



Transcript of **Jacob O. Wobbrock, Ph.D.**

Wednesday, March 26, 2025

Samsung Patent Appeals

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Reference Number: 152110

1 UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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SAMSUNG ELECTRONICS CO., LTD. AND

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SAMSUNG ELECTRONICS AMERICA, INC.,

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Petitioners

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v .

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MAXELL, LTD.,

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Patent Owner.

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Inter Partes Review No: IPR2024-00828

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U.S. Patent No. 8,982,086

22

1 Remote Deposition

2 Wednesday, March 26, 2025

3 Deposition via Zoom of JACOB O. WOBBROCK,
4 Ph.D., a witness herein, called for examination by
5 counsel for Petitioners in the above-entitled matter,
6 pursuant to notice, the witness being duly sworn by
7 MARY GRACE CASTLEBERRY, a Notary Public in and for
8 the State of Maryland, taken at 12:00 p.m. EDT,
9 Wednesday, March 26, 2025, and the proceedings being
10 taken down by Stenotype by MARY GRACE CASTLEBERRY,
11 RPR, and transcribed under her direction.

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2

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1	C O N T E N T S		
2	WITNESS	EXAMINATION BY COUNSEL FOR	
3	JACOB O. WOBBROCK, Ph.D.	PETITIONER	PATENT OWNER
4	BY MR. ELLISON	6	
5	BY MR. PLUTA		81

6			
7			
8	E X H I B I T S		
9	EXHIBIT		PAGE
10	NO. 2005	Declaration of Jacob O.	8
11		Wobbrock, Ph.D.	
12	NO. 2014	Curriculum Vitae of Jacob O.	82
13		Wobbrock, Ph.D.	

1 P R O C E E D I N G S

2 Whereupon,

3 JACOB O. WOBBROCK, Ph.D.,

4 was called as a witness by counsel for Petitioners,

5 and having been duly sworn by the Notary Public, was

6 examined and testified as follows:

7 EXAMINATION BY COUNSEL FOR PETITIONERS

8 BY MR. ELLISON:

9 Q. Good morning, Dr. Wobbrock.

10 A. Hi. Good morning.

11 Q. I'm Martin Ellison. I represent the
12 petitioners in this IPR proceeding.

13 A. Good to meet you.

14 Q. Good to meet you too. You've been deposed
15 before?

16 A. I have.

17 Q. Is there any reason you can't give your
18 best testimony today?

19 A. Nope.

20 Q. Where are you right now?

21 A. I'm in Seattle, Washington.

22 Q. Is there anyone else in the room with you?

1 A. No.

2 Q. And you're at your computer, correct?

3 A. Yes.

4 Q. Apart from this videoconference
5 application, do you have any applications running on
6 your computer?

7 A. Only what would be customary background
8 processes that run on Windows. For example, I'm on a
9 Windows 11 machine.

10 Q. Okay. Thank you. Do you have any other
11 devices in front of you?

12 A. I have my phone here off to the side.
13 It's turned off and not in view. I can put it out of
14 reach if that's helpful.

15 Q. No, it's fine. If it's turned off and not
16 in view, that's fine. Thank you.

17 Do you have any hard copy documents with
18 you?

19 A. I don't.

20 Q. Okay. I'm going to add to the chat
21 Exhibit 2005 in these proceedings, and that's the
22 declaration you submitted for this IPR.

1 [Exhibit No. 2005 was marked for
2 identification.)

3 BY MR. ELLISON:

4 Q. Can you let me know when you're able to
5 download and open that document?

6 A. Okay, I have it.

7 Q. And can you confirm this is the
8 declaration you submitted in this IPR?

9 A. I can confirm.

10 Q. Thank you. And it's signed under penalty
11 of perjury, correct?

12 A. Yes.

13 Q. Did you write this declaration?

14 A. Yes, I did. This is my declaration.

15 Q. And do you consider this declaration to
16 accurately describe your opinions in your own words?

17 A. I do.

18 Q. Is everything in this declaration true and
19 accurate to the best of your knowledge?

20 A. There was one oversight that I could
21 rectify now, which is I know I refer in appendix A to
22 my CV being attached, and I think I forgot to

1 actually attach it. So I'm happy to provide my CV as
2 mentioned in appendix A.

3 Otherwise, I believe it to be complete and
4 correct.

5 Q. All right. Thank you. I can coordinate
6 with counsel afterwards about the CV issue but thank
7 you for flagging that.

8 A. Uh-huh.

9 Q. How long did you spend preparing this
10 declaration?

11 A. I don't remember exactly. It was the
12 product of, well, off and on, multiple weeks and
13 many -- portions of many days working on it both to
14 write it up and to, you know, revise it and so on,
15 and then, you know, all the background work that went
16 into it. So it's a little hard for me to say but
17 suffice to say many dozens of hours.

18 Q. And how long did you spend preparing for
19 this deposition?

20 A. Well, in a sense, all of this work led me
21 to be prepared for this deposition, but specifically
22 for today's conversation with you, I spent the better

1 part of the last few days refreshing my memory and so
2 on.

3 Q. Did your preparation during the last few
4 days include meetings with counsel?

5 A. It did.

6 Q. When were those meetings and for how long
7 did you meet?

8 A. Those meetings were primarily yesterday
9 for a few hours and some conversations prior to
10 yesterday off and on for sometimes half an hour,
11 other times perhaps an hour. And those were just
12 scattered throughout some of the time preceding
13 yesterday.

14 Q. Who was present at those meetings?

15 A. The majority of my conversations have been
16 with Seth Bruneel, the counsel for Maxell who is on
17 this call now. Yesterday I also had conversations
18 with Robert Pluta, who is also counsel for Maxell and
19 on this call as well.

20 Q. Did you meet with anyone else who is
21 counsel for Maxell in connection with the preparation
22 for this deposition?

1 A. No, I don't believe so.

2 Q. Your declaration includes references to
3 other materials like, for example, a Microcontrollers
4 book, is that right?

5 A. There are other sources cited, yes.
6 That's one of them.

7 Q. Did you -- oh, I'm sorry to interrupt.
8 Did you locate those materials yourself?

9 A. There's quite a few different materials
10 mentioned. In many cases, I did locate them myself.
11 The Microcontrollers book is a good example where I
12 did locate that directly myself. Some of the other
13 materials were provided to me at my request. Some of
14 the file histories and things that counsel had were
15 made available to me by them.

16 Q. There are some definitions of mode that
17 you include in your declaration. And the materials
18 that are cited in connection with that, did you
19 locate those yourself or were those provided at your
20 request?

21 A. There are a few sources, for example, from
22 a McGraw-Hill Dictionary definition for mode, PC

1 Magazine definition for mode that I include. There's
2 also a description of modes in a textbook by Dix,
3 et al. from 2004 on human-computer interaction that I
4 include, and it's a mixture of whether those sources
5 were brought to my attention at my request or that I
6 directly went out and found myself.

7 For example, the Dix textbook is one I
8 found myself. I've taught from that textbook, for
9 example, for many years. The McGraw-Hill Dictionary
10 was brought to my attention at my request as I sought
11 a few different sources, dictionary sources for
12 definitions. So it's a mixture of things.

13 Q. What about the PC Magazine definition?

14 A. That one actually I don't recall whether
15 it was brought to my attention at my request or I
16 found it myself firsthand. I don't remember on that
17 one.

18 Q. Did you consider any materials that are
19 not cited in your declaration?

20 A. Not to my recollection.

21 Q. Can you go to Exhibit 2005? That's your
22 declaration. Page 32. And when I use the page

1 numbers, it's going to be the stamped numbers at the
2 bottom right, so that's going to correspond to the
3 PDF page itself. And let me know when you see
4 paragraph 66, please.

5 Sorry. I think I have the wrong number.
6 It's page 35 of the PDF.

7 A. Right. So I have page 35 of the PDF which
8 is stamped page 32, and I see paragraph 66.

9 Q. And when I refer to the stamps, I'm
10 talking about the bottom right. See how it says
11 Maxell Limited 2005, page 35 of 94?

12 A. I understand. I thought when you said the
13 stamp, you meant the page number that's centered in
14 the page so --

15 Q. Yeah.

16 A. -- if we agree on the stamp and the PDF
17 page both being 35 and go with that, that will be
18 great.

19 Q. Okay. I'll try and use that going forward
20 so we're on the same page here.

21 A. Yeah, quite literally.

22 Q. Yep.

1 Okay. You offered a written description
2 opinion in your declaration here, is that right?

3 MR. PLUTA: Object to form.

4 THE WITNESS: This section C is my opinion
5 about the '086 patent disclosing the structure that
6 could be used to recognize fingerprints. And that's
7 section C that starts on page 35.

8 BY MR. ELLISON:

9 Q. All right. And in paragraph 67, you say
10 there were two primary technologies used in
11 fingerprint detection at the time of the invention.
12 Do you see that?

13 A. My opening sentence in paragraph 67 says,
14 "At the time of the invention, there were two primary
15 technologies used in fingerprint detection," and goes
16 on from there.

17 Q. Are you familiar with the use of
18 capacitive sensors in a touchscreen device?

19 A. I am familiar.

20 Q. Is it true that not all capacitive sensors
21 are fingerprint sensors?

22 A. It is true that not all capacitive sensors

1 are fingerprint sensors in that not all capacitive
2 sensors are configured to perform the function of
3 recognizing fingerprints. However, all capacitive
4 sensors respond to finger touch and, in so doing,
5 they are responding to the presence of a fingerprint
6 which is inherent in the finger touch, because they
7 respond differentially to different aspects of the
8 finger when it touches. For example, the finger's
9 ridges in the fingerprint are going to generate a
10 different capacitance than the fingerprint's valleys
11 and other patterns in the fingerprint.

12 So all of that affects the capacitive
13 readout that is going to result in any capacitive
14 sensor. So in that sense, every capacitive sensor
15 inherently responds to a fingerprint.

16 Q. Is it true that not all capacitive sensors
17 are capable of detecting the unique features of a
18 user's fingerprint necessary to recognize a user by
19 that fingerprint?

20 MR. PLUTA: Object to form, lack of
21 foundation.

22 THE WITNESS: Not all fingerprint --

1 excuse me. Not all capacitive sensors are configured
2 for the purpose of recognizing fingerprints,
3 identifying users by their fingerprints. That's a
4 particular configuration of a capacitive sensor that
5 can be used.

6 BY MR. ELLISON:

7 Q. So in your opinion, any capacitive sensor,
8 regardless of the type, the level of resolution that
9 it can detect, can be configured to detect and
10 recognize unique features of a user's fingerprint?

11 A. It's my opinion that every capacitive
12 sensor, in responding to a user's touch, is
13 responding to their fingerprint. Because that's
14 inherent in the user's finger, it's inherent in the
15 user's touch and the capacitive result, the reading
16 from the sensor is affected by features of the
17 fingerprint.

18 That's not to say that every capacitive
19 sensor that exists has been configured specifically
20 for the purpose of identifying users by their
21 fingerprint. That's a particular application of
22 capacitive sensing.

1 Q. A capacitive sensor could respond to a
2 touch input by a user wearing a glove, right, if it
3 had a capacitive touch tip on the glove?

4 A. There are gloves or certain kinds of pens
5 or styli that are outfitted with material that can
6 respond or trigger a capacitive response in a
7 capacitive sensor. Such products are on the market.
8 I'm aware of those generally, not specifically. So
9 there are different materials in the world besides a
10 finger that can cause a capacitive sensor to respond
11 with a reading.

12 Q. And that response does not require a
13 fingerprint, right?

14 A. In the case of, let's say, a glove that's
15 been designed with a material that can cause a
16 capacitive sensor to respond to touch by that
17 material, then a fingerprint would not be involved in
18 that particular interaction.

19 Q. So a capacitive sensor does not require a
20 fingerprint in order to detect a touch input,
21 correct?

22 MR. PLUTA: Object to the form.

1 THE WITNESS: A capacitive sensor doesn't
2 require a fingerprint but if a user's finger touches
3 a capacitive sensor, then its reading is going to be
4 responsive to the presence of that fingerprint.

5 BY MR. ELLISON:

6 Q. Even if the device itself does not
7 recognize or detect the unique features of that
8 fingerprint?

9 A. Yes, even if the device doesn't detect the
10 identification of the user by their fingerprint, the
11 user's finger and the anatomy of that finger,
12 including its fingerprint, is going to affect the
13 capacitive reading that is produced. That
14 fingerprint's features are inherent in the
15 capacitance that is present in the finger as one side
16 of a capacitive plate. The capacitive sensor is the
17 other side of the capacitive plate and that electric
18 charge that is exchanged between them is affected by
19 the features of the finger and that includes the
20 fingerprint.

21 Q. Are you aware of any touchscreen device
22 where you can touch the capacitive touchscreen itself

1 at any location and it will recognize a user's
2 fingerprint?

3 MR. PLUTA: Object to form.

4 THE WITNESS: There are devices that have
5 in-screen fingerprint sensors that are on market. I
6 don't remember right now specifically their makes and
7 models and so on, but such devices do exist.

8 BY MR. ELLISON:

9 Q. Devices with in-screen fingerprint sensors
10 that are using capacitive fingerprint sensing?

11 A. I don't recall at this time exactly what
12 the specifics of the technologies are, but they're
13 using capacitive touchscreens generally and some of
14 them have in-screen fingerprint recognizers.

15 Q. On those devices, can you touch the
16 capacitive touchscreen anywhere and it will recognize
17 a user's fingerprint, or only at the location where
18 it has a fingerprint-recognizing sensor?

19 A. In the devices to which I refer, they have
20 dedicated locations for fingerprint sensing. It's
21 not the case that the entirety of the screen is
22 dedicated to fingerprint sensing.

1 Q. So on those devices, there are different
2 capacitive sensors for the screen than there are for
3 the actual fingerprint sensing?

4 A. I don't recall, as I said, the specific
5 makes and models of the devices to which I refer.
6 I'm generally aware that there is some in-screen
7 fingerprint sensing on the market and I haven't, as I
8 sit here today, remembered an analysis that's more
9 detailed than that.

10 Q. Okay. You just testified the devices you
11 were referring to, you know there are dedicated
12 locations for fingerprint sensing, right?

13 A. Yes.

14 Q. And those dedicated locations are a
15 specific point on the screen itself, right?

16 A. Not so much a point. I believe there is a
17 bit of a region.

18 Q. A specific region on the screen itself,
19 right?

20 A. Yes.

21 Q. The rest of the screen is still using
22 capacitive sensing to detect touch, right?

1 A. That's correct.

2 Q. And a touch on the rest of the screen
3 that's not in the region for detecting fingerprints
4 won't detect a fingerprint, will it?

5 A. Again, it won't recognize a user or
6 identify them via their fingerprint. Those parts of
7 the screen aren't configured for that purpose.
8 However, as I've said, they will still be responding
9 to the presence of the fingerprint as part of the
10 user's finger when it touches those parts of the
11 screen, because the fingerprint is inherent in the
12 user's finger and it affects the capacitive readings
13 that are obtained wherever the user touches.

14 Q. So there is a difference in your mind
15 between responding to the presence of a fingerprint
16 and actually recognizing a fingerprint?

17 A. A fingerprint sensor is configured as, for
18 example, a capacitive sensor to recognize or identify
19 a user. But any capacitive sensor, for example, the
20 rest of the screen as we just referred to, is still
21 responding to a user's fingerprint when it responds
22 to the user's touch because the capacitive change

1 that's generated is affected by the fingerprint.

2 Another way of putting this would be if I
3 have a user touch a screen and it generates a
4 capacitive outcome or result, that capacitive reading
5 in the presence of their fingerprint is going to be
6 different than if there was some way to somehow strip
7 their finger of that fingerprint and then they touch
8 the screen with no fingerprint present, it would
9 inherently change the capacitive reading to some
10 extent. So the fingerprint is affecting that reading
11 wherever the user might touch on the screen.

12 Q. In those instances where you have a device
13 that's responding to the presence of a fingerprint as
14 opposed to actually detecting the unique features of
15 the fingerprint, does the presence or absence of a
16 fingerprint have any meaningful impact on the actual
17 operation of the capacitive sensor's ability to
18 detect a touch?

19 MR. PLUTA: Object to form.

20 THE WITNESS: In the case where the user
21 is touching the screen apart from a part of the
22 screen that has been configured to identify users via

1 their fingerprint, that finger touch, again, will be
2 affecting the capacitive reading by the presence of
3 its fingerprint. But as far as operating the
4 touchscreen goes, the device is configured to operate
5 apart from the details of the fingerprint itself.

6 BY MR. ELLISON:

7 Q. Can you go to page 39 of Exhibit 2005,
8 paragraph 76?

9 A. Okay.

10 Q. And this is a section where you discuss
11 the level of ordinary skill in the art, correct?

12 A. Yes.

13 Q. And on the next page, paragraph 77, I
14 believe this is your definition of a person of skill
15 in the art, correct?

16 A. Yes, it is.

17 Q. All right. And your definition includes
18 one to two years of experience in the field of
19 computing devices with touch interfaces, is that
20 right?

21 A. Yes. I offer a definition that a POSITA
22 would have had at least a bachelor's degree in

1 electrical engineering, computer engineering,
2 computer science or a related field with at least one
3 to two years of experience in the field of computing
4 devices with touch interfaces.

5 Q. What kind of technical capabilities would
6 a person with that experience possess?

7 A. With -- are you referring specifically to
8 the one to two years of experience in the field or
9 are you referring to my entirety of paragraph 77?

10 Q. Let's go with the entirety of paragraph
11 77.

12 A. Sure. Well, a bachelor's degree in
13 electrical engineering, computer engineering,
14 computer science or related, that part would give the
15 POSITA a strong foundation in the fundamentals of
16 computing hardware and software. And the one to two
17 years of experience in the field of computing devices
18 with touch interfaces would give them a strong
19 additional foundation in the specifics of
20 touchscreens, capacitive sensing, touch-based
21 interaction techniques and related topics.

22 Q. Could a person matching the description

1 you have in paragraph 77, for example, install the
2 different hardware components in a touchscreen
3 device?

4 A. I believe they could, uh-huh.

5 Q. What about reading and writing source
6 code. Could a person matching your description read
7 and write source code?

8 A. Yes, they should be able to.

9 Q. They would be capable of writing source
10 code that controls the components in the touchscreen
11 device itself?

12 A. Yes, they should.

13 Q. Could a person of ordinary skill in the
14 art who matches the description in paragraph 77
15 program a device to enroll and authenticate, for
16 example, a user's password?

17 A. They should be able to, yes.

18 Q. How about the ability to connect the
19 hardware components with each other inside of a
20 touchscreen device. Could a person of ordinary skill
21 in the art matching your description do that?

22 A. I think they should be able to, yes.

1 Q. And you met this definition of person of
2 ordinary skill in the art as of the time of the
3 invention of the '086 patent, is that right?

4 A. I think it's fair to say I would have
5 exceeded it and thereby having met it, yes.

6 Q. I would like to go backwards in Exhibit
7 2005 to page 23, the section that starts with
8 paragraph 53.

9 A. All right. I'm there.

10 Q. This is a discussion of the background of
11 the '086 patent, is that right?

12 A. Yes, that's my backgrounder on the '086.

13 Q. And then if we move ahead to page 26,
14 paragraph 56, will you let me know when you're there?

15 A. Okay, I'm there.

16 Q. And paragraph 56 includes a description by
17 you of the patent's disclosures relating to the
18 touchscreen panel, is that right?

19 A. In paragraph 56, I talk about the portable
20 terminal and, in particular, refer to the '086's
21 figure 2 which, among other things, has a touch panel
22 in that portable terminal, and I talk about the group

1 of sensors that it contains.

2 Q. Is the '086 patent's description of the
3 touch panel a typical touchscreen configuration for
4 the 2011 time frame?

5 MR. PLUTA: Object to form.

6 THE WITNESS: There, at that time, are
7 many different ways to configure a touch panel and a
8 touchscreen, and this is one of those that would have
9 been typical of its time.

10 BY MR. ELLISON:

11 Q. Do you have an opinion on whether the
12 elements of claim 1 of the '086 patent are present in
13 the embodiments described in the specification?

14 MR. PLUTA: Object to form.

15 THE WITNESS: The claim that you refer to,
16 claim 1 of the '086, of course is what is the
17 patented material. The preferred embodiments are a
18 few. A few different aspects of preferred
19 embodiments are shown in the specification of the
20 '086. And those different embodiments exhibit some
21 of the claims. They're used to illustrate certain
22 aspects of the claims.

1 Of course, if you have a specific
2 preferred embodiment to which you want to direct my
3 attention, I'm happy to talk about that.

4 BY MR. ELLISON:

5 Q. Can you go to page 27, paragraph 58,
6 please?

7 A. Okay.

8 Q. And included in paragraph 58 is a
9 reference to and you include figure 12B from the '086
10 patent. Do you see that?

11 A. Below paragraph 58 going on to page 28, I
12 do include a snap of figure 12B from the '086.

13 Q. And what is figure 12B showing?

14 A. Figure 12B is illustrating a particular
15 embodiment in the specification of the '086. In this
16 embodiment, there is a password, which is a numeric
17 password in this case of four digits, which are 0528.
18 It's just an example, of course. And coupled with
19 those password digits are input methods which refer
20 to the manner in which the user, in this case, is
21 touching those digits and, in particular, whether the
22 user is touching those digits with a fingertip or a

1 fingerpad. And then depending on the sequence of
2 fingerprints and finger pads used, different system
3 operations are the result when the password is
4 entered. For example, it could take the user to a
5 waiting screen, it could take them to a mail-creating
6 screen, and it could take them to an
7 application-starting screen, are the examples given
8 in figure 12B.

9 Q. So the password with the three
10 corresponding input methods are registered by the
11 user according to the '086 patent?

12 A. This is a case where the user defined the
13 password and defined the fingertip or fingerpad input
14 methods used with each digit of the password, so
15 these would be an example of the user defining their
16 password and strengthening it, in this case by
17 coupling it with the particular input method the user
18 desires.

19 Q. And the user defined the password and
20 defined the fingertip or fingerpad input methods by
21 registering the password and input methods, right?

22 A. In this preferred embodiment, the user

1 could have defined the password and the input methods
2 in that regard. I don't have open, because you
3 haven't supplied it to me yet, the '086 patent, so
4 it's possible that a password and input method could
5 have been defined by the system. It could be the
6 system default, for example. It could be even
7 something perhaps defined by the user's spouse, say.

8 I don't recall exactly at this point,
9 without looking at the '086, its entirety of its
10 discussion of figure 12B. But a typical usage would
11 be the user would define their password and define
12 the input methods they wish to use with that
13 password.

14 Q. And look at paragraph 59 on page 28. The
15 first sentence says that the three types of input
16 methods are registered for one password. Do you see
17 that?

18 A. I see that.

19 Q. So the user is registering a password's
20 input methods, right, according to the specification?

21 MR. PLUTA: Object to form.

22 THE WITNESS: The quote from the patent

1 that I cite there, from column 7, lines 42 to 44, is
2 actually written in the passive voice. So it says
3 three types of input methods are registered for one
4 password.

5 So actually in that, just as a matter of
6 English grammar, in that sentence, it's not actually
7 clear that the user defined and registered the
8 password. I think that's a reasonable use case. But
9 the point that this text is making is that the
10 password is registered and the input methods are
11 registered.

12 BY MR. ELLISON:

13 Q. How much time would you say you've spent
14 with the '086 patent over the course of the last four
15 or five years?

16 A. That's a really hard one to estimate but
17 it's a very high number. I mean, I'm really shooting
18 in the dark here but it's in the many hundreds of
19 hours.

20 Q. Now, in your time with the '086 patent,
21 did you ever see or do you recall ever seeing a
22 reference to anyone but the user defining and

1 registering the user's password?

2 MR. PLUTA: Object to form.

3 THE WITNESS: I don't recall one way or
4 the other as that was generally not the focus per se.
5 I mean, the focus is on the claims and the apparatus
6 of the '086 and what its -- what the claims cover,
7 some of the preferred embodiments and so on. So in
8 that sense, I was focused on the apparatus and the
9 claims more so than I guess what we'd call particular
10 use cases of who's doing what. But without the '086
11 open in front of me, I can't say for sure.

12 BY MR. ELLISON:

13 Q. But it is clear from the quote at least
14 that the password and the input methods are
15 registered?

16 A. It is clear from my quote that there are
17 registered -- it says three types of input methods
18 for that password. And of course I know from the
19 claims that there is a registration mode and an
20 identification mode in claim 1 and that that
21 registration mode has two registration submodes, if
22 you will, one for finger ends and one for fingerpads.

1 So I've spent enough time with the '086 I remember
2 the core components, of course.

3 Q. Does this embodiment that you've included
4 here correspond to the core components of the claims
5 that you were just referring to, like the
6 registration mode with two submodes?

7 MR. PLUTA: Object to form.

8 THE WITNESS: This example in figure 12B
9 is just a particular part of one embodiment. It's
10 just one figure. I don't want to represent that it,
11 for example, covers the totality of claim 1 in the
12 '086, and nor is it meant to by the '086 authors.
13 There are some elements in this embodiment that do
14 meet some of the claim limitations.

15 We see that there's a registering mode
16 that could be used to register the password and the
17 fingertip and fingerpad inputs that accompany it.
18 And the embodiments in the '086 also show examples of
19 the registering submodes, the two registering modes,
20 one for fingerpads and one for finger ends, and we
21 can see that fingerpads and fingertips are present in
22 this figure 12B. So some of those claim elements are

1 evident here.

2 But this is just one figure, part of -- in
3 fact, even part of one figure. It's only figure 12B.
4 There is a 12A as well. And it's just one example of
5 some of the aspects of claim 1.

6 BY MR. ELLISON:

7 Q. Okay. So I would like to take this a
8 little bit more on a step-by-step basis if you don't
9 mind.

10 A. Okay.

11 Q. We're looking at 12B, right?

12 A. Yes.

13 Q. Some elements of what we're seeing in 12B
14 do meet some of the claim limitations of claim 1,
15 right?

16 A. Yes, I think so. There are some parts of
17 claim 1 that could be read onto figure 12B.

18 Q. Okay. One of those things is that it's a
19 password with input methods that are the result of
20 registration, correct?

21 A. Claim 1 requires a registering mode and
22 that has of course certain aspects to it. And the

1 example in 12B shows a series of input methods that
2 are registered for a password. There's fingertip and
3 fingerpad examples here, and those -- the detection
4 of those fingertips and fingerpads is possible in a
5 given embodiment through a registering process that
6 has two registering modes, one for fingerpads and one
7 for finger ends. The fingertip would be an example
8 of a finger end.

9 So we can see those aspects of claim 1 in
10 figure 12B, for example, and I think that's one way
11 that some aspects of claim 1 are present in figure
12 12B.

13 Q. Thank you. In your declaration, you
14 provide a proposed construction for modes, is that
15 correct?

16 A. I do. I talk about modes based on them
17 being an operating state of a system or apparatus and
18 I arrive at that from a number of sources, my own
19 expertise and background in the field, what a POSITA
20 would understand. The example in the Dix HCI
21 textbook that I mentioned earlier today talks about
22 modes in the same way, and then also the McGraw

1 dictionary definition and the PC Mag definition, they
2 all concur in what a mode is. So that's how I
3 arrived at that proposed construction there.

4 Q. What's an operating state?

5 A. Well, in the context of a mode, an
6 operating state is the state that the system is in
7 such that when a user takes an action within the
8 system, that operating state, the state the system's
9 in, which is the mode, it will result in a different
10 outcome from that user's action based on that
11 operating state. And I offer the example that I
12 think most people can understand from their own
13 experience of the caps lock key. So when the caps
14 lock key is active, when it's been pressed down --
15 many keyboards have a little light on them to show
16 that that's the case -- the operating state of the
17 system is that caps lock is down and so then
18 subsequent actions like, say, pressing the W key will
19 produce a capital W. If the caps lock key is not
20 active and the little light is not on, then pressing
21 the W key would give me a lower case W.

22 So it's referring -- operating state is

1 referring to the state that the system is in, which
2 is the mode which governs the outcome of the user's
3 action.

4 Q. Can you go to page 44 of your declaration,
5 paragraph 82?

6 A. Okay.

7 Q. I know you were just saying earlier
8 operating state. Do you mean the same thing when you
9 say operational state in your proposed construction
10 here?

11 A. Yes.

12 Q. All right. So implicit in your proposed
13 construction of operational state is a further
14 requirement that you were just discussing where,
15 depending on the state the system's in, the user's
16 action will return a different result, is that right?

17 A. Well, let's be clear about the
18 construction I'm proposing and then what an
19 understanding of that construction would be. So as I
20 say here, I am -- "I submit that the term 'first
21 registering mode for inputting input information by a
22 pad of the finger' as appearing in the claims would

1 be understood by a POSITA as a 'first operational
2 state for registering in which information is input
3 by a pad of the finger.' Likewise, the term 'second
4 registering mode for inputting input information by
5 an end of the finger' as appearing in the claims
6 would be understood by a POSITA as a 'second
7 operational state for registering in which
8 information is input by an end of the finger, the
9 first registering mode and the second registering
10 mode being different operational states.'"

11 So those are the constructions that I'm
12 putting forth, that I'm proposing. The further
13 understanding of what those constructions mean are
14 also in light of what a POSITA would understand a
15 mode to be and what an operational state as a mode
16 is, and that's where we get into the fuller examples
17 of where the state of the system affects the actions
18 the user takes such that we have different results
19 from the same user actions when the operational state
20 is in one state or another.

21 And actually, I say in paragraph 83, "This
22 consistent application of what a mode is applies to

1 the terms 'identification mode,' 'registering mode,'
2 'first registering mode' and 'second registering
3 mode.'" So as I go on in my declaration here, I
4 expand on this operational state concept, and a mode
5 is an example of an operational state that has
6 effects on the user's actions.

7 Q. Okay. Again, I would like to break this
8 down a little bit more if that's all right.

9 A. Sure.

10 Q. In paragraph 82, you have your proposed
11 constructions for the first registering mode and the
12 second registering mode, is that right?

13 A. Yes.

14 Q. Both of those constructions include the
15 concept of operational states, is that fair?

16 A. Yes.

17 Q. And what I'm wondering is, the reference
18 to an operational state, is that required to follow
19 the example you gave later on in your declaration
20 where you say the state of the system affects the
21 actions a user takes such that there are different
22 results from the same actions? Is that required by

1 an operational state?

2 A. I would put it this way. A mode is an
3 example of an operational state. Computers of course
4 are in some state or another all the time, right?
5 Everything they do is changing the state of memory or
6 changing the state of what's currently running on the
7 processor. In fact, in theoretical computer science,
8 we refer to a computer as a state machine and it can
9 be, in fact, theoretically described as a state
10 machine where it's in different states and
11 transitions between those states based on any number
12 of things, processing algorithms, inputs, outputs,
13 whatever.

14 And so operational state is, in that
15 sense, a broader term, but a mode is an example of an
16 operational state, and is the one that's germane here
17 because the '086 talks about, for example, two
18 operating modes, as I mention in paragraph 83, which
19 refers to column 8, lines 43 to 46 in claim 1, two
20 operating modes. So we have -- and it talks of
21 course about registering modes and identification
22 mode and so on.

1 And so a mode is an example of an
2 operational state, and then in particular, the kind
3 of operational state that a mode is is an operational
4 state such that when the user takes an action, there
5 is a different result based on the mode, based on the
6 current operational state. So it's really best to
7 think of a mode as an example of an operational
8 state, and it's the operational state that's germane
9 to the '086 in this case.

10 Q. Are there operational states that are
11 modes other than the situation you described where,
12 depending on the mode, the same user action returns a
13 different result?

14 A. That's not really an analysis I've
15 conducted. I mean, the "are there any" questions of
16 course would require me to have conducted something
17 of an exhaustive search to know with confidence if
18 there could be or couldn't be. I just haven't really
19 considered that particular question so I'm not sure I
20 can offer an answer here today.

21 What I can say is that the modes that are
22 in the claim language of the '086, in claim 1 in

1 particular, those modes are operational states and
2 they are modes that affect the user's action such
3 that there are different results based on the action
4 the user takes. And so that's the type of
5 operational state that I've considered in this case
6 because that's what's at issue here.

7 Q. Maybe if I reframe the question this way,
8 it will be a little more helpful.

9 What I would like to know is, is it
10 possible for a piece of prior art to disclose the
11 first and second registering modes if they don't have
12 modes that are similar to the one you described
13 where, depending on the mode, the same user action
14 returns a different result?

15 MR. PLUTA: Object to form, lack of
16 foundation, incomplete hypothetical.

17 THE WITNESS: The kind of modes that we're
18 considering here in the '086 are operational states
19 such that the user's action would result in a
20 different outcome. For example, I know from my
21 recollection that figure 10 shows a calibration
22 process, registering process for fingerpads and

1 finger -- or finger ends, I think, and fingerpads
2 maybe in that order. And that's an example of two
3 registering modes, right, one for fingerpads and one
4 for finger ends.

5 And in figure 10, in just that example, we
6 have the act of the user touching the screen is going
7 to result in a difference, which is, is the system
8 going to update its thresholds for the fingertip in
9 one case or, in the other mode, it's going to update
10 its thresholds for the fingerpad. And so we have,
11 because of that mode difference, in this case the two
12 registering modes, we have the system responding
13 differently based on the user touching the screen,
14 which is the action they take.

15 And so that's how we -- that's how I see
16 the registering modes at work in the '086. That's an
17 example. And any mode of this type in the two
18 registering modes is going to have to enable the case
19 where the system is responding to the user's action
20 differently based on the current operational state or
21 the current mode of the system.

22 And that's what it would mean to have two

1 registering modes. And so if it's always responding
2 the same way every time, then, you know, kind of
3 carrying out the same algorithm or the same steps or
4 what have you, then there's not a mode at work in
5 that and there wouldn't be -- at least there wouldn't
6 be the registering modes that I've been referring to.

7 BY MR. ELLISON:

8 Q. I would like to talk about your caps lock
9 example in your declaration.

10 A. Okay. Sure.

11 Q. You've used this in a few past
12 proceedings, right?

13 A. I believe I have. It's kind of a
14 canonical example of a mode in the field of computer
15 science and human-computer interaction in particular,
16 so I certainly am not the one to invent that example,
17 but a lot of people can relate to it because they've
18 typed on a keyboard before.

19 Q. Are there any other practical examples of
20 modes you can give besides this one?

21 A. Sure. One that's related to caps lock is
22 the shift key and, in fact, we draw a distinction

1 between what's called a passive mode, caps lock being
2 an example, where the user sets the mode. The system
3 can set the mode too for that matter. It doesn't
4 have to be set by the user, but a mode is set or, in
5 the language we've been using, the operational state
6 of the system is set. And then the user can take
7 subsequent actions. So caps lock is an example of a
8 passive mode where it's set and then the user can
9 proceed, say, pressing the W key.

10 Shift is an active mode, and the
11 difference is that active modes must be continually
12 maintained by the user in order to be active. That's
13 why they're called active modes. And so we get the
14 same result with shift as we do with caps lock. For
15 example, when we hold down shift and press the W key,
16 we get a capital W, but we have to be holding down
17 the shift key. And so caps lock is a passive mode,
18 shift is an active mode.

19 Your car has modes like this as well. For
20 example, the gas pedal is in an active mode, but
21 cruise control, that keeps you at a certain speed, is
22 a passive mode. The brake is -- the braking -- the

1 brake pedal is an active mode. It's active when
2 you're engaging it. But the emergency brake, like
3 the E brake, is a passive mode, right? The car is in
4 the state of being braked.

5 So those are some examples that often come
6 up in teaching about modes.

7 Q. That makes sense. Thank you.

8 Are both active and passive modes examples
9 of modes that would be in different operational
10 states?

11 A. They're both examples of modes, so they
12 would be operational states because they're modes.
13 The passive and active distinction really is just
14 about whether the user is, in an ongoing, active
15 manner maintaining the mode, or if the mode can just
16 be sort of set.

17 And of course one of the challenges in a
18 passive mode is it can be set and then the user might
19 forget. And that's why the caps lock key has a
20 little light on it on most keyboards -- at least many
21 laptops and other keyboards have those -- because it
22 helps you remember that it's on, and you don't need

1 that kind of indicator with a shift key with the
2 active mode because the user is actively maintaining
3 it and so they know, because they're doing it.

4 Same reason that you might start driving
5 your car pushing the gas pedal but realizing you're
6 not moving because you left the E brake on. The E
7 brake is in passive mode and so you might have
8 forgotten, right? You're not actively maintaining
9 it. But you know when your foot's on the gas pedal.
10 At least we hope you do, right?

11 So there are some differences in design
12 choices around those things, but they're both modes
13 at the end of the day.

14 Q. Is there a difference between an operating
15 mode and a mode?

16 A. I'm afraid I don't have context for the
17 phrase "operating mode." Is that something I said in
18 a recent answer or where is that coming from? If you
19 could help me.

20 Q. Look at paragraph 83 on page 44 of your
21 declaration.

22 A. Okay, I'm there.

1 Q. I believe it's the second sentence that
2 says it claims the '086 patent explicitly refer to
3 the identification mode and registering mode as two
4 operating modes?

5 A. Yes, thank you.

6 Q. That's what I was referring to. Is there
7 a difference between operating modes and modes?

8 A. I think in this case, the two operating
9 modes it's referring to are identification mode and
10 registering mode, which are part of claim 1, of
11 course. It's referring to the operational state of
12 the system, and so I think it's tying into -- in
13 fact, my proposed constructions, I say operational
14 state, but operating and operational in this case I
15 think are interchangeable.

16 So in that sense, it's just clarifying
17 what kind of operational state. Two operating modes
18 is an operational state that are modes.

19 Q. Can you go to page 68 of Exhibit 2005,
20 paragraph 123?

21 A. Okay.

22 Q. What do you mean when you talk about

1 scalar values in this paragraph?

2 A. So here in this section, which, if I
3 scroll up a little bit, starts at paragraph 120 and
4 is section B, which is labeled "Rogers in view of
5 Rosenberg fails to disclose limitation 1f," which is
6 the two registering modes or submodes. And in
7 particular, in 123, to your question, the scalar
8 values refers to Rogers, when providing training
9 examples to define a graphical password in Rogers, it
10 updates what it calls its parameter envelopes, which
11 are essentially tolerances around, say, positions or
12 areas of the finger's touches and gestures.

13 And those parameter envelopes are scalar
14 values. In fact, Rogers gives an example of saying,
15 for some tolerance around, say, a position, like an
16 average position where the finger makes a gesture, we
17 might define a two sigma envelope. Two sigma is
18 referring to sigma being the standard Greek letter
19 for standard deviation. So essentially it's saying
20 two standard deviations around the mean position.

21 And scalar values could also be called
22 numeric values or continuous values. They're real

1 number values. And a mean would be an example. So
2 the mean position would be the scalar value, or that
3 two sigma standard deviation would be scalar values.
4 Those are examples that Rogers gives of tolerances,
5 these parameter envelopes, this kind of region of
6 acceptance that makes it so the user doesn't have to
7 exactly perform the exact same graphical password in
8 order for it to match. That's where the scalar
9 values are involved.

10 Q. So in the context of Rogers' disclosures
11 of distinguishing between touching with your finger
12 and touching with a stylus, would the scalar values
13 you're referring to be the size range of that contact
14 input?

15 A. That's one example. The size of the input
16 is a scalar value. The input itself actually is --
17 in Rogers, an example is an oval because a touch is
18 not just a single point. And so we would have a
19 couple scalar values there. We could have the major
20 axis length of the oval, the minor axis length of the
21 oval, we could have the area of the oval, we could
22 have the position of the oval, we could have the

1 orientation or the angle at which the oval is
2 defined.

3 So these are just -- even on a single
4 touch with a finger or a stylus, there could be a
5 handful of different scalar values that could be
6 measured.

7 Q. Okay. So let's just assume for a second
8 we're talking about contact area. In Rogers when
9 it's talking about scalar values and parameter
10 envelopes, what it's doing to distinguish the two
11 types of contacts is seeing if they fall within a
12 certain size range, each one falls within a certain
13 size range, is that right?

14 A. Well, in Rogers, there wouldn't be a kind
15 of "each one" concept. It doesn't know if it's being
16 touched by a finger or by a stylus tip, to use your
17 example and the one Rogers uses as well. It just
18 knows that it's being touched by something. And that
19 something creates an oval, say, with a certain size,
20 again, to go with that as our example.

21 And so there is never a case where it's
22 like this is the finger oval or this is the stylus

1 oval. It's just this is an oval, it's being touched
2 and the -- in the training that Rogers briefly
3 describes, the parameter envelopes would be updated
4 with each time it's touched. So each oval that comes
5 in, whether finger, whether stylus, that oval is
6 measured and its area and the parameter envelope is
7 just updated every time. There's never a case where
8 that doesn't happen in Rogers, so it's always a kind
9 of step-by-step process that's just defining a
10 graphical password as seeing a training example and
11 updating the parameter envelope accordingly.

12 Q. So in Rogers, there would be -- to use the
13 still fingertip, or just a finger and a stylus input,
14 there would be two sets of envelopes or two envelopes
15 associated with each input, right?

16 A. No, I don't believe that's correct.

17 Q. I'm sorry. There would be an envelope
18 associated with each input, right?

19 MR. PLUTA: Object to form.

20 THE WITNESS: Also no. I don't think
21 that's quite right. The way Rogers works is that the
22 graphical password is defined, so the user, for

1 example, let's say they use their finger initially
2 and they -- let's just keep it simple. Let's just
3 say they make a swipe from left to right in a roughly
4 horizontal fashion, okay? And so that swipe has a
5 certain width, according to the user's -- the width
6 of their finger as they touch.

7 Rogers describes that optionally the user
8 can elect to provide further training examples or the
9 system, in some embodiments, might elect to provide
10 or to request more training examples. It doesn't
11 have to. It could just leave it as it is. But if
12 additional examples are provided, let's say, to go
13 with our example here, that the stylus then is used
14 to touch the screen and let's say, for the sake of
15 argument, that the stylus tip is a smaller oval than
16 the finger was, when the user makes that same
17 left-to-right swipe, now Rogers has seen some wider
18 oval with the finger, some narrower ovals with the
19 stylus.

20 It doesn't know that it's seeing a finger
21 and it doesn't know that it's seeing a stylus. It's
22 just seeing ovals. They could come from anything

1 that capable of creating a capacitive response in the
2 system. But it's seeing ovals and now it's going to
3 update its parameter envelopes according to the, say,
4 the size of the ovals that it's seeing.

5 So there's not a set of **parameters**
6 envelopes for the finger and parameter envelopes for
7 the stylus. There's just a parameter envelope around
8 the mean, say, position of that swipe. You can think
9 of it as a kind of tolerance band to either side of
10 it that would be reflective of the variance in the
11 ovals that it's seen. In the case of a finger and
12 the case of a stylus, that variance might be somewhat
13 large, and so that band might be somewhat forgiving.
14 And this would be a way the user could, you know, say
15 I **want to work** when I use my finger or a stylus, so
16 give me a forgiving kind of band.

17 But again, Rogers doesn't have a separate
18 set of envelopes for the finger or the stylus. It
19 doesn't know that it's got a finger or stylus. It's
20 just every time it's touched, it's just updating its
21 parameter envelopes based on whatever touches it's
22 seeing.

1 BY MR. ELLISON:

2 Q. Do the claims require that the claimed
3 apparatus know that it's seeing a fingerpad and a
4 finger end as the input?

5 MR. PLUTA: Object to form, vague.

6 THE WITNESS: The claim 1 of the '086 does
7 not require that the system know that what it's
8 seeing is a pad or a finger end, to use the claim
9 language. In other words, it doesn't require that it
10 has a kind of label attached to that part of the
11 finger. It does require that a registering mode is
12 provided for fingerpads and a registering mode is
13 provided for finger ends, and those have to be
14 registering modes.

15 And so owing to what a mode is, we need to
16 have a case where there is the presence of those two
17 modes and so the user's action of touching the screen
18 would have a different result based on the presence
19 of the two modes, based on which mode we're in,
20 whatever the mode or the operational state of the
21 system is in.

22 So in the example that we just discussed

1 of Rogers, there's not -- I don't see two registering
2 modes present because Rogers always responds the
3 exact same way. It just updates its parameter
4 envelope regardless of whatever ovals it's seeing.
5 So it's not so much a matter of Rogers not knowing
6 whether it's a finger or stylus. It's that Rogers
7 always behaves the exact same way.

8 And even in Rogers itself, the flowchart
9 of the algorithm, I don't remember which figure it is
10 offhand, but there's no fork anywhere, right?
11 There's no like if I'm in one mode, do this and if
12 I'm in the other mode, do that. It's just all a
13 straight line. Rogers always just responds the exact
14 same way. And so there's just no registering modes
15 available -- no two registering modes as in claim 1
16 of the '086 that are present there. It always
17 responds the same way regardless.

18 BY MR. ELLISON:

19 Q. Could you go to page 69 of the PDF,
20 paragraph 125?

21 MR. PLUTA: Counsel, when you're at a good
22 stopping point, can we take a break? It's been about

1 an hour and a half.

2 MR. ELLISON: Yeah, I'd be fine to take a
3 break now if that's all right.

4 THE WITNESS: Now is fine or we can -- I'm
5 at where you asked me to be so we can either do that
6 now and take a break or we can come back and start
7 there. It's up to you.

8 MR. ELLISON: Let's maybe take a 10-minute
9 break.

10 THE WITNESS: Okay.

11 MR. ELLISON: Come back at -- I have 10 --
12 it will be 10:40 when we come back.

13 THE WITNESS: That works for me.

14 [Recess.]

15 BY MR. ELLISON:

16 Q. So I believe we're on page 69 of your
17 declaration, paragraph 125.

18 A. Page 69, paragraph 125, is that what I
19 heard you say?

20 Q. Yes.

21 A. Yes.

22 Q. And in this paragraph, there is the second

1 sentence that says, "In the '086 patent, there are
2 separate user interfaces for registering touches
3 regarding different portions of the finger."

4 Do you see that?

5 A. I see that.

6 Q. And you contrast that with Rogers which
7 you say does not have separate user interfaces, is
8 that right?

9 A. In this paragraph, I'm pointing out that
10 the '086 in its preferred embodiment, for example,
11 figures 10A and 10B, offers some separate user
12 interfaces, and I'm mentioning that Rogers does not
13 put forth any such interfaces.

14 Q. Separate user interfaces are not required
15 by the claim, though, are they?

16 A. Claim 1 of the '086 patent does not
17 require separate user interfaces. I believe claim 5
18 does have some requirement of separate messages or
19 interface representations. Again, I don't have the
20 '086 open and so I won't speak to claim 5 further but
21 you said the claim, so I know outside claim 1,
22 there's some indication of user interfaces.

1 In claim 1, what's required is that we
2 have two registering modes, and in paragraph 125 I'm
3 offering just an example of those two modes being
4 evident in the '086, specifically in figures 10A and
5 10B. So that's just a way of seeing those modes
6 visually in action. But user interface components
7 are not -- separate user interfaces for the two
8 registering modes are not required by claim 1 of the
9 '086.

10 Q. You offer an opinion in your declaration
11 that Rogers does not disclose the second controller
12 limitation of 1e, is that right?

13 A. I do offer that opinion. I don't believe
14 Rogers discloses the second controller limitation.
15 Rogers has just a single controller processor.

16 Q. And you include in your declaration a
17 statement that a controller is a well understood
18 structure in electrical and computer engineering, is
19 that right?

20 A. That sounds accurate but if you could
21 maybe direct me to where you're reading that from.

22 Actually, I think I found it.

1 Paragraph 106, is that right?

2 Q. Yes.

3 A. Yeah. So I say in paragraph 106, I note
4 that the controller is a well understood structure in
5 **electrical computer engineering**. At a minimum, it
6 has processing, input/output, and memory, and then I
7 reference Microcontrollers Fundamentals textbook and
8 I offer a diagram in paragraph 107 of a basic
9 controller that has those core components.

10 Q. Do you consider this to be a construction
11 of controller that you're offering in this section?

12 MR. PLUTA: Object to form.

13 THE WITNESS: No, I don't proffer it as a
14 construction per se. It's just what a -- as I say,
15 what a POSITA would understand. It's a well
16 understood concept. It's sort of similar to saying
17 the term "processor" or "memory." These are well
18 understood concepts that a POSITA would understand.

19 I offer that in paragraph 107 when I say,
20 "Consistent with the understanding of a POSITA, this
21 textbook describes the basic architecture of the
22 known structure of a microcontroller," and it goes on

1 from there. So it's not a construction but it's an
2 understanding of what a controller is.

3 BY MR. ELLISON:

4 Q. Would it be fair to characterize a
5 controller as a component of a computer system that
6 controls the operation of a subsystem?

7 A. I don't -- I mean, I -- it's a little hard
8 for me to analyze a particular definition or
9 construction that I don't have written in front of me
10 and haven't had time to consider.

11 The controller is, as I describe and as
12 this textbook describes, you know, they combine the
13 fundamental resources, as I say in paragraph 107,
14 quoting from the book, available in a microcomputer
15 such as the CPU, memory, and I/O resources in a
16 single chip. And then it goes on to talk about the
17 CPU's function. It fetches the program instructions
18 from memory, interprets and decodes them, executes
19 them, and then shows the block diagram.

20 So, I mean, that's what I'm prepared today
21 to offer that a controller is and does, so any
22 additional definitions or constructions, especially

1 this I've not considered or don't have written in
2 front of me, I'm not really prepared to analyze on
3 the fly verbally.

4 Q. Is it your opinion that in order for a
5 device to meet the controller limitation in 1e, that
6 it has to have, as part of the controller, all of
7 these elements you've identified here, processing,
8 input/output, and memory?

9 MR. PLUTA: Object to form, relevance.

10 THE WITNESS: The limitations that the
11 claim 1 of the '086 has to meet are those spelled out
12 in the claim. 1e requires there be a controller and
13 it describes what that controller has to do. That's
14 what's required of the claim.

15 In order for a controller to function,
16 it's going to need some processing, some access to
17 memory, and some ability to get data in and out of
18 the controller's processing. And so it's hard for me
19 to imagine a controller that can function without at
20 least those three core things. And so in a POSITA's
21 understanding of controller, it would need to be able
22 to operate to fulfill its function, and to operate it

1 would need to be able to access memory, perform
2 processing, and be able to have I/O capabilities. So
3 that's just what a controller needs to do its job.

4 BY MR. ELLISON:

5 Q. So you distinguished the processor that's
6 disclosed in Rogers from a controller, right, the
7 second controller?

8 A. Well, Rogers doesn't have a second
9 controller at all. Rogers has a single processor
10 that is I believe in figure 1 of Rogers, if I recall,
11 and that processor is capable of carrying out all of
12 the functions that Rogers describes, so Rogers
13 doesn't indicate there's ever a second controller or
14 processor present and Rogers really has no need for
15 one because everything Rogers describes is capable of
16 being carried out on the first and only processor
17 that Rogers indicates it has.

18 Q. Okay. I want to go back to paragraph 106
19 on page 59 of your report.

20 A. Okay.

21 Q. In the second sentence you say, "At a
22 minimum, a controller has processing, input/output,

1 and memory, as described below."

2 Do you see that?

3 A. Yep.

4 Q. In your opinion, are those components
5 required structural elements of a controller or
6 second controller as recited in the claim?

7 A. So I want to be clear that I'm not
8 asserting a particular, you know, hardware
9 arrangement here. I'm referring to the capabilities
10 that a controller has to have. It has to be able to
11 perform processing. It has to be able to get data
12 into and out of it, so it needs some I/O
13 capabilities, and it has to be able to access some
14 memory. For example, memory holds the instructions
15 that run of the processing component and memory might
16 hold some data that it might operate on.

17 And so this is talking about how a
18 controller has access to these things or the
19 capabilities for these things. It's not describing
20 or prescribing a particular, you know, particular
21 circuit design or hardware design or particular
22 embodiment, you know, where let's say the memory

1 resides inside the controller chip versus outside
2 that and it can access memory that's separate from
3 it. Again, I'm agnostic here to those things. I'm
4 just saying that -- that's why I'm saying at a
5 minimum, it has to have the capabilities for these
6 things, it has to have -- or we can say the access to
7 these things. It has to be able to do processing, to
8 do I/O, and to have some access to memory.

9 Q. Claim 1 of the '086 patent separately
10 recites memory, right?

11 A. So if we're going to refer further to
12 claim 1, let's open the '086 patent, because we've
13 been talking about it a lot and while I have a pretty
14 good memory of a lot of it, I would like to be able
15 to look at things if we're going to talk specifically
16 about the text. So can we introduce that as an
17 exhibit so this isn't a memory exam?

18 Q. Go to page 40 of your declaration.

19 A. Okay.

20 Q. You have here the full claim language of
21 the '086 patent at issue, correct?

22 A. Yes, that's right.

1 Q. Do you want to refer to that?

2 A. We can refer to that.

3 Q. Okay.

4 A. If we are going to refer further to the
5 spec or the figures or things, unless they're
6 reproduced in my report, though, I'd prefer to be
7 able to look at the patent itself. But no, this is
8 fine for the claim language. Thanks for reminding me
9 this is here.

10 If you could repeat your question, that
11 would be great.

12 Q. Claim 1 of the '086 patent separately
13 recites memory, correct?

14 A. 1d recites memory that's configured to
15 store second information relating to the
16 identification of the user, which is stored in
17 advance.

18 Q. So it separately recites memory, correct?

19 MR. PLUTA: Object to form.

20 THE WITNESS: I'm not sure what you mean
21 by separately. I mean, it's an element of claim 1 so
22 in that sense, it's part of claim 1 and not separate

1 from claim 1.

2 BY MR. ELLISON:

3 Q. We were just looking at the paragraph in
4 your 1e analysis that said a controller at a minimum
5 has memory, among other things, right?

6 A. We were looking at that.

7 Q. Is the memory that the controller has when
8 you're discussing limitation 1e different from the
9 memory that's recited in 1d, or can they be the same
10 thing?

11 A. So the controller in 1e is the second
12 controller, as we were discussing, and it's the
13 matcher, so to speak, right? It's matching the first
14 information and the second information. And to do
15 that, it would need some processing, it would need
16 some I/O, and it would need some access to memory,
17 for example, to compare a stored password or
18 something to, say, a password that was just entered.
19 And so it would need access to those things and that
20 includes access to the memory. And the limitation 1d
21 memory is memory that that second controller could
22 access and so that's what's required of the claims.

1 Q. So the second controller limitation 1e
2 just needs to have access to memory in order to be a
3 controller, is that right?

4 A. As I discuss in the paragraphs that were
5 leading up to the excerpt from the textbook, at a
6 minimum a controller, in order to act as one, in
7 order to perform as one, would need access to memory.
8 There's no requirement in that that the memory be
9 only, you know, used by that controller and not
10 another or only accessible by that controller and not
11 another. Those might be ways to construct things in
12 a particular embodiment, sure.

13 But what we need in a controller is that
14 it has to have access to memory. And in particular,
15 the claimed controller, the second controller, needs
16 to access memory that stores the second information
17 relating to the identification of the user which is
18 stored in advance. And it accesses that memory so
19 that it could compare the first information and the
20 second information to see if they're coincident, as
21 it says, in other words, to see if there is a match.
22 And that's in the identification mode, not

1 registering mode.

2 So the claimed second controller in 1e has
3 access to the claimed memory in 1d, and that's part
4 of how that second controller in 1e does its job.

5 Q. The claimed second controller in 1e has
6 access to the claimed memory in 1d, that's right?

7 A. Yes.

8 Q. So the claimed second controller in 1e
9 does not have to have its own separate memory?

10 A. From a hardware configuration design point
11 of view, the claim does not require that the memory
12 be physically separated from some other memory
13 somewhere else or the memory only be accessible by
14 the second controller. That's just not in the claim.
15 The memory is described as 1d says. It's just
16 configured to store the second information.

17 And so that's what's required, and how
18 that memory is exactly physically laid out in
19 hardware and what kind of memory it is, you know, is
20 it RAM, ROM, you know, which kind of ROM, et cetera,
21 like all those implementation details the claim is
22 silent on. What it's not silent on is that that

1 memory must be able to store the second information
2 and the second controller must be able to access that
3 second information in order to know if they're
4 coincident with the first information. And it's also
5 related to claim F because the second information has
6 to come from at least the first or second registering
7 modes, if not both. And so that second information
8 is then stored in that memory, and that memory is
9 configured to store that second information.

10 Q. Could you go to page 62, paragraph 110 and
11 let me know when you're there?

12 A. Okay.

13 Q. At the end of that first sentence, there
14 is a reference to a program counter. Do you see
15 that?

16 A. I do.

17 Q. Is that a required structural element of
18 the claimed second controller in limitation 1e?

19 MR. PLUTA: Object to form.

20 THE WITNESS: It's not required by the
21 claim in an explicit fashion. I mean, it's not --
22 there's nowhere in the claim that it talks about a

1 program counter as a claimed element in claim 1.
2 What I'm referring to in paragraph 110 is that a
3 POSITA would recognize control unit 3 in the '086 as
4 a preferred embodiment, that it would, you know, have
5 the types of components a controller would have, you
6 know, a processor, memory, I/O. A program counter is
7 a way of knowing which line of code is being executed
8 at a given time, and so it's telling you essentially
9 where in memory the current code execution address is
10 and allows you to execute code.

11 So it's I suppose conceivable that there
12 might be other ways of implementing these things, but
13 a POSITA would generally understand a program counter
14 just to be part of what a processor and memory
15 enables a controller to do to do its work.

16 BY MR. ELLISON:

17 Q. Is a program counter typically part of a
18 processor?

19 A. Typically, for a processor to do its work,
20 it would include a program counter. As I was
21 describing that enables a processor to conduct its
22 processing. So that's -- it's not itself a

1 controller, to be clear. The program counter is just
2 a piece, kind of, of a processor or controller. It's
3 not itself a controller. It's a counter. It just
4 counts what line of code's being run currently.

5 Q. If you'll look at the third sentence of
6 paragraph 110, it starts with, "The determination
7 unit disclosed in the '086 patent."

8 A. This was in paragraph 110, I'm sorry,
9 where again?

10 Q. The third sentence.

11 A. The third sentence, okay.

12 Q. On page 62 of the PDF.

13 A. This is the sentence that reads, "The
14 determination unit disclosed in the '086 patent that
15 is disclosed as within the control unit does provide
16 support for a separate controller even if it is
17 within control unit 3 because, even if it runs on the
18 same CPU, the memory it draws from and the code it
19 executes are different than the first controller."

20 Is that the sentence?

21 Q. That is the sentence I'm referring to,
22 yes.

1 A. Okay. Thanks.

2 Q. What do you mean by the words in the
3 middle of that sentence, "even if it runs on the same
4 CPU"?

5 A. Yeah, so a controller can -- in this case,
6 the determination unit is the controller that
7 performs the matching process and it's described in,
8 as I quote here, column 3 of the '086, and that
9 determination unit is a conceptual component,
10 conceptual unit. I'll describe what I mean by that.
11 That is, in this preferred embodiment, described as
12 being within control unit 3. When I say conceptual,
13 I mean it's a distinct unit that performs distinct
14 processing. In particular, it's the matcher. It
15 determines if the first and second information are
16 coincident, meaning do they match.

17 Whether it's a physically separate piece
18 of hardware is a matter of a particular embodiment.
19 And so it well might be. And I am aware of certain
20 products, you know, that have separate, dedicated
21 controllers for certain functions that are physically
22 separate from their main CPU, for example. But it

1 doesn't have to be in order to perform the functions
2 that the determination unit performs, which is this
3 matching process as it accesses the second
4 information and compares it to the first information.

5 And so that's what I mean when I say even
6 if it runs on the same CPU, the determination unit
7 could be code, for example, that is dedicated to
8 carrying out the functions of the determination unit.
9 That code could be, for example, swapped into the
10 CPU, to run and carry out the determination unit's
11 functions, perhaps even in a secure way because maybe
12 it's dealing with, you know, passwords and biometrics
13 and other secure information. And then, you know, it
14 could be swapped out and the main controller, the
15 first controller code, could then run.

16 CPUs are swapping in and out code all the
17 time and that's how they operate, so that's why your
18 laptop is capable of running multiple things at once,
19 because the CPU can only run one process at a time,
20 but it does so very fast and switches between a great
21 many at one time.

22 So a determination unit can be realized in

1 a particular embodiment even if the code is running
2 on the same CPU as the control unit 3 as a whole,
3 which is what I'm referring to there.

4 Q. Okay. Give me a second. That's a lot to
5 unpack there.

6 A. It's a computer science question, so.

7 Q. Control unit 3 would have a CPU
8 presumably, correct? Or is it a CPU?

9 A. It's a controller and so it would have
10 some processing, it would have some access to memory,
11 and it would have some I/O capabilities, right? So
12 processing is part of that.

13 CPU of course stands for central
14 processing unit, and that's an example of the
15 processing part of control unit 3. It could be a
16 microcontroller, which is more commonly in like a
17 handheld device or kind of smaller device. CPU might
18 be more commonly found in a more powerful device like
19 a laptop. But those are just implementation details.
20 I mean, the point is there's a processing capacity
21 within control unit 3.

22 Q. Okay. And what I understood you to be

1 saying is that that could be one set of processing
2 capacity for certain functions and another set of
3 processing capacity for the functions that are
4 associated with the determination unit or they could
5 all be the same processor, is that right?

6 A. So what can't be the case, as the claims
7 require, is that there is only a single controller.
8 What the claims do not require, in my opinion, what
9 they're sort of silent on, is any particular hardware
10 design that must be a certain way. And so the
11 preferred embodiment that the '086 describes is a
12 control unit 3 which also has, you know, access to
13 memory and some things. And it also, in the
14 preferred embodiment, has a determination unit which
15 it refers to as also having access to memory and, you
16 know, other aspects we recognize commonly in a
17 controller like a program counter and -- it refers to
18 a counter and an ALU, I think, and some things.

19 And so it's clear that the preferred
20 embodiment it describes has the -- meets the
21 functionality of two controllers, the first and
22 second, the first being control unit 3 and the second

1 being the determination unit.

2 But it's just -- that's a preferred
3 embodiment. The claims are silent on does this need
4 to be a physically separate processor? Does the
5 second controller need to be -- have access to
6 physically separate memory from the first controller
7 and so on? That's just not what the claim is
8 concerned with. The claim is concerned with these
9 controllers existing, of course, but then being able
10 to carry out a particular functioning as the claims
11 describe.

12 Q. So the claims don't require physically
13 separate controllers, the first and second
14 controller, is that right?

15 A. The claim language puts a number of
16 restrictions on what the controllers are and do, and
17 of course that they're controllers. So it's not that
18 there is no physical manifestation of those
19 controllers at all because there has to be in order
20 for them to do processing and access memory and
21 stuff.

22 So there has to be some physical memory

1 and some physical processor and some physical I/O
2 capability, so it's not that this **isn't** a nonphysical
3 kind of thing, but it's -- the claim is silent on the
4 specific hardware arrangement that might be employed
5 to realize those claims and it could be done with
6 physically separate components. In the preferred
7 embodiment, we see I think some of that. But it
8 could also be done with some physically similar but
9 programmatically separate components, like running
10 isolated code that's separate from other code but
11 perhaps on the same physical processor but not, of
12 course, at the same time and so on.

13 So the claim's just silent about the
14 physical arrangement of these things. But it's not
15 silent that they must exist, that they must carry out
16 these functions, and that they must be separate
17 controllers. And the preferred embodiment in the
18 '086 of course has an example of that.

19 Q. So the claim is silent about the physical
20 arrangement of the two controllers, right?

21 A. The claim imposes restrictions about
22 things being configured, the controllers being

1 configured and the memory being configured to do
2 certain things, but it's silent about any particular
3 hardware or software design in that regard.

4 Q. So you could have hardware, you could have
5 software, you could have a combination of the two for
6 one or both controllers?

7 MR. PLUTA: Object to form.

8 THE WITNESS: You could have hardware and
9 software that are in perhaps any number of particular
10 embodiments that could meet the limitations of
11 claim 1, provided that they are configured to do the
12 things that the claim limitations require.
13 Specifically -- and I'm looking back up at the claim
14 language, element 1c, a first controller configured
15 to control the information processing apparatus to
16 operate into two operating modes, right? So it's got
17 to be configured to do that or it's not the first
18 controller.

19 In 1d, it's memory that's configured to
20 store second information relating to the
21 identification of the user. So it's got to be memory
22 that's configured to do that or it's not the claimed

1 memory.

2 And in 1e, a second controller that's
3 configured to execute a specified process when,
4 essentially, the information that's stored and what
5 the user perhaps provides matches. So it's got to be
6 configured to execute that process and do that
7 determination if it's coincident or not.

8 So if the arrangement of software and
9 hardware is not configured to do those things, then
10 those claimed elements are not met. So that's what
11 the claim is putting the restrictions on, is how
12 whatever hardware and software you might be using,
13 how those things are configured. They have to be
14 configured to meet these limitations.

15 BY MR. ELLISON:

16 Q. Would a person of ordinary skill in the
17 art know how to configure these different
18 arrangements that are described in the patent or the
19 patent claim?

20 A. Yeah, I think so. I mean, configuring
21 could be writing software code to program the
22 controllers to carry out certain things. It could be

1 employing certain hardware arrangements, for example,
2 using microcontrollers would be well known to a
3 person of ordinary skill in the art, and combining
4 those physical controllers with software that, for
5 example, stores second information in the case of the
6 memory. Yeah, that would call be within a purview of
7 a POSITA.

8 MR. ELLISON: Why don't we take a
9 10-minute break. Let me go through my notes. I
10 don't expect to have very many more questions after
11 that.

12 THE WITNESS: All right.

13 [Recess.]

14 MR. ELLISON: Dr. Wobbrock, thank you for
15 your time. I don't have any further questions as of
16 right now.

17 THE WITNESS: Okay. Thank you.

18 MR. PLUTA: I have a couple of questions.

19 EXAMINATION BY COUNSEL FOR PATENT OWNER

20 BY MR. PLUTA:

21 Q. Dr. Wobbrock, do you remember when
22 Mr. Ellison introduced your declaration,

1 Exhibit 2005, earlier in the deposition?

2 A. I recall.

3 Q. And you recall your testimony about how
4 it's missing -- the CV that you intended to attach
5 was missing from the declaration?

6 A. I recall mentioning that.

7 [Exhibit No. 2014 was marked for
8 identification.]

9 BY MR. PLUTA:

10 Q. I dropped into the chat box what I'm
11 marking as Exhibit 2014. And I'll ask, after you've
12 had a chance to open that, is this the version of
13 your CV that you intended to attach to your
14 declaration?

15 A. I'm downloading it now and I will open it
16 momentarily.

17 Yes, this is a version of my CV that's
18 dated the 31st of October, 2024. I keep a little
19 date stamp in the top left corner just to help me
20 know which version it is, but this is an accurate
21 representation of my CV as of that date.

22 MR. PLUTA: Okay. Thank you.

1 I have no further questions.

2 MR. ELLISON: No other questions from me.

3 Thank you.

4 [Whereupon, at 2:42 p.m., the taking of
5 the instant deposition ceased.]

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1 CERTIFICATE OF REPORTER

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3 STATE OF MARYLAND]

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21 My commission expires: 6/18/2027
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Notice Date: Monday, 31. March 2025

Attention: Jacob O. Wobbrock, Ph.D.

Re: Samsung Patent Appeals

Deposition of Jacob O. Wobbrock, Ph.D. (3/26/2025)

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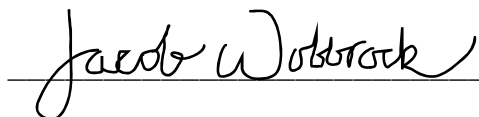
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