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Paper No. ____

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VALVE CORPORATION,
Petitioner,

v.

IMMERSION CORPORATION,
Patent Owner.

Case No. TBD
Patent No. 8,749,507

PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.1 *et seq.*

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<i>Apple Inc. v. Telefonaktiebolaget LM Ericsson</i> , IPR2022-00457, Paper 7 (Sep. 21, 2022).....	77
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EXHIBIT LIST

Exhibit	Description
1001	U.S. Patent No. 8,749,507
1002	Prosecution History of U.S. Patent No. 8,749,507
1003	Declaration of Jean Renard Ward
1004	CV of Jean Renard Ward
1005	U.S. Patent No. 6,590,568, “Touch Screen Drag And Drop Input Technique” (“Astala”)
1006	U.S. Patent Pub. No. US 2002/0033795, “Haptic Interface For Laptop Computers And Other Portable Devices” (“Shahoian”)
1007	U.S. Patent Pub. No. 2002/0057263, “Simulating Gestures of A Pointing Device Using A Stylus And Providing Feedback Thereto” (“Keely”)
1008	U.S. Patent No. 7,256,773, “Detection of A Dwell Gesture By Examining Parameters Associated With Pen Motion” (“Kolmykov-Zotov” or “KZ”)
1009	U.S. Patent No. 5,943,044, “Force Sensing Semiconductive Touchpad” (“Martinelli”)
1010	U.S. Patent No. 5,734,373, “Method And Apparatus For Controlling Force Feedback Interface Systems Utilizing A Host Computer” (“Rosenberg”)
1011	U.S. Patent No. 6,791,536, “Simulating Gestures of A Pointing Device Using A Stylus And Providing Feedback Thereto” (“Keely-536”)
1012	U.S. Prov. App. No. 60/247,841, “High Level Active Pen Matrix” (“Keely-841”)
1013	U.S. Prov. App. No. 60/247,400, “System and Method For Accepting Disparate Types Of User Input” (“Keely-400”)
1014	U.S. Patent No. 5,880,411, “Object Position Detector With Edge Motion Feature And Gesture Recognition” (“Gillespie”)

Exhibit	Description
1015	Order 27, Construing the Terms of the Asserted Claims of the Patent At Issue, <i>In the Matter of Certain Mobile and Portable Electronic Devices Incorporating Haptics (Including Smartphones and Laptops) and Components Thereof</i> , Inv. Nos. 337-TA-1004, 337-TA-990 (Feb. 2, 2017)
1016	S.K. Lee et al., “A Multi-Touch Three Dimensional Touch-Sensitive Tablet,” <i>ACM Sigchi Bulletin</i> , vol. 16, no. 4, pp. 21-25 (1985) (“Lee85”)
1017	<i>The New Oxford American Dictionary</i> (Oxford University Press 2001)
1018	<i>Microsoft Computer Dictionary</i> (5th ed. 2002)
1019	Chart comparing ’507 patent claim language
1020	U.S. Patent No. 8,164,573, “Systems And Methods For Adaptive Interpretations Of Input From A Touch-Sensitive Input Device”
1021	Prosecution History of U.S. Patent No. 8,164,573
1022	<i>Apple Inc. v. Immersion Corp.</i> , IPR2016-01777, Paper 1 (Sep. 12, 2016)
1023	<i>Apple Inc. v. Immersion Corp.</i> , IPR2016-01777, Paper 7 (Mar. 23, 2017)
1024	<i>Apple Inc. v. Immersion Corp.</i> , IPR2017-01310, Paper 1 (Apr. 21, 2017)
1025	<i>Apple Inc. v. Immersion Corp.</i> , IPR2017-01310, Paper 7 (Aug. 9, 2017)
1026	<i>Apple Inc. v. Immersion Corp.</i> , IPR2017-01310, Paper 8 (Nov., 2, 2017)
1027	U.S. Patent Pub. No. U.S. 2004/0150631, “Method Of Triggering Functions In A Computer Application Using A Digitizer Having A Stylus And A Digitizer System” (“Fleck”)
1028	<i>Ex parte DaCosta</i> , No. 2009-015440 (PTAB Dec. 14, 2011)
1029	Federal Court Management Statistics (September 2023)
1030	Davis, “The RAND Tablet: A Man-Machine Graphical Communication Device” in Proceedings-Fall Joint Computer Conference (1964)
1031	U.S. Patent No. 3,482,241
1032	U.S. Patent No. 5,708,460
1033	U.S. Patent No. 6,492,979

Exhibit	Description
1034	U.S. Patent No. 5,510,813
1035	Buxton, “Touch Gesture and Marking,” ch. 7 in Baecker, ed., Readings in Human-Computer Interaction (1995)
1036	U.S. Patent No. 6,160,489
1037	Strong, “An Electrotactile Display,” IEEE, Trans. On Man-Machine Sys., mms-11:1 (Mar. 1970)
1038	Massie, “Initial Haptic Explorations with the Phantom: Virtual Touch Through Point Interaction” MIT Thesis (1996)
1039	Bliss, “Optical-to-Tactile Image Conversion for the Blind,” IEEE, Trans. On Man-Machine Sys., mms-11:1 (Mar. 1970)
1040	European Patent Publication No. EP0265011A1
1041	U.S. Patent No. 5,388,992
1042	IBM, “Mouse Ball-Actuating Device with Force and Tactile Feedback,” IBM Technical Disclosure Bulletin 32:9B (Feb. 1990)
1043	Fukumoto, “Active Click Tactile Feedback for Touch Panels,” CHI 2001 Interactive Posters (2001)
1044	PCT Publication No. WO9200559A1
1045	Massie, “The Phantom Haptic Interface—A Device for Probing Virtual Objects” in ASME, Dynamic Systems and Control (1994)
1046	U.S. Patent No. 5,982,352
1047	U.S. Patent No. 6,131,097
1048	U.S. Patent No. 6,337,678
1049	U.S. Patent No. 6,219,034
1050	U.S. Patent No. 6,219,032
1051	U.S. Patent No. 4,885,565
1052	U.S. Patent No. 6,424,333
1053	Negroponte, “HUNCH An Experiment in Sketch Recognition” in UCLA, Environmental Design: Research and Practice, Proceedings of the EDRA 3/ar 8 Conference (1972)

Exhibit	Description
1054	Foley, Fundamentals of Interactive Computer Graphics (1982) (excerpts)
1055	Buxton, “There’s More to Interaction than Meets the Eye” in Norman, ed., User Centered Systems Design (1986)
1056	Rosch, “Alternative Input-Digitizing Tablets-Pointing the Way to Easier Input,” PC Magazine, p. 227 (Nov. 28, 1989)
1057	U.S. Patent No. 5,491,495
1058	Buxton, “Issues and Techniques in Touch-Sensitive Tablet Input,” SIGGRAPH ‘85, 19:3, 215 (1985)
1059	U.S. Patent No. 4,202,041
1060	U.S. Patent No. 494,562
1061	U.S. Patent No. 5,673,066
1062	U.S. Patent No. 5,680,126 (“Kikinis”)
1063	U.S. Patent No. 7,336,260 (“Martin”)
1064	J. R. Ward and M. J. Phillips, “Digitizer Technology: Performance Characteristics and the Effects on the User Interface,” in <i>IEEE Computer Graphics and Applications</i> , vol. 7, no. 4, pp. 31-44, April 1987.
1065	U.S. Patent No. 5,734,373 (“Rosenberg-373”)
1066	U.S. Patent No. 5,053,757 (“Meadows”)
1067	James R. Taggart, M.S. Thesis. “Reading a Sketch by Hunch” (MIT, 1973).
1068	U.S. Patent No. 5,245,139 (“Protheroe”)
1069	U.S. Patent No. 5,543,591 (“Gillespie-591”)
1070	G.P. Kurtenbach, Dissertation. “The Design and Evaluation of Marking Menus,” University of Toronto, 1993.
1071	U.S. Patent Pub. No. 2005/0162411 (“VanBerkel”)
1072	U.S. Patent No. 5,231,381 (“Duwaer”)
1073	U.S. Patent No. 5,117,071 (“Greanias”)

Exhibit	Description
1074	U.S. Patent No. 6,128,007 (“Seybold”)
1075	U.S. Patent No. 5,365,461 (“Stein”)
1076	U.S. Patent No. 6,762,752 (“Perski”)
1077	Dkt. 46, Order, <i>Immersion v. Valve</i> , No. 2:23-cv-712 (W.D. Wash.)
1078	Immersion infringement contentions in <i>Immersion v. Valve</i> , No. 2:23-cv-712 (W.D. Wash.)
1079	Exhibit B to Immersion infringement contentions in <i>Immersion v. Valve</i> , No. 2:23-cv-712 (W.D. Wash.)
1080	Dkt. 15, Proof of Service, <i>Immersion v. Valve</i> , No. 2:23-cv-712 (W.D. Wash.)

MANDATORY NOTICES

A. Real Party-In-Interest – §42.8(b)(1)

Petitioner Valve Corporation (“Valve” or “Petitioner”) is the real party-in-interest.

B. Related Matters – §42.8(b)(2)

1. United States Patent & Trademark Office

U.S. Patent No. 8,749,507 (“the ’507 patent”) was filed on April 6, 2012 as Application No. 13/441,108. The ’507 patent claims priority to Application No. 10/723,778, which was filed on November 26, 2003 and issued as U.S. Patent No. 8,164,573 on April 24, 2012. The ’507 patent expired on November 26, 2023.

2. Patent Trial and Appeal Board

The ’507 patent was the subject of petitions in *Apple Inc. v. Immersion Corp.*, IPR2016-01777 and *Apple Inc. v. Immersion Corp.*, IPR2017-01310.

3. District Court Matters

a. Western District of Washington

The ’507 patent is asserted in *Immersion Corp. v. Valve Corp.*, 2:23-cv-00712-TL (W.D. Wash.) (“the Litigation”). Valve was served with the complaint on May 18, 2023.

b. District of Delaware

The '507 patent was asserted in *Immersion Corp. v. Apple Inc., AT&T Inc., and AT&T Mobility LLC*, No. 1:16-cv-325 (D. Del.). The court dismissed the action in its entirety with prejudice on February 7, 2018.

4. International Trade Commission

The '507 patent was at issue *In the Matter of Certain Mobile and Portable Electronic Devices Incorporating Haptics (Including Smartphones and Laptops) and Components Thereof*, Inv. No. 337-TA-1004, on the basis of a complaint filed May 5, 2016 on behalf of Immersion concerning the '507 patent and four other Immersion patents. The Chief ALJ consolidated the investigation with No. 337-TA-990, previously instituted against Apple and others concerning three other Immersion patents, and recaptioned the matter as Inv. Nos. 337-TA-1004, 337-TA-990 (consolidated). The ALJ granted a joint motion to terminate on the basis of settlement agreement on February 16, 2018 (Order No. 75). *See generally* 83 Fed. Reg. 12405 (Mar. 21, 2018) (describing consolidated investigations and settlement).

C. Counsel and Service Information – §§42.8(b)(3) and (b)(4)

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Powers of attorney are submitted with this petition. Counsel for Petitioner consents to service of all documents via electronic mail.

Petitioner requests *inter partes* review of '507 patent claims 1-18 (“challenged claims”).

I. INTRODUCTION

The '507 patent claims providing haptic feedback responsive to determining a user's gesture on a touch-sensitive input device like a touchpad or touchscreen. The gesture may be, e.g., a press or tap, and can simulate a mouse button click. During prosecution, the Patent Owner (“Immersion”) overcame claim rejections by adding limitations reciting specific criteria to determine the gesture. But Immersion's gesture-recognition techniques were well-known.

Ground 1 (Astala+Shahoian). Astala (EX1005) discloses the claimed gesture determination techniques. Astala's system does not provide haptic feedback, but that was known. Shahoian (EX1006)—an Immersion application—published more than a year before Immersion filed the '507 patent, making it indisputable prior art. Shahoian discloses haptic feedback for touchpads and touchscreens, and the pressure-sensing components recited in various dependent claims. Astala+Shahoian renders claims 1-18 obvious.

Ground 2 (Keely+Kolmykov-Zotov). Keely (EX1007) describes determining a press-and-hold gesture on a touchpad and providing haptic feedback. Kolmykov-Zotov (EX1008) improves Keely's press-and-hold determining techniques. Keely+Kolmykov-Zotov renders claims 1, 6-9, 13-14, and 18 obvious.

Ground 3 (Keely+Kolmykov-Zotov+Shahoian). Keely and Kolmykov-Zotov do not describe implementation details recited in certain dependent claims relating to known pressure sensors. Shahoian does. Keely+Kolmykov-Zotov+Shahoian renders claims 2-5, 10-12, and 15-17 obvious.

II. STANDING CERTIFICATION

The '507 patent is available for IPR. Petitioners are neither barred nor estopped from requesting IPR. 37 C.F.R. §42.104(a).

III. UNPATENTABILITY GROUNDS

Ground	Reference(s)	Claim(s)	Basis
1	Astala+Shahoian	1-18	§103(a)
2	Keely+Kolmykov-Zotov	1, 6-9, 13-14, 18	§103(a)
3	Keely+Kolmykov-Zotov+Shahoian	2-5, 10-12, 15-17	§103(a)

The above-identified references are prior art under at least pre-AIA §§102(a), (b), and/or (e) based on their filing and publication dates:

Reference	Filing	Publication	Basis
Astala	2000-10-20	2003-07-08	§§102(a), 102(e)
Shahoian	2000-01-19	2002-03-21	§102(b)
Keely	2001-03-23	2002-05-16	§102(b)
Kolmykov-Zotov	2003-06-09	2007-08-14	§102(e)

IV. '507 PATENT¹

The '507 patent is directed to interpreting inputs received from a touch-sensitive input device (1:25-27) like a touchpad, touch panel, or touchscreen (1:33-35, 2:39-41, Fig. 1). The '507 patent describes “accurately determining [user] intent based on data [from] a touch-sensitive input device.” 2:1-3.

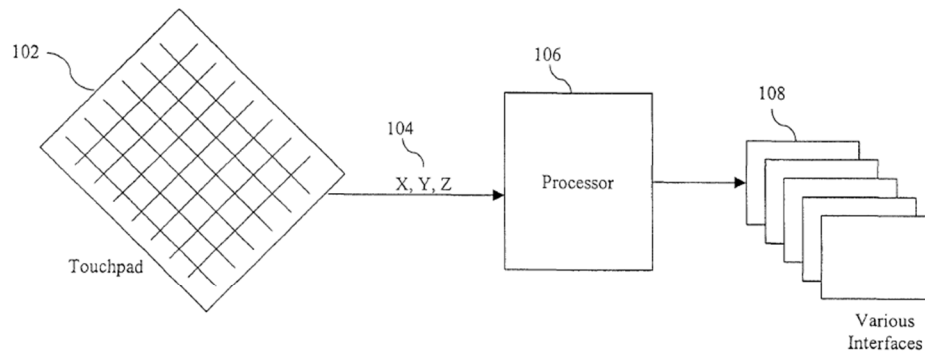


FIG. 1

Touchpad 102 senses a stylus (or finger) contacting the surface of the touchpad 102, and sends parameters indicating the X/Y position and pressure of the contact to processor 106. 2:41-45, 3:51-52. The detected pressure may be a “pseudo pressure or Z parameter” (which is “an estimation” of “vertical displacement” of the touchpad surface “based on the size” of a change in capacitance) rather than a “direct measure of pressure” or “a measure of the actual vertical displacement” on the

¹ Unless otherwise noted, Section IV citations reference EX1001.

touchpad 102. 3:10-19. The pseudo pressure “may not accurately represent the amount of pressure actually exerted on the touchpad 102” because the sensed capacitance change varies based on factors other than pressure (e.g., size of the user’s finger). 3:19-39. “[O]ther embodiments” may sense “actual pressure” by using an “explicit pressure sensor.” 2:61-63.

The claims determine user intent from position (X/Y) and pressure (Z) parameters reflecting the user/touchpad interaction. 4:56-58. Determining user intent means recognizing a gesture from the sensed parameters. Figure 3 shows determining particular user “gestures” (e.g., tapping 310, pressing 326) from the touchpad’s user-interaction data. Fig. 3, 7:7-32, 8:5-50.

A. Challenged Claims

Claims 1-18 are reproduced in the Claim List (Appendix A). Independent claim 1 is reproduced below with limitation labels added:

1[PRE] A method comprising:

[1A] receiving contact data from an input device;

[1B] determining an interaction with a displayed object on a screen based on the contact data;

[1C] responsive to determining the interaction, determining a gesture based on the contact data comprising:

[1D] determining a pressure and a change in pressure based on the contact data, and

[1E] determining a press if:

[1E1] the pressure is greater than a pressure threshold,

[1E2] the change in pressure is greater than a change in pressure threshold, and,

[1E3] a first interval has elapsed; and,

[1F] responsive to determining the gesture, outputting a haptic effect.

Claim 9 recites a computer-readable medium (“CRM”) for implementing claim 1’s method. Claim 14 recites a processor communicating with a CRM and configured to perform claim 1’s method. Dependent claims add limitations on contact data (claims 2-5) and “gesture” analysis (claims 6-8). Dependent claims 10-13 (CRM) and 15-18 (system) add limitations similar to those in claims 2-4 and 6.

B. Prosecution History

The ’507 patent issued from Application No. 13/441,108 (EX1002, 429)—a continuation of Application No. 10/723,778 (“’778-App”), filed November 26, 2003 (*Id.*, 11).

The Examiner rejected application-claim 1 as anticipated by Patent No. 6,118,435 (“Fujita”). EX1002, 320. In response, Immersion added limitations [1E] and [1E1]-[1E3] (EX1002, 344) and argued that “Fujita does not disclose or suggest ‘comparing a change in pressure to a change in pressure threshold.’” EX1002, 350-351.

The Examiner then rejected application-claim 1 for double patenting over parent Patent No. 8,164,573's claim 11 in view of EX1014 ("Gillespie"). EX1002, 385-386. The Examiner found that Gillespie taught gesture determination based on pressure and change in pressure each meeting a threshold. EX1002, 386. Immersion filed a terminal disclaimer (EX1002, 400) and the Examiner allowed the claims. EX1002, 410.

C. Apple IPRs

Immersion asserted the '507 patent against Apple in district court and at the ITC. Apple filed IPR2016-01777 challenging thirteen '507 patent claims. EX1022, 3. Seven months later Apple filed IPR2017-01310 with a single ground (Astala+Shahoian) challenging all 18 claims. EX1024, 3. Both the -01777 petition (EX1023, 15) and -01310 petition (EX1024, 40) relied on Shahoian solely for providing haptic feedback.

The Board denied institution in -01777, finding the two primary references—Toda and Morimura—did not meet “determining a press” under a claim construction discussed *infra* §V.A. EX1023, 15-17. The Board never considered Shahoian beyond finding that it failed to supply the disclosure the Board found missing in Toda and Morimura. EX1023, 15-17.

The Board then discretionarily denied the second-filed (-01310) petition under Section 314(a) and *General Plastic*. EX1026, 14. The Board never considered the merits of Astala+Shahoian in -01310.

D. POSA

A person of ordinary skill in the art (“POSA”) on November 26, 2003 would have had a Bachelors’ degree in computer science, electrical engineering, or a related field, plus at least two years of industry or graduate level experience with software engineering, haptics programming, and/or human-computer interaction, including experience with user-interfaces and applications involving touchscreens, touchpads, and related technologies. Ward, ¶¶47-51.

V. CLAIM INTERPRETATION

The Board construes claim terms using ordinary meaning in light of the specification and prosecution history. 37 C.F.R. § 42.100(b). The Board need only construe terms to the extent needed to resolve disputes. *Nidec v. Zhongshan*, 868 F.3d 1013, 1017 (Fed. Cir. 2017); 83 Fed. Reg. 51,340 at 51,353.

A. “determining a press if... a first interval has elapsed”

Limitation [1E] recites “determining a press if” criteria in limitations [1E1]-[1E3] are met:

[1E1] the pressure is greater than a pressure threshold,

[1E2] the change in pressure is greater than a change in pressure threshold, and

[1E3] a first interval has elapsed;

In IPR2016-01777, the panel required the conditions in [1E1] and [1E2] “*be maintained for the duration of the first interval* [in [1E3]] before a press is determined” (EX1023, 14-15).² This construction is contrary to *Phillips* and excludes the ’507 specification’s two embodiments.

Immersion did “not endorse the Board’s interpretation[.]” EX1025, 15.

The ITC correctly did ***not*** require that [1E1]-[1E2]’s conditions persist for the first time interval. EX1015, 46-56.

As detailed below, the intrinsic evidence confirms that “determining a press” [1E] only requires meeting [1E1]-[1E3] individually, without requiring that the [1E1] or [1E2] conditions persist ***throughout*** the [1E3] “first interval.”

1. Claim language

[1E1] determines whether pressure exceeds a threshold without specifying a point in time for the comparison. Ward, ¶114. Applicants ***could*** have required that the pressure exceed the pressure threshold throughout the “first interval” but did not.

[1E2] evaluates a difference between pressure measurements at two points in time. Ward, ¶115. Applicants ***could*** have required that a pressure change exceed a

² Emphasis added throughout the Petition unless otherwise noted.

pressure change threshold throughout the “first interval” but did not.

[1E3] does not limit when the “first interval” begins, and thus does not require that it begin only once a pressure or change in pressure exceeds a threshold.

2. Specification

Construing “determining a press” [1E] to require that [1E1] or [1E2] be met *throughout* [1E3]’s “first interval” would exclude each ’507 patent embodiment. *Phillips v. AWH*, 415 F.3d 1303, 1321 (Fed. Cir. 2005) (en banc) (“specification is the single best guide to the meaning of a disputed term”) (cleaned up). A construction excluding a preferred embodiment “is rarely, if ever, correct[.]” *Vitronics v. Conceptronic*, 90 F.3d 1576, 1583 (Fed. Cir. 1996).

The specification discloses two “press” determination embodiments. EX1001, Fig. 2 (step 236), Fig. 3 (step 326); Ward, ¶118.

a. Fig. 2 Embodiment

Fig. 2 shows two time intervals: a “first tick count” and a “release tick count.” As detailed below, *neither* interval in Fig. 2 measures how long a pressure or pressure change persists above a threshold. Ward, ¶¶119, 124-125. The “*first tick count*... determine[s] the length of time the finger remains on the key” (EX1001, 6:10-12), while the “*release tick count*... measure[s] a time interval *following the detection of a press* during which the finger is deemed to be pressing” (EX1001,

6:62-65). The Fig. 2 embodiment does not support requiring that conditions [1E1]-[1E2] persist *throughout* a first interval. Ward, ¶126.

(1) First Tick Count

The “first tick count is set when the finger goes from a non-touching to a touching state and is used to measure a time interval during which a different (higher) set of thresholds is used because users typically push harder when they first touch[.]” *Id.*, 6:58-62. Before step 216 determines that the “*first tick count* [started at step 208] has elapsed” (EX1001, 6:34-35), step 220 sets a “first threshold.” After **step 216** determines [1E3] that the “*first tick count* has elapsed” (*id.*), step 218 sets a lower “move threshold.” Ward, ¶¶120-121.

Fig. 2’s process checks [1E2] at **step 222** whether a “change in pseudo pressure exceeds the threshold value” (EX1001, 6:37-41), and then (if so) checks [1E1] at **step 224** whether the then-current pseudo pressure exceeds a threshold (EX1001, 6:41-47). Ward, ¶121. Fig. 2’s process does so regardless of whether it determines (in step 216) that the first tick count has elapsed or not. Ward, ¶121. The determination of whether the first tick count has elapsed or not at **step 216** ([1E3]) only impacts which threshold values (set at 218 or 220) the determinations in **step 222** ([1E2]) and **step 224** ([1E1]) use. Ward, ¶123. The first tick count does not measure how long a pressure or change in pressure has exceeded a threshold. Ward, ¶¶125-126.

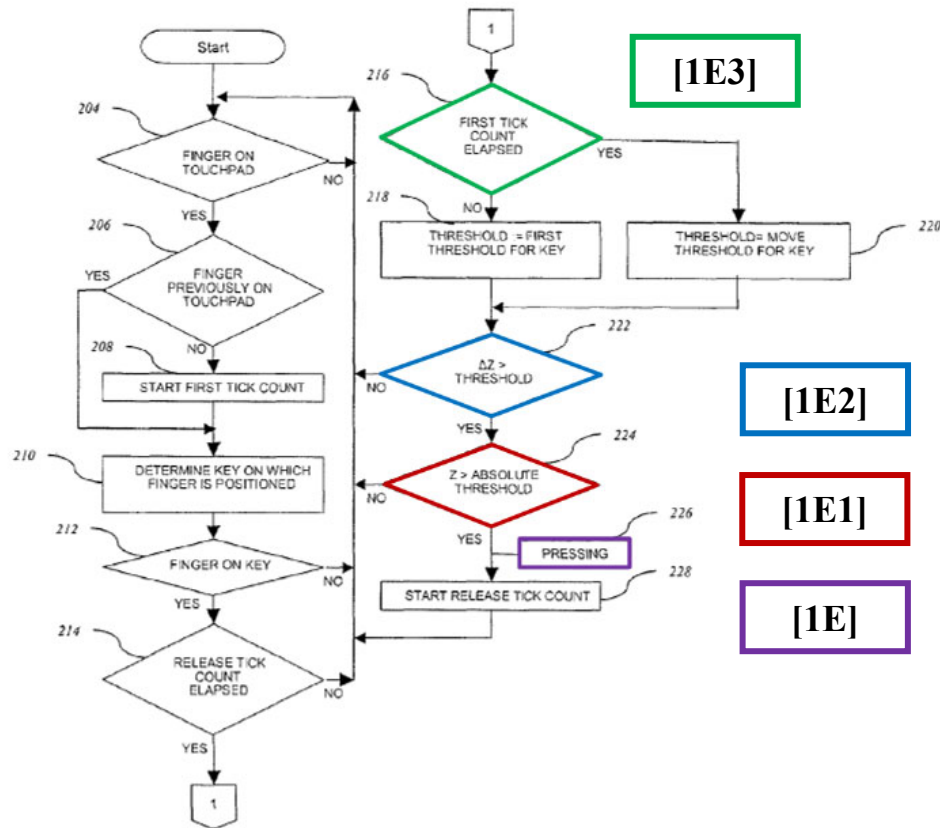


FIG. 2

(2) Release Tick Count

The *release tick count* “start(s)” (step 228) *after* a “pressing” determination (step 226) because it “measure[s] a time interval *following the detection of a press*” and ensures that no “further press detection” is performed via which another press is determined until the release tick count has elapsed (EX1001, 6:62-7:6). If the *release tick count* interval was considered to be the “first interval” as claimed, it does not measure how long a pressure or change in pressure has exceeded a threshold. Ward, ¶¶124 -126.

b. Fig. 3 Embodiment

For a new touching to be recognized, the pressure must exceed an upper threshold. EX1001, 7:16-25; Ward, ¶127. Then, the pressure must fall below a lower threshold to determine that the touching ended. EX1001, 7:25-27; Ward, ¶127.

Step 302 checks [1E1] whether pressure (Z) exceeds the upper threshold. EX1001, 8:5-8, Fig. 3; Ward, ¶127. Without this determination passing, no “pressing” will be determined (**step 326**) because the process will never advance to **step 326**. EX1001, 7:16-25; Ward, ¶128.

returns to step 302 so that if the pressure change exceeds the threshold at a *later* pass through **step 322** after the first time interval has elapsed, a “pressing” is determined at **step 326** [1E]. EX1001, Fig. 3; Ward, ¶137. Determining a press does not require that the pressure change persist over the entire first interval. Ward, ¶¶136-138.

The same is true for [1E1]’s determination. A “pressing” is not detected unless the pressure exceeded the *upper* threshold. EX1001, 7:16-25; Ward, ¶139. When it determines that the first interval has not elapsed (**step 324**), the process returns to **step 302** and again determines whether the pressure exceeds the upper threshold. EX1001, Fig. 3; Ward, ¶142. If that determination fails, the process does *not* terminate and find no “pressing.” Ward, ¶¶129-134, 140-143. So long as the pressure remains above the *lower* threshold (step 306), the process continues so that if the other conditions are met, a touch will be detected after the first interval elapses. EX1001, Fig. 3 and 7:25-27; Ward, ¶¶129-134, 144. A “pressing” determination requires a pressure above the *upper* threshold (**step 302**, [1E1]), but not that the pressure persist above that *upper* threshold throughout the first interval. Ward, ¶¶131, 145.

B. Other Constructions.

No other outer boundary constructions are needed because combinations meet the remaining limitations under any reasonable construction. *Vivid Techs. v. Am. Sci. & Eng’g.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

The ITC construed three terms. All grounds meet those constructions:

Term	EX1015	Construction
“pressure”	47	“application of force from a contact”
“pseudo pressure”	53	“an indirect measure of pressure”
“determining a press if... the change in pressure is greater than a change in pressure threshold”	56	“determining that a press has occurred if the magnitude of the change in pressure (positive or negative) is greater than a static or adaptive threshold for the change in pressure.”

The ITC adopted *Immersion’s* construction of “pressure” (EX1015, 46-47). Judicial estoppel precludes Immersion from arguing for a different construction. *Trustees in Bankruptcy of North American Rubber Thread v. United States*, 593 F.3d 1346, 1353–1354 (Fed. Cir. 2010).

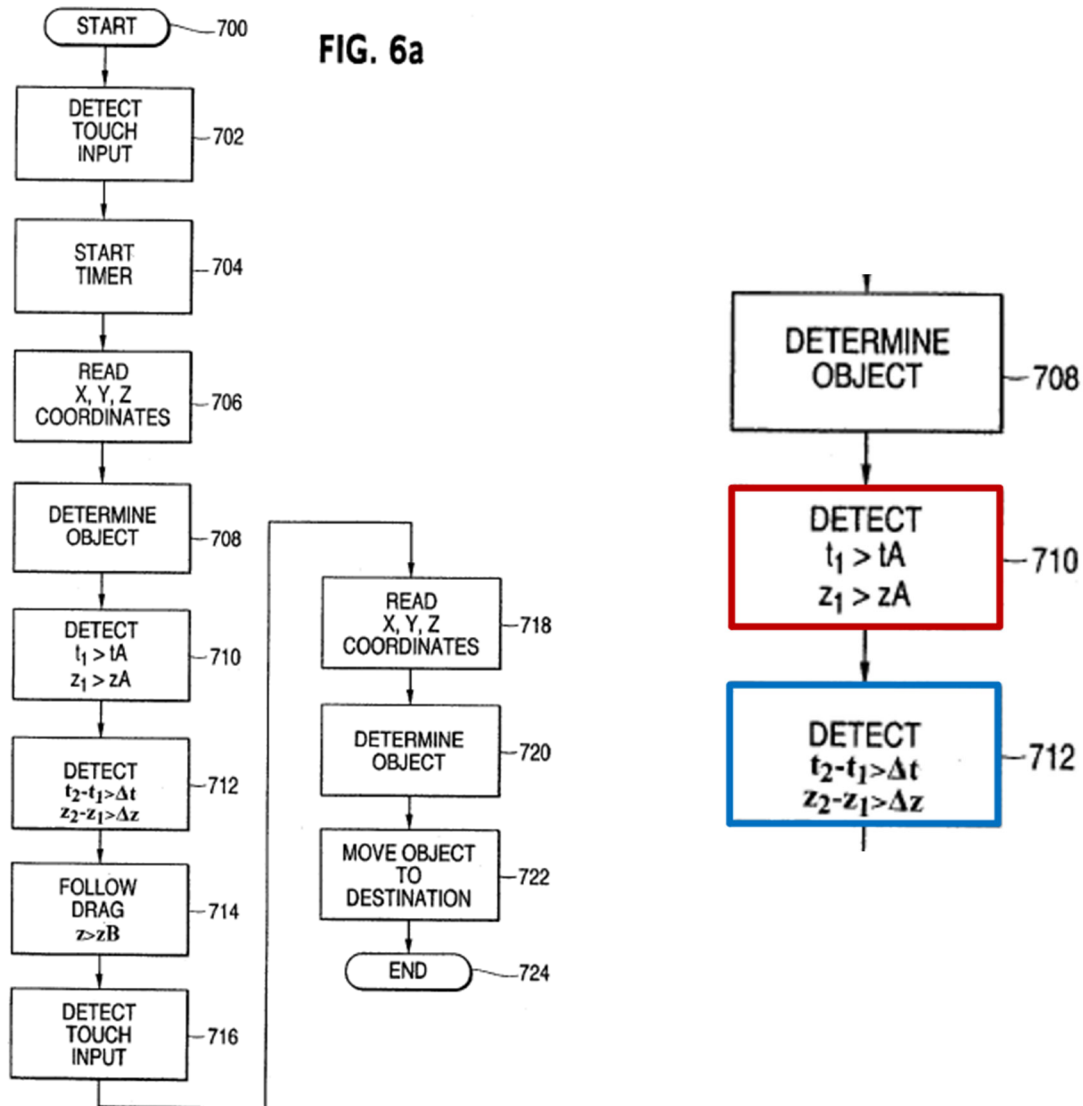
VI. UNPATENTABILITY ANALYSIS

A. Ground 1: Astala+Shahoian Renders Obvious Claims 1-18.

1. Astala

Astala discloses algorithms for gesture determination from user interaction with a touchscreen, such as dragging and dropping file folders into a directory on a graphic display. Astala, Abstract, Fig. 6a-6d, 1:18-21, 9:40-65; Ward, ¶150. Astala detects a particular type of press whereby the user touches an object using a certain amount of pressure, then reduces that pressure before dragging the object to another location. Astala, Abstract.

In Fig. 6a (annotated below), Astala determines that a user has pressed on a displayed object (identified in step 708) based on several determinations.



Step 710 determines whether pressure (z_1) exceeds a threshold pressure (z_A) *and* for a time period (t_1) greater than a predetermined time period (t_A). Astala, 9:25-35; Ward, ¶¶151-153. **Step 712** determines whether pressure (z_2) on the object has been reduced from pressure (z_1) by an amount greater than a predetermined pressure

differential (Δz). Astala, 9:35-40; Ward, ¶¶154. Astala also checks whether a time interval has elapsed ($t_2 - t_1 > \Delta t$) (**step 712**). Astala, Fig. 6a, 9:15-39; Ward, ¶154.

In steps 710 and 712, Astala determines that the user has pressed an object, as explained above, in a manner preceding a drag of that object. Astala, 9:40-65, Fig. 6a; Ward, ¶155.

2. Shahoian

Shahoian describes techniques for providing haptic feedback to touchpads 16 or touchscreens 52 based on gesture determination. Shahoian, Figs. 2, 3, [0007], [0040]-[0043], [0055]-[0057]. The haptic feedback “assist[s] and inform[s] the user of ... control tasks within [a] graphical environment.” Shahoian, [0006]. For example, “haptic feedback can... be useful to indicate to the user that a button has been pressed, e.g. a small vibration is output when a button is activated.” Shahoian, [0178]. Ward, ¶156.

Shahoian describes touchpads that use capacitive, resistive, or “different type[s] of sensing,” and explains how capacitive and resistive sensors perform pressure sensing. Shahoian, [0041]; Ward, ¶157.

3. Reasons to Combine

Shahoian explains that “[o]ne problem with existing touchpads is that there is no haptic feedback provided to the user” to “assist and inform the user” how user gestures have been interpreted. Shahoian, [0006]; Ward, ¶¶158-159. POSAs would

have recognized that Astala’s touchscreen was ready for the improvement Shahoian provides, *i.e.*, haptic feedback associated with touchpad/touchscreen input gestures. Ward, ¶160; *KSR Int’l v. Teleflex*, 550 U.S. 398, 417-418 (2007) (“application of a known technique to... prior art ready for the improvement” is likely obvious).

POSAs would have recognized that incorporating Shahoian’s haptic feedback into Astala’s touchscreen would have had benefits taught by Shahoian, including informing users how touchpad gestures were interpreted and “assist[ing] users in noisy environments... where sound may not be easily heard by the user.” Shahoian, [0178]; *id.*, [0006], [0178], [0187]-[0188], [0192]; Ward, ¶161. This would “enhance interactions and manipulations in a displayed graphical environment” like Astala’s. Shahoian, [0007]; Ward, ¶162. For example, providing a user with haptic feedback when an object has been pressed in a manner that will allow it to be dragged, and when the object has been dropped at a new location, would improve Astala’s “drag-and-drop” gesture. Ward, ¶162. The haptic feedback helps ensure that the user’s gestures were properly interpreted because it gives the user time to correct an improper determination. Shahoian, [0178]; Astala, 9:15-39; Ward, ¶184.

Astala discloses detecting the “pressure z of touch input” (Astala, 9:26-28) but does not disclose particular pressure sensors. That implementation detail was a design choice POSAs routinely made. Ward, ¶163.

POSAs had reasons to use Shahoian’s pressure-sensing components in Astala. Ward, ¶164. Shahoian teaches the benefits of capacitive pseudo pressure sensing when using haptic feedback. Shahoian, [0041] (“[c]apacitive touchpads... may be better suited... in some embodiments, since excessive pressure on the touchpad may in some cases interfere with... haptic feedback.”); Ward, ¶165; *infra* §§VI.A.5.a-VI.A.5.b (discussing Shahoian’s sensors). POSAs also understood that actual pressure sensors may provide more accurate input because “capacitive touchpads are prone to inadvertent cursor positioning[.]” EX1009, (“Martinelli”), 2:54-56; EX1032, 1:29-30; Ward, ¶166. It was well-known to use multiple sensors simultaneously in a touch-sensitive input device, including to provide more accurate determinations of user input. E.g., EX1033, Abstract, 1:56-2:7; EX1071, Abstract, [0010]-[0012], [0019], [0050], [0088]; EX1061, 1:16-20, 2:28-37, 3:27-34; EX1072, 2:25-65; EX1073, 3:66-4:11; EX1074, 4:24-45; EX1075, 4:59-66; EX1076, 2:66-3:29; Ward, ¶¶166-178. Thus, POSAs had reasons to use actual and pseudo pressure sensing in Astala’s touchscreen to support Astala’s multiple use cases and to determine gestures more accurately. Ward, ¶179.

POSAs would reasonably have expected the combination of Astala with Shahoian’s haptic feedback and Shahoian’s pressure-sensors to succeed for the same reasons they worked in Shahoian. Ward, ¶180. Astala+Shahoian uses Shahoian’s haptic feedback and pressure sensors for their intended use taught by Shahoian.

Ward, ¶181. Shahoian demonstrates that algorithms for haptic feedback were known and predictable, so POSAs would have reasonably expected their use with Astala to succeed. Ward, ¶182.

In the Astala-Shahoian combination, Astala’s touchscreen includes Shahoian’s capacitive “pseudo pressure” sensors and actual resistive pressure sensors. *Infra* §VI.A.5; Ward, ¶183. Astala-Shahoian’s touchscreen incorporates Shahoian’s haptic feedback (e.g., vibration), for example to inform the user that the system recognized a “press” (Astala, Fig. 6a, steps 710, 712) that precedes dragging an object using Astala’s drag-and-drop technique (Astala, Fig. 6a, step 714). Ward, ¶184.

4. Claim 1

a. 1[PRE]: “A method comprising:”

Astala+Shahoia performs a method that makes a gesture determination and provides haptic feedback as shown *infra* §§VI.A.4.b-VI.A.4.ij (limitations [1A]-[1F]). Ward, ¶185.

b. [1A]: “receiving contact data from an input device”

(1) Claim Terms

(i) “input device”

The ’507 patent describes touchpads, touch screens, and touch panels as input devices. EX1001, 1:33-35, Fig. 1 (touchpad 102).

(ii) “contact data”

POSAs understood “contact data” means data representing user contact with the input device. EX1001, claim 2 (“contact data” comprises “pressure”), claim 4 (contact data “based on a contact” on a “touch-sensitive input device”), claim 5 (“contact information” comprises “position data”), claim 1 (determining “an interaction with a displayed object” ([1B]), and “a pressure and a change in pressure” ([1D]) “based on” contact data); EX1002, 320-321 (Examiner identified “contact data” as “a touch,” “pressure,” and “pressing the touch panel at a pressure”); Ward, ¶187.

(2) Astala+Shahoian meets [1A].

Astala+Shahoian uses Astala’s touch screen, which is an “input device” meeting [1A]. Astala, 1:41-47 (“touch screen input device”), 2:20-24, 9:15-16 (“touch screen input is detected”); Ward, ¶188. “Touch screen input” by “a finger or pointed stylus” is “detected” on touch screen 70. Astala, 9:15-18, Fig. 6(a) (step 702), 9:8-29 (“touch input 732”); Ward, ¶189. Astala’s “touch screen controller... monitors touch screen-input parameters for processing the touch inputs on the touch screen display[.]” Astala, 8:54-56. POSAs understood that Astala’s “touch screen-input parameters” and “touch input 732” are contact data because they represent user contact with the touch screen. Ward, ¶190.

POSAs also understood that Astala’s controller “received” this contact data because it “monitors” the contact data “for processing” and processes the contact data to determine gestures. Astala, 6:23-27, 8:54-56, 9:21-65 (analyzing contact data), Fig. 6a; Ward, ¶¶191-192 (citing EX1010, 6:57-60—which Shahoian at [0049] incorporates—as corroborating that a POSA understood touch-sensitive input devices have a “computer” that “receive[s] sensor data” from the input device’s sensors”).

c. [1B]: “determining an interaction with a displayed object on a screen based on the contact data”

Astala+Shahoian meets limitation [1B] because it implements Astala’s method of determining user interaction with a displayed “FILE” object (the “displayed object”) based on contact data providing X/Y coordinates of touch input 732 on the touchscreen. Astala, 9:3-8 (“a technique utilizing touch screen inputs for dragging... *objects displayed on the touch screen*”), 9:16-27 (determining “touch input 732 being disposed over the object file 1 of window 728”), Figs. 6a-6b (steps

706, 708); Ward, ¶193. “At step 708, a determination is made that file 1 is the object, that is, the selected item of touch input 732[.]” Astala, 9:26-27; Ward, ¶194.

d. [1C]: “responsive to determining the interaction, determining a gesture based on the contact data comprising”

Astala+Shahoian meets limitation [1C] because it uses Astala’s gesture determination based on “touch input 732” (contact data) as shown *infra* §§VI.A.4.e-VI.A.4.i for limitations [1D]-[1E3]. *See also* Astala, Fig. 6a, 9:9-65; Ward, ¶195.

As discussed below, Astala determines several gestures that the user performs when dragging and dropping objects. Astala, Fig. 6a (steps 702-704, 710-724); Ward, ¶196. These gestures are all determined “responsive to determining the interaction” the user has with the displayed object, such as the file object described *supra* §VI.A.4.c (limitation [1B]). Astala, 9:3-27 (“At step 708, a determination is made that file 1 is... the selected item[] of touch input 732[.]”), Fig. 6a (steps 706-708); Ward, ¶197.

Astala’s “dragging and dropping” moves a selected object from one location to another. Astala, 2:45-47; Ward, ¶198. A POSA understood this includes at least three gestures: (1) pressing the object in a manner that designates the object for movement (analogous to picking the object up); (2) moving the object to a new location; and (3) dropping the object (analogous to putting the object down). Ward, ¶199. The gesture detection (1) is performed by steps 710 and 712 and that is the

gesture detection that is mapped herein to claim 1. The gesture determination in steps 710 and 712 is for the object determined in step 708, and thus “responsive to determining the interaction” with the object in limitation [1B]. *Supra* §VI.A.4.c; Astala, 9:26-27; Ward, ¶200.

e. [1D]: “determining a pressure and a change in pressure based on the contact data”

(1) “determining a pressure”

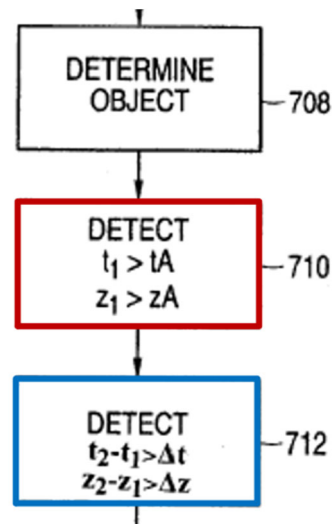
Using Astala’s gesture-determination method, after determining the object contacted in step 708, Astala+Shahoian determines whether the sensed pressure (z_1) exceeds a threshold pressure (z_A) (**step 710**). Astala, Fig. 6a, 9:28-29; Ward, ¶201.

Determining that the pressure exceeds a threshold involves determining the pressure (z_1). Ward, ¶202. The pressure determination is based on pressure (contact data) sensed by the touch screen. *Supra* §VI.A.4.d (limitation [1C]); Ward, ¶203. Astala+Shahoian uses Shahoian’s sensors that sense “pressure.” Shahoian, [0005], [0007], [0041]; Ward, ¶204.

(2) “determining... a change in pressure”

Astala+Shahoian uses Astala’s gesture-determination method that determines a change in pressure ($z_2 - z_1$) (**step 712** in Fig. 6a) by determining whether “the value of the pressure z of the object on the touch screen 70 has been *reduced* by an amount greater than a predetermined pressure differential Δz .” Astala, 9:36-39; Ward, ¶205. Determining the change (reduction) in pressure is based on pressure measurements

(contact data) from the touchscreen because the detected pressure represents “the pressure z of touch input 732.” Astala, 9:28-29; Ward, ¶206.

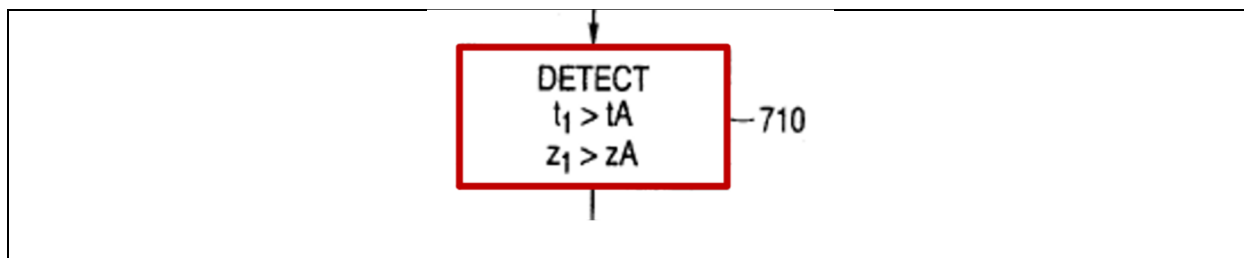


f. [1E]: “determining a press if”

Astala+Shahoian meets limitation [1E] because it meets limitations [1E1]-[1E3] as shown *infra* §§VI.A.4.g-VI.A.4.i. Ward, ¶207.

g. [1E1]: “the pressure is greater than a pressure threshold”

Astala+Shahoian meets limitation [1E1] because Astala’s gesture-determination method determines whether sensed pressure (z_1) exceeds threshold pressure (z_A) (**step 710**). *Supra* §VI.A.4.e(1); Astala, Fig. 6a, 9:28-29 (“a determination is made that the value of the pressure z of touch input 732 is greater than a predetermined value Z_a ”); 9:32-34 (“pressure of the object touching the touch screen 70 is determined to be greater than a predetermined pressure value”); Ward, ¶208.



h. [1E2]: “the change in pressure is greater than a change in pressure threshold”

Using Astala’s gesture-determination method, Astala+Shahoian meets limitation [1E2] two ways. Ward, ¶209.

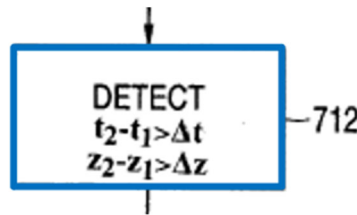
(1) Astala+Shahoian Determining Whether a Pressure Reduction Exceeds a Threshold Meets [1E2]

POSAs understood that a pressure change has a magnitude and sign. Ward, ¶210. POSAs also understood that the claimed “change in pressure threshold” quantifies an amount (magnitude) of change and not the change’s sign (positive/negative). *Id.*; EX1017, 1028 (magnitude measures the “*size or extent*” of a quantity). Limitation [1E2] refers to a “change in pressure” (which can be positive or negative) and does not require a pressure “increase.” Ward, ¶211. Thus, as the ITC *correctly found*, [1E2] requires determining “if the *magnitude* of the change in pressure (*positive or negative*) is greater” than a threshold. *Supra* §V.B.

Astala’s gesture-determination method determines whether a change in pressure ($z_2 - z_1$) is *greater than* (“>”) a threshold pressure change (Δz) in Fig. 6a **step 712** by determining whether the “pressure $z...$ has been reduced by an *amount*

greater than a predetermined pressure differential Δz .” Astala, 9:36-39; Ward, ¶212.

This meets limitation [1E2]. Ward, ¶213.



In IPR2017-01310, Immersion argued that Astala’s step 712 is part of determining a “drag” gesture rather than “a press.” EX1025, 21-27. That is wrong.

First, the claim defines a press by the criteria in [1E1]-[1E3]. The ’507 specification makes clear that gestures other than a press can be determined based on *other* criteria. Ward, ¶¶214-215. Under one set of criteria the ’507 construes contact as a “tapping” (step 310), and under another set of criteria it construes contact as a “pressing” (step 326). EX1001, Fig. 3, 8:16-50; Ward, ¶216. Astala’s determination in steps 710-712 meets everything that claim 1 requires to interpret a contact as “press”—as discussed *supra* §§VI.A.4.g-VI.A.4.hVI.A.4.i, *infra* §VI.A.4.i. Ward, ¶217. Nothing in the ’507 specification supports injecting additional or different requirements for determining a “press.” *Id.*

Second, Astala refutes any suggestion that step 712 is part of Astala’s “drag” determination. POSAs knew that Astala’s “dragging and dropping” gesture uses using three separate gestures: (1) “*pressing* a selected first item displayed on the touch screen” to grab the object, (2) “dragging the [selected item]” to a second

displayed item (e.g., file folder), and (3) pressing the second item to drop the first item. Astala, 2:38-40; Ward, ¶218. Thus, Astala uses “dragging” in the conventional sense of “moving” (Astala, 2:45-47) an object and “determin[es] that a drag operation is occurring... by detecting *changes in the x and y coordinates.*” Astala, 9:43-46; Ward, ¶219. Step 712’s pressure evaluation does not evaluate whether the object has been moved (changed x/y coordinates), and step 712 occurs *before* “*step 714* [where] the object is dragged[.]” Astala, 9:40-42; Ward, ¶220. Any “drag” gesture occurs only *after* the “press” determined in steps 710-712 selects the object to be moved. Ward, ¶¶220-223.

(2) Obvious To Add A Pressure-Change Determination to Astala’s Step 710.

If the Board were to interpret [1E2] to require “pressure change” to mean *increasing* pressure, that would have been met by an obvious implementation of Astala’s “press” detection (steps 710-712) in Astala+Shahoian. Ward, ¶224.

It was known to interpret a touchpad interaction as a gesture that selects a displayed object based on an increase in pressure from an initial contact. EX1016 (“Lee85”), 21 (“we can push a virtual button *by giving an extra bit of pressure* to signal a change in state.”); Gillespie, 48:65-49:8 (push gesture requires increasing pressure); EX1002, 386 (citing Gillespie); *infra* §VI.B.4.g (Ground 2 limitation [1E2], discussing Kolmykov-Zotov, 13:27-57, claims 1, 9); Ward, ¶225. POSAs would have recognized that Astala’s “drag and drop” interprets a gesture that selects

the object to be dragged and dropped, and would have benefitted from using this known pressure increase technique for interpreting that gesture that selects the object. Ward, ¶226. POSAs knew that using increasing pressure was a design choice for selecting a displayed object. Ward, ¶227; *KSR v. Teleflex*, 550 U.S. 398, 421 (2007).

Furthermore, this Astala-Shahoian variation applies a known technique (interpreting a select gesture by requiring a pressure increase exceeding a threshold) to a known device (Astala-Shahoian) ready for improvement (ensuring that the user affirmatively selects the object) yielding predictable results. Ward, ¶228; *KSR*, 550 U.S. at 416-417.

i. [1E3]: “a first interval has elapsed”

Using Astala’s gesture-determination method, Astala+Shahoian meets [1E3].

(1) Astala+Shahoian Meets [1E3] Under the Proper Construction.

Under the proper construction (*supra* §V.A), Astala's method meets [1E3] in two ways. Ward, ¶230. **First**, in step 710, Astala determines whether the pressure exceeds pressure threshold Z_A (*supra* §VI.A.4.g (limitation [1E1])) “for a period of time $[t_1]$, which is greater than a predetermined period of time $[t_A]$.” Astala, Fig. 6a (step 710), 9:26-35, 10:28-31 (claim1). Astala therefore only determines a press when step 710 determines that a first interval (t_A) has “elapsed.” Ward, ¶231.

Second, in step 712, Astala determines that “ $t_2 - t_1 > \Delta t$.” Astala, Fig. 6a; *supra* §VI.A.4.h (limitation [1E2]); Ward, ¶232. POSAs understood that the pressure measurements (z_1 and z_2) evaluated in determining the pressure change in step 712 are detected at times (t_1 and t_2) separated by a time interval exceeding Δt . Astala therefore determines a press only when step 712 determines that a first interval (Δt) has “elapsed,” because determining a press requires evaluating the change in pressure between pressure measurements z_1 and z_2 , which in turn requires that the time interval (Δt) has “elapsed” between those pressure measurements. Ward, ¶233.

(2) An Obvious Modification of Astala+Shahoian Meets The IPR2016-01777 Construction

The IPR2016-01777 construction is wrong. *Supra* §V.A. But even if the Board were to adopt it, an obvious variant of Astala+Shahoian meets it.

POSAs had reasons to modify Astala to require that both the pressure above a threshold ($z_1 > z_A$ in step 710) and pressure change above a threshold ($z_2 - z_1 > \Delta z$ in step 712) persist through an interval to ensure that intermittent pressing is not misinterpreted as invoking a drag-and-drop. Ward, ¶235. POSAs knew this was a conventional gesture-determination design choice as demonstrated *infra* §§VI.B.4.e-VI.B.4.h (Ground 2 limitations [1E]-[1E3]). Ward, ¶236. POSAs would have reasonably expected success in implementing this variation because the

programming to implement it was predictable and well-within the POSA’s skill.

Infra §§VI.B.4.e-VI.B.4.h (Ground 2 limitations [1E]-[1E3]); Ward, ¶237.

j. [1F]: “responsive to determining the gesture, outputting a haptic effect.”

Responsive to determining the gesture (a press that selects an object to be dragged in [1E]), Astala+Shahoian uses Shahoian’s teaching to output a haptic effect to the touch-sensitive device. *Supra* §VI.A.3 (discussing Astala+Shahoian); Shahoian, [0189] (“Haptic sensations can be associated with or dependent on particular gestures”), [0007], [0013], [0179]; Ward, ¶¶238-239.

5. Claim 2

2	The method of claim 1, wherein the contact data comprises an actual pressure and a pseudo pressure.
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Astala+Shahoian renders obvious claim 2 because the combination uses Shahoian’s teachings to detect actual and pseudo pressure. *Supra* §VI.A.3 (discussing Astala+Shahoian); Ward, ¶240.

a. Pseudo pressure

The ’507 patent describes “pseudo pressure” as pressure measured indirectly by “capacitance resulting from the conductor touching the touchpad.” EX1001, 3:10-14 (the “amount of capacitance **is not a direct measure of pressure** but rather a pseudo pressure”); Ward, ¶241. The ’507 patent explains the “capacitance change”

providing pseudo pressure varies with the “surface [area] of the conductor used on the touchpad” like a “user’s finger” (EX1001, 3:15-31). Ward, ¶242.

POSAs understood that Shahoian’s capacitive sensors (Shahoian, [0041]) provide contact data comprising “pseudo pressure” (claim 2) as claimed. Ward, ¶243. For example, Shahoian identifies Martinelli as disclosing the type of capacitive touchpad sensing used in Shahoian (Shahoian, [0041]). Martinelli’s capacitive sensors measure what the ’507 patent calls pseudo pressure. Martinelli, 2:1-3:1 (“capacitive touchpads *indirectly measure* the amount of *applied pressure* by measuring the surface area of the object applying the pressure”); Ward, ¶244. This also meets the ITC’s pseudo pressure construction. EX1015, 53; *supra* §V.B.

b. Actual pressure

Shahoian also discloses “resistive” sensing and explains “[r]esistive touchpads are typically pressure-sensitive.” Shahoian, [0041]. POSAs knew that resistive sensing as disclosed in Shahoian measured actual pressure. Ward, ¶245. Martinelli confirms this because Shahoian identifies Martinelli as an example of resistive sensing (Shahoian, [0041]), and Martinelli’s resistive touchpad “ha[s] the ability to measure the *actual pressure* applied by an object” and “the gradation of pressure applied on the touchpad and offer dynamic pressure-sensing features.” Martinelli, 4:40-53; *id.*, 5:3-7. Ward, ¶246. Shahoian’s sensors provide contact data comprising “actual pressure” meeting claim 2. Ward, ¶¶247-248.

6. Claim 3

3	The method of claim 2, wherein the pseudo pressure is based on a change in capacitance resulting from the contact.
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Astala+Shahoian’s capacitive sensors measure pseudo pressure based on a change in capacitance resulting from contact. *Supra* §VI.A.5 (claim 2); Shahoian, [0041] (citing Martinelli’s capacitive sensing); Martinelli, 2:13-16 (“capacitance [is] altered” by touching), 3:9-11 (“*capacitive* touchpad measures the area of contact”), 2:1-3:1; Ward, ¶¶249-250.

7. Claim 4

4	The method of claim 3, wherein the contact data is based on a contact on a specific portion of a touch-sensitive input device.
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Astala+Shahoian renders obvious claim 4 because it uses Astala’s method that reads “the x and y coordinates of the touch input 732.” Astala, 9:16-27, Fig. 6 (706); Ward, ¶251. The x/y coordinates are based on the contact data and identify “a specific portion of a touch-sensitive input device.” Ward, ¶252.

8. Claim 5

5	The method of claim 4, wherein the contact information comprises position data, and further comprising determining whether a contact is made on a softkey based on the position data.
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Claim 5 does not require pressing a softkey as part of the claim 1 gesture determination. It adds a new requirement for determining whether a softkey is

contacted. A “softkey” is a virtual key displayed on a virtual keypad. Ward, ¶¶253-256 (citing EX1062, 11:35-40 and EX1063, 1:55-59). Astala+Shahoian renders obvious claim 5 because it uses Astala’s method of detecting user interaction with a “virtual keyboard” (Astala, 7:6-10, 8:48-50) implementing keypad functions on a display screen (Astala, 2:14-18). Ward, ¶¶253-254. POSAs understood that Astala’s “virtual keypad” had virtual keys (i.e., softkeys). Astala, 7:6-10; Ward, ¶¶253-256.

9. Claim 6

6	The method of claim 1, wherein the determining a gesture comprises determining a tapping gesture.
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The ’507 specification describes “tapping” (step 310) and “pressing” (step 326) as different gestures determined using different criteria. EX1001, Fig. 3, 8:16-40. Ward, ¶257.

Claim 1 requires determining a pressure and pressure change (limitation [1D]) and using them as criteria for “determining a *press*” (limitations [1E1]-[1E3]), which Astala+Shahoian meets as discussed *supra* §VI.A.4.e-i. Ward, ¶¶257-258.

Neither claim 1 nor claim 6 requires using that pressure or pressure change in “determining a *tapping* gesture.” Ward, ¶258. Claim 6 merely requires determining a tapping—without limiting how. Ward, ¶259.

Astala+Shahoian renders obvious claim 6. Ward, ¶260. Shahoian teaches a tapping gesture to “select a graphical object or menu item.” Shahoian, [0189]; *infra*

§VI.B.5 (claim 6); Ward, ¶260. POSAs had reasons to configure Astala+Shahoian to provide a tapping gesture as taught by Shahoian and provide haptic feedback for the tapping gesture as taught by Shahoian. Shahoian, [0189] (“Haptic sensations can be associated with...particular gestures”). Ward, ¶261. Tapping was a known design choice for “selecting” an object or menu item and would allow the user to select among the services Astala’s system provides. Astala, 3:45-50; Ward, ¶261. POSAs would have expected success in implementing this known functionality which was within the POSAs’ skill. Ward, ¶262.

10. Claim 7

a. Preamble

7[PRE]	The method of claim 1, wherein determining the gesture further comprises:
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Astala+Shahoian meets 7[PRE] because it meets limitations [7A]-[7C] as shown *infra* §§VI.A.10.b-VI.A.10.d. Ward, ¶263.

b. Limitation [7A]

7A	calculating a first value associated with a speed of movement of a contact across the input device;
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Astala+Shahoian meets [7A] because it uses Astala’s method that “detect[s] changes in the x and y coordinates over a predetermined period of time” (Astala, 9:44-46) to determine whether the location of pressure applied to the input device

“is *changing at a rate* greater than a predetermined rate” (Astala, 10:52-56) when determining a “drag and drop” gesture. “Rate” of change in x/y coordinates is “speed of movement” across the touchscreen surface. Ward, ¶264.

Detecting the speed of contact movement across a touchpad/touchscreen was well-known. Shahoian, [0042]; Rosenberg, 15:50-60; Ward, ¶265. Shahoian moves the cursor “a greater distance” when the user’s finger moves faster. Shahoian, [0042]; Ward, ¶266. A POSA had reasons to use that known technique in Astala-Shahoian because it would improve the user experience moving the object more quickly during Astala’s drag-and-drop when the user’s finger moves more quickly. Ward, ¶267. POSAs would have expected success in implementing this known functionality which was within the POSAs’ skill. *Id.*

c. Limitation [7B]

7B	comparing the first value to a speed threshold value; and
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Astala+Shahoian meets [7B] because Astala compares the rate of change (speed) of the pressure location to “a *predetermined rate*” (speed threshold value). Astala, 10:52-56; Ward, ¶268.

Additionally, the conventional and obvious way to implement Shahoian’s technique that “correlates” the “speed of the fingertip on the touchpad” to “the distance that the cursor is moved in the graphical environment” (Shahoian, [0042])

was to compare the speed to one or more thresholds, where each threshold specifies a distance the cursor is to be moved. Ward, ¶269.

d. Limitation [7C]

7C	outputting a signal if the first value is less than the speed threshold value.
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The only thing the '507 specification describes as happening “if” the speed value is determined (step 320) to be less than the speed threshold is that the gesture-determining processor proceeds to a different next processing step in Fig. 3’s flowchart. EX1001, 8:32-42; Ward, ¶270. Thus, a POSA would have understood that the claimed “signal” is a signal the processor generates that determines its next processing step. EX1001, 8:32-42. The conventional and obvious way to implement Astala+Shahoian’s speed determination is for the input device controller’s processor to output a signal when the speed is less than the threshold to control the speed of the cursor/object movement. *Supra* §VI.A.10.c; Ward, ¶271.

11. Claim 8

8	The method of claim 7, further comprising applying a speed filter to the first value before comparing the speed to the speed threshold value.
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Shahoian incorporates Rosenberg. Shahoian, [0049]. Rosenberg filters velocity calculated from sensor data (contact data) to suppress noise spikes to

improve gesture recognition. Rosenberg, 21:8-52; Ward, ¶¶272. A velocity filter is a conventional speed filter. Ward, ¶¶273-276; EX1065, 21:10-16; EX1066, 4:9-14.

Based on these Shahoian teachings and the POSA's background knowledge of the benefits of speed filtering to improve gesture recognition, POSAs implementing Astala+Shahoian would have applied a speed filter to the first value (see [7A]) before comparing it to the speed threshold (see [7B]), and had a reasonable expectation of success in doing so. Ward, ¶¶277-278.

12. Claim 9

Claim 9 recites a non-transitory computer-readable medium ("CRM") comprising program code for causing a processor to execute a method. *See* 9[PRE]; Ward, ¶279.

a. Astala+Shahoian Uses Non-Transitory CRM With Program Code Executed by a Processor.

Astala+Shahoian uses Astala's gesture-determination method implemented via an "executable software program." Astala, 6:10-30; Ward, ¶280. Astala discloses "software for operating... terminal 20," where terminal 20 includes "a touch screen controller for controlling the input process for touch screen 70." Astala, 6:29-32. POSAs understood that Astala's "touch screen controller" has a processor executing the terminal's software to perform gesture determination from touchscreen inputs. Astala, 8:54-56 (touchscreen controller "monitors touch screen input-parameters for processing the touch inputs"); Ward, ¶¶280-281.

POSAs had additional reasons to implement Astala+Shahoian's gesture determination using software (program code) executed by a processor because this was conventional and provided the well-known advantages of a software implementation, including the flexibility to be easily updated or changed. EX1014, 20:26-32 (position data processing implemented "as software running on a microprocessor"), 27:56-64 (gesture determination "could readily be made by performing one of a number of equivalent software routines... [which] are obvious and straightforward from the functions described herein."), 29:53-58 (similar); Ward, ¶282.

The conventional and obvious way to implement Astala's "software" implementation with a reasonable expectation of success was to store the software program code in a non-transitory CRM (e.g., memory) accessible to the processor so that the processor can execute the program code. Astala, 6:27-33 (hardware includes "memory for storing... the software for operating the terminal"); Ward, ¶283.

b. Astala+Shahoia's Program Code Causes a Processor to Perform [9A]-[9F]'s Method Steps

Limitations [9A]-[9F] each recites "program code for" executing a method step, and those steps are substantively identical to limitations [1A]-[1F], respectively. EX1019; Ward, ¶284. Astala+Shahoian's program code implements claim 1's method and that program code meets elements [9A]-[9F] for the same

reasons Astala+Shahoian meets limitations [1A]-[1F], as illustrated below. Ward, ¶285.

Limitation	Corresponding	Analysis
[9A]	[1A]	§VI.A.4.b
[9B]	[1B]	§VI.A.4.c
[9C]	[1C]	§VI.A.4.d
[9D]	[1D]	§VI.A.4.e
[9E]	[1E]	§VI.A.4.f
[9E1]	[1E1]	§VI.A.4.g
[9E2]	[1E2]	§VI.A.4.h
[9E3]	[1E3]	§VI.A.4.i
[9F]	[1F]	§VI.A.4.j

13. Claims 10-13.

Claims 10-13 depend from claim 9 and recite limitations substantively identical to claims 2-4 and 6, respectively. EX1019; Ward, ¶286. Astala+Shahoian meets and renders obvious claims 10-13 for the same reasons it meets claims 2-4 and 6 as illustrated below. Ward, ¶286.

Claim	Corresponding	Analysis
10	2	§VI.A.5
11	3	§VI.A.6
12	4	§VI.A.7
13	6	§VI.A.9

14. Claim 14.

a. Astala+Shahoian's System Has a Processor and CRM

Claim 14 recites a system comprising a processor communicating with a CRM and configured to perform certain method steps. *See* 14[PRE]-14[B].

Astala+Shahoian uses Astala’s gesture-determination method, implemented via a processor in communication with a CRM to run code stored thereon, as described for claim 9. *Supra* §VI.A.12; Ward, ¶287.

b. Astala+Shahoia’s Processor is Configured to Perform [14C]-[14H]

Limitations [14CA]-[14H] recite method steps substantively identical to limitations [1A]-[1F] as illustrated below. EX1019; Ward, ¶288. Astala+Shahoian’s processor is configured to meet limitations [14C]-[14H] for the same reasons Astala+Shahoian meets limitations [1A]-[1F]. Ward, ¶288.

Limitation	Corresponding	Analysis
[14C]	[1A]	§VI.B.4.b
[14D]	[1B]	§VI.B.4.c
[14E]	[1C]	§VI.B.4.d
[14F]	[1D]	§VI.B.4.e
[14G]	[1E]	§VI.B.4.f
[14G1]	[1E1]	§VI.B.4.g
[14G2]	[1E2]	§VI.B.4.g
[14G3]	[1E3]	§VI.B.4.h
[14H]	[1F]	§VI.B.4.j

15. Claims 15-18.

Claims 15-18 depend from claim 14 and recite limitations substantively identical to those in claims 2-4 and 6. EX1019; Ward, ¶289. Astala+Shahoian's processor is configured to meet claims 15-18 for the same reasons Astala+Shahoian meets claims 2-4 and 6 as detailed below. Ward, ¶289.

Claim	Corresponding	Analysis
15	2	§VI.A.5
16	3	§VI.A.6
17	4	§VI.A.7
18	6	§VI.A.9

B. Ground 2: Keely+Kolmykov-Zotov Renders Obvious Claims 1, 6-9, 13-14, and 18.

1. Keely

Keely (Ex. 1007) is a patent application published May 16, 2002, which issued as EX1011 ("Keely-536").

Like the '507 patent (EX1001, 1:49-51), Keely discloses techniques for simulating mouse gestures on a touchpad. Keely, Abstract. A mouse has a primary gesture ("left click") and a secondary gesture ("right click"). Keely, [0003]. Keely "simulat[es] mouse gestures with the stylus" on a touch-sensitive device. Keely, [0004]-[0005].

Keely's technique can be used with a tablet computer having a digitizing display. Keely, [0021], Fig. 2. When the tablet detects that a stylus has touched the

display (“placing the stylus down”), the tablet begins “counting time, *e.g.*, by using a timer, up to at least a threshold amount of time.” Keely, [0023]. “A timeout condition is defined responsive to the threshold amount of time having passed.” *Id.* Keely detects a mouse click when the stylus touches the digitizing display and then is lifted from the display. Keely, [0024]-[0025]; Ward, ¶¶290-292. In one embodiment, the tablet simulates a left-click if the stylus touches a location but is lifted up before a timeout (Keely, [0024]), whereas lifting the stylus after the timeout simulates a right-click (Keely, [0025]). Ward, ¶293.

Keely describes a “need for providing helpful feedback” to the user to “indicate whether gestures made with the stylus are those that are intended by the user.” Keely, [0006]. Keely confirm[s] a gesture—like a mouse button click—with “tactile” feedback including “vibration of the computer 201 [tablet] and/or stylus.” Keely, [0031]; Ward, ¶294.

2. Kolmykov-Zotov

Kolmykov-Zotov (“KZ”), like Keely, discloses techniques for evaluating gestures on a pen-based computing system using a touchscreen (KZ, 3:18-22). Kolmykov-Zotov recognized that press-and-hold gestures simulating mouse clicks using techniques like Keely’s were imprecise because users struggled to hold a stylus steady in one location for a fixed interval. KZ, 2:29-43.

Kolmykov-Zotov describes a more reliable technique for determining if a user intended a dwell gesture to be a “press-and-hold” action. KZ, 3:12-15, 5:53-6:7; 10:37-52. Kolmykov-Zotov teaches using “two different parameters”—also called “first” and “second” parameters—in making the gesture determination. KZ, Abstract, 3:19-45, 5:53-66, 7:25-27. Any of several different parameters can be the first and second parameters used in determining a press-and-hold gesture (KZ, 6:8-43, 13:26-57), including pen pressure (KZ, 13:32-33) and change in pen pressure (KZ, 13:40-41). Ward, ¶¶295-296. Kolmykov-Zotov measures each parameter over a “predetermined time period” and compares a measured parameter to a respective “predetermined parameter value” (e.g., a threshold) “correspond[ing]” with a press-and-hold gesture. KZ, claim 1; Ward, ¶297.

3. Keely+Kolmykov-Zotov

Keely and Kolmykov-Zotov are from the same field of endeavor as the ’507 patent – identifying gestures on a touch-sensitive input device. Ward, ¶298. POSAs had reasons to combine Keely and Kolmykov-Zotov with a reasonable expectation of success.

a. Reasons to combine

Keely describes gestures requiring holding a pen down for a time interval. Keely, [0024]-[0025], [0027]. Kolmykov-Zotov characterizes such gestures as a “press-and-hold” action that “can be difficult... to perform because it can be

difficult... to hold a pen perfectly steady for a predetermined time period[.]” KZ, 2:29-43; *id.*, 10:37-52 (explaining problems arising from erroneous or delayed press-and-hold determinations); EX1027, [0010] (discussing difficulty in holding a stylus in place); Ward, ¶¶299-300.

Kolmykov-Zotov criticizes prior techniques addressing the “holding pen steady” problem in “press-and-hold” systems like Keely’s. KZ, 2:43-3:1; Ward, ¶301. Kolmykov-Zotov teaches that evaluating other parameters—including pen pressure (KZ, 13:32-33) and change in pen pressure (KZ, 13:40-41)—to determine a press-and-hold simulating a mouse click made “press-and-hold processing easier, quicker, and more reliable.” KZ, 3:12-15; *id.*, 10:37-52 (similar); Ward, ¶302.

POSAs had reasons to use Kolmykov-Zotov’s gesture-determination techniques in Keely.

First, Kolmykov-Zotov teaches that its techniques determine a press-and-hold more accurately than techniques like Keely’s. KZ, 3:12-15 (“more reliable”); 10:37-52 (“improve the accuracy of a determination of whether a dwell gesture... is intended to constitute a press-and-hold... or some other action[.]”); Ward, ¶¶303-304.

Second, using Kolmykov-Zotov’s known technique to address known shortcomings with Keely’s gesture determination simply uses prior art elements according to their established functions, which would have been obvious. Ward,

¶305; *KSR*, 550 U.S. at 417-418. There were known problems with Keely’s gesture analysis for which Kolmykov-Zotov provided an obvious solution. *KSR*, 550 U.S. at 420; Ward, ¶306. POSAs would have seen a benefit to using Kolmykov-Zotov’s press-and-hold determination methods to remedy Keely’s known shortcomings. KZ, 2:29-43, 10:37-52; EX1027, [0010]; Ward, ¶307; *KSR*, 550 U.S., 424. Kolmykov-Zotov confirms this combination would have been “a suitable [obvious] option.” *Intel v. Qualcomm*, 21 F.4th 784, 800 (Fed. Cir. 2021); Ward, ¶308. Keely and Kolmykov-Zotov’s teachings “fit... together like pieces of a puzzle.” *Intel*, 21 F.4th at 799 (quoting *KSR*, 550 U.S. at 420).

b. Reasonable expectation of success

POSAs would have reasonably expected that using Kolmykov-Zotov’s gesture-determining techniques in Keely would have succeeded. Ward, ¶309. Keely and Kolmykov-Zotov both disclose techniques for determining user intent from interaction with a touchpad to simulate mouse gestures. *Id.* Keely and Kolmykov-Zotov describe the same type of touch-sensitive input devices that have a software-programmed processor that receives contact data and interprets user gestures. Keely, [0021]-[0022]; KZ, 9:19-55; Ward, ¶309. It would have been simple and straightforward for a POSA to modify Keely’s gesture-determining software to use Kolmykov-Zotov’s analysis techniques. Ward, ¶¶310-311.

c. Keely+Kolmykov-Zotov

The combination Keely+Kolmykov-Zotov is Keely's touchpad and haptic feedback system modified to incorporate Kolmykov-Zotov's gesture-determination techniques.

4. Claim 1

a. Preamble

1[PRE]	A method comprising:
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Keely+Kolmykov-Zotov meets 1[PRE] because it implements Keely's gesture-determination method modified based on Kolmykov-Zotov. Ward, ¶313; Keely, Abstract ("A method... for simulating" a mouse gesture), [0008] (similar), claims 1-13; KZ, Abstract ("methods ... determine whether specific electronic pen gestures ... should be processed as 'press-and-hold' gestures."), claims 1-10.

b. Limitation [1A]

1A	receiving contact data from an input device;
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Keely+Kolmykov-Zotov uses Keely's touch-sensitive display (also called a "digitizer" or "touchscreen") which is an "input device" as claimed. Keely, [0004] ("systems utilize a touch-sensitive display screen with a stylus as an input device"), [0007] ("touch-sensitive display surface"), [0021] (discussing digitizing display panels providing touch-sensitive display surface 202); Fig. 1 (digitizer 165 connects

to processing unit 110); Ward, ¶¶58-62, 314; *accord* KZ, 9:19-38 (system “interprets gestures made using stylus 204” on the same type of digitizer as Keely).

POSAs understood that Keely’s digitizers (“touch-sensitive input devices”) (Keely, [0021]) worked by sensing user contact (e.g., via a pen, stylus, or finger) with the digitizer, generating data (“contact data”) representing that contact (e.g., x/y position on the digitizer, the pressure applied, etc.), and providing that contact data to a processor that interprets it. Keely, Abstract (computer detects stylus interaction with touchpad); *accord* KZ, Title (detects dwell gesture “by examining parameters associated with pen motion”), Abstract (“measuring” parameters “associated with pen interaction”), 10:8-18 (“input used to control the user interface is entered... using an electronic pen”); Ward, ¶315.

POSAs understood that a processor in Keely’s system “receives” contact data representing user input because Keely describes processing the user input. Keely, [0009] (providing feedback “responsive to certain stylus gestures” including “pressing” the “display surface” for “at least” a “minimum... time”), [0021] (tablet PC 201 “interprets marks made using stylus 204” on the “pen digitizer”), [0023] (“computer 201 detect[s] the stylus being placed down”), claim 1 (detecting and responding to stylus interaction with touchscreen), claim 14 (computer comprising “a processor” configured to detect stylus contact); *accord* KZ, 7:8-15 (“processor for measuring... interaction parameters” and determining press-and-hold), 9:19-38,

10:8-18 (“input used to control the user interface is entered into the computer system using an electronic pen”); Ward, ¶316.

c. Limitation [1B]

1B	determining an interaction with a displayed object on a screen based on the contact data;
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Keely+Kolmykov-Zotov uses Kolmykov-Zotov’s techniques to improve Keely’s technique for simulating mouse clicks in a system using a graphical user interface (“GUI”) and stylus. *Supra* §VI.B.3 (describing combination); Keely, [0008] (“simulating gestures of a pointing device”), [0024] (left click), [0025] (right click), [0029] (invention usable with a “GUI operating system”), Fig. 2; Ward, ¶317.

POSAs understood that pointing devices and mouse clicks were conventionally used to interact with objects displayed in a GUI. Ward, ¶¶64-65, 318; e.g., Astala, 9:3-35. Keely’s computer allows the user to interact (“edit, manipulate, and create”) with “**objects** through the use of the stylus.” Keely, [0007]; *id.*, [0004] (“user places the stylus tip upon the touch-sensitive display screen... to control **objects** displayed on the display screen”), [0030] (“A user can press and hold, then drag over ink, text, or other objects, within a document to **select those objects.**”); Ward, ¶319.

Kolmykov-Zotov similarly explains that pen interaction with a digitizer may correspond to “tapping a user interface element (such as a toolbar item)” —which is

a “displayed *object* on a screen”—to perform a gesture “allow[ing] performance of the function(s) associated with that interface element.” KZ, 2:3-18; *id.*, 2:29-39 (defining “press-and-hold” gesture to signal mouse “right click” functionality), 5:11-14 (defining “press-and-hold”), 9:33-38 (system “interprets gestures made using stylus 204” to “execute conventional... application tasks”), 10:8-13 (“input used to control the user interface is entered into the computing system using an electronic pen”), Ward, ¶320.

As demonstrated above, both Kolmykov-Zotov and Keely use contact data from a digitizer (input device) to determine user interactions with a displayed object on a screen, such as “user interface elements” like “toolbar[s]” (KZ, 2:3-28) or other “objects displayed” (Keely, [0004], [0030]). Ward, ¶321. Thus, Keely+Kolmykov-Zotov determines an interaction with a displayed object on a screen based on the contact data meeting [1B]. Ward, ¶322.

d. Limitation [1C]

1C	responsive to determining the interaction, determining a gesture based on the contact data comprising:
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Keely+Kolmykov-Zotov meets [1C] because it responds to determining user interaction with the input device by analyzing the contact data to determine a press-and-hold gesture that simulates a right mouse click based on the contact data, as shown *infra* §§VI.B.4.e-VI.B.4.h (limitations [1D]-[1E3]). Ward, ¶323.

e. Limitation [1D]

1D	determining a pressure and a change in pressure based on the contact data, and
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Keely+Kolmykov-Zotov meets [1D] because it uses Kolmykov-Zotov’s gesture-detection techniques that “determin[e] whether a specific gesture constitutes a press-and-hold action” (13:27-29) by “measuring” first and second “parameter[s] associated with pen interaction” with the digitizer (KZ, 5:57-66, 10:53-62, claim 1), where the first and second parameters can be “*pen pressure* normal to the digitizer” and “*change in pen pressure* normal to the digitizer.” KZ, 13:27-57, claims 1, 9; Ward, ¶324.

Kolmykov-Zotov teaches that parameter selection from among the disclosed parameters was a design choice. KZ, 13:27-29 (“wide variety of parameters may be used in determining whether a specific gesture constitutes a press-and-hold”), 13:47-57 (“any suitable parameter” and “*any suitable* number of parameters and/or *combinations*” of parameters “may be used”); Ward, ¶325. POSAs understood that evaluating pressure and change in pressure together was a known “suitable ... combination[.]” (KZ, 13:47-57) for determining user intent. Ward, ¶326 (*citing, e.g.,* Astala, steps 710 and 712). Thus, POSAs understood Kolmykov-Zotov to disclose using pressure and change in pressure as the first and second (“two different”)

parameters used in determining a press-and-hold gesture. Ward, ¶327; KZ, Abstract, 6:8-43, 13:27-57, claims 1, 9.

To the extent Kolmykov-Zotov is considered to not expressly disclose this, it would have been an obvious design choice to use pressure and change in pressure to determine a gesture because it was known to use them together in making gesture determinations. *supra* §§VI.A.4.e, VI.A.4.g-VI.A.4.h; Ward, ¶328 (citing Lee85, 21; Gillespie, 48:65-49:8). Requiring a user to press harder normal to the digitizer to provide a *change in pressure* exceeding a threshold (*infra* §VI.B.4.g) was a conventional way to force the user to signal a press-and-hold intent. *Supra* § VI.A.4.h; Lee85, 21; Gillespie, 48:65-49:8; Ward, ¶328.

POSAs understood that Kolmykov-Zotov’s “measuring” the “pen pressure” and “change in pen pressure” parameters “determin[es]” them “based on the contact data” as claimed. KZ, 14:11-15 (using “underlying data” from pen interaction in parameter measurement); Ward, ¶329. The “measurement values... are processed (if necessary) to provide the various parameters needed.” KZ, 14:66-15:2, Fig. 7 (step S514 (calculate parameters)). Ward, ¶¶329-330.

POSAs understood that Kolmykov-Zotov’s “change in pressure” is “determin[ed]” by calculation from multiple pressure measurements. Ward, ¶331. If Kolmykov-Zotov is considered as not expressly disclosing this calculation, that

would have been an obvious way to determine the “change in pressure” Kolmykov-Zotov describes. Ward, ¶¶332-334 (citing EX1053, 22-1-4; EX1067, 15-16).

f. Limitation [1E]

1.e	determining a press if:
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Limitations [1E1]-[1E3] recite conditions for determining a “press” in [1E]. Ward, ¶335. Keely+Kolmykov-Zotov meets [1E] because it uses Kolmykov-Zotov’s gesture-determination that determines a “press-and-hold” gesture if the criteria in limitations [1E1]-[1E3] are met. *Infra* §§VI.B.4.g-VI.B.4.h; Ward, ¶336.

g. Limitations [1E1]-[1E2]

1E1	the pressure is greater than a pressure threshold,
1E2	the change in pressure is greater than a change in pressure threshold, and

Keely+Kolmykov-Zotov meets [1E1]-[1E2] because Kolmykov-Zotov discloses determining a press-and-hold gesture by measuring “pen pressure normal to the digitizer” ([1E1]) and “change in pen pressure normal to the digitizer” ([1E2]). KZ, 13:27-57, claims 1 and 9; Ward, ¶337.

Kolmykov-Zotov discloses using pressure and pressure change together as the “two different parameters” Kolmykov-Zotov describes for making a press-and-hold determination (KZ, Abstract, 6:8-43, 13:27-57, claims 1, 9). Alternatively, this

would also have been an obvious implementation for the reasons explained *supra* §VI.B.4.e (limitation [1D]). Ward, ¶338.

Kolmykov-Zotov discloses “comparing” the measured first and second parameter values—which can be pressure and change in pressure (KZ, 13:27-57)—to “predetermined parameter values corresponding to a press-and-hold gesture” (KZ, 19:41-43, claim 1). Ward, ¶339. POSAs understood that Kolmykov-Zotov’s “predetermined parameter values” are “threshold” values. Ward, ¶340.

Kolmykov-Zotov does not expressly state that its “comparing” requires a parameter to be “greater” than a “predetermined” value.

Pressure. POSAs knew that requiring pressure to be “greater” than a threshold was conventional to exclude inadvertent digitizer interactions. Lee85, 23 (“a threshold... must be overcome in order for a touch to be detected”); Ward, ¶¶341-342. Such minimum pressure requirements were known for triggering a press-and-hold gesture. EX1033, 3:14-31; EX1068, Abstract, 3:57-61; Ward, ¶¶343-349. Kolmykov-Zotov describes “adjust[ing] standards for activating press-and-hold processing” to exclude erroneous activation (KZ, 6:65-7:7), which POSAs knew can be accomplished by setting such pressure thresholds. KZ, 3:41-45; EX1069, 23:5-12; Ward, ¶¶344-350. Thus, a conventional and obvious way to implement Kolmykov-Zotov’s pressure determination was to determine whether the pressure was greater than a pressure threshold as required by [1E1]. Ward, ¶¶345-350.

Change in pressure. POSAs knew that requiring a pressure change to be “greater” than a threshold was a conventional way to determine user intent by requiring that the pressure change be large enough to signify a purposeful user action rather than an unintended minor pressure variation. Lee85, 21 (“If... the tablet has pressure sensing, we can push a virtual button *by giving an extra bit of pressure* to signal a change in state.”); Astala, Fig. 6a (step 712), 9:36-39; EX1070, 48; Ward, ¶¶351-352. Thus, a conventional and obvious way to implement Kolmykov-Zotov’s pressure change determination was to determine whether the pressure change was greater than a pressure change threshold as required by [1E2]. Ward, ¶¶353-354.

h. **Limitation [1E3]**

1E3	a first interval has elapsed; and
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Keely+Kolmykov-Zotov meets [1E3] because it uses Kolmykov-Zotov’s technique that measures first and second parameters values—which can be pressure and change in pressure (KZ, 13:27-57, *supra* §VI.B.4.g)—“over a first predetermined time period” (KZ, 19:32-40) and compares the measured values to the “predetermined parameter values” (e.g., thresholds) (*supra* §VI.B.4.g; KZ, 13:41-43, 19:42-44). Ward, ¶355. “[A]t the end of the first *predetermined time period*,” based on the comparison of the measured parameters and their thresholds, a “press-and-hold gesture” determination is made. KZ, 19:45-52; *see also* KZ, 2:29-

33 (known mouse click emulation required pen pressure “for a predetermined amount of time”); Ward, ¶355.

POSAs would have understood that “the end of the first predetermined time period” (KZ, 19:45-52) indicates that “a first time interval [the first predetermined time period] has elapsed” as claimed. Ward, ¶356. This meets [1E3]. Ward, ¶357.

i. Determining a Press ([1E]-[1E3])

As explained below, Keely+Kolmykov-Zotov’s technique that meets [1E1]-[1E3] (*supra* §§VI.B.4.g-VI.B.4.h) determines a “*press*-and-hold gesture” (KZ, 19:45-52) which meets “determining a press” in [1E]. KZ, 2:29-39 (press-and-hold emulates mouse click), 5:11-14, 6:44-46 (press-and-hold is a “dwell gesture”); Ward, ¶359. As also explained below, the Keely+Kolmykov-Zotov technique that meets [1E1]-[1E3] (*supra* §§VI.B.4.g-VI.B.4.h) meets “determining a press” in [1E] under any reasonable construction. Ward, ¶358.

(1) Keely+Kolmykov-Zotov Meets the Proper Construction

The proper construction of claim 1 does not require that either pressure greater than a pressure threshold ([1E1]), or pressure change greater than a pressure change threshold ([1E2]), persist throughout a first interval ([1E3]). *Supra* §V.A. Under the proper construction, Keely+Kolmykov-Zotov’s press-and-hold gesture meeting [1E1]-[1E3] (*supra* §§VI.B.4.g-VI.B.4.h) meets “determining a press” in [1E]. Ward, ¶360.

(2) Keely+Kolmykov-Zotov Meets a Narrower Construction

Even if the Board were to adopt the IPR2016-01777 construction for “determining a press” that requires that the conditions in [1E1]-[1E2] “*be maintained for the duration of the first interval* before a press is determined” (EX1023, 14-15), Keely+Kolmykov-Zotov meets it. Ward, ¶361.

Keely+Kolmykov-Zotov uses Kolmykov-Zotov’s technique that measures “values” (plural) of the first and second parameters—which can be pressure and change in pressure (KZ, 13:27-57, *supra* §VI.B.4.g)—“over a first predetermined time period” (KZ, 19:32-40), compares the measured “values” (plural) of the first and second parameters to “predetermined parameter values” (KZ, 19:40-44), and determines a “press-and-hold gesture” based on comparisons “at the end of the first predetermined time period” (KZ, 19:44-52). Ward, ¶362. POSAs would have understood this meant that if the predetermined parameter values specifying a press-and-hold gesture are not maintained over the first predetermined time period, the system will determine that the event was not a press-and-hold gesture. Ward, ¶363.

In addition to those express teachings in Kolmykov-Zotov, POSAs understood that “press-and-hold” gestures conventionally required the user press for a period of time. Ward, ¶364. The POSAs’ background knowledge includes Keely’s teaching of determining a press-and-hold gesture only after the user holds a stylus down for “at least the threshold amount of time.” Keely, [0008], [0025], claim 1.

This informs how a POSA would have interpreted Kolmykov-Zotov’s teachings and confirms the above understanding. Ward, ¶365.

If the Board disagrees that Kolmykov-Zotov expressly discloses that the threshold pressure and pressure change must be maintained for the predetermined time interval to determine a press-and-hold gesture, that would have been an obvious way to implement Keely+Kolmykov-Zotov with a reasonable expectation of success. Ward, ¶366. Kolmykov-Zotov compares multiple “values” (plural) of each parameter to its corresponding threshold during the “first predetermined time interval.” KZ, 19:32-52; Ward, ¶367. A POSA understood that the most desirable way for Kolmykov-Zotov to determine the “press-and-hold gesture” based on multiple values measured during the “first predetermined time period” is to ensure that *all* values measured during the “first predetermined time period” meet the threshold. Ward, ¶367. This would facilitate ensuring that the detected gesture was the user-intended gesture by requiring the user to maintain the gesture for “at least” a “threshold amount of time.” Keely, [0008], [0025], claim 1; Ward, ¶367.

j. Limitation [1F]

1F	responsive to determining the gesture, outputting a haptic effect.
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Keely+Kolmykov-Zotov meets [1F] because it provides Keely’s tactile feedback, responsive to the press-and-hold gesture, indicating “that the intended

gesture has been made properly.” Keely, [0030]; Ward, ¶¶368-369; *supra* §VI.B.3 (discussing combination).

Providing tactile feedback is “outputting a haptic effect” (EX1018, 245; Ward, ¶368) and is performed “responsive to determining the gesture” as claimed. Keely, [0006] (“providing helpful feedback to the user... to indicate whether gestures made with the stylus are those that are intended.... is even more useful when provided in conjunction with various gesture simulation techniques[.]”), [0009] (“[U]ser may... be given some indication that the user has performed a particular stylus gesture[.]”), [0031] (“feedback may be in the form of... tactile (e.g., vibration of the computer 201 and/or stylus 204).”); Ward, ¶370.

5. Claim 6

6	The method of claim 1, wherein the determining a gesture comprises determining a tapping gesture.
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“Tapping” (step 310) and “pressing” (step 326) are different gestures determined using different criteria. EX1001, 8:16-25, Fig. 3. Claim 1 requires determining a pressure and pressure change, which Keely+Kolmykov-Zotov meets as discussed *supra* §§VI.B.4.e, VI.B.4.g for limitations [1D] and [1E1]-[1E2]. Neither claim 1 nor claim 6 requires that pressure or pressure change be used in “determining a tapping gesture.” Ward, ¶371. Claim 6 merely requires that a tapping be determined—without limiting how. *Id.*

Keely incorporates Prov. App. No. 60/247,841 (EX1012, “Keely-841”), in its entirety. Keely, [0001]; Keely-536, 1:15-16, 35-36.

Keely+Kolmykov-Zotov meets claim 6 because Keely—via incorporated Keely-841—determines a tapping on a GUI to select an item using a different gesture than the Keely+Kolmykov-Zotov press-and-hold gesture determined using Kolmykov-Zotov’s technique. Keely-841, 2:19-21, 4:1-4, 9-10 (stylus tap operation), 9:15-20 (describing user gestures), 10:17-22, Fig. 3 (tap 307), 12:10-13:20 (tap 502), Figs. 5A-5B; Ward, ¶373. Kolmykov-Zotov *confirms* that it was conventional in a press-and-hold system to select items via a tap. KZ, 10:8-13 (entering user input “to control the user interface... by tapping the pen tip on the screen and... activating functions with the pen using a ‘press-and-hold’”), 18:11-19 (“tapping” to close menu); Ward, ¶374.

6. Claim 7

a. Preamble

7[PRE]	The method of claim 1, wherein determining the gesture further comprises:
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Keely+Kolmykov-Zotov meets 7[PRE] because, as detailed below, it determines claim 1’s press-and-hold gesture in a manner meeting claim 7.

Claim 1 requires that determining “a gesture” ([1C]) comprises determining a press “if” three conditions are met ([1E]). Claim 7 imposes an additional

requirement (“further comprises”) on “determining *the* gesture,” including evaluating “speed of movement” and “outputting a signal if” the speed value is less than a threshold. The specification uses “speed” below a threshold as a requirement (step 320) for determining a “pressing” (step 326). EX1001, 8:31-41, Fig. 3 (step 320); Ward, ¶¶375-376. Claim 7 must be construed to cover using speed below a threshold as an additional requirement for determining a pressing gesture, because that is the only use of a speed determination the specification discloses. Ward, ¶377.

b. Limitation [7A]

7A	calculating a first value associated with a speed of movement of a contact across the input device;
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Keely+Kolmykov-Zotov meets [7A] because it uses Kolmykov-Zotov’s technique that includes pen movement velocity in the x/y directions of the digitizer (KZ, 6:8-35, 11:12-20) as a parameter in determining the press-and-hold gesture that meets claim 1 (*supra* §VI.B.4.d (limitation [1C])). Ward, ¶378. Kolmykov-Zotov teaches that any suitable number and combination of disclosed parameters can be used together. KZ, 13:47-57. POSAs understood that evaluating pressure, change in pressure and pen movement velocity (e.g., speed) was a suitable combination because pen velocity was known to be used in determining pen stability as discussed *infra* §VI.B.6.c. KZ, 11:12-42 (describing steadiness and pen movement), 14:35-56 (same); *infra* §§VI.B.6.c, VI.B.7 (citing KZ); Ward, ¶¶379-380.

POSAs understood that pen velocity across the digitizer represents “speed of movement of a contact across” the “input device” ([7A]). Ward, ¶¶381.

c. Limitations [7B]-[7C]

7B	comparing the first value to a speed threshold value; and
7C	outputting a signal if the first value is less than the speed threshold value.

Keely+Kolmykov-Zotov meets [7B] because Kolmykov-Zotov’s technique compares each parameter (including pen velocity) to a corresponding predetermined value (threshold) as explained *supra* §VI.B.4.g (limitations [1E1]-[1E2]). Ward, ¶382. Kolmykov-Zotov uses pen velocity as a steadiness measure indicating user intent to hold the pen steady by ensuring that pen velocity is below a threshold value during a press-and-hold gesture. KZ, 11:12-39; Ward, ¶383.

Because pen velocity magnitude is speed, Kolmykov-Zotov describes comparing pen speed to a threshold speed value, meeting [7B]. Ward, ¶384.

Keely+Kolmykov-Zotov meets [7C] because POSAs understood that Kolmykov-Zotov’s use of steadiness as a measure of user intent to hold a pen in position determines whether pen velocity magnitude was *below* (e.g., “less than” ([7C])) the predetermined “speed threshold” value to indicate a press-and-hold (KZ, 11:12-39, 14:35-47, 15:49-55 (“rapid movement” can exclude press-and-hold)) rather than “some other action” like “an ink stroke” (KZ, 16:6-16). Ward, ¶385.

7. Claim 8

8	The method of claim 7, further comprising applying a speed filter to the first value before comparing the speed to the speed threshold value.
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a. “filter”

The ’507 patent describes filtering as performing “numerical calculation[s]” on received data to reduce the effects of unwanted noise from extraneous contact with the touchpad (EX1001, 7:29-37), and describes an averaged pressure measurement as “filtered” (EX1001, 9:24-27). Ward, ¶386. POSAs understood that averaging data was a form of filtering meeting claim 8. Ward, ¶387.

b. Keely+Kolmykov-Zotov meets claim 8.

Keely+Kolmykov-Zotov uses Kolmykov-Zotov’s technique that analyzes pen velocity (e.g., speed) in determining a “steadiness factor.” *Supra* §VI.B.6 (claim 7). The steadiness factor can be determined “from the data in any suitable manner,” including using “an average and/or median steadiness factor.” KZ, 11:58-12:4, 12:13-21 (using average as steadiness parameter), 12:27-31 (using “average... tip movement” as steadiness parameter); 14:65-15:8 (processing measurements to develop average for threshold comparison in gesture determination); Ward, ¶388.

Kolmykov-Zotov’s averaging is a type of filtering consistent with the ’507 patent’s description. Ward, ¶389. Averaging the pen velocity magnitude constitutes applying a “speed filter” to pen speed before comparing the filtered pen speed to the

speed threshold discussed in connection with claim 7. *Supra* §VI.B.6.c (limitation [7C]); Ward, ¶390.

8. Claims 9 and 13

Claim 9 recites “a non-transitory [CRM] comprising program code for causing a processor to execute a method.” *See* 9[PRE]. Keely+Kolmykov-Zotov uses Kolmykov-Zotov’s technique implemented by a CRM comprising program code for causing Keely’s processor to execute Kolmykov-Zotov’s method of detecting a press-and-hold gesture. *Supra* §VI.B.4.b (limitation [1A], discussing Keely’s processor); KZ, Abstract (CRM “used to determine whether specific electronic pen gestures should be processed as ‘press-and-hold’ gestures.”), 16:6-8, 19:10-16, claims 21 and 29 (CRM); Keely, [0021] (tablet PC 201 “interprets marks made using stylus 204” on the “pen digitizer”), [0023] (“computer 201 detect[s] the stylus being placed down”), claim 1 (detecting and responding to stylus interaction with touchscreen), claim 14 (computer comprising “a processor” configured to detect stylus contact). Executing code stored on a CRM on a processor was conventional. A POSA would have understood this was how Keely and Kolmykov-Zotov’s worked. KZ, Fig. 3 (processing unit 110), 3:58-60 (“general-purpose

computer... may be used”); 7:8-15 (“processor for measuring... interaction parameters” and determining press-and-hold); Ward, ¶391.

Elements [9A]-[9F] each recites “program code for” executing a method step and those steps are substantively identical to limitations [1A]-[1F], respectively. EX1019; Ward, ¶392. The program code in Keely+Kolmykov-Zotov implements the method discussed in connection with claim 1 and that program code meets elements [9A]-[9F] for the same reasons Keely+Kolmykov-Zotov meets limitations [1A]-[1F] as illustrated below. Ward, ¶393.

Element	Corresponding	Analysis
[9A]	[1A]	§VI.B.4.b
[9B]	[1B]	§VI.B.4.c
[9C]	[1C]	§VI.B.4.d
[9D]	[1D]	§VI.B.4.e
[9E]	[1E]	§VI.B.4.f
[9E1]	[1E1]	§VI.B.4.g
[9E2]	[1E2]	§VI.B.4.g
[9E3]	[1E3]	§VI.B.4.h
[9F]	[1F]	§VI.B.4.j

Claim 13 depends from claim 9 and recites the program code as comprising code for determining a tapping. Keely+Kolmykov-Zotov’s program code detects a tapping as discussed *Supra*, §VI.B.5 (claim 6). Ward, ¶394.

9. Claims 14 and 18

Claim 14 recites a system comprising a CRM and a processor configured to perform certain method steps. *See* 14[PRE]-14[B]. Keely+Kolmykov-Zotov uses

Kolmykov-Zotov's gesture-determination method implemented via a processor in communication with a CRM to run code stored thereon as described for claim 9. *Supra*, §VI.B.8; Ward, ¶395.

Limitations [14C]-[14H] recite the processor as configured to perform steps identical to [1A]-[1F], respectively. EX1019; Ward, ¶396. Keely+Kolmykov-Zotov's processor meets limitations [14C]-[14H] in implementing Kolmykov-Zotov's gesture-determination method for the same reasons Kolmykov-Zotov's method meets [1A]-[1F]. Ward, ¶396.

Element	Corresponding	Analysis
[14C]	[1A]	§VI.B.4.b
[14D]	[1B]	§VI.B.4.c
[14E]	[1C]	§VI.B.4.d
[14F]	[1D]	§VI.B.4.e
[14G]	[1E]	§VI.B.4.f
[14G1]	[1E1]	§VI.B.4.g
[14G2]	[1E2]	§VI.B.4.g
[14G3]	[1E3]	§VI.B.4.h
[14H]	[1F]	§VI.B.4.j

Claim 18 depends from claim 14 and requires that the processor be configured to determine a tapping. Keely+Kolmykov-Zotov's processor detects a tapping. *Supra* §VI.B.5 (claim 6); Ward, ¶397.

C. Ground 3: Keely+Kolmykov-Zotov+Shahoian Renders Obvious Claims 2-5, 10-12, and 15-17.

Keely and Kolmykov-Zotov do not disclose particular types of pressure sensors that their systems use. Thus, choosing particular sensors to implement

Keely+Kolmykov-Zotov was a design choice for the same reasons as choosing sensors to implement Astala. *Supra* §VI.A.3; Ward, ¶398. Shahoian discloses pressure sensors. Shahoian, [0040]-[0043]; *supra* §VI.A.2; Ward, ¶398.

POSAs would have used both Shahoian's capacitive pseudo pressure sensors and Shahoian's resistive actual pressure sensors (discussed *supra* §VI.A.5) in implementing Keely+Kolmykov-Zotov for the same reasons POSAs would have done so in implementing Astala with the same reasonable expectation of success (explained *supra* §VI.A.3), because just like Astala, Keely+Kolmykov-Zotov is a system with a touch-sensitive input device that uses sensors to determine touches and would benefit in the same way as Astala's system from using Shahoian's sensors. Ward, ¶399.

1. Claim 2

Keely+Kolmykov-Zotov+Shahoian meets claim 1 for the reasons Keely+Kolmykov-Zotov meets claim 1. *Supra*, §VI.B.4; Ward, ¶400. Shahoian's sensors generate contact data comprising actual and pseudo pressure as required by claim 2. *Supra* §VI.A.5 (Ground 1, claim 2). Thus Keely+Kolmykov-Zotov+Shahoian renders claim 2 obvious. Ward, ¶401.

2. Claim 3

Shahoian's sensors, used in Keely+Kolmykov-Zotov+Shahoian, base the pseudo pressure in the contact data (claim 2) on a change in capacitance as required

by claim 3. *Supra* §VI.A.6 (Ground 1, claim 3). Thus, Keely+Kolmykov-Zotov+Shahoian renders claim 3 obvious. Ward, ¶402.

3. Claims 4-5

Keely+Kolmykov-Zotov+Shahoian uses Kolmykov-Zotov's technique to determine a press-and-hold with a displayed object, which involves determining the x/y coordinates of the contact with the touch-sensitive input device to determine which object is contacted. *Supra* §VI.B.4.c (limitation [1B]); Ward, ¶403. This meets claim 4's requirement that the contact data being based on a specific portion of the touch-sensitive input device, and claim 5's requirement that the contact information comprise position data. Ward, ¶404.

With respect to claim 5's remaining requirement of "determining whether a contact is made on a softkey based on the position data," Keely+Kolmykov-Zotov+Shahoian is a modified implementation of Keely's system.

Keely incorporates EX1013 ("Keely-400"). Keely, [0001]; Keely-536, 1:20-22, 35-36. In Keely, a "user brings up the soft keyboard and actuates it by tapping on keys with the user's pen. On screen presses are translated into actual key stroke commands that an operating system understands." Keely-400, 10:8-10. Keely determines "what lies beneath the contact position," e.g., a softkey. Keely-841, 10:8-12, Fig. 3 (step 302); Ward, ¶¶405-406. This is consistent with how Shahoian's sensors work, because they allow a user to interact with "regions" of the touch-

sensitive input device such as “a small rectangular area, like a button, which the user can point to in order to initiate” an associated function. Shahoian, [0193]; Ward, ¶407.

Thus, Keely+Kolmykov-Zotov+Shahoian renders obvious claims 4-5. Ward, ¶408.

4. Claims 10-12, 15-17

Claims 10-12 depend from claim 9, which Keely+Kolmykov-Zotov+Shahoian meets for the reasons Keely+Kolmykov-Zotov meets claim 9. *Supra*, §VI.B.8; Ward, ¶409.

Claims 15-17 depend from claim 14, which Keely+Kolmykov-Zotov+Shahoian meets for the reasons Keely+Kolmykov-Zotov meets claim 14. *Supra* §VI.B.9; Ward, ¶410.

Claims 10-12 and 15-17 recite limitations substantively identical to those in claims 2-4. EX1019; Ward, ¶411. Keely+Kolmykov-Zotov+Shahoian meets claims 10-12 and 15-17 for the same reasons Keely+Kolmykov-Zotov meets claims 2-4. Ward, ¶412.

Claim	Corresponding	Analysis
10, 15	2	§VI.C.1
11, 16	3	§VI.C.2
12, 17	4	§VI.C.3

VII. NO BASIS FOR DISCRETIONARY DENIAL

A. *Fintiv*

The *Fintiv* factors weigh against discretionary denial.

1. Stay Potential

Petitioner will seek a pre-institution stay, but without “specific evidence” how the court will rule this factor is neutral. *Sand Revolution II v. Continental Intermodal Group–Trucking*, IPR2019-01393, Paper 24, 7 (June 16, 2020) (informative).

2. Trial Timing

The median time-to-trial in the Western District of Washington is 27 months, indicating trial in August 2025 (EX1029, 79), *after* a final written decision would be expected. *Cf. Sony Interactive v. Quantum Imaging*, IPR2023-00954, Paper 11, 26 (Dec. 11, 2023) (trial four months before FWD “weighs against discretionary denial”); *but see* EX1077 (identifying June 2025 trial-ready date).

Moreover, Petitioner filed this petition with diligence, roughly four months after receiving Immersion’s list of asserted claims, and nearly three months before the §315(b) deadline. EX1078-1079; EX1080. Factor 2 thus weighs against denial. *Fintiv*, Paper 11, 11 (“expeditiously” filed petitions “weigh[] against [denial]”).

3. Litigation Investment

Other than initial motion practice and preliminary contentions, the parties have invested little in the litigation, weighing against denial. *Samsung Elecs. v.*

Netlist, IPR2022-00063, Paper 13, 8 (May 5, 2022) (granting institution where no “claim construction and merits determinations” had occurred).

4. Issue Overlap

Valve challenges all 18 claims, whereas Immersion only asserted claims 1-8 in the Litigation. EX1079, 2-28. Challenging claims the district court will not address weighs against denial. *Markforged v. Continuous Composites*, IPR2022-00679, Paper 7, 32-33 (Oct. 25, 2022).

5. Litigation Defendants

Petitioner is the defendant in district court, which “is far from an unusual circumstance.” *Sand Revolution II*, Paper 24, 12-13. This factor is neutral.

6. Other Considerations

The Petition’s “strong showing on the merits” (*supra* §§VI.A, VI.B, VI.C) weighs against denial. *Data Company v. Bright Data*, IPR2022-00138, Paper 12, 15-16 (May 11, 2022).

7. Compelling Evidence

The grounds provide “compelling evidence” of unpatentability making *Fintiv* discretionary denial unavailable. Interim Procedure, 3-5; *Nokia v. TQ Delta*, IPR2022-00471, Paper 11, 19-21 (Aug. 18, 2022); *CommScope Techs. v. Dali Wireless*, IPR2022-01242, Paper 23, 4-5 (Dir. Feb. 27, 2023) (precedential).

B. *General Plastic*

General Plastic governs whether to discretionarily deny institution in view of an earlier petition filed by a different party—like Apple’s two prior petitions. *Valve Corp. v. Elec. Scripting Prods.*, IPR2019-00062, Paper 11, 2 (April 2, 2019) (precedential).

Factor 1 asks whether the current petitioner filed the earlier petition or has a “significant relationship” with the earlier petitioner. *General Plastic*, Paper 19, 8–10; *Valve v. Electronic Scripting Products*, IPR2019-00062, Paper 11, 2 (Apr. 2, 2019) (precedential). Valve has not previously challenged the ’507 patent and has no significant relationship with Apple. *Valve*, Paper 11, 10. But while Valve was not involved in the earlier Apple litigations or IPR, Immersion’s current lawsuit targets Valve’s products. Factor 1 thus “weighs strongly against” discretionary denial. *Ebates Performance Marketing v. IBM*, IPR2022-00646, Paper 10, 9 (Oct. 25, 2022) (instituting review despite five prior petitions having been filed).

Factors 2 and 4-5 concern the time between a petitioner filing a first petition and a subsequent petition. *General Plastic*, Paper 19, 8–10; *Ebates*, Paper 10 at 10. Those factors “have only marginal relevance” where, as here, Valve did not previously challenge the patent and has no significant relationship with a prior petitioner. *Ebates*, Paper 10, 10-11. Regardless, Valve filed its petition promptly, only nine months after being sued. This weighs against discretionary denial. *Id.*

Factor 3 considers whether the subsequent petition was refined based on lessons learned from the earlier proceeding. *General Plastic*, Paper 19, 8-10. Valve did not “strategically stag[e] [its] prior art and arguments in multiple petitions[.]” *Ebates*, Paper 10, 12. IPR2016-01777 did not involve Astala+Shahoian, while the Board’s discretionary denial of Apple’s second petition—including Astala and Shahoian—offered no “map” for Valve to follow. *Code200 v. Bright Data*, IPR2022-00861, Paper 18, 6 (Dir. Aug. 23, 2022) (precedential). Simply put, this Petition is “the result of Patent Owner’s litigation activity, rather than Petitioner’s abuse of the review process.” *Nearmap v. Eagle View Technologies*, IPR2022-01090, Paper 9, 8-9 (Jan. 12, 2023). Insofar as the Petition responds to the Board’s claim construction for “determining a press” in IPR2016-01777, that is part of the intrinsic record that requires discussion, not a road-mapping issue. *Aylus Networks v. Apple*, 856 F.3d 1353, 1359-1361 (Fed. Cir. 2017).

Factors 6-7 consider the Board’s finite resources and the need to issue a final written decision within one year. *General Plastic*, Paper 19, 8-10. Nothing suggests an undue burden on the Board or its ability to issue a final determination. Moreover, “the Board’s mission ‘to improve patent quality...’ outweighs the impact on Board resources.” *Code200*, Paper 18, 5.

C. *Advanced Bionics.*

1. Step One: The Petition Advances Art and Arguments Not Previously Considered.

The Office has never considered the patentability of challenged claims over Keely+Kolmykov-Zotov (Ground 2), or Keely+Kolmykov-Zotov+Shahoian (Ground 3). *Advanced Bionics v. Med-El*, IPR2019-01469, Paper 6, 7-8 (Feb. 13, 2020) (precedential) (“AB”). That weighs against discretionary denial. *Netlist*, Paper 13, 13 (Step one not satisfied where only one of petition’s four references was cited in an IDS).

Keely+Kolmykov-Zotov (Ground 2) and Keely+Kolmykov-Zotov+Shahoian (Ground 3) materially differ from the prior art presented to the Office. *Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8, 17-24 (Dec. 15, 2017) (“BD”) (precedential). Both grounds rely on Kolmykov-Zotov’s explicit disclosure of gesture determination comparing multiple parameters including pressure ([1E1]) and pressure change ([1E2]) to respective thresholds (e.g., *supra* §§VI.B.3, VI.B.4.g)—the limitations that the applicant added to overcome rejections and gain allowance in prosecution (*supra* §IV.B). Both grounds also meet the “determining a press” limitation that the Board relied upon to deny institution (over other references) in IPR2016-01777. *Supra* §VI.B.4.i.

2. Step Two: The Office Erred Materially

The Petition also fails *AB* step two. ***First***, because the Office has never considered Keely+Kolykov-Zotov (Ground 2) or Keely+Kolykov-Zotov+Shahoian (Ground 3) these combinations are not part of the step two analysis. ***Second***, while the IPR2017-01310 petition showed unpatentability over Astala+Shahoian, the Board never considered the merits. Failing to find unpatentability over Astala+Shahoian was error material to patentability. In short, Valve is asking the Office to consider ***for the first time on the merits*** whether Astala+Shahoian renders obvious claims 1-18. *BD* factors (c), (e), and (f) (*Advanced Bionics*, 10) all weigh against denial under §325(d).

a. *BD* factor (c)

The Board never considered the merits of Astala+Shahoian when it discretionarily denied the petition in IPR2017-01310, and the Office never rejected claims over Astala+Shahoian in prosecution. EX1126, 7-14. During prosecution the Examiner separately initialed Astala and Shahoian but never applied them in a claim rejection, and never explained why claims were deemed allowable over Astala or Shahoian. Under *BD* factor (c) these facts weigh in favor of finding error material to patentability. *Yita v. MacNeil*, IPR2023-00172, Paper 12, 46 (June 13, 2023) (collecting cases).

b. *BD* factor (e)

In IPR2016-01777 the Board rejected patentability challenges over different references as failing to meet ([1E]) “determining a press.” EX1023, 15-16 (discussing Toda), 18 (discussing Morimura). The Petition shows that the Office’s “determining a press” construction in IPR2016-01777 is error because it excludes each ’507 disclosed embodiment. *Supra* §V.A. Astala+Shahoian meets [1E] “determining a press” under the correct claim construction. *Supra* §§VI.A.4.f-VI.A.4.i.

By never evaluating the merits of Astala+Shahoian and never rejecting or canceling claims over Astala+Shahoian the Office failed to appreciate that Astala+Shahoian discloses the features ([1E1], [1E2]) that the Applicant relied upon to overcome rejections in prosecution. *Supra* §§VI.A.4.g-VI.A.4.h. *STMicroelecs. v. Purdue*, IPR2022-00309, Paper 14, 13 (July 6, 2022). Astala+Shahoian also expressly meets ([1E3]), *supra* §VI.A.4.i, which the Board found lacking in IPR2016-01777. EX1023, 18.

Under these facts *BD* factor (e) weighs against discretionary denial. *Samsung Elecs. v. Manufacturing Res. Int’l*, IPR2023-00254, Paper 11, 65-67 (June 20, 2023) (petition grounds showed Examiner’s material error in failing to appreciate prior art where references were initialed on IDS but never discussed); *Code200 v. Bright Data*, IPR2022-00353, Paper 8, 10 (July 1, 2022) (*BD* factors (e) weighs against

discretionary denial because “Petitioner has provided sufficient evidence that Crowds discloses every limitation of the independent claim[.]”); *Scientific Design v. Shell*, IPR2021-01537, Paper 7, 25 (Mar. 18, 2022) (material error shown “[b]ased on the strength of the Petitioner’s challenges”); *Apple v. Telefonaktiebolaget LM Ericsson*, IPR2022-00457, Paper 7, 8-9 (Sep. 21, 2022) (similar).

c. *BD* factor (f)

BD factor (f) weighs against discretionary denial because while the Office never rejected claims over Astala+Shahoian, the petition’s Ground 1 mapping and the supporting expert testimony weigh in favor of finding error material to patentability in allowing (or failing to cancel) claims over Astala+Shahoian. *Yita*, Paper 12, 46; *Shell*, Paper 7, 25.

In short, Grounds (2) and (3) fail *AB* step one, while Ground 1 fails *AB* step two. Section 325(d) discretionary denial is unwarranted.

The Board should institute review and cancel claims 1-18.

Respectfully submitted,
Valve Corporation

Dated: February 7, 2024

By: /Adam R. Wichman/
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CERTIFICATE OF SERVICE UNDER 37 C.F.R. § 42.6 (E)(4)

I certify that on February 7, 2024, I will cause a copy of the foregoing document, including any exhibits or appendices filed therewith, to be served via Overnight FedEx at the following correspondence address of record for the patent:

MILES & STOCKBRIDGE P.C.
Immersion Corporation
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Date: February 7, 2024

/MacAulay Rush/
MacAulay Rush
Paralegal
WOLF, GREENFIELD & SACKS, P.C.

CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24, the undersigned certifies that the foregoing Petition for *Inter Partes* Review contains 13,943 words excluding a table of contents, a table of authorities, Mandatory Notices under § 42.8, a certificate of service or word count, or appendix of exhibits or claim listing. Petitioners have relied on the word count feature of the word processing system used to create this paper in making this certification.

Date: February 7, 2024

/MacAulay Rush/

MacAulay Rush

Paralegal

WOLF, GREENFIELD & SACKS, P.C.

Appendix A: U.S. Patent No. 8,749,507 Claim List

#	Limitation
1[PRE]	A method comprising:
1A	receiving contact data from an input device;
1B	determining an interaction with a displayed object on a screen based on the contact data;
1C	responsive to determining the interaction, determining a gesture based on the contact data comprising:
1D	determining a pressure and a change in pressure based on the contact data, and
1E	determining a press if:
1E1	the pressure is greater than a pressure threshold,
1E2	the change in pressure is greater than a change in pressure threshold, and
1E3	a first interval has elapsed; and
1F	responsive to determining the gesture, outputting a haptic effect.
2	The method of claim 1, wherein the contact data comprises an actual pressure and a pseudo pressure.
3	The method of claim 2, wherein the pseudo pressure is based on a change in capacitance resulting from the contact.
4	The method of claim 3, wherein the contact data is based on a contact on a specific portion of a touch-sensitive input device.
5	The method of claim 4, wherein the contact information comprises position data, and further comprising determining whether a contact is made on a softkey based on the position data.
6	The method of claim 1, wherein the determining a gesture comprises determining a tapping gesture.
7[PRE]	The method of claim 1, wherein determining the gesture further comprises:
7A	calculating a first value associated with a speed of movement of a contact across the input device;
7B	comparing the first value to a speed threshold value; and
7C	outputting a signal if the first value is less than the speed threshold value.
8	The method of claim 7, further comprising applying a speed filter to the first value before comparing the speed to the speed threshold value.

#	Limitation
9[PRE]	A non-transitory computer-readable medium comprising program code for causing a processor to execute a method, the program code comprising:
9A	program code for receiving contact data from an input device;
9B	program code for determining an interaction with a displayed object on a screen based on the contact data;
9C	program code for, responsive to determining the interaction, determining a gesture based on the contact data comprising:
9D	program code for determining a pressure and a change in pressure based on the contact data, and
9E	program code for determining a press if:
9E1	the pressure is greater than a pressure threshold,
9E2	the change in pressure is greater than a change in pressure threshold, and
9E3	a first interval has elapsed; and
9F	program code for, responsive to determining the gesture, outputting a haptic effect.
10	The non-transitory computer-readable medium of claim 9, wherein the contact data comprises an actual pressure and a pseudo pressure.
11	The non-transitory computer-readable medium of claim 10, wherein the pseudo pressure is based on a change in capacitance resulting from the contact.
12	The non-transitory computer-readable medium of claim 11, wherein the contact data is based on a contact on a specific portion of a touch-sensitive input device.
13	The non-transitory computer-readable medium of claim 9, wherein the program code for determining a gesture comprises program code for determining a tapping gesture.
14[PRE]	A system comprising:
14A	a computer-readable medium; and
14B	a processor in communication with the computer-readable medium, the processor configured to:
14C	receive contact data from an input device;
14D	determine an interaction with a displayed object on a screen based on the contact data;
14E	responsive to determining the interaction, determine a gesture based on the contact data comprising:

#	Limitation
14F	determining a pressure and a change in pressure based on the contact data, and
14.g	determining a press if:
14G1	the pressure is greater than a pressure threshold,
14G2	the change in pressure is greater than a change in pressure threshold, and
14G3	a first interval has elapsed; and
14H	responsive to determining the gesture, output a haptic effect.
15	The system of claim 14, wherein the contact data comprises an actual pressure and a pseudo pressure.
16	The system of claim 15, wherein the pseudo pressure is based on a change in capacitance resulting from the contact.
17	The system of claim 16, wherein the contact data is based on a contact on a specific portion of a touch-sensitive input device.
18	The system of claim 14, wherein the processor is configured to determine a gesture by determining a tapping gesture.