. Do you see that, sir?

A. No. In fact, this is not with an LCD display. This is with an OLED. An OLED system is an emissive system that emits down through the glass so the background does not have to be transparent and is, in fact, not transparent. Because we don't know how to make an lower function material that is transparent. Nobody knows how to do it.

Q. But at least you will agree that these references do disclose ITO for use as a transparent material for use in a mutual capacitance device?

A. This reference? No, this has no discussion of ITO.

Q. So the SmartSkin article by the same authors of this patent application disclose the use of ITO; is that correct, sir?

A. The SmartSkin article by Rekimoto, who is one of the authors of the article, does say that as future work, it would be desirable -- or one direction for future work would be to develop a system using ITO. It doesn't say how

to do that. Nor does it actually work.

JUDGE ESSEX: Doctor, what do you mean it doesn't actually work? The Smartphones seem to work every day that I see them.

THE WITNESS: Yes, Your Honor.

JUDGE ESSEX: So it does actually work?

THE WITNESS: No, Your Honor. With respect to SmartSkin --

JUDGE ESSEX: What is the fact you are talking about it. You are dancing around it. Tell me what it is.

THE WITNESS: Certainly, Your Honor. If you look at SmartSkin, if we can have figure 2 of SmartSkin, I can point out what the issue is, Your Honor.

Thank you. Your Honor, if you look at figure 2 of SmartSkin, figure 2 of SmartSkin uses receivers that are voltage sensing systems. SmartSkin itself points out that the signal strength that it gets is extremely low.

That is an inherent characteristic of using voltage sensing, you are very sensitive to, among other things, the resistivity of the lines.

They use copper lines for a reason. They need the very high conductivity of these copper lines. If you go to ITO, which is 100 times less conductive than copper, this system won't function.

So in the accused products, it works because they are not -- I don't know if this should be on the confidential record -- it is a general statement, I am not going to refer to any art -- in the accused products and also for that matter in the '607 patent, it works, it is able to meet the requirements of the preamble, et cetera, and still implement transparency and the relevant claims because it doesn't use voltage sensing. A consequence of this sensing scheme is that it cannot implement a transparent system.

JUDGE ESSEX: What about voltage sensing?

THE WITNESS: I'm sorry, Your Honor?

JUDGE ESSEX: What does it substitute for voltage sensing?

THE WITNESS: So the version that is used in the '607 and as it turns out is also used in the accused products are systems that

count charge. They don't sense voltage. And that turns out to be critical.

JUDGE ESSEX: Was that known to people of ordinary skill in the art in 2002 or '3?

THE WITNESS: I have never seen anything -- I have not seen any art with respect to use of charge counting in a mutual capacitance system before the '607, Your Honor. So I think that '607 is the first one to show that.

JUDGE ESSEX: All right. Go ahead.

BY MR. DeFRANCO:

Q. We were looking at RDX-28.017. Do you recall that?

A. Yes.

Q. And you refer to the OLED, the organic LED. Do you see that?

A. Yes.

Q. It also refers to a liquid crystal display. Do you see that?

A. I do.

Q. It says "or." Either one or the other; is that right, sir?

A. Correct, but with respect to figure 9, it is OLED specific.

Q. But it does say it can also be used with a liquid crystal display; is that correct, sir?

A. Independent of figure 9, yes, the words liquid crystal display do appear in this section.

Q. Just one moment. Let's turn to, back to the '607 patent for just a moment, please. Let's take a look at figure 13.

Figure 13, sir, that is the inverted amplifier that deals with N length parasitic capacitance, negating the impact of parasitic capacitance; is that correct, sir.

A. In fact, figure 13 is the amplifier circuit that is used for overall sensing. One of the things it does do is figures out how to separate out the effect of parasitics. And the way it does that to get accurate sensing is by counting charge. Figure 13, this configuration is a circuit that counts charge.

Q. Would you say that's a fairly straightforward or simple circuit that's found generally in textbooks at the time, sir? Isn't that a fair characterization?

A. You mean that circuit on its own, did

it exist?

Q. Yes.

A. Yes.

Q. Okay. And wouldn't you also say, sir, that one of skill in the art at the time prior to the '607 patent, knew you could sense capacitive charge by using a circuit that could count charge. Isn't that fair, sir?

A. Prior to the '607, with respect to -- with respect to a touchscreen or with respect to just counting charge?

Q. Just generally, sir.

A. So it was known that you could count charge by using a surrogate such as this to count charge.

Q. And would you say as a followup that that would not be known by one skilled in the art that it could be used in a mutual capacitance system, is that what your testimony is?

A. It is my testimony that nobody, prior to the '607, no one figured out -- and there is certainly no evidence of it -- that anybody figured out that you could finally get to use ITO in these mutual capacitance systems that

implement multi-touch.

And the way to allow the use of ITO, the way to get to a system that could deal with these higher resistivity materials such as ITO is to count charge instead of measuring voltage.

Q. And for your opinions in this case, sir, did you take into account the testimony from at least one of the inventors that the SmartSkin disclosure was at least part of the inspiration for what ultimately came -- became their inventions as claimed in the '607 patent?

A. I did read the testimony. I believe you are referring to the Strickon testimony?

Q. Yes.

A. I read that.

Q. And you don't dispute that testimony, do you, sir?

A. The testimony is what it is. I have no basis beyond that.

Q. Okay. Did you discuss that with Mr. Strickon at all?

A. I have never spoken to Mr. Strickon.

Q. All right. Thank you for that. Let's turn to another reference, the other reference

we're going to cover today, which is the Perski reference.

You're aware that that's another reference that Motorola relies on in this case for its position that the asserted claims of the '607 patent are invalid. You're aware of that, sir?

A. I'm aware that it is being relied on by Motorola for that purpose.

Q. Let's turn to slide RDX-28.020. Actually, go back to 019, Ryan. Let's start with that briefly.

Just for the record, sir, you have spent a reasonable amount of time with these references. The filing date of the Perski patent itself, the '455 patent, is January 15th of 2004; is that correct, sir?

A. Yes.

Q. You are aware of that Perski provisional application, the filing date for that is early February of 2003, February 10th or so, sir; is that correct?

A. I'm sorry, where is the date?

Q. There is a couple of dates.

A. There is February 9th on the bottom of

that page.

Q. Yeah. At least on the front page of the document, it says February 9th, 2003. Do you see that, sir?

A. I do.

Q. Okay. And there is also a third reference in this group or family. It is the Morag '662, which we will talk a little bit about later, but you have reviewed that as well, haven't you?

A. Yes.

Q. Now, it is your testimony with respect to this Perski reference, your opinion is that it fails to disclose, enable, or render obvious the multi-touch limitations required by the asserted claims under either of the parties' proposed constructions. Is that correct, sir?

A. That's correct.

Q. So if we turn to the next slide, RDX-28.020, the limitations not disclosed, that's the fifth bullet point down if I'm counting that correctly, do you see that, it is multi-touch?

A. Yes, that's referring to the preamble limitations.

Q. So by way of comparison, you had a longer list as to what was not disclosed in the SmartSkin references, we're talking about one feature, multi-touch, that you believe is not disclosed in the Perski reference. Is that fair?

A. We are talking about the preamble based limitations related to multi-touch.

Q. Yes, sir.

A. Okay.

Q. Now, let's show briefly paragraph 74 in your rebuttal witness statement. Okay. So briefly this is where you characterize multi-touch in the two set of asserted claims here. For example, with respect to claims 1 to 7, you say that the detection of multiple touches or near touches that occur at the same time and at distinct locations where the production of distinct signals representative of the location as required by claim 1 and dependent claims 2 to 7. Do you see that, sir?

A. I do.

Q. And then with respect to claim 10, you have the characterization that's below that, the recognition of multiple touch events that

occur at different locations on the touch panel at the same time at distinct points across the touch panel.

Do you see that?

A. Yes.

Q. And you go on to provide a bit of additional information, sir; is that correct?

A. Yes.

Q. Okay. Now, in your opinion, Perski suffers from the same problems as the prior art to the '607; is that correct?

A. Some of them, yes.

Q. Okay. Some of them. And more specifically, in your view, Perski is directed to a single touch device; is that correct?

A. Yes, that's primarily true.

Q. You don't think -- in your opinion, it doesn't disclose multi-touch or the processing required for multi-touch; is that fair?

A. In my opinion, it does not disclose the multi-touch limitations as required therewith by the relevant claims of the '607 patent.

Q. Okay. Let's turn to the next slide. We're going to go through a bit in the

remaining time of some slides that show different portions of the disclosure of the Perski references. Okay? Are you with me?

A. I am.

Q. All right. Slide 021, do you see there that it is an excerpt from the Perski specification that says, "the goal of the finger detection algorithm in this method is to recognize all of the sensor matrix junctions that transfer signals due to external finger touch."

Do you see that, sir?

A. I do.

Q. "It should be noted that this algorithm is preferably able to detect more than one finger touch at the same time."

Do you see that, sir?

A. I do see that language.

Q. No dispute that it explicitly says that the algorithm is preferably able in Perski to detect more than one finger touch at the same time?

A. That language does exist in Perski.

Q. Okay. Let's go to the next slide, please, slide 22. A little bit more detail, a

little in the provisional application. I just want to be clear. We're going to be going back and forth between these related documents. In the interest of time, to do it more efficiently, I am going to take it a subject matter at a time, but this is from the Perski '808 provisional, the cover page that we looked at, it is Exhibit RX-303 on page 4.

Okay? You have seen this document before?

A. I have.

Q. Okay. Do you see, sir, that it says, "the goal of the finger detection algorithm in this method is to recognize all of the sensor matrix junctions that bypass signals due to external finger touch." Do you see that, sir?

A. I do.

Q. It goes on to say, "it should be noted that this algorithm is able to detect more than one finger touch at the same time."

That's the same discussion we saw in the other Perski document about being able to detect more than one touch, for example, two touches obviously; is that correct, sir?

A. That's what this particular language

says, this further language that specifically says it is too slow.

Q. Okay. Let's go on to slide 023. This is a figure that we have seen earlier in this hearing, sir. I am sure you recognize it out of Perski.

A. Yes, I do.

Q. And do you see that next to that is associated language that relates to the figure 2 that's depicted there? It says that right in the text. Do you see that, sir?

A. Yes.

Q. And do you see that it states that a two-dimensional sensor matrix 20 lies in a transparent layer over an electronic display device? Do you see that, sir?

A. Yes.

Q. And it says, "an electric signal 22 is applied to a first conductor line 24 in the two-dimensional sensor matrix."

Do you see that, sir?

A. I do.

Q. And this has -- this configuration in Perski, this has drive and sense lines, doesn't it, no doubt?

A. The second embodiment, the version we're talking about here?

Q. Yes, sir.

A. Yes, I agree with that.

Q. Okay, this particular embodiment shows the drive lines, number 22 with that arrow showing an alternating signal being applied. Do you see that?

A. Yes. An AC voltage is applied at 22.

Q. Right. And then the arrow that's exiting, that's the sense line at item 30. Is that correct, sir?

A. That is, that is the particular sense line associated with that node, produces a voltage, and then later on they actually disclose some voltage sensing circuitry for that.

Q. They do disclose voltage sensing circuitry for that, for those sense lines in Perski; is that right?

A. Well, they actually disclose a voltage sensing circuit for another embodiment. That's the only sensing circuit that they actually disclose, but with respect to this, they also say you are sensing the voltage signals coming

out.

Q. Okay, fair enough.

This particular portion goes on to read, "a finger 26 touches the sensor 20 at a certain position, increases the capacitance between the first conductor line 24 and the orthogonal conductor line 28 which happens to be at or closest to the touch position."

Do you see that, sir?

A. Yes.

Q. That's the same concept, mutual capacitance we have been over and over again, the finger touches, it impacts the capacitance, which is detected by the sensing circuit and then the rest of the operation is performed; is that fair, sir?

A. If you are asking me if this is conceptually mutual capacitance, I don't disagree with that.

Q. Now, if we turn over to RDX-24, this is some additional text that goes with that same figure, sir, okay? It says, "a number of procedures for detection are possible."

You have seen this before, haven't you?

A. Yes.

Q. It says, "the most simple and direct approach is to provide a signal to each one of the matrix lines in one of the matrix axes, one line at a time, and to read the signal in turn at each one of the matrix lines on the orthogonal axis." Do you see that?

A. I do.

Q. That is describing generally how the sense operation is implemented in this embodiment of Perski; is that correct?

A. Yes, and in this particular embodiment, it discusses scanning all the way across node by node.

Q. And this is a transparent configuration that's intended or can be displaced over a display device. Isn't that true?

A. It is transparent as described here. This section doesn't specifically talk about putting it over a display, but it certainly is transparent.

Q. You don't dispute that this Perski device is transparent, do you?

A. No, I do not.

Q. And in terms of these procedures, the specification goes on in Perski and it says this method enables the detection of multiple finger touches. Do you see that, sir?

A. I do and you will note it doesn't say at the same time there. And further in the next paragraph, it goes on to say this is too slow.

Q. Okay. But at least you agree with me in this particular paragraph, it does talk about a transparent device and it talks about how that is implemented in a particular configuration and goes on to say specifically that this method enables the detection of multiple finger touches. Is that correct?

A. It does, but not at the same time.

Q. Now, let's turn to slide RDX-026, skipping ahead a little bit, Ryan. Now, we're back again, sir, to the provisional application of Perski. And there is an excerpt at the top of the provisional application on page 4 along with figure 2 from the provisional application.

Do you see that there?

A. Yes, I do.

Q. Now, just briefly, you don't dispute

that figure 2 shows a matrix of transparent conductive lines and as we said before there are drive and sense lines shown there?

A. This is indeed a matrix. I believe there is description of the use of transparency. And there are indeed drive and sense lines.

Q. Okay. And if we -- and that's discussed in that portion of the Perski provisional disclosure. Do you see that in that paragraph?

A. That portion doesn't mention transparency, but I believe it is mentioned somewhere else.

Q. Okay.

A. But that is generally related to figure 2.

Q. Well, let's look at transparency with respect to figure 2. If we go to the next slide, slide 27, you will see the excerpt at the top, doesn't that disclose transparency? It says, "the present invention utilizes a patterned transparent conductive foil system, used for detecting the location of an electromagnetic stylus on top of a display

surface in order to enable multiple and simultaneous finger inputs directly on the display."

Do you see that, sir?

A. I do.

Q. So there it is saying for sure with that question, it is transparent, obviously, you don't disagree with that?

A. I don't.

Q. It also discloses that the purpose for that is to enable multiple and simultaneous finger inputs directly on display. Do you see that, sir?

A. It does say that. In fact, in the main body, it goes on to say it is too slow.

Q. Okay. Let's turn to slide 28. Again, a little bit more about this figure 2. It says, "the most simple and direct approach is to provide a signal to each of the matrix lines, in one of the matrix axes, one line at a time, and to read the signal at each one of the matrix lines on the orthogonal axis."

Do you see that, sir?

A. I do.

Q. Okay. It says, "it is possible to

sample a group of reception lines at the same time, and even to sample all reception lines simultaneously, thus reducing the number of lines to N." Do you see that, sir?

A. Thus reducing the number of steps to N?

Q. Yes, sir.

A. Yes, I see that.

Q. Now, I would like to turn for a moment to the Morag provisional, which is, I believe, incorporated by reference in the Perski '455 patent. Is that your understanding, sir?

A. I understand that's what's being claimed, yes.

Q. Okay. So if we go to the next slide, slide 29, please, Ryan, you have seen this figure 1 from the Morag provisional; is that right, sir?

A. I believe so. Let me just turn to it, please. Yes, I see it.

Q. And you have also looked at that text, and there is some highlighted text there in the middle. I won't read that, but you have seen that before, sir, haven't you?

A. Yes, I have.

Q. Now, if you look at that language in that paragraph, sir, wouldn't you say that generally discusses that there is reception from the sensing lines, there is filtering and amplification of the signal, there is sampling into a digital representation, and then sending that digital representation out to a DSP or digital signal processor; is that right, sir?

A. DSP is digital signal processor, but, I'm sorry, I am looking for the language.

Q. Okay.

A. So it does say it amplifies the signal. It says it filters out irrelevant frequencies. It says it samples it into a digital representation. And it says it forwards it for further digital processing.

Q. And would you agree that the digital representation is processed to determine the position of one or more objects and then that's sent to some other circuitry?

A. Well, that's not described here, but certainly if that were the desired operation, you would -- that would be something you would probably do in the digital domain.

Q. So where it states the digital unit 3

is responsible for running the digital processing algorithms, the outcome of the digital process is the position of one or more physical objects, typical stylus, which is forward to the host via interface 7."

Do you see that, sir?

A. It is typically but, yes, I see that language.

Q. And it is using the information that's received from the mutual capacitance grid to send the data to the digital processing algorithm so that it can detect the position of more than one physical device. Isn't that true, sir?

A. Yes, I agree with that.

Q. Okay. Now, let's take a look at -- at least in terms of that language you don't dispute Perski is talking about how to use an algorithm and associated circuitry to detect multiple touches in a transparent device?

A. You mean Perski by incorporating Morag?

Q. Yes, sir.

A. I understand. So with respect to the incorporation, in Morag, it certainly says what

you do with what comes out of the grid. And if I didn't answer your question fully --

Q. No, you did, thank you.

A. Okay.

Q. Just want to turn briefly to another version of the Perski figures on which we have added some items. It is RDX-28030. I know you have spent significant amount of time with this. Just for the record and make sure we're on the same page, this is figure 2 from the Perski with some colorization of the drive and sense lines. Do you see that, sir? Sense lines are in red. Drive lines are in blue, one each, in each of these two depictions?

A. I see that.

Q. And in the original Perski, what was the circle that's yellow on top, what did that reflect that was a circle in the drawing as it originally existed?

A. That is generally pointing to a particular node on the figure.

Q. And we have added a node. Do you see that, a node below each one of those?

A. I see that.

Q. The Perski references we have been

talking about, they disclose the ability to sense two different touches at two different locations on a mutual capacitance transparent device. Isn't that, sir?

A. Not at the same time. Yes, I agree. If you are talking about timing, yes, it does.

Q. So your opinion is that it can detect more than one, just not simultaneously?

A. So there is two possibilities. If it uses the technique disclosed, it is too slow to do it simultaneously. If it uses the so-called faster technique, it is not able to actually detect multiple touches accurately.

Q. Okay. And that is one of the bases on which you, in your opinion, distinguish the Perski references; is that correct?

A. That is something I have considered, yes.

Q. Now, do you remember that any specific disclosure in the '607 patent that teaches the detection of multiple fingers at the exact same time? In other words, is that explicitly discussed anywhere in the '607 patent?

A. If by exact same time, you mean at the same picosecond, no. In fact, that's not a

requirement. But what is a requirement is that it appears at the same time to the user. And that's my opinion with respect to claim construction.

Q. I don't want to quibble about times. In terms of what it says in the '607 specification, there is no discussion about how the invention gives the ability to detect two touches or multiple touches at the exact same time; is that correct?

A. And by exact, you mean not as perceived by the user but realtime?

Q. Yes, in realtime?

A. I agree with that.

Q. And there is some -- as you said, if there is fingers that are spread apart, not this configuration, if my fingers are spread apart on a device that's implemented using the '607 patented technology, there is going to be some time lag there as you were suggesting, isn't there, sir?

A. Not as perceived by the user, but in terms of picosecond differences, for example, yes, absolutely.

Q. Certainly, but that's because of the

way that the sense lines are scanned, right, from one side to the other, they are not scanned at exactly the same time. Isn't that correct, sir?

A. If you mean do you read all the nodes simultaneously to the exact fraction, no, you do not.

Q. And I don't remember, you haven't done any tests in this case as to whether a very short, precise touch by two fingers at exactly the same time could be detected by devices that implemented the '607 invention?

A. You mean have I taken a phone and tried that?

Q. Yes. Have you done any -- well, have you done any tests to see whether those two touches could be recognized at an instantaneous point in time?

A. As perceived by me, yes, they clearly are. Are you asking me, have I used some sort of ultra high speed camera to figure out if they are actually perceived within picoseconds of each other, no.

Q. You haven't done any tests in that regard, that's all I am asking?

A. In that regard, no.

Q. So then if we go back to this figure that we're looking at, RDX-28030, there is no discussion, if you look at -- consider those two yellow points or two points of touch in the Perski configuration, there is no discussion in Perski that if there were a single large touch, for an example, it could be recognized as two different touches, if we talk about that hypothetical.

A. I disagree. The Perski reference says I believe you detect node by node and each node corresponds to a touch. So if by large you are allowing it to overlap, that wouldn't necessarily follow.

Q. Let's take a look at column 14, lines 15 to 19 of the -- I think the easiest way to do this, Ryan, is to go back to slide RDX-021. Just where we were before, sir, at least there is a specific disclosure in Perski that the algorithm is able to detect more than one finger touch at the same time, do you see that, sir, that's the goal of the Perski reference?

A. That is what it says with regard to the goal in RX-708 at column 14, lines 15

through 19.

Q. I thought you had said in a portion of your rebuttal witness statement that a single large touch could cause an output signal to detect more than one conductor line and the Perski detection method would register this as two touches instead of one. Is that right, sir?

A. Perhaps you could point me to it, but that does sound like something I said.

Q. We can look at it, but you don't disagree with that?

A. I don't disagree with that.

Q. Okay. So going back to Perski again where we started, Perski never discusses that as being a problem; isn't that true, sir?

A. You mean does he say this is a shortcoming of his method?

Q. Yes.

A. With respect to that, no, I don't believe so. He didn't recognize it, but it is.

Q. You have taken a look at the witness statements of the fact witnesses in this case that relate to the '607 patent, specifically you have read Mr. Hotelling's witness

statement, haven't you, sir?

A. Yes, I have.

Q. Okay. And you actually considered that, I think you may have referenced that in some of your own testimony in the case, but be that as it may, you have read that testimony, haven't you?

A. His witness statement? Yes, I have.

Q. And in his witness statement, he identifies three classes of touch detection. Do you recall that, sir?

A. Not specifically, but I'm not -- I don't have it in front of me right now.

Q. Okay. Well, let's put up -- I don't know if you have this, Ryan, but the Hotelling witness statement, question and answer 21.

MR. FERGUSON: Excuse me, Your Honor, I think this is confidential.

JUDGE ESSEX: Well, I don't -- is this Apple confidential?

MR. FERGUSON: This would be Apple confidential.

JUDGE ESSEX: All right.

MR. DeFRANCO: Let me try to do it without putting that on the screen.

JUDGE ESSEX: All right. You are going to try to avoid going into confidential?

MR. DeFRANCO: I would like to.

JUDGE ESSEX: You want to stay on the public record?

MR. DeFRANCO: Yes, sir.

JUDGE ESSEX: All right. Go ahead.

BY MR. DeFRANCO:

Q. If we talk about a class of touch detections, a touch detection system that takes two touch points and averages them, which I believe is shown as a problem with the prior art in figure 1A. Do you recall that, where there is a little plus sign between the two?

A. By figure 1A, you are referring to figure 1A of the '607 patent?

Q. Yes.

A. Yes.

Q. Perski is not one -- doesn't suffer from that problem, does it, the ability to not have to average two touch points, right? Clearly Perski could separate, was an advance over that class of touch devices, wasn't it, sir?

A. You are asking me with reference to

the node by node scanning method?

Q. Yes.

A. In the node by node scanning method, Perski does not talk about averaging, so he doesn't suffer from that problem.

Q. And you didn't see anything in there that said that Perski needed to average two touches as the prior art did because of limitations in terms of the configuration of the electrodes and processing technology, that sort of thing, correct?

A. I don't believe I saw any discussion of averaging with respect to being a problem in that regard.

Q. Okay. And if we talk about a second category or class of detection devices, those that suffer from shadowing, you would agree, wouldn't you, that Perski doesn't suffer from the shadowing problem of that second category or class of touchscreen devices, does it?

A. You are talking about the scanning, the node by node scanning version, not the version that actually groups nodes?

Q. Yes, right.

A. Because the grouping one does suffer

from it. But the node-by-node scanning one would not suffer from the shadowing behavior.

MR. DeFRANCO: One moment, Your Honor. I am trying to avoid the confidential record.

JUDGE ESSEX: I understand.

MR. DeFRANCO: Your Honor, with that, I am going to finish with the cross-examination -- conclude cross-examination.

JUDGE ESSEX: All right.

MS. KATTAN: I have no questions, Your Honor.

MR. FERGUSON: Your Honor, it might make sense if we take our lunch break now. I think that would speed up the redirect. And that would also then allow the recross to occur right after my redirect and we can take it all in one shot. Get it done quicker.

JUDGE ESSEX: All right. That makes some sense.

Doctor, we're going to go to recess. Again, let me remind you to discuss anything you want, other than your testimony and the matters contained in your report.

All right. We're in recess. We will

be back in an hour, about ten until 1:00.

(Whereupon, at 11:49 a.m., a lunch recess was taken.)

AFTERNOON SESSION

(12:50 p.m.)

JUDGE ESSEX: All right. Are we ready?

MR. FERGUSON: We are, Your Honor.

JUDGE ESSEX: All right. Back on the record. Go ahead.

REDIRECT EXAMINATION

BY MR. FERGUSON:

Q. Good afternoon, Dr. Subramanian.

A. Good afternoon.

Q. I would like to start with claim 1 of the '607 patent, JX-2. And you touched on the preamble of claim 1 several times during your cross-examination. Do you remember that?

A. Yes, I do.

Q. I would like to start by breaking down some of the elements in the preamble, so, Chris, could we start with a transparent capacitive sensing medium. Great.

First of all, can you just briefly explain what your opinion is with respect to what that means?

A. Certainly. With respect to this portion of the preamble, the words transparent

capacitive sensing medium indicate that the touch panel that we're talking about will comprise something that is transparent and it is going to use capacitive sensing.

So those are two requirements of a system that would implement claim 1.

Q. Okay. And now, Chris, let's go and highlight in a different color "detect multiple touches or near touches that occur at a same time and at distinct locations in a plane of the touch panel."

And, again, can you explain your opinion with respect to what that claim language means?

A. Certainly. This claim language says, firstly, that we have to be able to detect multiple, which means more than one touches or near touches. And those touches would occur at the same time and be in distinct locations on the plane of the touch panel.

Now, what does that mean by distinct locations in a plane of the touch panel? That means we are able to detect when the touches are made in different locations on the plane of the touch panel.

We actually get some guidance on what that means from the specification itself and, further, we get guidance from later portions of the preamble of claim 1.

Q. And let's go to that. Let's use one more color and highlight "to produce distinct signals representative of a location of the touches on the plane of the touch panel for each of the multiple touches."

And, again, can you tell us what your opinion is with respect to what that language means?

A. Certainly. This language requires that the touch panel of claim 1 must be able to produce signals representative of the location of the touches, so it has to produce a signal for the touch, the multiple touches that we have discussed above, that are on the plane of the touch panel, and those signals must be distinct for each of the multiple touches.

We get further guidance on what distinct means with respect to the multiple touches by looking at the specification. In particular, if we look at a section that actually I discussed earlier in the

cross-examination portion where we were looking at the section describing the prior art, there was criticisms of the state of the technology at the time, specifically identifying issues associated with averaging and shadowing.

And the general problems they have in being able to accurately distinguish multiple touches. So based on the clear teaching away from the problems of the prior art and the need to solve those problems, put together, the preamble requires, first, that the system be transparent; second, that it be capacitive in terms of the sensing it uses; and, third, that it be able to accurately detect multiple touches.

And that specifically means it needs to not suffer from the shadowing, averaging, et cetera, style problems. And it needs to be able to do them in such a way that it can produce distinct signals representative of the locations and it must be able to do that at a same time.

The specification teaches us that at a same time means at the same time as perceived by the user.

Q. Okay. Now, with that claim language informing your opinions with respect to the prior art, let's take a look at the SmartSkin reference that you were questioned about during the cross-examination. This is JX-367. Of course you remember being asked questions about this, right?

A. Yes, I do.

Q. And you have expressed an opinion that the SmartSkin reference does not anticipate the asserted claims of the '607 patent. Is that right?

A. Yes, I have expressed that opinion.

Q. Okay. Let's start with looking at figure 2 of the SmartSkin reference. And this was used during your cross-examination?

A. Yes, it was.

Q. And I want to just set a little bit of groundwork here. Figure 2 shows the touch panel as used in SmartSkin. Is that right?

A. That's correct. This is, in fact, the schematic representation of the SmartSkin touch panel and, in fact, it describes both of the embodiments in terms of how it is set up, both the table embodiment and the tablet embodiment

use this.

Q. They both -- both embodiments that are disclosed use this representation which is figure 2?

A. That's correct.

Q. And what material in these embodiments is used for the drive and sense lines that are shown at the top of the figure?

A. The drive and sense lines for both embodiments based on figure 2 are copper.

Q. Is copper transparent?

A. No, copper is not transparent. In the thicknesses that are used here, it is entirely opaque.

Q. Now, you were shown the SmartSkin video during your cross-examination. Do you remember that?

A. I do.

Q. What material, to your knowledge, was used for the drive lines and sense lines in that video?

A. I believe the video I was shown was for the tablet version, and that version uses copper for the drive and sense lines.

Q. All right. And you were asked a

number of questions about the conclusion section of the SmartSkin reference, JX-367, that referred to the future work that might be able to be done with respect to indium tin oxide. Do you remember those questions?

A. I recall the discussion of the future work on indium tin oxide.

Q. Okay. Can indium tin oxide be substituted for the copper lines that are shown in figure 2 of the SmartSkin reference in a manner that would be simple to implement?

A. No, as I have already said during my cross-examination, you could not take the system of figure 2 and replace the copper with indium tin oxide. Doing so would result in a non-working system. It is not a drop-in replacement. The circuits of figure 2 would not work with an ITO mesh.

Q. Let's talk a little bit about the disclosures of the use of indium tin oxide in the '607 patent versus the disclosure, such that it is, in the SmartSkin reference.

So, Chris, can we go back to the patent, please, the '607 patent, JX-2. And can we put up in the patent column 14, starting at

line -- starting at line 44 all the way through column 15, ending at line 23. Chris, column 14, line 44, please. I think that's different than what you have up there. Okay, great.

And then through column 15, line 23.

Can you fix the column 15 a little bit? There we go. Thank you.

Here is the disclosure. You were asked a few questions about this in your cross-examination, although not all this material was on the screen. First of all, let's focus on the disclosure at column 14, line 44, that paragraph, where it discusses the lines that are used in the '607 patent.

And I wanted to focus in on the section that discloses the size of the lines. Now, can you tell us by looking at that whether the '607 patent provides any guidance to the reader with respect to the thickness and width of the lines that should be used?

A. Yes, it does. Specific examples are provided at, for example, starting at line 54, it talks about the pitch of the sensing and driving lines of being about five millimeters, and talks about line widths as well on the

order of 1.05 and 2.10 millimeters, so it does provide some examples of the kinds of numbers that could be used.

Q. And then in the next paragraph column 14, around line 60, is there a discussion with respect to some of the issues that result when one uses ITO in a touchscreen sensor?

A. Yes, it does. Specifically it does point out the issues related to transparency and resistivity and talks about how those are typically resolved.

Q. And then you were asked some questions, I think, by His Honor with respect to column 15, the paragraph that begins around line 8 regarding the dead areas and the need to have a uniform optical retarder. Is that right?

A. That's right.

Q. Again, can you just quickly cover that one more time.

A. Certainly. With respect to the discussion of dealing with the dead areas between the ITO, the issue is that ITO has a different refractive index than typical polymer materials such as a glue or a plastic.

And also different refractive index, for example, than many glasses. And so if you have a layer that has multiple ITO lines and spaces in between that are either air or filled with a glue or filled with a polymer of some sort, you have a difference in the refractive index in the stripes versus in what are called the dead regions, the spaces between the stripes.

The problem with that is then if you have a user looking at the display, he perceives a layering, which depending on how far you are from the display, either shows itself as little bands or even as a shimmer of the display.

Q. Okay.

A. So that's a problem because it results in a poor perception of the quality of the transparency, and the patent describes that and discusses potential ways of dealing with that.

Q. So now, Chris, let's go back to JX-367, the SmartSkin reference, and let's go to page 7. And can we blow up the paragraph on the right that says use of transparent electrodes.

Can you read for us the first sentence in this section.

A. Certainly. The section says, "a transparent SmartSkin sensor can be obtained by using indium tin oxide (ITO) or a conductive polymer."

Q. Is there any other disclosure in the SmartSkin reference about how ITO could be used in a SmartSkin sensor?

A. No, there isn't. This is suggested as future work and that's why it is not significant discussion. This is just to say this could be an idea someone could work on, but we don't -- it hasn't been done and it is not disclosed how to do it.

Q. So between the '607 patent disclosure and the SmartSkin reference with respect to a teaching of how to use ITO on a touchscreen device, which one provides more guidance to the person of skill in the art?

A. Well, even with respect to the ITO itself, there is clearly substantially more guidance within the '607 patent.

Q. Let's go back to figure 2 of SmartSkin again. You can take off the '607 disclosure.

Let's blow that back up.

Now, Dr. Subramanian, you said on cross-examination that ITO will not work with figure 2. Do you recall that?

A. I do.

Q. I would like you to provide an overview right now of why you have that belief.

A. Certainly. As I pointed out in response to His Honor's question, the receivers used in figure 2 -- and these are the only receivers disclosed within the SmartSkin reference, or for that matter in the SmartSkin patent application as well, are voltage amplifiers. What they do is they are used to determine the voltage on the rows.

So, in other words, when the wave signal of figure 2 is applied to what we're calling the drive lines, capacitive coupling results in voltage being present at the end of the sense lines that feed to the receiver.

The circuitry of figure 2 is used to measure that voltage. And we know that because we see these amplifiers shown here and those which are shown as triangles, and that's the classic representation of an amplifier.

Q. Okay.

A. And they are called as such. They are called amps.

Q. Now, let's juxtapose that with what's disclosed in the '607 patent. Chris, can you keep this side-by-side. Let's go to the '607 patent and shows figures 12 and 13.

Again, at a high level, can you tell us what is disclosed in figures 12 and 13 of the '607 patent?

A. Certainly. Figures 12 and 13 show conceptually how the sensing is actually done. In particular, what you notice in figure 12, we see a schematic representation of what happens in this mutual capacitance system.

The drive signal is shown as 228, and it is applied to the left of this capacitor. That's the two parallel lines. And you notice it has an arrow going through it.

That arrow indicates that it is a variable capacitor. And let me explain what that means.

This capacitance over here represents the capacitance between the drive line and the sense line. And that capacitance changes

depending on whether there is a finger nearby or not.

So that's what the arrow means. The arrow indicates that the value can change.

So there is a drive line signal applied on 222. And it is coupled to the sense line to 224. And then ultimately feeds to the circuit, 230.

230 is the sensing circuit. And the described sensing circuit of figure 13 would conceptually fit in there and that is, in fact, called out specifically as being a circuit that is going to count charge.

So the circuit -- the system described with respect to this mutual capacitance system of the '607 patent is a system that counts charge and uses that to make a determination as to the presence or absence of a finger.

Now, that's important because you see that it is using a different metric for doing this determination. Instead of using voltage, which is what's used in SmartSkin, it uses charge.

Q. Now, can you explain why that is significant when you are using ITO as the

material for the row and sense lines?

A. Certainly. At a high level, the advantage of using charge over using voltage is you become significantly less sensitive to the resistance of the lines. Voltage is extremely sensitive to the resistance of the lines. If you count charge, it is not.

I can explain that further. I could draw it and make it clear.

MR. FERGUSON: Your Honor, with your permission, would we be able to have Dr. Subramanian use the boards here to sketch out his analysis with respect to the use of the counting charge versus voltage?

JUDGE ESSEX: Yes. I am just wondering how we're going to mic him up.

MR. FERGUSON: I actually have a wireless mic right here, Your Honor.

JUDGE ESSEX: Then proceed.

MR. DeFRANCO: Your Honor, just to state an objection, Your Honor. If he could just point out where this is in his witness statements, please.

JUDGE ESSEX: Well, I'm going to allow it because I asked the question and we have

raised the difference between voltage and charge. And the difference between the SmartSkin and the others. So I think it was covered.

I don't exactly do cross-examination, but it has become a fair point in our record so I am going to allow it.

THE WITNESS: Thank you, Your Honor. So, Your Honor, I will, on these easels, I will first --

JUDGE ESSEX: One other thing. If you want to come out so you can actually see what he is doing, any of the attorneys, if your view is impeded, please feel free to leave your seat and find a place where you can watch.

MS. KATTAN: Thank you, Your Honor.

BY MR. FERGUSON:

Q. Now, let's just set the stage for the question. Can you explain for us what the difference is with respect to using a voltage sensor as in SmartSkin versus using a charge counter in the '607 patent and, in particular, why that's important when you are using ITO as the drive and sense line material.

A. Certainly. To start, it is best if I

first explain how at a conceptual level a mutual capacitance system works. So, Your Honor, I will start by that.

In a mutual capacitance system, as everybody has agreed, to my knowledge, in this case, we have rows and we have columns. And they are, in the cases we're looking at, are in different layers.

Now, it turns out when you have two conductors in different layers, there is a capacitance that exists between them. So I'm going to draw that like this (indicating).

These parallel lines are the standard schematic used globally to indicate a capacitance. In a mutual capacitance system, we have a drive line where we apply a signal. Typically it is an alternating current. Some sort of current that is time variant. And I will explain why we do that in a minute.

And then on the sense line we have some sort of sensing circuit. And I am just going to call it S for now. If Your Honor would like, I can draw a little higher up.

JUDGE ESSEX: No, that's fine.

THE WITNESS: Now the basic concept

then at the highest level for this mutual capacitance system is that if we apply a time variant signal here, we want to be able to detect something here (indicating).

By the way, the reason we use time variant signals is capacitors will actually allow electrons to flow, if the electrons are time variant. In other words, if the signal that is applied is varying with time, the capacitor actually allows some current to flow.

So this is the conceptual level at which a mutual capacitance system works. So to explain the difference, the next step then would be for me to work through each of those individually.

BY MR. FERGUSON:

Q. Can we do that? Why don't you explain, with respect to figure 2 of SmartSkin and then figures 12 and 13 of the '607 patent, the differences.

A. Certainly. So I will start then with figure 2 of SmartSkin to explain how it works. I will leave this up for a second, Your Honor, and I am going to draw over here and then I will flip that up, because I will have

everything I need.

Just so that we can see what's going on with respect to this intersection point, I am not going to actually draw the intersection point. Instead, just to make the diagram a little easier to see visually, I am going to draw it like this (indicating). But, in fact -- and I am going to show the capacitor here (indicating).

But, in fact, that represents an intersection point. They are just on different layers. Okay.

So let's then -- that's the conceptual idea we have over here. In SmartSkin, a voltage is applied on the drive line and that is called wave signal in SmartSkin. And this is what happens when the voltage is applied.

There are losses within this system. There are -- there is a copper line over here (indicating). It has some capacitances to the external world. There is always some parasitic losses in the system. And there is parasitic losses from the sense line as well.

And there is a voltage detecting circuit placed on the other end. Now, how does

the system work?

I'm applying a time variant signal to the drive line. That results in a propagation of electrons through the drive line. Some fraction of those electrons make it to the sense line. Not all of them, but some are lost through the parasitic elements.

And that net result is a potential is set on the sense line, which is measured by the amplifier in the bottom of the voltage amplifier. So this is an important point. Conceptually, in fact, fundamentally at a physical level, what a voltage amplifier does is it measures the energy of electrons.

It is not counting how many electrons are there. It is measuring the energy of electrons. That's what voltage is. Voltage is a measure of potential energy.

So we have electrons over here and this voltage amplifier is determining their energy. Now, why is that important?

This (indicating) is a conductor of some sort, but it is not a perfect conductor. It doesn't have zero resistance. It has some resistance associated with it.

And as I will show you in a minute, that has a tremendous impact on how the system actually works. But before I do that, I should switch over then to the '607 patent.

Q. Why don't we write -- let's mark the one on the right CDX-30, please, so we can refer to them.

A. All right.

(Complainant Exhibit Number CDX-30 was marked for identification.)

BY MR. FERGUSON:

Q. So this is -- and why don't we write SmartSkin on the top.

A. (The witness complied.)

Q. Okay. And let's start with '607 over here (indicating). Great. And can you explain how it works in the '607 patent?

A. Certainly. Again, we have the same general mutual capacitance setup. So we have a drive line, we have a sense line. There is a capacitance between them. There are losses in the system. And there is an applied voltage here.

But in the '607 patent, what we have is we have a charge counting circuit. Now, why

is this important? This system has the same situation with respect to a voltage being applied, electrons getting through but we are actually looking at something different.

Instead of looking at the energy of electrons as we do in CDX-30, here we look at the number of electrons. We don't care about their energies. We're just counting their numbers.

Now, why is that important? And why does it relate to what you end up using for the material? That's the important question.

Q. So let's write CDX-31 there so we know, we have the two demonstratives as it relates to SmartSkin and the '607. Let's go back to SmartSkin.

And can you discuss the material that is used for the drive and sense lines and how that relates to the use of the voltage sensor?

A. Certainly. If we look at the SmartSkin system, there is a conductor shown here (indicating) for the row and for the column, for the drive line and for the sense line.

The conductor that's used in SmartSkin

is copper. Copper has a very high conductivity. Its conductivity is on the order of 10 to the 4th siemens per centimeter, so it is very, very conductive, that's 10,000 siemens per centimeter. It is a very conductive material. It is actually one of the most conductive materials we have available to us.

Q. Can you write copper right across the top?

A. Certainly, copper. And this is also copper (indicating). Now, why is that important? It turns out that the voltage that is present here (indicating) depends on the resistance of the conductor.

Conceptually here is the reason. Electrons don't flow through this like being on a freeway. In fact, they are bouncing around constantly.

JUDGE ESSEX: It is like a freeway in Washington.

THE WITNESS: Maybe like a freeway in Washington, Your Honor. So they are bouncing around constantly.

The more bouncing -- that is called scattering. The more scattering they do, the

more energy they lose. So what that means is if I have a very good conductor, I don't lose too much energy in here, and the strength of the signal I am trying to measure over here is moderate. And, in fact, SmartSkin calls this out. SmartSkin actually says the signal is weak, so it is already saying it is weak with copper.

Now, if I were to replace this with a material that had higher resistance, so lower conductivity, there is much more bouncing and the energy of the electrons that come out gets even lower.

And so it is not possible to detect. And this is the reason that you wouldn't want to use -- in fact, you couldn't use ITO in these systems, because ITO is 100 times -- in its best case, is 100 times lower conductivity than copper.

JUDGE ESSEX: Let me ask you this. Charge counter, that's been known to the science before the '607 patent?

THE WITNESS: Yes, Your Honor, but not in --

JUDGE ESSEX: And it is not claimed

anywhere in the '607 patent as inventing that.

THE WITNESS: That's correct, Your Honor. And I don't think the point of the claims -- and my point here is not to say that you need to have a charge counter. My point is to meet the requirements of the preamble, namely, being able to detect multiple touches at the same time in a transparent system, the way you can get there in the '607 is with the charge counter. You couldn't do that with SmartSkin.

So let's contrast, then, if Your Honor is ready, I can move on to contrast to the '607.

JUDGE ESSEX: All right.

BY MR. FERGUSON:

Q. This is CDX-31?

A. This is CDX-31.

Q. Why don't you write ITO, so we know.

A. So in CDX-31, we have ITO. That is a lower conductivity material. 100 times lower than copper but remember in the charge counter we're not checking energy. We're not checking the energy of electrons. We are counting the number of electrons.

So even if these electrons are bouncing around a lot and they lose a lot of their energy, we're still able to count them. They may be low energy when they get here, but we are able to count them.

So the key result out of this is not the fact that I am using a charge counter versus a voltage counter. It is the charge counter allows me to have a system that uses ITO and still allows me to meet the requirements of the claim.

Q. Okay.

JUDGE ESSEX: All right.

THE WITNESS: Thank you, Your Honor.

JUDGE ESSEX: Thank you.

MR. FERGUSON: Your Honor, we will have pictures of these made for submission as demonstrative exhibits.

JUDGE ESSEX: All right.

BY MR. FERGUSON:

Q. Okay, you have hinted at, in response to His Honor's question, how does this impact your opinions about whether the SmartSkin reference anticipates the claims of the '607 patent and, Chris, let's put up claim 1 to use

as an example.

A. All the claims of the '607 patent require the use of these transparent layers. There are no transparent layers, and there certainly were none at that time, that had conductivity such that you could make use of a voltage-based sensing scheme.

Let's step back and let's look at SmartSkin. SmartSkin discloses a system that uses copper. That is the system in the videos. That is the system in figure 2. That is the two embodiments that they actually discuss within the SmartSkin reference.

Those are all opaque. They all use copper. In future work, SmartSkin says one of the directions that would be worth looking into is the use of transparent electrodes. There is no disclosure of how that would actually happen. There is insufficient disclosure and, in fact, for the very reasons I have mentioned, it would not work.

Q. So as I understand it, SmartSkin discloses an enabling embodiment of a multiple touch sensor, but it is copper; is that right?

A. It is copper and it is not

transparent.

Q. So it is not transparent. So it won't meet that portion of the preamble?

A. It won't meet that portion of the preamble and, in fact, in general, for all the limitations requiring transparency, it does not deliver those.

Q. And with respect to an embodiment in SmartSkin that uses ITO, what is your opinion?

A. Well, my opinion is there is no embodiment that uses ITO. There is a description of it as potential future work. There is no disclosure of a transparent capacitive sensing medium and all the other requirements related to transparency associated with any of the claims of the '607 patent.

Q. Could a person of ordinary skill in the art have built an ITO-based charge -- an ITO-based sensing system using the disclosure in SmartSkin?

A. No, they couldn't, for the very reasons I have indicated related to the strength of the signal and the problems with voltage sensing.

Q. You were also asked some questions

about the disclosure of SmartSkin to the Patent Office and I would want to just touch on that briefly. Chris, can we go up to JX-005.077. This is the file history.

And you recall that this was the information disclosure statement that was first submitted by the inventors to the Patent Office?

A. Yes, I believe so.

Q. Let's go to page 79 and 80. Now, this information disclosure statement, you can check this, but there are 40 references that the inventors disclosed to the Patent Office in the first IDS. Does that comport with your understanding?

A. Yes, I believe so. And we can see that because the last number is A40 on the list.

Q. And SmartSkin, the prior art reference that Motorola is relying upon here, JX-367, that is listed here as A26. Is that true?

A. That is the 26th on the list, A26.

Q. Let's jump up to JX-1099 through 110. I know you are not an expert in patent law, but you have looked at file histories in the past,

have you not?

A. I have.

Q. At the bottom of this page, this is the examiner's name. Do you agree with that?

A. Yes, it says his name is Kimnhung Nguyen.

Q. What does it say with respect to the date considered?

A. The date was listed as May 11th, 2008.

Q. If we go back to 1100 here, let's pull up the top. Is there any question that the Patent Office considered the SmartSkin reference in allowing the claims?

A. There is no question the examiner clearly did. We see the indication of a KN, which would be the initials of Kim Nguyen, the examiner right next to the A26 Rekimoto SmartSkin reference.

Q. Okay. All right.

You were also asked some questions about the Perski '455 patent. Do you recall that?

A. I do.

Q. Just for reference, Chris, let's pull up RX-708. Is this the Perski '455 patent that

you offered opinions on?

A. Yes, I believe so.

Q. What does Perski '455 disclose with respect to how it senses touches?

A. The Perski '455 system discloses the use of two methods, two broad methods of determining the location of touches. The first method involves scanning node by node across each intersection point, and it specifically says that is slow.

And it goes on to --

Q. I'm sorry. Go ahead.

A. And it goes on to disclose a faster version.

Q. Let's look at those individually. Let's go to column 14, lines 20 through 43 of Perski, RX-708.

Now, what is disclosed here with respect to the number of procedures for detection that are used in Perski?

A. This is related to the node by node detection method. If you have a mesh that has N rows and M columns, for example -- actually, I said that wrong, we have N columns and M rows, for example, you would end up having at

least N times M individual querying procedures.

Q. And let me stop you and ask you to read that into the record at line 31 of column 14 of Perski.

A. Certainly. The statement in Perski that calls out the problem with this technique is specifically at line, starting at line 31 where it says, "The disadvantage of such a direct detection method is that it requires an order of N times M steps, where N stands for the number of vertical lines and M stands for the number of horizontal lines. In fact, because it is typically necessary to repeat the procedure for the second axis, so the number of steps is more typically 2 times N times M steps."

Q. How does that relate if at all to whether this embodiment of Perski can meet the multi-touch limitation in the preamble of claim 1 of the '607 patent?

A. In my cross-examination, it was pointed -- I was actually pointed to the sentence immediately after which said that this method enables the detection of multiple finger touches. However, because of the slowness of

the method, it does not enable it at the same time.

Q. And then you said there was a second embodiment disclosed in Perski?

A. There is a second embodiment related to a faster method disclosed after this method.

Q. And let's go -- let's stay in column 14 and go to lines 44 through 56. And this says at the top of line 44, column 14 of Perski, RX-708, "a faster approach is to apply the signal to a group of conductors on one axis."

Can you describe what is disclosed with respect to this faster approach?

A. Certainly. With regard to this faster approach, the idea within this section of Perski is that you can group sets of conductors and use those as a group in the scanning methodology.

However, this particular method has a problem that is called out specifically and, in fact, it turns out it is the same problem of the prior art in the '607 references and I quote, reading from line 52, "however, this method may lead to ambiguity on those rare

occasions when multiple touches occur simultaneously at specific combinations of locations, and the larger the groups, the greater is the scope for ambiguity."

So this shows that in this system, if you use the faster method, you are not able to get multi-touch. It does propose a third version that is worth talking about as well.

Q. Okay. Why don't we just move down and talk a little bit about the optimal approach that is disclosed beginning at line 57 of column 14 of Perski. And what does it disclose there?

A. So this is the three sentences or the three lines, the one sentence that appears as the optimal approach is to combine the above methods, starting with the faster method and switching to the direct approach upon detection of a possible ambiguity.

What does this mean? In this case, that means that if the system detects an ambiguity, and it is not clear how it actually does that, there is no explanation on how you would detect an ambiguity using the faster method. If the faster method results in an

ambiguity, then, it says, switch to the direct approach and do that, which means overall in the case where you have the ambiguity, you end up spending even more time.

This is an important point. Perski is really targeted at a single touch system that can deal with both stylus-based detection and finger-based detection. It doesn't intend to deal with multiple touches except on rare occasions.

So in all three cases, if you have multiple touches, either you are not able to resolve them, that's the fast method, or it is too slow, that's the slow method, or in the optimal case, you are fast if you have a single touch but the moment you have multiple touches, you become slow.

Q. Okay. What type of sensing circuitry is disclosed in Perski '455?

A. Perski '455, as I discussed in cross-examination, also uses voltage sensing. The only -- the discussion in relation to this embodiment only talks about the signals in terms of the drive and sense signals and it uses the same language to describe them, which

would mean their voltage signals, and the only description of specific circuits is in relation to another embodiment, and that is unequivocally voltage sensing circuitry.

Q. Let's just put up figure 5 of Perski '455, RX-708. What is shown in figure 5 of the Perski '455 reference?

A. The figure 5 of Perski '455 is the sensing circuitry for another embodiment. This is not the mutual capacitance embodiment involving rows and columns. This is a different embodiment. And I believe this is not what Dr. Wolfe has been referring to.

But this is the shown sensing circuit for that embodiment and it is very clearly a voltage sensing circuit.

Q. Is it like the sensing circuit that we have in CDX-31, the '607, or CDX-30, like the SmartSkin one?

A. It is not like the sensing circuit of CDX-31, the '607 patent. You will notice there is no capacitor connected across, which is the key to implementing it as a charge counting circuit.

Rather, it is a straight voltage

amplifier, similar to that of CDX-30, SmartSkin.

Q. So to summarize, what limitations in claim 1 of the '607 patent do you believe are missing from the Perski reference, '455?

A. The Perski reference misses the multi-touch limitations associated with the preamble of the '607 patent. It is either unable to detect multiple touches in the fast version or it is unable to do them at the same time in the slow version.

Q. You were asked some questions about the Perski provisional '808 application. That's RX-303. Chris, can we put that up?

Do you recall this on your cross-examination?

A. Yes, I do.

Q. We can do this quickly. What type of sensing circuitry does the Perski '808 provisional application disclose?

A. The description is similar to that of the main Perski. There is, in fact, less language provided than in the main Perski, but there is no additional disclosure.

Q. Is there any disclosure in the Perski

'808 provisional application of any type of sensing circuitry that's different from the voltage sensing circuitry in the Perski '455?

A. No, there isn't. In fact, there is even less.

Q. And you were also asked some questions about the Morag provisional application, the '662 application. That's RX-703. Let's put that up.

Do you recall being asked questions about this reference?

A. I do.

Q. Same question. What type of sensing circuitry does the Morag '662 provisional application disclose?

A. The Morag '662 provisional application, within it and its figures and in the text also only uses the same voltage sensing techniques. There is no additional disclosure.

Q. That's the voltage sensor similar to the one in SmartSkin?

A. Yes, it is.

Q. Okay. Is there any disclosure in the Morag provisional '662 application of any other

type of sensing circuitry, besides the voltage sensor?

A. No, there isn't.

MR. FERGUSON: Thank you, Your Honor. I have nothing further.

JUDGE ESSEX: All right.

RECROSS-EXAMINATION

BY MR. DeFRANCO:

Q. Good afternoon, Doctor.

A. Good afternoon.

Q. Just to start, you were asked about the IDS in the '607 patent prosecution history, you were asked to point out the SmartSkin reference. You were shown the initial IDS where it wasn't checked off, the references weren't checked off and a later IDS where it had been checked off. You quickly went and said those are the examiner's initials. Do you recall that?

A. I recall that set of questions.

Q. I believe we covered that exact subject matter on direct examination. I didn't see anything on -- I'm sorry, on cross-examination. I didn't see you add any information to that on redirect examination

compared to what we talked about on cross-examination. Did I miss something there, sir?

A. Well, there was one thing. It pointed out that there is only 40 references in that initial one.

Q. I actually thought we went over that, but that was the point you wanted to bring out?

A. Actually, I didn't ask the questions, so I don't really know what the point was. I just answered the question.

Q. Okay. You spent some time, and I want to turn to this in a moment, drawing the distinction between two different measuring techniques, I think you put it in general terms, the voltage and a charge technique, right?

A. Correct.

Q. Now, looking back at your expert reports and your expert witness statement in this case, your testimony you presented before you came here to testify, I didn't see any detail on the distinction between these two methods.

Do you recall any, sir?

A. You mean discussing the specifics of it?

Q. Yes.

A. No, I don't believe so. I pointed out in my deposition specifically and in my expert reports why ITO was not a drop-in replacement. It was related to this.

Q. Right. But there was no discussion of the difference between these two techniques and the detail about how they work and how in that -- in your view or opinion, that impacts the relevance of the prior art that we talked about this morning?

A. If you are asking me, did I do a detailed circuit schematic like this, no, I didn't.

Q. You didn't discuss these, I don't recall you discussing these topics at all, did you, sir, in your direct witness statement?

A. No, that's not true. I did not specifically talk about the schematics, but I made clear that the big problem with SmartSkin is it could not work because ITO would not be a drop-in replacement.

Q. Okay. That's as far as you went in

your direct witness statement, isn't it, sir?

A. Well, there was some discussion of it, but that was the general gist of it.

Q. That's as far as you went, isn't it, sir? Should we -- do you want to point us out something more specific than that general discussion?

A. No, that was the gist of it, but it was not just the one sentence.

Q. Okay. In terms of -- let's put up claim 1, please. Now, on cross-examination, sir, you went through different pieces of the preamble which you view as a limitation to claim 1; is that correct?

A. That's correct.

Q. You took those a piece at a time; is that right?

A. In my answer -- in the redirect?

Q. Yes, sir.

A. Yes, that's correct.

Q. And I believe, correct me if I am wrong, I believe you said that in your opinion this concept of the charge method for detecting or sensing capacitance was set forth in the preamble somehow or captured by the preamble

somehow?

A. No, that's absolutely not what I said.

Q. Okay. So that then you will agree that that charge method is not a limitation in claim 1; is that fair?

A. I agree it is not my point to say that you need the charge method. My point is to say that the prior art could not meet the preamble. What it enabled it to be met in '607 is the use of the charge method.

Q. Okay. Fair enough.

So the claim does -- it is not limited to one method or the other. You agree with that, right?

A. You mean with respect to the sensor?

Q. Yes.

A. Yes, I agree.

Q. All it says is it has to have capacitive monitoring circuitry. Is that correct, sir?

A. That's correct. You are referring to the operatively coupled limitation?

Q. Yes.

A. I agree.

Q. And in general terms, the voltage

technique that you discussed in the prior art is certainly capacitive monitoring circuitry, isn't it, sir?

A. With respect to the construction that I have provided, yes, I believe it would meet that, but it would not meet the requirements then -- a system using that would not be able to meet the requirements of the preamble, et cetera.

Q. Yes. And that relates to your interpretation of the ability of how quickly that system could operate, that sort of thing; is that correct?

A. Well, not just the speed. Also the sensitivity.

Q. Yes. Those concepts, speed and sensitivity of the patented system versus your discussion of the prior art, there is no discussion of that in the '607 patent. Isn't that correct?

A. Actually, there is specific discussion of sensitivity with relation to the importance of resistance.

Q. Right. But that's with respect to the charge method that's disclosed in the '607

patent. Isn't that fair, sir?

A. That's correct. And that's why it works with the charge method.

Q. Let's turn to column 17 and 18 of the '607 patent. And if you could blow up the bottom paragraph of the left-hand side, please, and then put that next to -- make that a little smaller, Ryan. Just take a minute.

And then put next to that the first three paragraphs on the other column. Now, put that to the left. And why don't we -- it refers there -- we're talking about figure 14. Maybe you can put -- add figure 14 to that, Ryan, and see how you can do with this.

Are you there at that portion of the patent, sir?

A. I am.

Q. Let's talk about it a little bit while that is coming up on your screen. I think at your deposition, you were asked to identify portions of the specification that talked about the circuitry that we're looking at here that would implement the claimed invention. Do you recall that and you pointed to this part of the specification?

A. I think I pointed to this and also the previous sections, but I believe this was the section I pointed to.

Q. Okay. And this is where the figure 14 that describes the basic elements of the circuitry in the '607 patent are set forth; is that correct? They are shown in figure 14?

A. Part of them. I mean, figure 14 also refers back to the previous figures and specifically that's figures 12 and 13. It says so explicitly.

Q. Right. Figures 12 and 13, the simple amplifier circuit we looked at before, the inverted amplifier, for example, sir?

A. Yes, that's correct.

Q. Okay. Now, that's the detail of those portions of the circuitry. It is shown at that piece of the specification; is that right? Do you see that?

A. And there is the corresponding text associated with it, yes, I agree.

Q. There is no discussion there of any particular algorithms that could be used to implement the invention to avoid the shadowing or the ability to sense two different touches

at the same time, is there, sir?

A. No, I disagree. There is other sections, and I did talk about those in my deposition. There is flow charts, there is actual figures showing the results in terms of detecting the algorithms, and I specifically discussed those.

Q. Okay. The flow chart, pretty general flow chart. What I am looking for, sir, there is no mathematical algorithms or other calculations or no specifics about the exact techniques, the rates, the parameters, that the inventors used in any device that they had tested at this time, is there?

A. I think I understand. If you are asking me, are they exact numbers or code, no. What is provided are flow charts, and actual results in terms of the analysis of data, then that appears in figure 17.

Q. You also mentioned ITO. You went back to ITO. Do you recall that?

A. We have been talking about ITO a lot today.

Q. You went back to one of the -- it is a shame I will never need it again -- but you

also went back to one of the portions of the specification we talked about on cross-examination. Do you recall that?

A. I do.

Q. Not to belabor the point, but some of that section talked about some specific measurements of the width; is that correct, of the ITO?

A. Yes, there were some numbers there.

Q. There wasn't any more detail that related to some of the other considerations we talked about this morning like transparency or resistivity; is that correct?

A. That section did not. The resistivity of ITO is discussed, not in terms of numbers, we're talking about the tradeoffs.

Q. Numbers are important, aren't they, sir? If you were going to replicate an exact device that somebody would make that proved that it worked conceptually, numbers would be important, wouldn't it?

A. Actually, it turns out in the charge sensing scheme, they are not that important. That's why you can use ITO.

Q. Somebody knowing ITO could be used

could do some experimentation, not undue experimentation and make a working product, correct?

A. With respect to '607, that's correct, because being the charge-based sensing, it is not that sensitive to the resistance.

Q. So the charge-based sensing is related now to the transparency -- or the selection, excuse me, of the ITO, the ITO that would be suitable in this invention?

A. That's what we have been saying, yes. That's what I talked about, yeah.

Q. And did you make that statement specifically in your expert report or expert witness statement? What you just said, is that set forth clearly in any of those materials?

A. The statement that charge-based sensing is specifically related to the transparency was not explicitly called out. However, I explicitly said that you couldn't, in relation to prior art, that you could not use ITO because it would not be a drop in replacement because resistivity is extremely important.

Q. By the way, whether you are using the

voltage or charge method, you are still measuring capacity; is that right, capacitance?

A. You are being responsive to capacitance. If you are asking me, are you actually directly measuring the capacitance, no. But certainly you are responding to changes in capacitance.

Q. Certainly one of skill in the art at the time knew that ITO was more resistive than copper for sure, right, obviously?

A. Yes, I agree with that.

Q. And I think you said it might have been in response to His Honor's question that one would have known about the amplifier circuit that's shown in figure 13 that was in the prior art as well?

A. Yes, I agree.

Q. Okay. Also one skilled in the art would know generally about these different techniques that you gave us a bit of information on before, the charge versus voltage techniques in general terms for measuring changes in capacitance?

A. One would know that those equations exist for relating capacitance to voltage and

charge.

Q. Okay. Let's turn to, for a moment now to the Perski reference, okay? Now, your opinion as to why Perski is not invalidating prior art is because the system did not operate quickly enough to be able to distinguish between two touch points on the transparent mutually conductive touchscreen disclosed in Perski. Is that fair?

A. Either not fast enough or not without ambiguity.

Q. Okay.

A. There is two possibilities, depending on which version we're talking about.

Q. Now let's go to the portion of Perski that you testified about for a bit. It is column 14. And then we will finish up.

Okay. So this portion of column 14, and I think if we start at line -- I don't want to cut it off -- I think if we start at line 15 and go down to line 59, that that's the portion of Perski, sir, that you relied upon to distinguish it from the claimed invention. That is the ability of the claimed invention to be able to distinguish between two touch points

at one time; is that correct?

A. This is the section we were discussing. I discussed various sections, but this is the key section that we were discussing earlier.

Q. All right. Now, you had some general testimony about the failings of Perski to be able to distinguish between two touch points. Do you recall that?

A. Yes.

Q. And that's never explicitly stated in Perski that it can't be done. I just want to make sure that's not your testimony. There is no sentence in here that says it can't be done; is that true?

A. Actually, I disagree. It specifically says at line 52 of the paragraph, of the section you have up, "however, this method may lead to ambiguity on those rare occasions when multiple touches occur simultaneously at specific combinations of locations. And the larger the groups, the greater the scope for ambiguity."

Q. Now, that says -- would you point to anything else, sir?

A. With respect to this section, that's the only section.

Q. Okay. And it goes on to say that an optimal approach is to combine the two previous approaches. Isn't that correct, sir?

A. That's correct. And I discussed that as well in my redirect.

Q. Now, Perski disclosed -- the method in Perski, the equation, I think, is two times N times M, meaning two times the number of rows and columns. That's the number of data detection points that could be processed using the Perski method; is that correct?

A. That's the number of steps to get all the data.

Q. Okay. Now, in your opinion, I take it, it has got something to do with the voltage method that would not be quick enough, you couldn't do it quickly enough to make measurements on a grid of that -- of a given dimension to detect two different points of touch?

A. No, there is two levels to it. First, Perski itself says that the basic row, column, scanning method, the N by M scanning method is

slow, and it says you should use the faster approach.

But I do agree, in fact, that the only method disclosed in Perski is voltage and, indeed, with ITO, that is slow.

Q. And in terms of the processing power, you're not saying that there weren't chips, DSPs, for example, that had processing power at this point in time sufficient to process that data in order to detect multiple touches? Do you understand my question?

A. I do. You are asking me the speed of sensing out of the panel versus the processing power.

Q. Yes.

A. I am not focused on the processing power. The slowness is the sensing of the panel.

Q. Okay. There is no question at that time that the circuitry, DSP or any other circuitry that can be used to do the sensing and the calculation to show that there were multiple touches existed at that point in time?

A. The DSP would not be the limiting factor on the speed. That's not what I am

claiming. And there were DSPs available at that time that would have had sufficient speed, were the data available.

But the problem is this method doesn't make the data available fast enough.

Q. Okay. This method being the voltage sensing portion of the method?

A. No, this method being the N by M method of Perski. You are right, voltage makes things even slower but Perski itself says the N by M method, which is the only method they have in there that claims to be able to detect multiple touches without ambiguity, that is the only method in there that does that and it is slow. And it says so.

Q. Okay. If you didn't use the N by M method, wouldn't you agree that if you just used N, you measured the sense lines going across using a sufficiently fast processor, would that be able to detect multiple touches?

A. No, it would not. It still calls out this method as being slow. It is saying the only way to get the -- the only fast method that's disclosed with relation to this embodiment is the grouping method.

Q. Okay. And in your opinion, the grouping method is not sufficient to detect multiple touches?

A. That's correct. Because it specifically calls out that this method will suffer from the ambiguity problems.

Q. Okay. Now, you haven't done any calculations to see whether if you went away from the two times N times M method, the processing could still be fast enough, in your opinion, to detect multiple touches, have you?

A. I have done some calculations, but if you are asking me, have I calculated what specific times would be, and given some exact numbers, no, I just calculated for typical display sizes what the numbers would work out to be.

MR. DeFRANCO: One moment, Your Honor. Thank you, Your Honor, that's all I have.

JUDGE ESSEX: All right. Staff, do you have anything?

MS. KATTAN: No, Your Honor.

JUDGE ESSEX: All right.

MR. FERGUSON: Nothing further, Your Honor. Thank you.

JUDGE ESSEX: All right. Very well.

Doctor, I think we're done with you for this hearing anyway. And thank you very much for your testimony. You are dismissed.

THE WITNESS: Thank you, Your Honor.

JUDGE ESSEX: Mr. Davis?

MR. DAVIS: Your Honor.

JUDGE ESSEX: Good afternoon.

MR. DAVIS: Apple calls as its final witness in its rebuttal case, Dr. Ravin Balakrishnan.

JUDGE ESSEX: Doctor, you may be seated. I would remind you, you have been sworn earlier in this case and you are still under oath.

Whereupon--

RAVIN BALAKRISHNAN

a witness, called for examination, having previously been duly sworn, was examined and testified further as follows:

THE WITNESS: Yes, I understand.

DIRECT EXAMINATION

BY MR. DAVIS:

Q. Dr. Balakrishnan, could you turn to CX-568C in the volume 1 of your notebooks.

A. Yes, I have it.
Q. Is this your rebuttal witness statement?
A. Yes, it is.
Q. And could you turn to page 156 of this exhibit. Is that your signature there, sir?
A. Yes, it is.
Q. Okay. And does this witness statement contain your answers to the questions contained therein?
A. Yes, it does.
Q. Okay.
MR. DAVIS: Thank you, Your Honor. I pass the witness.
JUDGE ESSEX: Thank you.
MR. VERHOEVEN: Good afternoon, Your Honor.
JUDGE ESSEX: Good afternoon.
MR. VERHOEVEN: May I approach?

CROSS-EXAMINATION

BY MR. VERHOEVEN:
Q. Good afternoon, Dr. Balakrishnan.
A. Good afternoon.
Q. I'm going to ask you some questions about your opinions with respect to validity,

invalidity, with respect to the '430 patent and then my partner is going to ask you about the '828 patent, just so you have some framework.

A. Okay.

Q. And, in particular, on the '430 issues, I am going to address two references today. So the first reference I am going to address is the Malone '870 patent.

You have reviewed that patent?

A. Yes, I have.

Q. And could we put up RX-289 for the record. There we go. So this is the Malone patent, correct?

A. Yes, it is.

Q. And that's how I am going to refer to it today, if that's okay, I am going to call it the Malone patent.

A. That's fine.

Q. You understand the Malone patent claims priority to an application dated June 30th, 1989?

A. I believe so, yes.

Q. And there is no issue here that Malone, in fact, would be considered prior art to the '430 patent; is that correct?

A. I don't believe we made such an assertion.

Q. So you agree that's not an issue?

A. True.

Q. Okay. And you understand that Respondent, Motorola, has alleged that the Malone patent is an anticipatory reference to the '430 asserted claims?

A. Yes, I do.

Q. And Staff also believes that Malone is an anticipatory reference?

A. I believe that's true.

Q. Okay. And, finally, you also understand, it is no dispute, that the Malone patent was not considered by the examiner during prosecution of the '430 patent?

A. Yes, that's true.

Q. Okay. All right. So let's briefly just look at the Malone patent and go to the issues with respect to it. Can we go to slide RDX-26.2. And you have the patent in your binder, correct, sir?

A. Yes, I do.

Q. So you can feel free to look at context if you would like to.

A. Sure.

Q. On Malone '870, it has a background section which is typical for patents, right?

A. Of course.

Q. And I have just displayed that on the screen. This is column 2, 54 through 61. Background art, it says, "with the increasing power of microprocessors, and of computers generally of any given physical size, there has been a widely recognized need for systems that would permit users who lack sophisticated programming skills to utilize this newly available computational power for a wide range of tasks." And it talks about different approaches in order to satisfy this need.

Do you remember seeing that?

A. Yes.

Q. And then it goes on to talk about a summary of the invention or the invention here. And I have just pulled up an RDX-26.3, a portion from column 5, lines 35 through 45.

And here you see it talks about the object lens system. Do you see that?

A. That's right.

Q. And that's basically the system that's

disclosed in this patent, right, to deal with this problem with the prior art, the object lens system?

A. That's what's disclosed in Malone, that's right.

Q. That's right. And it says, "users of the object lens system can create, modify, retrieve, and display objects that represent many physically or conceptually familiar things such as messages, people, meetings, tasks, manufactured parts, and software bugs. The system provides an interface to an object-oriented database in the sense that, one, each object includes a collection of fields and field values, two, each object type has a set of actions that can be performed upon it, and, three, the objects are arranged in a hierarchy of increasingly specialized types with each object type inheriting fields, actions, and other properties from its parents."

Do you see that?

A. Yes.

Q. And then it continues, and I am just trying to summarize so we have some perspective

here with the general technology, it continues in the patent at column 7, lines 1 through 6, and I have displayed this on slide 26.4, "if an object satisfies the criteria specified in a rule, the rule performs some specified actions. These actions can be general actions such as retrieving, classifying, mailing, and deleting objects or object-specific actions such as loading files or adding events to a calendar."

Do you see that?

A. Yes, I do.

Q. So what the Malone system is talking about is an object-oriented system, right?

A. That's right.

Q. You have objects that are based on rules that are specified, right?

A. Sure.

Q. And these objects can do things like retrieve, they can classify, they can mail, they can delete, all kinds of different things, right?

A. They can do those things that are stated there, yes.

Q. And then, for example, if a user uses an object to retrieve something, such as a

component, using the object lens system, then there is also a range of actions that can be performed on that object under the Malone patent, right?

A. If a user retrieves an object, it could -- they could then use the system to perform some actions on those objects.

Q. Okay. Now, if we can go to the next slide, this is RDX-26.5. What I have done, I think Mr. DeFranco referred to this as a slide within a slide. This is one, too. I have just depicted your slide from your witness statement, CDX-8.017.

Do you remember this?

A. Yes, I do.

Q. And this is a chart you created to summarize your opinions with respect to this reference, correct, sir?

A. I believe so, yes.

Q. And what we have on the left column, you have just recreated verbatim the language from claim 1 of the '430 patent, correct?

A. That's right. That's the claim language, yes.

Q. And you have put -- you have

highlighted in red the claim language that you believe is not anticipated by Malone; is that correct?

A. The stuff in red, that's correct, yes.

Q. And just in case there is any doubt, you put a big red X on top of it, too?

A. Sure.

Q. Okay. So I take it from this that the things that are not in red, you did not contest that those things are disclosed in the Malone reference, right?

A. That's right. Elements A, B, and C, in particular, yes.

Q. So you don't contest that Malone discloses a computer implemented method with one or more properties to an operating system active on a computer with a memory, correct?

A. I contest the portion about dynamically adding support for hardware or software components to an operating system.

Q. That's why I didn't read that part. So I understand the stuff in red you contest. My question is the stuff that's in black in the preamble, and I will read it into the record one more time, that you don't contest, let me

read it, "a computer-implemented method with one or more properties to an operating system active on a computer with a memory." Those elements that are not in red from the preamble, it is correct you do not contest that those can be found in the Malone reference, correct?

A. The "to an operating system" portion is in element D, which I have indicated we are contesting.

Q. Sir, I want to establish for the record whether or not you contest the language in the preamble I just read is disclosed in Malone?

A. I'm contesting the to an operating system portion is not disclosed in Malone, as I have indicated, in element D which mirrors the same language.

Q. I am asking you what you don't contest. Let me just try one more time.

A. Okay.

Q. I am reading the black language that you have not X'd out in the preamble. Do you understand what I am doing?

A. Yes, I do.

Q. Let me just say it this way. The

black letters in the preamble that are not in red on your slide, with respect to those elements, you do not contest they are found in Malone, right?

A. That's correct. Except I am saying that the to an operating system portion is actually handled in element D, which we are contesting, so that's the clarification I am trying to make here.

Q. Then if we go to 1A, it says, specifying the target hardware or software component search criteria, including one or more properties.

You do not contest that that element is found and disclosed in the Malone '870 patent, correct?

A. Element A, no, I do not contest that.

Q. And for element B, querying the operating system to identify one or more hardware or software components that meet the target hardware or software component search criteria, you do not contest that element B of claim 1 of the Malone '870 -- let me withdraw that question.

You do not contest that element B of

claim 1 of the '430 patent is found in the Malone '870 patent?

A. That is correct, yes. I will just note that I think that's a typo.

Q. There is a typo. Can you point it out for His Honor?

A. Just on the heading of the slide, it says, claim 1: Malone '870. It should be the '430 patent's claim 1, with respect to the Malone patent.

Q. Lucky for me that's your slide and not mine?

A. It is a typo.

Q. To be clear, the left-hand column is claim 1 of the '430?

A. That's correct.

Q. And you are applying Malone to claim 1 of the '430 in CDX-8.17?

A. That's correct.

Q. You do not contest that element B of '430 is disclosed in Malone '870?

A. Element B, that's right.

Q. And if we go to element C, "returning hardware or software components meeting the target hardware or software component search

criteria," element C of claim 1 of the '430, you also do not contest is present and disclosed in Malone '870, correct?

A. That is correct, yes.

Q. And then in element D, you only dispute the red -- the elements -- withdraw the question and let me try one more time.

With respect to element D of the '430, you are only contesting the limitations within element D that you have indicated in red on this slide, correct?

A. Sure.

Q. Okay. So basically, if you look at the preamble in element D, what you are contesting is the adding support element; is that right?

A. Adding support for hardware, software components to the operating system, right.

Q. Now, during your first session when you appeared here, we discussed the claim construction as well as the non-infringement issues. Do you remember that?

A. Yes, I do.

Q. And I am not going to go into that again and repeat it, but one of the subjects

that we discussed relatively extensively was the appropriate meaning of the phrase adding support. Do you remember that?

A. Yes, I do.

Q. And your opinion is that the appropriate construction of adding support for hardware or software components to the operating system is facilitating access to hardware or software components; is that right?

A. That is correct.

Q. And your understanding of facilitating access is that it means to -- enabling other software applications or software elements in the system to be able to access those hardware and software components, right?

A. Via the operating system, that's right, that's the context I am using here.

Q. Okay. So when we're looking at Malone '870 to see if it meets this element, you would agree the appropriate test is to ask that question, does Malone disclose functionality that facilitates access or enables other applications or software in the system to be able to access hardware or software components, fair?

A. Through the operating system, in that the adding support, as the claim language clearly says, is adding the support to the operating system. So not to something else, for example.

Q. But when we're thinking about this word adding support to the operating system, your construction is just to look to see if it facilitates access to hardware or software components, right?

A. The adding support portion, yes, but obviously the whole element of claim D is adding support to the operating system. So the to the operating system is an important part of this.

Q. You don't think adding support to the operating system requires any software to the operating system, right?

A. It doesn't have to be software per se, no.

Q. You think it could just be a link?

A. It could be a link in a structure that is handled and accessed by the operating system, yes.

Q. Do you think it could be a change in a

variable in the operating system, right?

A. It could be some data in an appropriate data structure in the operating system that's changed to enable that access, yes.

Q. So this element will be met if some change in data structure in the operating system happens as a result of these steps?

A. Change in a data structure in the operating system in a structure that is enabling that kind of access to hardware and software within the operating system, yes.

Q. One second, Your Honor. I am going to skip over some things. Can we go to RDX-26.14. So let's go look at what Malone discusses focusing in on this adding support element. It seems to be the one that is the sole element being disputed.

So I have put on the screen from RX-289, the Malone patent, column 23, lines 29 through 35. Do you see that up there on the top right?

A. Yes, I do.

Q. And it says, folders are containers and are one of the most powerful features of

object lens. Like thing, users can create instances of folder. The most important attribute of folders is that they contain a field which contains a list of links to other objects. Folders also have a type of object that they prefer to contain. The user is asked to identify this type when a new folder is created. Finally, folders can also have a selection rule which can be used as a kind of agent on special assignment to collect objects to put into the folder.

Do you see that?

A. Yes, I do.

Q. Then the second box, and this is column 6, lines 57 through column 7, line 9, and I am only going to read the highlighted part of this box says, "users of the object lens system can create rule-based agents that provide specifications for processing information automatically on behalf of their users.

"When an agent is triggered, it applies a set of rules to a specified collection of objects. If an object satisfies the criteria specified in a rule, the rule

performs some specified action.

"These actions can be general actions, such as retrieving, classifying, mailing, and deleting objects or object-specific actions such as loading files or adding events to a calendar.

"The agents in object lens are autonomous in the sense that once they have been created, they can take actions without the explicit attention of a human user."

Do you see that?

A. Yes, I do.

Q. So in the object lens system described here in the Malone patent, once an object is identified by an agent, there is a large variety of actions that can be performed on the object, correct?

A. Well, a large variety that are within this object lens system, yes.

Q. The object could be retrieved, correct?

A. Within this object lens system, yes.

Q. It could be retrieved and then put into a folder, correct?

A. Within the system, yes.

Q. And that would enable access to whatever object is put into that folder, correct? In other words, other components would then -- who had access to that folder would then have access to that new object that got put into that folder?

A. Other components within this rule-based object-oriented object lens system, yes, nothing to do with the operating system.

Q. Nothing to do with the operating system. Okay, we will come back to that in a second.

Glad you mentioned that. We will come back to that.

Similarly, this description indicates an object could be loaded. You could use one of these rules to automatically load an object, right?

A. Sure.

Q. And loading an object, if you had a rule that says if X happens, I want you to load this object, because I want to have access to it if it happens, that would enable access to that object, wouldn't it?

A. It simply says load the object. It

doesn't say whether there is access to it after that.

Q. Yeah, but if I set up one of these folders and used some rules and used an automatic agent, and said, I want you to look for new e-mails and if there is a new e-mail, I want you to move a link to it into a folder I have especially created for myself, that functionality is enabled and disclosed by Malone, right?

A. With the kind of rule that you explained? Yes. And within this object lens system, absolutely.

Q. And that would be done in part through a link, wouldn't it?

A. In the example you said, the link is to an e-mail, I believe, you said, in another folder, yes. But the link is in the folder at the object lens system, yes.

Q. And you admit that if we were to perform -- if we were to take an e-mail example, that that would involve the operating system, wouldn't it?

A. No, it doesn't involve the operating system. There is no support added for that

e-mail within the operating system.

Q. Well, wouldn't you agree that retrieving e-mail involves a system-level call to the operating system?

A. Retrieving e-mail?

Q. Yeah.

A. No, I don't think so, necessarily. It depends on how you define a system level call.

Q. So it is your testimony that retrieving from a mail system -- let me withdraw the question.

Let's take a mail system using this object lens, part of it has a mail system, okay? And it goes ahead and retrieves mail from a server. Wouldn't that involve the operating system, sir?

A. It might involve the operating system in that the server may be, you know, managed by an operating system, yes, but the act of the mail supporting that e-mail is not within the operating system per se.

Q. It would require the use of a mailer daemon, right?

A. Depending on the e-mail system, it could require a daemon.

Q. And that's a system level call, right?
A. A daemon is typically a system level, yes.
Q. I'm sorry?
A. A daemon would typically be at the system level.
Q. Operating system level?
A. Sure.
Q. Okay. Let's go to another portion of Malone. This is slide RDX-26.15. And I am displaying column 8, lines 13 through 31.
And here there is a little heading at the top of this paragraph, "automatic agents for searching and manipulating networks." Do you see that?
A. Yes.
Q. This is another section you reviewed for Malone to form your opinion, right?
A. Sure. Reviewed all of Malone, yes.
Q. And it says, "in addition to summarizing the contents of semi-structured objects, the system can use their structure to perform even more powerful automatic options such as searching and restructuring."
Do you see that? Then it says, "The

object lens system uses rule-based agents to perform these automatic actions. For example, figure 20 shows an agent that maintains a folder of overdue tasks. Every night at midnight, this agent is automatically triggered and searches the all tasks folder," what does that say, "a system-maintained folder that contains all task objects to the local workstation. When the agent finds tasks whose due date has passed, it moves them into the overdue tasks folder."

Do you see that?

A. Yes, I do.

Q. So this is an example where there is a system maintained folder, correct?

A. That's right, an object lens system maintained folder, yes.

Q. System, meaning the operating system?

A. No, I don't believe so. It is referring here to the object lens system as far as I can tell.

Q. Well, it says the system, doesn't it, sir?

A. It does say system within the context of a paragraph describing the object lens

system.

Q. It doesn't say application, it says system?

A. It says system within that context, yes.

Q. And this is describing a system maintained folder that is automatically searched every night, right?

A. It searches the all task folder within this object lens system, yes.

Q. Automatically every night, right?

A. That's what the agent is doing, yes.

Q. And it determines whether some tasks are overdue, right?

A. That's right.

Q. And if the tasks are overdue, it automatically moves them from this folder to another folder, right?

A. If the task's due date has passed and you call it overdue, which is probably okay, it moves it from the all task folder to the overdue task folder within this system, yes.

Q. And a person of ordinary skill in the art would know one way to do that is to use a link, right?

A. One way to do that would be to copy it, which says here it moves them, so I am assuming here that it actually moved the file as opposed to creating a symbolic link, for example.

Q. A person of ordinary skill in the art when you say copy, oftentimes they are just referring to a pointer, right?

A. If you are copying as opposed to creating a symbolic link, it would be actually copying, moving the data over.

Q. Well, another way to do it is to have a pointer, right?

A. That would not be copying. You would be creating a link to it, yes.

Q. And one way to do this would be to create a link, right?

A. Then it would not be moving it. It would be creating a link.

Q. Okay. Moving it is actually more substantial functionality than just having a pointer, right?

A. Not necessarily. Moving really just means I am copying the bytes over and having a pointer is a different construct. It is one

where you have a link, a piece of data that indicates where the data -- the other data is. It is pointing to that data. I don't think one is necessarily more complex or difficult construct, the word you used, than the other.

Q. Now, you would agree that by virtue of this functionality disclosed here on column 18, lines 19 through 31, that what's going on here is that overdue tasks are being collected and tracked by the system, aren't they?

A. What is going on here is the agent is automatically at midnight at every night, it is automatically triggering this rule that goes out and looks in this all tasks folder, this particular folder, which is an object lens system maintained folder, and then when it finds tasks in that folder where the due date has passed, it moves them to the overdue task folder. That's exactly what it says.

Q. And it is an ongoing operation, it is not just a one time deal, it happens every night?

A. It happens once a night, it looks like, yes.

Q. Okay. So fair to say that using this

functionality, overdue tasks are being tracked by the system automatically?

A. I think that's an interpretation you are putting on top of it. I think this is a very simple thing. It is every night. It basically runs this rule within this object lens system that looks for files, it does a very simple comparison. If the due date has passed, i.e., it is now past that date, it moves it to the overdue task folder. Is that tracking? I think tracking may involve more complex things.

Q. A task could be a component?

A. It is a task object. It doesn't say what it is.

Q. Task object is a software component under the '430 patent, right?

A. It could be a software component.

Q. And this is describing tracking and providing access to task objects, correct?

A. It is not talking about tracking per se. I don't see that. It is talking about moving those objects from one folder to the other, if it meets a particular rule, and that rule is that the due date has passed, and it

does this every midnight and it is doing it in this object lens system.

So I think it is a very simple thing that it is doing.

Q. It is facilitating access to overdue tasks, correct?

A. It is -- it is doing what it is doing. It is moving tasks that are overdue from one folder to another folder within this object lens system.

Q. It is automatic technology that helps a user and facilitates the ability for a user to have access to tasks that the user is supposed to perform that are overdue? That's what it is describing, isn't it?

A. No, it is describing moving things from one folder to another folder based on the rule. It doesn't say I am facilitating anything to the user. It is just a simple move from one folder to another.

Q. Well, but if I am a user and I am using this object lens system, and say I read this and I say, whoa, that's a great idea, I am always delinquent on my tasks, I am going to set this up because I want to know when these

particular software components, i.e., task objects that are overdue, I want to know when they occur, this system is facilitating and giving me the ability to access better than before those overdue software components, those overdue task objects, right?

A. I'm sorry for interrupting you there.

Q. No problem.

A. So I don't see this as doing any better. It has just moved a bunch of folders over -- sorry, a bunch of tasks over from one folder to another.

So how is it enabling better access? I think is something like what you said. I am not sure it is better access. It is just putting it in another folder that I can then look at and I could have looked at it in the old task folder as well.

Q. So you don't think that's helping a user who has expressed an interest in being reminded of overdue tasks, you don't think that is facilitating access to the software components there?

A. I think it is helping the user. I don't know that it is facilitating access to an

operating system or adding support to an operating system, if that's what you are getting at. This is a completely different thing. It is within this object lens system.

Q. Let's move on to RDX-26.16. This is another excerpt from Malone '870 patent, in particular, RX-289 at column 11, lines 6 through 17.

It says, "in some cases, agents can take actions automatically on behalf of their users. For instance, figure 4 shows an example of a simple agent designed to help a user process incoming mail. When an agent is triggered, it applies a set of rules to the collection of objects in a folder. The agent in figure 4 is applied to objects in the new mail folder and is triggered by the arrival of new mail. That is, when mail is retrieved to the workstation, the mail program automatically inserts links to the new messages into the user's new mail folder and these new links trigger the agent. In the current version of object lens, two other kinds of automatic triggers are available: Daily to midnight and on the hour."

Do you see that?

A. Yes, I do.

Q. In this example, whenever a new mail is received from the server, a link is created between the new mail objects and the new mail folder, correct?

A. Just give me one moment to reread this paragraph if you don't mind. Yes, it puts links in the user's new mail folder to those messages, yes.

Q. And new mail objects, those are software components under the '430 patent, right?

A. New mail objects, yeah, they could be software components, sure, except they are not in the operating system.

Q. So under this system, the system looks for new software components that are received at the system level, at the operating system level by the server, and if it finds them, it creates a link, correct?

A. It is not objects that are received at the operating system level. This is received in the mail, in the mail folder, and then it makes the links. This has nothing to do with

the operating system per se. The stuff arrives in the mail folder, but the mail program handles that.

Q. The new mail that comes in through the server goes through the operating system, doesn't it, sir?

A. It doesn't necessarily go through the operating system. The mailer takes care of putting it in the new mail folder.

Q. You mean the mailer daemon?

A. The mailer daemon, that's right.

Q. Which is part of the operating system?

A. The mailer daemon is running within the operating system, as I said earlier.

Q. And this link facilitates access to this new mail, doesn't it, to these new software components?

A. These links facilitate access to those messages, those new messages that have been put into the new mail folder.

Q. All right. Let's go to -- back to the '430 patent. I am displaying RDX-26.17. This is an excerpt from the '430 patent. I am displaying, for the record, JX-1 at column 12, 66 through column 13, line 7.

I am also displaying figure 9 and a description of figure 9 at column 2, lines 26 through 27. And I will just walk through this for the record.

The bottom box says, figure 9 is an illustration of a smart folder in accordance with a preferred embodiment. Do you see that?

A. That's right.

Q. Now, you contend that the smart folder that's being illustrated here is an embodiment of claim 1 of the '430 patent, right?

A. That's right. It is an embodiment of claim 1. Especially claim 1, elements A, B, and C, and because you have this structure called the object-oriented system locator system, that the '430 patent is all about, that enables this sort of smart foldering.

Q. So the answer is yes, you think figure 9 is an embodiment of claim 1 of the '430 patent?

A. It is an embodiment in particular of claim 1, elements A, B, and C, in particular.

Q. So you don't believe it is an embodiment of element D?

A. I believe the '430 patent as a whole

enables this smart folder embodiment and, you know, given that, and if you had such a system that adds support to the operating system, you could build a smart foldering system like this that may include adding support to the operating system, but this particular one may or may not directly embody claim D necessarily.

Q. Is it --

A. I'm sorry, element D.

Q. I put text on the screen that I read into the record. Do you see the text?

A. Yes, a preferred embodiment.

Q. You read it, right?

A. That's right.

Q. And you have seen this figure, figure 9?

A. Yes, I have.

Q. All right. I am asking you just about what's on the screen for purposes of this next question. Are you with me?

A. Okay.

Q. Does what we have got exhibited on the screen constitute an embodiment of claim 1 of the '430 patent, sir?

A. It is one embodiment.

Q. Thank you. So that means in your opinion that this discloses the elements of claim 1 of the '430 patent, right?

A. I think it discloses explicitly elements A, B, and C of the '430 patent. It doesn't explicitly disclose element D, which is adding support for the hardware and software component to the operating system.

Now, the overall structure of the '430 patent, the locator system, that, the system itself has the ability to add support to the operating system. So within that context, the smart folder would work within that context.

MR. VERHOEVEN: One second, Your Honor, if I may.

BY MR. VERHOEVEN:

Q. Let's go through the highlighted text in the text box. It says, "the smart folder then invokes the locator and requests particular documents containing the desired attributes to be collected in the folder."

Actually, let me back up because that's in the middle of the discussion. For the record, I will start at the top. "Figure 9 is an illustration of a smart folder which uses

a locator to organize documents, graphic objects, folders, et cetera, which a user is interested in collecting together."

So can you explain to His Honor what is that first sentence describing?

A. What that is describing, Your Honor, is that it is a folder much like any folder that you would see on your desktop system like your MacIntosh or Windows system. And within that there is a locator, a mechanism that's described in the '430 patent to retrieve, to search by properties, to find documents, graphic objects, folders, et cetera, which the user may be interested in collecting together.

And what that locator does is goes out and does that search and pulls these objects and puts it in this folder which it is calling a smart folder because it kind of does this on an ongoing, automatic basis.

Q. Okay. Now, isn't this functionality of monitoring and then going out and moving things into a smart folder the same thing we just looked at in Malone, sir?

A. Not exactly, because this functionality, smart folder functionality in

the '430 embodiment is working within the object-oriented system locator framework described in the '430 patent that is all about searching by properties, going out and querying and looking for objects, i.e., components, hardware or software components that match those properties, returning them, and then crucially adding support for those hardware and software components to the operating system, not just putting it in the folder. That doesn't add support to the operating system.

It is just putting it in the folder in this case. But the context here is working within this broader framework. In the Malone reference, it is a separate system that doesn't involve the operating system directly. It is what they call, if I recall the language specifically, it says the object lens system which is a separate system that is specifically designed for this sort of foldering, but does not add support to the operating system once it finds a particular object or document or a folder.

It simply puts those things in a folder and then doesn't add support. And the

crucial difference there is adding support for those components, once it has been found. And that's the difference between the overall framework here --

JUDGE ESSEX: Can you give me an example what support is added when it puts something like this -- is it software that is now part of the operating system?

THE WITNESS: In this case, the software is not necessarily part of the operating system. So say, for example, it found one of the things it is looking for is a piece of software.

It finds it through a search for properties, for example, and it brings it back up, because it returns it as a component, a software component, and puts it in the folder.

And that act of putting in the folder itself doesn't necessarily mean I am adding it to the operating system or adding support for it to the operating system, by just putting it in the folder.

But now within the context of the '430 patent, the '430 patent has the capability to add support for that component, should it

desire to, to the operating system. But the Malone patent, Malone reference doesn't talk about adding that support to the operating system.

JUDGE ESSEX: Go ahead.

BY MR. VERHOEVEN:

Q. Can you show me -- you are saying this doesn't disclose adding support to the operating system, figure 9?

A. It doesn't directly do that, no.

Q. What about any of the embodiments in the patent, can you show me a particular embodiment in this patent, in the '430 patent in the specification that expressly discloses adding support as you claim to the "operating system"?

A. There is no specific embodiment. The embodiments, as I understand it, don't have to explain every single element in the claim necessarily. They are just examples.

Q. So you can't point me to a single embodiment that does what you just said?

A. As an embodiment? No, not in the -- not in the patent.

Q. And if you look at the actual examples

that are contained in the specification of the '430 patent that talk about the phrase "preferred embodiment" like figure 9, they don't expressly disclose what you are saying, some specific connection to a specific operating system, do they?

A. It doesn't specifically disclose in the embodiment the notion of adding support to the operating system for that component, but you have got to remember that this system, the entire object-oriented system locator system is designed to add that support.

So it is not just about the embodiment expressly disclosing it. Whereas the Malone reference doesn't talk about adding support to the operating system at all.

Q. Even though you can't point to a single example of the many examples in this patent that describe the preferred embodiment in which there is any discussion of this functionality you are talking about, specifically pointing to adding support to the operating system, is that your testimony?

A. It doesn't directly expressly say that. Like it doesn't say, you know, support

is now added to the operating system if that's the words you are looking for.

Q. Now, if we focus on this ostensibly preferred embodiment, figure 9, the functionality described in the text here in figure 9 is all disclosed in Malone, isn't it, sir?

A. You are talking about the text above?

Q. That's right. In other words, Malone talks about folders that have similar functionality, doesn't it?

A. One key difference is that this smart foldering in the figure 9 example of the '430 patent is being done with a locator that is within the structure of the '430 patent's invention. It is a locator within the system locator system that is designed to then add support to the operating system, whereas in Malone, from what you have shown me so far and what I have read, it is a rule. It has nothing to do with -- it is a rule-based system. It is making a new rule that is doing those searches and putting it in a folder without adding support to the operating system.

Q. You keep saying supports the operating

system. Where is that disclosed in figure 9?

A. It is disclosed in that the locator is within this object-oriented system locator system. That's the structure I am talking about. That's one difference in that the locator here is a different -- is not exactly the same thing as the rules that are being used in the Malone patent per se.

You asked me if the language matched exactly and I am just pointing out at least one key difference.

Q. Ryan, can we go to RDX-289. You said Malone doesn't talk about operating system. I guess you are suggesting Malone is only talking about operating programs, is that what your contention is?

A. I said Malone doesn't talk about adding support to an operating system, which is the requirement in element D of claim 1 of the '430 patent.

Q. Can we go to column 18, please, of RX-289. Ryan, do you see where I am pointing there, where it says 4? Can you go from there all the way down to the bottom and pull it out? Do you see item 4 says, system architecture?

Do you see that?

A. Yes.

Q. It is not talking about an application program, it is talking about the whole system, isn't it?

A. No, this is talking about the system architecture of the object lens system, which is the focus of the Malone patent.

Q. Right.

A. Of that particular system, the object lens system.

Q. The object lens system isn't characterized in this patent as some sort of application framework, it is talking about entire system within the system architecture, isn't it, sir?

A. No, it is talking about an object lens system, the system, the word system there refers to that particular system. Not some general system or an operating system. This is the object lens system. It is talking about the system architecture of that particular object lens system.

Q. Now, Ryan, do you see where it starts object manager around like 64? Can you pull

that out and then I am going to pull out the carryover paragraph to the next page.

So you have read about the object manager before as part of Malone?

A. Yes, I am glad you brought this up because this helps clarify things.

Q. It says, "the heart of the object lens is the object manager." Do you see that?

A. That's right.

Q. It says, "the object manager is responsible for keeping track of all classes and class-instances and their links to each other. It also keeps track of the current state of each object and helps the objects handle messages which they receive by providing support functions with their methods."

Then it continues, "the object manager provides the forms manager with the information it needs to present a form. The object manager also handles saving and loading objects from permanent storage in the database. In the future, the object manager will work with shared database to do object locking and version control."

Do you see that?

A. Yes, I do.
Q. Now --
A. All of this is in the context of this object lens system as it clearly says there. Overall architecture of the object lens system.
Q. Now, do you remember in your -- can we save this and go back to the slides, please? Could we go to RDX-26.26, please.
Now, you remember when we were going over your opinions with respect to infringement or non-infringement, you used this slide in your witness statement, CDX-1.042?
A. Sure.
Q. And this is your illustration of what you allege the Android operating system is?
A. That's right. It is a high level overview, yes.
Q. You contend that this, everything in this dotted line is "the operating system," right?
A. In this -- in this particular system, yes.
Q. Okay. So you drew this line, right? This didn't come from some document?
A. Sure.

Q. Okay. What it actually says is application framework, doesn't it?

A. That's the application framework, yes.

Q. Now, you remember you accused the activity manager as being a component that is involved in what you call adding support to the operating system?

A. That's part of it, yes, because it goes -- it is part of it and then it goes and adds support to the operating system itself, yes.

Q. Right. So the functionality of the activity manager, according to you, in the Android system is operating system functionality, right?

A. The activity manager in conjunction with the package manager and other things along with that. We have already gone through that.

Q. And the activity manager, similar to the object manager, is something that provides support to all these different objects that are sending messages back and forth; isn't that true, sir?

A. No. I don't see that as being the same thing because the object lens framework

system, the object lens system that the Malone patent talks about is not dealing with the operating system per se. It is not about adding things so other applications or other software components can facilitate access to it necessarily.

It is a system within itself. So it is facilitating access to things within itself, not to the operating system.

Q. The activity manager, similar to the operating system, keeps track of the current state of objects, right?

A. The activity manager happens to keep track of a particular set of data in Android, yes.

Q. And the activity manager, similar to the object manager in Malone, provides support functions for object-oriented messages that it receives, right?

A. The activity manager provides a connection, it basically manages the active applications that are -- and services that are available out there in Android, yes.

Q. But on the one hand, you call the activity manager part of the operating system,

but if you go back to the Malone slide, Ryan, you call the object manager which always manages objects, just like the activity manager, you say you can't -- you haven't proven that that's part of the operating system, that's your distinction?

A. No, the distinction is the object manager in Malone, which I believe you have a slide here, is within the object lens system. And it is very clear even in this paragraph that you brought up, which is a good place to start, the object manager, it is within the context, it says right there, line 61, the object lens system and goes on forward, illustrated in figure 16, and then it talks about the object manager.

So the object manager is within the object lens system. It is not within the operating system.

Q. Where in this patent is there a distinction drawn between operating system and application programs?

A. It doesn't talk about --

Q. Show me.

A. It doesn't talk about the operating

system. This entire thing is set up for an object lens system. It is a system on its own that handles all these things, which are within this architecture of the object lens system, not the operating system.

Q. I think you said all I need to hear. It is a system on its own, right?

A. That's right, that sits on top. It has to run on any operating system. But it has nothing to do with the operating system per se.

Q. It is a system on its own, isn't it?

A. It does not have to do with the operating system per se. That is my testimony.

Q. What do you mean when you say operating system?

A. The operating system is, for example, in the Android chart that you showed me earlier, that would be the kernel and the structure around that, that deals with things that come in and out of the operating system.

Q. Would it include the functionality of a manager that manages all of the objects and keeps track of them on the system? Would that be part of the operating system, sir?

A. It would manage -- it potentially

could have a manager that manages objects in the operating system, yes.

Q. And here this system, this object lens system, which is its own system, has an object manager that keeps track of the current state of each object. That means each object on the system, right?

A. Within the object lens system. There is no disclosure in Malone that the object lens system is an operating system or a replacement for an operating system. This is a separate system that runs the way that it is with an object manager and does all these things, which we have talked about some of them today.

Q. It is a complete system?

A. It is a system, but it is not one that is an operating system.

Q. How many computer systems do you know that don't have operating systems as part of them?

A. You mean that don't run an operating system?

Q. That don't have a system, not what you would consider an operating system, don't have a kernel, don't have a manager that manages

objects?

A. Well, there are some embedded systems on small devices that don't necessarily have an operating system per se, but most have an operating system, yes.

Q. Would you agree that if His Honor concludes that this is describing an operating system and operating system functionality as part of this system, that Malone, assuming that conclusion, that Malone does show adding support?

A. If His Honor concludes that the object lens system is in itself an operating system, which I don't see how His Honor could come to that conclusion by looking at the evidence and reading Malone, it is possible that that would be considered adding support to an operating system, but that's a big if, because the object lens system would have to be an operating system on its own.

Q. Let's move on, on to the second reference related to the '430 patent that I would like to ask you some questions about today. It is UNIX Find. Before I go on, I just wanted to do one more thing. I'm sorry, I

forgot it. I apologize.

Can we go to RDX-26.22. Now, you have seen this before because you have read through this. Do you remember this step 4 of this example?

A. In Malone? Yes.

Q. So there is three other steps that aren't particularly relevant to what I want to ask you questions about, if you would like to look at context, that's fine. I just don't want to take the time to go through them all.

A. Sure, let me quickly skim that if you don't mind.

Q. Sure, take your time.

A. You are saying that's at column 17? That's right. It is the fourth step of a series of steps.

Q. Have you refamiliarized yourself with this?

A. I haven't read them again right now, but I see the context.

Q. If you need to, go ahead.

A. Sure.

Q. So step 4 in the example is titled automatically selecting and manipulating

objects. And for the record, this is a slide RDX-26.22 and I am displaying column 17, lines 47 through 61 of the Malone patent.

And it says, "the last step in our example is to add intelligent agents to help search and modify the network nodes. For instance, figure 16 shows an agent like one you might use to notify you whenever people add arguments that support positions you have entered."

Do you see that?

A. Yes.

Q. Now, there is -- the word argument here is used. That doesn't mean the same thing as when a lawyer uses the word argument, right? Can you explain to His Honor what that means?

A. Just give me a second to read this just to make sure I get the context correct. I want to make sure of what network of nodes you are talking about here. Just one second. In some sense, it is adding arguments of the nature that the lawyer does, but --

Q. Let's take a step back.

A. Sure.

Q. We're talking about object-oriented

programming, right?

A. In the overall -- not just programming, an object-oriented system.

Q. System. And argument is a term of art in object-oriented systems, correct?

A. It could be, yes.

Q. Just like methods are?

A. Sure.

Q. So could you just for the record explain to His Honor what does argument mean in the context of an object-oriented system?

A. In an object-oriented system, it would be a parameter that would be one part of a method, for example. So you could have a method that says find files and the file would be a parameter which would be the argument. And it is another way of saying parameter. But I believe here it doing something slightly different. It is searching for hypertext information.

Q. It says, "for instance, figure 16 shows an agent like one you might use to notify you when people add arguments that support positions you have entered. This agent is triggered automatically when new objects are

added to the folder containing the discussion of interest. Figure 17 shows the rule this agent uses to select the arguments that support a specific person's positions."

Do you see that?

A. Right. Here in figure 16, this looks like an argument in a series of conversations in a hypertext system. And when it sees that argument, for example, the node types, if you look at step 2 there on column 16, and step 2, lines 60 onwards, it says to define the new node types which have an issue of position and argument.

So the word argument here is used as one type of parameter, not all parameters. You specialize existing object types and so forth. So what this is doing is giving me -- what they are calling an argumentation application. And the application here is an application that has people adding new discussions in a discussion system, discussion/argumentation system.

Q. This application shows that you can set the system up to notify you and receive a notification in response to a query every time an object meeting a certain criterion is added

to the folder selected by the user, correct?

A. Whenever people add a particular argument, yeah, a particular new instance that supports positions you have entered, yes.

Q. Now, if we go back to the smart folder example from '430, it says, "additionally, the smart folder can instruct the locator to notify it when new documents containing the desired attributes are added or removed from the system." Do you see that, sir?

A. That's right.

Q. And if we go back, isn't that the same thing as what is described in step 4, automatic notification when new objects are added to the folder containing the discussion of interest? It is the same sort of automatic notification that you point to as part of the preferred embodiment in figure 9 of the patent as adding support, isn't it true, sir?

A. No. The notification here is within this object lens system. The notification here is mapped to exactly what you showed me in the previous slide in Malone and I believe the abstract or the slide you had up there just before. It is mapping to exactly that, yes.

Q. This is similar to figure 9 and the associated text from the '430 patent, step 4 in Malone in this example is talking about automatic notification when new objects are added to a folder, correct?

A. Notification is the same sort of notification. But it is not adding support of the operating system.

Q. Okay. Setting aside the dispute about what adding support means, in figure 9 which you claim is an embodiment of the invention, the notification functionality described in the text associated with that figure is the same sort of notification that's described in step 4, isn't it, sir?

A. One difference would be that that notification in the patent in the embodiment of the patent is that it is within this locator framework that's running in this operating system the patent talks about, whereas here it is within a very different system called the object lens system which we have already gone over.

Q. They both do searches, right?

A. That's right.

Q. They both look for properties?
A. That's right, search is based on properties, yes.
Q. Yes?
A. Yes, we have agreed on that, absolutely.
Q. You don't dispute they are looking for properties?
A. No, I don't.
Q. Search is based on properties, right?
A. Absolutely.
Q. And you don't dispute it returns objects that match, right?
A. That's right.
Q. And here it is saying that it also automatically notifies you, you can set it up and it will be an ongoing service that will facilitate to a user access to these new objects that are added, the user is saying I want to be informed if new objects related to my discussion are added, right? That's what it is saying?
A. That's right, within the object lens system. There is no dispute there, yes.
Q. And the object is a software

component?

A. In this case, you could say an object is a software component, sure.

Q. And this system is automatically facilitating the user's access to these new objects that are added and putting it into a folder for ease of access, isn't that what this is doing?

A. In the object lens system, absolutely.

Q. Okay. Let's move on and briefly cover the second reference, which is UNIX Find. I will put on the screen the first page of UNIX Find.

Now we're not going to have a dispute about whether UNIX is an operating system, are we?

A. I hope not. If you want, we will have one. We could.

Q. You agree UNIX is an operating system, right?

A. Yes, I do.

Q. Okay. And one feature in the UNIX operating system is this Find feature, right?

A. Yes, it is one command in the UNIX system, absolutely.

Q. And I have just put the front page of this, which is a depiction of RDX-26 -- I'm sorry, which is a depiction of RX-735. Is that what it looks like to you?

A. Sure.

Q. And this is the Wait Group's UNIX Primer or Primer Plus, right?

A. I would say Primer, yes.

Q. Primer, okay. And you have reviewed the document, right?

A. Yes.

Q. And you see the reference date or the copyright date is 1990?

A. Yes.

Q. That's before the '430 patent was filed, right?

A. I believe so, yes.

Q. And this reference, similarly, there is no dispute about whether this constitutes prior art, correct?

A. UNIX is well-known, absolutely.

Q. So you agree it is prior art?

A. Yes.

Q. Okay. And for the record, you understand that Motorola asserts that this

reference, the UNIX Find, is anticipatory of the asserted claims?

A. Yes, I believe so.

Q. And that Staff also is of the position that this reference is anticipatory of the disputed claims as well?

A. I believe that's true, although there was some discussion about the Staff's position changing there, so I am not 100 percent sure what is the latest one. To my understanding, yes.

Q. Okay. Let's quickly go through this reference. I have put up RX-26.30, which is an excerpt from RX-735 at control number 731 through 32. It says, finding files: Find. "The Find command searches for files that meet some criterion. You can search for files that have a certain name or are a certain size or files not accessed for a certain number of days or files having a certain number of links, and this is just a partial list. Once the files are found, you can have the path names printed, and you can have the files themselves printed or removed or otherwise acted upon."

Do you see that?

A. Yes.
Q. So this talks about find means searching for things, finding things?
A. That's right.
Q. So you can search for files and you can search by name, right?
A. Yes.
Q. Or by file size?
A. That's right.
Q. Or you can search by the last date by which a file is accessed?
A. Yes.
Q. And you can search for files that have -- by the number of links they have?
A. That's right.
Q. And it says this is just a partial list of the ways you can search for files, right?
A. That's right.
Q. And it clearly says that once you retrieve those files, once the files are found, you can do actions on those files, right?
A. You can do actions on the path names that are returned, yes.
Q. So, for example, you can print, right?

A. You can print the names, yes.
Q. You can remove the files, right?
A. You could, but you have to do some other actions after that to do that.
Q. And it says, or otherwise -- just generally, it says, or otherwise act upon the files, right?
A. Yes.
Q. Okay. Then if you go into the body, further into the body of this section, and this is slide RDX-26.31 at Control -- depicting RX-735 at Control No. 732 through 33, we see a delineation of search criteria that are used in connection with the Find command. Fair?
A. Of course.
Q. And here we have a disclosure of searching using the attribute file name?
A. Yes.
Q. And I am deliberately using the word attribute, because there is a dispute about properties on this, right?
A. Sure.
Q. Let me set the stage on that. Your primary issue with this reference is that you contend it doesn't disclose doing searches

using properties as that word is used in the claims, correct?

A. It does not disclose searching properties as properly construed. It also doesn't add anything to the operating system.

Q. And this gets back, without rehashing the claim construction cross-examination we did, which I don't intend to repeat, this gets back to whether a property is intrinsic or inherent versus non-inherent or non-intrinsic, right, according to your opinion?

A. It gets back to whether the properties are as the properties added by the object locator system of the '430 patent, which are these non-intrinsic characteristics, yes.

Q. Just so we have -- we refresh ourselves on the parties' positions, is it fair that Motorola -- or withdraw the question.

Your opinion is that properties as that word is used in claim 1 is limited to only properties that are non-intrinsic properties, correct?

A. That's right. The desired attributes that are non-intrinsic to those files or components, yes.

Q. And you contend that a property --
A. If I could just finish.
Q. Certainly, sir.
A. That have been added by -- by the system or the user through this overall object locator system that the '430 patent is describing.
Q. You concede --
A. That's the context.
Q. You concede, outside the context of the '430 patent, when computer scientists are talking about properties of a file, that things like names and file size would be considered properties, right?
A. Outside the '430 patent, the word property is very broad and it can be used in different ways.
Q. So, for example, the name of a file would be a property of a file outside the context of the '430 patent?
A. I think we're talking about the context of the '430 patent here, so I am not sure why we're going outside that, but outside that --
Q. I want to set the stage. Outside of

it, you agree properties can include intrinsic as well as -- what you call intrinsic as well as what you call non-intrinsic properties, fair?

A. I think we used the term intrinsic characteristics, but outside the '430 patent, if properties are defined that way, that's fine.

Q. But you contend that somehow the patent is limited by the intrinsic evidence so that the word properties in the claim doesn't include intrinsic properties but only includes what you call non-intrinsic characteristics of a component?

A. In the '430 patent, properties are those that are added by the locator system and that would not be the intrinsic properties.

Q. You see here this expressly discloses searching by file name, right?

A. That's right.

Q. And your contention is that a file name is not a property?

A. As used in the '430 patent, it is not, it is an intrinsic characteristic. Every file has a file name in operating systems, so it is

not something that's added through this object locator system, for example.

Q. But if you had a system where it didn't have file names per se, maybe just numbers or something, and somebody said, you know what, I want to add a name to a file, and they added a name, that would make it a property under the '430 patent, right?

A. If you had an overall system like described in the '430 patent, there was an object locator system designed to add information, i.e., properties to components, so that they can later be searched and retrieved and support for that are added in the operating system, then, sure, you could add something called name, for example. But outside that, I don't see how you would do that.

Q. Now, if His Honor considers the issue of claim construction on properties and says, you know what, I think Motorola is right and Apple is wrong, properties can include file names, this discloses properties in connection with the search element of the '430 patent, correct?

A. If His Honor constructs -- construes

the term properties to be Motorola's construction, then, you know, that would obviously include names, yes.

Q. And so UNIX Find would disclose properties?

A. If His Honor takes that construction, which I don't believe is the correct construction -- the correct one is that I have discussed at length -- then it would, yes.

Q. Thank you. Let's go to another page on UNIX Find. This is RDX-26.32. And I am displaying RX-735 at control number 733 -- or ending in 733.

This is talking about a different way to find using a different parameter, let's say. Correct?

A. Let's say inherent characteristic to keep the same technology -- terminology.

Q. I am trying to stay away from inherent. I mean, we can argue about that, but let's step aside from that and just say what does this disclose? It discloses doing a search and finding a file by a different parameter. Can you tell His Honor what is that parameter?

A. This is a characteristic, inherent characteristic of a file that would just have the last time and date the file was accessed by the system.

Q. And when you say inherent, what you are saying -- do you intend to mean the same thing when you use the word intrinsic? Sometimes I think you have used the word intrinsic. Sometimes inherent.

A. I mean something not added by this object locator system, yes.

Q. So inherent or intrinsic, what you mean by that is that it must exist as part of the component?

A. The component would have those characteristics as part of it, that it is not something that's added to distinguish from the kind of properties that we're talking about that are non-intrinsic characteristics, it is not something that's added by this locator system that the '430 patent is talking about, that is added to facilitate searching and instantiation subsequently.

Q. It is necessary to the component, it must exist if the component exists, is that

what it means?

A. If that component has those characteristics as part of its structure, yes.

Q. Well --

A. So, for example, a file in the UNIX system would have name, would have the last access time and so forth. That is part of that, the definition of a file in a UNIX system.

Q. Well, I need to understand this because I am confused. Are you saying that you have a component, let's take any example, let's say it is a file, okay?

A. Okay.

Q. A file is an example of a software component, right?

A. True.

Q. Okay. You have got a file. What is going to be inherent to that file?

A. It would be anything that's not added by the object locator system that the '430 patent is talking about. So, for example, the file name or the date or time -- or date and time of access, which that file would typically have anyway. If it existed as a component,

without the use of this object locator system that the '430 patent is talking about.

Q. So the way you are defining -- I just need to understand. I am confused.

Are you saying that a component of a file is something that's got to exist regardless of the system that the file is on or are you saying --

A. Component of the file?

Q. Let me finish. Or are you saying that we measure whether it is inherent or not based on the system it is operating in? In other words, is inherency system dependent or system independent?

A. I am not sure I totally understand your question, sir.

Q. Okay. Let me play from your deposition, you were asked what intrinsic means.

A. Okay.

Q. And maybe we can start from that and then I will follow up with that.

A. Sure.

Q. This is your deposition taken on August 5th, 2011, page 156, 15 through 157, 11.

MR. DAVIS: Your Honor, objection. Improper impeachment. He hasn't identified anything being impeached here. If he wants to ask him a question about what's inherent or intrinsic and then if it differs, then he can impeach.

JUDGE ESSEX: I assume he is asking whether it was dependent on the last -- I won't go through everything here -- but he is asking whether it is dependent on the system and those matters, and we will see if it is proper impeachment when it comes up. But I think he has laid enough information that he can play it and we can look at it. So you are overruled. Go ahead.

(Videotape played and transcribed as follows:)

"Question: What is the distinction again between, you know, the Find command that's running in the background shell program" --

(End of video clip played.)

MR. VERHOEVEN: Take that down, please, Ryan. That's the wrong clip. Page 156 -- Your Honor, may I take one second?

JUDGE ESSEX: Yes, you may.

(Videotape played and transcribed as follows:)

"Question: Why is it intrinsic if someone is inputting the data, doesn't intrinsic mean it already exists?

"Answer: I am not sure intrinsic means it already exists. I think intrinsic would mean at least in the context of what we're talking about here it must exist. So a file, you know, would have to have a file name. It cannot exist without a file name at least in most operating systems that I'm familiar with."

(End of video clip played.)

BY MR. VERHOEVEN:

Q. In that excerpt I interpreted what you said it must exist regardless of what system it is, it is an attribute inherent to the component, is that not what you meant?

A. For that example I said, I believe I said for a file it won't exist without a file name, but I didn't mean in any component necessarily. A file in an operating system would have a file name, yes.

Q. We will go to RDX-26.32 again. These

parameters used in UNIX Find, file last accessed exactly seven days ago, that's not an inherent component or inherent attribute of a software component that must exist?

A. For a file it would exist.

Q. It doesn't have to exist.

A. We're talking about files here.

Q. Let me finish my question. It doesn't have to exist. You could design, any good software could design a system that doesn't track the last date of access, those components could exist on a system regardless of this attribute, this is completely optional, isn't it, sir?

A. No, I mean, you are talking here about UNIX Find and UNIX Find system looks for files and files by these different inherent characteristics, file name, type, time or date of last access. So this is not some random component we're talking about. This is within UNIX Find. And, you know, it is your example.

Q. Well, sir, if you are defining inherency or intrinsicness as system dependent, in other words, if the system I have written requires it, then, therefore, it is inherent,

isn't that a complete tautology as to whether something is inherent or not?

A. No, because within that system it would be required and within the UNIX system and the files within the UNIX system, which is what we're talking about here, a file would have these inherent characteristics.

Q. Let's assume there is a software system that was designed and it works fine but it doesn't track last access. Do you follow me?

A. Hypothetical, is that what you are saying?

Q. That's right.

A. Okay. So a hypothetical system --

Q. It works fine, it just doesn't have this parameter. They didn't program it in the last time that a document file, for example, was accessed. You couldn't -- the system didn't automatically do that.

A. It doesn't have it is what you are saying.

Q. Right. But the system can just like UNIX, the system, you could run scrips on it, a scrip is a short program, right?

A. Sure.

Q. And you could create a scrip that would attach the last access parameter to all the files that you in particular that you as a person using this system were using so that you could then track it, do you follow me so far?

A. You would have to build such a system.

Q. You would add the parameter to the existing system through a scrip, do you follow me?

A. The scrip would have to be built such that it would have data structures to be able to add those parameters, track it, select the locator system described in '430 as an example. You would have to build that structure.

Q. So in that system the parameter last access is a property under your definition of property in the '430 patent, correct?

A. If it was built within a system like the locator system in the '430, and you used a scripting system and added all the necessary pieces that made up the equivalent of the '430 patent as object locator system, then maybe that's true, but just a script on its own cannot just attach properties to, as is used in

the '430 patent. That is existing in this locator framework.

Q. Now let's assume that that worked so well that you told your friends about the script you created and lots of people started using it and the publisher of the program realized this is a desirable attribute and when 2.0 version of the program came out, they made it a required attribute.

Now, under your logic all of a sudden this parameter is no longer a property; isn't that true under your logic?

A. So you were talking about scripts and then you changed to programs and so I am not following. Are we talking about the same thing? What exactly are we talking about here?

Q. I am talking about in version 1.0 of the system --

A. Of which system --

Q. The system itself did not require any tracking of this parameter and it did not track the parameter automatically. However, users could add this parameter. Do you follow me so far?

A. And you are talking about a

hypothetical system that you have just built; is that true?

Q. Correct, sir.

A. Okay.

Q. And then for version 2.0 -- and so in version 1.0, you agree that these parameters, you know, last accessed, those are properties because they are not intrinsic to system 1.0. Do you agree?

A. No, I do not agree with that. What I said earlier was if you built a system, this hypothetical system that had the same kind of structure as the object locator system of the '430 patent, which had the capabilities to attach those kinds of properties with subsequent searching, then that might be true, but the way you have described the system that you're hypothetically building, it is unclear what you are building. You can't just simply add things to files without an appropriate system.

Q. Same is true for the '430 disclosure, right?

A. The '430 is talking about an object-oriented locator system.

Q. You say the only thing that are properties that are claimed here are things that users add, all of a sudden they can add them easily on '430 but they can't add them easily in my hypothetical? What's the difference?

A. The difference is the '430 is talking about an overall architecture in a system that does this. In your hypothetical you talked about --

Q. My hypothetical is --

A. You didn't let me finish.

JUDGE ESSEX: Come on.

MR. VERHOEVEN: Sorry.

THE WITNESS: I have lost my train of thought here now.

BY MR. VERHOEVEN:

Q. Let me try it one more time and I will move on.

A. Sure.

Q. This is a hypothetical. The hypothetical is that an entity has published an entire system, an entire software system. That system can do various things such as process documents, but it does not, the system does not

require any ability to track the parameter of last accessed date.

Do you follow me so far?

A. So you are building a hypothetical system that doesn't have the ability to track last accessed date? Is that your hypothetical?

Q. It doesn't require it.

A. You said --

Q. The system itself doesn't track it. Got it?

A. Okay, the hypothetical system does not track last access, got it, okay.

Q. But the system allows users to add properties to their components. Do you follow me?

A. So the system has the capability to support the adding of properties.

Q. Just like the '430 specification.

A. The '430 is more than that but --

Q. And let's say that at least one user wants to be able to track their document files by the last date accessed and so they add a property to those software components that tracks the last date of access. Do you follow me?

A. If your system is able to add those properties, like in the '430, then, yes.

Q. And under your logic for properties, that would be a property and non-intrinsic, correct?

A. Under the --

Q. Parameter of last access?

A. Sorry. Under the '430 patent's description of properties, if you had a system of that structure within that locator system and you are representing to me you are building a similar system, if you build a similar system that is able to add those properties, then, sure, you can add those properties. But it has got to have the same functionality as the '430 patent system, which is what I believe you are representing to me is your hypothetical.

Q. So under the hypothetical those would be non-intrinsic properties of the component, right?

A. Under the hypothetical as I just clarified, yes.

Q. Now, let's assume that, go forward in time and the developer of this software system says I want -- people -- this is a popular

added parameter that people are using, I want to make it a system requirement for version 2.0.

And they issue version 2.0 of the system that automatically, every time a component, software component is accessed, it adds a parameter of the date and time when it was last accessed.

Do you follow me?

A. So you are still within this hypothetical system?

Q. Correct.

A. That's right.

Q. Version 2.0 though.

A. All right, sure. New version, okay.

Q. Under your logic, all of a sudden this parameter becomes a non-property as you construe the '430 patent?

A. Because the -- I'm sorry.

Q. Correct?

A. Because those properties in the '430 are tagged on to the inherent things, yes.

Q. So isn't it true that when you are parsing what is a property or not a property, it is all system dependent?

A. Well, I think we already went over this. The properties as we discussed in the context of the '430 patent's locator system is not the random use of the word property, so I think we already went over this in great length, that it is part of the '430 patent's system.

Q. Is this concept of inherency system dependent or not, sir?

A. Different systems would have different things that are inherent, yes, as long as they are not attached, things that are not attached in a dynamic way like in the '430 patent would be inherent.

Q. So we can take any given property, whether it is accessed seven days ago, whether it is an alphabetic name, whether it is virtually anything you can think of, you can design a system that required it but you could also design a system that didn't require it, and under your logic, whether it becomes a property or not is merely a desire constraint of the system? Isn't that true?

A. Well, I think you can design all kinds of systems. And you can do all kinds of

hypotheticals. You can call them whatever you want.

Q. So do you agree with me then?

A. I am not sure I agree with you, because in the '430 patent, it is talking about a very specific kind of system that's able to attach these properties to the components and then search for them. And that is one kind of system. And what I am saying is you could build such a system, absolutely, that's the whole point of the patent, you can go build something that mimics it, that does similar things, and, sure, then you would be doing the kind of things that the '430 patent does.

Q. So I could take file name and design a system where that's not a requirement, in which case name would be a property under the '430 patent, right?

A. If I design a system like the '430 patent system.

Q. And I could have --

A. That had the locator framework, that had the ability to add those properties and search for them, yes. If that was the intent, to build the equivalent of the '430 patent

system, sure, you could do that.

Q. So sometimes names are properties?

A. A name could be a property if I added -- so say, for example, in the '430 patent, I may say printer names and I may add that as a property. That doesn't make it not a property.

Q. And the same logic applies to the parameter of the last accessed date, correct?

A. If the system follows all the things that the '430 patent does, and makes that a property, as opposed to it being inherent to the components of that system, then sure.

Q. And then, again, if properties is not limited to non-intrinsic properties, but includes both intrinsic and non-intrinsic properties, there is no dispute that UNIX Find discloses it?

A. If you use the construction that properties includes everything, then UNIX Find would be finding by properties, yes, in that construct of properties. That's not the correct construction of properties as used in the '430 patent as I see it.

Q. Thank you, Doctor.

MR. VERHOEVEN: Your Honor, I pass the

witness. I forgot, we have the '828, Mr. Nelson is going to go do that. I don't think it will be very long, though.

MR. NELSON: Not too long.

JUDGE ESSEX: I think we will take a break before we see Mr. Nelson. We have run pretty long and I think it is time for our afternoon recess. We will be back at quarter till. We're in recess.

(A recess was taken at 3:28 p.m., after which the trial resumed at 3:45 p.m.)

JUDGE ESSEX: Are we ready?

MR. NELSON: I am, Your Honor.

JUDGE ESSEX: Proceed, Mr. Nelson.

MR. NELSON: All right.

BY MR. NELSON:

Q. Ryan, can we put up RX-1339, please. I just have a few questions for you about the '828.

A. Okay.

Q. So RX-1339 here, the Bisset patent, 5,825,352, you are familiar with this patent, correct?

A. Yes, I am.

Q. And, in fact, the Bisset patent,

RX-1339, was used by the examiner to reject the majority of the pending claims, including all the independent claims during the prosecution of the '828 patent, correct?

A. Initially, yes.

Q. In fact, if we go to JX-6, page 1407, Ryan, do you see here if we highlight the part in the middle there, a little bit farther under claim rejections, 35 U.S.C Section 102, yes, exactly.

So you know what a rejection under 35 USC Section 102 is, don't you?

A. As being anticipated by?

Q. The reference anticipates. In other words, shows all the elements of the pending claim, correct?

A. Of those claims that are being rejected, yes.

Q. Right. And so the claims that were being rejected at that time were 1 through 3, 6 to 8, 23 to 29, 31, and 32, correct?

A. That's correct.

Q. Okay. So that includes the claims that are asserted here in this action, correct?

A. I believe so, yes.

Q. Okay. So then in response, if we go to JX-6, 1456, and let's just blow up claim 1 there.

So you understand that, in response to the rejection that the examiner made under Bisset, the applicant came back and amended the pending claims, correct?

A. That is correct.

Q. And the only amendment that was made was to add the term mathematically to the last element, correct?

A. That was the only addition that was made, although I believe the applicant disagreed with the reasoning given by the patent examiner as to why they needed to make it, but they made it anyway to get it in.

Q. Understood. But prior to that, the claims said fitting an ellipse to at least one of the pixel groups, correct?

A. That is correct.

Q. And afterwards, it was amended to say mathematically fitting an ellipse to at least one of the pixel groups, correct?

A. That's correct.

Q. And, similarly, if we look at claim

10, claim 10 was amended in exactly the same way, correct?

A. In that they added the terminology mathematical, yes.

Q. Right. And you understand that claim 24, the other asserted independent claim, is a means-plus-function claim, correct?

A. That is correct, yes.

Q. And for that the applicant specifically pointed back to the specification, you understand that?

A. For the means, yes.

Q. Yes. So now if we look at JX-6, 1468 and 69, we see the applicant's response. I am not going to read all this. We have looked at this a few times.

But let me see if this is a fair characterization. Is it your understanding, Doctor, that when the applicants came back and amended the claims to add the term mathematically, that the applicant's sole basis for distinguishing the Bisset patent was that Bisset did not show the element of mathematically fitting an ellipse to one or more pixel groups?

A. So my understanding of this is that the applicant is basically saying that their understanding of what the office action -- the Patent Office's interpretation, is merely obtaining measured data is the same as fitting an ellipse to the data. They disagree with that, and, therefore, added the word mathematically fitting.

Q. Right. And the applicant said that Bisset does not show mathematically fitting an ellipse to one or more pixel groups, correct?

A. Yeah, Bisset doesn't do any kind of fitting at all of ellipses.

Q. Okay. The applicant didn't say Bisset doesn't show segmenting, correct?

A. That was not in this section of the -- of the rejection, or the response, I mean, sorry.

Q. Right. It didn't say that in the response at all, in response to the rejection to the Bisset, correct?

A. In the pieces I have read, I have not encountered that. It may be there somewhere but from what I have seen, I have not asserted that.

Q. You haven't seen that? You haven't seen that anywhere if we peruse the file history, I mean, the record will show it and I am not going to go through the file history in detail, but if I represent to you that there were no other bases that the applicant used to distinguish the Bisset patent, you wouldn't have any quibble with that, correct?

A. That's fair.

Q. Okay. Now, let's look --

A. I'm sorry, in context of the file history.

Q. Yes, in the file history. I am just talking about what the applicant did. Now, let's look at RX-351.

Now, RX-351 is a thesis, and I will just say the last name, you can help me with the others if you want, but Desai, Mr. Desai, correct?

A. Close enough.

Q. How should I say it?

A. We will go with that.

Q. No, go ahead.

A. It is Desai. Let's go with Desai as you said. That's fine.

Q. I appreciate that. The title of this is: Interpretation of tactile data from an FSR pressure pad transducer using image processing techniques, correct?

A. Of course.

Q. And this is dated November 1994, correct?

A. That is correct, yes.

Q. And you have reviewed the Desai reference in connection with your opinions in this case, correct?

A. Yes.

Q. Okay. And the Desai reference, at least generally, talks about processing techniques for pixel image data obtained from a touch sensor, correct?

A. I am not sure I would call it a touch sensor. It is a pressure pad sensor. It is a pressure sensor.

Q. Right. A pressure sensor meaning things can come into contact with it and it can sense that pressure, correct?

A. Things could come into contact with it, right, like disks and things like that that they describe in the thesis, yes.

Q. They describe objects, but the same thing would work for fingers, correct?

A. If you want to call a finger an object, and you are not interested in tracking it over time and doing anything more sophisticated than just seeing it touching this transducer, sure.

Q. But at least in general then a portion of the Desai thesis talks about taking that image data that you collect from the sensor and then processing it in some means to get information from it, correct?

A. It takes that pressure data that comes out of the sensor and processing it, yes.

Q. And if we look at page 71 of the Desai thesis, and just for the record that's RX-351, you will agree with me that one of the things that the Desai thesis shows is fitting an ellipse to the image data, correct?

A. That is correct. What page are we talking about here?

Q. I am talking about 71 first.

A. You have got 79 up there.

Q. No, no, 71 of the thesis. You are looking at --

A. Oh, I'm sorry, okay. That's the confusion. Okay. Yep, okay, I have got it. Sorry.

Q. And if we look at page 72, in particular 4.22, and if we just blow that up, Ryan, this is at least a pictorial example that shows fitting a rectangle and also fitting an ellipse to some image data, correct?

A. Sure.

Q. And, in fact, if we look at page 76 and 77, and let's just take 4.3.4, where it starts there and blow that up and then go to the next page, and just juxtapose that with what's on 77, the whole thing on 77, just put it on top of 77, and if we need to scroll through, we can.

And one of the ways that the Desai thesis here on page 76 and 77 talks about fitting an ellipse to the image data is to use a group covariance matrix, correct?

A. Just give me one second to refamiliarize myself with this. Here they call it the scatter matrix, which becomes the covariance matrix, yes.

Q. So it is that same thing? In fact, if

we look at 4.4, right below 4.4, that sentence, blow it up, it says "the matrix S can also be referred to as the covariance matrix."
Correct?

A. That's right. That's what it says, yes.

Q. That's the scatter matrix that you were talking about?

A. That's right.

Q. Okay. So we're in agreement there.

And from this covariance matrix I do a transform in order to determine the Eigenvalues and the Eigenvectors, correct?

A. Sure.

Q. So what's shown here in the Desai thesis on page 76 and 77 is essentially identical to the ellipse fitting procedure that we saw in column 26 of the '828 patent, correct?

A. It is a similar process. I'm not sure I would use the word identical. I would say similar process.

Q. Very similar process, correct?

A. I think that's fair.

MR. NELSON: Thank you. I have no

further questions, Your Honor.

MS. KATTAN: I have no questions, Your Honor.

REDIRECT EXAMINATION

BY MR. DAVIS:

Q. Your Honor, I would like to start with the '430 patent.

So before we get into specific differences between the prior art and the claims of the '430 patent, could you generally describe the framework approach to computer programming discussed in the '430 patent so we have a context for what the patent is talking about?

A. Sure. Maybe it may be useful to bring up the '430 patent on the screen, and specifically the column 4 of the '430 patent just as a reference.

So what -- you asked about framework programming. And basically prior to the framework programming, the old days, programs running software running on computer systems were linear. They basically went from the start of the program and they executed line by line until they reached the end of the program

with particular logic in that program.

And what that meant was the programmer who built that had to know exactly all the variables, all the things that it wanted to do, and the kinds of things that that program was going to process, okay, including appropriate names and so forth.

The framework, this is quite a bit different. The flow of control, remember I said in the old way it is step by step linear flow of control. And in a framework system or object-oriented system, instead of writing the flow of control in a sequential manner, you basically describe these objects, the kinds of things you wanted to deal with, the types of data, and you built methods that would act on that data.

And this is called object-oriented programming. You had these objects, you had the methods, but the actual flow of control, i.e., the way it processed that code need not have been completely linear.

And it was up to the framework, the object-oriented framework within which these objects and methods existed that would decide

what gets called when. And, in fact, the programmer who wrote the objects in the first place may not know what subsequent object or what subsequent code or system may be accessing that.

So that was left up to the framework to deal with. And maybe just to highlight this, I will ask to bring column 4 up. If you want to highlight lines, let's say, 33 onwards to the bottom of the column, please.

And here it talks about programming with frameworks, actually starting at line 44. It talks about a new way of programming. In fact, it is not like programming at all in the traditional sense. In old-style operating systems, such as DOS or UNIX, the developer's own program provides all of the structure. The operating system provides services through system calls. The developer's program makes the calls when it needs the service and control, i.e., the logic returns when the service has been provided.

So this is that flow of control I was talking about in the traditional way of doing things. And if you go further on lines 55

onwards, it specifically discusses what happens when frameworks are used where the flow of control changes. The developer, i.e., the programmer who wrote the code in the first place is not responsible for determining the sequence of the execution. It is really up to the object to say, okay, I am being accessed, what do I do with this right now, and it is up to this framework to make that flow of control happen.

Q. Okay. Do you see where it says further down on column 4, approximately line 61, routines written by the developer are activated by code the developer did not write and the developer never even sees?

A. That's right.

Q. What does that refer to?

A. So that ties back to what I was saying earlier. The programmer only writes these objects and the methods for it. What other code executes or calls those objects, the developer may have no idea who does that. That's really up to the framework to take care of that.

Q. Okay. How does searching for

components based on properties fit into this, if at all?

A. So the '430 patent talks about searching for components. And it is within this sort of object-oriented framework where you have this framework that has these component objects and methods that work on them and so forth. And the logic is the same thing, when a -- let me use an example, maybe.

Say, for example, in the old system, if I wanted to connect a printer to my computer, what I would have to do is know that I have to load a particular printer driver. I would typically load that by knowing the driver's name, by asking for it, or loading it from disk, and install that printer driver and then I will have that printer working on my system, if everything goes well. A lot of times it doesn't.

If the printer happens to be on the network, I have to ask my systems administrator what is the name of that printer and how do I access that. And you will get some cryptic, you know, computer-like name that you would type in and hopefully you will get your

printer.

In the object-oriented kind of system that's described in the '430 patent, what you would say is I am interested in printers -- I want to print something and I want to print, a color printer that handles PDF files and sends that query out, and the system is able, because of these properties that are attached at different printers and so forth, is able to do that matching. It may be a slightly imprecise matching. It may find five different color printers but only one or two that does PDF and pulls out the one that is most appropriate or the best match and makes that available to the user who requested a color printer that prints PDF files.

So the difference here is clearly the user who is using this, asking to add a printer in this example, doesn't have to know about the printer's name or load a particular driver manually in any fashion. It kind of all happens automatically at a higher level of abstraction from a user's perspective, in particular.

Q. And how does the concept of adding

support for the hardware or software components to the operating system play into this system?

A. So that plays in because the way this '430 patent is talking about it is it has got some data structures there that maintain what components, whether it is hardware or software, that it can allow access to by other elements, like another user, another piece of software.

And basically maintains some data structures that say, okay, these are the active printers, these are the active folders that may be there, and I am going to provide some data to enable me to allow other applications, other users, other software to access those software or hardware components that have previously been searched for and support added for in this data structure.

And much like in the Android system where, you know, it uses the activity stack and the package manager to instantiate those, those components.

Q. Can we turn actually now to column 3, lines, say, 36 through 52 or so, if you can bring those up on the screen.

Could you explain for us in a little

bit more detail what the framework approach is?

A. So here is an example of what a particular framework approach might be. So, for example, you might have these objects that enable -- so let's use the example in line 50, for example, user interface framework. So it may provide framework for a programmer to say I want to create a user interface, what the user would see that has windows and scroll bars and menus, but doesn't have to necessarily define those things. It may say I want to use a particular scroll bar and the system will be able to come back with an appropriate object and instantiate that scroll bar, and it could choose from more than one, if more than one exists.

Q. Okay. And do you see where it states, "thus, a framework is a set of object classes that collaborate to execute defined sets of computing responsibilities?"

A. Yes.

Q. Can you explain what that means?

A. So this goes back to the overall framework has these multiple objects and these object classes, and the classes are basically

the definition of the objects instantiation of a class. And the framework basically has a bunch of these running and will enable that to execute or basically decide what computation will be done by which object, which is what is meant by computing responsibilities. Rather than the user saying I want this program to run it, the framework takes care of figuring out which program is going to -- which object is going to run it.

Q. Okay. Are there any advantages to this approach over the more traditional way of programming?

A. Well, absolutely. The advantage here is, first of all, the user or the requester doesn't have to know what particular pieces of code need to be loaded or run. That is left up to the framework to figure that out.

It also allows the kinds of things you see on modern phones, the iPhones and Android devices where the user is suddenly given access to all these different applications without necessarily knowing about it a priori.

For example, I think in our opening slides or in my tutorial maybe I used the

example of on a phone if I clicked on an e-mail link and the system would come back and say you have three different possible e-mail programs that can run this, and you just have to choose one of them. And the system was able to do that on its own. The user did not have to load those e-mail clients up front, did not have to even know that they existed before making the request or before clicking that e-mail link.

Q. Are there any particular challenges using this approach to locating target hardware or software?

A. The challenges, first of all, in the early days was users had a complete different mindset. They were used to procedural programming. They had to do that flip to understand how to do this, but more importantly the overall framework, as talked about in the '430 patent, which is a particular framework in an operating system to provide access to these different components to a user level system, to a user level usage, the challenges would be to make sure they all kind of worked properly together and that every one of those elements could be searched and searched with

appropriately descriptive criteria, that it doesn't require obtuse language that the old systems would require.

Say, for example, in the printer example, I could search by saying I want a color printer, rather than requiring, you know, the HP 2225 printer, for example.

So it was those kinds of advantages that it gave. And the challenges were to build a system that actually enabled all of that to happen.

Q. Okay. Let's turn now to the Malone reference. And I would like to start off, if we could pull up the background art on column 2 starting around line 53 or so, if I could pull that to the bottom. And then the rest of that section on the top of column 3 down to summary of the invention. So if we could just blow up those two parts.

So do you see in the background art it states that, with increasing power of microprocessors and of computers generally of any given physical size, there has been a widely recognized need for systems that would permit users who lack sophisticated programming

skills to utilize this newly-available computational power for a wide range of tasks. Many different approaches have been taken in order to try to satisfy this need.

What is the first approach that the background of the Malone patent identifies?

A. The old style that I was talking about, which is basically -- are you talking about the first new approach, you mean?

Q. So they are talking about many different approaches to satisfy the need. So can you describe what is meant by one line of approach has tried to obtain the ordinary and often complicated user interface of a computer system's operating system by providing an operating environment within which a user relates to the operating system without directly using the operating system's commands?

A. Sure. This is, this is talking about an application basically that would sit, like the MacIntosh Finder, which is the example, it is an application level software that would be able to relate to the operating system without necessarily programming at that low level of an operating system. Unlike like a UNIX Find

where you had to sit there at the terminal and do the defining, this MacIntosh Finder provided a one-level higher abstraction to be able to find files, for example.

Q. Do you see where it states on the top of column 3, another approach is described in a recent paper by Malone, and that paper there introduced a concept of semi-structural messages and rules for processing these messages and a system called information lens?

A. That's correct.

Q. Can you explain what that talks about?

A. Yeah, this talks about this notion of adding, say if you have like a MacIntosh Finder, which simply just finds appropriate files, if you give it a particular name or you put files into a folder, what this is adding to that is this notion of rules.

And the rules would be, for example, find all files that, you know, have the date of March 2nd, 2011. It would put that in and these rules could run on their own.

And they call this an information lens because the analogy to the physical world would be like a lens, a piece of glass or something

that only showed particular things and not others, as a bit of a filter, so to speak.

Q. Okay. And what does it state about -- can you explain the statement, "the approach of operating environments is limited in that they are dependent on specific applications programs to provide access to databases having wide ranges of applicability to users, and the specific applications are not necessarily integrated with the operating environment"? What is that talking about?

A. So this is basically saying that these kinds of operating environments don't have good integration with other applications. So they are basically talking about it gets data but it doesn't necessarily talk with other applications very well.

Q. Okay. And what does it identify -- what does it say about information lens?

A. It basically says although information lens provides some valuable concepts, i.e., this notion of rules, it is limited to facilitating e-mail communications and not applicable to general databases.

Q. Okay. Can you -- first of all, let's

turn now to column 18. And do you remember being asked questions about column 18, and the system architecture there?

A. That's right.

Q. Okay. Let's pull up from, say, line 20 down to the end of the column, column 18. First of all, what is object lens?

A. Object lens is defined in Malone as simply a program. It is an object-oriented event-driven program, as it states here.

Q. Is it an operating system?

A. Oh, absolutely not.

Q. Can you explain the difference between object lens and a computer operating system?

A. Well, operating system is, one way of describing it is the lowest level piece of software that handles all the programs, execution of programs, storage of data, and networking and so forth that is typically on most computer systems.

What object lens is, is simply an event-driven application. It is just sitting on top and it is running to provide the functionality it provides, but it is not an operating system.

Q. Okay. And do you see the -- I think you were asked about what system referred to up in line 22 or so, in addition to summarizing the contents of semi-structured objects, the system can use their structure to perform even more powerful, automatic actions such as searching and restructuring.

And in that sentence, what does the word system refer to?

A. It is referring to the object lens system.

Q. Why do you think that?

A. Because this whole portion, if you can actually pull back, show me the other part, the stuff before it, if you don't mind. Actually, what page are we on?

Q. It is column 18. Why don't we just throw up all of column 18.

A. Yes, it is talking about the system, right? And all through here it is -- and if you look at the previous column as well, it is talking about the different steps of the object lens system.

So this whole page, in fact, is describing the object lens system. And, in

fact, the very next line to the one you suggested, you pointed out, says the object lens system. So that's the context that this paragraph is within.

Q. Okay. And do you see, let's -- and is the object lens system part of the computer operating system?

A. No, I think we already went over that. It is an event-driven program. It is not part of the operating system, absolutely.

Q. Okay. And do you recall also being asked about column 11, let's pull that up, the first half of column 11.

Do you remember being asked about this part of the specification, specifically let's talk about the paragraph starting, in some cases agents can take actions automatically on behalf of their users.

First of all, what is meant by users?

A. Users would be, for example, human user or it could be another folder or an application.

Q. Okay. So would a user be an active computer operating system?

A. No, that's not what it says here.

Q. So would actions being taken automatically on behalf of users facilitate, access of hardware or software components for a computer operating system?

A. Not through the operating system, no. Certainly not adding support for it.

Q. Okay. Generally speaking, what does Malone, the '870 patent relate to?

A. The Malone patent is basically talking about a particular system, an application-level system, that is giving this rule-based mechanism to do -- it provide users and other applications with the ability to move things between folders, for example.

So it basically gives a different view of the data that it has access to. It is not in any way adding support to an operating system as contemplated in the '430 patent.

Q. Okay. Do you remember being asked by Mr. Verhoeven whether the terms argument being used in some of the figures related to the term as it is used in specific computer programming context?

A. Yes.

Q. Could you turn to figure 12 of the

patent?

A. Could you tell me which CX that is?

Q. Sure, sure, I'm sorry. So Malone is RX-289. And let's go ahead and blow up both of those figures.

Do you see in figure 12, in figure 12 where it states, there is a name, let's use C, text, we should use C for implementation because it provides a nice interface with the X window system. Although your arguments in -- there is a box for text, let's use USP, are valid in general, for us the interface is a standard window -- with a standard window system is crucial.

Looking through this and figure 13, does this -- how does this relate, if at all, to what's being described in figure 17? And if we could bring up figure 17 side-by-side with figures 12 and 13.

MR. VERHOEVEN: Your Honor, I just object and note that none of these discussions of these figures are anywhere in the witness statement. There has been a very long redirect about operating system that is also not in the witness statement that I haven't objected to,

but I think at some point I have to draw the line.

MR. DAVIS: Your Honor, if I might respond?

JUDGE ESSEX: I don't think so. I think you covered these in your cross-examination. I think the matters were raised in cross-examination. I think you fairly did raise whether these went to an operating system, were part of an operating system, or involved in an operating system, I recall very lengthy cross-examination on that, and I think this is appropriate redirect for those questions on cross.

Anything else you would like to add, Mr. Davis?

MR. DAVIS: No, Your Honor.

JUDGE ESSEX: All right. Then continue.

BY MR. DAVIS:

Q. So does what is being described in figures 12 and 13 relate at all to figure 17?

A. Yes, it does.

Q. Can you describe how it does?

A. So basically figure 17, the way I am

seeing it, is basically talking about a type of rule. And the rule is if a particular argument, and the argument here is a descriptor of the type of content that have positions and so forth, then copy folder to new argument.

So this argument here in some ways is similar to the lawyers' argument or a discussion going on. If you go back to figure 12, you see here some example text where it says, although your arguments in let's use LISP, and essentially what happens here is if you look at figure 13, you have got a particular argument and the argument has filled in with the description of good interface with X and it fills in a bunch of other data.

And based on the different values in this data, things get moved into a folder, I guess, the new arguments folder in figure, that is shown in figure 17.

Q. Okay. So could you quickly summarize for us your opinion with regard to what elements, for example, of claim 1 of the '430 patent are not disclosed by Malone and why you think that?

A. So Malone, you know, my opinion it

discloses claims, sorry, claim 1, elements A to C, but not element D, which is the adding support to an operating system portion, because this, as we have just gone over, this is a programming event for a program.

It does not add support for the hardware and software components that are retrieved through the searching in elements A to C to the operating system without rebooting this operating system. So element D is not met.

Q. Okay. And is there anything in Malone that -- I'm sorry.

I withdraw the question. Let's turn now to the UNIX reference. First of all, what is UNIX?

A. UNIX is an operating system. It is an old operating system. It has been around since at least the early 1970s. It has been around for a long time.

Q. How common was its use in the early '90s?

A. It was very common. It was arguably one of the predominant operating systems at that time, before it was superseded by Windows

and Apple's MacIntosh.

Q. Could you describe the find command for us?

A. The find command is one of the simple commands in UNIX. UNIX, Your Honor, is a command-based system. It traditionally at that time did not have a graphical interface. That was added subsequently.

So the way you interacted with UNIX is you had a command with a command window so you looked at a window and it had basically a little arrow thing and you typed in commands. And one command could be list all the files in a directory and another command could be find all files that match a particular criteria, like file name equals, you know, has a particular name or a file date equals 21st, January, 1970, for example.

So it did that kind of matching. It was a command-based thing. So you had to type this in or run it in a script. It was not something that was particularly user friendly. You had to be in the know, so to speak. You had to be a computer person generally to use UNIX and use things like UNIX Find.

So that's really an old school way of doing things and very, very direct. I knew I needed to find a particular thing with a particular piece of information on it, and it would find that it didn't have the kind of general ability to search for things, like in the printer example I gave in the '430 example where you may say I want printers that can support color and PDF. It would not be able to do anything of that nature.

Q. Would one of ordinary skill in the art at the time of the filing of the application that led to the '430 patent be familiar with UNIX?

A. Oh, absolutely.

Q. Would somebody who is familiar with UNIX be familiar with the find command?

A. Oh, absolutely. It is one of the few basic commands in UNIX.

Q. Okay. And was UNIX disclosed in the specification of the '430 patent?

A. Yes, it was.

Q. Okay. Do you know whether the examiner is considered to be one of ordinary skill in the art?

A. I'm sure he is, absolutely.
Q. And now did the examiner ever reject the claims of the '430 patent during prosecution?
A. He did, yes.
Q. Did he, did he object -- did he reject them based on, based on the prior art?
A. No, he did not reject it based on the prior art. He asked for better descriptions of the claims, so that it would better match the specification.
Q. Okay. And how many times did the patentee have to amend the claims in order to overcome the examiner's indefinite rejections?
A. He had to do it at least twice.
Q. Okay. And going back to the underlying purpose that you described for searching for components that met, based on properties, could you use UNIX to serve that purpose in a framework-based operating system?
A. UNIX in its --
Q. The find command.
A. The find command? Absolutely not.
Q. Why not?
A. Because it doesn't search by

properties. Like I have already discussed at length, the search criteria in find is simply these inherent characteristics of the components that are already there. It doesn't search for the properties that could be added by the kind of locator system that the '430 patent talks about.

And, secondly, they just cannot -- it does not enable adding support to the operating system after it finds those files that it looked for.

Q. Okay. Let's turn quickly to the '828 patent. So, first, I would like to turn to Desai. Desai is RX-351.

A. Yes, I have got it.

Q. So could you please -- could you turn to page, let me give you the page. It is page 117 of the --

A. Of the thesis?

Q. Of the thesis.

A. Yes, I am there.

Q. Now, was Desai designed to detect multiple objects?

MR. NELSON: Objection, Your Honor. This is beyond the scope of my

cross-examination. My cross-examination was intentionally very limited in scope.

I did not address his opinions concerning what was absent from Desai. That was in his witness statement. It is not counsel's opportunity to supplement his record. That's what it is.

I addressed his agreement that there was elliptical fitting in Desai, nothing about his opinions concerning what was absent in Desai. So this is beyond the scope of cross-examination, Your Honor.

JUDGE ESSEX: I believe Mr. Nelson is quite accurate on that. This is beyond the scope of cross. Let's strike it.

MR. DAVIS: I will move on, Your Honor. Just one moment, Your Honor.

JUDGE ESSEX: Absolutely.

BY MR. DAVIS:

Q. Do you recall being asked about the Bisset reference?

A. Yes.

Q. Okay. And the response to the examiner's rejection of the '828 -- of some of the '828 claims based on the Bisset reference?

A. Yes.

Q. In responding to the examiner's rejection, did the patentee rely on any particular way of fitting an ellipse to overcome the Bisset reference?

A. No.

Q. Did the patentee ever indicate that the method disclosed in column 27 of the '828 patent was -- I'm sorry.

Did the patentee ever address whether or not one could fit an ellipse using the embodiment described in column 27 in response to the office action by the examiner?

MR. NELSON: I am going to make the same objection, Your Honor. I think we're getting back into claim construction, which I did not do as well.

MR. DAVIS: Your Honor, he asked the grounds for the patentee's response to the rejection. And I am just attempting to establish the nature of that response.

JUDGE ESSEX: I am not really sure what we're going for here.

MR. DAVIS: You know what, Your Honor, I think I have it from the earlier question and

answer.

JUDGE ESSEX: All right.

MR. DAVIS: I will go ahead --

JUDGE ESSEX: Then I will strike it.

MR. DAVIS: I will go ahead and pass the witness.

MS. KATTAN: I have no questions, Your Honor.

MR. VERHOEVEN: Your Honor, I have just three to five minutes.

RECROSS-EXAMINATION

BY MR. VERHOEVEN:

Q. Put up the '430 patent, column 4. And, Ryan, approximately line 44 through the end on column 4.

You were asked on redirect about this paragraph. Do you remember that?

A. Yes.

Q. And you were directed to the top of the paragraph, or maybe you weren't directed, but somebody mentioned the top of the paragraph, "programming with frameworks requires a new way of thinking for developers accustomed to other types of systems." Do you see that?

A. Yes.
Q. And you pointed to that as, in your redirect, as the frameworks is somehow the invention here. Do you remember that?
MR. DAVIS: Object, mischaracterizes his testimony.
MR. VERHOEVEN: I will withdraw it.
BY MR. VERHOEVEN:
Q. You remember talking about that, right?
A. I talked about frameworks, yes.
Q. The next sentence says: "In fact, it is not like programming at all in the traditional sense." If we could highlight as we're going along here. "In old-style operating systems such as DOS or UNIX," and then it goes on. Do you see that?
A. Yes.
Q. Now, DOS and UNIX are what are called procedural software systems, right?
A. Old style. They were not object-oriented, yes.
Q. They were not object-oriented. They were procedural as opposed to object-oriented?
A. Back in the day, yes.

Q. And what this paragraph is really talking about, sir, isn't it, is the difference between the old-style procedural software systems and object-oriented software systems?

A. With frameworks, yes.

Q. This discussion of frameworks is in the context of object-oriented frameworks, right?

A. That's correct.

Q. So if you see down here at line 59 -- I will grab my pointer, if we could highlight that sentence, Ryan -- rather, the thinking must be in terms of the responsibilities of the objects, which must rely on the framework to determine when the tasks should execute.

So this paragraph is saying in the old style you didn't use object-oriented programming. Now with this framework technology, we're using object-oriented programming, right?

A. Within frameworks, yes.

Q. And then it continues down here, "routines written by the developer are activated by code the developer did not write and that the developer never even sees." Do

you see that?

A. Yes.

Q. That's a discussion of how object-oriented programming works, right?

A. That's correct. Absolutely.

Q. Okay. Now, Malone is object-oriented, right?

A. It is an object-oriented system, yes.

Q. Right.

A. Application.

Q. It is the same thing as what this is talking about, object-oriented programming, correct?

A. It is created in the same type of object-oriented setup, yes.

Q. Now, you were asked about this framework, locator framework. Can we go to claim 1, please.

Where in claim 1 is there a limitation of a locator framework?

A. Claim 1 is talking about what the patent is all about, so the whole patent has this locator framework.

Q. Where is there a limitation here that uses the phrase locator framework?

A. It doesn't use that phrase in the claim.

Q. It doesn't. It uses different words to describe the scope of the invention, right?

A. Well, the scope of the invention is within the context of this overall locator framework that the '430 patent is talking about.

Q. Now, in redirect I thought that you were asked about adding support and what that functionality is here. And I took some notes, correct me if I am wrong, I thought you said adding support was allowing other applications access to the software components.

A. That's right, once the operating system has that support in, yes.

Q. And the Malone system allows other applications access to software components, doesn't it, sir?

A. But not through the operating system.

Q. Setting aside your dispute with me about whether there is an operating system included in the object lens system, set that aside for me, will you?

A. Sure.

Q. Will you admit for me that setting that aside, at least, that the Malone system allows other applications to access software components?

A. The Malone system, if in your hypothetical, that it is running -- it is not even in the operating system, as I am contending, then, yes, it allows other applications to access files in the file folder, sure.

Q. Now, can we go to the Malone patent, please, Ryan, '870. This is RX-289. And if we can go to column 3. Actually, can we go to column 2 first and can you pull out on column 2 the bottom paragraph, just the bottom one. That's fine. You can do it for background art. That's good, too.

Then underneath that put column 3, the two initial -- or go to column 3 and I will tell you what to do. Can you pull all the way down to the paragraph after summary of the invention, and can we put that all on the same screen? Or maybe not. That's fine, Ryan.

So you were shown this on redirect, this paragraph, one line of approach has tried

to tame the ordinary and often complicated user interface of a computer system's operating system by providing an operating environment within which the user relates to the operating system without directly using the operating system's commands? Do you remember that?

A. Yes, I do.

Q. And then it says, "the MacIntosh Finder is an example of this approach." Do you remember that?

A. Yes.

Q. And you said this is an application-based approach?

A. That's right.

Q. Okay. And then if you go down here, though, it talks about another approach and it says, "the approach of operating environments is limited in that they are dependent on specific applications programs to provide access to databases having wide ranges of applicability to users" -- and this is the clause I would like to focus on -- "and the specific applications are not necessarily integrated with the operating environment." Do you see that?

A. That's right.

Q. Operating environment is the operating system?

A. No.

Q. It says operating environment, sir?

A. That's right. If you look back at the previous paragraph that you have highlighted on the left-hand side, it says, user interface of a computer system's operating system by providing an operating environment. So that clearly distinguishes between the operating system and the operating environment.

Q. Sir, this is one line of approach. And this is discussing another approach. Do you see that?

A. I'm sorry, I am talking over you.

Q. I'm sorry.

A. That's right, but it is talking about the same kind of operating environment. It says the approach of operating environments, in your yellow highlighted section, it relates back, I believe, to the same language used just a paragraph before. And that's what it is saying. It is not the same as the operating system. And, in fact, it very clearly

distinguishes from the operating system in the previous paragraph.

Q. Isn't it true this paragraph is saying that the prior art approach had a problem in that it wasn't integrated with the operating environment and, sir, isn't it true that the whole purpose of this invention is achieving that integration with the operating environment?

A. With the operating environment, but that's distinct from the operating system as shown in the paragraph on the left-hand side, which comes from column 2 at the bottom.

Q. Now, you say that the Malone reference is limited to application level systems. Where does it say that in this patent? Can you show His Honor?

A. Because it says right here, the operating environment, for example, and it talks about applications integrated with the operating environment, and it clearly, as an example, distinguish that, as I just said before, the operating environment, which a user then uses to relate to the operating system, is clearly different from the operating system.

Q. So it is disclosed in the problems of the prior art section?

A. Basically that's the language that it talks about. And nowhere in the patent does it say this is an operating system or replacement or an integration to the operating system.

Q. Where in the patent, sir, does -- in the description of the invention, where in the preferred embodiment of this patent does it say that this solution is limited to application level systems?

A. It doesn't say that in those words but it does not say it is an operating system solution on it.

Q. It says it is a system.

A. It says it is a system, yes.

Q. It is a stand-alone system?

A. It is a stand-alone system, that it would run on top of an operating system.

Q. It doesn't say it runs on top of an operating system, does it, sir?

A. It doesn't use those words per se but my reading of this patent and one skilled in the art reading this patent would make that understanding, yes.

Q. It just says it is a system?
A. That's what it says, yes.
Q. Thank you.
MR. VERHOEVEN: Your Honor, at this point I don't have any further questions.
JUDGE ESSEX: Mr. Nelson, did you have any further questions?
MR. NELSON: No, nothing from me, Your Honor.
JUDGE ESSEX: Staff?
MS. KATTAN: No, Your Honor.
MR. DAVIS: Nothing, Your Honor.
JUDGE ESSEX: All right. And I assume that you are resting your rebuttal case?
MR. DAVIS: Yes, Your Honor, with the exception that we need to deal with the exhibits.
JUDGE ESSEX: There is always paperwork to finish. All right. Before I close usually, and in this case I am particularly happy to first thank the court reporter and support staff.
Oh, pardon me. You are dismissed and thank you very much.
THE WITNESS: Thank you, Your Honor.

JUDGE ESSEX: Or you can sit there if you want to while I thank the attorneys. But I am always impressed with the bar that's in front of me and particularly the cooperation. And the attorneys in this case have been no exception to that.

You have been outstanding and it is a great pleasure to preside over people such as yourselves, and you have my thanks in this case and we are adjourned.

(Whereupon, the below list of exhibits were provided to the court reporter for receipt into evidence:)

(Joint Exhibit Numbers JX-463C, JX-479C, JX-533C were received into evidence.)

(Joint Exhibit Numbers JX-700C, JX-437, JX-489, JX-525C, JX-527C, JX-532C, JX-542C, JX-543C were received into evidence.)

(Respondent Exhibit Number RX-165C was received into evidence.)

(Joint Exhibit Numbers JX-701C, JX-525C, JX-540C, JX-543C, JX-544C were was received into evidence.)

(Respondent Exhibit Number RX-111C was received into evidence.)

(Joint Exhibit Number JX-705C was received into evidence.)

(Respondent Exhibit Numbers RX-151C, RX-934, RX-935 were received into evidence.)

(Joint Exhibit Numbers JX-702C, JX-001 were received into evidence.)

(Respondent Exhibit Numbers RX-185C, RX-867 were received into evidence.)

(Joint Exhibit Numbers JX-706C, JX-002, JX-005, JX-480C, JX-689C were received into evidence.)

(Respondent Exhibit Numbers RX-26C, RX-181C, RX-184C were received into evidence.)

(Joint Exhibit Numbers JX-466C, JX-005, JX-006 were received into evidence.)

(Respondent Exhibit Numbers RX-1360 through RX-1364, RX-1365C, RX-1366, RX-1367C, RX-1368C, RX-1374C were received into evidence.)

(Joint Exhibit Numbers JX-467C, JX-001, JX-002, JX-003, JX-005 were received into evidence.)

(Respondent Exhibit Number RX-329 was received into evidence.)

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(Joint Exhibit Number JX-468C was received into evidence.)

(Respondent Exhibit Numbers RX-9C, RX-10C, RX-11C, RX-34C, RX-36C were received into evidence.)

(Joint Exhibit Numbers JX-469C, JX-001, JX-004 were received into evidence.)

(Respondent Exhibit Numbers RX-156, RX-299, RX-850, RX-922 were received into evidence.)

(Joint Exhibit Numbers JX-707C, JX-002, JX-003, JX-367 were received into evidence.)

(Respondent Exhibit Numbers RX-158C, RPX-31 were received into evidence.)

(Joint Exhibit Numbers JX-471C, JX-001, JX-002, JX-003, JX-007, JX-437, JX-489, JX-524C through JX-527C, JX-532C, JX-540C through JX-543C, JX-545C, JX-546C were received into evidence.)

(Respondent Exhibit Numbers RX-142C, RX-861 were received into evidence.)

(Joint Exhibit Numbers JX-472C, JX-196 were received into evidence.)

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(Respondent Exhibit Numbers RX-13C, RX-53, RX-68, RX-144C, RX-154C, RX-1860C, RX-1861C, RX-1862C were received into evidence.)

(Joint Exhibit Numbers JX-612C, JX-644C, JX-675C were received into evidence.)

(Respondent Exhibit Number RX-1869C was received into evidence.)

(Joint Exhibit Numbers JX-001, JX-004 were received into evidence.)

(Respondent Exhibit Numbers RX-1874C, RDX-08, RX-0289, RX-0601, RX-0735, RX-0882, RX-0884, RX-0922, RX-0994C, RX-1212C, RX-1217C, RX-1796, RX-1874C were received into evidence.)

(Joint Exhibit Numbers JX-001, JX-458C, JX-459C, JX-487 were received into evidence.)

(Respondent Exhibit Numbers RX-1894C, RDX-13.1-RDX-13.6, RX-882, RX-884, RX-1159, RX-1165, RX-1166, RX-1170, RX-1208, RX-1240, RX-1257, RX-1258, RX-1261, RX-1263 through RX-1282, RX-1284, RX-1285, RX-1893, RX-1894C were received into evidence.)

(Complainant Exhibit Number CX-227C, CX-473 were received into evidence.)

(Respondent Exhibit Numbers RX-1876C, RX-0904, RX-0906, RX-0914 through RX-0916, RX-1073, RX-1081, RX-1093, RX-1102 through RX-1104, RX-1106, RX-1109, RX-1114C, RX-1117C, RX-1203, RX-1206, RX-1290C, RX-1876C, RX-1897C, were received into evidence.)

(Joint Exhibit Numbers JX-458C, JX-655C, JX-656C, JX-659C through JX-663C, JX-681C through JX-685C were received into evidence.)

(Respondent Exhibit Number RX-1877C, RX-0826C, RX-1376C, RX-1424C, RX-1877C were received into evidence.)

(Complainant Exhibit Number CX-113 was received into evidence.)

(Respondent Exhibit Numbers RX-1878C, RX-1879C, RX-1424C, RX-1879C were received into evidence.)

(Joint Exhibit Numbers JX-655C, JX-656C, JX-659C through JX-662C, JX-681C through JX-685C were received into evidence.)

(Respondent Exhibit Numbers RX-1424C, RX-1879C were received into evidence.)

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(Joint Exhibit Numbers JX-002, JX-003, JX-005, JX-006, JX-055, JX-196, JX-367, JX-458C, JX-460C, JX-486C, JX-488C, JX-534C, JX-535C, JX-603C, JX-606C, JX-610C, JX-612C, JX-614C, JX-616C, JX-618C, JX-620C, JX-622C, JX-624C, JX-626C, JX-630C, JX-632C, JX-634C, JX-636C, JX-638C, JX-640C, JX-642C, JX-644C, JX-652C, JX-655C, JX-659C, JX-660C, JX-661C, JX-671C, JX-673C, JX-675C, JX-680C, JX-681C, JX-684C, JX-685C were received into evidence.)

(Respondent Exhibit Numbers RX-1895C, RDX-11.1-11.36C, RX-28C, RX-329, RX-334, RX-557, RX-704C, RX-708, RX-709, RX-710, RX-717, RX-880, RX-927, RX-1049, RX-1895C were received into evidence.)

(Joint Exhibit Numbers JX-002, JX-003, JX-005, JX-006, JX-124, JX-132, JX-142, JX-143, JX-147, JX-196, JX-220, JX-245, JX-289, JX-291, JX-347, JX-353, JX-367, JX-401, JX-404 through JX-406, JX-410, JX-419, JX-482C, JX-483C, JX-686, JX-687, JX-690C were received into evidence.)

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(Respondent Exhibit Numbers RX-1885C, RDX-9, RX-8, RX-73, RX-279, RX-303, RX-305, RX-329, RX-334, RX-342, RX-350, RX-351, RX-512, RX-558, RX-565, RX-567, RX-625, RX-696, RX-703, RX-705, RX-706, RX-708, RX-709, RX-713, RX-715, RX-717 through RX-721, RX-817 through RX-821, RX-829, RX-830, RX-845, RX-876, RX-877C, RX-878, RX-918, RX-1236, RX-1339, RX-1834, RX-1837, RX-1885C, RX-1888, RX-1887C, RX-0812C, RX-0815C, RX-0994C, RX-1237C, RX-1887C, RX-1796, RDX-15.01-RDX-15.03, RDX-15.05-RDX-15.08, RDX-15.10-RDX-15.18, RDX-15.20, RDX-15.22, RDX-15.25-RDX-15.29, RDX-15.31-RDX-15.61, RDX-15.68-RDX-15.74, RDX-15.81-RDX-15.82, RDX-16.01-RDX-16.03, RDX-16.09-RDX-16.11, RDX-16.22-RDX-16.23, RDX-16.25, RDX-16.29-RDX-16.31, RDX-16.34, RDX-16.37 were received into evidence.)

(Joint Exhibit Numbers JX-448C, JX-651C, JX-657C were received into evidence.)

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(Respondent Exhibit Numbers RDX-20.02-RDX-20.11, RDX-20.15-RDX-20.20, RDX-20.30-RDX-20.43, RDX-20.43A, RDX-20.46-RDX-20.47, RDX-20.49-RDX-20.53, RDX-20.56-RDX-20.61, RDX-20.63-RDX-20.71, RDX-20.79-RDX-20.80, RDX-20.82-RDX-20.84, RDX-20.86, RDX-20.88-RDX-20.90, RDX-20.96-RDX-20.97, RDX-20.99-RDX-20.100, RDX-20.103-RDX-20.104, RDX-30, RX-1836 were received into evidence.)

(Joint Exhibit Number JX-6, JX-367 was received into evidence.)

(Respondent Exhibit Number RX-26C, RX-140C, RX-158C, RDX-17.003, RDX-17.004, RDX-17.007, RDX-17.023, RDX-17.025, RDX-18.002, RDX-18.003, RDX-18.004, RDX-18.010, RDX-18.011, RDX-3.016, RDX-20, RDX-26, RDX-28 were received into evidence.)

(Complainant Exhibit Numbers CDX-3.001, CX-032C.001, CX-032C.038-.040, CX-032C.075, CX-203C, CX-357, CX-366C, CX-368C, CX-399, CX-403, CX-404, CX-408, CX-415, CX-416, CX-419, CX-420, CX-425, CX-473C, CX-474C, CX-574C, CX-575C were received into evidence.)

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(Joint Exhibit Numbers JX-8, JX-437C, JX-478C, JX-479C, JX-491, JX-532C were received into evidence.)

(Complainant Exhibit Numbers CDX-008.001-017, CDX-008.025, CDX-008.026, CDX-008.054-058, CDX-008.500-507, CDX-008.509-510, CDX-008.513-516, CX-210, CX-211, CX-212C, CX-213, CX-215, CX-216, CX-384C, CX-391C, CX-550C, CX-568C were received into evidence.)

(Joint Exhibit Numbers JX-001, JX-003, JX-004, JX-006, JX-143, JX-196, JX-245, JX-291, JX-464C, JX-469C, JX-472C, JX-491, JX-496C, JX-686, JX-696, JX-702C, JX-705C, JX-15C, JX-668C, JX-557C, JX-692C, JX-645C, JX-646C were received into evidence.)

(Complainant Exhibit Numbers CX-576, CX-577, CX-578, CX-579 were received into evidence.)

(Joint Exhibit Numbers JX-17C, JX-644C, JX-642C, JX-700C, JX-18C, JX-573C, JX-626C, JX-652C, JX-644C, JX-642C, JX-658C, JX-628C were received into evidence.)

(Complainant Exhibit Numbers CX-195, CX-113 were received into evidence.)

(Joint Exhibit Numbers JX-701C, JX-704C, JX-19C were received into evidence.)

(Complainant Exhibit Numbers CX-224C, CX-226C, CX-227C, CX-228C, CX-229C, CX-230C, CX-240C, CX-241C, CX-242C, CX-244, CX-247C were received into evidence.)

(Joint Exhibit Numbers JX-20C, JX-644C, JX-658C, JX-642C, JX-573C, JX-705C, JX-464C, JX-692C were received into evidence.)

(Complainant Exhibit Number CDX-11.103 was received into evidence.)

(Respondent Exhibit Number RX-1869C was received into evidence.)

(Joint Exhibit Number JX-702C, JX-706C, JX-466C, JX-001, JX-004 were received into evidence.)

(Complainant Exhibit Number CDX-1.032 was received into evidence.)

(Joint Exhibit Numbers JX-467C, JX-22C, JX-468C, JX-469C, JX-23C, JX-573C, JX-578C, JX-579C, JX-551C, JX-655C, JX-659C, JX-660C, JX-661C, JX-460C, JX-656C, JX-659C were received into evidence.)

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(Complainant Exhibit Numbers CX-051C, CX-052C, CX-054C, CX-055C, CX-056C, CX-057C, CX-061C, CX-067C, CX-073C were received into evidence.)

(Joint Exhibit Numbers JX-024C, JX-548C, JX-559C, JX-562C, JX-571C, JX-572C, JX-582C, JX-707C were received into evidence.)

(Complainant Exhibit Numbers CDX-9.001-024, CDX-9.026-054, CDX-9.075-083, CDX-9.088-094, CDX-9.096-097, CDX-9.117-118, CDX-30, CDX-31, CX-183C through CX-193C, CX-202C, CX-205C, CX-213, CX-218, CX-240C, CX-214C, CX-295C, CX-297C through CX-299C, CX-306C, CX-512C through CX-517C, CX-522C, CX-536C through CX-543C, CX-553, CX-554, CX-560, CX-561, CX-569C, CX-086C, CX-404, CX-415, CDX-11.023, CDX-11.029, CX-181, CX-600 were received into evidence.)

(Joint Exhibit Numbers JX-2, JX-5, JX-17C, JX-18C, JX-20C, JX-347, JX-367, JX-401, JX-419, JX-480C, JX-482C, JX-483C, JX-491, JX-528C, JX-530C, JX-690C, JX-461C, JX-462, JX-539C were received into evidence.)

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(Complainant Exhibit Numbers CDX-17.001, CDX-18, CDX-20, CDX-22, CDX-23, CDX-25, CDX-73C, CDX-553, CDX-554, CDX-601 through CDX-603 were received into evidence.)

(Joint Exhibit Numbers JX-002, JX-003, JX-367, JX-406, JX-458C, JX-663C were received into evidence.)

(Whereupon, at 4:45 p.m., the trial concluded.)

C O N T E N T S

WITNESS	DIRECT	CROSS	REDIRECT	RECROSS
VIVEK SUBRAMANIAN	1437	1438	1570	1608
RAVIN BALAKRISHNAN	1626	1627	1721	1749

AFTERNOON SESSION: 1570

E X H I B I T S

EXHIBIT NO:	MARKED	RECEIVED
COMPLAINANT		
CDX-30.....	1590	
CX-227C.....		1763
CX-473.....		1763
CX-113.....		1764
CDX-3.001.....		1767
CX-032C.001.....		1767
CX-032C.038-.040.....		1767
CX-032C.075.....		1767
CX-203C.....		1767
CX-357.....		1767
CX-366C.....		1767
CX-368C.....		1767
CX-399.....		1767
CX-403.....		1767
CX-404.....		1767

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CX-408		1767
CX-415		1767
CX-416		1767
CX-419		1767
CX-420		1767
CX-425		1767
CX-473C		1767
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CDX-008.500-507		1768
CDX-008.509-510		1768
CDX-008.513-516		1768
CX-210		1768
CX-211		1768
CX-212C		1768
CX-213		1768
CX-215		1768
CX-216		1768

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CX-113		1768
CX-224C		1769
CX-226C		1769
CX-227C		1769
CX-228C		1769
CX-229C		1769
CX-230C		1769
CX-240C		1769
CX-241C		1769
CX-242C		1769
CX-244		1769
CX-247C		1769
CDX-11.103		1769
CDX-1.032		1769

EXHIBIT NO:	MARKED	RECEIVED
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CX-067C		1770
CX-073C		1770
CDX-9.001-024		1770
CDX-9.026-054		1770
CDX-9.075-083		1770
CDX-9.088-094		1770
CDX-9.096-097		1770
CDX-9.117-118		1770
CDX-30		1770
CDX-31		1770
CX-183C through CX-193C		1770
CX-202C		1770
CX-205C		1770
CX-213		1770
CX-218		1770
CX-240C		1770

EXHIBIT NO:	MARKED	RECEIVED
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CX-214C		1770
CX-295C		1770
CX-297C through CX-299C		1770
CX-306C		1770
CX-512C through CX-517C		1770
CX-522C		1770
CX-536C through CX-543C		1770
CX-553		1770
CX-554		1770
CX-560		1770
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CX-404		1770
CX-415		1770
CDX-11.023		1770
CDX-11.029		1770
CX-181		1770
CX-600		1770
CDX-17.001		1771
CDX-18		1771
CDX-20		1771
CDX-22		1771

EXHIBIT NO:	MARKED	RECEIVED
COMPLAINANT		
CDX-23		1771
CDX-25		1771
CDX-73C		1771
CDX-553		1771
CDX-554		1771
CDX-601 through CDX-603		1771
RESPONDENT		
RX-165C		1760
RX-111C		1760
RX-151C		1761
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RX-185C		1761
RX-867		1761
RX-26C		1761
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RX-184C		1761
RX-1360 through RX-1364		1761
RX-1365C		1761
RX-1366		1761
RX-1367C		1761
RX-1368C		1761

EXHIBIT NO:	MARKED	RECEIVED
RESPONDENT		
RX-1374C		1761
RX-329		1761
RX-9C		1762
RX-10C		1762
RX-11C		1762
RX-34C		1762
RX-36C		1762
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RX-1860C		1763
RX-1861C		1763
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EXHIBIT NO:	MARKED	RECEIVED
RESPONDENT		
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RX-1874C		1763
RDX-08		1763
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RX-882		1763
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RX-1208		1763

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RESPONDENT		
RX-1240		1763
RX-1257		1763
RX-1258		1763
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RX-1263 through RX-1282		1763
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RX-1285		1763
RX-1893		1763
RX-1894C		1763
RX-1876C		1764
RX-0904		1764
RX-0906		1764
RX-0914 through RX-0916		1764
RX-1073		1764
RX-1081		1764
RX-1093		1764
RX-1102 through RX-1104		1764
RX-1106		1764
RX-1109		1764
RX-1114C		1764
RX-1117C		1764
RX-1203		1764
RX-1206		1764

EXHIBIT NO:	MARKED	RECEIVED
RESPONDENT		
RX-1290C		1764
RX-1876C		1764
RX-1897C		1764
RX-1877C		1764
RX-0826C		1764
RX-1376C		1764
RX-1424C		1764
RX-1877C		1764
RX-1878C		1764
RX-1879C		1764
RX-1424C		1764
RX-1879C		1764
RX-1895C		1765
RDX-11.1-11.36C		1765
RX-28C		1765
RX-329		1765
RX-334		1765
RX-557		1765
RX-704C		1765
RX-708		1765
RX-709		1765
RX-710		1765
RX-717		1765

EXHIBIT NO:	MARKED	RECEIVED
RESPONDENT		
RX-880		1765
RX-927		1765
RX-1049		1765
RX-1895C		1765
RX-1885C		1766
RDX-9		1766
RX-8		1766
RX-73		1766
RX-279		1766
RX-303		1766
RX-305		1766
RX-329		1766
RX-334		1766
RX-342		1766
RX-350		1766
RX-351		1766
RX-512		1766
RX-558		1766
RX-565		1766
RX-567		1766
RX-625		1766
RX-696		1766
RX-703		1766

EXHIBIT NO:	MARKED	RECEIVED
RESPONDENT		
RX-705		1766
RX-706		1766
RX-708		1766
RX-709		1766
RX-713		1766
RX-715		1766
RX-717 through RX-721		1766
RX-817 through RX-821		1766
RX-829		1766
RX-830		1766
RX-845		1766
RX-876		1766
RX-877C		1766
RX-878		1766
RX-918		1766
RX-1236		1766
RX-1339		1766
RX-1834		1766
RX-1837		1766
RX-1885C		1766
RX-1888		1766
RX-1887C		1766
RX-0812C		1766

EXHIBIT NO:	MARKED	RECEIVED
RESPONDENT		
RX-0815C		1766
RX-0994C		1766
RX-1237C		1766
RX-1887C		1766
RX-1796		1766
RDX-15.01-RDX-15.03		1766
RDX-15.05-RDX-15.08		1766
RDX-15.10-RDX-15.18		1766
RDX-15.20		1766
RDX-15.22		1766
RDX-15.25-RDX-15.29		1766
RDX-15.31-RDX-15.61		1766
RDX-15.68-RDX-15.74		1766
RDX-15.81-RDX-15.82		1766
RDX-16.01-RDX-16.03		1766
RDX-16.09-RDX-16.11		1766
RDX-16.22-RDX-16.23		1766
RDX-16.25		1766
RDX-16.29-RDX-16.31		1766
RDX-16.34		1766
RDX-16.37		1766
RDX-20.02-RDX-20.11		1767
RDX-20.15-RDX-20.20		1767

EXHIBIT NO:	MARKED	RECEIVED
RESPONDENT		
RDX-20.30-RDX-20.43		1767
RDX-20.43A		1767
RDX-20.46-RDX-20.47		1767
RDX-20.49-RDX-20.53		1767
RDX-20.56-RDX-20.61		1767
RDX-20.63-RDX-20.71		1767
RDX-20.79-RDX-20.80		1767
RDX-20.82-RDX-20.84		1767
RDX-20.86		1767
RDX-20.88-RDX-20.90		1767
RDX-20.96-RDX-20.97		1767
RDX-20.99-RDX-20.100		1767
RDX-20.103-RDX-20.104		1767
RDX-30		1767
RX-1836		1767
RX-26C		1767
RX-140C		1767
RX-158C		1767
RDX-17.003		1767
RDX-17.004		1767
RDX-17.007		1767
RDX-17.023		1767
RDX-17.025		1767

EXHIBIT NO:	MARKED	RECEIVED
RESPONDENT		
RDX-18.002		1767
RDX-18.003		1767
RDX-18.004		1767
RDX-18.010		1767
RDX-18.011		1767
RDX-3.016		1767
RDX-20		1767
RDX-26		1767
RDX-28		1767
RX-1869C		1769
JOINT		
JX-463C		1760
JX-479C		1760
JX-533C		1760
JX-700C		1760
JX-437		1760
JX-489		1760
JX-525C		1760
JX-527C		1760
JX-532C		1760
JX-542C		1760
JX-543C		1760
JX-701C		1760

EXHIBIT NO:	MARKED	RECEIVED
JOINT		
JX-525C		1760
JX-540C		1760
JX-543C		1760
JX-544C		1760
JX-705C		1761
JX-702C		1761
JX-001		1761
JX-706C		1761
JX-002		1761
JX-005		1761
JX-480C		1761
JX-689C		1761
JX-466C		1761
JX-005		1761
JX-006		1761
JX-467C		1761
JX-001		1761
JX-002		1761
JX-003		1761
JX-005		1761
JX-468C		1762
JX-469C		1762
JX-001		1762

EXHIBIT NO:	MARKED	RECEIVED
JOINT		
JX-004		1762
JX-707C		1762
JX-002		1762
JX-003		1762
JX-367		1762
JX-471C		1762
JX-001		1762
JX-002		1762
JX-003		1762
JX-007		1762
JX-437		1762
JX-489		1762
JX-524C through JX-527C		1762
JX-532C		1762
JX-540C through JX-543C		1762
JX-545C		1762
JX-546C		1762
JX-472C		1762
JX-196		1762
JX-612C		1763
JX-644C		1763
JX-675C		1763
JX-001		1763

EXHIBIT NO:	MARKED	RECEIVED
JOINT		
JX-004		1763
JX-001		1763
JX-458C		1763
JX-459C		1763
JX-487		1763
JX-458C		1764
JX-655C		1764
JX-656C		1764
JX-659C through JX-663C		1764
JX-681C through JX-685C		1764
JX-002		1765
JX-003		1765
JX-005		1765
JX-006		1765
JX-055		1765
JX-196		1765
JX-367		1765
JX-458C		1765
JX-460C		1765
JX-486C		1765
JX-488C		1765
JX-534C		1765
JX-535C		1765

EXHIBIT NO:	MARKED	RECEIVED
JOINT		
JX-603C		1765
JX-606C		1765
JX-610C		1765
JX-612C		1765
JX-614C		1765
JX-616C		1765
JX-618C		1765
JX-620C		1765
JX-622C		1765
JX-624C		1765
JX-626C		1765
JX-630C		1765
JX-632C		1765
JX-634C		1765
JX-636C		1765
JX-638C		1765
JX-640C		1765
JX-642C		1765
JX-644C		1765
JX-652C		1765
JX-655C		1765
JX-659C		1765
JX-660C		1765

EXHIBIT NO:	MARKED	RECEIVED
JOINT		
JX-661C		1765
JX-671C		1765
JX-673C		1765
JX-675C		1765
JX-680C		1765
JX-681C		1765
JX-684C		1765
JX-685C		1765
JX-002		1765
JX-003		1765
JX-005		1765
JX-006		1765
JX-124		1765
JX-132		1765
JX-142		1765
JX-143		1765
JX-147		1765
JX-196		1765
JX-220		1765
JX-245		1765
JX-289		1765
JX-291		1765
JX-347		1765

EXHIBIT NO:	MARKED	RECEIVED
JOINT		
JX-353		1765
JX-367		1765
JX-401		1765
JX-404 through JX-406		1765
JX-410		1765
JX-419		1765
JX-482C		1765
JX-483C		1765
JX-686		1765
JX-687		1765
JX-690C		1765
JX-448C		1766
JX-651C		1766
JX-657C		1766
JX-6		1767
JX-367		1767
JX-8		1768
JX-437C		1768
JX-478C		1768
JX-479C		1768
JX-491		1768
JX-532C		1768
JX-001		1768

EXHIBIT NO:	MARKED	RECEIVED
JOINT		
JX-003		1768
JX-004		1768
JX-006		1768
JX-143		1768
JX-196		1768
JX-245		1768
JX-291		1768
JX-464C		1768
JX-469C		1768
JX-472C		1768
JX-491		1768
JX-496C		1768
JX-686		1768
JX-696		1768
JX-702C		1768
JX-705C		1768
JX-15C		1768
JX-668C		1768
JX-557C		1768
JX-692C		1768
JX-645C		1768
JX-646C		1768
JX-17C		1768

EXHIBIT NO:	MARKED	RECEIVED
JOINT		
JX-644C		1768
JX-642C		1768
JX-700C		1768
JX-18C		1768
JX-573C		1768
JX-626C		1768
JX-652C		1768
JX-644C		1768
JX-642C		1768
JX-658C		1768
JX-628C		1768
JX-701C		1769
JX-704C		1769
JX-19C		1769
JX-20C		1769
JX-644C		1769
JX-658C		1769
JX-642C		1769
JX-573C		1769
JX-705C		1769
JX-464C		1769
JX-692C		1769
JX-702C		1769

EXHIBIT NO:	MARKED	RECEIVED
JOINT		
JX-706C		1769
JX-466C		1769
JX-001		1769
JX-004		1769
JX-467C		1769
JX-22C		1769
JX-468C		1769
JX-469C		1769
JX-23C		1769
JX-573C		1769
JX-578C		1769
JX-579C		1769
JX-551C		1769
JX-655C		1769
JX-659C		1769
JX-660C		1769
JX-661C		1769
JX-460C		1769
JX-656C		1769
JX-659C		1769
JX-024C		1770
JX-548C		1770
JX-559C		1770

EXHIBIT NO:	MARKED	RECEIVED
JOINT		
JX-562C		1770
JX-571C		1770
JX-572C		1770
JX-582C		1770
JX-707C		1770
JX-2		1770
JX-5		1770
JX-17C		1770
JX-18C		1770
JX-20C		1770
JX-347		1770
JX-367		1770
JX-401		1770
JX-419		1770
JX-480C		1770
JX-482C		1770
JX-483C		1770
JX-491		1770
JX-528C		1770
JX-530C		1770
JX-690C		1770
JX-461C		1770
JX-462		1770

EXHIBIT NO:	MARKED	RECEIVED
JOINT		
JX-539C		1770
JX-002		1771
JX-003		1771
JX-367		1771
JX-406		1771
JX-458C		1771
JX-663C		1771

CERTIFICATE OF REPORTER

TITLE: Certain Mobile Devices

INVESTIGATION NO: 337-TA-750

HEARING DATE: Sept 30, 2011

LOCATION: Wash DC

NATURE OF HEARING: Volume 5

I hereby certify that the foregoing/attached transcript is a true, correct and complete record of the above-referenced proceedings of the U.S. International Trade Commission.

Date: 9/30/11

SIGNED: KAREN BRYNTESON Karen Brynteson

Signature of the Contractor of the Authorized Contractor's Representative
1220 L Street, N.W, Suite 600
Washington, D.C. 20005

I hereby certify that I am not the Court Reporter and that I have proofread the above-referenced transcript of the proceedings of the U.S. International Trade Commission, against the aforementioned Court Reporter's notes and recordings, for accuracy in transcription in the spelling, hyphenation, punctuation and speaker identification and did not make any changes of a substantive nature. The foregoing/attached transcript is a true, correct and complete transcription of the proceedings.

SIGNED: JOHN D. LASHER John D. Lasher
Signature of Proofreader

I hereby certify that I reported the above-referenced proceedings of the U.S. International Trade Commission and caused to be prepared from my tapes and notes of the proceedings a true, correct and complete verbatim recording of the proceedings.

SIGNED: KAREN BRYNTESON Karen Brynteson
Signature of the Court Reporter