

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,

Petitioner

v.

SPEIR TECHNOLOGIES LTD.,

Patent Owner

IPR2023-00542

Patent 7,765,399

REMOTE DEPOSITION OF SANDEEP CHATTERJEE, Ph.D.

Friday, October 27, 2023

Via Videoconference

Reported by:

Dana Welch, CSR, RPR, CRR, CRC

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TransPerfect Legal Solutions
212-400-8845 - Depo@TransPerfect.com

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Friday, October 27, 2023

11:58 p.m. EST

REMOTE DEPOSITION of SANDEEP CHATTERJEE,
Ph.D., appearing via Zoom, held before Dana
Welch, a Registered Professional Reporter,
Certified Realtime Reporter.

1 APPEARANCES OF COUNSEL:

2 On Behalf of the Petitioner:

FISH & RICHARDSON P.C.

3 David Holt, Esq.

dth@fr.com

4 1000 Maine Avenue SW.

Washington, D.C. 20024

5 (202) 783-5070

6 FISH & RICHARSON P.C.

Gretchen A. DeVries, Esq.

7 devries@fr.com

7 Times Square 20th Floor

8 New York, NY 10036

(212) 765-5070

9

10 On Behalf of the Patent Owner:

11 BC LAW GROUP, P.C.

Seth Lindner, Esq.

12 slindner@bc-lawgroup.com

200 Madison Avenue, 24th Floor

13 New York, NY 10016

(212) 951-0100

14

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22

23

24

25

TransPerfect Legal Solutions
212-400-8845 - Depo@TransPerfect.com

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I N D E X

WITNESS:

SANDEEP CHATTERJEE, Ph.D.

EXAMINATION:

PAGE:

BY MR. LINDNER

5

EXHIBITS MARKED:

NO. DESCRIPTION

PAGE:

Exhibit 1001, U.S. Patent 7,765,399 33

Exhibit 1003, Declaration of Dr. Sandeep 8

Chatterjee, Ph.D.

Exhibit 1004, U.S. Patent 7,716,720 26

Exhibit 1005, U.S. Patent Application 136

2005/0190159 A1

P R O C E E D I N G S

COURT REPORTER: The attorneys participating in this deposition acknowledge that I am not physically present in the deposition room and that I will be reporting this deposition remotely. They further acknowledge that in lieu of an oath administered in person, the witness will verbally declare his testimony in this matter under penalty of perjury. The parties and their counsel consent to this arrangement and waive any objections to this manner of reporting. Please indicate your agreement by stating your name and your agreement on the record.

MR. LINDNER: Seth Lindner, no objections. I agree with your stipulations.

MR. HOLT: David Holt, I agree with your stipulations, no objections.

SANDEEP CHATTERJEE, Ph.D.,
having provided proper identification, was placed under oath and testified as follows:

EXAMINATION

BY MR. LINDNER:

1 Q. Good morning, Dr. Chatterjee.

2 A. Good morning.

3 Q. I assume you've been deposed by video
4 before; is that correct?

5 A. I have, yes.

6 Q. Okay. So you're pretty familiar with
7 probably the ground rules?

8 A. Um, yes. I think the ground rules for a
9 video deposition, I think are the same as for a
10 non-video deposition.

11 Q. All right. So just please be sure to give
12 verbal answers instead of gestures or, you know,
13 other sounds that might convey an answer so that
14 the court reporter can get everything accurately.
15 Is that okay?

16 A. Yes.

17 Q. And it seems like the video is fairly
18 responsive here, but, please, you know, in case
19 there's any delays, make sure that you have time to
20 hear my whole question before you answer and I'll
21 try to do the same thing as you're giving your
22 responses. Sound good?

23 A. It does.

24 Q. Can you tell me what you have with you

1 today?

2 A. What do you mean what do I have with me?

3 Q. Do you have any written materials with
4 you?

5 A. I have written materials. I assume you're
6 asking about the case. I have like other papers,
7 not about the case, with me.

8 Q. Okay. Are those materials that are on
9 your desk in front of you that you're planning on
10 using today?

11 A. No. I'm not planning on using. There's
12 like a card that my wife gave me, things like that.
13 I'm just saying that there are documents on my desk
14 here but they're not relevant to the case.

15 Q. Okay. Do you have any paper copies of any
16 of the documents that are relevant to the case?

17 A. Not paper copies, no.

18 Q. All right. And on your computer, are
19 there any other applications running other than the
20 Zoom application that's up on the screen?

21 A. No. I have shut down Outlook, and no
22 other application apart from Zoom.

23 Q. All right. So you submitted a declaration
24 for IPR2023-00542, right?

1 A. I don't recall the IPR number, but I did
2 submit a declaration for this matter, yes.

3 Q. All right. And I have put a copy of the
4 exhibit, it's labeled Ex. 1003.pdf into the chat.

5 Do you have that?

6 A. I do.

7 Q. All right. And could you open that up and
8 take a look and confirm that that is the
9 declaration you submitted for IPR2023-00542?

10 (Exhibit 1003, Declaration of Dr. Sandeep
11 Chatterjee, Ph.D., marked for identification.)

12 A. So I think my declaration doesn't identify
13 the IPR number. I think that would be on the
14 petition.

15 Q. Is the exhibit that I put into the chat
16 your declaration that you submitted relevant to the
17 IPR challenging the 7,765,399 patent?

18 A. It is, yes. 212 pages long, and I see my
19 signature at the end.

20 Q. Okay. So if I refer to your declaration
21 today during the deposition, you'll understand me
22 to be referring to that exhibit, correct?

23 A. Yes.

24 Q. All right. And if I refer to the '399

1 patent, I mean the U.S. Patent Number 7,765,399.

2 A. Yes.

3 Q. Okay. In paragraph 13 of your
4 declaration, you say that you're using
5 February 22nd, 2006 as the critical date for the
6 '399 patent.

7 Do you see that?

8 A. Which paragraph number?

9 Q. 13.

10 A. I see that, yes.

11 Q. So today, if we talk about the critical
12 date, is it okay if we both understand that means
13 the date that you've listed there in your
14 declaration on page 13 -- sorry -- paragraph 13?

15 A. Yes. February 22nd, 2006.

16 Q. And just some housekeeping here, your
17 declaration appears to include two different page
18 numbers at the bottom of most of the pages. So
19 I'll try to refer to paragraph numbers today, but
20 if I do mention a page number, I'll be using the
21 number that's printed closest to the bottom of the
22 page. Okay?

23 A. Yeah. I might forget that, but, yeah, I
24 think if we go with the paragraph numbering that

1 will be the easiest, but yes, I understand your
2 point.

3 Q. Okay. And also in paragraph 13 of your
4 declaration, you say that you've analyzed various
5 publications and materials in addition to other
6 materials that you cite in your declaration.

7 Do you see that?

8 A. In paragraph 13?

9 Q. Yes.

10 Oh, I apologize. It's actually paragraph
11 14.

12 A. Okay. I see that.

13 Q. So can you explain what you meant by that,
14 "the various publications and materials in addition
15 to other materials I cite in my declaration"?

16 A. So you're asking about the last sentence
17 in paragraph 14?

18 Q. Correct.

19 A. I think it could have been phrased better.
20 I think there's some grammar issues here. But,
21 essentially, I'm saying that I've analyzed other
22 publications and materials, and I have cited to
23 them in the body of my declaration.

24 Q. Okay. So there aren't any materials that

1 you are relying upon or basing your opinion upon
2 that are not cited in your declaration, right?

3 A. Well, I want to be very clear on that. In
4 terms of the publications and materials and
5 documents that I've analyzed as part of the
6 analysis in my declaration, I have cited to them.
7 But then the sentence before that, I'm talking
8 about my own experience, related work that I have
9 done myself. So there is other material that comes
10 into play.

11 And then I talk about the definition of a
12 person of ordinary skill later in my declaration
13 and the information that he or she would know as
14 well.

15 But I think I understand your question to
16 be like the actual analysis of the grounds I've
17 done based on the, for example, the prior art that
18 is expressly listed in my declaration. But I have
19 in terms of motivation to combine, things like
20 that, taken into account what a person of ordinary
21 skill would have known and understood based on
22 basic concepts in computer science and things like
23 that.

24 Q. Okay. So obviously you have a Ph.D. and

1 many years of experience, so you've reviewed lots
2 and lots of articles and publications over the
3 years. But what you're saying is that when you
4 started working on this case, you formed your
5 opinions here, the ones that are expressed in your
6 declaration, based on your existing knowledge when
7 you started the case and based on your analysis of
8 just the documents that you have cited in your
9 declaration, right?

10 A. So to be clear, it's not -- the analysis
11 is not from my perspective and my existing
12 knowledge, it's really from the perspective of one
13 of ordinary skill and what he or she would have
14 understood from these references. So that's -- and
15 I explain that later on when I talk about one of
16 ordinary skill, the education, experience that he
17 or she would have.

18 Q. Okay. And I was just trying to clarify
19 more on the -- in reference to the documents that
20 you used. There wasn't a particular document that
21 you relied on after beginning your work on this
22 case that isn't cited in your declaration, right?

23 A. No. There's not a particular document
24 that I rely on that's not cited. There are various

1 documents -- I think either before this or after
2 this, I list out -- yeah, right above this, I list
3 out all of the documents and the exhibit number.
4 But yes, there's not like one particular document
5 that I have not cited in my declaration but I rely
6 on it.

7 Q. Roughly how much time did you spend
8 analyzing materials and preparing your declaration?

9 A. I don't recall. This was -- I believe
10 this declaration was submitted at the very
11 beginning of this year, and I was working on it
12 prior to that. There was a good amount of time but
13 I don't recall precisely.

14 Q. Would you say more than ten hours?

15 A. Yes.

16 Q. More than 50 hours?

17 A. I believe so, yes.

18 Q. More than 100 hours?

19 A. Probably in that ballpark, I would guess.
20 Again, I don't have a recollection. It was over a
21 year ago, or approximately a year ago, but I would
22 estimate it's probably in that ballpark.

23 Q. And since submitting your declaration,
24 have you spent any additional time analyzing the

1 materials relevant to this IPR?

2 A. So I'm not really sure what you mean by
3 analyzing these materials. After submitting the
4 declaration, I have reviewed the institution
5 decision, I have reviewed, for example, the POPR.
6 I'm not -- I'm not sure whether you would include
7 that within analyzing these materials.

8 Q. Did you review your declaration after
9 submitting it in preparation for today's
10 deposition?

11 A. Yes.

12 Q. And in reviewing it, did you identify any
13 mistakes in your declaration?

14 A. I don't think there are any mistakes.
15 There are some typos that I found and some things
16 that I should have caught before submitting it.
17 For example, if you look at paragraph 20, like the
18 exhibit numbers were missing from a couple of
19 places. For example, in paragraph 20, about three
20 lines from the bottom, it just says #399. It
21 should have included the exhibit number.

22 And I think it goes on, it has a
23 reference, the Hall reference, so it's missing the
24 exhibit number. So there are minor typos here and

1 there. I don't think there's any material or
2 significant confusion that the lack of the exhibit
3 numbers raises. But there's no error. I -- these
4 are my opinions, I 100 percent agree with them,
5 stand by them. There are some typos that I should
6 have caught.

7 Q. Have any of your opinions expressed in
8 your declaration changed since you submitted it?

9 A. No. Like I just mentioned, I 100 percent
10 stand behind these opinions, so no.

11 Q. Did you assist in drafting the petition
12 that was filed against the '399 patent?

13 A. I think this question is a little bit
14 confusing. I think there were two petitions. And
15 then the petitions do reference my declaration.
16 And there are quotes and things like that in the
17 petition, referencing my declaration.

18 So to the extent that those would fall
19 within your question, then clearly when the
20 petition is referenced in my declaration, then,
21 yes, it's assisting the petition.

22 Q. And beyond the petition referenced in your
23 declaration, did you have a role in drafting the
24 petition?

1 A. I don't recall. I believe I reviewed the
2 petition and I may have provided feedback. But,
3 again, this is a long time ago. I don't recall
4 exactly.

5 Q. In preparing your declaration, did you
6 speak with anyone other than your attorneys at Fish
7 & Richardson, or the attorneys at Fish &
8 Richardson, about the substance of your
9 declaration?

10 A. No. Apart from the attorneys, no.

11 Q. And in preparing for today's deposition,
12 did you review any documents beyond those that are
13 listed in your declaration in paragraph 11 and 12?

14 A. I did. And I think I covered this in one
15 of your previous questions or in one of my previous
16 answers, that after that, I have reviewed, for
17 example, the POPR, the institution decision as
18 well; those are two examples of documents that are
19 not listed in paragraphs 11 or 12.

20 Q. Are there any others?

21 A. Not that I can think of right now.

22 Q. Can you describe the drafting process for
23 preparing your declaration?

24 A. I'm not really sure what you mean by can I

1 describe the drafting process.

2 Q. In other words, did you sit down in front
3 of your computer with a blank document open and
4 start typing to create the declaration?

5 A. Again, I don't recall exactly. It was a
6 long time ago. But, yes, I did put together, if I
7 remember correctly, a first draft of the
8 declaration, and then I discussed it with counsel.
9 And so I don't recall whether I started off with a
10 blank Microsoft Word document or used an older
11 template for declarations. Otherwise, I would have
12 to go and set up all the formatting and things like
13 that.

14 But I understand your question. And what
15 I did was I put together my analysis and then, like
16 I said, it was an iterative process, and I
17 discussed it with counsel, and they provided
18 feedback, that's how it proceeded.

19 Q. Are there portions of your declaration
20 that were drafted first by counsel and then
21 reviewed or edited by you?

22 A. I don't know how to answer that question.
23 Again, this is a long time ago. You know, they may
24 have added a paragraph here or there clarifying

1 things that they may have thought were unclear.

2 But with regards to the actual opinions as set
3 forth in the declaration, they are my opinions.

4 Q. So in your declaration, you've concluded
5 on a number of occasions that a particular claim or
6 a particular limitation would have been obvious to
7 a person of ordinary skill in the art, right?

8 A. I don't think that I'm providing an
9 opinion that a claim on its -- or a limitation on
10 its own is obvious. I'm really providing opinions
11 with regards to certain challenged claims. And so
12 my opinions are really directed to the challenged
13 claims and that they're obvious to one of ordinary
14 skill.

15 Q. So let me give you an example of what I
16 was talking about. If you can look at paragraph 32
17 of your declaration, let me know when you've
18 reviewed it.

19 A. Okay. I've reviewed it.

20 Q. So in this paragraph, would you say that
21 you have offered your opinion that a person of
22 skill would have found obvious for the untrusted
23 host mobile device and numeric screen combination
24 to include a conventional audio input and output

1 components?

2 A. So the actual claim analysis comes later
3 in my declaration. This, I'm simply providing --
4 as I think I've made very clear in the declaration,
5 Marek makes very clear that its system works with
6 or can work with a conventional PDA or cell phone,
7 but Marek doesn't provide details, implementation
8 details of such a conventional PDA or cell phone.

9 But I believe, and this is coming back to
10 one of the questions that you asked earlier, and a
11 POSITA, as of the critical date, would have known
12 what some of these conventional capabilities of a
13 conventional PDA would be.

14 And all I'm stating here is that, look, a
15 POSITA would have understood that audio
16 functionality is conventional features or
17 functionalities in a conventional PDA. And then I
18 just go into additional details in this section
19 where I believe, yes, I'm pointing to Skarine to
20 provide additional support for that as well.

21 Q. You mentioned that the claim analysis
22 comes later in your declaration. So let me direct
23 you to a paragraph that's more within that section
24 of your declaration. Could you take a look at

1 paragraph 57, please? And I want to direct your
2 attention to the portion of the paragraph that goes
3 over onto the next page.

4 A. Okay. I've read paragraph 57.

5 Q. So in this paragraph, is it accurate that
6 you're offering your opinion that the two mobile
7 devices, i.e., the untrusted host and the SCM,
8 render obvious a portable mobile computing device?

9 A. I think what I'm saying in paragraph 57,
10 and I believe it's pretty clear, is that I believe
11 the express disclosure supports that both are
12 portable global computing devices, and I was simply
13 stating that at a minimum, they render obvious, but
14 I think the actual statements and analysis in this
15 paragraph are stating that the express language in
16 Marek would make clear to a person of ordinary
17 skill that both are portable mobile computing
18 devices. For example, just going from memory here,
19 but even Marek talks about a CF card interface.
20 And a person of ordinary skill would have
21 understood that a CF card is a compact flash card,
22 a small sized card.

23 So there's a lot of express disclosure
24 that would lead one of ordinary skill to come to

1 the conclusions that I've set forth in this
2 paragraph.

3 Q. All right. And I'm not asking this
4 question in particular to uncover kind of the
5 difference between whether you said this limitation
6 was literally present in the art or whether it
7 would have been obvious. I'm asking this because
8 earlier, you said that you didn't think you were
9 providing an opinion that a limitation on its own
10 is obvious. And I thought that there were quite a
11 few examples in your declaration where it seemed
12 like you actually were offering an opinion that a
13 limitation on its own was obvious. And this one in
14 paragraph 57 seems like an example of that, where
15 you've offered an opinion that the limitation of a
16 portable mobile computing device would have been
17 obvious.

18 So I just want to make sure I'm
19 understanding what you mean when you say things
20 like you did in paragraph 57 about the obviousness
21 of a limitation.

22 MR. HOLT: Objection, form.

23 A. So I think what I explained before is that
24 the opinions that I've set forth in my report, I'm

1 stating that based on the prior art references and
2 the knowledge that a POSITA would have. And I
3 think I may have mentioned this earlier -- that I
4 think based purely on Marek, together with the
5 knowledge that a person of ordinary skill would
6 have had, that they would render the challenged
7 claims obvious.

8 Simply out of an abundance of caution,
9 I've cited to the Skarine reference and shown that,
10 look, these are conventional implementation details
11 that Marek doesn't expressly disclose. But Marek
12 discloses that his system works with conventional
13 PDAs and cell phones. And so that's what I've done
14 is that I've simply -- I've shown that -- I think I
15 state this expressly early on in my declaration --
16 that based on the Marek disclosure, together with
17 the knowledge of a POSITA, the challenged claims
18 would have been obvious.

19 On top of that, like I've just explained,
20 I've cited to the Skarine reference to provide
21 those implementation details that Marek has not
22 cited to or provided.

23 Q. So in these instances in your declaration
24 where you express your opinion that a particular

1 limitation would have been obvious or would have
2 been rendered obvious, does your declaration
3 include your complete basis for that opinion, that
4 a particular limitation is obvious?

5 A. I'm not sure I understand your question.
6 But to the extent you're asking are there other
7 portions of the Marek reference or the Skarine
8 reference that I could have also cited to, yes,
9 there are other portions. But I think I've cited
10 to the -- to very relevant portions of the two
11 references, and then I've also cited to other
12 references as well.

13 But there's lots of disclosure in the
14 Marek reference and the Skarine reference and even
15 like the Hall and Infineon reference, the other
16 references. I didn't point to every portion of,
17 for example, the Skarine reference that supports an
18 opinion, but I've cited to a number of portions of
19 the Skarine reference that support my opinion.

20 So if that was your question, then that's
21 my answer.

22 Q. So I just want to make sure I'm following
23 your explanation there. Are you saying that what
24 you're relying on for your obviousness opinions as

1 to these particular limitations throughout your
2 declaration are the portions of the various
3 references that you've cited in your declaration?

4 A. I don't think I understood your question.
5 All I'm trying to say is if, for example, even a
6 question that you asked me a few minutes ago with
7 regards to I think paragraph -- some earlier
8 paragraph that we were looking at -- oh, no, this
9 paragraph, paragraph 57, that it's talking about
10 why a POSITA would understand that both the add-on
11 as well as the host are portable mobile computing
12 devices. There's lots of disclosure in Marek that
13 would lead one of ordinary skill to that
14 conclusion.

15 And all I'm trying to say is that if
16 there's 20 different places in the Marek references
17 that would lead one of ordinary skill to that
18 conclusion, I didn't or I may not have, for example
19 in paragraph 57, cited to all 20 of those. But
20 I've cited to three or four of the top ones or
21 three or four of the places that would clearly lead
22 one of ordinary skill to that conclusion.

23 All I'm trying to say is that I don't see
24 it necessary if -- for example, I think the CF

1 interface that I just explained to you is not
2 listed in paragraph 57, but that's another data
3 point that would lead one of ordinary skill to the
4 conclusion about the form factor, the size of the
5 Marek system.

6 And so that's my only point, that there's
7 a lot of reasons why one of ordinary skill would
8 understand a particular point. And I -- for
9 example, like I just explained, if there are 20
10 such reasons in Marek, I may have pointed to three
11 or four or five or six, not necessarily all 20.

12 Q. And in your opinion, the portions of the
13 references that you did cite to are sufficient to
14 reach the conclusion that you have reached
15 regarding obviousness, right?

16 A. Yes, more than sufficient.

17 And just to clarify, even that example of
18 the CF card interface, it may not be here in
19 paragraph 57, but I do recall that in some other
20 paragraph I do talk about the CF card interface.

21 But to answer your question, yes.

22 MR. LINDNER: I'm going to put into the
23 chat the Marek reference, and that is labeled
24 here as Ex.1004.

1 (Exhibit 1004, U.S. Patent 7,716,720, marked
2 for identification.)

3 Q. Let me know when you've received that.

4 A. Okay. Got it.

5 Q. And this is the document that you've
6 referred to throughout your declaration as Marek,
7 M-a-r-e-k, correct?

8 A. Yes.

9 Q. Did you review Marek in preparation for
10 the deposition today?

11 A. If your question is did I review it one
12 time, then no; I reviewed it multiple times.

13 Q. Would in your opinion a person of skill
14 looking at the Marek document around the time of
15 the critical date, have identified any security
16 vulnerabilities in the computing environment that's
17 described in Marek?

18 A. I don't think I understand your question.

19 Q. So Marek describes itself as a system for
20 providing secure and trusted computing
21 environments. And in the abstract on the first
22 page, it also says that the "invention is directed
23 to a system for providing a trusted environment for
24 untrusted computing systems."

1 So I'm just asking that in your review of
2 Marek, do you feel that a person of skill would
3 have looked at this document and found that it did
4 provide a secure and trusted computing environment?

5 MR. HOLT: Objection, form.

6 A. Again, I'm not still sure that I
7 understand your question. As the title states,
8 "System for providing secure and trusted computing
9 environments," and going beyond the abstract and
10 going into the actual column 1, column 2, where
11 it's talking about field of the invention, the
12 summary of the invention, it's talking about issues
13 with standard COTS computing environments and how
14 to make -- how to allow for having a secure and
15 trusted computing environment that works together
16 with, for example, a conventional PDA or cell
17 phone. So I don't think I understand your question
18 still.

19 Q. So I'll give you an example and I'll
20 clarify my question. If I were to say to you,
21 Dr. Chatterjee, I've come up with a secure
22 computing environment that's appropriate for
23 military applications at the highest level of
24 security, and here's my computing environment. I

1 have an Etch A Sketch, and I'm going to code in
2 whatever I want to say to someone on the Etch A
3 Sketch, and I'm going to walk around town with
4 that, and anybody who wants to see it can see it,
5 and if I get suspicious, I'll shake it up and those
6 words will disappear. And I said in your opinion,
7 would that be a secure computing environment, would
8 you be able to answer that question?

9 MR. HOLT: Objection, form.

10 A. So when you say "that question," is your
11 question, is your Etch A Sketch system a secure and
12 trusted computing environment, is that your
13 question?

14 Q. Yes.

15 A. I would need to understand how your system
16 works before I could answer that. Like I would
17 need to think through it, I would need to
18 understand how an Etch A Sketch works. I have used
19 an Etch A Sketch a long time ago. So I would need
20 to understand a lot of things before I could answer
21 that question.

22 Q. Okay. But you understand the question of
23 is this a secure environment, right?

24 A. Well, I think what I understood your

1 question was related to what the title for Marek
2 is, a system for providing secure and trusted
3 computing environments; and I understood your Etch
4 A Sketch example to be trying to clarify your
5 question for me.

6 Q. So with your years of experience, Ph.D.,
7 all the work you've done in this field, if I show
8 you a description, detailed description of a
9 computing environment that's intended to be secure
10 and trusted, are you saying that you would not be
11 able to look at that and tell me whether you think
12 it is secure and trusted?

13 MR. HOLT: Objection, form.

14 A. So number one, going back to what I
15 answered for you when I said that I would need to
16 understand your example of the Etch A Sketch
17 example before I could answer any questions, that's
18 basically -- I never said that I cannot answer your
19 questions whether something is, you know, trusted
20 or not.

21 And I'm using the term "trusted" as set
22 forth -- I believe it's clearly set forth in column
23 3 of the '399 patent. So I'm using the terms as
24 set forth and understood in the context of the '399

1 patent.

2 All I'm trying to say is that I would need
3 to understand your system, think about it, consider
4 it, before I could answer any of your questions,
5 that's all I'm stating. I would need to have more
6 information before I could answer your questions.

7 Q. Well, earlier, when I asked you whether
8 you thought a person of ordinary skill would have
9 looked at Marek and found that it provided a secure
10 and trusted computing environment, you said that
11 you didn't understand my question. But now it
12 sounds like you're saying that because I switched
13 to a simpler system of my Etch A Sketch, now you
14 need to understand the Etch A Sketch, but you
15 couldn't answer the question. So help me clarify
16 that confusion.

17 A. Well, I think my confusion with your
18 original question about Marek is if you're -- if
19 you're trying to say that Marek is lying or
20 something, that its title is stating secure --
21 what's the title -- the title is stating system for
22 providing secure and trusted computing
23 environments, but the specification is disclosing
24 something else, that that's what I thought you were

1 asking, and I was really confused by your question.

2 Q. I'm just asking the question of whether a
3 person of skill reviewing the Marek reference,
4 would come to the conclusion that the system
5 described in Marek is secure and trusted?

6 A. And I think I explained to you that I
7 would need to understand what you mean by secure
8 and trusted, like the analysis I've done in my
9 declaration is based on what one of ordinary skill
10 would understand looking at -- you know, we're
11 looking at really the '399 challenged claims and
12 looking at the claim language there, and the
13 understanding of the term secure and trusted would
14 be based on the specification of the 399.

15 So is that what you're getting at, like
16 would one of ordinary skill looking at the claims,
17 the challenged claims of the '399, find that Marek
18 renders obvious those challenged claims? If that's
19 the question, then yes.

20 Q. My question is a little bit broader than
21 that, and it's just simply whether a person of
22 skill would think that the disclosure in Marek
23 describes a system that a person of skill would at
24 the critical date understand as being secure?

1 MR. HOLT: Objection, form.

2 A. But that's where my confusion lies, in
3 that I don't understand what you mean by secure.

4 The analysis I've done in the declaration
5 is based on the challenged claims and the
6 understanding that a POSITA would have of, you
7 know, the terms based on the specification of the
8 '399 patent and the context of the '399 patent,
9 that's the analysis that I've done.

10 Q. So let's talk about some of the terms then
11 to make sure we're speaking the same language here.
12 How would a person of skill in the art reviewing
13 the '399 patent at the time of the critical date
14 understand the meaning of "secure"?

15 A. Well, I don't believe there's any claim in
16 the '399 patent that simply states "secure."

17 The challenged claims of the '399 patent
18 has -- and, again, you have not shared the '399
19 patent here. But I believe it says "secure
20 computing," something like that. I forget the
21 actual claim language.

22 But the analysis I've done in my
23 declaration is based on the challenged claims, not
24 simply the word "secure."

1 Q. I have just shared with you in the chat
2 the '399 patent, which is marked as Exhibit 1001.

3 (Exhibit 1001, U.S. Patent 7,765,399,
4 marked for identification.)

5 Q. Do you see that?

6 A. Yes.

7 Q. So I don't have a particular question
8 about that, but since you mentioned it, I would
9 make sure that you had access to that.

10 Let me just ask this a different way. Are
11 you saying that a person of skill in the art at the
12 time of the critical date would not be able to come
13 up with the meaning of the term "secure" within the
14 context of the '399 patent?

15 A. I'm not sure I understand your question,
16 because, again, there's no claim in the '399 patent
17 that simply states "secure." For example, now that
18 you've shared the '399 patent, if you look at claim
19 1, it states "a portable mobile computing device,
20 including a secure user processor, a non-secure
21 user processor, a communications transceiver, and a
22 cryptographic engine." And then it sets forward in
23 the next limitation, "Said secure user processor
24 comprising a trusted microprocessor, a trusted

1 operating system, executing on said trusted
2 microprocessor, and a trusted application software
3 executing on said trusted microprocessor."

4 So the term, the claim term here is
5 "secure user processor" and the claim language
6 makes clear what the secure user processor
7 comprises, and the specification also talks about
8 that as well. So I have not provided any analysis
9 on simply the word "secure," period.

10 Q. And is it your opinion that a person of
11 skill in the art would not be able to answer the
12 question of what it means for something in a
13 computing environment to be secure based on the
14 '399 patent and their knowledge of the art?

15 A. So I think you're asking within the
16 context of the '399 patent. Am I understanding
17 your question correctly?

18 Q. Yes.

19 A. So, again, if you look at column 3, line
20 57, the specification states "trusted hardware and
21 trusted software can be combined to provide secure
22 data processing." And a few lines above that, it
23 states, "As used herein, the term 'trusted' is used
24 with reference to computer hardware, operating

1 systems, and/or software applications that have
2 been designed to ensure secure storage processing
3 and communication of data."

4 So it explains what the terms would mean.
5 And so within the context of the '399 patent, and
6 specifically the claims that I've analyzed, I've
7 shown that the Marek reference -- and like I
8 stated, alone with the knowledge of a POSITA, or
9 the actual analysis that I've done in the body of
10 my declaration, which is in combination with the
11 Skarine reference, clearly renders obvious the
12 challenged claims."

13 Q. I'm sorry. That wasn't my question
14 whether the Marek reference combined with Skarine
15 renders obvious the challenged claims.

16 I'm just trying to get a baseline
17 understanding of how these terms would have been
18 understood by a person of skill in the art.

19 So let me ask it a different way. Is it
20 your opinion that the '399 patent uses the term
21 "secure" in a way that is different than how a
22 person of skill in the art would have understood
23 that term to mean without looking at the '399
24 patent?

1 A. Again, I think that's what I'm trying to
2 get at, that there's no claim language that simply
3 states "secure." It's -- the claim language is
4 "secure user processor." And the claim expressly
5 recites that a secure user processor comprises
6 these three things. And so that's where I don't
7 understand your question because there's nothing
8 that simply says secure, period.

9 And so it's talking about a secure user
10 processor comprising these three things. And the
11 analysis that I've done in my declaration is to
12 show that, look, one of ordinary skill in looking
13 at the Marek reference would find that the secure
14 user processor, as one would understand it from the
15 '399 patent, is at a minimum rendered obvious in
16 the combined system of Marek and Skarine.

17 Q. So you're saying that the only meaning a
18 person of skill in the art would give to "secure
19 user processor" is by looking at the claim language
20 and seeing which components need to be a part of
21 that secured user processor. And if those
22 components are there, then the secure user
23 processor is disclosed; is that right?

24 MR. HOLT: Objection, form.

1 A. I'm not sure -- when you stated that the
2 only meaning that one of ordinary skill would give
3 to the secure user processor, I didn't understand
4 your question. And it's not only in the claims,
5 even the specification, and I think I explained
6 this earlier, the specification has similar
7 disclosure that states that a secure user processor
8 comprises these three things. And so, again, I'm
9 getting very confused by your questions.

10 Q. What's the difference between a secure
11 user process and a non-secure user processor?

12 A. Well, it states -- again, looking at the
13 claims, again, the analysis I've done is based on
14 the claims. And it states very clearly in the
15 third limitation after the preamble that said
16 "non-secure user processor comprising an untrusted
17 microprocessor, an untrusted operating system, an
18 untrusted application software."

19 Q. What's the difference between trusted
20 microprocessor and untrusted microprocessor?

21 A. I think I pointed you to column 3 before,
22 and I read from it, that the '399 patent expressly
23 states in column 3, line 53, "As used herein, the
24 term trusted," and the term trusted is in quotation

1 marks, "is used with reference to computer
2 hardware, operating systems, and/or software
3 applications that have been designed to ensure
4 secure storage processing and communication of
5 data. Trusted hardware and trusted software can be
6 combined to provide secure data processing." And
7 then it talks about other examples in other
8 portions of the specification as well.

9 Q. So is it fair then to say that a secure
10 user processor includes hardware, operating
11 systems, and/or software applications that have
12 been designed to ensure a secure storage processing
13 and communication of data?

14 MR. HOLT: Objection, form.

15 A. Again, I don't see that in the challenged
16 claims. The challenged claims, and that's the
17 analysis that I've done because that's my
18 understanding, that that's the analysis that I'm
19 supposed to do is look at the challenged claims and
20 see whether, you know, as of the critical date, one
21 of ordinary skill looking at the Marek reference,
22 what one of ordinary skill would understand. And
23 so in, for example, claim 1, it states said secure
24 user processor comprising these three things.

1 If there -- it seems like you're asking if
2 there was some other claim that said something
3 totally different, would the analysis be different
4 or not? So I'm not really understanding your
5 question because the claims are, or at least the
6 challenged claims are what they state, they don't
7 state other requirements or other limitations.

8 Q. Well, you did say a moment ago that the
9 trusted -- that the term "trusted" refers to
10 computer hardware, operating systems, or software
11 applications that have been designed to ensure
12 secure storage, processing, and communication of
13 data, right?

14 A. Just to be clear, I said it because I was
15 reading from the specification of the '399 patent.

16 Q. And is that how a person of ordinary skill
17 would understand the term trusted, looking at the
18 '399 patent?

19 A. Within the context of the '399 patent and
20 given that it's stating "as used herein," the term
21 "trusted" is used with reference to computer
22 hardware, operating systems, and/or software
23 applications that have been designed to ensure
24 secure storage processing and communication of

1 data, then, yes, that's how one of ordinary skill
2 would understand that term "trusted" to mean.

3 And then as I mentioned also earlier that
4 there are other portions of the specification that
5 provide additional explanations and things like
6 that.

7 Q. So in my previous question, I simply asked
8 you about a secure user processor, and included
9 that language that we just discussed regarding
10 ensuring secure storage processing, communication
11 of data, et cetera, into the context of the claim,
12 which says it comprises a trusted microprocessor.
13 And when I did that, you said, well, that's not the
14 claim language anymore, so we can't answer the
15 question. But I simply put the definition that you
16 gave for trusted into the claim language in place
17 of the word trusted, and I'm not sure why
18 everything fell apart at that point.

19 A. Well, first, you keep on stating that I'm
20 giving this definition. I want to, again, make it
21 clear, this is expressly stated in the '399 patent.

22 And my only point is the analysis that
23 I've done is based on what the challenged claims
24 state. And I've explained why -- I've explained my

1 declaration, that here is what the challenged
2 claims recite, here is what one of ordinary skill
3 would understand the term "trusted" to mean or at a
4 minimum to include, and here is why based on the
5 disclosure of Marek and/or the Skarine -- the
6 combination of the Marek-Skarine combination, one
7 of ordinary skill would find that the challenged
8 claims are rendered obvious.

9 Q. So in conducting your obviousness
10 analysis, did you consider the meaning of the claim
11 terms in the context of the '399 patent?

12 A. Well, the claims are understood within the
13 context of the '399 patent.

14 Q. That doesn't answer my question.

15 Let me ask it again. When you conducted
16 your obviousness analysis, did you consider the
17 meaning of the claim terms in the '399 patent?

18 A. If I understood your question, did I -- in
19 conducting the analysis as set forth in my
20 declaration, did I consider what one of ordinary
21 skill would understand of the claims, including the
22 claim terms, to be or to mean within the context of
23 the '399 patent? Yes, I did. And trusted -- and
24 the express definition here, and which I've

1 explained to you a couple times now, is one example
2 of that.

3 Q. So if you've considered the meaning of
4 those terms, why are you not able to provide for me
5 today what a person of skill would have understood
6 those terms to mean?

7 A. What you asked me before is a very
8 different thing. Like, for example, you asked me
9 what would the term "secure" mean. But what I'm
10 telling you is that the term "secure" does not
11 appear, just the term "secure," within the claims.
12 It's talking about a secure user processor, and
13 that's the analysis that I've done.

14 Q. So you have no opinion as to how a person
15 of skill in the art would have understood the word
16 "secure" in the context of the '399 patent?

17 MR. HOLT: Objection, form.

18 A. Again, this is a very confusing and hard
19 to answer question. I do provide a number of
20 opinions that state that one of ordinary skill
21 would have clearly understood from the disclosure
22 or at minimum found it obvious, that the secure
23 user processor is rendered obvious by the
24 Marek-Skarine combination.

1 But if you're asking do I have somewhere
2 in my declaration that the term "secure," period,
3 means this, I don't think I've done that anywhere
4 in my declaration. And if I have, if you can point
5 me to it, I can take a look at it and answer your
6 questions. But I've done the analysis based on the
7 challenged claims and not some other rewritten
8 claim.

9 Q. I'm not asking to rewrite any of the
10 claims, and I have your whole declaration here.
11 I'm asking for your opinions. And it sounds like
12 you're saying you cannot give me your opinion as to
13 how a person of ordinary skill in the art would
14 understand the term "secure" in the context of the
15 '399 patent, right?

16 A. Well, as I just explained to you, that I
17 do have opinions and analysis in my declaration,
18 for example, with regards to secure user processor.

19 So that's where I'm not able to answer
20 your question. And you're stating that you're not
21 rewriting the claims, but there's nothing that just
22 says "secure," period; for example, the second
23 limitation said "said secure user processor."

24 Q. Well, that doesn't make much sense because

1 if you're going to use that logic, I would have to
2 then read for you the entire claim, because I
3 picked out a word in the claim and you said that
4 doesn't appear by itself, well, neither do any of
5 the other words, they're all in the context of the
6 claim.

7 So it sounds to me like you can't give an
8 opinion, you don't have an opinion as to what that
9 word means to a person of skill in the art.

10 And it's just yes or no. Can you offer
11 me -- tell me what your opinion is as to how a
12 person of skill would have understood the word
13 "secure" in the claim? Yes or no.

14 MR. HOLT: Objection, form.

15 A. I still am confused by your question. I
16 don't understand your explanation right now that it
17 doesn't make sense, because the term is "secure."
18 And if the term -- or the term is "secure user
19 processor." And if the term were something
20 different, then "secure" in the context of a
21 different term can mean something totally
22 different.

23 So it does make sense. And all I'm trying
24 to say is it doesn't say something like "said

1 secure comprising." It's stating "said secure user
2 processor," and that's the analysis that I've done.
3 It doesn't say "said secure plastic" or something
4 like that. So it does make sense. And your
5 question is confusing, and I don't understand it,
6 and so I'm trying to answer your question, but it
7 really doesn't make any sense.

8 Q. What makes a user processor secure?

9 A. Well, with regards to claim 1, it makes it
10 very clear that "said secure user processor
11 comprising a trusted microprocessor, a trusted
12 operating system, a trusted application software,"
13 and that's what claim 1 requires.

14 Q. So the word "secure user processor"
15 doesn't have any meaning there other than what
16 it -- the claim says it comprises.

17 So I could have said it's a thingamajig
18 comprising trusted microprocessor, trusted
19 operating system executing on trusted
20 microprocessor, and trusted application software
21 executing on said trusted microprocessor, and that
22 would be how you understand that term, just based
23 on those -- those comprising limitations, right?

24 MR. HOLT: Objection, form.

1 A. Well, even column 3, the portion that I
2 read for you about five or six times now, it makes
3 it very clear that trusted hardware and trusted
4 software can be combined to provide secure data
5 processing.

6 So it makes it clear that what it's
7 talking about, secure user processor, is this
8 concept that comprises these three things in
9 challenged claim 1. And it's consistent with the
10 specification, which is stating that trusted
11 hardware and trusted software can be combined to
12 provide secure data processing.

13 Q. So in your opinion, the claim limitation
14 that begins with "said secure user processor"
15 requires nothing more than the list of things that
16 are stated there as after the word "comprising"; is
17 that correct?

18 A. For challenged claim 1, it is stating that
19 said user processor comprises these three things.
20 And the analysis that I've done has shown that
21 based on the Marek-Skarine combination, one of
22 ordinary skill would have found these -- I believe,
23 I'm going from memory here, but I believe I stated
24 that these are expressly disclosed, but at a

1 minimum they would have been rendered obvious.

2 Q. And you don't think that a person of skill
3 would understand the word "secure user processor"
4 itself to provide any meaning to what is required
5 by the limitation we just talked about beyond the
6 separate elements listed after the word
7 "comprising," right?

8 A. Well, I have two points there: One:
9 Again, I'm going to draw your attention back to
10 column 3, where it states in the specification
11 "trusted hardware and trusted software can be
12 combined to provide secure data processing."

13 And then the second point is that there
14 may be other things in it, but for claim 1,
15 challenged claim 1, it's reciting those three
16 things. There may be another claim -- and, again,
17 I keep on talking about of the claims were
18 rewritten, it may say that the trusted processor is
19 painted red, but it doesn't say that in challenged
20 claim 1. And so that's the analysis that I did.

21 Q. And so you're not giving any particular
22 meaning to the term "secure" beyond what the claim
23 says it must comprise, right?

24 A. Well, I'm not sure how to answer that

1 question. Like I've stated, I believe one of
2 ordinary skill would understand from reading the
3 '399 patent that a POSITA would understand from the
4 '399 patent that a secure user processor is a
5 concept that is comprised of trusted hardware and
6 trusted software, that's what the specification
7 states.

8 Challenged claim 1 has a little bit more
9 detail, and it states that a trusted operating
10 system and a trusted application software. So,
11 again, the analysis I did is based on the actual
12 claim language of the challenged claims.

13 Q. Let me ask you about the term "secure
14 human/machine interface." How would a person of
15 skill in the art at the time of the critical date
16 understand that term?

17 A. Well, I believe the specification provides
18 various examples of secure human/machine interface
19 and different devices that can be within a secure
20 human/machine interface, and also provides various
21 examples of a non-secure human/machine interface
22 and types of devices that may be used for that.

23 And so what the challenged claim 1 is
24 reciting is a secure human/machine interface

1 configured for enabling bi-directional
2 communication of classified information exclusively
3 between a user and said secure user processor. And
4 so, for example, the specification makes clear -- I
5 believe it talks about something like a keyboard,
6 it talks about a headset, I believe, microphone,
7 speaker, and so these are what one of ordinary
8 skill would understand to be a human/machine
9 interface, or a secure human/machine interface, or
10 a non-secure human/machine interface.

11 Q. So what's the difference between a secure
12 human/machine interface and a non-secure
13 human/machine interface?

14 A. So in challenged claim 1, it states that
15 "a secure human/machine interface configured for
16 enabling bi-directional communication of classified
17 information exclusively between user and said
18 secure user processor," whereas "a non-secure
19 human/machine interface distinct from said secure
20 human/machine interface and configured for enabling
21 bi-directional communication of unclassified
22 information exclusively between said user and said
23 non-secure user processor."

24 So, again, in claim 1 the difference

1 between the two is that it's for communication of
2 classified versus unclassified information between
3 the user and the secure user processor or the
4 non-secure user processor.

5 Q. Other than the difference that you just
6 mentioned regarding the communication endpoints
7 being user versus secure processor or user versus
8 non-secure processor, does the description about
9 whether the interface is configured for enabling
10 classified information -- sorry -- configured for
11 enabling communication of classified information
12 versus non-classified information affect the
13 meaning of those two types of human/machine
14 interfaces?

15 MR. HOLT: Objection, form.

16 A. I think you lost me on that question.

17 Q. Yeah. I think I may have lost myself as
18 well. Let me try that again.

19 In the two limitations that you were just
20 looking at, the first being secure human/machine
21 interface, and the second being a non-secure
22 human/machine interface, the claims recite that the
23 secure interface is between a user and a secure
24 processor, and that a non-secure human/machine

1 interface is between a user and a non-secure
2 processor, right?

3 A. They also recite about classified versus
4 unclassified information.

5 Q. Right. So setting aside the first part
6 about user to secure processor versus user to
7 non-secure processor, how would a person of
8 ordinary skill determine whether a particular
9 interface is configured for enabling communication
10 of unclassified information versus one that is
11 configured for enabling communication of classified
12 information?

13 MR. HOLT: Objection, form.

14 A. I'm still lost in your question. You're
15 asking how would one of ordinary skill determine
16 that it's configured like that? It seems like an
17 infringement type of question that you're asking,
18 so it's confusing.

19 But to the extent that I'm kind of sort of
20 understanding your question, one thing is the
21 patent, the '399 patent makes clear that you're not
22 going to have classified information on the
23 non-secure processor; so that's one thing to kind
24 of distinguish, if that's what your question was.

1 Q. Okay. Thank you. That's what I'm trying
2 to get at, and it's a hard question for me to ask
3 in a clear way. So thanks for sticking with me.

4 Yes. I'm trying to understand what's your
5 opinion of when we just look at the portion of the
6 claim that describes it being configured for a
7 particular type of information, how would one
8 assess whether that's present in a particular
9 description of a system or not?

10 A. So to be clear, the claim language is
11 configured for enabling bi-directional
12 communication of unclassified or classified
13 information. So it's not configured for classified
14 or unclassified information, but it's configured
15 for enabling bi-directional communication of
16 classified or unclassified information.

17 And so, again, I'm not -- I'm not setting
18 forth opinions in my declaration that provide
19 general analysis of how to do a determination of
20 whether a system is configured like this or not.
21 I'm looking at what one of ordinary skill would
22 understand from, for example, the Marek reference,
23 or more specifically, the Marek-Skarine
24 combination. And I'm setting forth opinions

1 stating that one of ordinary skill looking at the
2 Marek reference or the Marek-Skarine combination,
3 the teachings from those, it would at a minimum
4 render obvious the challenged claims.

5 Q. In reviewing the '399 patent, what are
6 some characteristics of a human/machine interface
7 that would indicate to a person of skill in the art
8 whether that interface is configured for enabling
9 bi-directional communication of classified
10 information as compared to unclassified
11 information?

12 A. Again, I'm still confused by your
13 question, but I think the answer is based on the
14 disclosure of -- like if the system says that it's
15 used for this purpose, then one of ordinary skill
16 would understand that the system or that subsystem
17 is configured for that purpose.

18 So, again, I'm still not understanding
19 your question, but I'm trying to, as best I can,
20 answer my understanding of your questions.

21 Q. So there's no technical analysis that a
22 person of skill would do in order to determine
23 whether a system was configured to enable
24 communication of classified information versus

1 unclassified information. It's simply whether the
2 person describing that particular system said this
3 is for classified and this is for unclassified; is
4 that your opinion?

5 MR. HOLT: Objection, form.

6 A. Again, this seems to be a hypothetical,
7 and it's a very vague and confusing hypothetical.
8 But, again, the actual analysis I've done in my
9 declaration is, you know, if we take the secure
10 human/machine interface as an example, the Marek
11 reference makes it very clear, it talks about the
12 Scware portion within its system. And the Marek
13 reference makes very clear to one of ordinary skill
14 that the purpose of the Scware is to bypass
15 everything else on the untrusted host and allow the
16 trusted processor to have communication with the
17 different input/ output devices, for example,
18 keyboard, display, whatever.

19 And so I don't really understand your
20 question or your point about there's no technical
21 analysis. The Marek reference makes very clear
22 it's providing express technical disclosure, saying
23 here is the Scware. The Scware does this. And it
24 disables all of the other functionality on the

1 untrusted host, so that the trusted processor can
2 have communications with various I/O devices, for
3 example, a keyboard or a display.

4 So I don't know how to answer your
5 question about no technical analysis is needed.
6 The Marek states it and it makes it very clear and
7 it makes sense.

8 Q. You mentioned that Marek describes a
9 software called Scware, right?

10 A. Yes.

11 Q. And is Scware part of the -- is Scware
12 part of what in your opinion is a secure
13 human/computer interface?

14 MR. LINDNER: Sorry. Let me ask that
15 again because I used the wrong word.

16 Q. Is Scware a part of what you would
17 consider to be in Marek the secure human/machine
18 interface?

19 MR. HOLT: Objection, form.

20 A. I'm pointing to the actual components, for
21 example, the keyboard and the display, and the
22 Marek reference, I believe Marek describes the
23 Scware as a trusted agent that resides on the
24 untrusted side to allow the secure processor to

1 have that secure communications with the I/O
2 devices like the keyboard and display.

3 So what I'm pointing to, and I believe
4 I've highlighted them in different colors in my
5 declaration, is the actual I/O devices.

6 Q. All right. Let me point you to paragraph
7 108 of your declaration, and that continues onto
8 the next page as well. Let me know when you're
9 there.

10 A. Okay. I'm at 108. Just give me one
11 second to review it.

12 Okay. I've reviewed paragraph 108.

13 Q. So this was what I was trying to ask: You
14 said in paragraph 108 that you've highlighted in
15 pink these input and output devices, and that those
16 are a secure human/machine interface, right?

17 A. Yes.

18 Q. And then if we look at the composite
19 figure above paragraph 109, we see that there are
20 three items that are in a pink box: One of them is
21 keyboard 722; the other is Scware 724; and the
22 other one is display 720. And then there's an
23 arrow, a pink arrow that goes from the word "Secure
24 HMI" and points to the keyboard and the display.

1 So my question is here, just based on the
2 coloring, it wasn't clear to me whether you were
3 saying that Scware, which is highlighted in pink is
4 also a part of the secure human/machine interface
5 or not?

6 A. So the Scware is used when a secure
7 processor wants to take advantage of, for example,
8 the keyboard or the display, that's what Marek
9 makes clear.

10 So I'm not saying that the Scware on its
11 own is a secure HMI. I'm simply stating that --
12 and I believe Marek makes it very clear in its
13 disclosure, the specification, that the Scware is
14 essentially a secure driver. So the Scware allows,
15 for example, the keyboard to be used by the secure
16 processor. So it's not that Scware on its own is a
17 secure HMI, it's the I/O devices, but the Scware is
18 used when the secure processor is communicating
19 with the, for example, keyboard and display.

20 Q. If you look at paragraph 111 of your
21 declaration -- sorry, let me point you down one to
22 paragraph 112. Do you see that you have cited to
23 and quoted a portion of Marek from column 10, lines
24 49 to 51.

1 A. Okay. I see it.

2 Q. And in that portion of Marek, it describes
3 "input and output devices 722, 720 of the untrusted
4 host."

5 Do you see that?

6 A. I do.

7 Q. So what does it mean to describe those two
8 devices, 720 and 722, as "of the untrusted host"?

9 A. Well, I think 722 and 720 are the keyboard
10 and mouse -- keyboard and display, sorry.

11 Q. So when it says that those keyboard and
12 display are devices of the untrusted host, what
13 does that mean?

14 A. That, for example, the untrusted host in
15 Marek, he or she states that it could be a PDA. So
16 the display could be the display of a PDA, and the
17 keyboard could be the keyboard of a PDA.

18 Q. So in what Marek describes and the kind of
19 portions of the figure that we've been looking at
20 on page 83 of your declaration that come from
21 Marek, this could be, as an example, a PDA with a
22 built-in display and a built-in keyboard, and then
23 a separate module, which is the SCM 702 portion of
24 that figure that's connected to the untrusted

1 computing environment, the PDA; is that right?

2 A. So the SCM can be connected to the PDA,
3 like we talked about the CF interface, so you could
4 -- I think one of ordinary skill would understand
5 from the Marek disclosure that the SCM could be
6 like a compact flash size device, and then it could
7 be connected to a conventional PDA or cell phone
8 type of device.

9 Q. Okay. That makes sense.

10 So then in that case, the keyboard could
11 be used for communicating with the untrusted
12 environment or it could be, in the proper
13 arrangement, used for communicating to the SCM
14 apparatus, right?

15 A. But that's where -- in that latter case,
16 that's where Marek discloses and describes the
17 Scware and what it does, and that everything else
18 within the untrusted host is disabled or turned
19 off. So yes, it could do that.

20 Q. And could you describe for me what are the
21 internal mechanics of getting data from a user
22 typing on a keyboard into one or the other of these
23 processors?

24 MR. HOLT: Objection, form.

1 A. I'm not sure what you mean by "the
2 internal mechanics." I believe, as I've explained
3 a couple of times, that Marek explains pretty
4 clearly that the Scware is similar to a secure
5 driver and that everything else on the untrusted
6 host is disabled, so there can be no snooping,
7 there can be no malware, nothing like that.

8 So, for example, if something is to be
9 displayed on the display screen, the secure
10 processor is able to use the Scware to communicate
11 classified information between user and that secure
12 user processor.

13 Q. So when I was asking about the mechanics
14 -- maybe that's not the right term -- but I'm
15 trying to understand a little bit about
16 electronically, how the information gets from the
17 keyboard, where it's entered, to its whatever
18 destination it goes to, and what steps would that
19 include?

20 A. So I think based on the disclosure of
21 Marek, that the keyboard -- and if you look at the
22 arrow in the diagram that we were looking at before
23 right above paragraph 109, there's an arrow from
24 the keyboard. And so it would -- the keyboard --

1 the keystroke would be received by the Scware,
2 which as I explained, Marek discloses as a type of
3 secure driver, and everything else within the
4 untrusted host is also disabled, as I explained
5 before, and the Scware would facilitate the secure
6 processor receiving that communication.

7 Q. So when Scware receives the keystroke from
8 the keyboard, it needs to store that information
9 somewhere, right?

10 A. Why would it need to store that
11 information somewhere?

12 Q. I mean, Scware is software, right?

13 A. That is what it says. If I remember
14 correctly, I think Marek describes it as software
15 and, like I said, a type of secure driver.

16 Q. And software is just a set of instructions
17 that are executed by a processor, right?

18 A. Something like that.

19 Q. And so which processor is executing the
20 instructions for Scware?

21 A. I don't believe that Marek goes into that
22 level of detail. Marek does set forth that all of
23 the other capabilities of the untrusted host are
24 disabled. Marek also clearly states that the

1 Scware allows bypassing the host, the untrusted
2 host OS altogether. So Marek doesn't say Scware
3 has to be running here or running there, but it
4 does make clear that it bypasses the untrusted host
5 OS.

6 MR. HOLT: Seth, I think we've been going
7 for about an hour and 40 minutes. And it
8 doesn't have to be right now, but in the near
9 future if we could do a bathroom break, that
10 would be nice.

11 MR. LINDNER: Okay. Why don't we do that
12 now. We'll take a short break. You want five
13 minutes, 10 minutes?

14 MR. HOLT: Ten would be great. Thank you.

15 (Proceedings interrupted at 1:41 p.m. and
16 reconvened at 1:52 p.m.)

17 BY MR. LINDNER:

18 Q. All right. Dr. Chatterjee, we were
19 talking about Scware 724, as described in Marek.
20 And I wanted to make sure I understood your opinion
21 about that.

22 If you look at paragraph 109 of your
23 declaration, do you see that you state in the
24 second sentence, "the Scware 'resides on the

1 untrusted host environment while the SCM 702 is
2 operating'?"

3 A. Yes.

4 Q. And if we look at that portion that you're
5 quoting from Marek, which is in column 10,
6 beginning around line 42, it says, that "The SCM
7 may also include Scware, (a Trusted Agent) 724."
8 And then on line 45, it says, "The Scware 724 may
9 be loaded onto the untrusted host from the SCM 702
10 in Plug-and-Play fashion when the SCM 702 is added
11 on to the untrusted host."

12 Do you see that?

13 A. Yes.

14 Q. So when it says "Scware 724 may be loaded
15 onto the untrusted host," what does that mean?

16 A. It's stating that "the Scware 724 may be
17 loaded onto the untrusted host from the SCM 702 in
18 Plug-and-Play fashion when the SCM 702 is added
19 onto the untrusted host."

20 So, essentially, that the Scware can be
21 loaded from the SCM onto the untrusted host when,
22 for example, the SCM is plugged into the untrusted
23 host.

24 Q. And loading a piece of software onto the

1 untrusted host means that the processor executing
2 the instructions associated with that software is a
3 processor on the untrusted host, right?

4 A. Say that again. With regards to the
5 loading, is that what your question was?

6 Q. My question is, after Sware is loaded
7 onto the untrusted host, when that software is run,
8 meaning its instructions are executed, they are
9 executed by a processor on the untrusted host,
10 right?

11 A. So the Sware is run on the untrusted
12 side, yes. But as it makes clear, this is a
13 trusted agent Sware, and so the -- it's a trusted
14 agent that works together with the secure user
15 processor, the TSM, on the Marek system to allow
16 the TSM to securely communicate with, for example,
17 the keyboard and display.

18 Q. In order for Sware to execute its
19 instructions, it has to be done by a processor,
20 right?

21 A. To the extent it's software, yes.

22 Q. And Sware is software, correct?

23 A. I think the example is that it's software.
24 It could probably be something else. But I believe

1 the example is that it's software, stating that
2 it's exemplary software.

3 Q. And you said in your declaration at
4 paragraph 109, "Marek's computing environment
5 includes Scware 724, which is software that acts as
6 a trusted agent," right?

7 A. Yes. If that's what you read from my
8 declaration, yes.

9 Q. So the Scware software instructions are
10 executed by a processor, right?

11 A. Yes, software would require a processor in
12 order to run.

13 Q. And in Marek's description of the Scware,
14 which is loaded onto the untrusted host, that
15 processor that executes the Scware is a processor
16 on the untrusted host, right?

17 A. The Scware, like it states, the Scware 724
18 resides on the untrusted host environment while the
19 SCM is operating; so, yes.

20 Q. And in the process of serving its function
21 to transfer, for example, keyboard strokes to the
22 SCM, the Scware would need to store those keyboard
23 strokes or that keyboard stroke information
24 somewhere in order to then move it to the next

1 location, right?

2 MR. HOLT: Objection, form.

3 A. I don't understand where you're getting
4 that it has to store it.

5 I believe what a POSITA would understand
6 from Marek's disclosure is that the Scware
7 facilitates the TSM in either receiving or sending
8 the information, for example, information to
9 display on the screen or information from the
10 keyboard. The TSM may store it after it receives
11 it, but I don't believe there's any disclosure that
12 the Scware is storing it for some reason. In fact,
13 I believe Marek's disclosure is the opposite,
14 stating that it completely bypasses the host OS and
15 that all other capabilities, functions on the
16 untrusted host are disabled.

17 Q. So explain to me then electrically what
18 happens when a keyboard stroke is pressed?

19 A. So the keyboard stroke would -- the
20 electrical signal would be received by the --
21 within the PDA, the host environment. The Scware
22 would take that data, transfer it over the I/O
23 lines 730, which would go to the TSM, and that's
24 essentially the flow that would happen.

1 Q. So you said that the electrical signal
2 would be received by the PDA, which is the host
3 environment, and then Sware would take that data
4 and transfer it over the I/O lines 730.

5 So when the Sware wants to take that
6 data, it is taking it from some location in memory
7 or a register of some kind and then transferring
8 it, right?

9 A. It doesn't have to be. There are
10 different ways of implementing keyboards and things
11 like that. But like I stated, I believe what one
12 of ordinary skill would understand based on the
13 disclosure of Marek, that everything else on the
14 host is disabled when the SCM is running and Sware
15 is running, the electrical signal would be received
16 by the Sware and then it would transfer it over
17 the I/O line 730.

18 Q. How can Sware, which is simply a set of
19 instructions, receive data in a way that does not
20 involve a register or some type of memory?

21 A. Well, it could be getting data from, for
22 example -- well, everything is electrical signals.
23 And so when you're looking at electrical signals,
24 they're actually analog signals. And so there

1 would be some kind of A to D converter that would
2 convert the electrical signals to a digital
3 representation, and that would be what is
4 transferred by the Scware over this line 730.

5 Q. And isn't a digital representation of an
6 electrical signal, in order for it to be
7 transferred, needs to be stored somewhere --
8 electrically stored in a register or in memory?

9 A. I don't understand why it has to be
10 stored.

11 You can, for example, as data is coming
12 in -- and we're getting like way afield of the
13 actual claims here, we're getting into like very
14 low-level implementation details, which are really
15 not relevant to the claims.

16 But just in answer to your question, the
17 signals are coming in, and they can be immediately
18 sent out. For example, even for the I/O line 730,
19 I believe Marek makes very clear it could be
20 parallel lines or serial lines.

21 So there's no need for anything to be
22 stored on the untrusted host environment. And the
23 fact that Marek expressly states that everything is
24 disabled on the host environment when the Scware is

1 running seems to further corroborate that
2 understanding.

3 Q. In column 10 of Marek, below the portion
4 we were reading a moment ago, it describes several
5 modes of operation. This is starting on line 55.

6 Do you see that?

7 A. Okay. Yes.

8 Q. And I believe that you have cited to the
9 portion beginning on line 58 that says, "In H-mode,
10 only I/O interfaces allowed by the Scware 724 may
11 be implemented and no other applications may be
12 allowed to run on the host platform"; is that
13 right?

14 A. I'm looking at Marek. Which part of my
15 declaration did you read from?

16 Q. So you cited -- in paragraph 114 of your
17 declaration, you cited to Marek at column 10, lines
18 55 to 65.

19 Do you see that?

20 A. Yeah. I see column 10, lines 55 to 65.
21 There are other citations as well as right after
22 that --

23 Q. Sure.

24 A. -- you can see that.

1 Q. Yes. You also cited to the next two
2 lines, lines 65 to 67.

3 And in particular, you cited the portion
4 that says "A security critical section concept is
5 used to implement the Scware 724 in H-mode to
6 disable all applications but the Scware 724 on the
7 host environment," right?

8 A. Uh-huh, yes.

9 Q. So if we look at the rest of column 10 and
10 the first few lines of column 11, Marek describes
11 the operation in H-mode a little bit further.

12 Do you see that?

13 A. Okay. I've read to column 11, line 6.

14 Q. So what is a "security critical section"?

15 A. Well, I think it states right at the very
16 bottom of column 10, that "a security critical
17 section is an execution interval during which
18 certain tasks and/or drivers are selectively
19 disabled so that some security sensitive function
20 is protected from malware attacks."

21 Q. And how would a person of skill in the art
22 understand that that execution interval is
23 implemented?

24 A. I don't understand what you mean how they

1 would understand that security critical section
2 interval is implemented.

3 It's simply stating that -- and what one
4 of ordinary skill would understand from the
5 teaching of Marek is that everything else on the
6 untrusted host is disabled. And I believe I even
7 cited to portions -- in my a declaration, I'm
8 citing to portions where it states "Marek also
9 describes that the host's only function is to
10 provide power to the SCM, 702." And it further
11 states, "Alternatively, the host may not provide
12 any functions at all if the SCM 702 provides its
13 own power source."

14 So it would be understood by one of
15 ordinary skill that everything on the host is
16 disabled so that the Scware can run and simply take
17 I/O information that's coming in or going out and
18 simply pass it on securely to the secure user
19 processor, which is on the SCM.

20 Q. So when this disabling happens, where does
21 that get initiated?

22 A. I'm not sure what you mean by where does
23 it get initiated. It would be understood, based on
24 the disclosure, that when the SCM is running, this

1 security interval -- execution interval is
2 happening.

3 So one way of thinking about it could be
4 that it's initiated by the SCM. When it wants to
5 do something that requires the Scware, it could be
6 initiated by the SCM, everything on the host -- on
7 the host device can be disabled, and then the
8 Scware is running, and it's simply -- and it states
9 this, that everything is bypassed, the host OS is
10 completely bypassed; as a result, the Scware 724
11 operates as a dedicated input/output device driver.

12 And so it's making very clear that all the
13 Scware is doing is that when everything is disabled
14 on the host device, it's simply passing securely
15 that information from, for example, the keyboard
16 and display.

17 Q. So it's not that the operating system on
18 the host has some mode that it initiates on its own
19 to disable everything, there would be some external
20 command that shuts down those operations of the
21 host OS; is that right?

22 A. Well, again, these kinds of implementation
23 details I think are, again, far afield from the
24 claim language and the analysis that I've done.

1 But in answer to your question, in other portions
2 of Marek, it states that the entire operating
3 system is rebooted after that point.

4 And so one way to do that and one
5 implementation detail, again, which is completely
6 unrelated to the analysis, is that, yes, the SCM
7 can state disable everything, and then it will run
8 the Scware and do what we've been talking about,
9 and then it will reboot the operating system again,
10 and that's the express disclosure of one example
11 from Marek.

12 Q. Is there any other way that this H-mode
13 could be initiated other than using a command from
14 the SCM to do that disabling?

15 A. So to be clear, I'm not sure that I stated
16 that it's a command. It could be like some kind of
17 electrical signal from the SCM side as well, it
18 doesn't have to be some kind of a command or a
19 software command.

20 But, again, I don't understand the
21 relevance of this to the analysis that I've done.
22 And I've not memorized everything that Marek
23 discloses, but I have explained to you that one
24 clear understanding that one of ordinary skill

1 would have in reading Marek is that everything on
2 the host side is disabled, the Scware is run, so
3 that the I/O can be securely communicated between,
4 for example, the keyboard or the display and the
5 SCM in the Marek system.

6 Q. So I asked you previously whether there
7 was another way that H-mode could be initiated, and
8 I didn't hear you offer any other kind of
9 explanation. So let me just give you another
10 opportunity just to make sure I'm understanding
11 your opinion.

12 Is there a different way that H-mode could
13 be initiated that does not involve a signal or a
14 command coming from the SCM?

15 A. So to be clear, I don't believe that even
16 those answers that I gave you are really my
17 opinions. You're asking me implementation details,
18 which, again, I've stated a number of times, which
19 I believe are orthogonal and irrelevant to the
20 analysis that I performed.

21 But I've simply answered that one way that
22 one of ordinary skill would understand that this
23 could be implemented are the examples that I gave
24 you. And so what I'm pointing to is really the

1 teachings in Marek.

2 And Marek makes clear, and I've stated
3 this a number of times for you already, is that
4 Marek makes clear that everything on the host side
5 is disabled. And the only thing that's running is
6 Scware, and Scware acts as a dedicated driver to
7 pass data that's coming in from the keyboard or
8 going out to the display. And so that's really
9 what I'm pointing to as part of my opinion. I'm
10 not pointing to these implementation details that
11 you were asking me about.

12 Q. When you cited to Marek for the
13 proposition that the host is completely bypassed
14 and that Scware operates as a dedicated
15 input/output device driver in paragraph 114, you
16 cited to and quoted the portion of Marek describing
17 H-mode, right?

18 A. I believe you are looking at one
19 paragraph. There's a lot of discussion of Marek,
20 let me -- even earlier this morning we were looking
21 at, I have a background section that talks about
22 Marek before, as well as the Skarine reference, as
23 well as the combination and motivations to combine
24 and things like that, before I go into the actual

1 claim-by-claim or element-by-element analysis
2 section.

3 So I believe we're -- if you're limiting
4 it to only this single paragraph, then I believe
5 you're correct, but there is a lot of portions of
6 Marek that I've cited to throughout my declaration.

7 Q. Okay. I'd like to direct your attention
8 to column 11, line 27 through 31. Can you review
9 that and let me know when you're done.

10 A. Sure.

11 Okay. I've read the paragraph.

12 Q. So would you agree that the autonomous
13 execution state described in Marek is entered if
14 Scware is not loaded, because the user chose to
15 decline the option to load it?

16 A. It seems to indicate that if the option is
17 declined by the user, an autonomous execution state
18 can be entered, and that would be understood when
19 the SCM wants to communicate with, for example, the
20 keyboard or display.

21 Q. So autonomous execution state is not
22 something that is entered while Scware is running
23 and serving its function as a dedicated
24 input/output device driver, right?

1 A. I'm not sure I understand your question.
2 This paragraph is stating that if the user declines
3 to install the Scware 724 when the SCM 702 is
4 plugged into the host, that's all it's saying here.
5 And then it states about midway into the paragraph
6 that "if Scware operation is selected, the user is
7 prompted to shut down all applications running on
8 the host and the Scware 724 is loaded onto the
9 host."

10 So all it's saying is if the user declines
11 to load Scware when the SCM is initially connected,
12 then later on, when the SCM requires communication
13 with, for example, the display or the keyboard, it
14 will load Scware onto the host and do things just
15 like we've been discussing for the last hour or so.

16 Q. Okay. I want to direct you to -- in the
17 same column, column 11 of Marek, and beginning line
18 7, do you see that it says, "When H-mode is
19 finished, the Scware 724 zeroizes the appropriate
20 memory regions of the host platform, including the
21 output device's frame buffer."

22 A. Okay. I see that. The paragraph
23 continues on as well.

24 Q. What is the output device's frame buffer?

1 A. The frame buffer could essentially be, for
2 example, for a keyboard, the data that's coming in,
3 it could be accumulated in that frame buffer and
4 then sent along.

5 Q. So that's a region of memory within the
6 host platform, right?

7 A. It could be in that one example, as I
8 pointed out, it states alternatively, and it states
9 that it can function in different ways as well.
10 Marek provides different ways that this can be
11 implemented.

12 Q. So why would it be important for Scware
13 724 to zeroize the appropriate memory regions of
14 the host platform?

15 A. So that there's no remnants of Scware
16 running or having been run, remaining when, for
17 example, the operating system is rebooted again.

18 Q. And when you say "no remnants of the
19 Scware running," you're talking about the
20 information that either came from the keyboard and
21 are stored in a frame buffer or information that
22 was sent to the display and stored in a frame
23 buffer, right?

24 A. If a frame buffer is used, then, yes, that

1 could be what is happening. And that information
2 could also be encrypted information as well.

3 But like I stated, there's different
4 examples that Marek provides where he states in
5 alternative embodiment, and it continues on.

6 Q. So is there an embodiment that you are
7 relying on in Marek that you've analyzed that
8 satisfies the claims that do not involve zeroizing
9 the memory regions of the host platform?

10 MR. HOLT: Objection, form.

11 A. I don't -- so what it's basically -- these
12 are implementation details. What I'm pointing to
13 in my analysis is the teachings and what one of
14 ordinary skill would understand from reviewing
15 Marek and also the Skarine reference. Things like
16 zeroizing the appropriate memory regions of the
17 host platform, these are implementation details.
18 The teachings that I'm pointing to is what we've
19 talked about before, that everything on the host
20 platform is disabled and the Sware is the only
21 thing that's running and it allows secure
22 communications from, for example, the keyboard or
23 the display to Marek's SCM.

24 Q. So I asked you whether you were relying on

1 an embodiment in Marek that satisfies the claims,
2 that does not involve zeroizing memory readings of
3 the host platform, and you didn't provide me with
4 an alternative embodiment. So can I assume then
5 that you haven't identified or relied on a
6 different embodiment than the one that is described
7 here in column 11, line 7 regarding H-mode?

8 MR. HOLT: Objection, form.

9 A. Again, I don't understand your question.
10 This zeroizing is simply an implementation detail.
11 And what this paragraph in column 11 starting at
12 line 7 onwards, it's simply stating that you can
13 zeroize, or another way to do it is simply do a
14 cold start of the operating system. So it's simply
15 stating you can -- you know, one way to do it would
16 be to do a cold start of the host and another way
17 to do it would be to simply restart the operating
18 system. These are implementation details.

19 All I'm pointing to is the teachings from
20 Marek. For example, like if Marek says that he,
21 you know, he likes the pink, his processor is red,
22 I'm not pointing to implementation details like
23 that; I'm pointing to the concept, the teachings
24 that one of ordinary skill would have based on his

1 or her review of Marek.

2 Q. From a security perspective, why would
3 Marek describe that a cold start of the host would
4 be performed when a power interrupt occurs during
5 H-mode operation?

6 A. What do you mean from a security
7 perspective why would Marek describe that? I don't
8 see that language. It simply states, "In an
9 alternative embodiment, when a power interrupt
10 occurs during H-mode operation, a cold start of the
11 host will be performed."

12 Q. Is there a security advantage to
13 restarting or -- sorry -- cold starting the host
14 when a power interrupt occurs during H-mode
15 operation?

16 A. There are trade-offs. There are
17 implementation details and trade-offs to pretty
18 much everything in computer science. You can do
19 things one way, and there are positives and
20 negatives of that, and you can do things another
21 way, and there are positives and negatives of that.

22 So, again, I don't -- you're kind of
23 asking me why did Marek write something in his
24 patent specification versus not writing something

1 or a reason why he wrote a sentence or his attorney
2 wrote a sentence. I can't explain why Marek wrote
3 something. I'm simply opining on what one of
4 ordinary skill would have understood from reading
5 what's actually in Marek. And I'm stating that
6 looking at the challenged claims, that the
7 Marek-Skarine combination clearly renders obvious
8 the challenged claims.

9 Q. So when a person of ordinary skill reads
10 the sentence from Marek that I just read a moment
11 ago about the cold start, would that person of
12 ordinary skill understand that there could be some
13 security advantages to performing that cold start?

14 A. Again, like I stated, there are pros and
15 cons to almost everything in computer science, and
16 you seem to be asking me questions that I have not
17 rendered opinions on and which I believe are
18 completely irrelevant and orthogonal to the issues
19 that are set forth in my declaration.

20 So I would need to understand precisely
21 what you mean, other implementation details, there
22 are lots of things that I would need to understand.
23 For example, like when you're doing a cold start,
24 like looking at power consumption, things like that

1 would be an issue.

2 So it's -- your question, again, like I'm
3 saying, it's really irrelevant and orthogonal to
4 the analysis I performed. And then you're asking
5 me like whether there would be some benefit that
6 one of ordinary skill would understand from reading
7 a single sentence. But, again, it's not relevant
8 to the analysis I've done. The analysis I've done
9 is what one of ordinary skill would understand from
10 the teachings of Marek, and I've explained, I
11 believe, very clearly, that the Marek-Skarine
12 combination would render obvious the challenged
13 claims.

14 Q. I understand that you don't think that the
15 question is relevant, but you also understand that
16 your opinion as to the relevance of my questions
17 has no bearing on your obligation to answer my
18 questions to the best of your ability, right?

19 A. Okay. But what I'm stating is I need to
20 have a lot more information. Just stating what
21 would one of ordinary skill understand from a
22 security perspective with regards to a cold start,
23 the example I gave you is well, what would one of
24 ordinary skill understand about what? Like if that

1 person is looking at power consumption issues, then
2 they may be thinking, okay, well, a cold start may
3 draw more power at that instantaneous cold start
4 time.

5 So there's a lot -- and that's what I keep
6 on going back to. There's a lot of like pros and
7 cons that are weighed for everything in computer
8 science. And if you want me to answer your
9 question, then I need a lot more detail, I need
10 time to consider it, think about it, and then I can
11 answer your question.

12 Q. When a cold start is performed, what
13 happens to data that's in the device's frame
14 buffer?

15 A. Well, again, this is a perfect example of
16 my point, that I need a lot more information. To
17 the extent that the device's frame buffer is
18 implemented using DRAM versus EE PROM, the length
19 of time that the EE PROM can maintain information,
20 there's like a number of technical issues that have
21 to be answered before I can answer a question like
22 that.

23 Q. So what does the term "cold start" mean?

24 A. Well, cold start, it's talking about a

1 cold start of the host. And so a cold start of the
2 host would typically mean that you're completely
3 shutting down and then starting up again.

4 Q. And if you completely shut down and start
5 up again, assuming you've shut down for a long
6 enough period of time, all of the volatile memory
7 would be cleared of whatever data that it held,
8 right?

9 MR. HOLT: Objection, form.

10 A. Well, that's, again, what I'm saying, that
11 it completely depends on what kind of memory, like
12 you yourself stated, how long, you know, the
13 implementation, even leaving aside, for example,
14 DRAM versus ROM or EE PROM, even like the
15 electrical specifications of the specific chips
16 that are used would become relevant, because
17 depending on the specific chips that are used,
18 electrical specifications of those chips, the
19 outside room temperature can affect the magnetic
20 characteristics of certain memory devices as well.
21 So that's what I'm saying, you're asking me these
22 questions without giving me 99.99 percent of the
23 input that I would need to answer your question.

24 Q. If one wanted to erase or make harder to

1 recover information stored in a volatile frame
2 buffer, would performing a cold start potentially
3 be a way to achieve that?

4 A. So I'm not sure what you mean by "a
5 volatile frame buffer." I believe what you mean is
6 a frame buffer that's implemented using volatile
7 memory. Is that what you're trying to get at?

8 Q. Yes.

9 A. So, again, that's what I just tried to
10 explain to you, that it completely depends on the
11 type of memory, not even like the type, like DRAM
12 or volatile memory versus non-volatile memory, but
13 it even depends on the particular chips, the
14 ambient temperature, environment, magnetic
15 situation, because these are magnetic devices. So
16 there's lots of input that would be required in
17 order to answer these questions.

18 Q. Is a frame buffer also used for the output
19 to the display that's shown in Marek as element
20 720?

21 A. It could be. A frame buffer could be
22 used. I don't believe Marek ever states that some
23 implementation detail is required for his system
24 versus other implementation details that are not.

1 He simply is setting forth the concepts. And so it
2 could be that a frame buffer is used for the
3 display 720 or 722 -- 720.

4 Q. So how would a frame buffer -- or let me
5 say, how could a frame buffer be implemented in the
6 untrusted computing environment?

7 A. Again, I'm not understanding. The frame
8 buffer would be implemented by the Scware.
9 Everything else on the host is disabled. So
10 nothing else is running or can run when the SCM in
11 the Marek system is working. So the frame buffer
12 would be managed by the Scware, and depending on
13 the type of display, the size of display, the
14 electrical specifications of the display, the data
15 would be sent over to be displayed.

16 Q. So the frame buffer is a memory region
17 within the untrusted computing environment that
18 Scware can use as sort of a temporary holding place
19 for display data and that the display can access to
20 provide the displayed information; is that right?

21 A. It doesn't have to. This is similar to
22 what we talked about when you were asking me about
23 the keyboard. There's no need, and Marek does not
24 state that you have to store the data on the

1 untrusted side. In fact, Marek makes clear that
2 the I/O port 730 can be serial or parallel. And so
3 you can be receiving data or the Scware can be
4 receiving data, for example, from the keyboard and
5 immediately passing it on. Conversely, even for
6 the display, the Scware can be receiving data and
7 immediately passing it on. So these are
8 implementation details that, again, are not
9 relevant to my analysis. I'm trying to answer your
10 questions because you asked me to, but that's
11 simply an implementation detail.

12 Q. How does the serial versus parallel
13 interface that you just mentioned for 730 in
14 Marek's Figure 7, relate to the question of whether
15 a frame buffer is used or whether any memory is
16 used to temporarily store input or output
17 information?

18 A. Well, it's not -- the serial or parallel
19 is not determinative of whether a frame buffer is
20 used or not. I'm simply stating that there's no --
21 you keep on asking me about data being stored on
22 the untrusted host side. Nowhere does Marek say
23 that in my system you have to store data from the
24 SCM on the untrusted host side. In fact, his

1 entire system would lead one of ordinary skill to
2 the opposite conclusion.

3 And so all I'm trying to tell you, because
4 you're asking me a lot of implementation details,
5 is that one of ordinary skill would understand that
6 because Marek himself is talking about there can be
7 serial or parallel data, one of ordinary skill
8 would understand that even to display data, you can
9 send data in parallel over the I/O line 730 and
10 then they can be displayed. There's no need to be
11 hoarding data, storing it on the untrusted side.
12 Nowhere does Marek state that.

13 And as I just explained, I believe the
14 system of Marek and the teachings of Marek are
15 exactly opposite of the concept of storing data
16 from SCM onto the untrusted host environment.

17 Q. So which portions of Marek do you believe
18 support the idea that a frame buffer would not be
19 used?

20 A. Well, nowhere does it state that in my
21 system you have to use a frame buffer, that's what
22 I'm relying on, that's an example.

23 Q. Okay. So it's the absence of a disavowal
24 of -- or sorry -- it's the, yeah, the absence of a

1 disavowal of frame buffers is what you're saying?

2 A. I think that's one example of it.

3 The point is that you seem to be thinking
4 or at least asking me questions that Marek requires
5 that data be stored on the untrusted side by the
6 SCM. That's my only point, that nowhere does Marek
7 state that data has to be stored on the untrusted
8 side and nowhere does Marek state that you have to
9 use a frame buffer.

10 Q. And when you say that you don't have to
11 use the frame buffer that's shown in Marek's
12 Figure 7 and described in the Marek specification,
13 you don't have anything in Marek that describes an
14 embodiment where that's not used, right?

15 A. Well, these are examples. And so
16 there's -- my only point is that there's nothing in
17 Marek -- and if I'm wrong, I'd ask you to point me
18 to somewhere in Marek that states that data that is
19 sent from the SCM is stored by Scware on the
20 untrusted side. That's my point, that there's
21 nothing that states in Marek that you have to do
22 that. These are implementation details.

23 And there are lots of different ways that
24 one of ordinary skill would understand that this

1 could be implemented. If you -- if somebody wants
2 to implement it using a frame buffer, they can do
3 that. And Marek is simply stating that if you use
4 a frame buffer, then you may want to zero out that
5 frame buffer before restarting the host OS or doing
6 a cold start.

7 But it never states you have to, have to,
8 have to use a frame buffer. And it never states
9 that you have to store data on the -- on the
10 untrusted host side. That's my only point. These
11 are implementation details. And one of ordinary
12 skill would understand that there are multiple ways
13 of implementing the teachings of Marek.

14 Q. So explain to me what a person of ordinary
15 skill would understand as to how the keyboard and
16 display in Figure 7 of Marek could be used by
17 Scware without utilizing any kind of frame buffer
18 or memory on the untrusted computing environment.

19 A. That's precisely what I've explained to
20 you already a couple of times, that one way to
21 think about it -- and this is just, again, off the
22 cuff, from the top of my head -- is that because
23 the interface, the I/O line 730 are parallel, could
24 be parallel, one of ordinary skill would

1 understand, okay, there are a lot of benefits to
2 simply using that parallel connection. And then
3 simply Scware will get that data, for example, that
4 wants to go to the display and simply send it to
5 the display to be displayed. There's no need or
6 requirement for data to be stored and kept for some
7 time.

8 Q. So when you say Scware is going to get at
9 the data, what does that mean electrically?

10 A. It will get it from the I/O line 730.

11 Q. And how would that happen?

12 A. Well, the I/O lines are going, if you look
13 at the diagram, it's between -- it's pointing to
14 the FPGA on the SCM side, and on the other side
15 it's pointing to the Scware, and it would simply be
16 going electrically over those I/O lines. The
17 Scware would receive a digital representation of
18 those electrical signals and then pass them to the
19 display to be displayed. And you can see there's
20 another arrow coming down from the Scware going to
21 the right and then going to the display.

22 Q. So you said that the data that Scware
23 receives, that it's going to be getting display
24 information would be digital in your example. And

1 how does this software send a digital signal to the
2 display?

3 A. Well, there would be other set of lines
4 that are connected to the display. And that's what
5 I was pointing to, there's another line coming down
6 from the Scware going to the right. And it
7 simply -- and what I explained that you can imagine
8 there's a parallel interface for 730, which is
9 consistent with what Marek teaches, and then the
10 line that's coming down from Scware and going to
11 the right, all of that parallel data can be the
12 frame buffer data that is sent to the display.

13 There's no need to use, for example, a
14 serial interface and accumulate data in some kind
15 of memory or register, and then only after
16 accumulating everything, then you send it to the
17 display. You can receive everything and then send
18 it on to the display to be displayed.

19 Q. So you're saying that at any moment in
20 time, that parallel interface that we looked at all
21 of those parallel -- those parallel connections,
22 right, electrical conductors, that has -- at any
23 moment in time each one of those has one pixel of
24 information, right, for the display, and that the

1 way this could be implemented would be that the
2 display is just a live direct feed of each of those
3 pixels, and that the parallel connection has all --
4 has the entire display's worth of pixels, so a
5 dedicated electrical connector for each pixel in
6 the display, is that what you're saying?

7 A. Well, depending on the size of the
8 display, but not in a typical situation. In a
9 typical situation, you're not going to have like
10 millions of lines in I/O line 730.

11 All I'm stating is -- and this is how
12 displays work in real life, you're sending
13 information to the display and it's -- even though
14 you're sending it, it's the human eye that
15 perceives that information. And, in fact, the
16 human eye cannot see the flickering in a typical
17 display, even though it's sending one pixel, one
18 line at a time. It's because the human eye is not
19 as advanced as, say, a robotic eye, and that's why
20 it looks like a stable picture, even though data
21 for different pixels are provided at different
22 times.

23 Q. So what role does Sware play in that
24 process, in terms of something electrically has to

1 happen in order to connect the data being received
2 over that connection 730 and sending it to the
3 display or receiving it from the keyboard,
4 something electrically has to happen that's
5 controlled by Scware, right?

6 A. Well, Scware, like we've talked about, and
7 what Marek clearly teaches, is that it's a trusted
8 agent running on the host. And so if there's
9 nothing else running on the host side, like we've
10 talked about, everything else is disabled. And so
11 Scware is the only thing that's running, so,
12 therefore, it's the thing that will actually
13 facilitate the display happening. Or if there is
14 keyboard data coming in, it will facilitate that
15 keyboard data coming in to be sent back to the SCM.

16 Q. And what does it mean to facilitate that;
17 what does it actually do?

18 A. Well, like I explained, it's a trusted
19 agent. So it would receive that data from, for
20 example, the SCM. We're talking about the display
21 720. So it would receive the data from the SCM
22 over the I/O line 730, and then it would provide it
23 to the display. It's not that the line 730 are
24 directly connected to the display.

1 Q. So how can the Scware receive the data and
2 then provide it to the display without having it be
3 stored somewhere? It's digital, so how could it be
4 done without it being stored somewhere?

5 A. It's simply getting them from the I/O path
6 730, and like I've explained to you a number of
7 times now, it doesn't have to sit there and
8 accumulate data over time. It can receive parallel
9 data, and then it's simply able to take that
10 received data and send it to, for example, the
11 display; or conversely, if it's receiving data from
12 the keyboard, it can take that information or that
13 data from the keyboard and send it over line 730.
14 Again, these are all implementation details. It
15 completely depends on the keyboard 722 that's used
16 or the display 720 that's used.

17 MR. LINDNER: I think it's probably noon
18 for you on the West Coast there. Would it be
19 a good time for a lunch break or do you want
20 to take a short break and keep going?

21 THE WITNESS: I'm okay keeping going if
22 you guys are. Do we know how much longer you
23 anticipate?

24 MR. LINDNER: Off the record.

1 (Proceedings interrupted at 3:02 p.m. and
2 reconvened at 3:32 p.m.)

3 BY MR. LINDNER:

4 Q. Dr. Chatterjee, I wanted to give you one
5 more opportunity to explain this to me, because
6 it's not clear.

7 Can you describe in as much detail as
8 possible, how data could get from the SCM to the
9 display, managed by Scware, without ever being
10 stored on the untrusted host in any capacity?

11 A. So I think I've explained this a number of
12 times already. Like I explained, these are
13 implementation details. What I've done in my
14 analysis in my declaration is really the teachings.

15 So I've already explained to you some
16 implementation details, even though I've told you I
17 believe it's irrelevant and orthogonal to the
18 issues in my declaration. But, for example -- and,
19 again, this is just off the cuff, off the top of my
20 head. The data can be -- if the data is destined
21 for the display 720 -- because I think that's what
22 we've been talking about all this time -- the data
23 can be transmitted over I/O line 730. Scware is
24 the only thing that is not disabled on the host

1 side. Scware will receive that data, and then it
2 can provide that data using the downward line
3 coming out of the Scware block and then turning
4 right and then going into the display.

5 Q. Is there circuitry involved in that
6 process of Scware receiving and then subsequently
7 providing that data to the display?

8 A. Well, certainly there's circuitry
9 involved. It's how computers work. It's not magic
10 or anything. So even the I/O line 730, those are
11 conducting lines. And then, like we've talked
12 about, even though computers work in the digital
13 domain, ultimately, everything on Earth is analog.
14 So the actual signals that are transmitted are
15 analog signals. And then they're simply converted
16 from analog to digital. And then, as I explained,
17 the Scware, there is other lines, and this is shown
18 in the combined figure which is above paragraph 109
19 of my declaration, there's other conductive lines
20 that are going to the display.

21 Q. And you said that those would not be just
22 one solid continuous electrical conductor between
23 730 and the line connecting Scware to the display
24 as shown in Figure 7, right?

1 A. One solid line? Do you mean, are you
2 saying that whether the I/O line 730 and the lines
3 coming down from Scware and to the right, if those
4 are the same lines?

5 Q. Yes.

6 A. Again, these are implementation details.
7 That could be one way of doing it. And this is
8 what I'm stating, that there are multiple ways of
9 doing it in terms of the implementation that
10 somebody wants to achieve. There are cost issues
11 associated with whether you want to have separate
12 lines 730 and separate lines that are coming out of
13 Scware.

14 But, again, the analysis that I've done is
15 based on the express disclosure in Marek and
16 Skarine and what one of ordinary skill would have
17 understood and found obvious based on that
18 disclosure.

19 Q. Right. So if one of ordinary skill would
20 have found obvious that this could have been done
21 without a frame buffer of any kind, then I'm asking
22 you to describe in as much detail as you can how
23 that would be implemented in terms of the hardware
24 that's present, and how the software interacts with

1 the hardware. And so far, it seems like you
2 haven't been willing to do that.

3 A. I disagree. I think I've given you this
4 explanation about ten-plus times. I've already
5 explained to you that you can have the data come
6 out from the SCM on line 730 and then the Scware is
7 able to receive that, and then on the lines coming
8 down from Scware and to the right, the frame buffer
9 data can be provided.

10 You seem to have this incorrect technical
11 belief that there has to be some kind of storage on
12 the untrusted host, and what I've been trying to
13 explain to you repeatedly is that that is wrong.
14 And you have not offered anything in Marek, and
15 I've asked you repeatedly to show me why there is
16 anything in Marek that would lead one of ordinary
17 skill to that incorrect understanding. And so --
18 and I've explained to you a number of times that
19 the data -- and, you know, if you look at that
20 combined figure above paragraph 109, it's simply
21 stating frame buffer data.

22 And so if you want to talk about the
23 concept of a frame buffer, it's very easy to simply
24 have the frame buffer maintained on the SCM side.

1 And then it's simply provided over the parallel
2 line -- the 730 I/O lines can be parallel -- and
3 then the Sware receives that frame buffer data and
4 then puts it onto the vertical line coming out of
5 Sware, and then to the right, and then goes to the
6 display.

7 So I think I've explained this to you more
8 than ten times.

9 Q. When you say that the Sware receives the
10 data, Sware is software, it's a set of
11 instructions. So how does a set of instructions
12 receive data? That's the part I'm just -- I'm not
13 understanding.

14 A. Well, it's the data that's coming over the
15 I/O line 730.

16 Q. Can you explain how that happens? I know
17 where the data comes from. How does Sware receive
18 that data?

19 A. Well, I explained to you already, again, a
20 number of times already that data that goes over
21 electrical conductors are analog signals. So the
22 analog signals are traveling over the line 730.
23 There's an analog-to-digital converter that
24 converts the voltage of the signals. And how

1 analog-to-digital converter typically works is if
2 it's above a threshold, then it's determined to be
3 a 1, and if it's below a threshold, it's determined
4 to be a 0. And that what's happening.

5 So that data that's transmitted over the
6 line 730 as an analog signal or a set of analog
7 signals are converted from analog to digital. And
8 then the Scware receives that digital data and
9 then, again, sends it over the lines coming down
10 from the Scware and to the right, to the display.

11 Q. Okay. So if the Scware is not operating,
12 then it wouldn't send the data to the display,
13 right?

14 A. If the Scware is not operating, the SCM
15 would not send that data to begin with.

16 Q. So when you say that the Scware sends the
17 data to the display, in terms of the circuitry
18 involved, what does that mean?

19 A. Well, the circuitry involved would be
20 putting it onto the line that's shown coming down
21 from Scware and then to the right. So there would
22 be some kind of a transceiver that would simply,
23 again, take the digital data and put them onto
24 these lines, and the exact opposite of what I

1 explained before would happen. So if there's a 1,
2 it would provide, for example, a 3.3 volt
3 electrical signal. If it's a 0, it will provide
4 somewhere in the 0 electrical signal. And that
5 would get transmitted to the display.

6 And then, again, completely depends how
7 the display functions, and this has been my point
8 all along, that these are completely implementation
9 details. So depending on how the display
10 functions, that data that's coming over those lines
11 can be used directly to do something or they may
12 be -- something else may happen in order to do
13 another digital -- or analog-to-digital conversion
14 again. But these are just implementation details.

15 Q. So you're saying that the mechanism for
16 providing this information transfer, either from
17 the keyboard or to a display, without any kind of
18 memory or frame buffer, would use a transceiver
19 that is within the untrusted computing environment
20 to facilitate the data transfer, and that Scware
21 would be somehow controlling that transceiver; is
22 that your opinion?

23 A. Well, to be clear, I don't want to confuse
24 that with the RF transceiver that is discussed

1 elsewhere in my declaration.

2 It's simply stating -- because you're
3 asking me these very low-level implementation
4 details of how signals are transmitted, I'm simply
5 explaining to you that computers work with
6 electronics and electrical signals. There's no
7 magic that happens. And so in order to send data
8 onto that line that's coming down from Sware,
9 there has to be an electrical signal generated.
10 And one way to do that would be to use some kind of
11 a transceiver. So a transceiver would be a
12 transmitter receiver. It doesn't have to be. It
13 could be you have just the transmitter that will
14 take the digital data, like an analog -- or
15 digital-to-analog converter that will take that
16 digital data and simply make it into an analog
17 signal.

18 Q. So what would be the role of Sware in
19 that process as you just described?

20 A. The role of Sware is that that is the
21 only thing that's actually not disabled on the host
22 side. So Sware would take the data that's coming
23 over I/O line 730 and then provide it onto lines
24 that are coming down and to the right.

1 Similarly, if there's keyboard data that's
2 coming in, Scware would figure out, okay, there's
3 keyboard data that's coming in, and then it will
4 put it onto the line 730 going down to SCM.

5 Q. You said a moment ago that the
6 transceiver -- Scware would use the transceiver in
7 order to facilitate this. So I'm asking you
8 specifically how would Scware, which is software,
9 how would that software interact with the
10 transceiver in order to make this data transfer
11 happen?

12 A. Well, like I mentioned, one type of
13 transmitter could be a digital-to-analog converter.
14 So it would simply take the data that Scware wants
15 to send over to the display and it would simply
16 convert from the digital representation into an
17 analog signal.

18 Q. And what is Scware's role in making that
19 conversion happen?

20 A. I don't think Scware has a role in that
21 conversion. Again, these are implementation
22 details. Somebody can decide to implement Scware
23 in some totally different way. It's, again,
24 completely irrelevant to my analysis, and all I'm

1 trying to do is answer your questions by stating
2 that it's not magic how computers work, and if data
3 is being communicated, then it's communicated with
4 analog electrical signals.

5 Q. So you said that Sware does not have a
6 role in the conversion.

7 A. That's not what I said. I said it doesn't
8 have to.

9 Q. My question was, "and what is Sware's
10 role in making that conversion happen?" Your
11 answer was, "I don't think Sware has a role in
12 that conversion."

13 A. And then I believe I followed up by
14 stating that these are implementation details and
15 people can choose to implement Sware to do
16 different things as well. The point is that the
17 analysis I've done is based on the teachings of
18 Marek, not on other implementation details that are
19 completely irrelevant to the challenged claims or
20 to the analysis that I've set forth in my
21 declaration.

22 Q. I really think that our whole day would go
23 a lot faster if you could refrain from expressing
24 your opinion that my questions are irrelevant or

1 orthogonal or anything like that, that just simply
2 doesn't matter here. I'm going to ask the
3 questions and you're supposed to answer them. So
4 you're just wasting everybody's time by continually
5 saying this is orthogonal or irrelevant. Just
6 answer the questions, please. Okay?

7 MR. HOLT: He's trying to answer the
8 questions and you're asking the same questions
9 over and over and over again. So the
10 frustration here is that the same question is
11 getting asked many, many, many times.

12 MR. LINDNER: No. I asked plenty of
13 different questions and he goes back to this
14 is implementation details, it's orthogonal,
15 it's orthogonal, it's orthogonal.

16 So if you want to object, you know how to
17 do that. It's no speaking objections, please.

18 Q. Does Scware play a role in the data
19 transfer from the SCM to the display?

20 A. What do you mean by the "data transfer"?

21 Q. You mentioned earlier that Scware takes
22 data coming over the I/O line 730 and then provides
23 it onto the lines that are coming down to the
24 right. And you also described how there could be

1 an analog-to-digital converter circuitry somewhere
2 on the untrusted host, and that would be used to
3 convert the data from an analog form to a digital
4 form.

5 And I'm asking you what is Scware's role
6 in facilitating that transfer of display data
7 coming from the SCM going to the display?

8 A. So to be clear, I don't think I said that
9 there's analog-to-digital converters on the
10 untrusted side. There's -- I think what I've
11 explained, again, a number of times already, is
12 that computers don't work with magic, they work by
13 transmitting electrical signals.

14 In order to transmit an electrical signal
15 you would need some kind of a transceiver,
16 transmitter, digital-to-analog converter,
17 analog-to-digital converter, these are like common
18 components that you would need in order to have
19 communications over conductor lines, especially
20 lines like 730, which are defined to be I/O lines
21 or I/O paths.

22 So I'm not stating that there's D-to-A or
23 A-to-D converters only on the untrusted computing
24 side; they would be on both sides; that's how

1 computing works.

2 Q. So that doesn't answer my question at all.
3 You just distracted us by talking about which side
4 the A-to-D converters are on.

5 My question is about Scware's role.

6 A. Well, I didn't distract, I don't believe
7 so. You misstated my testimony, so I was
8 correcting you. I don't believe you misstating my
9 testimony and me trying to correct you is a
10 distraction.

11 Q. Can you please answer the question that I
12 asked about Scware's role in facilitating the data
13 transfer of the display data coming from SCM going
14 to the display?

15 A. Well, Scware -- and, again, I've answered
16 this already, maybe more than ten times, maybe 15
17 times -- that Marek makes crystal clear in his
18 specification and the disclosures, that Scware is
19 the only thing that's running, also makes clear
20 that Scware is a trusted agent that's used by the
21 SCM to securely communicate with, for example, 722,
22 the keyboard, or 720, the display. And so Scware
23 facilitates that secure communication. And that is
24 what one of ordinary skill would understand from

1 reviewing Marek.

2 Q. So I've asked a bunch of times here how it
3 facilitates, and you just keep saying again that it
4 does facilitate. So this is your chance to tell me
5 how. And if you aren't able to do it now, then
6 you're not going to be able to do it in another
7 expert declaration later when you figure out some
8 way how to make this thing work.

9 So this is your -- I'll give you another
10 chance just out of courtesy here, to tell me how,
11 in terms of the circuitry involved, how the
12 software interacts with that circuitry, how does
13 Scware facilitate this data transfer, either from
14 the keyboard or to the display, in a way that
15 doesn't involve any data buffers or memory.

16 MR. HOLT: Objection, form.

17 A. So, again, I'm going to clarify, you just
18 stating that I have not answered your question does
19 not mean that I have not answered your question.
20 You may not understand my answers, but I believe my
21 212 page declaration provides excruciating detail
22 and analysis of the challenged claims and how the
23 Marek-Skarine combination renders obvious those
24 challenged claims.

1 And on top of that, today, I've spent
2 numerous times, like I said, probably in excess of
3 15 times, answering the same question over and over
4 again. And so I've already answered the question.
5 You just stating that I have not answered your
6 question and that I cannot -- and that I have not
7 or cannot provide the answers, I'm not a lawyer,
8 I'm just telling you I've answered the technical
9 questions, both in my declaration and today
10 repeatedly.

11 Q. So if the expert for patent owner in this
12 IPR says that it is not possible to transfer the
13 data from the SCM to the display or conversely from
14 the keyboard to the SCM without using some kind of
15 a memory or frame buffer or register within the
16 untrusted computing environment, you would have no
17 technical response to that other than to say it can
18 transfer it there; is that right?

19 MR. HOLT: Objection, form.

20 A. Can you show me that description? I'd
21 like to read it and then I'll answer your question.

22 Q. No. I don't have a description to show
23 you. I just asked the question. I said if the
24 expert for patent owner says that it's not possible

1 to transfer the data from the SCM to the display or
2 from the keyboard to the SCM without some kind of
3 memory or frame buffer or register within the
4 untrusted environment, you would not be able to
5 provide a technical description of how it's
6 possible to do so, right?

7 MR. HOLT: Objection, form.

8 A. I've already provided a technical, very
9 low-level implementation detail on how it's
10 possible to do so. You seem to be asking me to
11 respond to a nebulous unknown opinion of somebody
12 who you're not naming, what the opinion is you're
13 not stating, the basis for that opinion you're
14 refusing to state, and you want me to answer that
15 question. I think we talked about the ground rules
16 for a depo at the beginning. I think I can't
17 answer that question.

18 If somebody -- if you're going to tell me
19 like if somebody says X, are you able to respond to
20 that? Well, I need to understand what is X
21 exactly, what is the basis for X, what are the
22 reasons that that person is concluding, I need to
23 understand who that person is, what their
24 background is. So I cannot answer your question.

1 Q. I wanted to direct your attention to --
2 well, the figure appears in multiple places, but
3 let's look at the figure that's shown above
4 paragraph 89 in your declaration.

5 A. Okay. I'm there.

6 Q. So you have drawn a blue box around a
7 portion of that figure, and you have an arrow with
8 a blue letters saying "cryptographic engine"
9 pointing to that blue box, right?

10 A. I see that.

11 Q. And you're identifying everything inside
12 of that blue box as being a part of the
13 cryptographic engine that appears in, for example,
14 claim 1 of the '399 patent, right?

15 A. I am, yes.

16 Q. And Marek, which is where a portion of
17 this figure that we're looking at comes from,
18 describes a cryptographic engine 706, correct?

19 A. Yes. And so what I'm doing here, and I
20 think you explained this accurately, is that I'm
21 saying that it's -- the blue is the claimed
22 cryptographic engine.

23 Q. So the cryptographic engine that is
24 identified in Marek as element 706 does not satisfy

1 the claimed cryptographic engine as we see in claim
2 1 and other claims of the '399 patent, right?

3 A. I don't believe I'm providing a negative
4 opinion that that cryptographic engine 706 does not
5 provide or does not meet the claimed cryptographic
6 engine. I'm simply stating that, look, this -- the
7 stuff that is in the blue box clearly renders
8 obvious the claimed cryptographic engine, and then
9 I explain in excruciating detail why.

10 Q. So why would you include these other
11 elements as part of the cryptographic engine if
12 Marek already discloses a cryptographic engine?

13 A. Again, I'm not really sure what you're
14 asking me. The analysis I'm providing is that the
15 Marek-Skarine combination renders obvious the
16 challenged claims.

17 You seem to be asking me why did I do --
18 why did I not do some other analysis, why did I not
19 map some other components? I don't believe I
20 needed to do that. I'm simply stating that one of
21 ordinary skill would have understood from the
22 disclosure of Marek and Skarine that the challenged
23 claims are rendered obvious, and I've provided one
24 or more mappings and explanations why they would

1 have been rendered obvious.

2 And I believe somewhere early in my
3 declaration, I even state that are other mappings
4 that are possible. So like I stated, I don't
5 believe I'm providing a negative opinion that
6 crypto 706 does not meet this or does not meet
7 that; I'm simply stating the blue box that I have
8 clearly renders obvious the claimed cryptographic
9 engine.

10 Q. You haven't offered an opinion in your
11 declaration that cryptographic engine 706 in Marek
12 by itself is a cryptographic engine, as claimed in
13 the '399 patent, right?

14 A. I think I agree with you. Again, it's a
15 212 page document. I don't recall everything that
16 I've stated. But I -- and, again, looking at this
17 figure and the blue coloring, I am pointing to the
18 entire blue box to be what I'm mapping for the
19 claimed cryptographic engine.

20 Q. And you also haven't offered any opinion
21 that the box labeled "optional crypto" with the
22 number "714" constitutes a cryptographic engine as
23 claimed in the '399 patent, right?

24 A. Are you asking me like as part of the blue

1 box or are you asking me only 714 as being the
2 claimed cryptographic engine?

3 Q. Only 714 by itself.

4 A. Again, I don't believe so, but, again,
5 it's a 212 page declaration. I haven't memorized
6 everything that I've stated in there. But I
7 believe the mapping that I'm doing is the blue box.

8 Q. Well, feel free to scroll through the
9 discussion of the cryptographic engine limitation.
10 And that starts -- starts on page 68 of your
11 declaration for claim 1 and it goes down to
12 page 80, so that's 12 pages. Feel free to look
13 through there to confirm whether or not you have
14 identified either of those two components, the
15 cryptographic engine 706 or the optional crypto 714
16 as independently satisfying the claim limitation
17 for a cryptographic engine.

18 A. I don't know if it's on my side or on your
19 side, Mr. Lindner, but you're kind of breaking up a
20 little bit on me. You seem to be okay now.

21 Q. Do you need me to repeat my question?

22 A. Well, I'll review. No, I heard your
23 question, to review the 12 pages starting in like
24 paragraph 87 onwards.

1 Okay. I've quickly skimmed through
2 paragraph 104. I forget which paragraph you asked
3 me to stop at. But I am pointing to Marek's TSM,
4 that claimed cryptographic engine, and that is
5 what's highlighted in blue in the figure that we
6 were looking at.

7 But just to be clear, there's no reason
8 why that blue cannot be enlarged, but in terms of
9 what I'm pointing to, I'm pointing to the TSM.

10 THE WITNESS: I think you're muted.

11 MR. LINDNER: Sorry.

12 Q. I'd like to direct your attention now to
13 paragraph 65 of your declaration. And about
14 halfway down that paragraph 65, you say that "The
15 embedded COTS processor of Marek's ACE 703,
16 together with the COTS OS and software, are or at
17 least render obvious a secure processor."

18 Do you see that?

19 A. Yes.

20 Q. And then below that, you say, "For
21 instance, these elements render obvious a secure
22 user processor because of their role in providing a
23 secure trusted computing environment," right?

24 A. I do. And then I cite to a portion of the

1 '399 patent.

2 Q. So is it your opinion --

3 A. Sorry. Not the '399 patent, the Marek.

4 Q. Is it your opinion that any element that
5 provides a robust security interface using
6 cryptography is a cryptographic engine?

7 MR. HOLT: Objection, form.

8 A. You asked me whether it's a cryptographic
9 engine? This section is talking about the secure
10 user processor.

11 MR. LINDNER: Oh, I'm sorry. Let me --
12 sorry. Let me reask that. I just put the
13 wrong word into my question.

14 Q. So my question is, is it your opinion that
15 any element that provides a robust security
16 interface using cryptography is a secure user
17 processor?

18 A. Where are you reading from?

19 Q. I was just asking you a question, and I'm
20 using some of the words that you used in paragraph
21 65, where you described those elements rendering
22 obvious a secure user processor because of their
23 role in providing a secure trusted computing
24 environment.

1 MR. LINDNER: Oh, you know what, I
2 apologize. I am -- I've got my question all
3 mixed up here. This is a good chance for me
4 to say strike that from the record.

5 Okay. Let me ask this for the third time.
6 Hopefully, it makes a little more sense this
7 time.

8 Q. Is it your opinion that elements that play
9 a role in providing a secure trusted computing
10 environment are necessarily a secure user
11 processor?

12 MR. HOLT: Objection, form.

13 A. I still don't understand the question.

14 I'm stating that what I'm pointing to in
15 Marek are, or at least render obvious, the claimed
16 secured user processor. And I have a footnote that
17 explains that as a first point, that the disclosure
18 in Marek is consistent with what the '399 patent
19 itself describes as being a secure user processor.
20 And then I go into additional reasons saying, for
21 instance, these elements render obvious a secure
22 user processor because of their role in providing a
23 secure trusted computing environment, and then I
24 cite to multiple portions of Marek that support

1 that. For example, Marek talks about preventing
2 malware from doing bad things within that trusted
3 environment.

4 And so that's my point that there's a lot
5 of disclosure in Marek that supports the conclusion
6 that what I'm pointing to is a secure user
7 processor, as one of ordinary skill would
8 understand that within the '399 patent.

9 Q. So in claim limitation 1, the first
10 limitation after the preamble, it includes a couple
11 of different elements, the last of which is a
12 cryptographic engine.

13 Do you see that?

14 A. I do.

15 Q. So what is a cryptographic engine?

16 A. Well, a cryptographic engine, as one would
17 understand it within the context of the '399, is
18 configured for -- it encrypts data communicated
19 from the secure user processor to the non-secure
20 user processor, and it comprises a trusted
21 cryptographic processor and a trusted operating
22 system executing on said trusted cryptographic
23 processor for at least claim 1 of the '399 patent.

24 Q. So take a look at paragraph 76 of your

1 declaration. And the first sentence says, "the TSM
2 704 can be considered to be a cryptographic engine
3 at least because it provides a robust security
4 interface."

5 Do you see that?

6 A. I think the sentence continues on; it
7 doesn't end there.

8 Q. You're looking at the paragraph 76, the
9 first sentence?

10 A. Yes. My point is that the sentence, I
11 believe, ends with "using cryptography."

12 Q. Oh, I see.

13 Okay. So my question is, does any element
14 that provides a robust security interface using
15 cryptography qualify as a cryptographic engine?

16 MR. HOLT: Objection, form.

17 A. That's not what I'm saying. I'm saying
18 that "the TSM 704 can be considered to be a
19 cryptographic engine at least because it provides a
20 robust security interface using cryptography."

21 I have a footnote 4, and I explain that
22 the functionality of the TSM is consistent with the
23 functionality of the cryptographic engine, as
24 described in the '399 patent. And then I continue

1 on in my analysis, talking about later how the
2 other limitations with regards to the claimed
3 cryptographic engine are also met.

4 Q. And which portion of TSM provides the
5 cryptography functionality?

6 A. Again, I've not memorized everything in
7 Marek, but at a minimum, the Marek's crypto engine,
8 which is -- I can't find -- yeah, Marek 706, at a
9 minimum, it explains that provides encryption and
10 decryption and that the crypto engine 706, I
11 believe it uses words like it assists the processor
12 705 or aids the processor 705, some language like
13 that.

14 Q. And in the portion of paragraph 76 that's
15 on page 60, you also cite to and quote several
16 other passages in Marek relating to, for example,
17 partitioning of memory resources, and
18 authentication protocols and brick wall
19 partitioning of memory time and device resources.
20 Do any of those things relate to cryptography?

21 A. Well, if you're asking about the quote
22 coming from column 9, lines 48 to 60, where it's
23 talking about "Memory and I/O resources in the SCM
24 702 are strictly partitioned and managed by several

1 secure TSM partitions. Each I/O path of the SCM
2 702 is configured to go through the TSM 704 so that
3 the corresponding TSM partition of an I/O path
4 controls the I/O path to be secured and
5 authenticated." And then the next part of the
6 quote talks about authentication protocols. So I
7 believe these all fall within -- broadly within the
8 subject area of cryptography.

9 Why I'm pointing to these is really
10 related to the footnote that I read to you earlier
11 that the description in Marek is very similar to or
12 consistent with the description in the '399 patent.
13 And this further underscores a point that I've made
14 repeatedly in my declaration, especially at the
15 beginning of my declaration, where these concepts
16 of trusted processors, trusted operating systems,
17 trusted applications, these are all well known
18 concepts. And, in fact, I believe the '399 even
19 concedes the point that trusted processors,
20 operating systems, and applications were all well
21 known.

22 So that's my point here. I'm simply
23 stating, look, there's similar disclosure in Marek
24 that's consistent with the disclosure in the '399

1 patent.

2 Q. Is there another portion of the TSM that
3 is involved in encrypting data other than the
4 cryptographic processor of Marek, which is 706?

5 A. I think Marek calls it the cryptographic
6 engine 706.

7 I don't recall -- again, Marek discloses a
8 lot of things, and I don't recall whether Marek
9 says that other components perform encryption. But
10 I know that Marek very clearly articulates and
11 states that the cryptographic engine 706 performs
12 encryption and decryption and that it either
13 assists or aids the processor 705.

14 Q. In Marek, does the untrusted computing
15 environment have a mechanism for decrypting data
16 that would have been encrypted by cryptographic
17 engine 706?

18 A. Again, I've not memorized everything in
19 Marek. If you point me to something in my
20 declaration or in Marek, I'm happy to review it and
21 answer your question.

22 Q. I don't think it's there. I don't think
23 that it does do that. I just want to confirm that
24 I didn't miss something and that there was some

1 mechanism or the untrusted computing environment to
2 decrypt that data, because there is a box in
3 Figure 7 that's called "decrypted data."

4 A. So like I stated, I have not memorized
5 everything in Marek. So to that extent, I don't
6 believe I'm pointing to anything -- at least in my
7 analysis I don't believe I'm point to anything
8 where the untrusted computing environment is
9 decrypting something that was encrypted by the TSM.
10 But, again, I'm just telling you that I've not
11 memorized every word in Marek.

12 Q. In paragraphs 87 and 88 of your
13 declaration, you offer your opinion that the
14 cryptographic engine you've identified is
15 configured for encrypting data communicated from
16 the secure user processor to the non-secure user
17 processor, right?

18 A. The subtitle does state that, yes.

19 Q. And then in the subsequent paragraphs 89
20 and 90, you address your opinion on how the
21 cryptographic engine is configured to encrypt any
22 data communicated along these I/O paths, right?

23 A. I believe the disclosure in Marek is that
24 it can encrypt any data along the I/O paths.

1 Q. And about a couple lines down from the top
2 of paragraph 90, you say, "That is, each I/O path
3 that passes through the TSM is secured and
4 authenticated by Marek's TSM, e.g., by the
5 cryptographic engine of the combination," and I
6 left out the parenthetical.

7 Did I get that right?

8 A. Did you read from that first sentence in
9 paragraph 90? I was trying to find where you were
10 reading from, so I don't really know.

11 Q. Let me start again. I'm looking at the
12 second full sentence in paragraph 90 that begins at
13 the end of the fourth line. And it says, "That is,
14 each I/O path that passes through the TSM,
15 including the I/O paths between the secure user
16 processor and the non-secure processor, is secured
17 and authenticated by Marek's TSM, e.g., by the
18 cryptographic engine of the combination."

19 Do you see that?

20 A. Okay. I see where you read from, yes.

21 Q. So what does it mean for data to be --

22 MR. LINDNER: Let me restate.

23 Q. What does it mean for an I/O path to be
24 secured and authenticated?

1 A. Well, I think the sentence before that
2 explains what it means to be secure and
3 authenticated, for example, enforcing predetermined
4 security policies; and then the sentence after
5 that, where I'm citing to the disclosure of Marek
6 that talks about implementing strict authentication
7 protocols; and the next paragraph talks about
8 implementing cryptography. And the disclosure in
9 Marek would be understood to include those
10 different capabilities on the I/O path -- or the
11 I/O paths, plural.

12 Q. So when Marek describes providing
13 partitioning, does that mean encryption or is it
14 something different?

15 A. Partitioning typically refers to keeping
16 things separate, so data can be kept separate. The
17 data can still be encrypted, it's not -- and I
18 don't think anything in Marek states that you can
19 or cannot encrypt partitioned data.

20 Q. And when Marek describes enforcing
21 predetermined security policies, what does that
22 specifically refer to?

23 A. Well, that you can enforce predetermined
24 security policies. For example, I believe a

1 security policy that would be understood by a
2 POSITA in reviewing Marek is that data that's
3 transmitted from the secure processor -- from the
4 secure processor to the host would be encrypted.

5 Q. And how is it that encrypting data helps
6 to protect information confidentiality and
7 integrity?

8 A. Did you read from paragraph 90 again?

9 Q. I read some of the words from paragraph 91
10 that said that cryptography is the widely used
11 means for protecting information confidentiality
12 and integrity. And I was asking you how Marek's
13 cryptographic engine --

14 MR. LINDNER: Let me just ask a different
15 question.

16 Q. Take a look at paragraph 91. Okay?

17 A. Okay.

18 Q. How does Marek's cryptographic engine 706
19 aid the trusted processor 705 to provide a robust
20 security interface by implementing cryptography?

21 A. So if I understood your question
22 correctly, Marek expressly states that "Marek's
23 cryptographic engine 706 aids the trusted processor
24 705 to provide a robust security interface."

1 So I believe one of ordinary skill would
2 understand that cryptography helps to provide such
3 a robust security interface. And as Marek makes
4 clear, the cryptographic engine can perform
5 encryption. And one of ordinary skill understands
6 that encryption not only keeps the information
7 encrypted so that people who should not be seeing
8 it or things that should not be seeing it are not
9 able to see the encrypted data, but also performs
10 authentication because you know that only the
11 entity that had the encryption key was the one that
12 encrypted the data. Those are two examples.

13 Q. So after Marek encrypts the data, that's
14 what allows, at that point, data to be sent over to
15 the untrusted computing environment, while not
16 revealing the data itself to anything happening on
17 the untrusted computing environment, right?

18 A. I don't believe that Marek is saying that
19 whatever is encrypted automatically has to be sent
20 to the untrusted side. I believe what a POSITA
21 would understand from reading Marek is that, yes,
22 one thing that can be done is that, for example, if
23 you're going to be using the wireless transmitter,
24 the transceiver of, for example, the PDA or the

1 cell phone, the conventional device that Marek
2 discloses as the host, that yes, you could encrypt
3 the data. But I just want to be clear, I'm not --
4 I don't believe Marek is stating that whatever is
5 encrypted has to be sent to the host side.

6 Q. Okay. Understood.

7 I was trying to ask the question about why
8 encrypted data could be sent to the untrusted side
9 without revealing the data, and I think you've
10 answered that.

11 I wanted to ask you about the opinions
12 you've expressed about the first data communication
13 link that starts at paragraph 105 of your
14 declaration.

15 A. Okay.

16 Q. So you say sort of in the middle of
17 paragraph 105, "Given that data is communicated
18 between the secure processor and the cryptographic
19 engine, it is my opinion that a POSITA would have
20 understood there to be a first data communication
21 link, highlighted in purple, communicating data
22 between the secure processor and the cryptographic
23 engine."

24 Do you see that?

1 A. I do.

2 Q. And then in the figure below paragraph
3 105, you have purple box on the element that's
4 labeled "dual port RAM 707," and an arrow coming
5 from words in purple that say "implements first
6 data communication link."

7 Do you see that?

8 A. I do.

9 Q. So I wanted to just make sure I
10 understand, are you saying that the dual port RAM
11 is the first data communication link?

12 A. I'm saying that Marek makes clear that any
13 I/O from/to the ACE 703 is configured to go through
14 the TSM 704. And so Marek is clearly stating that
15 anything that's starting or ending at the ACE 703
16 within the SCM goes through the TSM 704.

17 And so clearly one of ordinary skill would
18 understand from that very clear description that
19 there is a communication path from the ACE 703,
20 which I've identified as a secure processor, to the
21 TSM. Otherwise, it cannot be that any
22 communications, any and all communications that are
23 starting from or ending at ACE 703 goes through the
24 TSM.

1 And then I'm stating on top of that, if
2 you look at Figure 7, it shows that there's a dual
3 port RAM, and the dual port RAM is drawn so that
4 it's on like connecting or between both the ACE 703
5 and the TSM.

6 And so a POSITA would understand that to
7 be the claimed first data communications link
8 because it meets the claim language, which is
9 communicating data between said secure processor
10 and said cryptographic engine.

11 Q. And when you're talking about the
12 cryptographic engine here, are you talking about
13 the entirety of TSM 704, right?

14 A. Yes, the claimed cryptographic engine.

15 Q. Would a person of skill understand there
16 to be another pathway for data to get from the
17 secure processor to TSM 704 that doesn't involve
18 the use of dual port RAM 707?

19 A. I'm just looking it up.

20 So like I mentioned, dual port RAM 707
21 seems to be an optional component. It's stating
22 that the ACE may be implemented through -- or
23 sorry -- reading before that, from the bottom of
24 column 9, that the virtual I/O paths between the

1 TSM and the ACE may be implemented through a dual
2 port RAM 707, with each I/O path and a
3 memory-mapped resource being controlled by a
4 dedicated TSM port.

5 So the dual port RAM is not the only thing
6 that meets the first communications link. I'm
7 simply pointing to it in this diagram because it's
8 in the diagram. But as I explained before, it
9 makes clear, Marek makes it very clear in the
10 specification that there are I/O paths in between
11 the TSM 704 and the ACE 703.

12 Q. And you've identified dual port RAM 707
13 as the first data communication link because that's
14 the one that Marek describes as playing that role
15 of implementing the virtual I/O paths between the
16 TSM and the ACE, right?

17 A. No. As I explained, Marek explains in the
18 specification that the dual port RAM may be used,
19 but it doesn't have to be. But what Marek does
20 explain very clearly is that there are I/O paths
21 between the ACE 703 and the TSM 704. And there are
22 I/O paths. So, Marek, I'm saying, okay, look, dual
23 port RAM 707 is in the diagram, and so I'm pointing
24 to that. But as I explained before, the

1 specification states that there are I/O paths, and
2 the I/O paths can be implemented using dual port
3 RAM.

4 So as I wrote in that purple text on the
5 composite figure, the dual port RAM implements
6 first data communication link, but Marek makes
7 clear there are the I/O paths which meet the first
8 data communications link, but the dual port RAM is
9 one example of that.

10 Q. Okay. I wanted to just talk to you kind
11 of generally about the composite figure that you
12 have in your declaration. And it's used a number
13 of times, but let me point you to one instance so
14 we're looking at the same one.

15 So since I'm here, let's just look at the
16 composite figure that's on the page above paragraph
17 106 of your declaration.

18 A. Okay. I'm there.

19 Q. All right. So if we compare this
20 composite figure to Figure 7 of Marek, there are
21 some differences, right?

22 A. Yes. That's why it's a composite figure.

23 Q. And which elements in your composite are
24 missing from what Marek shows in Figure 7?

1 A. Which are missing? The composite adds
2 some additional boxes and lines.

3 Q. I can ask it that way then.

4 Which boxes and lines in your composite
5 have been added to what Marek shows in Figure 7?

6 A. I think -- and, again, this is done many
7 months ago, but I think it's the lines at the very
8 top, the boxes and lines at the very top.

9 Q. So that would be the box labeled
10 "Transceiver/Antenna," the box labeled "Speaker,"
11 the box labeled "Microphone," and the box labeled
12 "Memory"; is that right?

13 A. That looks about right.

14 Well, and of course the color coding and
15 the colored text are obviously also added.

16 Q. And some of those elements in your
17 composita that you added to Marek's Figure 7 come
18 from the Skarine reference, right?

19 A. Well, I think I touched on this point
20 earlier today as well, that Marek very clearly
21 states that the host is a conventional PDA or cell
22 phone. And so I believe each of these things, the
23 boxes, Transceiver/Antenna, Speaker, Microphone,
24 Memory, I believe one of ordinary skill would have

1 understood that these are conventional components,
2 conventional capabilities of conventional PDAs and
3 cell phones.

4 I'm simply pointing to the Skarine
5 reference to provide those implementation details,
6 for example that a conventional PDA can have a
7 speaker, a conventional PDA can have a microphone,
8 that's what I'm doing. But I want to make it clear
9 I'm not saying that you need the Skarine reference.
10 I believe my point is that one of ordinary skill
11 would have clearly understood and known even prior
12 to the critical date, that PDAs had speakers and
13 microphones. I'm simply out of an abundance of
14 caution pointing to the Skarine reference to
15 provide these level -- or these implementation
16 details.

17 Q. So Speaker 234 and Microphone 236 in your
18 composite figure appear to come directly from a
19 figure in Skarine, right?

20 A. I believe so, yes.

21 Q. Let me put the Skarine reference in the
22 chat so you can reference that.

23 (Exhibit 1005, U.S. Patent Application
24 2005/0190159 A1, marked for identification.)

1 Q. I've just placed into the chat Exhibit
2 1005, that I've been referring to as the Skarine
3 reference.

4 Do you see that?

5 A. I do.

6 MR. LINDNER: So let me just ask my
7 question again.

8 Q. In your composite figure in your
9 declaration, Speaker 234 and Microphone 236 are
10 both elements that are shown in Skarine Figure 2,
11 right?

12 A. They are, yes.

13 Q. And then in your composite figure, you
14 have another box that's Transceiver/Antenna, but
15 the Transceiver/Antenna box as shown in your
16 composite, that doesn't appear in Skarine, does it?

17 A. Well, I have two answers: One is that
18 Marek makes clear that the host can be a wireless
19 device, so wireless PDA. And I believe one of
20 ordinary skill as of the critical date would have
21 understood that a wireless PDA or wireless device
22 or even a cell phone would have a transceiver.

23 On top of that, if you look at Figure 2,
24 on the left-hand side, it does show a transmitter

1 and receiver, and it does show antennas connected
2 to each of the transmitter and receiver, and it
3 shows the actual towers above that as well.

4 Q. So are you saying that the box labeled
5 Transceiver/Antenna in your composite figure is a
6 representation for the dotted line box 211 in
7 Figure 2 of Skarine?

8 A. Well, I think I gave you two answers
9 already: One is that Marek expressly states that
10 the host can be a wireless PDA or a cell phone, and
11 that a person of ordinary skill as of the critical
12 date would have understood that a wireless device
13 would require a transceiver and a cell phone would
14 have a transceiver. On top of that -- and antenna
15 to go along with that transceiver.

16 The dotted box in Figure 2 of Skarine,
17 yes, it has a lot of other details. And one of the
18 reasons why I just put in a smaller box is that
19 because this dotted box is enormous and it would
20 take up a lot of space.

21 Q. How would a person of skill in the art
22 understand the term "trusted operating system" in
23 the context of the '399 patent?

24 A. I think we've talked about this a lot in

1 the morning already, in reference to column 3,
2 which provides an express definition of the term.
3 And it states in column 3, starting at line 53, "As
4 used herein, the term trusted is used with
5 reference to computer hardware, operating systems
6 and/or software applications that have been
7 designed to ensure secure storage, processing, and
8 communication of data," and then it continues on.
9 So I think we've talked about that already.

10 Q. So with particular mention of the
11 operating system being trusted, how is an operating
12 system designed and tested to ensure the integrity
13 and reliability of the source code and resistance
14 to penetration?

15 MR. HOLT: Objection, form.

16 A. Ask your question again, please.

17 Q. The portion you read from column 3
18 describes what "trusted" means, and it describes
19 how the software would have been designed to ensure
20 secure storage processing and communication of data
21 and is generally designed and tested to ensure
22 integrity and reliability.

23 So I'm just asking you if an operating
24 system in particular has certain things that would

1 make it trusted or that would verify that it's
2 trusted?

3 MR. HOLT: Objection, form.

4 A. Well, the '399 patent has similar
5 disclosure to what Marek discloses, for example,
6 that trusted software can be certified by
7 analyzing, for example, its source code, making
8 sure that the source code does only what it's
9 supposed to do and doesn't do bad things, that the
10 source code does not contain malware. And so those
11 are examples of actions that fall within that
12 express definition of the '399 patent.

13 And, again, this is consistent with what
14 I've explained repeatedly in the morning today as
15 well, that the '399 patent itself concedes that
16 trusted hardware, trusted software were well known
17 concepts. And it's -- and it's pretty clear
18 because the Marek reference has very similar
19 disclosure to the '399 patent's disclosure with
20 regard to trusted hardware and trusted software.

21 MR. LINDNER: Can we take a short break?

22 (Proceedings interrupted at 5:14 p.m. and
23 reconvened at 5:24 p.m.)

24 MR. LINDNER: Well, subject to recross, I

1 will pass the witness.

2 MR. HOLT: No redirect on our side.

3 (Transcript order requested by the
4 reporter.)

5 MR. LINDNER: Five business days on the
6 final. Rough, real-time.

7 MR. HOLT: Just whenever is fine for us.
8 Regular is fine. No rough.

9 (Whereupon, this deposition was concluded
10 at 5:26 p.m.)

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1 CERTIFICATE

2
3 I, Dana Welch, Registered Professional
4 Reporter, Certified Realtime Reporter, do hereby
5 certify that SANDEEP CHATTERJEE, Ph.D., the witness
6 whose deposition is hereinbefore set forth, was
7 duly sworn by me before the commencement of
8 such deposition, and that such deposition was taken
9 before me and is a true record of the testimony
10 given by such witness.

11 I further certify that the adverse party was
12 represented by counsel at the deposition. I
13 further certify that I have no disqualifying
14 interests, personal or financial, in any party in
15 this action.

16 I further certify that the deposition of
17 SANDEEP CHATTERJEE, Ph.D., occurred REMOTELY on
18 October 27, 2023 via Zoom, commencing at 11:58 a.m.
19 EST and concluding at 5:06 p.m. EST

20 _____
21 Dana Welch, CSR, RPR, CRR
22
23
24
25

DEPOSITION ERRATA SHEET

Assignment No. SY008133

Case Caption: Apple v. Speir

DECLARATION UNDER PENALTY OF PERJURY

I, Sandeep Chatterjee, Ph.D., declare
under penalty of perjury that I have read the
entire transcript of my deposition taken in the
captioned matter or the same has been read to me,
and the same is true and accurate, save and except
for changes and/or corrections, if any, as
indicated by me on the DEPOSITION ERRATA SHEET
hereof, with the understanding that I offer these
changes as if still under oath.

Signed on the ____ day of

_____, 2023.

SANDEEP CHATTERJEE, Ph.D.

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