

In the Matter Of:

APPLE vs

SMITH INTERFACE TECHNOLOGIES, LLC,

ANDREW COCKBURN, PHD

April 16, 2025



1 UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE THE PATENT TRIAL AND APPEAL BOARD IPR2024-01085 - PATENT 10,649,580 ----- APPLE, INC. Plaintiff, -vs- SMITH INTERFACE TECHNOLOGIES, LLC, Defendant. ----- REMOTE TESTIMONY OF ANDREW COCKBURN, PhD APRIL 16, 2025 - 12:00 P.M. CT JOB NO. 2025-978577	3 REMOTE APPEARANCES: COUNSEL FOR PLAINTIFF: BY - JENNIFER HUANG FISH & RICHARDSON 60 South 6th Street, Suite 3200 Minneapolis, MN 55402 COUNSEL FOR DEFENDANT: BY - ART LICYGIEWICZ BY - VLADA WENDEL NORTON ROSE FULBRIGHT US LLP 2200 Ross Avenue, Suite 3600 Dallas, TX 75201-7932
2 APRIL 16, 2025 12:00 P.M. CT DEPOSITION of ANDREW COCKBURN, PhD, before S. Arielle Santos, Certified Court Reporter, Certified LiveNote Reporter and Notary Public.	4 INDEX ANDREW COCKBURN, PhD 4 BY ART LICYGIEWICZ 5 EXHIBITS REFERENCED - PREVIOUSLY MARKED Exhibit 1001 12 Exhibit 1002 12 Exhibit 1003 12 Exhibit 1004 12 Exhibit 1005 13 Exhibit 1006 13

5 1 ANDREW COCKBURN, PhD, Affirmed, Testifies 2 as Follows: 3 THE WITNESS: I do. 4 5 EXAMINATION 6 BY ART LICYGIEWICZ: 7 Q Good morning, Dr. Cockburn. 8 A Good morning. 9 Q Good seeing you. 10 You were deposed by me last 11 week, last Tuesday, correct? 12 In the -- 13 (Simultaneous Crosstalk.) 14 A -- certain the day. 15 Q Well, it was roughly a week ago. 16 I forget you're in New Zealand. So the 17 time-date -- time-space continuum kind of 18 changes here over in the States versus 19 New Zealand. 20 So -- but you have been deposed 21 a number of times before, correct? 22 A Yes.	7 1 the question that I asked. 2 Sound good? 3 A That sounds good. 4 Q Okay. 5 And second, I will do my best to 6 take short break roughly every hour or 7 so. You need a break sooner, would like 8 to take your dog out or whatever, just 9 let us know and we will do the best we 10 can to accommodate you. If a question is 11 pending, though, I just ask that you 12 answer my question first before we take 13 the break. 14 All right? 15 A That sounds good. 16 Q Okay. 17 Do you understand that you are 18 here to talk about your opinions in 19 connection with IPR 2024-01085 that 20 challenges the validity of US Patent No. 21 10,649,580? 22 A I haven't memorized the numbers,
6 1 Q And you were sworn in by the 2 court reporter just now. So you 3 understand you're testifying under oath 4 today, correct? 5 A I do, yes. 6 Q Given the fact that you've been 7 deposed numerous times, I am going to 8 dispense, like I did last time, with most 9 of the preliminaries, if that's all right 10 with you. 11 A That's fine. 12 Q Okay. 13 I do want to make two things 14 clear that the -- hopefully we can follow 15 those today. We did a good job last 16 time. 17 But, first, let's please -- 18 let's try not to talk over and interrupt 19 each other. I will do my best to make 20 sure that I don't do that when I'm asking 21 you questions and would appreciate it if 22 you do not do that when you are answering	8 1 but I understand that I am here to answer 2 questions regarding what I refer to as 3 the '580 patent. 4 Q Fair enough. Because if I 5 didn't write them down, I 6 wouldn't memorize -- couldn't remember 7 the numbers, either. 8 And so we are going to refer to 9 that as the US Patent 10,649,580 as the 10 '580 patent, as you just referred to it, 11 okay? Just for shortcut. 12 A Okay. 13 Q Okay. 14 And I will try to refer to IPR 15 2024-01085 as "this IPR." So neither you 16 nor I have to try to remember the full 17 IPR number, as I don't believe that you 18 or I have it memorized as we just stated. 19 Is that all right? 20 A Yes. 21 Q And if I am referring to any 22 other IPR, I would try to be as specific

9 1 as possible with that IPR so that we can 2 make sure we have as clean a record as 3 possible; is that fair? 4 A Yes. 5 Q Where are you located today? 6 A In Lyttelton, New Zealand. 7 Q Anyone else with you? 8 A No, not in the room. 9 Q If someone does happen to enter 10 the room that you are in, would you 11 please let us know? 12 A Yes. 13 Q Dr. Cockburn, aside from 14 participating in the Zoom deposition, can 15 you confirm for me that you are not in 16 communication with anyone electronically 17 or otherwise at this time? 18 A I confirm that. 19 Q Okay. 20 And can you confirm for me that 21 you will not look at or send any e-mails, 22 electronic messages, chats, or other	11 1 more of the foundation for the deposition 2 first and then we can address the 3 corrections to your report. 4 What did you do to prepare for 5 today's deposition? 6 A I re-read the materials 7 associated with this IPR and I talked 8 with Apple counsel. 9 Q Anything else? 10 A I thought about matters. 11 Q Anything else? 12 A Not that occurs to me at the 13 moment. 14 Q Did you review any documents 15 that refreshed your recollection for this 16 deposition? 17 A Yes, including those documents I 18 mentioned earlier. 19 Q Any other documents that you 20 reviewed that would refresh -- strike 21 that. 22 Did you review any other
10 1 communications during this deposition? 2 A Yes. 3 Q Do you have anything open on 4 your computer other than the Zoom meeting 5 right now? 6 A Finder is running, but no 7 windows is showing, nothing else is 8 running except for Zoom and only this 9 windows showing in Zoom. 10 Q Okay. 11 Do you have any hard copies of 12 your report from this IPR with you? 13 A No. 14 Q Do you have any other hard copy 15 documents with you today? 16 A I have Post-it note that had 17 some typos in my declaration, that I 18 appreciate the opportunity to correct. 19 Q Certainly. 20 A Other than that, no. 21 Q Let's hold off on those for a 22 little bit. Let me ask -- lay out some	12 1 documents that refreshed your 2 recollection for this deposition? 3 A Not that I recall. 4 ART LICYGIEWICZ: We are 5 going to place a number of 6 documents in the Zoom chat that we 7 will be discussing today. 8 They are: Exhibit 1001, 9 which is US Patent No. 10,649,580. 10 Exhibit 1002, which is the 11 file history of what became the 12 '580 patent. 13 Exhibit 1003, which is the 14 declaration of Dr. Andrew Cockburn 15 in this IPR. 16 Exhibit 1004, which is the 17 Ramos paper, "Zliding: Fluid 18 Zooming and Sliding for High 19 Precision Parameters," which I 20 understand the parties have been 21 referring to as "the Ramos 22 reference."

13 1 Exhibit 1005, which is Ramos 2 viewing and sliding video, which 3 the parties have been referring to 4 as "the Ramos video." 5 Exhibit 1006, which is US 6 Patent Publication Number 7 2006/00094356, Ording, et al, 8 which parties have been referring 9 to as the Ording reference. 10 If we need any additional 11 documents, we will upload these as 12 we go along and identify them 13 accordingly. 14 BY ART LICYGIEWICZ: 15 Q Dr. Cockburn, can you let me 16 know when you have all these documents 17 downloaded first. 18 A As far as I can see, they have 19 not entered the chat window yet. 20 VLADA WENDEL: Can we 21 introduce the documents that we 22 have uploaded, please.	15 1 A Yes. 2 Q And this is a document that was 3 submitted in support of the IPR of the 4 '580 patent, correct? 5 A Yes. 6 Q You indicated previously that 7 you had corrections to make in regards to 8 your declaration. 9 Now, if you can please let us 10 know what those corrections are. 11 A Sure. First, paragraph 15. 12 Q Okay. 13 A On the second line, it says, US 14 Patent No. 10,936,114. That should be 15 10,649,580. 16 Q Okay. 17 A Next at paragraph 93. 18 Q Go ahead. 19 A The fifth line, there is a 20 comma, then a square brace, and 0094 21 square brace. 22 Q Yes.
14 1 ART LICYGIEWICZ: Let's go 2 off the record for a second. 3 THE REPORTER: Off the 4 record. 5 (Whereupon a Recess Commenced 6 at 12:07 p.m. and Testimony 7 Recommenced at 12:09 p.m. CT.) 8 BY ART LICYGIEWICZ: 9 Q Dr. Cockburn, have you been able 10 to download Exhibits 1001 through 1006? 11 A I am in the process of doing so. 12 Q Okay. 13 Please let me know when that's 14 completed so we can then continue on with 15 the deposition. 16 A I have them all and they are all 17 open now, thanks. 18 Q Okay. 19 Let's first go to your 20 declaration, Exhibit 1003. 21 A I am there, thanks. 22 Q Do you have that?	16 1 A That should be a period, then, 2 "see also Apple 1021," and the square 3 brace 0094 remains. 4 Q So you are referring to 5 paragraph 0094 of Apple 1021? 6 A Correct. 7 Q Okay. 8 Any other corrections? 9 A Paragraph 114. 10 Q Okay. 11 A There are two references to 12 Apple-1004, both of those should be 13 Apple-1006. 14 Q Anything else? 15 A In paragraph 115, the same 16 correction. There are two references to 17 Apple-1004, both of those should be 1006. 18 And finally, paragraph 171, on 19 the final line, there's a reference to 20 Apple-1004 -- sorry, final line of page 21 117, there is a reference to Apple-1004, 22 11:30 to 42. That should be Apple-1016,

17 1 67. 2 Q So that would be Apple-1016, 3 line 67? 4 A Paragraph 67. 5 Q Paragraph 67. Thank you. 6 Any others? 7 A That's it. Thanks. 8 Q Okay. 9 With those corrections, Dr. 10 Cockburn, does your declaration 11 accurately reflect all of your opinions 12 related to the IPR of the '580 patent? 13 A All of the opinions that I have 14 at this time. If more information comes 15 available to me, I reserve the right to 16 offer further opinions. 17 Q And I think, as I said before, 18 we reserve the right to ask you questions 19 about those further opinions. 20 A Understood. 21 Q Okay. 22 Dr. Cockburn, who drafted your	19 1 The last sentence, I believe 2 that you have agreed in prior depositions 3 that that should be removed from the 4 description of paragraph 26? 5 A That's not my understanding. 6 The language in the prior IPRs for the 7 description of the person skilled in the 8 art was different. 9 Q Okay. 10 Can you explain to me what you 11 mean by "compensated by a higher level of 12 education and vice versa"? 13 A The first sentence of the 14 description of the person skilled in the 15 art says that they would have at least 16 two years of relevant work experience, 17 for instance. 18 The final sentence clarifies 19 that if they had less work experience 20 than those two years, that could be 21 compensated by a higher level of 22 education.
18 1 declaration? 2 A It was a collaborative writing 3 effort between myself and the attorneys. 4 Q Are there certain portions that 5 were drafted by the attorneys? 6 A From my recollection, the legal 7 understanding section was drafted by the 8 attorneys. 9 Q Anything else? 10 A The rest was a collaborative 11 writing effort between myself and the 12 attorneys and I take responsibility for 13 every word. 14 Q Okay. 15 Let's go to paragraph 26 of your 16 declaration, if you would. 17 A I am there, thanks. 18 Q Okay. 19 I think this has occurred in 20 some of your other depositions in other 21 IPRs, but the level person -- well, level 22 of ordinary skill in the art.	20 1 Conversely, if a person had a 2 higher level of education, they would 3 need less work experience; and if they 4 had more work experience, it would be 5 possible that they would need less, a 6 lower level of education. 7 Q Okay. Fair enough. I 8 appreciate that. 9 Let me go to paragraph 28 of 10 your declaration, if you would. 11 A I am there, thanks. 12 Q Okay. 13 Paragraph 28, you state that you 14 understand that the words of the claims 15 should be given the plain meaning, unless 16 that meaning is inconsistent with the 17 patent specification or the patent's 18 history before the patent office, 19 correct? 20 A Yes. 21 Q Did you give the words of any of 22 the claims that you opined upon a meaning

21 1 other than their plain and ordinary 2 meaning? 3 A Not that I recall in this IPR, 4 no. 5 Q Okay. 6 Nowhere in your declaration do 7 you state what the plain and ordinary 8 meaning is of any of the claim terms you 9 considered; is that correct? 10 A I didn't provide definition of 11 any claim terms. 12 Q And I guess the question is a 13 little more focused than that. 14 You didn't provide the plain and 15 ordinary meaning, as you understand that 16 plain and ordinary meaning to be in your 17 declaration, did you? 18 A I am not sure I understand how 19 the question is different. I didn't 20 define any of the claim terms. 21 Q So you didn't define the plain 22 and ordinary meaning of any of the claim	23 1 "touch" is, correct? 2 A I applied the plain and ordinary 3 meaning to a person of skill in the art 4 and relied on the claims in the 5 specification. 6 Q But you didn't expressly state 7 what that plain and ordinary meaning is? 8 A As I said before, I provided no 9 definitions of claim terms. 10 Q You would agree with me that 11 "touch" has a temporal component, 12 correct? 13 A I would agree that "touch" can 14 have a temporal component. 15 Q Okay. 16 So in order to discern what type 17 of touch is made to a touchscreen, you 18 need to understand how long a contact has 19 been made with that touchscreen, correct? 20 A Can you repeat the question, 21 please. 22 Q Sure.
22 1 terms? 2 A I did not define the meaning of 3 any of the claim terms. 4 Q Let me ask it this way: You 5 never expressly stated that the plain and 6 ordinary meaning of a certain term used 7 in a claim is, quote, X. Correct? 8 A I never defined any claim term 9 as being X. 10 Q Or X can be whatever that 11 definition is? 12 A As I said before, I didn't 13 define any of the claim terms. 14 Q Okay. 15 So is it fair to say you gave 16 the word "touch" its plain and ordinary 17 meaning? 18 A As a person of skill in the art 19 would understand the term, it is used in 20 the claims, yes. 21 Q But you didn't expressly define 22 what that plain and ordinary meaning of	24 1 So in order to discern what type 2 of touch is made to a touchscreen, you 3 need to understand how long a contact has 4 been made with that touchscreen, correct? 5 JENNIFER HUANG: Objection. 6 Form. 7 BY ART LICYGIEWICZ: 8 Q You can answer. 9 A A person skilled in the art 10 understands that data associated with 11 touch can be registered as a contact 12 approaches the touchscreen, as it makes 13 contact with the touchscreen, as it moves 14 across the touchscreen, as it breaks 15 contact with the touchscreen, and as it 16 leaves a region of proximity with the 17 touchscreen. 18 Q In the context of a touchscreen, 19 the touch can be made by person's finger, 20 correct? 21 A In certain contexts a touch can 22 be made by a person's finger. In other

25 1 contexts, a finger will not be registered 2 by the touchscreen. 3 Q Okay. 4 And in other context, the touch 5 can be made by a stylus, correct? 6 A Various forms of objects can be 7 sensed by different types of touchscreen 8 technology. 9 Q And one of those would be a 10 stylus, for example, like an Apple 11 Pencil? 12 A Depending on the technology 13 involved, that would be possible. 14 Q Now, you would agree with me 15 that the word "touch" is a common word. 16 JENNIFER HUANG: Objection. 17 Form. 18 THE WITNESS: I don't know 19 exactly what you mean by "common." 20 Can you clarify? 21 BY ART LICYGIEWICZ: 22 Q The word "touch" is not a	27 1 plain and ordinary meaning of the word 2 "touch" to a person of ordinary skill in 3 the art, in your declaration, did you? 4 A I provided no definitions of any 5 of the claim terms in my declaration. 6 Q Okay. 7 You would agree with me that 8 "touch" can mean to come into contact 9 with, correct? 10 A Amongst the things that a person 11 of skill in the art would understand, a 12 touch could contain is contact, physical 13 contact with the touchscreen. 14 Q You would agree with me that 15 "touch" can mean to be in contact with, 16 correct? 17 A The meaning of "touch" can 18 include being in contact with. 19 Q Would you also agree with me 20 that "touch" can mean bringing a body 21 part into contact with another object so 22 as to be perceived through a tactile
26 1 specialized technical term, is it? 2 A I think I would disagree with 3 that. To a person of skill in the art, 4 "touch" carries a substantial set of 5 meanings beyond that a regular person in 6 the street might acknowledge. 7 Q So your position is that the 8 word "touch" has a special meaning to a 9 person of ordinary skill in the art; is 10 that right? 11 A A person of skill in the art has 12 a comprehensive understanding of the 13 things that can constitute touch when 14 registered by a touchscreen. 15 Q So does that mean that a person 16 of ordinary skill in the art gives the 17 word "touch" a special meaning beyond its 18 plain and ordinary meaning? 19 A The plain and ordinary meaning 20 of the word "touch," to a person of skill 21 in the art, is clear. 22 Q But you never set forth the	28 1 sense? 2 A Could you repeat that, please. 3 Q Sure. 4 Would you also agree with me 5 that "touch" can mean bringing a body 6 part into contact with another object, so 7 as to be perceived through a tactile -- 8 tactile sense? 9 A To a layman, outside of the 10 domain of touchscreen technologies, I 11 think that would be included in the set 12 of things that a layman would understand 13 "touch" to include. 14 Q Is it your position that a 15 person of ordinary skill in the art would 16 not include that tactile sense as part of 17 the definition of a touch? 18 A I think it would depend on 19 context. In a touchscreen technology, 20 which is the matter in this IPR, a touch 21 has a particular set of connotations to a 22 person of skill in the art.

29 1 Q Would a person of ordinary skill 2 in the art understand that "touch" can 3 mean to bring a body part into contact 4 with another object, so as to perceive 5 through a tactile sense? 6 A There are areas and domains and 7 contexts in which a person of skill in 8 the art would understand that the 9 perception of touch is included in the 10 set of things associated with particular 11 types of interactions. 12 Q Dr. Cockburn, would a plain and 13 ordinary meaning also not include a 14 layman's understanding of a term? 15 A I think a plain and ordinary 16 meaning would include the layman's 17 understanding of the scope of the meaning 18 of "touch." But with respect to 19 touchscreen technologies, detection of 20 gestures on touchscreen technologies, 21 there are a particular set of meanings 22 that a person of skill in the art would	31 1 Q So is it your position, sir, 2 that in some instances, touch does not 3 have a temporal component? 4 A In some instances, a device 5 responding to touch contacts need not 6 attend to the temporal component in order 7 to determine that the contact has been 8 broken. 9 Q Not quite the question I was 10 asking, sir. 11 Is it your position that in some 12 instances, "touch" does not have a 13 temporal component? 14 A I think I just gave you an 15 instance -- 16 (Zoom Technical Difficulties.) 17 THE WITNESS: I said I think 18 I gave you an instance. 19 I can't remember what the 20 remainder of my response was, but 21 there were words beyond instance, 22 and I don't recall what they were.
30 1 have that a layman would not. 2 Q Do you agree with me that 3 "touch" can mean to cause to be briefly 4 in contact or in conjunction with 5 something? 6 A I think a touch would include 7 that form of contact. 8 Q Okay. 9 And would you agree with me that 10 "touch" would also include putting a hand 11 or other body part likely onto or off 12 something, correct? 13 A Depending on the context, I am 14 not sure whether "touch" would include 15 off to a person of skill in the art. The 16 breaking of contact with a touchscreen 17 sensor would be included in the set of 18 things associated with a touch. 19 Q Isn't the breaking off of a 20 contact part of the temporal component of 21 a touch? 22 A In some contexts it can be.	32 1 BY ART LICYGIEWICZ: 2 Q It's your position, sir, that in 3 some instances, "touch" does not have a 4 temporal component? 5 A The instance I gave you in my 6 earlier response was the instance where 7 an apparatus or system with a touchscreen 8 does not attend to the temporal component 9 in order to determine that a contact has 10 been broken. 11 ART LICYGIEWICZ: Move to 12 strike as non-responsive. 13 BY ART LICYGIEWICZ: 14 Q Again, Dr. Cockburn, that wasn't 15 the question. 16 Are you saying that in some 17 instances, "touch" does not have a 18 temporal component? 19 JENNIFER HUANG: Objection. 20 Asked and answered. 21 BY ART LICYGIEWICZ: 22 Q You can answer.

33 1 A I think, again, I just gave you 2 a specific instance where "touch" does 3 not have a temporal component. 4 For instance, where a system is 5 examining the components of a touch, such 6 that the only data associated with the 7 touch that it examines, is the breaking 8 of contact. 9 Q Dr. Cockburn, while a system may 10 not examine the temporal component, that 11 does not mean that there still is not a 12 temporal component of "touch." Is that 13 true? 14 JENNIFER HUANG: Objection. 15 Form. 16 THE WITNESS: I think it's 17 important -- shall I go ahead? 18 BY ART LICYGIEWICZ: 19 Q Yes, please. 20 A I think it's important to 21 clarify that there are different aspects 22 of a touch that a person skilled in the	35 1 (Zoom Technical Difficulties.) 2 BY ART LICYGIEWICZ: 3 Q Dr. Cockburn, isn't it true 4 "touch" always has a temporal component 5 to it? 6 A From the user's perspective, a 7 touch has a temporal component. From the 8 system's perspective, the system's 9 determination of the meaning of "touch," 10 there may be no temporal component. 11 Q So your position is that touch 12 -- strike that. 13 Your position is such that the 14 word "touch" has a temporal component in 15 some instances -- strike that. 16 Dr. Cockburn, so it appears that 17 your position is that a touch has a 18 temporal component in some instances, but 19 not a temporal component in other 20 instances; is that correct? 21 A If we limit ourselves in this 22 analysis to the system's detection of
34 1 art understands. Those aspects of touch 2 include the user's aspect of touch, which 3 is the user's action on the touchscreen, 4 which involves and includes a temporal 5 component. There is a period of time 6 during which the user makes contact with 7 the touchscreen. 8 A person of skill in the art 9 also understands that there are the 10 system components of touch, and the 11 system examines particular parameters of 12 the touch and it may not pay any 13 attention in certain contexts to the 14 duration of the touch. 15 And, therefore, there are 16 contexts in which the system's 17 examination of the touch has no temporal 18 component. 19 Q Dr. Cockburn, I wasn't asking 20 about the system's examination of touch. 21 My question was broader. 22 Is there a context in which --	36 1 components of touch, it's certainly true 2 that in some instances, the system will 3 examine temporal components and respond 4 to them appropriately, and in other 5 instances, it will have no examination of 6 temporal components. 7 Q Independent of a system's 8 examination of temporal components, a 9 touch always includes a temporal 10 component, correct? 11 JENNIFER HUANG: Objection. 12 Form. 13 THE WITNESS: From the user's 14 perspective and from the physics 15 perspective, a touch will -- will 16 have some temporal component. 17 BY ART LICYGIEWICZ: 18 Q So that I am clear, you said 19 that from a user's perspective and from 20 the physics perspective, a touch will 21 have some temporal component, correct? 22 A A user would understand they

37 1 execute their gesture for some period of 2 time with respect to a touchscreen. And 3 from the physics perspective, data 4 associated with a touch will be induced 5 on the touch sensor for some period of 6 time. That period of time includes the 7 approach of certain forms of object with 8 the touchscreen, contact with the 9 touchscreen, and during for some period 10 of time, and the breaking of contact and 11 the end of the induced signals on the 12 touchscreen. 13 ART LICYGIEWICZ: Strike as 14 non-responsive. 15 BY ART LICYGIEWICZ: 16 Q I'm asking a very simple 17 question, using your own words here. 18 From a user's perspective and 19 from a physics perspective, a touch will 20 have some temporal component, correct? 21 A I just answered that question. 22 Q So is that a yes?	39 1 there is some temporal component 2 associated with a gesture with respect to 3 the touchscreen. 4 Q And from a physics perspective, 5 a touch will have some temporal 6 component, correct? 7 A From a physics perspective, 8 signals will be induced on the 9 touchscreen as an object approaches, 10 makes contact with, and departs from the 11 touchscreen. 12 ART LICYGIEWICZ: Move to 13 strike as non-responsive. 14 BY ART LICYGIEWICZ: 15 Q It's a yes-or-no question Dr. 16 Cockburn. 17 From a physics perspective, a 18 touch will have some temporal component, 19 correct? 20 JENNIFER HUANG: Objection. 21 Asked and answered. 22 BY ART LICYGIEWICZ:
38 1 A I think that was my earlier 2 answer. 3 From the user's perspective and 4 from physics perspective, there will be a 5 temporal component of aspects of the 6 touch. 7 For the user, that's the 8 components of their gesture with respect 9 to the touchscreen; and from a physics 10 perspective, that is the set of data 11 induced on the touchscreen with respect 12 to the touch, including its approach 13 contact and departure. 14 ART LICYGIEWICZ: Again, move 15 to strike as non-responsive. 16 BY ART LICYGIEWICZ: 17 Q Dr. Cockburn, my question was a 18 yes-or-no question. 19 From a user's perspective, a 20 touch will have some temporal component, 21 correct? 22 A The user would understand that	40 1 Q You can answer. 2 A Same answer. 3 ART LICYGIEWICZ: Same 4 objection. 5 BY ART LICYGIEWICZ: 6 Q Dr. Cockburn, from a system 7 perspective, touch will have some 8 temporal component, correct? 9 A The system's perspective of the 10 data associated with touch is essentially 11 the same as the physics described 12 earlier. 13 Data associated with the touch 14 is sensed by the touch sensor as a 15 contact approaches, makes contact with, 16 and departs from the touchscreen. That 17 is true for certain forms of 18 touchscreens. There are other forms of 19 touchscreens where data associated with 20 contact is not reported -- sorry -- 21 associated with the approach of the 22 contact is not detected.

41 1 ART LICYGIEWICZ: Again, move 2 to strike as non-responsive, 3 everything after beginning with 4 "data associated." 5 BY ART LICYGIEWICZ: 6 Q It's a yes-or-no question, Dr. 7 Cockburn. 8 From a system perspective, touch 9 has a temporal component, correct? 10 JENNIFER HUANG: Objection. 11 Asked and answered. 12 BY ART LICYGIEWICZ: 13 Q You can answer. 14 A From a system's perspective, 15 data associated with the touch can have a 16 temporal component. 17 Q Is it your position, sir, that 18 from a system perspective, data, in 19 certain instances, does not have a 20 temporal component? 21 JENNIFER HUANG: Objection. 22 Form.	43 1 that the data associated with the 2 approach contact departure of the 3 object only exists for a single 4 frame on the touch sensor, and, 5 therefore, has no temporal 6 component. 7 BY ART LICYGIEWICZ: 8 Q Isn't it true, Dr. Cockburn, 9 that data relating to the temporal 10 component is always present? 11 A I don't think that's correct. 12 If the touch sensor registers or detects 13 data for a single instance of its 14 scanning, that data would only exist 15 essentially for an instant, and the 16 system need not pay any attention to any 17 temporal data associated with it, and 18 there may not be any temporal data 19 associated with it. 20 Q If the data exists for an 21 instant, doesn't that mean that the data 22 has a temporal component?
42 1 THE WITNESS: The data will 2 be induced over time on the touch 3 sensor. The processor, the 4 components of the device, need not 5 attend to any temporal aspect of 6 that data. 7 BY ART LICYGIEWICZ: 8 Q Irrespective of whether the 9 processor components of the device attend 10 to the temporal aspect of the data, 11 temporal data is still present, correct? 12 JENNIFER HUANG: Objection. 13 Form. 14 THE WITNESS: Data associated 15 with the approach and/or contact 16 and/or departure of the object 17 with respect to the touchscreen, 18 can exist over a period of time, 19 and, therefore, from one 20 perspective, contains a temporal 21 component. 22 However, it's also possible	44 1 A If the data was coupled with a 2 clock's timestamp, it would have a 3 temporal component. But it need not have 4 a clock stamp associated with it. 5 Q Does -- let me ask the questions 6 a little bit differently. 7 Does a gesture have a temporal 8 component associated with it? 9 A Gestures could be perceived in 10 the same way as touch data. We could 11 talk about a gesture, and a person of 12 skill in the art would understand, that a 13 gesture has a meaning to a user. So 14 there is the user's comprehension and 15 understanding of their intended data and 16 their mechanisms for expression. 17 There's also a meaning where the 18 system examines data associated with the 19 gesture in order to determine whether the 20 gesture satisfies certain criteria in 21 order to enact a particular form of 22 response from the device.

45 1 ART LICYGIEWICZ: Again, move 2 to strike as non-responsive. 3 BY ART LICYGIEWICZ: 4 The question is very simple, Dr. 5 Cockburn. 6 Does a gesture have a temporal 7 component? 8 JENNIFER HUANG: Objection. 9 Asked and answered. 10 BY ART LICYGIEWICZ: 11 Q You can answer. 12 A Same response. 13 ART LICYGIEWICZ: Same motion 14 to strike. 15 BY ART LICYGIEWICZ: 16 Q Is it your position, sir, that a 17 gesture does not have a temporal 18 component? 19 A Gestures certainly can have 20 temporal components, from both the user's 21 perspective and from the system's 22 perspective.	47 1 programmed to respond to each, any, and 2 all of those; approach, contact, and 3 departure. 4 Q So for purposes of a person of 5 ordinary skill in the art, it is your 6 position that a touch is the same thing 7 as no touch in the context of working 8 with touchscreens? 9 JENNIFER HUANG: Objection. 10 Form. 11 THE WITNESS: That isn't my 12 opinion. 13 BY ART LICYGIEWICZ: 14 Q Sir, is it your position that 15 actions before a person comes into 16 contact with a touchscreen are touches? 17 A A person of skill in the art and 18 the '580 patent, consistent with the 19 understanding of a person of skill in the 20 art, make clear that systems can detect 21 proximity with the touchscreen. This 22 depends on the particular technology used
46 1 Q Gestures on a touchscreen have a 2 tactile component, do they not? 3 A Gestures on the touchscreen can 4 have a tactile component. 5 Q Is it your position, sir, that 6 you can have a gesture made on a 7 touchscreen that doesn't touch the 8 screen? 9 A Yes. Gestures that are issued 10 in close proximity with the touchscreen 11 could be registered by the device and the 12 device could respond to them 13 appropriately. 14 Q So you are saying a touch is not 15 a touch in all circumstances? 16 A A person of skill in the art 17 understands that touches -- data 18 associated with touches could be 19 registered before the contact with the 20 touchscreen, during the contact with the 21 touchscreen, and after the contact with 22 the touchscreen, and systems could be	48 1 for the touchscreen, but many forms of 2 touchscreen can register proximity of a 3 contact with the display prior to actual 4 contact. 5 Q So if I take my finger and move 6 it to my laptop, which is a touchscreen, 7 and come super close to it without 8 physically contacting it, is that a 9 touch? 10 A The '580 specification makes 11 clear that proximity of the contact could 12 be registered by the device, and that is 13 data associated with a touch. 14 Q So in your opinion, sir, coming 15 as close as possible to a touchscreen 16 with my finger, without making contact to 17 that touchscreen, constitutes a touch? 18 A Depending on the technology used 19 for the touchscreen, data associated with 20 the touch at extreme close proximity from 21 the device's perspective, could be almost 22 indistinguishable from physical contact.

49 1 This is made clear in the '580 2 specification. 3 JENNIFER HUANG: Counsel, we 4 have been going about an hour. If 5 there is time for a break, that 6 would be great. 7 ART LICYGIEWICZ: Why don't 8 we go ahead and take 10 minutes 9 right now. 10 THE REPORTER: Off the 11 record. 12 (Whereupon a Recess Commenced 13 at 1:00 p.m. and Testimony 14 Recommended at 1:12 p.m. CT.) 15 BY ART LICYGIEWICZ: 16 Q Dr. Cockburn, did you have a 17 chance to speak to anybody during the 18 break? 19 A No. 20 Q I guess the sun's not up yet, 21 huh? 22 A 6:00 a.m. not yet, school	51 1 different provisional applications from 2 which the application that became the 3 '580 claims priority, correct? 4 A Yes, I see that. 5 Q Okay. 6 Did you review any of these four 7 provisional applications in coming to 8 your conclusions set forth in your 9 declaration? 10 A Not independently. I did 11 examine the file history of the '580 12 patent, and I understand that sometimes 13 elements of provisionals appear in the 14 file history. 15 Q And the provisionals were not 16 included in the file history, 17 Exhibit 1002; is that correct? 18 A I haven't checked it for that 19 particular issue. I could do so now, if 20 you like. 21 Q Let me ask you, to your 22 recollection -- to the best of your
50 1 holidays. 2 Q Not yet. 3 Let's go back to paragraph 28. 4 You state that you were informed by 5 counsel that you should use August 5, 6 2011, as a point in time for claim 7 interpretation purposes, correct? 8 A Yes. 9 Q Did you, in fact, use August 5, 10 2011, as a point in time for claim 11 interpretation purposes? 12 A Yes. 13 Q Let's jump over to Exhibit 1001, 14 the '580 patent. 15 A I am there, thanks. 16 Q Go to part -- where it says 60, 17 in parens. 18 Do you see that? It's on the 19 second page, I believe. 20 A I see that. 21 Q Okay. 22 You see it references four	52 1 recollection, do you recall whether the 2 provisional applications were included in 3 the prosecution history at Exhibit 1002? 4 A I don't recall that they were 5 included in the file history. 6 Q Did you consider any documents 7 not listed in paragraph -- I think it was 8 15 of your declaration? 9 A During -- during the analysis 10 that led to the creation of the 11 declaration, I examined a large number of 12 documents. The ones -- the documents 13 that I rely on are the ones cited in 14 paragraph 15 of my declaration. 15 Q So just to make clear, then, you 16 did not rely on any other documents, 17 other than what is set forth in paragraph 18 15 of your declaration to -- in writing 19 your declaration; is that fair? 20 A That's fair. 21 Q Okay. 22 Dr. Cockburn, during the

53 1 deposition that you and I had relative to 2 the '114 patent IPR, we discussed 3 gestures. 4 Do you recall that? 5 A Broadly, yes. 6 Q And generally, can we say there 7 are two types of gestures; a tap gesture 8 and a hold gesture or press gesture? 9 A Those two types of gestures are 10 well known to a person skilled in the 11 art, both from the user's perspective and 12 from the system's perspective. 13 Q So -- strike that. 14 A A gesture can be a tap, which is 15 when a user quickly touches and releases 16 the touch surface, correct? 17 A It depends on context. A tap 18 often refers to a rapid making of contact 19 followed by quickly breaking contact. 20 Some contexts, a cap refers to 21 only first half of that process; the 22 bringing of the finger into contact with	55 1 Press gestures are when the user 2 touches the touch surface and leaves 3 their finger stationary; is that right? 4 A A press gesture can have 5 slightly different meanings, dependent on 6 context. 7 Q But in general, a press gesture 8 is when a user touches a surface and 9 leaves the finger or other touching 10 implement stationary on the surface, 11 correct? 12 A In some contexts, that would 13 satisfy the recognition of a press 14 gesture. In other contexts, a press 15 gesture may be determined through other 16 parameters, including pressure data or 17 force data. 18 Q And a gesture could be what is 19 called a short press, correct? 20 A A short press is one form of 21 known gesture. 22 Q And that occurs -- a short press
54 1 the display. 2 Q Are those second -- the second 3 half of that answer, are you referring to 4 a tap and hold type gesture? 5 A Not necessarily. A tap and hold 6 comprises the bringing of the finger or 7 object into contact with the display and 8 remaining substantially stationary for a 9 period of time. Whereas, a tap, in 10 certain contexts, is just the bringing of 11 the object into contact with the display. 12 Q Another gesture is a double tap, 13 correct? 14 A That's another well-known 15 gesture. 16 Q And the double tap is when the 17 user quickly touches and releases the 18 touch surface twice, in quick succession; 19 is that fair? 20 A That sounds like a reasonable 21 description, yes. 22 Q Let's talk about press gestures.	56 1 occurs when a user has continued to leave 2 their finger -- I'm going to use finger 3 as the object that's touching the touch 4 surface -- for a period of time; is that 5 right? 6 A Depends on the context, but that 7 would be included in the understanding 8 of -- what could be a short gesture. 9 Q You mean a short press gesture? 10 A Sorry, yes. I meant short press 11 gesture. 12 Q And a gesture could also be a 13 long press; is that right? 14 A Long press gesture is a known 15 form of gesture. 16 Q And that's a gesture that is -- 17 that has a longer temporal duration than 18 a short press, correct? 19 A It really depends on context. A 20 system may not discriminate between a 21 short press and a long press. There 22 would be situations in which a person

57 1 skilled in the art would understand that 2 both a -- all of a press, a short press, 3 and a long press, may be identified by 4 the system and discriminated based on the 5 duration of those presses. 6 Q Another type of gesture could be 7 a press and move gesture; is that right? 8 A Could be, yes. 9 Q A press and move gesture -- you 10 may have to correct my understanding 11 here -- but that would be generated after 12 a press gesture, at a certain set of 13 coordinates on the touchscreen, and then 14 released at a different set of 15 coordinates on the touchscreen, all while 16 maintaining contact with the touchscreen 17 from the first to the second set of 18 coordinates? 19 A What you described could be a 20 press and move gesture. Other things 21 might be identified as a press and move 22 gesture as well.	59 1 correct? 2 A A hold is a known type of 3 gesture that users can execute on a 4 touchscreen display and systems can 5 recognize. 6 Q And a hold is where the user 7 just continues to leave their finger 8 stationary for a period of time that is 9 longer than a long press; is that fair? 10 A It depends on context. It could 11 be recognized in that way. 12 Q And the gestures -- the press 13 gestures that we were just talking about, 14 those are all different press gestures, 15 correct? 16 A Are we discussing the specific 17 instantiations as described by Bowens 18 from the '114? 19 Q We are discussing what you and I 20 had just been talking about. 21 The press gestures that we were 22 talking about -- that I just asked you
58 1 Q Okay. 2 Then a gesture could also be a 3 repeat press, correct? 4 A A gesture may be recognized such 5 as that it generates a repeat press 6 outcome and may be recognized as a repeat 7 press. 8 Q And a repeat press would be an 9 instance in which the user continued to 10 leave their finger stationary for a 11 period of time, and then repeated or did 12 the process at least one more time. 13 Would that be fair? 14 A It sounds reasonable. It does 15 sound like these questions are directed 16 to specifically the language used in a 17 reference that we discussed during the 18 '114 deposition, and I believe that was 19 within the context of Bowens, a reference 20 called Bowens, which I don't have with me 21 at the moment. 22 Q A gesture could also be a hold,	60 1 about, those are all different types of 2 press gestures, correct? 3 A We discussed those press 4 gestures discretely. We identified that 5 a press gesture is known. A long press 6 gesture is known. A short press gesture 7 is known. A hold gesture is known. 8 We didn't discuss the 9 discrimination between them 10 substantially. 11 Q But it would be fair to say that 12 different gestures that we talked about 13 are different from one another -- or 14 strike that. 15 It would be fair to say that the 16 gestures that we have talked about are 17 different from one another, correct? 18 A I think a person skilled in the 19 art would understand that there are 20 contexts in which those gestures could be 21 different from one another. 22 There are also contexts, such as

61 1 the context provided by Bowens, where, 2 for instance, the press gesture was a 3 superset gesture that comprised a subset 4 of gestures, including short press long 5 press. 6 Q Dr. Cockburn, tap gestures are 7 different than press gestures, correct? 8 A In some contexts they may be. 9 In other contexts, they may not be. 10 Q Is it your testimony that a tap 11 and a press are the same thing? 12 A My testimony is that a tap and a 13 press could be the same thing. For 14 example, in an earlier response, I said 15 there are situations in which a tap is 16 recognized not by the establishment and 17 the breaking of contact in rapid 18 succession, but rather, the tap may be 19 recognized by simply the establishment of 20 contact; and, therefore, in that 21 situation, a tap gesture could be 22 extremely similar or even the same as a	63 1 instance, in the context of Bowen which 2 we discussed during my deposition on the 3 '114 patent, the meaning of "tap" and 4 "press" are distinct. 5 However, as I just said, there 6 are situations in which a person of skill 7 in the art would understand that a tap 8 and a press could be the same gesture. 9 Q Let me turn for a second to 10 paragraph 91 of your declaration. Tell 11 me when you have that. 12 A I am there, thanks. 13 Q Just want to confirm your 14 opinions here, sir. 15 Is it your opinion that the 16 pressure cursor is displayed in the 17 second layer? 18 A (Reviewing.) The pressure 19 cursor is one of the components of the 20 Zlider, and the Zlider appears in a 21 second layer. 22 Q And when you say "components of
62 1 press gesture. 2 Q A double tap gesture is 3 different than a press gesture, correct? 4 A Broadly, that seems fair. 5 Q A person of skill in the art 6 would generally understand that the 7 various tap and press gestures that we 8 discuss are different gestures, correct? 9 A I think I just answered that 10 regarding tap and press, that there are 11 contexts in which a person of skill in 12 the art would understand that they are 13 different. There are contexts in which a 14 person of skill in the art would 15 understand that a tap and a press may be 16 the same gesture. 17 Q Is the meaning of -- strike 18 that. 19 Is the plain and ordinary 20 meaning of "tap" the same as the plain 21 and ordinary meaning of "press"? 22 A It depends on the context. For	64 1 the Zlider," are the other components of 2 the Zlider the working area and vernier? 3 A Yes, that seems fair. 4 Q Okay. 5 So it is your position that the 6 pressure cursor, the vernier, and the 7 working area are all displayed in a 8 second layer, correct? 9 A At least the extended markings 10 and -- of the vernier and the pressure 11 cursor are displayed in a second layer. 12 Q Paragraph 91, you also state 13 that the working area is in a second 14 layer, correct? 15 A (Reviewing.) I read the first 16 sentence of paragraph 91. It says, As 17 shown in Figure 6, the Zlider's pressure 18 cursor is displayed in a second layer, 19 i.e., it is always above, for example, 20 the image being displayed and manipulated 21 by the Zlider, along with other 22 components the Zlider, e.g., working area

65 1 and vernier. 2 Q So if we take out the 3 parenthetical, your sentence reads, As 4 shown in Figure 6, the Zlider's, 5 quote/unquote, pressure cursor is 6 displayed in a second layer, along with 7 the other components of the Zlider, e.g., 8 working area and vernier. Correct? 9 A Extracting the first 10 parenthetical, you read that sentence 11 correctly. 12 Q Okay. Let's turn to paragraph 13 48 of your declaration. 14 Bear with me because I still do 15 this old school. 16 Do you have that? 17 A Yes. 18 Q Okay. 19 Paragraph 48 shows an excerpt 20 from the Ramos video; is that right? 21 A That's correct. 22 Q Did you annotate the image shown	67 1 And you would also agree -- 2 A Sorry. Sorry, can I finish? 3 In the figure at the bottom of 4 page 24, there is a small amount of blur 5 in the figure at the top of page 25 -- 6 (Simultaneous Crosstalk.) 7 Q We're just -- 8 A -- paragraph. 9 Q We're talking at the one on page 10 24, not on page 25. 11 A Could you repeat the question, 12 please. 13 Q Sure. 14 The image on page 24, in 15 paragraph 48 of your declaration, you 16 would agree with me that there is no blur 17 between the contents and the working 18 area; is that correct? 19 A I would agree there is no blur 20 between the two in that image. 21 Q Okay. 22 And you agree with me that there
66 1 in paragraph 48? 2 A Yes. 3 Q So in paragraph 48 you have a 4 line, the topmost line goes to what is 5 called contents or the picture; is that 6 fair? 7 A That's fair. 8 Q And the second reference that's 9 annotated goes to the working area or the 10 ladder-like structure that's at the right 11 of the image, correct? 12 A Yes. 13 Q The image on page 24, paragraph 14 48 of your declaration, you would agree 15 with me that there's no blur between the 16 contents and the working area; is that 17 correct? 18 A (Reviewing.) You referred to no 19 blur. I would agree there is no blur 20 shown in that figure. In the -- 21 (Simultaneous Crosstalk.) 22 Q Okay.	68 1 is no shadowing between the contents and 2 the working area in the image shown in 3 paragraph 48, correct? 4 (Zoom Technical Difficulties.) 5 THE WITNESS: I agree that 6 the figure at the bottom of page 7 24 does not show a shadowing 8 affect between the working area 9 and the contents. 10 BY ART LICYGIEWICZ: 11 Q And you agree with me that there 12 is no opacity between the contents and 13 the working area shown in the figure at 14 paragraph 48 of your declaration? 15 JENNIFER HUANG: Objection. 16 Form. 17 THE WITNESS: There are two 18 figures -- 19 ART LICYGIEWICZ: What is the 20 basis of the form objection? Hold 21 on. 22 JENNIFER HUANG: It's not

69 1 real clear what is meant by 2 "opacity." 3 But if the witness can answer 4 the question, he's, of course, 5 welcome to. 6 THE WITNESS: There are two 7 figures in paragraph 48. The 8 second figure in paragraph 48 does 9 show an opacity affect between an 10 element of the Zlider that is 11 partially in the working area and 12 the same element of the Zlider 13 being the pressure cursor that is 14 partially over the content. 15 BY ART LICYGIEWICZ: 16 Q In the image shown on page 24, 17 in paragraph 48, there is no opacity 18 between the contents and the working 19 area, correct? 20 A In the image at the bottom of 21 page 24, there is no such opacity affect 22 between the working area and the	71 1 (Time Noted: 1:39 p.m. CT.) 2 (Deposition Adjourned for the 3 day.) 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
70 1 contents. 2 Q And the only opacity in the 3 figure -- strike that. 4 The only opacity in the image at 5 the top of page 25 is from the pressure 6 cursor, correct? 7 A I am not sure that's entirely 8 correct. There are also extended 9 elements of the vernier that the spacing 10 between the extended elements that 11 overlay the content is fully transparent. 12 Q Is it your position, sir, that 13 the image shown on page 25 of your 14 declaration, that the working area 15 overlays the content? 16 A There are elements within the 17 vernier that overlay the content. Those 18 elements within the vernier are the 19 extended markings that can be seen just 20 to the left of the red handle marking 21 region and another one just to the right. 22 (Zoom Technical Difficulties.)	72 1 ACKNOWLEDGEMENT 2 STATE OF _____ 3 COUNTY OF _____ 4 5 I, the undersigned, hereby 6 certify that I have read the transcript 7 of my testimony taken under oath in my 8 deposition; that the transcript is a true 9 and complete and correct record of my 10 testimony, and that the answers on the 11 record as given by me are true and 12 correct. 13 14 _____ 15 ANDREW COCKBURN, PhD 16 17 Signed and subscribed to before 18 me this _____ day of _____, 19 20__. 20 21 _____ 22 Notary Public

1 I, S. Arielle Santos, CSR, CLR, do
2 hereby certify:
3 That prior to being examined, the witness named
4 in the forgoing deposition, was by me duly
5 affirmed remotely under order SC of FL No.
6 AOSC20-23 Amendment 4 (II)(C)(2) to testify the
7 truth, the whole truth, and nothing but the
8 truth.
9 That said deposition was taken before me at the
10 time and place set forth and was taken down by
11 me in shorthand and thereafter reduced to
12 computerized transcription under my direction
13 and supervision, and I hereby certify the
14 foregoing deposition is a full, true and correct
15 transcript of my shorthand notes so taken.
16 I further certify that I am neither counsel for
17 nor related to any party to said action nor in
18 anywise interested in the outcome thereof.

19 
20 _____

21 S. Arielle Santos, CSR

22 Notary No. HH 192604 Exp 10/31/2025

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