

EXHIBIT P

In The Matter Of:
ELAN MICROELECTRONICS v.
APPLE

BRIAN VON HERZEN
April 1, 2010

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Page 1

BRIAN VON HERZEN, Ph.D.

IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN JOSE DIVISION

ELAN MICROELECTRONICS CORPORATION,
Plaintiff,
vs. CASE NO:
C-09-01531 RS(PVT)
APPLE, INC.,
Defendant.
AND RELATED COUNTERCLAIMS. /

DEPOSITION OF BRIAN VON HERZEN, Ph.D.
Thursday, April 1, 2010
Pages 1 - 120

REPORTED BY JOANNE ICHIKI, CSR #11660

Comp-U-Script/GROSSMAN & COTTER/Weber & Volzing

Page 3

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1 I N D E X

2 EXAMINATION BY: PAGE:

3 Mr. DeBruine 7

4

5 E X H I B I T S

6 EXHIBIT NO. DESCRIPTION PAGE

7 1 Copy, Declaration of Brian Von 7

8 Herzen, Ph.D. Regarding Claim

9 Construction of U.S. Patents,

10 undated, 26 pages

11

12 2 Copy, Exhibit R - Materials 7

13 Reviewed, undated, 1 page

14

15 3 Copy, Curriculum Vitae for Brian 7

16 Von Herzen, Ph.D., 2/21/10, 7

17 pages

18

19 4 Copy, U.S. Patent No. 5,825,352, 7

20 10/20/98, 27 pages

21

22 5 Copy, U.S. Patent No. 5,495,077, 76

23 2/27/96, Bates Nos. APEL0000141

24 to APEL0000167, 27 pages

25

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1	E X H I B I T S	
2	EXHIBIT NO.	DESCRIPTION PAGE
3	6	Copy, U.S. Patent No. 7,495,659 39
4		B2, 2/24/09, 27 pages
5		
6	7	Copy, U.S. Patent No. 5,764,218, 62
7		6/9/98, 26 pages
8		
9	8	Copy, U.S. Patent No. 7,274,353 76
10		B2, 9/25/07, 8 pages
11		
12	9	Copy, Amendment to Application 99
13		No. 08/608,116, 8/22/97, Bates
14		Nos. ELN001550 to ELN001558, 9
15		pages
16		
17	10	Copy, Amendment to Application 111
18		No. 08/608,116, 4/8/98, Bates
19		Nos. ELN001567 to ELN001571, 5
20		pages
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1 JoAnne Ichiki of Grossman & Cotter.
2 Would counsel present please identify
3 themselves and state whom they represent.
4 MR. DeBRUINE: Sean DeBruine for Alston
5 & Bird. I represent the plaintiff, Elan
6 Microelectronics. With me this morning is Celine
7 Liu.
8 MS. MEHTA: Sonal Mehta from Weil,
9 Gotshal & Manges with the witness and representing
10 Apple.
11 THE VIDEOGRAPHER: If there are no
12 stipulations, the reporter may administer the oath
13 to the witness.
14 BRIAN VON HERZEN, Ph.D.,
15 called as a witness by the Plaintiff, and who, being
16 first administered an oath, was thereupon examined
17 and testified as hereinafter set forth.
18 (Whereupon, Plaintiff's Exhibit 1, 2, 3
19 and 4 were marked for identification.)
20 EXAMINATION BY MR. DeBRUINE
21 BY MR. DeBRUINE:
22 Q. Good morning, Dr. Von Herzen.
23 A. Good morning.
24 Q. As I just mentioned, my name is Sean
25 DeBruine. I'm an attorney for Elan. And I'm going

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1 BE IT REMEMBERED that, pursuant to Notice of
2 Taking Deposition, and on Thursday, April 1, 2010,
3 commencing at the hour of 9:35 a.m. thereof at
4 Alston & Bird, LLP, Two Palo Alto Square, Suite 400,
5 Palo Alto, California, before me, JOANNE ICHIKI, a
6 Certified Shorthand Reporter, the following
7 proceedings were had.
8 THE VIDEOGRAPHER: Good morning. This marks
9 the beginning of Volume I, Videotape 1 in the
10 deposition of Brian Von Herzen in the matter of Elan
11 Microelectronics Corporation v. Apple, Inc. in the
12 United States District Court, Northern District of
13 California, San Jose Division, Case No. C-09-01531
14 RS (PVT). Today's date is April 1, 2010. The time
15 is 9:35.
16 The location of this deposition is Alston &
17 Bird, Two Palo Alto Square, 3000 El Camino Real,
18 Suite 400, Palo Alto, California. The deposition
19 was noticed by plaintiff, and the videotape is being
20 produced on behalf of plaintiff.
21 The video operator is Jake Krohn, a
22 California Notary Public for the County of Alameda,
23 employed by Dan Mottaz Video Productions, LLC, 182
24 Second Street, Suite 202, San Francisco, California
25 94105. (415) 624-1300. The court reporter is

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1 to ask you some questions here today.
2 Have you had your deposition taken
3 before?
4 A. Yes, I have.
5 Q. How many times?
6 A. Half a dozen times.
7 Q. Okay. Have all of those been in an
8 expert witness capacity?
9 A. Yes, they have.
10 Q. Okay. So I won't spend a lot of time on
11 the mechanics. I'm sure you know that I'll be
12 asking you questions, and you're to give me the most
13 full and complete answers you can.
14 Do you understand that?
15 A. Yes, I do.
16 Q. Do you understand that, since this is
17 being recorded and taken down by the stenographer,
18 we need verbal answers to the questions?
19 A. Yes.
20 Q. Okay. Is there any reason today that you
21 can't give full and complete testimony?
22 A. No.
23 Q. Okay. Dr. Von Herzen, what did you do to
24 prepare for this deposition today?
25 A. I reviewed my expert report, file

<p>BRIAN VON HERZEN, Ph.D. Page 9</p> <p>1 histories, and the patents-at-issue in this case. 2 Q. Okay. Did you meet with anyone to 3 discuss this deposition before coming here today? 4 A. Yes. Yesterday I met with Weil 5 attorneys. 6 Q. Okay. And about how long did those 7 meetings last? 8 A. Oh, it was part of a day, I would say 9 started mid morning. 10 Q. And when did it end? 11 A. Early evening. 12 Q. Okay. Dr. Von Herzen, you have provided 13 a declaration regarding the construction of certain 14 claim terms for the patents-at-issue in this case; 15 is that correct? 16 A. Yes, that's correct. 17 MR. DeBRUINE: Can we hand the witness 18 Exhibit 1, please? 19 BY MR. DeBRUINE: 20 Q. And we've handed you a document marked as 21 Exhibit 1, which is entitled "Declaration of Brian 22 Von Herzen, Ph.D. Regarding Claim Construction of 23 U.S. Patents Nos. 5,825,352, 7,274,353, 5,764,218 24 and 7,495,659." 25 Do you have that?</p>	<p>BRIAN VON HERZEN, Ph.D. Page 11</p> <p>1 and Ph.D. in computer science from the California 2 Institute of Technology. 3 Q. Okay. And when were those degrees? 4 A. 1990 -- 19 -- correction. 1980, 1984, 5 and 1989. 6 Q. Okay. And after you completed the 7 bachelor's degree, were you -- have you been 8 employed? 9 A. Yes. After my bachelor's degree, I was 10 employed at Hewlett-Packard Laboratories for 11 approximately one year. And then I matriculated at 12 Cal Tech where I worked summers in various 13 capacities for electronics, computing and software 14 companies. 15 Q. Okay. And did you become employed after 16 the master's degree? 17 A. I worked for a summer at several 18 companies over several years. That included 19 working at Pixar Image Computer. We helped to 20 develop hardware and software for the Pixar Image 21 Computer in 1986. In 1985, I worked at 22 Schlumberger Palo Alto Research Laboratories. And 23 in 1982, I believe I worked at Dolby Laboratories. 24 Q. And those were summer jobs; is that 25 correct?</p>
<p>BRIAN VON HERZEN, Ph.D. Page 10</p> <p>1 A. Yes, I do. 2 Q. Okay. Is that the declaration that you 3 prepared for this matter? 4 A. Yes, it is. 5 Q. And is that your signature on the last 6 page? 7 A. Yes, it is. 8 Q. Okay. And I'll also hand you what's been 9 marked as Exhibit 2, which is entitled "Exhibit R, 10 Materials Reviewed." 11 Do you have that? 12 A. Yes, I do. 13 Q. Is that a list of materials that you 14 reviewed for purposes of preparing your declaration? 15 A. Yes. 16 Q. Since preparing your declaration, did you 17 review any other materials for purposes of 18 construing the claims at issue in this case? 19 A. No. These are the materials that I 20 reviewed. 21 Q. Okay. Now, Dr. Von Herzen, can you 22 please give me your educational background after 23 high school? 24 A. Yes. I received a bachelor's degree in 25 physics from Princeton University, and a master's</p>	<p>BRIAN VON HERZEN, Ph.D. Page 12</p> <p>1 A. And vacations. 2 Q. Okay. 3 A. I was still working full time on my 4 Ph.D. 5 Q. And what did you do after completing the 6 Ph.D.? 7 A. After completing the Ph.D., I worked at 8 the Cal Tech Submillimeter Observatory in Hawaii. 9 Q. For how long? 10 A. That was from 1989 until 1992 where I 11 developed custom integrated circuits for radio 12 astronomy applications. 13 Q. Okay. And after 1992, did you take 14 another job? 15 A. Yes. I worked at Synaptics. 16 Q. And what was Synaptics's business in 17 1992? 18 A. The business was to develop human 19 interface devices. 20 Q. Okay. And by "human interface devices," 21 what do you mean? 22 A. Well, that includes touch pads. It 23 includes input and output devices that could 24 comprise display technology, neural networks for 25 sensing, recognizing and displaying information.</p>

<p>BRIAN VON HERZEN, Ph.D. Page 13</p> <p>1 Q. And what is a neural network device? 2 A. A neural network, an artificial neural 3 network is a network of computing nodes and 4 inter-connections that emulate the behavior of 5 biological neural networks. 6 Q. Okay. And you were at Synaptics until -- 7 when did you leave Synaptics? 8 A. Approximately January of 1994. 9 Q. Okay. And where did you -- what did you 10 do after January of 1994? 11 A. I started my own company, Rapid 12 Prototypes, Incorporated, and have been the CEO of 13 that company to the present time. 14 Q. Okay. And what is the business of Rapid 15 Prototypes? 16 A. We develop commercial products for 17 Fortune 500 companies and start-up companies. That 18 includes hardware, software, and system 19 integration. 20 Q. Okay. Now, during your time at 21 Synaptics, did you have any involvement in design or 22 development of capacitive touch pads? 23 A. Yes, I did. 24 Q. Could you detail for me all of your 25 involvement in capacitive touch pad development at</p>	<p>BRIAN VON HERZEN, Ph.D. Page 15</p> <p>1 A. While I don't believe I was a named 2 inventor of any of those particular inventions, I 3 do have approximately a dozen patents issued and 4 more pending. 5 Q. But you were not named on any of 6 Synaptics' patents pertaining to touch pads; is that 7 correct? 8 A. Not to my knowledge, no. 9 Q. Okay. What was the state of the 10 development of the touch pad at Synaptics when you 11 left in approximately January of 1994? 12 A. The touch pad was in development, and we 13 had a number of -- a number of working units in the 14 laboratory. 15 Q. Okay. And where did this fundamental 16 architecture question come down? Did Synaptics use 17 analog or digital? 18 A. Ultimately, I believe that the back end 19 circuitry is digital. The analog-to-digital 20 converters transform the signals into digital 21 representation, and the microprocessor does the 22 back end processing for that touch pad. 23 Q. Had that determination been made as of 24 the time you had left in January -- in about January 25 of 1994?</p>
<p>BRIAN VON HERZEN, Ph.D. Page 14</p> <p>1 Synaptics? 2 A. One of the key tasks that was required 3 was to determine the fundamental architecture to be 4 utilized in the touch pad. There were tradeoffs in 5 using analog computation, for example, analog VLSI 6 circuits, traded off against digitizing and the use 7 of digital microprocessors for touch sensing. 8 So I was participating materially in the 9 fundamental architecture of the touch pad 10 development. 11 Q. Okay. Can you detail how you were 12 involved in that fundamental architecture? 13 A. We were performing engineering tradeoffs 14 between the performance and optimization of analog 15 VLSI circuits as compared with analog-to-digital 16 converters and microprocessors and their 17 utilization in this application. 18 Q. Okay. And what were those -- what was to 19 be the purpose of either the analog or the digital 20 circuitry? 21 A. Well, the purpose was to sense touch, 22 and in particular, to facilitate human input via 23 touch sensing. 24 Q. Okay. Are you named on any of Synaptics' 25 patents relating to touch pads?</p>	<p>BRIAN VON HERZEN, Ph.D. Page 16</p> <p>1 A. Largely, yes. 2 Q. Okay. Did you do any development of the 3 firmware or software for the digital analysis? 4 A. I did develop software for digital 5 analysis at Synaptics. 6 Q. In particular, in connection with the 7 touch pad product? 8 A. It involved signal processing that was 9 utilized in the touch pad. 10 Q. Was your role specifically for the touch 11 pad; in other words, did you develop that firmware 12 specifically for the touch pad? 13 A. We had a signal processing environment 14 that was a custom environment at Synaptics. And I 15 wrote and designed algorithms for that environment, 16 and that environment was utilized in the 17 development of the touch pad algorithms. 18 Q. So if I'm understanding you correctly, 19 the algorithms you developed were not specifically 20 developed for the touch pad; is that correct? 21 A. They were part of our development 22 environment at Synaptics. And so there were a 23 variety of signal processing algorithms that I 24 wrote that formed that environment. And that 25 environment was utilized to actually produce the</p>

<p>BRIAN VON HERZEN, Ph.D. Page 17</p> <p>1 touch pad. 2 Q. Okay. But at the time you wrote those 3 algorithms, you were not writing them specifically 4 for the touch pad; is that correct? 5 A. The algorithms had number of 6 applications. One of them was the touch pad 7 applications. So in fact, they were -- this 8 environment and algorithms in that environment were 9 used for the touch pad. 10 Q. Okay. After leaving Synaptics and 11 founding your own company, did you do any consulting 12 work in connection with touch pads? 13 A. I did consulting work several years 14 later for Synaptics. And it involved the use of 15 programmable logic devices. 16 Q. When was that consulting? 17 A. It was approximately 15 years ago. 18 Q. Can you be any more specific than that? 19 A. No, I can't. 20 Q. Okay. And what exactly was the nature of 21 your consulting with relation to programmable logic 22 devices for Synaptics? 23 A. I was asked to implement a programmable 24 logic device, some of the algorithms on that 25 programmable logic device.</p>	<p>BRIAN VON HERZEN, Ph.D. Page 19</p> <p>1 I did some consulting work for Interval Research 2 Corporation, and some of that work involved the use 3 of haptic systems. Haptic systems utilize touch 4 sensing and force feedback to produce a 5 bi-directional input/output human interface device. 6 And so in the 1990s when I was 7 consulting with Interval Research, there was some 8 work done on haptic devices which may or may not 9 have used capacitive touch sensing. 10 BY MR. DeBRUINE: 11 Q. You don't recall one way or the other 12 whether they used capacitive touch sensing? 13 A. Well, some haptic devices use capacitive 14 touch sensing. 15 Q. My question was specifically with regard 16 to your consultation for Interval Research. Did it 17 use capacitive touch sensing? 18 A. I don't recall. 19 Q. Do you recall any details about what 20 touch sensing technology that product did use? 21 A. Yes, in the sense that the haptic force 22 device required both measurement of input forces 23 from the human user as well as the generation of 24 output forces in response to that user. So from 25 that perspective, any of a number of touch sensing</p>
<p>BRIAN VON HERZEN, Ph.D. Page 18</p> <p>1 Q. And what was the purpose of that 2 programmable logic device? 3 A. It was some product or application. It 4 was 15 years ago, and I just -- I don't recall 5 particularly the detailed application other than 6 that we were configuring the programmable logic 7 device to perform certain signal processing 8 algorithms. 9 Q. And is that all the detail you can recall 10 of that? 11 A. It was 15 years ago. 12 Q. Okay. So what we've talked about here, 13 is that the total of your work in connection with 14 capacitive touch pad devices? 15 A. My employment at Synaptics from 1992 to 16 1994, and possible consulting work comprises my 17 work on touch pads. 18 Q. Okay. My question was a little more 19 specific. 20 Other than what we've specifically talked 21 about here, have you had any other -- done any other 22 work on capacitive touch pad devices? 23 MS. MEHTA: Objection. Vague. 24 THE WITNESS: Well, that would depend on 25 the classification of capacitive touch pad devices.</p>	<p>BRIAN VON HERZEN, Ph.D. Page 20</p> <p>1 technologies could be used on the input side, 2 including possibly capacitive touch sensing. 3 Q. Okay. I'm not asking for speculation. 4 I'm asking you the particular work that you did, do 5 you know what technique was used to sense the input 6 force? 7 A. In that case, I don't recall if it was 8 capacitive, resistive or electromagnetic. 9 Q. Okay. Let's look at Exhibit 3. 10 Dr. Von Herzen, you've had a chance to 11 review Exhibit 3, which -- can you tell me what that 12 document is? 13 A. It's my C.V. 14 Q. Okay. And when was this document 15 prepared? 16 A. February 21, 2010. 17 Q. Okay. And that shows on the bottom that 18 date. It says, "Printed 2/21/10"; is that correct? 19 A. Yes. 20 Q. All right. On that date did you make any 21 modifications to your C.V.? 22 A. No. I may have updated the latest 23 patents that were issued recently in the last year, 24 and I believe those are the only changes. The 25 Ropes & Gray, there was a case, Realtime Data</p>

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1 versus Packeteer, that closed in January. And
2 actually, the Opti versus AMD case closed in
3 January as well.
4 Q. Okay. All right. To the best of your
5 knowledge, is everything in Exhibit 3 accurate?
6 A. Well, other than the closure of the Opti
7 versus AMD case in January of 2009, it's accurate.
8 Q. Okay. Whenever you prepare a
9 representation of your education and experience, do
10 you make every effort to make sure that that
11 representation is accurate?
12 A. I update my resume for a case to make
13 sure that it's got the latest information in it.
14 Q. Okay. I understand that. But beyond the
15 context necessarily of updating your resume for a
16 case, whenever you prepare a description of your
17 background and employment history, do you make every
18 effort to make sure that it's accurate?
19 A. I try to update my C.V. when it's needed
20 for a case.
21 Q. That was not my question, sir.
22 A. All right.
23 Q. Without regard to updating a C.V. for a
24 specific piece of litigation, whenever you prepare
25 for any reason a summary of your background and work

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1 experience, do you make every effort to ensure that
2 that description is accurate?
3 MS. MEHTA: Objection. Vague.
4 THE WITNESS: I make reasonable efforts.
5 BY MR. DeBRUINE:
6 Q. What do you mean by "reasonable efforts"?
7 A. I don't spend a lot of time working on
8 my C.V. when I'm preparing to work on a case.
9 Q. That was -- one more time. My question
10 is not limited to working on your C.V. in connection
11 with any particular case. I'm talking in connection
12 with any preparation, any representation of your
13 background and experience.
14 MS. MEHTA: Objection. Vague.
15 BY MR. DeBRUINE:
16 Q. In that context, what do you mean by
17 reasonable efforts?
18 A. What I mean is that, when I prepare to
19 work on a case, I find the most recent copy of my
20 resume, I scan it quickly, and I send it off.
21 Q. Do you ever prepare a summary of your
22 background, education, work experience for purposes
23 other than working on a particular case?
24 A. Yes.
25 Q. When do you do that other than working

BRIAN VON HERZEN, Ph.D. Page 23

1 for a particular case?
2 A. From time to time, clients ask that I
3 prepare a background of my C.V. so that we can
4 discuss working on a new project together.
5 Q. And when you prepare such a C.V., do you
6 take -- make every effort to make sure that that
7 C.V. is correct?
8 A. No. I don't make every effort. I make
9 reasonable efforts.
10 Q. Okay. And in your mind, what is a
11 reasonable effort?
12 A. My reasonable effort is I open up the
13 C.V., I take a look at it. If it looks like it's
14 accurate, I save it and send it off.
15 Q. Okay. If we can turn to Exhibit 1,
16 please, your declaration. The bottom of the second
17 page, you begin your opinion regarding the level of
18 ordinary skill in the art with reference to the '352
19 patent; is that correct?
20 A. Yes.
21 Q. And it is your opinion that such a person
22 of ordinary skill in the art would have a bachelor's
23 degree in computer science, electrical engineering,
24 or mathematics, and three to five years in the area
25 of signal processing or the design of touch

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1 sensitive input devices, or a master's or Ph.D. and
2 one to three years of experience in those fields; is
3 that correct?
4 A. Yes.
5 Q. Okay. What is your basis for that
6 opinion?
7 A. The basis for my opinion is based on my
8 personal experience. It's also based on the levels
9 of education and skill working in the field, and
10 the speed at which the field changed and
11 innovations were made in the field.
12 Q. Okay.
13 A. As well as sophistication of the
14 technology and the prior art.
15 Q. Okay. We talked about your personal
16 experience, which is your employment at Synaptics;
17 correct?
18 A. We did discuss my employment at
19 Synaptics.
20 Q. And that and the consulting work 15 years
21 ago for Synaptics is the total of your experience in
22 working on touch pads; correct?
23 MS. MEHTA: Objection. Mischaracterizes
24 his testimony.
25 THE WITNESS: As I stated previously, I

<p>BRIAN VON HERZEN, Ph.D. Page 25</p> <p>1 worked at Synaptics over a period from 1992 to 2 1994, did some consulting work through the 1990s. 3 In addition, I worked on signal processing 4 algorithms throughout the 1980s in areas that were 5 related to the signal processing that's required 6 for touch pads and touch sensing. 7 BY MR. DeBRUINE: 8 Q. Okay. And can you detail for me what 9 work you did in signal processing algorithms through 10 the 1980s that you believe is applicable to the 11 touch sensitive input devices? 12 A. That would include circuits that measure 13 capacitance, that utilize capacitive sensors to 14 measure signals, as well as analog-to-digital 15 converters, which are in fact utilized in touch 16 pads. 17 Q. Okay. Where did you do your work with 18 regard to capacitive sensors? 19 A. At the California Institute of 20 Technology. 21 Q. And what was the nature of that work? 22 A. Well, capacitive sensing is a very 23 useful form of sensing in a variety of electronic 24 applications. They include everything from 25 pressure sensing. I developed a scuba diving</p>	<p>BRIAN VON HERZEN, Ph.D. Page 27</p> <p>1 modulation, or ADM for short, which is another type 2 of converter for processing analog signals. 3 Q. Was any of your work on custom 4 analog-to-digital converters related specifically to 5 any touch sensitive input devices? 6 MS. MEHTA: Objection. Vague. 7 THE WITNESS: While it was not targeted 8 per se at a touch pad, many touch pads include 9 analog-to-digital converters, and the architecture 10 of these analog-to-digital converters is key to the 11 performance and applications of those touch pads. 12 BY MR. DeBRUINE: 13 Q. Were any of the custom analog-to-digital 14 converters that you designed during this period ever 15 used any touch sensitive input device? 16 A. While they were not targeted directly at 17 a particular touch pad device, the development of 18 those analog-to-digital converters provided key 19 information in the architecture of A-to-Ds that 20 could be used for touch pads. 21 Q. So the answer is no, none of your 22 specific custom analog-to-digital converters were 23 ever used in a touch sensitive input device; is that 24 correct? 25 A. No. While the particular</p>
<p>BRIAN VON HERZEN, Ph.D. Page 26</p> <p>1 decompression monitor in 1992. In addition, I 2 developed custom analog-to-digital converters from 3 the 1998 to 1992 time frame at locations including 4 the University of California, Santa Barbara. 5 Q. Did you mean 1988 to 1992? 6 A. Yes. 1988 to 1992. 7 Q. Okay. And what was the purpose of these 8 custom analog-to-digital converters? 9 A. The purpose was to enable high 10 performance analog-to-digital conversion. 11 Q. Were they for a specific purpose, a 12 specific product? 13 A. They were for research and development 14 of new products. 15 Q. Of what new products? 16 A. Well, analog-to-digital converters can 17 be used for a variety of products. Some of those 18 products relate, of course, to low cost sensing 19 devices, and others relate to high performance 20 conversion. There are a number of architectures 21 that can be utilized in analog-to-digital 22 converters. They include flash converters, 23 sigma-delta converters. 24 And in fact some of my early work at 25 Dolby Laboratories involved the use adaptive delta</p>	<p>BRIAN VON HERZEN, Ph.D. Page 28</p> <p>1 analog-to-digital converters that I developed were 2 not directly targeted to a touch pad, they 3 nonetheless informed the selection of 4 analog-to-digital converters that were utilized 5 later in touch pads. 6 Q. All right. You also say that your 7 opinion on the level of ordinary skill in the art 8 has to do with the level of education and experience 9 of persons of skill working in the field. 10 Do you have any -- did you consider any 11 particular person's education and work experience in 12 connection with forming your opinion there? 13 A. Well, I worked with over a dozen 14 colleagues at Synaptics, and they certainly had 15 levels of education and experience of people 16 working in the field. So that would be an example. 17 Q. Okay. Who in particular were you 18 thinking of when you formed this opinion? 19 A. I was thinking of many of the people who 20 worked at Synaptics at the time. 21 Q. Can you give me an example of any of the 22 people you considered in forming your opinion? 23 A. I can list off a variety of people who 24 worked at Synaptics at that time and were involved 25 in the development of products there.</p>

<p>BRIAN VON HERZEN, Ph.D. Page 29</p> <p>1 Q. They're not listed in your opinion, are 2 they? 3 A. They're not listed per se. 4 Q. Okay. Let's talk a little bit about what 5 one of ordinary skill in the art would have known 6 about, particularly, capacitive touch pads in 7 January of 1996. 8 Can you explain in general, in January of 9 1996, how a capacitive touch pad would determine the 10 location of a finger contacting the top of the touch 11 pad? 12 A. In general or in some context of a 13 particular patent? 14 Q. Well, let's talk in general. 15 A. All right. Well, in general, the 16 capacitance between an array of horizontal and 17 vertical wires is modified by the presence of a 18 conductive object, for example, a finger. And when 19 that capacitance changes, it's possible to measure 20 differences in electrical signals between the row 21 and columns of a touch pad device to infer the 22 location of that finger in proximity or touching 23 the actual touch pad. 24 Q. Okay. And how at that time did 25 capacitive touch pads go about inferring the</p>	<p>BRIAN VON HERZEN, Ph.D. Page 31</p> <p>1 Q. How is that processing -- in 1996, how 2 was that processing done to arrive at the 3 coordinates of that contact? 4 A. Well, a variety of means could be 5 employed for inferring the location of an object or 6 a finger on a touch pad from the sensory inputs. 7 One approach would be to process the array of 8 inputs and determine an interpolated value for the 9 location in an X and a Y dimension of that object, 10 and by such interpolation, utilizing an array of 11 input values in both the X direction and the Y 12 direction, a location could be resolved. 13 Q. Okay. You mentioned there were a variety 14 of ways. 15 What other ways besides using the 16 interpolation that was known at the time? 17 A. Well, any number of basis functions 18 could be used to provide the horizontal and 19 vertical basis for that position determination. 20 Q. What do you mean by a "basis function"? 21 A. A basis function is a function that 22 takes an array of inputs and weights those inputs 23 according to certain factors to determine an 24 interpolated value that would represent the 25 location in an X or Y direction, for example, of an</p>
<p>BRIAN VON HERZEN, Ph.D. Page 30</p> <p>1 location of an object touching or in proximity to 2 the touch pad? 3 A. They would provided electrical charge to 4 stimulus nodes of the touch pad and sense the 5 response on the sensory nodes of the touch pad. 6 Q. Okay. And what happened after the 7 response was sensed at those nodes? 8 A. That response would typically be 9 digitized and further processed. 10 Q. Okay. And can you explain how that 11 further processing arrives at the location that is 12 used for the contact? 13 MS. MEHTA: Objection. Vague. Lacks 14 foundation. 15 THE WITNESS: Can you repeat the 16 question, please? 17 BY MR. DeBRUINE: 18 Q. Certainly. You said that the electrical 19 signals from the nodes are digitized and further 20 processed; correct? 21 A. Correct. 22 Q. One of the goals of that further 23 processing is to arrive at the coordinates for the 24 location of the contact on the touch pad; correct? 25 A. Yes, that is one of the objectives.</p>	<p>BRIAN VON HERZEN, Ph.D. Page 32</p> <p>1 object or finger. 2 Q. Okay. Now, is that basis function to 3 arrive at an -- well, let me ask you this: 4 When you say an "interpolated value," 5 what do you mean by interpolated value? 6 A. An interpolated value could be a value 7 that was interstitial between two traces, for 8 example. 9 Q. Okay. Now, is that interpolated value 10 the same or different from a centroid? 11 MS. MEHTA: Objection. Vague. 12 THE WITNESS: If you're referring to 13 centroid in general and not in the context of any 14 particular patent, the notion of developing a 15 centroid in general is one of many basis functions 16 for determining the location of an object or 17 finger. 18 BY MR. DeBRUINE: 19 Q. Okay. And in particular, in January of 20 1996, using a centroid to determine the position of 21 a finger on a capacitive touch sensor was a known 22 basis function; is that correct? 23 A. Yes. I believe that, as disclosed in 24 Miller, for example, the Miller patent. 25 Q. And is Miller one of the patents that you</p>

<p>BRIAN VON HERZEN, Ph.D. Page 33</p> <p>1 considered in connection with your declaration here? 2 A. I believe that I looked at Miller as 3 part of that process. 4 Q. And Miller was another employee of 5 Synaptics? 6 A. Yes. In fact I think he's -- that 7 particular patent is referred to in the file 8 history of the '352 patent. 9 Q. Let's mark that as -- actually, let's do 10 this. Just so we keep things in order, I'll hand 11 you what's already been marked as Exhibit 4, which 12 is a copy of the '352 patent in this case. 13 (Whereupon, Plaintiff's Exhibit 5 was 14 marked for identification.) 15 BY MR. DeBRUINE: 16 Q. And now I'll hand you what's been marked 17 as Exhibit 5. 18 And can you confirm that Exhibit 5 is the 19 Miller patent you were just referencing? 20 A. Yes. Exhibit 5 is a Miller patent. 21 Q. Okay. And while we've got that, let's 22 look at Exhibit 1C of Miller. 23 MS. MEHTA: Figure 1C? 24 MR. DeBRUINE: Yes. Figure 1C. I'm 25 sorry.</p>	<p>BRIAN VON HERZEN, Ph.D. Page 35</p> <p>1 Q. I said "horizontal" twice. I apologize. 2 If I understand your testimony correct, a 3 touch pad of the sort illustrated here would be able 4 to determine location of an object at a point in 5 between the capacitive nodes that are shown here? 6 A. In the case of interstitial 7 interpolation, yes, a touch pad in general would be 8 able to identify the location of an object or 9 finger in between the lines of the touch pad. 10 Q. Okay. And in general, in January of 11 1996, what data was reported from a touch pad to a 12 host computer? 13 A. That would depend on the particular 14 touch pad being employed. But certainly position 15 information would be part of that information. 16 Q. Okay. And was it known in January of 17 1996 that the position information could be reported 18 as a change in position? 19 A. Generally speaking, the term that could 20 be reported was relative coordinates or absolute 21 coordinates, which would in this case correspond to 22 change in position or absolute position -- 23 Q. Okay. 24 A. -- respectively. 25 Q. And how was relative position determined?</p>
<p>BRIAN VON HERZEN, Ph.D. Page 34</p> <p>1 And I'm just going to note for the 2 record that it looks like the copy of this patent 3 that we pulled out of the production for some 4 reason came from the 3M production, and for some 5 reason they marked it "Confidential - Attorneys' 6 Eyes Only." I think we can all agree that an 7 issued patent is not confidential to 3M. 8 BY MR. DeBRUINE: 9 Q. So with reference to Figure 1C, does that 10 show an exemplary touch pad with capacitive nodes? 11 Do you understand? 12 A. In conjunction with Figures 1A and 1B, 13 yes, Figure 1C does show such an array of nodes. 14 Q. Okay. And certain of those nodes are 15 connected together by lines running in a horizontal 16 direction; is that correct? 17 A. Yes, they are. 18 Q. Okay. And others are connected together 19 by conductive lines in a horizontal direction; is 20 that correct? 21 A. Yes. As I stated before, some nodes are 22 horizontal. And you may have wanted to say some 23 nodes are vertical. 24 Q. That's what I meant to say. 25 A. Very well.</p>	<p>BRIAN VON HERZEN, Ph.D. Page 36</p> <p>1 MS. MEHTA: Objection. Vague. 2 THE WITNESS: In general, relative 3 position would generally be determined by the new 4 position relative to an earlier or previous 5 position or other reference location. 6 BY MR. DeBRUINE: 7 Q. Okay. So the relative position 8 determines the amount of or the distance between a 9 previous position and a current position; is that 10 correct? Do I understand you correct? 11 A. By one way of example, relative position 12 could use a previous position as the base for 13 determining the change. 14 Q. Okay. And by determining the change, the 15 distance between those two points is calculated; 16 correct? 17 A. Yes. The relative offset in the X 18 direction and the relative offset in the Y 19 direction would generally be reported. 20 Q. And in January of 1996, that was 21 generally referred to as Delta X, Delta Y; is that 22 correct? 23 MS. MEHTA: Objection. Foundation. 24 THE WITNESS: That could be one of many 25 representations used for the change.</p>

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1 BY MR. DeBRUINE:
2 Q. And when you say "absolute position,"
3 what do you mean?
4 A. Absolute position would generally be
5 based on a fixed reference that doesn't change as a
6 function of time, and that provided the origin for
7 determining a position location.
8 Q. Okay. So if I understand you correctly,
9 the absolute position is simply the position of the
10 finger at that particular point in time?
11 A. Relative to some origin, yes.
12 Q. When you say "relative to some origin,"
13 what do you mean?
14 A. There's always an origin to a coordinate
15 system.
16 Q. I see.
17 A. And that origin forms the basis for an
18 absolute coordinate system --
19 Q. Okay.
20 A. -- along with the axis.
21 Q. And in January of 1996, it was known by
22 those skilled in the art how to determine the
23 intervals of time during which it was present on a
24 touch pad; is that correct?
25 A. Is your question in reference to one of

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1 patents-at-issue in this case?
2 Q. My question is as stated: One of
3 ordinary skill in the art in January of 1996 would
4 have known how to calculate a period of time during
5 which a user -- an object is in contact with a touch
6 pad; is that correct?
7 A. One of ordinary skill in the art at the
8 time of -- time frame of January 1996 would be able
9 to calculate time intervals based on the time
10 duration of particular events.
11 Q. And the time duration of particular
12 events being the beginning and ending of contact
13 with the touch pad?
14 A. Depending on how that's defined, one
15 could certainly measure time intervals of such
16 events.
17 MR. DeBRUINE: Okay. We've been going
18 for about an hour. Do you want to take a quick
19 break?
20 MS. MEHTA: Sure.
21 THE VIDEOGRAPHER: Off the record at
22 10:25.
23 (Recess taken.)
24 THE VIDEOGRAPHER: We are back on the
25 record at 10:41.

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1 BY MR. DeBRUINE:
2 Q. All right. Dr. Von Herzen, beginning on
3 Page 41 of your declaration, Exhibit 1, that section
4 begins down at the bottom "Statement of Opinions -
5 '659 Patent."
6 Do you see that?
7 A. Yes, I do.
8 Q. And then on the next page, you give your
9 opinion regarding the level of ordinary skill in the
10 art in the connection with that patent; is that
11 correct?
12 A. Yes.
13 Q. And your opinion there is the same as
14 with regard to the '352 patent; is that correct?
15 A. Yes.
16 Q. Is there any other information with
17 regard to the '659 patent that you've reviewed in
18 arriving at this opinion other than what we've
19 already discussed with the '352 patent?
20 A. I reviewed the '659 patent, its file
21 history, and associated information in arriving at
22 my opinions.
23 MR. DeBRUINE: Okay. Number 6.
24 (Whereupon, Plaintiff's Exhibit 6 was
25 marked for identification.)

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1 BY MR. DeBRUINE:
2 Q. And, sir, I've handed you what's been
3 marked as Exhibit 6, which is a copy of U.S. Patent
4 7,495,659.
5 Do you have that?
6 A. Yes.
7 Q. Okay. I'd like to explore some of your
8 opinions with regard to this patent. In particular,
9 I'd like to start with the term "native sensor
10 coordinates."
11 As used in Claims 1 and 6 of the '659
12 patent, what do you believe a proper construction of
13 the phrase "native sensor coordinates" is?
14 A. Native sensor coordinates refers to the
15 sensor coordinates of a touch pad.
16 Q. Okay. And when you say native sensor --
17 excuse me -- "sensor coordinates of a touch pad,"
18 what do you mean?
19 A. I mean the sensor coordinates of a touch
20 pad as we discussed relative to some origin which
21 forms the origin of the touch pad coordinates.
22 Q. Okay. And just so I'm clear, are we
23 talking about the coordinates of the physical
24 sensors?
25 A. They are the coordinates of the sensors,

<p>BRIAN VON HERZEN, Ph.D. Page 41</p> <p>1 and the sensors are physical. 2 Q. So for instance, if we look at Figure 1 3 of the patent, the '659 patent, on the left-hand 4 side those show a number of conductive lines running 5 in the horizontal and the vertical direction; 6 correct? 7 A. Yes, they do. 8 Q. And that is a general representation of 9 one implementation of a touch pad; is that correct? 10 MS. MEHTA: Objection. Form. Vague. 11 THE WITNESS: This shows one embodiment 12 of a touch pad. And Figure 1, it illustrates 13 sensor coordinates as represented by the X and Y 14 directions. 15 BY MR. DeBRUINE: 16 Q. Okay. And now are the, in your opinion, 17 the native sensor coordinates the places where those 18 conductive traces intersect? 19 A. No. I would not characterize that. 20 Q. So the native sensor coordinates can be 21 points that are interpolated between the physical 22 sensors as we discussed earlier? Is that your 23 opinion? 24 A. My opinion is that native sensor 25 coordinates are like, by metaphor, longitude and</p>	<p>BRIAN VON HERZEN, Ph.D. Page 43</p> <p>1 coordinates. The noise would have to be -- have 2 some effect on the accuracy of particular 3 coordinates or position that were reported on a 4 touch pad. 5 Q. Okay. Is there a difference, in your 6 mind, between native sensor coordinates and the 7 discernible coordinates in a particular touch pad? 8 A. The native sensor coordinates refer to 9 the actual sensor coordinates of the touch pad. 10 And as represented in Figure 1, the X and Y axes 11 represent axes of a particular coordinate system 12 for that touch pad. 13 The question of accuracy and precision 14 are somewhat independent of the coordinate system 15 that is set up for a touch pad. Those are somewhat 16 orthogonal issues. 17 Q. In the context of Claim 1 and 6 when it 18 says "native sensor coordinates," in your mind, does 19 that mean any physical point on the touch pad with 20 reference to a coordinate system? 21 MS. MEHTA: Objection. Vague. 22 THE WITNESS: Could you repeat the 23 question, please? 24 MR. DeBRUINE: Can you read the question 25 back?</p>
<p>BRIAN VON HERZEN, Ph.D. Page 42</p> <p>1 latitude. Any particular place on the earth has 2 both a longitude and a latitude. That represents 3 an example of coordinates in the case of 4 positioning on the globe. 5 In the case of positioning on a touch 6 pad, native sensor coordinates refers to the sensor 7 coordinates of the touch pad such that any location 8 on that touch pad would have a set of native sensor 9 coordinates corresponding to the coordinates on the 10 touch pad. 11 Q. Okay. And for any given touch pad, is 12 there any limit on the number of coordinates that 13 the touch pad can determine? 14 MS. MEHTA: Objection. Vague. 15 Speculation. 16 THE WITNESS: That would depend on the 17 context of the particular situation you wanted to 18 discuss. 19 BY MR. DeBRUINE: 20 Q. Okay. How would it depend? 21 A. Well, for example, noise would certainly 22 be present in a physical system. And the presence 23 of that noise would have an influence on the 24 maximum resolution, for example, of a touch pad. 25 And that would influence the number of discernible</p>	<p>BRIAN VON HERZEN, Ph.D. Page 44</p> <p>1 (Record read.) 2 THE WITNESS: In the context of Claim 1, 3 the native sensor coordinates refer to a coordinate 4 system, and that coordinate system is based upon 5 the sensor coordinates of the touch pad. And so 6 that coordinate system provides an approach to 7 determining location of a position on the touch pad 8 and provides a frame of reference for identifying 9 that location. 10 BY MR. DeBRUINE: 11 Q. Okay. So am I correct in understanding 12 that the native sensor coordinates are a reference 13 simply to the coordinate system used? 14 A. Yes, in the sense that Claim 1 talks 15 about mapping the touch pad surface, which is a 16 two-dimensional manifold, into a native sensor 17 coordinate. So that means having a coordinate 18 system, in this case a native coordinate system, 19 that maps the touch pad surface into this 20 coordinate system. 21 Q. Okay. And how do the sensors map the 22 surface into a coordinate system? 23 MS. MEHTA: Objection. Vague. 24 THE WITNESS: Well, the sensors are 25 configured to map the touch pad surface into native</p>

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1 sensor coordinates by taking measurements that
2 enable the inference of approximate coordinate
3 values based on the measurement results.
4 BY MR. DeBRUINE:
5 Q. And is it those approximate locations
6 based on the measurement results that are the native
7 sensor coordinates, in your mind?
8 MS. MEHTA: Vague.
9 THE WITNESS: In my mind, the native
10 sensor coordinates are the sensor coordinates of
11 the touch pad. And that refers to the coordinates
12 of the touch pad as reported by the sensors.
13 BY MR. DeBRUINE:
14 Q. Okay. Now --
15 A. And I might add, it's with reference to
16 the native sensor coordinate system. And so those
17 coordinates are interpreted in the context of that
18 native sensor coordinate system.
19 Q. Okay. Now, the coordinates as reported
20 by the sensors, from your last answer, that -- would
21 that include the interpretation of the raw analog
22 data to arrive at a particular coordinate?
23 MS. MEHTA: Objection. Vague.
24 Foundation.
25 THE WITNESS: That depends on what you

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1 mean by "this interpretation."
2 BY MR. DeBRUINE:
3 Q. Well, a previous answer to a previous
4 question, you talked about how the sensor would
5 interpolate the data, the sensor values, to arrive
6 at an approximate coordinate position; is that
7 correct?
8 A. I did discuss interpolation, yes.
9 Q. And so when you say that the native
10 sensor coordinates, or the coordinates as reported
11 by the sensors, those coordinates, in order to
12 arrive at those coordinates, you would have to do
13 some interpolation of the data, the electrical
14 signals coming off the sensors; is that correct?
15 MS. MEHTA: Objection. Mischaracterizes
16 his testimony.
17 THE WITNESS: Well, in actuality, a
18 number of steps could happen in the order, and they
19 could include transformation into other coordinate
20 systems. They could include the basis functions
21 that we discussed previously for interpolation of
22 interstitial values, as well as noise management.
23 So in that context, in general, it's
24 possible to either transform first or to
25 interpolate. In fact they could be done in

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1 different orders.
2 BY MR. DeBRUINE:
3 Q. Okay. But I guess my question is: In
4 order to arrive at coordinates, the native sensor
5 coordinates, that raw data has to be interpreted in
6 some way?
7 A. My understanding is that the Claim 1 use
8 of the term "native sensor coordinates" refers to a
9 touch pad surface. So Claim 1 is directed to an
10 assembly, and that assembly has on it sensors. And
11 these sensors are configured to map this
12 two-dimensional surface of the touch pad into a
13 native sensor coordinate system. And I believe
14 that's illustrated fairly well in Figure 1 where it
15 shows an X/Y coordinate system that is set up to
16 map the touch pad's surface. So these two axes, X
17 and Y, refer to a coordinate system.
18 Q. Okay. And so the native sensor
19 coordinates are the coordinates that are interpreted
20 based on the signals coming off of those horizontal
21 and vertical lines; is that correct?
22 MS. MEHTA: Objection. Vague.
23 THE WITNESS: Well, Claim 1 actually
24 talks further down about receiving from one or more
25 sensors native values are that associated with

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1 native sensor coordinates. So in that sense, the
2 native sensor coordinates are the result of sensors
3 configured to map this two-dimensional surface into
4 the native sensor coordinate system.
5 But I believe you may be referring to
6 native values perhaps, which would represent values
7 associated with a native sensor coordinates.
8 BY MR. DeBRUINE:
9 Q. Well, I'm not there. I'm on native
10 sensor coordinates, still trying to understand what
11 you believe the claim means by "native sensor
12 coordinates."
13 Now, are those the coordinates that are
14 interpreted based on the signals coming off from the
15 sensors?
16 MS. MEHTA: Objection. Asked and
17 answered.
18 THE WITNESS: The sensors are configured
19 to map the touch pad surface into native sensor
20 coordinates. Those coordinates are part of a
21 coordinate system that is a mathematical mapping of
22 the two-dimensional touch pad surface onto the
23 native sensor coordinate system.
24 BY MR. DeBRUINE:
25 Q. Okay. And -- all right. So let me get

<p>BRIAN VON HERZEN, Ph.D. Page 49</p> <p>1 this straight. 2 We have a touch pad surface; correct? 3 A. Yes. 4 Q. We've chosen a coordinate system, for 5 example, let's say an X/Y Cartesian coordinate 6 system, correct, for example? 7 A. Are you referring by X/Y as a native 8 sensor coordinate system? 9 Q. Well, I'm trying to understand what you 10 mean by "native coordinate sensor system." So let's 11 take it a step at a time. 12 A. All right. 13 Q. Touch pad surface; correct? 14 A. Yes. We have a touch pad surface in the 15 context of '659. 16 Q. Okay. And we have sensors underneath 17 that surface; correct? 18 A. That is correct. 19 Q. And for example, in Figure 1, those 20 sensors are lines running perpendicular to each 21 other in a vertical and horizontal direction; is 22 that correct? 23 A. There are lines running horizontally and 24 vertically. I just want to confirm that Element 6 25 is in fact what they're referring to there.</p>	<p>BRIAN VON HERZEN, Ph.D. Page 51</p> <p>1 A. There may be fewer sensors than 2 coordinates, so I don't believe that would be 3 correct. 4 Q. Okay. So a native sensor coordinate may 5 fall in between the physical sensors; correct? 6 A. In general, a coordinate system could 7 comprise more coordinates than the intersections of 8 X and Y sensors; that is correct. 9 Q. Well, in general, in the context of the 10 terms "native sensor coordinates," it's your 11 opinion, is it not, that the native sensor 12 coordinates is not limited to the physical locations 13 of the conductive sensors in the touch pad; is that 14 correct? 15 A. Please repeat the question. 16 (Record read.) 17 THE WITNESS: Every native sensor 18 coordinate corresponds to a physical location. 19 There may be more sensor coordinates than there are 20 sensors in the sense that interpolation enables the 21 inference of many coordinates for any particular 22 pair of sensors. 23 So in summary, the mapping of a touch 24 pad surface into native sensor coordinates involves 25 the mapping of a two-dimensional surface into a</p>
<p>BRIAN VON HERZEN, Ph.D. Page 50</p> <p>1 Electrodes, 6, yes. Those appears to be 2 sensor electrodes. 3 Q. Okay. And those electrodes are 4 configured to map the touch pad surface into an X 5 and Y coordinate system? 6 A. In the embodiment of Figure 1, the 7 sensors are configured to map this touch pad 8 surface into a coordinate system. 9 Q. Okay. And in that context, what is the 10 native sensor coordinate, or the coordinates -- what 11 is a native sensor coordinate with respect to Figure 12 1? 13 A. It is the sensor coordinates of the 14 touch pad. 15 Q. You said, though, that native sensor 16 coordinates are not limited to the coordinates of 17 the physical sensors -- 18 MS. MEHTA: Objection. Misstates the 19 testimony. 20 BY MR. DeBRUINE: 21 Q. -- is that correct? 22 A. I don't believe I said that. 23 Q. Well, okay. Is it your opinion that 24 native sensor coordinates are the physical location 25 of the conductive sensors?</p>	<p>BRIAN VON HERZEN, Ph.D. Page 52</p> <p>1 coordinate system that can comprise many values. 2 And those values, in general, can be more or less 3 than the number of intersections of a set of wires 4 or lines. 5 Q. Okay. 6 A. Nonetheless, they correspond to the 7 sensor coordinates of the touch pad. 8 Q. So let's take a look at the top of 9 Page 44 in your declaration, Exhibit 1, please, and 10 the first full sentence that begins at Line 2. It 11 says, "To one of ordinary skill in the art, this 12 would have been understood to mean that the sensors 13 are configured to map the touch pad into the 14 physical - or native - coordinates of the sensors." 15 Do you see that? 16 A. Yes, I do. 17 Q. Just to confirm, you don't mean that to 18 be limited to the physical coordinates of the actual 19 conductive lines? 20 A. No. It's meant to be part of the 21 coordinate system, as it states in Line 1. And 22 rewinding here to the beginning of that sentence, 23 "Here, the claim recites that these sensors are 24 configured to map the touch pad surface into a 25 specific coordinate system, namely, into 'native</p>

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1 sensor coordinates."
2 So the term "native sensor coordinates"
3 should be understood in the context of a specific
4 coordinate system, namely, the coordinate system of
5 the sensors of the touch pad.
6 Q. Okay. Now, let's talk about logical
7 device units.
8 What -- in your opinion, how would one of
9 ordinary skill in the art understand the phrase
10 "logical device units" in these certain claims of
11 the patent?
12 A. In my opinion, one or more logical
13 device units refers to one or more actuation zones
14 representing one or more areas of the track pad
15 encompassing native sensor coordinates.
16 Q. And what is your basis for that opinion?
17 A. Well, it's based on the use of this term
18 in Claim 1 as well as how it's used in the patent,
19 and what one of ordinary skill in the art would
20 understand a limitation of one or more logical
21 device units to be, among other reasons.
22 Q. When you say a logical device units is an
23 actuation zone, what do you mean?
24 A. Well, an actuation zone, for example,
25 could refer to a zone such as the zones illustrated

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1 in Figure 10 of the '659 patent.
2 Q. I understand that's an illustration.
3 A. Yes.
4 Q. Can you tell me -- can you give me a
5 definition of what you mean by "actuation zone" in
6 your interpretation of this claim language?
7 A. An actuation zone is a region that is
8 sensitive to touch. It's a subset of the touch or
9 track pad surface that responds to touch and may or
10 may not provide coordinate transformation.
11 Q. What do you mean by "coordinate
12 transformation"?
13 A. Coordinate transformation is, in
14 general, a process of transforming from one
15 coordinate system to another coordinate system.
16 Q. But that's not, in your mind, a limit, a
17 requirement for something to be an actuation zone?
18 A. No. An actuation zone represent areas
19 of a touch pad that can be actuated by a user.
20 Q. Okay. On Page 46, there's a heading,
21 "New values associated with logical device units."
22 Do you see that?
23 A. Yes.
24 Q. Can you point to me what discussion
25 you're referencing on Line 13 with regard to that

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1 claim term?
2 A. Okay. I may have actually been
3 referring to further down. So if you look, for
4 example, on Page 47, Lines 20 and 21, it discusses
5 that "The touch pad assembly also includes a
6 controller that divides the surface of the touch
7 pad into logical device units that represent areas
8 of the touch pad that can be actuated by a user,
9 receives the native values of the native sensor
10 coordinates from the sensors, adjusts the native
11 values of the native sensor coordinates into a new
12 value associated with the logical device units, and
13 reports the new value of the logical device units
14 to a host device."
15 Q. Okay. And in your opinion, how would one
16 of ordinary skill in the art interpret the phrase
17 "news values associated with logical device units"?
18 A. The new values could be adjusted
19 coordinates from the native values. And those
20 adjustments could include a transformation,
21 truncation, or rounding or other basis function.
22 MR. DeBRUINE: Can I have that answer
23 read back, please?
24 (Record read.)
25 BY MR. DeBRUINE:

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1 Q. Okay. Now, I understand that those are
2 examples of what the new values could be. In other
3 words, it could be an adjustment of the coordinates.
4 Is that your opinion of what the new
5 values associated with the logical device units are
6 limited to? In other words, is that your definition
7 of that term?
8 MS. MEHTA: Objection. Vague.
9 THE WITNESS: That notion of new values
10 being transformed from the native values is
11 inclusive of that term such that new values are
12 associated with logical device units and are based
13 on an adjustment of the native values coming from
14 the native coordinate system.
15 BY MR. DeBRUINE:
16 Q. So can you give me your construction of
17 the term "new values associated with logical device
18 units"?
19 A. I haven't specifically construed that in
20 this place. But I have given you some examples as
21 indicated, for example, on Page 47 of how the new
22 values can be calculated from the native values.
23 Q. Okay. I understand you've given me some
24 examples. But sitting here now, can you give me
25 your construction of the phrase "new values

<p>BRIAN VON HERZEN, Ph.D. Page 57</p> <p>1 associated with logical device units"?</p> <p>2 MS. MEHTA: Objection. Asked and</p> <p>3 answered.</p> <p>4 THE WITNESS: Could you read back the</p> <p>5 question, please?</p> <p>6 (Record read.)</p> <p>7 MS. MEHTA: Same objection. Asked and</p> <p>8 answered.</p> <p>9 THE WITNESS: At this time I can provide</p> <p>10 you with examples of the new values associated with</p> <p>11 logical device units as described on Page 47.</p> <p>12 BY MR. DeBRUINE:</p> <p>13 Q. Okay. On the bottom of Page 48, that</p> <p>14 last paragraph, you take exception with Elan's</p> <p>15 proposed construction of discrete user actuation</p> <p>16 zones representing areas of the touch pad</p> <p>17 encompassing groups of native sensor coordinates.</p> <p>18 Do you see that?</p> <p>19 A. Yes, I do.</p> <p>20 Q. And in particular, in the last sentence,</p> <p>21 you say that "one of ordinary skill in the art would</p> <p>22 understand that two zones could overlap."</p> <p>23 Do you see that?</p> <p>24 A. Yes, I do.</p> <p>25 Q. What is your basis for that opinion?</p>	<p>BRIAN VON HERZEN, Ph.D. Page 59</p> <p>1 through; is that correct?</p> <p>2 MS. MEHTA: Objection. Vague.</p> <p>3 THE WITNESS: I believe that removing</p> <p>4 redundant or non-essential data refers to</p> <p>5 eliminating data that is redundant or non-essential</p> <p>6 to the processing of touch inputs.</p> <p>7 BY MR. DeBRUINE:</p> <p>8 Q. Okay. But if some data that is redundant</p> <p>9 or non-essential to the processing of touch inputs</p> <p>10 is not eliminated, that would still fall within the</p> <p>11 meaning of this phrase, to your mind; is that</p> <p>12 correct?</p> <p>13 MS. MEHTA: Objection. Vague.</p> <p>14 Incomplete hypothetical.</p> <p>15 THE WITNESS: I assume we're talking in</p> <p>16 the context of Claim 2?</p> <p>17 BY MR. DeBRUINE:</p> <p>18 Q. Yes.</p> <p>19 A. Removing redundant or non-essential data</p> <p>20 requires removing some of the data that's redundant</p> <p>21 or non-essential.</p> <p>22 Q. Okay. And what is your basis for that</p> <p>23 opinion?</p> <p>24 A. My basis includes the specification at</p> <p>25 Column 6 and 7 where it discusses significant</p>
<p>BRIAN VON HERZEN, Ph.D. Page 58</p> <p>1 A. It's based upon the claims, their</p> <p>2 limitations, and the specification of the '659</p> <p>3 patent.</p> <p>4 Q. Okay. How do the claims of the '659</p> <p>5 patent support that opinion?</p> <p>6 A. When I read the claims of the '659, I do</p> <p>7 it in the context of the specification and the</p> <p>8 figures. And I find nothing in the specification</p> <p>9 or the figures that limit the logical device units</p> <p>10 to non-overlapping regions.</p> <p>11 Q. All right. Is there a single example in</p> <p>12 the claim or the specifications where the logical</p> <p>13 device units overlap?</p> <p>14 A. While there may not be a particular</p> <p>15 example in the '659 of overlapping, when I review</p> <p>16 the '659 specification, figures, and file history,</p> <p>17 I find that there's nothing to preclude the</p> <p>18 overlapping of logical device units.</p> <p>19 Q. Page 49 begins the discussion of the</p> <p>20 phrase "removing redundant or non-essential data."</p> <p>21 Do you see that?</p> <p>22 A. Yes, I do.</p> <p>23 Q. And it's your opinion that that should be</p> <p>24 interpreted to mean removing substantial redundant</p> <p>25 or non-essential data but permitting some to pass</p>	<p>BRIAN VON HERZEN, Ph.D. Page 60</p> <p>1 changes as compared to ever so minor changes</p> <p>2 because of finger balance, minor movements, et</p> <p>3 cetera. And further, in Figure 7 where it refers</p> <p>4 to noise events that also could comprise redundant</p> <p>5 or non-essential data.</p> <p>6 Q. Okay. And how does that support your</p> <p>7 opinion that removing redundant or non-essential</p> <p>8 data means removing some redundant or non-essential</p> <p>9 data?</p> <p>10 A. One of ordinary skill in the art would</p> <p>11 understand that this disclosure means that some of</p> <p>12 the data is redundant and should be removed to</p> <p>13 practice Claim 2. In the example of noise events</p> <p>14 as discussed in Column 7, there are noise levels</p> <p>15 that are specific to one application versus</p> <p>16 another, and therefore, different levels of noise</p> <p>17 may cause different amounts of data to be removed</p> <p>18 for different applications. And therefore, what</p> <p>19 Claim 2 requires is that the data be removed. But</p> <p>20 since one application may require more removal of</p> <p>21 data than another application, that could vary from</p> <p>22 one point to another.</p> <p>23 Therefore, it's reasonable from the</p> <p>24 perspective of one of skilled in the art to infer</p> <p>25 that the removal would depend on the context of</p>

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1 that particular application. Therefore, some of
2 that data would be removed in one context and more
3 of the data could be removed in another context.
4 Q. And that would be a determination in the
5 particular context of what's essential or redundant;
6 is that correct?
7 A. Yes. I believe that the notion of
8 redundant or non-essential data varies depending on
9 the application in which it's being used, and
10 therefore, the level of data elimination could vary
11 from one process to the other. And therefore, one
12 of ordinary skill in the art would understand that
13 removing redundant or non-essential data would
14 involve removing some of that data, not necessarily
15 all of it.
16 MR. DeBRUINE: Okay. We are about out
17 of tape, so why don't we take a break and let him
18 change that.
19 THE VIDEOGRAPHER: This is the end of
20 Volume I, Videotape No. 1 in the deposition of
21 Brian Von Herzen on April 1, 2010. The time is
22 11:30. We are off the record.
23 (Recess taken.)
24 THE VIDEOGRAPHER: This is the beginning
25 of Volume I, Videotape No. 2 in the deposition of

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1 Brian Von Herzen on April 1, 2010. The time is
2 11:43. We are back on the record.
3 BY MR. DeBRUINE:
4 Q. Okay. Dr. Von Herzen, as we're working
5 our way backwards through your report, let's talk
6 about the '218 patent. And your opinion starts on
7 Page 34.
8 (Whereupon, Plaintiff's Exhibit 7 was
9 marked for identification.)
10 BY MR. DeBRUINE:
11 Q. Dr. Von Herzen, you have been handed a
12 document marked Exhibit 7, which is a copy of U.S.
13 Patent 5,764,218 to Della Bona, et al.
14 Do you have that?
15 A. Yes, I do.
16 Q. And that's the '218 patent referenced in
17 your opinion; correct?
18 A. Yes, it is.
19 Q. Okay. Let's talk about the term "contact
20 intervals."
21 And it's your opinion that Elan's
22 proposed construction somehow limits the term
23 "contact intervals"; is that correct?
24 A. Yes, that's correct.
25 Q. And you give the example of the fact that

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1 Elan's definition refers to user contact with a
2 touch pad as opposed to a touch sensitive input
3 device; is that correct?
4 A. Yes.
5 Q. Are there any other limitations you
6 believe are improperly present in Elan's proposed
7 definition?
8 A. Well, this is an example that I've cited
9 here in the report of a limitation. There could be
10 others in the context of the patent as well.
11 Q. In your opinion, what, if any, other
12 limitations are improperly put into Elan's proposed
13 construction of this term?
14 A. Well, by way of example, Elan's
15 construction requires an amount of time during
16 which there is a continuous user contact with the
17 touch pad; whereas, the construction that I've
18 utilized and considered is that the term "contact
19 interval" is temporal duration of the user's
20 contact with the touch sensitive input device.
21 Now, the distinction here is that --
22 another example in which Elan's construction is
23 overly limiting is that Elan's construction
24 requires a continuous user contact, which I believe
25 is not a proper limitation of that term.

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1 Q. And why is that?
2 A. Well, the patent discusses a number of
3 situations in which that may not be the case.
4 Q. Such as?
5 A. Well, for example, in Column 13, it
6 discusses, "In addition" --
7 Q. Excuse me. Can you tell me which line
8 that is?
9 A. Yes. Starting on Line 17.
10 Q. Okay.
11 A. "In addition, alternative embodiments of
12 the present invention determine the Z axis velocity
13 and acceleration of the contact in order to further
14 discern between operations. Z axis sensitivity may
15 also be used to discern operations by indicating
16 how far the finger was lifted off the touch pad
17 during the operation. Thus, while certain
18 exemplary embodiments have been described and shown
19 in the accompanying drawings, it is to be
20 understood that the invention is not limited by the
21 foregoing illustrative details."
22 So what that is telling me is that, as
23 is commonly known by one skilled in the art, the
24 capacitance measures not only touch but also
25 proximity. And certainly in the presence of dust

<p>BRIAN VON HERZEN, Ph.D. Page 65</p> <p>1 and other objects that may be on the touch pad, 2 it's possible for a finger to roll over a piece of 3 dust and still have capacitance but not be in 4 continuous contact. 5 So this is one example where in fact 6 this Z axis measurement would be -- would determine 7 the extent to which the finger was still in 8 substantial contact, but perhaps maybe over a piece 9 of dust when it's moving over a particular region 10 of the touch pad. So in that case, I believe that 11 continuous contact is overly limiting based on this 12 understanding. 13 Q. Okay. That example wasn't cited in your 14 declaration, was it? 15 A. No. It was merely an example. I mean, 16 you've asked me for additional examples. I 17 provided one in my report. And you asked me to 18 find another one. And here's another one that I 19 found in the patent. 20 Q. Are there any other ways that you believe 21 Elan's proposed construction is unduly limiting? 22 A. I expect there are. Given enough time 23 with the patent, I could find others as I found 24 this one. 25 Q. As you sit here right now, are you aware</p>	<p>BRIAN VON HERZEN, Ph.D. Page 67</p> <p>1 A. A cursor controller could be a person 2 controlling the cursor. 3 Q. Okay. Does the term "cursor controller" 4 show up anywhere in the claims in the '659 patent? 5 MS. MEHTA: You mean the '218 patent? 6 MR. DeBRUINE: I mean the '218 patent. 7 I'm sitting here with the '659 in front of me. I 8 apologize. 9 THE WITNESS: Okay. To clarify, and 10 recalling my review of the '218 patent, the person 11 that I mentioned is the operator who is operating 12 the cursor controller that could be a touch 13 sensitive input device. And that, in turn, induces 14 operations such as drag, single click and multiple 15 click. 16 BY MR. DeBRUINE: 17 Q. Okay. I believe my question was, though, 18 whether the term "cursor controller" appears 19 anywhere in the claims of the '218 patent. 20 A. Yes. 21 Q. Where? 22 A. I'm sorry. I meant "yes," that is your 23 question. Let me get back to that. I was -- I had 24 to go down a couple levels to get back to your 25 question.</p>
<p>BRIAN VON HERZEN, Ph.D. Page 66</p> <p>1 of any other undue limitations that Elan's 2 construction places on the term "contact interval"? 3 A. While I may not be aware at the moment 4 of other limitations, I've provided two examples, 5 where given enough time with the patent, I was able 6 to find additional examples in which this 7 particular construction was overly limiting. 8 Q. Okay. Let's talk about the term "cursor 9 control operations." And your discussion begins at 10 Page 36. 11 And in your opinion, cursor control 12 operations should be construed to mean operations by 13 a cursor controller, such as drag, single click and 14 multiple click; is that correct? 15 A. Yes, that's correct. 16 Q. Okay. What is a cursor controller in the 17 context of your definition? 18 A. A cursor controller is that which 19 controls the cursor. 20 Q. Can you clarify? Are you talking about a 21 particular piece of hardware? Are you talking about 22 software? Are you talking about everything from the 23 physical mouse through the driver software on the 24 host? What do you mean by "that which controls the 25 cursor"?</p>	<p>BRIAN VON HERZEN, Ph.D. Page 68</p> <p>1 While the term "cursor controller" may 2 not directly appear in the claims on my scan 3 through all these claims, it does appear in the 4 specification as well as the figures of the '218 5 patent. 6 Q. Okay. Where does it appear in the 7 specifications? 8 A. Column 4, for example, and Figure 1. 9 Q. And where particularly in Column 4 does 10 the term "cursor controller" appear? 11 A. Line 20 and 21. 12 Q. Okay. Now, it's your opinion that the 13 cursor control operations do not mean cursor 14 tracking operations; is that correct? 15 A. They are not limited to cursor tracking 16 operations; correct. 17 Q. And your basis for that is, in your 18 opinion, that the '218 patent does not disclose 19 three different cursor tracking operations; is that 20 correct? 21 A. That is correct. 22 Q. Okay. Now, the '218 patent discloses 23 simple cursor tracking as one operation; is that 24 correct? 25 A. I'm sorry. Could you please read back</p>

<p>BRIAN VON HERZEN, Ph.D. Page 69</p> <p>1 the question? 2 (Record read.) 3 THE WITNESS: If by "simple cursor 4 tracking" you're referring to the cursor tracking 5 shown in Figure 5A; that is correct. 6 BY MR. DeBRUINE: 7 Q. And that's determined based on -- that 8 operation is entered based on the length of time the 9 user touches the input surface; correct? 10 MS. MEHTA: Objection. Vague. 11 THE WITNESS: If by "based on" you're 12 referring to the fact that it uses a Time T, and in 13 5A, T1 greater than T max, then it certainly 14 utilizes that time in formulating its cursor 15 tracking operation. 16 BY MR. DeBRUINE: 17 Q. Okay. The '218 patent also discloses a 18 drag operation; is that correct? 19 A. Yes, that's correct. 20 Q. And the drag operation involves cursor 21 movement, cursor tracking? 22 MS. MEHTA: Vague. 23 THE WITNESS: Well, dragging involves 24 movement. It could be construed differently than 25 cursor tracking.</p>	<p>BRIAN VON HERZEN, Ph.D. Page 71</p> <p>1 The specification of the '218 patent also 2 describes multi-click and drag operations; is that 3 correct? And for example, it's mentioned in Column 4 5 at about Line 15. 5 A. Yes. Multi-click and drag operations 6 are described in this patent which comprise one of 7 several cursor control operations, some of which do 8 not involve cursor tracking. 9 Q. But multi-click and drag operations 10 involve providing cursor manipulation data to the 11 computer; correct? 12 MS. MEHTA: Objection. Vague. 13 THE WITNESS: I actually characterize it 14 that multi-click and drag operations provide 15 positional information to the computer. 16 BY MR. DeBRUINE: 17 Q. Okay. So multi-click and drag operation 18 would involve cursor movement; correct? 19 A. No, not necessarily. I believe that 20 multi-click and drag operation would provide 21 positional data to the computer. The way the 22 computer utilizes that data would be context 23 dependent. 24 Q. Well, drag generally implies moving an 25 object across the screen; correct?</p>
<p>BRIAN VON HERZEN, Ph.D. Page 70</p> <p>1 BY MR. DeBRUINE: 2 Q. Okay. But it does involve providing 3 positional data regarding where the user's finger is 4 on the input device; correct? 5 MS. MEHTA: Vague. 6 THE WITNESS: Could you repeat the 7 question, please? 8 (Record read.) 9 THE WITNESS: That is correct. 10 BY MR. DeBRUINE: 11 Q. Okay. And the patent also discloses a 12 click and drag operation; correct? 13 A. Yes, it does. 14 Q. And a click and drag operation would also 15 involve providing positional data relative to the 16 location of the user's finger? 17 A. Yes. While the patent specification 18 provides positional data for click and drag, it 19 certainly describes those. The file history 20 specifically recites cursor control operations 21 involving operations that are, for example, single 22 click, multiple click, as well as drag. So -- 23 Q. I understand that, and I'm not asking you 24 about the file history right now. We're talking 25 about the specification.</p>	<p>BRIAN VON HERZEN, Ph.D. Page 72</p> <p>1 MS. MEHTA: Objection. Vague. 2 THE WITNESS: Not necessarily. 3 BY MR. DeBRUINE: 4 Q. In what context of computer input device 5 would a drag operation not involve movement of an 6 object on the screen? 7 A. In the context where the computer 8 device -- I'll start over. 9 In the context where the input device 10 was connected to a computer, and that computer 11 performed an operation that could, for example, 12 make the cursor disappear during the drag 13 operation. 14 Q. But there would still be positional data 15 being used to move some object, if not the cursor, 16 on the screen; is that correct? 17 A. Yes. In many examples, multiple click 18 and drag operations would involve positional data 19 being transferred from the input device to the 20 computer. 21 Q. Okay. And so the -- if I'm -- well, all 22 right. The next term you talk about is the "means 23 for detecting contact intervals," and the 24 corresponding "means for detecting gap intervals," 25 beginning on Page 38.</p>

<p>BRIAN VON HERZEN, Ph.D. Page 73</p> <p>1 Do you see that? 2 A. Yes. 3 Q. And am I correct, in your opinion, the 4 corresponding structure disclosed in the patent is 5 either a count up or a count down timer; is that 6 correct? 7 A. And equivalence thereof; correct. 8 Q. What, in your mind, would be known 9 equivalence for count up or count down timers? 10 A. Count up and count down timer 11 equivalence could comprise software that executes a 12 count up or count down function, firmware that 13 counts up or counts down, or hardware that counts 14 up or counts down, for example. 15 Q. Okay. Now, can a count up or count down 16 timer standing alone determine a contact interval? 17 MS. MEHTA: Objection. Vague. 18 THE WITNESS: A contact interval is a 19 period of time. And a count up or count down timer 20 measures time. So in that sense, it's a way to 21 measure time. 22 BY MR. DeBRUINE: 23 Q. I understand that. But standing alone, 24 can that counter -- how does that counter know when 25 to start counting?</p>	<p>BRIAN VON HERZEN, Ph.D. Page 75</p> <p>1 up or count down timers you're referring to, or are 2 those part of Figures 8 and 9? 3 A. I'm sorry. When you say "those are part 4 of Figures 8 and 9," what do you mean? 5 Q. The count up or count down timers. 6 A. Examples of count up or count down 7 timers can be seen in Figures 8 and 9, also, Column 8 10. 9 Q. All right. Anything else, in your 10 opinion, comprise the apparatus of Claim 5? 11 MS. MEHTA: Objection. Vague. 12 THE WITNESS: I expect I could find 13 other embodiments of the apparatus within the 14 specification. 15 MR. DeBRUINE: We're not going to need 16 to you sit here and read the patent again from 17 scratch. Why don't we say it's lunch time. 18 MS. MEHTA: Sounds good. 19 THE VIDEOGRAPHER: Off the record at 20 12:25. 21 (Luncheon recess taken.) 22 THE VIDEOGRAPHER: We are back on the 23 record at 1:40. 24 MR. DeBRUINE: Okay. Just a quick 25 housekeeping matter.</p>
<p>BRIAN VON HERZEN, Ph.D. Page 74</p> <p>1 MS. MEHTA: Vague. Incomplete 2 hypothetical. 3 THE WITNESS: So are we talking in the 4 context of Claim 5, for example? 5 BY MR. DeBRUINE: 6 Q. Yes. 7 A. All right. 8 Q. Yes. And we're talking in the context of 9 the claim terms that you are purporting to interpret 10 here. 11 A. Right. A count up or count down timer 12 in the context of Claim 5 will initiate its timing 13 when it receives a signal beginning a time period. 14 Q. Okay. And what provides that signal? 15 A. The apparatus of Claim 5. 16 Q. And by "the apparatus of Claim 5," what 17 do you mean? 18 A. Well, Figure 1 shows an example of an 19 embodiment of the apparatus. 20 Q. You mean the entire computer system 21 including the network shown in Figure 1? 22 A. Figure 1 shows a high level view that 23 includes the apparatus, and of which further 24 details are provided in Figures 8 and 9. 25 Q. Okay. So are Figures 8 and 9 the count</p>	<p>BRIAN VON HERZEN, Ph.D. Page 76</p> <p>1 Ms. Mehta and I talked about, before we 2 got back on the record, I'd like to have a 3 different copy of the Miller '077 patent marked as 4 Exhibit 5. The earlier one came from a production 5 that's now got it marked as Attorneys' Eyes Only. 6 So I'd like to have the court reporter mark a 7 document with Bates number APEL0000141 through 167 8 as Exhibit 5. 9 (Whereupon, Plaintiff's Exhibit 5 was 10 marked for identification.) 11 BY MR. DeBRUINE: 12 Q. All right. Let's turn, if we can, to the 13 '353 patent, which in your declaration, Exhibit 1, 14 the discussion begins on Page 24. 15 (Whereupon, Plaintiff's Exhibit 8 was 16 marked for identification.) 17 BY MR. DeBRUINE: 18 Q. Dr. Von Herzen, you have been handed a 19 document marked as Exhibit 8, which is a copy of 20 U.S. Patent 7,274,353 to Chiu, et al. 21 Do you have that? 22 A. Yes, I do. 23 Q. Is that the '353 patent that you provided 24 opinions on in your declaration? 25 A. Yes, it is.</p>

<p>BRIAN VON HERZEN, Ph.D. Page 77</p> <p>1 Q. Okay. Now, your first opinion is in 2 regard to claim elements including terms "a first 3 pattern on said panel," and variations of that show 4 up in Claims 1, 4, 7 and 10. 5 Do you see that? 6 A. Yes, I do. 7 Q. And it is your opinion, is it not, that 8 the first pattern in the asserted claims refers to a 9 pattern that is physically printed on the touch pad? 10 A. Yes, it is. 11 Q. What is the basis for your opinion that 12 that first pattern must be printed on the surface of 13 the touch pad? 14 A. Well, it's based on portions of the 15 specification and the claims, among others. 16 Q. Okay. Can you explain to me how the 17 claims support your opinion that claim element 18 requires a pattern that is printed on the surface of 19 the touch pad? Maybe I should say "the panel." 20 A. Yes. In Claim 1, for example, one of 21 the elements requires a first pattern on said panel 22 for representing a mode switch to switch said touch 23 pad between a key mode and a handwriting mode. So 24 there, the inventors chose the word "a first 25 pattern on said panel" rather than in the panel or</p>	<p>BRIAN VON HERZEN, Ph.D. Page 79</p> <p>1 panel. Claim 1 shows a plurality of second 2 patterns on said plurality of regions. So again, 3 it's "on." It's not "in," it's not "underneath," 4 but it's "on." And similarly, Claim 7 has similar 5 clauses, for example. So numerous examples of 6 those. 7 Q. Okay. You were going on to the 8 specification? 9 A. Yes. 10 Q. Could you point to me what in the 11 specification you believe supports your opinion that 12 the first pattern on said panel requires that the 13 pattern be printed? 14 A. We can start with the summary in Column 15 2, the summary of the invention. "According to the 16 present invention" -- and this is starting at Line 17 6 -- "a capacitive touch pad integrated with key 18 and handwriting functions can provide multiple 19 operation modes such as key pad, handwriting and 20 mouse. The panel on the present touch pad is 21 defined into several regions with plenty of 22 patterns printed thereon for representing the 23 interfaces corresponding to the operation modes. 24 In the key mode, the key patterns among the printed 25 patterns simulate a keyboard. In the handwriting</p>
<p>BRIAN VON HERZEN, Ph.D. Page 78</p> <p>1 underneath the panel. The operative word was "on." 2 And that's further supported in the specification. 3 Q. Okay. If I were to say to you that 4 "someone is on TV," would that person be printed on 5 the surface of the television? 6 A. The use in a colloquial context is very 7 different from that of the '353 patent. 8 Q. Okay. 9 A. So really, when it comes to patterns 10 being on a panel, that's very specific. 11 Q. Okay. Anything else in the claims that 12 you believe supports the requirement that the first 13 pattern be printed on said panel? 14 A. Well, the claims need to be understood 15 in the context of the specification, and the 16 specification -- 17 Q. I don't want to be rude and stop you, but 18 specifically, anything else in the claims of the 19 patent that you could point to to support your 20 opinion that the words "the first pattern on said 21 panel must be printed on the panel"? 22 A. Yes. 23 Q. What are you thinking of in the claims? 24 A. As additional examples of this, 25 certainly Claim 4 indicates a first pattern on said</p>	<p>BRIAN VON HERZEN, Ph.D. Page 80</p> <p>1 mode, the handwriting region among the defined 2 regions serves to handwriting input." 3 So here we are seeing a summary of the 4 invention that indicates that the present invention 5 is an invention with plenty of patterns printed 6 thereon. 7 Q. Okay. Anything else in the specification 8 that supports your opinion? 9 A. Yes. Figure 1, for example, the bottom 10 portion of which illustrates the actual physical 11 touch pad with patterns printed on the front of the 12 touch pad, and various of those patterns being used 13 in various modes of the touch pad operation. 14 In particular, the bottom portion of the 15 Figure 1 diagram is intended to be the physical 16 touch pad itself, and the top three diagrams are 17 meant to be operation of that touch pad in various 18 modes using a subset of patterns printed on the 19 touch pad on the bottom. 20 Q. Okay. Where does the specification say 21 that? 22 A. Well, first of all, the three arrows 23 emanating from the lower square of Figure 1, these 24 arrows appear in the horizontal middle of the 25 diagram, show that the one physical touch pad on</p>

<p>BRIAN VON HERZEN, Ph.D. Page 81</p> <p>1 the bottom can implement these three modes, the top 2 left being the key mode, the top middle being the 3 handwriting mode, and the top right being the mouse 4 mode. 5 And so this diagram is interpreted by 6 one of ordinary skill in the art shows how this 7 printed pattern on the bottom is used in each of 8 the three modes on the top vis-a-vis the arrows 9 that appear there. 10 Q. So if I'm clear, it's your testimony that 11 what is printed on the bottom-most representation of 12 Figure 1, those numbers and all of those words 13 remain on the screen in each of the three examples 14 given above it; is that correct? 15 A. Can you repeat the question, please? 16 (Record read.) 17 THE WITNESS: I believe the printing on 18 the bottom panel comprise the patterns and symbols 19 and numbers and letters that are below the box 20 represented by LCD 22. And that would be the 21 bottom square in Figure 1, the bottom large square 22 in Figure 1. 23 BY MR. DeBRUINE: 24 Q. Okay. 25 A. Item Number 10 appears to point to that.</p>	<p>BRIAN VON HERZEN, Ph.D. Page 83</p> <p>1 patterns." 2 Q. Okay. 3 A. So that's an example of an arrangement. 4 Q. And that's a particular arrangement of 5 patterns; correct? 6 MS. MEHTA: Objection. Misstates the 7 testimony. 8 THE WITNESS: Well, 24 points to a 9 series of boxes that includes patterns, numbers and 10 symbols, and they have a particular arrangement of 11 spatial location and functionality that comprise 12 the key mode of operation for this particular touch 13 pad. 26 similarly refers to a handwriting mode of 14 operation. And 28 indicates the ability to use a 15 mouse in a mouse mode. 16 BY MR. DeBRUINE: 17 Q. Okay. And the arrangement that's shown 18 in 26 has no printing whatsoever on the mouse cursor 19 control region 25 in Figure 1; is that correct? 20 A. Yes. The arrangement in 26 shows none 21 of the numbers because the numbers are not relevant 22 to the handwriting mode of operation. In other 23 words, the intention is to do the handwriting over 24 the physical part of the touch pad exemplified by 25 number 16 in Element 10 of Figure 1.</p>
<p>BRIAN VON HERZEN, Ph.D. Page 82</p> <p>1 Q. And how does Item 10 point to that? 2 A. Well, it points to the large box on the 3 bottom of Figure 1. 4 Q. Okay. 5 A. And that is the touch pad, the physical 6 touch pad. Notice that Item 10 is not referred on 7 the top three boxes but only the bottom box. So 8 that represents the physical touch pad; whereas, I 9 believe 24, 26 and 28 refer to an arrangement in 24 10 and an arrangement in 26. 11 Q. I don't think I'm following you with 12 respect to "arrangement." 13 A. Well, 24 in the specification is 14 referred to as an arrangement as described in the 15 last paragraph of Column 2 where it discusses that 16 "When the touch pad 10 is switched into a key mode, 17 the numbers, number sign, and star key patterns on 18 the virtual key region 16, the dial, correct, and 19 up and down key patterns on key region 18, and the 20 resume, redial and reserve function keys patterns 21 on the virtual key region 20 are shown as numeric 22 reference 24. The arrangement referred by 24 23 serves as an input device or an interface of a 24 telephone, and users can input the telephone number 25 for dialing by touching the corresponding key</p>	<p>BRIAN VON HERZEN, Ph.D. Page 84</p> <p>1 Now, that Element 16 has numbers printed 2 on it, but the numbers are not used when in the 3 handwriting mode. Therefore, in handwriting mode 4 26, the number patterns are ignored. 5 Q. But despite what's shown in Figure 1, 6 it's your opinion that they still appear on the 7 touch pad? 8 MS. MEHTA: Objection. Misstates, 9 mischaracterizes the testimony. 10 THE WITNESS: The touch pad is Element 11 10 as shown on the bottom. So it has on it all 12 these numbers printed. And when you're operating 13 in Mode 26, those numbers remain printed on the 14 touch pad. And by "mode," I mean arrangement. 15 And in fact, that's supported in the 16 specification when it says that virtual key regions 17 16 and 20 become a handwriting region 25 in 18 which -- well, "corporating with the input, 19 correct, font and choose function patterns on 20 virtual key regions 18 as shown in Number 26." 21 BY MR. DeBRUINE: 22 Q. Okay. And it's true, is it not, that the 23 illustration of Region 25 is blank, has no pattern 24 printed on it in that drawing; is that correct? 25 MS. MEHTA: Objection. Vague.</p>

<p>BRIAN VON HERZEN, Ph.D. Page 85</p> <p>1 THE WITNESS: Well, Region 25 does in 2 fact show an arrangement that's not using the 3 numbered keys that are part of Region 16 as printed 4 on the Touch Pad 10 and shown in Figure 1. Those 5 numbers still exist; they're simply not utilized in 6 the arrangement for handwriting recognition as 7 shown by Element 26.</p> <p>8 BY MR. DeBRUINE:</p> <p>9 Q. Okay. And did you consider Figure 2 at 10 all in arriving at your opinion?</p> <p>11 A. Yes, I considered Figure 2.</p> <p>12 Q. Okay. And how did Figure 2 impact your 13 opinion?</p> <p>14 A. Figure 2 shows that the Key Region 24, 15 the Key Arrangement 24 shown in Figure 1 could, 16 instead of being a set of printed numbers, could be 17 an array of printed letters. And so in that mode, 18 there would be an alternate touch pad. That 19 alternate touch pad would, in place of the ten 20 numbers and star symbol and pound symbol of Element 21 16, would instead have alphanumeric symbols 22 thereon. And that would be another way of printing 23 a touch pad and having it operate in a key mode of 24 operation.</p> <p>25 Figure 2 is still part of the invention.</p>	<p>BRIAN VON HERZEN, Ph.D. Page 87</p> <p>1 Figure 3. Let's see. Well, Figure 5 shows a 2 number of layers that comprise the device. And 3 while an insulator layer could be the top layer, 4 there would be other layers on top of that. And I 5 believe that the paragraph of interest discusses 6 that the printing could be on other layers --</p> <p>7 Q. Okay.</p> <p>8 A. -- depending on what is on top of the 9 panel.</p> <p>10 Q. Now, your opinion is also based on your 11 opinion that a touch pad is different than a touch 12 screen; is that correct?</p> <p>13 A. Yes.</p> <p>14 Q. Okay. Does the term -- where does the 15 term "touch pad" appear in the claims? Let me ask 16 you this:</p> <p>17 Is it your opinion that the claims are 18 limited to a touch pad as opposed to a touch screen?</p> <p>19 A. The claims are directed to a touch pad, 20 yes.</p> <p>21 Q. Okay. The question was subtly different. 22 Are the claims limited to a touch pad to 23 the exclusion of a touch screen?</p> <p>24 MS. MEHTA: Objection. That calls for 25 legal conclusion.</p>
<p>BRIAN VON HERZEN, Ph.D. Page 86</p> <p>1 And according to this present invention, there are 2 plenty of patterns printed thereon for representing 3 the interfaces corresponding to the operation 4 modes. So in that sense, Figure 2 instructs 5 alternative printings of this Touch Pad 10.</p> <p>6 Q. Okay. Now, did you take into account the 7 fact that the specification specifically says that 8 the patterns don't need to be printed on the surface 9 of the touch pad?</p> <p>10 A. Where are you referring to in the 11 specification?</p> <p>12 Q. I'm referring to Column 3, Lines 39 to 13 44.</p> <p>14 A. I don't interpret Columns [sic] 39 15 through 44 in that way.</p> <p>16 Q. How do you interpret columns -- how do 17 you interpret that paragraph?</p> <p>18 A. My interpretation of the paragraph in 19 Column 3, Lines 39 through 44, are that the key, 20 word and symbol patterns to represent any number of 21 function keys could be printed on some layer above 22 the insulator plate, if there's another layer on 23 top of it, or some other kind of plate. So there 24 could in fact be alternate structures.</p> <p>25 This is part of the description of</p>	<p>BRIAN VON HERZEN, Ph.D. Page 88</p> <p>1 MR. DeBRUINE: The man is here giving 2 opinions on legal conclusions. That's what he's 3 here to do.</p> <p>4 MS. MEHTA: Well, he's giving expert 5 opinion --</p> <p>6 MR. DeBRUINE: He's giving expert 7 opinion on claim construction, which is a legal 8 conclusion. If you want to object that he's here 9 to give a legal conclusion, I'm happy to join in 10 that objection. We can strike his testimony 11 entirely, and we can all go home.</p> <p>12 MS. MEHTA: You asked a different 13 question than what his opinion was as to the scope 14 of the claims. You asked --</p> <p>15 MR. DeBRUINE: That is an absolute. 16 That is nothing more than what is the scope of the 17 claim.</p> <p>18 BY MR. DeBRUINE:</p> <p>19 Q. In your opinion, are these claims limited 20 to a touch pad as opposed to a touch screen?</p> <p>21 MS. MEHTA: I'm making my objection. 22 You can go ahead and answer with respect 23 to your opinions.</p> <p>24 THE WITNESS: Yes. Your question 25 presumes that the touch screen would never have a</p>

<p>BRIAN VON HERZEN, Ph.D. Page 89</p> <p>1 touch pad in it. 2 BY MR. DeBRUINE: 3 Q. I'm simply trying to -- my question 4 doesn't presume anything, sir. If the answer to my 5 question is "no," please tell me. 6 A. I'm saying the question is 7 overconstrained in the sense that you're asking 8 with respect to touch pad. And I can answer with 9 respect to touch pad, namely, that the '353 is 10 directed towards a touch pad. 11 Q. And my question was somewhat more -- is 12 very different from what it's directed to. 13 Are the claims at issue limited to a 14 touch pad? 15 A. Yes. The claims are limited to a touch 16 pad. 17 Q. And would a touch screen -- a touch 18 screen, in your opinion, is not a touch pad; is that 19 correct? 20 A. In my opinion, a touch screen is 21 different than a touch pad. 22 Q. So a touch screen is not within the scope 23 of the asserted claims of the '353 patent, in your 24 opinion; is that correct? 25 MS. MEHTA: Objection. Outside the</p>	<p>BRIAN VON HERZEN, Ph.D. Page 91</p> <p>1 A. You're making the assumption that no 2 touch screen ever had a touch pad in it. 3 Q. Well, enlighten me. How can a -- well, 4 how -- describe for me a touch screen with a touch 5 pad in it. 6 A. Well, a touch pad is an input device, 7 and that input device senses touches in various 8 locations. It senses touch input. 9 A touch screen, on the other hand, is an 10 input/output device. And it not only measures the 11 location of touches, but it also provides a 12 display. It provides visual output. So a touch 13 screen is different than a touch pad. 14 And a touch pad is an input device, and 15 a touch screen is an input/output device. So 16 they're different. 17 Q. I understand that they're different. I'm 18 trying to understand how the difference that you're 19 making between a touch pad and a touch screen in 20 your declaration matters to these claims. 21 A. The claims are directed to a touch pad. 22 And a touch pad is described both in the 23 specification and in the claims themselves. 24 Q. Okay. And so a touch sensitive input 25 device over a screen is a touch pad, correct --</p>
<p>BRIAN VON HERZEN, Ph.D. Page 90</p> <p>1 scope. 2 THE WITNESS: What I said was that a 3 touch pad is within the limitations. And a touch 4 screen is different than a touch pad. 5 BY MR. DeBRUINE: 6 Q. Therefore, a touch screen is not within 7 the limitations of the claims; is that what you're 8 saying? 9 A. That is not a logical inference from the 10 two statements that I made. 11 Q. Let me make sure I understand this. 12 The claims -- the asserted claims of the 13 '353 patent, in your opinion, are limited to a touch 14 pad; correct? 15 A. That is correct. 16 Q. A touch screen is something different 17 from a touch pad? 18 A. Yes, that is correct. 19 Q. And therefore, a touch screen is not 20 within the scope of the asserted claims; correct? 21 MS. MEHTA: Outside the scope. 22 THE WITNESS: No. You're making an 23 additional assumption there. 24 BY MR. DeBRUINE: 25 Q. What assumption am I making?</p>	<p>BRIAN VON HERZEN, Ph.D. Page 92</p> <p>1 MS. MEHTA: Objection. Vague. 2 BY MR. DeBRUINE: 3 Q. -- even if the screen be can seen through 4 that touch pad? 5 MS. MEHTA: Incomplete hypothetical. 6 THE WITNESS: It -- the '353 patent 7 includes the disclosure of touch pads that are 8 transparent. Something could be placed underneath 9 a touch pad that could emit light, for example, a 10 back light, and that would illuminate the touch 11 pad. Or you could put an array of lights 12 underneath the touch pad. 13 BY MR. DeBRUINE: 14 Q. Or you could put a display underneath the 15 touch pad; is that correct? 16 A. In principle, you could put a display 17 underneath a touch pad. Then you would have a 18 touch pad on top of a display. 19 Q. Okay. And is that the same as a touch 20 screen? 21 A. Well, in general, a touch screen would 22 have less parallax than the assembly discussed, and 23 that parallax could make substantial differences in 24 the operation. 25 Q. But it would still, parallax or not, you</p>

<p>BRIAN VON HERZEN, Ph.D. Page 93</p> <p>1 would still have a touch pad as part of that touch 2 screen; am I understanding you correctly? 3 MS. MEHTA: Objection. 4 THE WITNESS: The composition of a touch 5 pad in the context of the '353 patent over some 6 kind of a monitor could have substantial functional 7 issues with respect to parallax, for example, that 8 might be somewhat different than the operation of a 9 touch screen. 10 BY MR. DeBRUINE: 11 Q. Let's try this. On Page 28 of your 12 declaration beginning at Line 11, you say, and I 13 quote, "Specifically, by reference to a 'touch pad' 14 instead of a 'touch screen,' a person of ordinary 15 skill in the art reading the '353 patent would 16 understand the claim language to require that any 17 pattern associated with operation of the panel for 18 touch inputting must be printed on that panel." 19 Explain to me why the reference to touch 20 pad instead of touch screen requires that the 21 patterns be printed on the panel? 22 A. Well, as I stated previously, a touch 23 pad is an input device. And as an input device, it 24 does not have the ability to change the patterns 25 there on top of the surface of the touch pad</p>	<p>BRIAN VON HERZEN, Ph.D. Page 95</p> <p>1 thereon, if I'm recalling that correctly. Yes, 2 plenty of patterns printed thereon for representing 3 the interfaces corresponding to the operation modes 4 as shown in Figure 1, where in fact a single region 5 can have several symbols and patterns printed on it 6 for operation in multiple modes. 7 BY MR. DeBRUINE: 8 Q. Okay. I think -- I'll try this one more 9 time. 10 Regardless of what the claims are 11 directed at, it is -- is it your opinion that the 12 asserted claims are limited to a touch pad to the 13 exclusion of a touch screen? 14 MS. MEHTA: Objection. Asked and 15 answered. 16 BY MR. DeBRUINE: 17 Q. In other words -- well, no, I'll leave it 18 at that. That's my question. 19 A. The claims are directed to a touch pad. 20 A touch screen is different than a touch pad. 21 Q. Okay. Once again, I don't care what 22 they're directed at. 23 Are the claims limited to a touch pad to 24 the exclusion of a touch screen? Can you answer 25 that question?</p>
<p>BRIAN VON HERZEN, Ph.D. Page 94</p> <p>1 because it's just an input device. Therefore, the 2 patterns that are disclosed to be printed on the 3 top of the touch pad are static and don't vary as a 4 function of time. 5 Q. But if the word "touch screen" had been 6 used, in your opinion, that would disclose patterns 7 displayed from underneath that are not static; is 8 that correct? 9 A. Are you asking with reference to the 10 claims in the '353 patent? 11 Q. Everything I'm asking is with reference 12 to your opinion about what the claims of the '353 13 patent mean. That's why we're here. 14 A. So could you repeat the question, 15 please? 16 (Record read.) 17 THE WITNESS: While a display underneath 18 a transparent touch pad might show time varying 19 patterns, the claims of the '353 patent require 20 that the patterns be on the panel rather than 21 underneath the panel. 22 In addition, the claims referenced 23 specifically a touch pad and not a touch screen. 24 And the entire invention of the '353 is directed to 25 an assembly with plenty of patterns printed</p>	<p>BRIAN VON HERZEN, Ph.D. Page 96</p> <p>1 MS. MEHTA: Objection. Argumentative. 2 Asked and answered multiple times. 3 THE WITNESS: As I stated previously, 4 you're making the presumption that no touch screen 5 has any touch pad. 6 So to answer that question, I can say 7 that the claims are directed to a touch pad. A 8 touch screen is different than a touch pad, and it 9 being an input/output device rather than just an 10 input device. 11 BY MR. DeBRUINE: 12 Q. And that's the best answer you can give 13 me to that question? 14 A. Yes. In order to be logically 15 consistent, it requires these constructions. 16 Q. Okay. All right. Let's turn to the '352 17 patent, if we may. We previously marked it as 18 Exhibit 4. And let's start -- it's your opinion 19 that the claim element "identify a first maxima in a 20 signal corresponding to a first finger" means to 21 identify a first peak value in a finger profile 22 taken on an axis obtained from scanning the touch 23 sensor; is that correct? 24 A. That is correct. 25 Q. Okay. Does the claim language --</p>

<p>BRIAN VON HERZEN, Ph.D. Page 97</p> <p>1 language of the claim refer to a profile taken on an 2 axis? 3 A. Indirectly, yes. 4 Q. Does it use those words -- 5 A. While it doesn't -- 6 Q. -- "on an axis"? 7 A. I'm sorry. While it doesn't use the 8 words "on an axis" per se, it indirectly refers to 9 that through the use of the term "signal." 10 Q. Okay. Can you explain to me how the word 11 "signal" implies a profile taken on an axis? 12 A. Yes. Claim 1 requires to scan the touch 13 sensors -- correction -- to scan the touch sensor 14 to identify a first maxima in a signal 15 corresponding to a first finger. 16 The signal comprises a finger profile, 17 and that finger profile is a profile of the finger 18 projected onto an axis. 19 Q. Okay. Where does the patent explain that 20 the signal is the profile projected on an axis? 21 A. I believe that it's discussed in the 22 file history for the '352 patent. 23 Q. It's not discussed in the patent; is that 24 correct? 25 A. I didn't say that.</p>	<p>BRIAN VON HERZEN, Ph.D. Page 99</p> <p>1 Q. Okay. Let's take a look at the file 2 history. 3 (Whereupon, Plaintiff's Exhibit 9 was 4 marked for identification.) 5 BY MR. DeBRUINE: 6 Q. Sir, you have been handed a document 7 marked as Exhibit 9, bearing Bates numbers ELN001550 8 to 1558. And this is the amendment received by the 9 office, Patent Office, on August 22, 1997, which -- 10 and is this the document that was referenced as 11 Exhibit H in your declaration? 12 MS. MEHTA: Just so the record is clear, 13 Sean, I think Exhibit H was his whole -- the whole 14 certified file history. And so there's citations 15 of the report to multiple portions of it. 16 MR. DeBRUINE: You're correct. You're 17 correct. We'll clarify that. 18 BY MR. DeBRUINE: 19 Q. But this is -- and I'll represent to you 20 that this is the August 22, 1997 amendment. 21 A. Yes. This is part of Exhibit H. And I 22 do have a clarification on Exhibit H. 23 On Page 10 of my report, I've actually 24 quoted one paragraph of Exhibit H, and in fact the 25 basis of my opinion included not only this</p>
<p>BRIAN VON HERZEN, Ph.D. Page 98</p> <p>1 Q. All right. Are you aware of anywhere 2 that -- where in the patent where it says that a 3 signal is a finger profile projected on an axis? 4 A. I believe that this claim was in fact 5 modified as part of the prosecution history for 6 this patent. So in fact, in order for the 7 inventors to win these claims, they needed to 8 modify these claims in order to get past the patent 9 examiner at the Patent Office. 10 Q. I understand that. I'm asking 11 specifically, though, about the specification in 12 this question. 13 Are you aware of anywhere in the 14 specification that says a signal representing a 15 first finger -- excuse me -- a signal corresponding 16 to a first finger, it means a profile taken on an 17 axis? 18 A. While the actual word "signal" may or 19 may not appear directly in the written 20 specification of the '352, it would be clear to one 21 of ordinary skill in the art that the X and Y 22 profiles that are shown, for example, in Figure 7B, 23 represent such signals, and furthermore, that a 24 signal appears significantly in the file history 25 for the '352 patent.</p>	<p>BRIAN VON HERZEN, Ph.D. Page 100</p> <p>1 paragraph but the paragraph following based on the 2 April 8, 1998 amendment and response at Pages 3 and 3 4 of that report. 4 Q. Okay. Well, we'll get to that when we 5 get to that claim term. 6 Can you explain to me, please, how the 7 amendment which has been marked as Exhibit 9 8 supports your opinion that the signal means a finger 9 profile projected on an axis? 10 A. Yes. Claim 1, for example, was amended 11 to read "Scanning the touch sensor to identify 12 first maxima in a signal corresponding to a first 13 finger," end quote, the new phrase being "in a 14 signal corresponding to a first finger." 15 Turning to page ELN001556, the second to 16 bottom paragraph states that "Claims 1 through 6 17 were indicated as incomplete for omitting to 18 indicate the cooperative relationship with the 19 fingers to produce the maxima and minima. Claim 1 20 has been amended to address this, and is now 21 believed to be allowable." 22 Namely, that the signal corresponding to 23 a first finger produces that maxima and minima as 24 required in the claim. 25 Q. Okay. There's no reference in here,</p>

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1 though, to a finger profile projected on an axis?
2 A. Well, the axis comes from illustrations
3 such as Figure 7B, and also the specification,
4 Column 11.
5 Q. I understand. I'm trying to understand
6 how what is said in the prosecution history that
7 you're referring to leads to that conclusion.
8 And it's true, is it not, that there's no
9 discussion of a finger profile in Exhibit 9?
10 A. I disagree. The maxima and minima are
11 with respect to a finger profile as shown, for
12 example, in Figure 7.
13 Q. Where is that stated in Exhibit 9,
14 Exhibit 9 being the portion of the file history?
15 Where is that stated?
16 A. Exhibit 9 establishes the connection
17 between the signal and the maxima and minima. The
18 signal is a sequence of values that comprise these
19 maxima and minima. The sequence of values are
20 shown, for example, in Figure 7B that shows X
21 profiles and Y profiles that include minima and
22 maxima as described in the claims of the '352.
23 Q. Okay. And that's discussed on Page 6 of
24 your declaration from Lines 3 to 13?
25 A. Yes. It is discussed there.

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1 Q. Okay. And do you understand that the
2 portions of the specification that you cite there
3 refer to an exemplary embodiment of the invention?
4 Do you understand that in arriving at your opinion?
5 A. Yes, these are examples.
6 Q. Okay. Let's talk about the term
7 "identify."
8 Can you -- what, in your opinion, is the
9 proper construction of the term "identify"?
10 A. "Identify" means to recognize a value to
11 be.
12 Q. And in the context of the claim, you
13 recognize the value to be what?
14 A. A maxima or a minima, for example.
15 Q. Okay. Now, you give a different
16 definition of that term -- well, all right. You
17 initially don't, I guess.
18 I guess what I'm looking for here on
19 Page 7, the sentence from -- beginning on Line 8,
20 you say that "One of ordinary skill would have
21 understood in the context of these claims that
22 'identify' or 'identifying' values would typically
23 involve setting corresponding variables (such as
24 'first maxima' variable) to the recognized values."
25 Do you see that sentence?

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1 A. Yes, I do.
2 Q. And just so we're clear, in your opinion,
3 does the term -- should the term "identify" be
4 construed to require setting a variable to the
5 recognized value?
6 A. Well, this is really an engineering
7 context of Patent '352. It's referring to
8 recognizing a value to be a maximum or a minimum,
9 for example. And then there are examples such as
10 figures of the '352 that then assign a variable to
11 the maximum or minimum, for example -- let's see if
12 I can find it here.
13 Figure 9 shows the setting of a variable
14 to valleys or peaks corresponding to minima or
15 maxima respectively.
16 Q. In your opinion, sir, does the step of
17 identifying or identify as used in the claims of the
18 '352 patent require the setting of a variable? Is
19 it limited to the setting of a variable, in your
20 opinion?
21 A. The '352 patent describes setting
22 corresponding variables to recognize values, and in
23 fact shows an example of that, for example, in
24 Figure 9.
25 Q. I don't mean to interrupt, but I think

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1 we're about to run out of the tape.
2 Are you done with your answer?
3 A. I was still considering the full,
4 complete response.
5 Q. Can we take a quick break to change the
6 tape and then let you continue to consider and we'll
7 come back to that question?
8 A. Yes.
9 THE VIDEOGRAPHER: This is the end of
10 Volume I, Videotape No. 2 in the deposition of
11 Brian Von Herzen on April 1, 2010. The time is
12 2:44. We are off the record.
13 (Recess taken.)
14 THE VIDEOGRAPHER: This is the beginning
15 of Volume I, Videotape No. 3 in the deposition of
16 Brian Von Herzen on April 1, 2010. The time is
17 2:48. We are back on the record.
18 BY MR. DeBRUINE:
19 Q. Do you have more to add to your answer?
20 A. Yes. I construed "identify" to be
21 recognize a value to be. That recognition process
22 could involve setting of a variable in order to
23 recognize that value.
24 I have not fully considered whether
25 setting a variable would be required in all

<p>BRIAN VON HERZEN, Ph.D. Page 105</p> <p>1 circumstances. However, given the claim 2 limitations that require sequentially identifying 3 maxima and minima, some state information would be 4 preserved in order to sequentially identify such 5 elements. 6 So the answer would really depend upon a 7 variable in the context of state information and 8 how that would be applied. 9 Q. None of that is discussed in your 10 declaration, is it? 11 A. I believe my declaration does discuss 12 many embodiments that involve setting a state 13 variable to identify a maximum or minimum. 14 Q. Okay. Can I have that answer read back, 15 please? 16 (Record read.) 17 MR. DeBRUINE: Actually, I needed the 18 answer before that. 19 (Record read.) 20 BY MR. DeBRUINE: 21 Q. Is there any discussion in your 22 declaration about sequentially identifying maxima 23 and minima? 24 A. Yes. 25 Q. And where do you express an opinion that</p>	<p>BRIAN VON HERZEN, Ph.D. Page 107</p> <p>1 identify it. Page 4. 2 Q. Okay. And where on Page 4 do you express 3 the opinion that these claims are limited to 4 performing the steps of identifying in a particular 5 sequence? 6 A. Starting at Lines 5 through 13 where it 7 says, "In January 1996, one of ordinary skill in 8 the art would have understood the term 'identify a 9 first maxima in a signal corresponding to a first 10 finger' in the claims of '352 patent to mean: 11 'identify a first peak value in a finger profile 12 taken on an axis obtained from scanning the touch 13 sensor'; the term 'identify a minima following the 14 first maxima' in the claims of the '352 patent to 15 mean: 'identify the lowest value in the finger 16 profile taken on an axis that occurs after the 17 first peak value'; and the term 'identify a second 18 maxima in a signal corresponding to a second finger 19 following said minima' in the claims of the '352 20 patent to mean: 'after identifying the lowest value 21 in the finger profile taken on said axis, identify 22 a second peak value in the finger profile taken on 23 said axis." 24 Q. Okay. Do you provide any support for 25 that opinion that the identification of the second</p>
<p>BRIAN VON HERZEN, Ph.D. Page 106</p> <p>1 sequential -- that those identifications need to 2 occur sequentially? 3 A. Well, on Page 6, I discuss that the 4 specification then describes that circuitry, 5 software, or firmware scans one of these finger 6 profiles to detect a first maxima 85 indicative of 7 a first finger in operative proximity to the touch 8 pad followed by a minima 90 indicative of a space 9 between the fingers, and further followed by 10 another maxima 95 indicative of a second finger 11 operatively coupled to the touch pad 30. 12 Q. And in your view, that's expressing an 13 opinion that there is a requirement that those steps 14 happen in sequence? 15 A. Yes. There is a requirement that they 16 happen in sequence. 17 Q. A different question. 18 Is that -- you're saying that that is 19 where you express that opinion that they're required 20 to be -- 21 A. That is one place where I express that 22 opinion. 23 Q. Okay. Is there anywhere else you 24 express -- you say you express that opinion? 25 A. There may be. I'll look through here,</p>	<p>BRIAN VON HERZEN, Ph.D. Page 108</p> <p>1 maxima has to occurred in sequence after identifying 2 the lowest value? 3 A. Well, support can be found, for example, 4 in Figure 9. 5 Q. I'm asking: In your declaration, do you 6 provide a discussion in the support for that 7 opinion? 8 A. Well, the declaration cites to many of 9 the articles and locations, many of the figures and 10 specification of the '352 patent. In particular, 11 on Page 6, it cites to Columns 5 and 8 and Figure 12 7B. It also cites to Column 6 on that page, for 13 example. 14 And while I'm thinking of it, the table 15 that appears on Page 4 should be clarified. The 16 middle entry on the right, I believe, is 17 incomplete. And Appendix C of my report -- or 18 Exhibit C, I should say, the remaining clause 19 that's missing from this entry should be included. 20 Q. Okay. When did you recognize that error? 21 A. I recognized that when I was reviewing 22 my report in preparation for this deposition. 23 Q. Okay. 24 A. I was wondering if it would be possible 25 to take a break.</p>

<p>BRIAN VON HERZEN, Ph.D. Page 109</p> <p>1 Q. I think this would be a good time to take 2 a break. 3 THE VIDEOGRAPHER: Off the record at 4 2:59. 5 (Recess taken.) 6 THE VIDEOGRAPHER: We are back on the 7 record at 3:12. 8 BY MR. DeBRUINE: 9 Q. Okay. Let's turn to the phrase "in 10 response to." 11 In your opinion, what does the -- how 12 should the phrase "in response to" be construed? 13 A. After and in reaction to. 14 Q. Okay. In your opinion, is there an 15 additional limitation that "in response to" must be 16 immediately after and in direct reaction to? 17 A. It must be in direct reaction to. 18 Q. Okay. But that's not -- so your opinion 19 is "after and in direct reaction to"? 20 A. "In direct reaction to," yes. 21 Q. That's not -- I just want to clarify. 22 That's not what -- that's the opinion you expressed 23 here. 24 And what is the basis for requiring that 25 the word "response" require a direct reaction?</p>	<p>BRIAN VON HERZEN, Ph.D. Page 111</p> <p>1 A. In the Exhibit H, file history of the 2 '352, April 8, 1998 amendment and response, Page 4. 3 MR. DeBRUINE: Let's mark that, please, 4 as Exhibit 10. 5 (Whereupon, Plaintiff's Exhibit 10 was 6 marked for identification.) 7 BY MR. DeBRUINE: 8 Q. Sir, you have been handed Exhibit 10, 9 which bears Bates Number ELN001567 to 1571. 10 Is this the portion of the '352 file 11 history you were referring to? 12 A. Yes. 13 Q. And can you show me where on Page 4 it 14 refers to providing an indication in direct reaction 15 to the identification of the two maxima? 16 A. On Line 2 where it says, "The present 17 invention uniquely utilizes the detection of two 18 maxima to determine if two fingers are present on 19 the touch pad." 20 That to me indicates that the two maxima 21 are determinative of an indication of two fingers. 22 Q. Okay. How does that support your further 23 opinion that the step of providing an indication 24 must occur immediately after that step of 25 determining?</p>
<p>BRIAN VON HERZEN, Ph.D. Page 110</p> <p>1 A. As discussed in Page 10, Lines 16 2 through 21, "based on the claim language, 3 specification, and file history, one of ordinary 4 skill would have understood 'in response to' to 5 mean that the indication of two fingers is based 6 directly on the identification of the first and 7 second maxima, that is, identification of the first 8 and second maxima is determinative of the 9 indication being provided." 10 Q. How does the fact that the identification 11 of the first and second maxima is determinative of 12 the presence of two fingers require that the 13 indication be provided in direct reaction to that 14 identification? 15 A. Can you read back the question, please? 16 (Record read.) 17 THE WITNESS: Well, in the file history 18 of this patent, in the April 8, 1999 -- correction 19 -- 1998 amendment and response, Exhibit H at 20 Page 4, I believe that it describes this in detail 21 in saying that the indication of two fingers is 22 determined by the two maxima. 23 BY MR. DeBRUINE: 24 Q. And where in the file history does it say 25 that?</p>	<p>BRIAN VON HERZEN, Ph.D. Page 112</p> <p>1 MS. MEHTA: Objection. Misstates the 2 testimony. 3 THE WITNESS: I believe I used the word 4 "directly." 5 BY MR. DeBRUINE: 6 Q. Okay. How does that paragraph relate to 7 your opinion with regard to the "in response to" 8 requiring it be in direct response to? 9 MS. MEHTA: Objection. Misstates the 10 testimony. 11 THE WITNESS: Could you read it back, 12 please? 13 (Record read.) 14 THE WITNESS: Since the two maxima are 15 determinative of an indication of two fingers, they 16 are the stimulus that determine the two finger 17 response. So they -- the two finger response 18 occurs after and in direct reaction to the presence 19 of the two maxima. 20 BY MR. DeBRUINE: 21 Q. And in your opinion, that sentence is -- 22 that's what that sentence says? 23 A. This sentence says that the two maxima 24 are determinative of the two fingers -- 25 Q. Okay.</p>

<p>BRIAN VON HERZEN, Ph.D. Page 113</p> <p>1 A. -- indication. 2 Q. Anywhere else on this Page 4 that says 3 that the identification or the indication of the 4 presence of two fingers must be in direct reaction 5 to the determination of the identification of the 6 two maxima? 7 A. Well, I used Page 4 further in my expert 8 report. So further down in Page 4, the section 9 that says "The present invention addresses this 10 deficiency of the '591 method by detecting two 11 maxima in the profile information. This allows the 12 detection of two fingers being present even if they 13 are both placed down at the same time. Such a 14 method is not shown or suggested by either of the 15 Synaptics patents, which in fact teach away from 16 this method." 17 Q. Anywhere else in this section of the file 18 history that you say supports your interpretation of 19 the term "in response to"? 20 A. Well, I've already cited to Page 3. So 21 Page 3 also includes supportive information where 22 it says, "These claims are directed to the feature 23 of the invention which detects multiple fingers by 24 detecting the multiple maxima in the profile on the 25 touch pad."</p>	<p>BRIAN VON HERZEN, Ph.D. Page 115</p> <p>1 select a block. 2 BY MR. DeBRUINE: 3 Q. Okay. And were there known spreadsheets, 4 for instance, that allowed a user to use a pointing 5 device to select a group of cells in a spreadsheet? 6 MS. MEHTA: Same objections. 7 THE WITNESS: I believe that Microsoft 8 Excel, for example, had a feature at that time 9 frame that would enable the selection of a block of 10 cells based on a pointing device. 11 BY MR. DeBRUINE: 12 Q. Okay. And those functions would be 13 referred to as a "select" function; is that correct? 14 MS. MEHTA: Objection. Vague and 15 foundation. 16 THE WITNESS: In general, I'm not sure 17 that I would refer to it as a select function. 18 However, in the context of the '352 patent, select 19 function has a specific meaning; namely, a 20 selection of an item. 21 BY MR. DeBRUINE: 22 Q. Okay. And what is the basis for your 23 opinion that the '352 patent is limited to the 24 selection of an item? 25 A. Column 13 of the specification provides</p>
<p>BRIAN VON HERZEN, Ph.D. Page 114</p> <p>1 Q. Okay. Anywhere else in here? 2 A. Well, the entire paragraph is relevant. 3 If I read this entire section through, I might find 4 some others, but this is a start. 5 Q. Well, I'm not here to have you form new 6 opinions. 7 In January of 1996, in known graphical 8 user interfaces, was it possible to use a pointing 9 device to select a block of text in a word 10 processing device? 11 MS. MEHTA: Objection. Vague. 12 THE WITNESS: So that depends a bit on 13 the context. Are you talking about personal 14 computer? What's -- is this a PDA? 15 BY MR. DeBRUINE: 16 Q. In any context. 17 A. In any context. Could you repeat the 18 question, please? 19 Q. Was it known to use a pointing device to 20 select a block of text displayed on a screen? 21 MS. MEHTA: Vague and foundation. 22 THE WITNESS: So in some context, for 23 example, in a personal computer with a word 24 processor running Microsoft Word, there may be some 25 context in which a pointing device would be used to</p>	<p>BRIAN VON HERZEN, Ph.D. Page 116</p> <p>1 support, Lines 8 through 12, where it says "During 2 the period 710 to 720, a second finger is detected 3 and then removed, which is defined in an exemplary 4 embodiment as a single finger tap which may be a 5 'select' function such as selecting one item from a 6 screen menu." 7 Q. And you read that as limiting the select 8 function to selecting one item; is that correct? 9 MS. MEHTA: Objection. Misstates the 10 testimony. 11 THE WITNESS: This provides supporting 12 evidence that the select function is a selection of 13 an item. 14 BY MR. DeBRUINE: 15 Q. And only a selection of an item; is that 16 your opinion? 17 A. It's my opinion that a select function 18 means a selection of an item. 19 Q. Do you have any other support for that 20 opinion besides that sentence? 21 A. That's the primary basis of my support. 22 Q. Okay. In January of 1996, how did a 23 mouse communicate to a host computer that a button 24 had been clicked? 25 MS. MEHTA: Objection. Foundation.</p>

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1 Incomplete hypothetical.
2 THE WITNESS: It could communicate that
3 a button had been clicked, for example, over a
4 serial port.
5 BY MR. DeBRUINE:
6 Q. Okay. And what did it do with that
7 serial port to communicate that a button had been
8 clicked?
9 MS. MEHTA: Same objections.
10 THE WITNESS: It would provide a signal
11 over that serial port.
12 BY MR. DeBRUINE:
13 Q. And what form would that signal take?
14 MS. MEHTA: Same objections.
15 THE WITNESS: In the form of electrons
16 passing over the connectors.
17 BY MR. DeBRUINE:
18 Q. Was there an established data format for
19 communications between a mouse and, for instance, an
20 IBM computer running a Microsoft operating system?
21 A. There were several such formats
22 established.
23 Q. Are you familiar with those formats?
24 A. To some extent.
25 Q. Do you know what variable would be used

BRIAN VON HERZEN, Ph.D. Page 118

1 to indicate that a button had been clicked?
2 A. I was referring to the physical
3 interface. Actually, I was thinking of the RS-232
4 interface, the PS-2 interface, and later USB.
5 Q. Okay. And one of ordinary skill in the
6 art in touch input devices would be familiar with
7 those interfaces at the time?
8 A. I believe that one of ordinary skill
9 would understand the connectors over which the
10 mouse interface would typically propagate, yes.
11 Q. Would they understand the data structures
12 that were used for a mouse to communicate its state
13 to the host computer --
14 MS. MEHTA: Foundation.
15 THE WITNESS: Some --
16 BY MR. DeBRUINE:
17 Q. -- if you know?
18 A. Some of those protocols were standard,
19 but some of them were proprietary. So for example,
20 there are some mice that are proprietary and that
21 have non-standard protocols for communication --
22 Q. Okay.
23 A. -- with customized drivers.
24 MR. DeBRUINE: Okay. You know what? I
25 think that's all I have.

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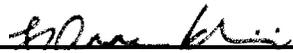
1 MS. MEHTA: Okay. We're happy to end
2 early.
3 MR. DeBRUINE: Thought you might.
4 THE VIDEOGRAPHER: This is the end of
5 Volume I, Tape Number 3. This concludes the
6 deposition of Brian Von Herzen. The original
7 videotapes will be retained by Dan Mottaz Video
8 Productions, LLC, 182 Second Street, Suite 202, San
9 Francisco, California 94105. (415) 624-1300. The
10 time is 3:33. We are off the record.
11 (Whereupon, the April 1, 2010 deposition
12 of BRIAN VON HERZEN, Ph.D. ended at 3:33 p.m.)
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17 BRIAN VON HERZEN, Ph.D.
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BRIAN VON HERZEN, Ph.D. Page 120

1 I, JoAnne Ichiki, duly authorized to
2 administer oaths pursuant to Section 2093(b) of the
3 California Code of Civil Procedure, do hereby
4 certify: That the witness in the foregoing
5 deposition was administered an oath to testify to
6 the whole truth in the within-entitled cause; that
7 said deposition was taken at the time and place
8 therein cited; that testimony of said witness was
9 reported by me and thereafter transcribed under my
10 direction into typewriting; that the foregoing is a
11 complete and accurate record of said testimony; and
12 that the witness was given an opportunity to read
13 and correct said deposition and to subscribe the
14 same. Should the signature of the witness not be
15 affixed to the deposition, the witness shall not
16 have availed himself/herself of the opportunity to
17 sign or the signature has been waived. I further
18 certify that I am not of counsel nor attorney for
19 any of the parties in the foregoing deposition and
20 caption named nor in any way interested in the
21 outcome of the cause named in said caption.
22 Dated: 04/07/10
23
24
25 JOANNE ICHIKI

1 I, JoAnne Ichiki, duly authorized to
2 administer oaths pursuant to Section 2093(b) of the
3 california code of civil procedure, do hereby
4 certify: That the witness in the foregoing
5 deposition was administered an oath to testify to
6 the whole truth in the within-entitled cause; that
7 said deposition was taken at the time and place
8 therein cited; that testimony of said witness was
9 reported by me and thereafter transcribed under my
10 direction into typewriting; that the foregoing is a
11 complete and accurate record of said testimony; and
12 that the witness was given an opportunity to read
13 and correct said deposition and to subscribe the
14 same. should the signature of the witness not be
15 affixed to the deposition, the witness shall not
16 have availed himself/herself of the opportunity to
17 sign or the signature has been waived. I further
18 certify that I am not of counsel nor attorney for
19 any of the parties in the foregoing deposition and
20 caption named nor in any way interested in the
21 outcome of the cause named in said caption.

22 Dated: April 7, 2010

23 
24 _____
25 JOANNE ICHIKI
CERTIFIED SHORTHAND REPORTER
NO. 11660