

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.
Petitioner,

v.

SMITH INTERFACE TECHNOLOGIES, LLC
Patent Owner.

Case IPR2024-01089
Patent 10,671,212

PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE

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LIST OF EXHIBITS

EX1001	U.S. Patent No. 10,671,212
EX1002	U.S. Patent No. 10,671,212 File History
EX1003	Declaration of Dr. Andrew Cockburn
EX1004	U.S. Publication No. 2006/0197753 to Hotelling (“Hotelling”)
EX1005	U.S. Publication No. 2004/0051726 to Martyn (“Martyn”)
EX1006	U.S. Publication No. 2011/0252362 to Cho et al. (“Cho”)
EX1007	U.S. Publication No. 2011/0252380 to Chaudhri (“Chaudhri”)
EX1008	RESERVED
EX1009	U.S. Publication No. 2006/0026535 to Hotelling et al.
EX1010	U.S. Publication No. 2006/0026521 to Hotelling et al.
EX1011–1019	RESERVED
EX1020	Newton MessagePad, Models: original (OMP) and 100 (MP100), https://web.archive.org/web/19990202045806/https://msu.edu/~luckie/gallery/mp100.htm (1999)
EX1021	Of mice and menus: designing the user-friendly interface, IEEE Spectrum (1999)
EX1022	Newton 2.0 User Interface Guidelines (1996)
EX1023	U.S. Patent No. 7,479,949
EX1024	U.S. Patent No. 8,954,887

EX1025	U.S. Publication No. 2009/0244023
EX1026	U.S. Patent No. 4,885,565
EX1027	Active Click: Tactile Feedback for Touch Panels (2001)
EX1028	Snap-Crackle-Pop: Tactile Feedback for Mobile Touch Screens (2006)
EX1029	Tactile Feedback for Mobile Interactions (2007)
EX1030	Design and Evaluation of Identifiable Key-Click Signals for Mobile Devices (2011)
EX1031	U.S. Publication No. 2006/0197753
EX1032	Issues and Techniques in Touch-Sensitive Tablet Input (1985)
EX1033	U.S. Patent No. 5,612,719
EX1034	U.S. Publication No. 2008/0036743
EX1035	U.S. Patent No. 8,830,181
EX1036	U.S. Patent No. 9,760,241
EX1037	Android Developers Guide, Creating Menus, https://web.archive.org/web/20110216140646/http://developer.android.com/guide/topics/ui/menus.html (2011)
EX1038	The State of the Art of Mobile Application Usability Evaluation (2012)
EX1039	Usability Heuristics for Touchscreen-based Mobile Devices (2012)
EX1040–1044	RESERVED

EX1045	iPhone User Guide: For iPhone OS 3.1 Software (2009)
EX1046–1053	RESERVED
EX1054	Ten Usability Heuristics (Copyright 2005) (archived 2010)
EX1055–1058	RESERVED
EX1059	Transcript of the Deposition of Dr. Madisetti ¹
EX1060	Tactile Interfaces for Small Touch Screens (2006)
EX1061	Android Developers Guide, Handling UI Events, https://web.archive.org/web/20110715000802/http://developer.android.com:80/guide/topics/ui/ui-events.html (2011)
EX1062	Supplemental Declaration of Dr. Andrew Cockburn
EX1063	Declaration of Vijay Madisetti in IPR2023-01268 (Aug. 10, 2023)

¹ Petitioner understands that Patent Owner intends for Dr. Madisetti to perform a read-and-sign of this deposition transcript (EX1059), per 37 C.F.R. § 42.53(f)(5). At the time of this filing, Petitioner has not received any communications from Patent Owner regarding the progress of Dr. Madisetti's read-and-sign. Petitioner assumes Patent Owner is facilitating Dr. Madisetti's review, that the review is ongoing, and that Patent Owner will raise any alleged errata. Should Patent Owner propose entry into the record of any alleged errata that does not seek to change the substance of Dr. Madisetti's testimony, Petitioner does not expect to object.

EX1064	Declaration of Vijay Madisetti in IPR2024-00246 (Jan. 9, 2025)
EX1065	Declaration of Vijay Madisetti in IPR2022-00570 (Jul. 1, 2021)
EX1066-1100	RESERVED
EX1101	U.S. Publication No. 2010/0107067
EX1102	Bezel Swipe: Conflict-Free Scrolling and Multiple Selection on Mobile Touch Screen Devices (2009)
EX1103	Experimental Analysis of Touch-Screen Gesture Designs in Mobile Environments (2011)
EX1104	U.S. Publication No. 2012/0304107
EX1105	BlackBerry PlayBook Tablet User Guide Version: 1.0 (2011)
EX1106	U.S. Publication No. 2012/0127098
EX1107	NeoNode N2 User Guide (2007)
EX1108	iPhone for Dummies 4th Edition, Wiley Publishing, Inc. (2010)
EX1109	U.S. Publication No. 2010/0095240
EX1110	Palm Pre User Guide (2009)
EX1111	Android 3.0 Platform Highlights, https://web.archive.org/web/20110309154317/http://developer.android.com/sdk/android-3.0-highlights.html (2011)
EX1112	U.S. Publication No. 2012/0159380
EX1113	Minput: Enabling Interaction on Small Mobile Devices with High-Precision, Low-Cost, Multipoint Optical Tracking (2010)

EX1114 U.S. Patent No. 8,493,344

LISTING OF CHALLENGED CLAIMS

Claim 1	
[1.pre]	A non-transitory computer-readable media storing computer instructions that; when executed by at least one processor of a mobile device including a touch screen, a memory, and an actuator coupled to the at least one processor; cause the mobile device to:
[1.a]	display indicia associated with an application, utilizing the touch screen;
[1.b]	when a first duration of a touch being applied to the touch screen is detected as ceasing in connection with the indicia, perform an operation;
[1.c]	when a second duration of the touch, that is different than the first duration of the touch, being applied to the touch screen is detected in connection with the indicia after the first duration is detected without the ceasing, output feedback that is perceptible by touch, utilizing the actuator;
[1.d]	when the second duration of the touch being applied to the touch screen is detected in connection with the indicia after the first duration of the touch is detected without the ceasing, display at least one menu including a plurality of particular actions;
[1.e]	when a selection touch being applied to the touch screen is detected in connection with at least one of the particular actions of the at least one menu after the second duration of the touch being applied to the touch screen is detected in connection with the indicia after the first duration of the touch is detected without the ceasing, perform the at least one particular action; and
[1.f]	when a slide or swipe gesture being applied to the touch screen is detected after the second duration of the touch being applied to the touch screen is detected in connection with the indicia after the first duration of the touch is detected without the ceasing, change at least one aspect of the display of the at least one menu.

Claim 2	
[2]	The non-transitory computer-readable media of claim 1, further including instructions that, when executed by the at least one processor, cause the mobile device to operate such that the particular actions are associated with the application.
Claim 9	
[9]	The non-transitory computer-readable media of claim 1, further including instructions that, when executed by the at least one processor, cause the mobile device to operate such that, when the second duration of the touch being applied to the touch screen is detected in connection with the indicia after the first duration of the touch is detected without the ceasing, the at least one menu is displayed along with the indicia or information associated therewith.
Claim 10	
[10]	The non-transitory computer-readable media of claim 9, further including instructions that, when executed by the at least one processor, cause the mobile device to operate such that the at least one menu is displayed along with the indicia.
Claim 11	
[11]	The non-transitory computer-readable media of claim 9, further including instructions that, when executed by the at least one processor, cause the mobile device to operate such that the at least one menu is displayed along with the information associated with the indicia.
Claim 13	
[13]	The non-transitory computer-readable media of claim 1, further including instructions that, when executed by the at least one processor, cause the mobile device to operate such that the first duration and the second duration of the touch are detected as part of the same gesture.

Claim 14	
[14]	The non-transitory computer-readable media of claim 13, further including instructions that, when executed by the at least one processor, cause the mobile device to operate such that the slide or swipe gesture is capable of being part of the same gesture.
Claim 15	
[15]	The non-transitory computer-readable media of claim 1, further including instructions that, when executed by the at least one processor, cause the mobile device to operate such that the at least one aspect of the display of the at least one menu is changed by ceasing display of the at least one menu.
Claim 16	
[16.pre]	A mobile device, comprising:
[16.a]	a touch screen;
[16.b]	an actuator;
[16.c]	at least one processor;
[16.d]	memory configured to store an application; and
[16.e]	one or more programs, wherein the one or more programs are stored in the memory and configured to be executed by the at least one processor, the one or more programs including instructions to:
[16.f]	display indicia, utilizing the touch screen;
[16.g]	when a first duration of a touch being applied to the touch screen is detected as ceasing in connection with the indicia, perform an operation;

[16.h]	when a second duration of the touch, that is different than the first duration of the touch, being applied to the touch screen is detected in connection with the indicia after the first duration is detected without the ceasing, output feedback that is perceptible by touch, utilizing the actuator;
[16.i]	when the second duration of the touch being applied to the touch screen is detected in connection with the indicia after the first duration of the touch is detected without the ceasing, display at least one menu including a plurality of particular actions;
[16.j]	when a selection touch being applied to the touch screen is detected in connection with at least one of the particular actions of the at least one menu after the second duration of the touch being applied to the touch screen is detected in connection with the indicia after the first duration of the touch is detected without the ceasing, perform the at least one particular action; and
[16.k]	when a slide or swipe gesture being applied to the touch screen is detected after the second duration of the touch being applied to the touch screen is detected in connection with the indicia after the first duration of the touch is detected without the ceasing, change at least one aspect of the display of the at least one menu.
Claim 56	
[56.pre]	The mobile device of claim 16,
[56.a]	wherein the mobile device is configured such that the at least one aspect of the display of the at least one menu is conditionally changed, based on whether a starting location of the slide or swipe gesture is at an edge of touch screen.
Claim 57	
[57.pre]	The mobile device of claim 16,

[57.a]	wherein the mobile device is configured such that the at least one aspect of the display of the at least one menu is conditionally changed, based on whether a starting location of the slide or swipe gesture is at least adjacent an edge of touch screen.
Claim 58	
[58]	The mobile device of claim 16, wherein the mobile device is configured such that the at least one aspect of the display of the at least one menu is conditionally changed, based on a direction of the slide or swipe gesture.
Claim 59	
[59]	The mobile device of claim 16, wherein the mobile device is configured such that the at least one aspect of the display of the at least one menu is conditionally changed, based on a distance of the slide or swipe gesture.
Claim 60	
[60]	The mobile device of claim 16, wherein the mobile device is configured such that the at least one aspect of the display of the at least one menu includes a location of the at least one menu.
Claim 61	
[61]	The mobile device of claim 16, wherein the mobile device is configured such that the at least one aspect of the display of the at least one menu includes a visibility of the at least one menu.
Claim 62	
[62]	The mobile device of claim 16, wherein the mobile device is configured such that the at least one aspect of the display of the at least one menu includes a highlighting on the at least one menu.

Claim 63	
[63]	The mobile device of claim 16, wherein the mobile device is configured such that the at least one aspect of the display of the at least one menu is changed by moving the at least one menu.
Claim 64	
[64]	The mobile device of claim 16, wherein the mobile device is configured such that the at least one aspect of the display of the at least one menu is changed by ceasing display of the at least one menu.
Claim 84	
[84.pre]	A method, comprising:
[84.a]	at a mobile device including a touch screen, an actuator, and memory in communication with at least one processor:
[84.b]	displaying indicia, utilizing the touch screen;
[84.c]	based on a first duration of a touch applied to the touch screen being detected as ceasing in connection with the indicia, performing [sic] an operation;
[84.d]	based on a second duration of the touch, that is different than the first duration of the touch, applied to the touch screen being detected in connection with the indicia after the first duration is detected without the ceasing, outputting feedback that is perceptible by touch, utilizing the actuator;
[84.e]	based on the second duration of the touch applied to the touch screen being detected in connection with the indicia after the first duration of the touch is detected without the ceasing, displaying at least one menu including a plurality of particular actions;

[84.f]	based on a selection touch applied to the touch screen being detected in connection with at least one of the particular actions of the at least one menu after the second duration of the touch is detected in connection with the indicia after the first duration of the touch is detected without the ceasing, performing the at least one particular action; and
[84.g]	based on a slide or swipe gesture applied to the touch screen being detected after the second duration of the touch is detected in connection with the indicia after the first duration of the touch is detected without the ceasing changing at least one aspect of the display of the at least one menu.

CONVENTIONS OF THIS REPLY BRIEF

- All emphasis is added unless noted otherwise;
- Bold-italic emphasis correlates to claim language;
- Quotations are generally reserved for exhibits; and
- The phrase “as discussed” and equivalent phrases incorporate fully the analysis of the cross-cited portion of the Reply Brief.

The Petition establishes that the '212 patent's supposed invention is really just an obvious variant of the prior art. Patent Owner contends otherwise, but not credibly. Arguing that basic user interface features like tactile feedback, menus, and slide gestures were new in 2011 is a nonstarter; and Patent Owner gets no further by alleging that the '212 patent's broad claims are anything more than a predictable combination of these known elements. The Petition shows, conclusively, that they are not. The Board should find the Challenged Claims obvious and unpatentable.

I. Patent Owner's "Multi-Part" Gesture Construction Is Unsupported

According to Patent Owner, the claims recite "logic and functionality for paths for a decision tree" to detect "multi-part pattern-based gestures" by processing "instances of user input on a touch screen that begin from a common starting point." POR, 13. But none of these words in Patent Owner's convoluted construction appear in the '212 patent's broad Challenged Claims², and Patent Owner identifies no evidence of "lexicography or disclaimer" that justifies importing such extraneous limitations. *Retractable Techs. v. Becton, Dickinson & Co.*, 659 F.3d 1369, 1372–73 (Fed. Cir. 2011); *see also generally* POR, 13–17.

Tellingly, even Patent Owner's expert, Dr. Madisetti, "disagree[s]" with the proposition that "the claims of the '212 patent are limited to and require multi-part

² Note that unchallenged Dependent Claim 83 recites "a multi-component gesture."

gestures” because the specification merely includes “nonlimiting examples.” EX1059, 74:11–75:9. It is therefore unsurprising that none of Patent Owner’s pin citations to the ’212 patent and the incorporated-by-reference ’918 provisional provide the kind of “clear and explicit statement[s]” that the law requires for injecting an unrecited multi-part gesture limitation into the Challenged Claims. *Thorner v. Sony Comput. Entm’t Am. LLC*, 669 F.3d 1362, 1367–68 (Fed. Cir. 2012); *see also* POR, 6–10 (citing, *e.g.*, EX1001, 74:24–26 (“In some embodiments...”).

As for Patent Owner’s additional argument that “each Limitation [must be] performed when presented with an instance of user input where their preconditions apply,” (POR, 14–15), the Board need not reach an affirmative construction because there is no “controversy” on this issue here, *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999). The Petition accounts for every limitation in exactly the fashion Patent Owner contends is required. *See* Pet., 4–5, 20–40.

II. The Combined Teachings of Hotelling and Martyn Render Obvious the Rudimentary Claim Features of Outputting Tactile Feedback and Displaying a Menu When a Second Touch Duration is Detected

The tactile feedback limitations of Elements [1.c], [16.h], [84.d] and the menu limitations of Elements [1.d], [16.i], [84.e] are simple. In a scenario “where the user’s touch is applied for a second duration—which may be longer than the first duration—the device outputs tactile feedback and displays *at least one menu including a plurality of particular actions.*” Pet., 4. The Petition explains in detail

how the combined teachings of Hotelling and Martyn render these rudimentary features obvious. *See* Pet., 26–31. As shown below, Patent Owner tries but fails to undercut the Petition by alluding to its erroneous “multi-part gesture” construction, improperly attacking the references in isolation from one another, and understating the knowledge and abilities of a POSITA. *See* POR, 26–48.

A. Hotelling Shows Pairing Tactile Feedback With a Long Duration Touch Was Known and Obvious (Elements [1.c], [16.h], [84.d])

1. Hotelling Teaches the Claimed Tactile Feedback Elements

There is no question that Hotelling’s many “tactile feedback” and “haptics” disclosures teach the ’212 patent’s claimed feature of *outputting feedback that is perceptible by touch*. *See* Pet., 28. The only debate is whether Hotelling also teaches that the tactile feedback *occurs when a second duration of the touch is detected*. *See Id.*; POR, 28–31. The record shows that Hotelling does so. EX1062, ¶¶16–30.

In a section titled “Audio/Tactile Feedback devices,” Hotelling explains how “widely varied” haptics mechanisms can be used to produce different forms of tactile feedback that facilitate multiple user experiences, such as by providing an “indicator[]” or “alert,” “enhanc[ing] the feel of actuating a GUI element such as a...virtual button,” and outputting “simultaneously with onscreen actions.” EX1004, [0160]–[0163]; *see also* [0158] (discussing “indicators that provide user feedback or indicate events,” such as “signals, conditions or status of the device”).

Hotelling thus broadly teaches that “tactile feedback may be used to alert a user that a user input has been made” and “can be used in conjunction with an input event including touch events.” EX1004, [0163]. Having already learned from Hotelling’s earlier disclosures that touch events include “long” touches on a virtual button,³ a POSITA would have understood Hotelling as a whole to teach the simple concept of providing tactile feedback *when a second duration of the touch being applied to the touch screen is detected*. See EX1003, ¶¶121–125; EX1062, ¶¶19–24 (discussing the POSITA’s background knowledge), ¶¶25–27 (discussing Hotelling); see also EX1004, [0145] (explaining that “variables” like “duration of the touch” can be used to “form a variety of behaviors and user feedback”), Claim 18 (the device “provides audio or tactile feedback to a user based on user inputs”).

Patent Owner responds by contending that Hotelling only “describes providing feedback for specific purposes,” either to make the virtual interface feel more physical or to provide a single type of alert indicator. POR, 27. But that cramped reading of Hotelling is wrong. “Contrary to [Patent Owner’s] suggestion, a skilled artisan would not read [Hotelling] with a myopic focus on a single

³ See EX1004, [0097] (“a controller...performs an action based on the touch event”), [0135] (discussing gesture recognition), [0145]–[0151] (explaining “duration” and touch events that are “short” or “long”), Figures 26, 27A–E.

example...but would instead view the reference’s teachings as a whole.” *Alacritech, Inc. v. Intel Corp.*, 817 F. App’x 995, 1000 (Fed. Cir. 2020); *see also Uber Techs., Inc. v. X One, Inc.*, 957 F.3d 1334, 1341 (Fed. Cir. 2020) (similar); *GE v. Raytheon Techs. Corp.*, 983 F.3d 1334, 1352 (Fed. Cir. 2020) (vacating an analysis that “unduly dissects prior art references into collections of individual elements”).

By improperly dissecting and isolating small snippets of disclosure, Patent Owner presents a fragmented view of Hotelling that “would entail providing haptic feedback upon the initial press and/or upon release—not when a time threshold of holding down a button is passed because there is no tactile response of a physical button during an ongoing hold.” POR, 28–29 (altered emphasis); *see also* Paper 7 at 23–24 (the Board noting Patent Owner’s “overly limited view of what Hotelling teaches”). Considering the reference as a whole reveals a different scene, one where Hotelling broadly teaches the POSITA that tactile feedback “may provide information so that the user knows that they actually implemented an input,” such as a “long” touch. EX1004, [0163], [0149]; EX1062, ¶¶28–29.

So, yes, Hotelling does teach the notion of providing tactile feedback during an ongoing hold. EX1062, ¶¶25–29. That’s how the user is informed that they have successfully executed a “long” touch. *Id.* This understanding of Hotelling is confirmed by an incorporated-by-reference document that describes “[c]ontinuous gestures...performed in a single stroke” and explains how a gesture, action, and

tactile feedback can all occur “concurrently.” EX1010, [0066], [0083]; *see also* [0065] (“viewing a menu”), [0068] (“[A]ctions associated with gestures can be implemented at the same time as the gesture[.]”); Pet., 44–45; EX1063, ¶¶58–59 (Dr. Madisetti opining on August 10, 2023 in IPR2023-01268 that Hotelling-521 (EX1010) is “part of” Hotelling’s disclosure (EX1004)); EX1062, ¶30.

In any event, setting aside that it stems from a fundamental misreading of Hotelling, Patent Owner’s view that tactile feedback would occur “upon release” of a virtual button is a sufficient concession to settle the dispute. POR, 28–29. After all, the claims do not recite that the feedback occurs “during an ongoing hold,” (POR, 29 (emphasis altered)), merely *when a second duration of the touch is detected*. There is no reason why the end of a long touch—“upon release”—cannot be the claimed *second duration*. Patent Owner’s contrary position seemingly stems from its now-debunked construction that the claims require a “multi-part gesture.” POR, 26; *see supra* §I.

2. Hotelling Also Renders Obvious the Claimed Tactile Feedback Elements

Alternatively, the Petition explains that providing tactile feedback *when a second duration of the touch is detected* is rendered obvious by supplementing Hotelling’s above-discussed teachings with the common knowledge and ordinary creativity of a POSITA. *See* Pet., 28–29 (citing EX1003, ¶¶126–130, ¶¶45–48).

Patent Owner responds by suggesting that “the cited portion of Dr. Cockburn’s declaration just reiterates what Hotelling already discloses.” POR, 31–32. Not so.

Dr. Cockburn cites objective third-party documents confirming a POSITA’s knowledge that tactile feedback “improve[s] usability,” not only by making virtual buttons feel more like physical buttons, but also by “confirm[ing] user actions [via] providing different tactile feedback” to signal different mobile device operations. EX1003, ¶¶128–129 (quoting EX1028, pp.1–2); EX1062, ¶¶20–24. As shown below, this same evidence defies Patent Owner’s suggestion that the record lacks any sign of “providing haptic feedback upon detection of a long touch,” (POR, 32).

4.2 Scrolling Demonstration

In the scrolling demonstration speed dependent scrolling is enhanced with tactile feedback in order to indicate the current scrolling speed to the user non-visually. In the demonstrator application a large document is displayed on the screen. The user can enter the scrolling mode by pressing the stylus onto the centre of the screen and holding it still until tactile feedback is presented. This tactile feedback indicates that the user has entered the scrolling mode. The user can then scroll up and down through the document by moving the stylus up and down, respectively, while holding the stylus on the screen. The

EX1028, p.2 (using tactile feedback to confirm the action of picking up an icon “by holding the stylus on it for a while”). Because the evidence shows a POSITA would have appreciated that tactile feedback “is likely to help all button interactions on touch-screens,” (EX1029, p.4), it follows that the POSITA would have been

motivated to pursue the common-sense solution of outputting tactile feedback in response to Hotelling’s “long” touch. EX1003, ¶¶126–130; EX1062, ¶¶31–34.

B. The Combined Teachings of Hotelling and Martyn Show Calling a Contextual Menu With a Long Duration Touch Was Obvious (Elements [1.d], [16.i], [84.e])

1. Patent Owner Disregards the Petition’s Hotelling-Martyn Combination and Misguidedly Attacks Its Own Hypothetical Combination of Hotelling’s Figures

Patent Owner spends most of its brief cutting down a strawman. The Petition does not seek to “apply [Hotelling’s] Figure 27A to Figure 18” of Hotelling in the literal way Patent Owner repeatedly suggests. *See* POR, 34–48. Instead, the Petition addresses the ’212 patent’s *menu* limitations based on the combined teachings of Hotelling and Martyn, which the Board aptly summarized:

More specifically, Petitioner argues that one of ordinary skill would have supplemented Hotelling’s GUI with application icons with Martyn’s teaching of “a contextual shortcut menu in response to a press-and-hold input on an application icon,” such that a held touch by a user on an icon would cause the display of a contextual menu. *Id.* at 13–14 (citing Ex. 1003 ¶ 75). Petitioner asserts that such shortcut menus were a ubiquitous feature

Paper 7 at 15–16; EX1062, ¶47.

The Petition provides multiple reasons why a POSITA would have incorporated Martyn’s App Snapshot teachings in the context of Hotelling’s main page GUI. *See* Pet., 13–17 (citing EX1003, ¶¶87–98). The Petition further explains

that the POSITA would have naturally identified Hotelling’s “long” touch as an appropriate gesture for invoking the App Snapshot menu because, among other things, (i) it flows from Martyn’s teaching of a “press and hold” input; and (ii) Hotelling already discloses the concept of using a “long” touch to invoke a contextual menu. Pet., 13–14 (citing EX1003, ¶¶75–76), 16 (citing EX1003, ¶83), 27 (citing EX1003, ¶124). Patent Owner’s complaint that the Petition “is silent” on this aspect of the combination does not hold water. POR, 34–35 (altered emphasis); EX1062, ¶¶36–41 (collecting and summarizing the record evidence).

After unsuccessfully contesting the Petition’s motivation-to-combine analysis regarding Hotelling and Martyn in its Preliminary Response, Patent Owner decided to abandon and, thus, waive those arguments in its principal Response. *Compare* POPR, 22–32, *with* Paper 7 at 18–21, *and with* POR, 34–48; *see also* Paper 8 at 9. Leaving the real issue largely uncontested, Patent Owner presses the erroneous and irrelevant point that Hotelling’s music player GUI in Figure 27A is a distinct embodiment that is “incompatible” with Hotelling’s Figure 18 main page GUI. POR, 37–48. But the Board already saw through that distraction. *See* Paper 7 at 19 (“[W]e do not understand Hotelling to be directed to two embodiments[.]”), 20 (“[I]t does not appear that two different embodiments are being referenced by Petitioner.”); POPR, 16–22. Besides, Patent Owner cannot rebut the Petition “by attacking [Hotelling] individually where the [instituted ground] is based upon the

teachings of a combination of [Hotelling and Martyn].” *Bradium Techs. LLC v. Iancu*, 923 F.3d 1032, 1050 (Fed. Cir. 2019) (quotes omitted).

2. Patent Owner’s Attempt to Silo Hotelling’s Disclosures Fails

Though the issue is not dispositive for the reasons discussed above, it still bears noting that Patent Owner draws the wrong conclusion from comparing Hotelling’s Figure 27A music player GUI to the Figure 18 main page GUI. POR, 34–48. The pertinent question is not whether a POSITA would have, or even could have, “bodily incorporat[ed]” one of the two GUIs into the other. *Axonics, Inc. v. Medtronic, Inc.*, 73 F.4th 950, 957 (Fed. Cir. 2023). Nor does the inquiry turn on whether Hotelling’s main page GUI in Figure 18 is a better or worse option than the GUI in Figure 9 that Patent Owner prefers. *See* POR, 43–46; *Par Pharm., Inc. v. TWi Pharm., Inc.*, 773 F.3d 1186, 1197-98 (Fed. Cir. 2014) (“Our precedent...does not require the motivation be the best option[.]” (altered emphasis)). What matters is whether the POSITA would have appreciated that Hotelling’s disclosed solution of invoking a contextual menu in the music player GUI would have suitably solved the “same problem” when integrating Martyn’s App Snapshot with the main page GUI. *Intel Corp. v. PACT XPP Schweiz AG*, 61 F.4th 1373, 1380–81 (Fed. Cir. 2023). The answer is, undoubtedly, yes. *See* EX1003, ¶83.

As the record makes clear, a POSITA would have known that using a long touch gesture on virtual buttons and icons to invoke menus and control options was

not new in 2011; it was commonplace. *See* EX1003, ¶¶43–44 (citing EX1024; EX1025), ¶78 (citing EX1037), ¶124 (citing EX1006); EX1062, ¶¶40–41 (Dr. Cockburn collecting examples). Accordingly, when faced with the simple design problem of assigning a touch gesture to invoke Martyn’s App Snapshot on Hotelling’s main page GUI, a POSITA would have pursued the conventional option of a long touch on the provided virtual buttons/application icons. EX1062, ¶41.

Moreover, a POSITA would have known that it was a common technique to assign the same input command to achieve substantially similar functionality across different operating systems and applications because following consistent conventions promotes usability. EX1062, ¶¶45–46 (citing EX1054, p.1 (“Users should not have to wonder whether different words, situations, or actions mean the same thing.”)). So the fact that Hotelling discloses a long touch gesture on a virtual button in the Figure 27 music player GUI for calling a contextual menu would have prompted the POSITA to use the same gesture for the similar function of invoking Martyn’s App Snapshot in the Figure 18 main page GUI, which likewise includes virtual buttons. *Id.* Patent Owner’s quibble that the virtual buttons in Figure 18 serve as application icons and are not part of a control region is unimportant—they are virtual buttons all the same. *Id.*

3. A POSITA Would Not Limit Application of Martyn's Teachings to Non-Touch Screens

As Dr. Cockburn explains, “Martyn provides analogous disclosure to that of Hotelling’s ‘long’ touch, specifying that the menu is ‘called’ by a ‘press and hold’ input, which a POSITA would have recognized as a long touch rather than a tap input.” EX1003, ¶124; *see also* ¶69, ¶73, ¶75; EX1062, ¶42. Patent Owner tries to drive a wedge between these references by suggesting—inaccurately—that Martyn’s press-and-hold disclosure is limited to “a physical button.” POR, 44–45.

First, a POSITA would have understood that the scope of Martyn’s disclosure is not limited to non-touch screen devices with only physical buttons. EX1062, ¶43. Martyn instead makes clear that its disclosure applies to “any kind of mobile device with communications capabilities,” including “smart phones [and] PDAs.” EX1005, [0002]. All experts agree that smartphones and PDAs with touch screens were known in the 2000–2001 timeframe when Martyn was filed, and certainly by the ’212 patent’s earliest claimed priority date in 2011. EX1003, ¶¶36–37; EX1062, ¶43; EX1064, ¶¶39–47; EX1059, 22:20–23:16. Second, even if Martyn were hypothetically limited to a press-and-hold input applied to a physical button or a virtual representation of a physical button, that would not change the fact that Hotelling’s long touch gesture is an obvious analog that a POSITA would have been motivated to employ. EX1062, ¶44.

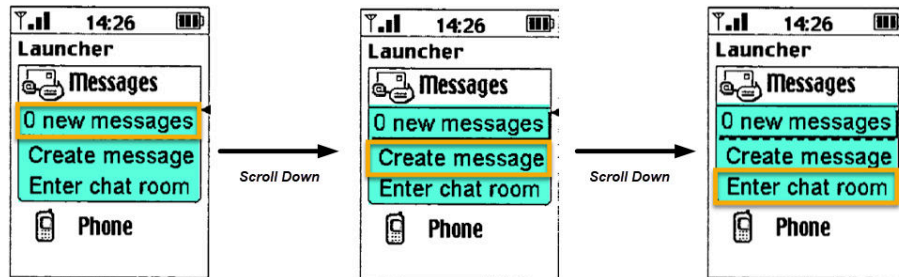
III. The Hotelling-Martyn-Cho Combination Renders Obvious the Claimed Features of Using Slide/Swipe Gestures to Change the Menu in Five Different Ways (Elements [1.f], [16.k], [84.g])

Given that *slide* and *swipe gestures* were so well known and the '212 patent's independent claims broadly cover any corresponding action that *changes at least one aspect of the display of the menu*, it is unsurprising that the prior art provides multiple paths to a conclusion of obviousness. Pet., 33–39. As Patent Owner concedes, the Petition explains how the Hotelling-Martyn-Cho Combination reaches these limitations in five different ways, any one of which is independently sufficient. POR, 49–58. Notably, Patent Owner does not argue that the Combination lacks slides/swipes or that manipulating a window displaying a contextual menu was new. *Id.* Patent Owner instead takes the position that a POSITA would not have put two and two together to combine these well-known features. *Id.* As demonstrated below, the record says otherwise.

A. First Way: Highlighting Menu Items, Per Hotelling-Martyn

Patent Owner's argument against Martyn's teaching to change the App Snapshot menu by "scroll[ing] or mov[ing] a 'highlight' (yellow box) through the list of items in the menu (blue)," (Pet., 34–35), is premised on the flawed understanding that Martyn is limited to "non-touch screen devices," (POR, 49–50). As discussed, Martyn explains that its teachings extend to known touch screen

devices like “smart phones” and “PDAs.” EX1005, [0002]; *supra*, §II.B.3 (citing EX1003, ¶¶36–37; EX1064, ¶¶39–47; EX1059, 22:20–23:16).



EX1005, Figure 2 (highlighted/duplicated to create a visual aid); EX1003, ¶140.

Patent Owner also fails to persuade by downplaying Martyn’s teachings as “unnecessary” in the context of Hotelling because “a touch screen device enables any item on the screen to be selected without [highlight] scrolling.” POR, 50. Dr. Cockburn debunked this theory during his deposition, providing key testimony that is revealed by expanding Patent Owner’s partial quote of the transcript to show the complete question-and-answer exchange:

Q. But it's not necessary to highlight an item prior to selecting it on a touch device when you can simply touch the visual representation of the item, as you said. Right?

A. It's not necessary to highlight it. The person of skill in the art would understand that it would be common practice to highlight the item under the finger to confirm to the user the item that is being touched. So highlighting and selection are commonly coupled in touchscreen interaction.

EX2006, 81:11–20. In short, although Martyn’s highlight scrolling functionality is not strictly necessary on a touch screen, it is nevertheless an obvious, beneficial, and common practice. *Id.* That Apple’s Newton MessagePad, a touch screen PDA from 1993, incorporated this functionality more than a decade before 2011 corroborates Dr. Cockburn and contradicts Patent Owner. EX1003, ¶36, ¶91 (quoting EX1022 (Newton 2.0 User Interface Guidelines), p.137).

B. Second Way: Dismissing the Menu, Per Hotelling-Martyn

“[J]ust as [Hotelling’s slide/swipe] gestures can be employed for list scrolling, Hotelling also suggests using them to ‘back out of a folder,’ an action analogous to Martyn’s menu dismissal.” Pet., 36 (quoting EX1004, [0151] (alterations modified)); EX1003, ¶¶143–144; EX11062, ¶¶50–54. Patent Owner takes the contrary position, arguing that Martyn’s App Snapshot “is not hierarchical” and, thus, not analogous to Hotelling’s “folder hierarchy.” POR, 52.

But Patent Owner misunderstands. Whether the App Snapshot is intrinsically hierarchical on its own is unimportant. What matters is that the App Snapshot is a hierarchical sub-menu when integrated with Hotelling’s main page GUI. Just like backing out of a sub-folder reintroduces the contents of a main folder to the user, dismissing Martyn’s App Snapshot reintroduces Hotelling’s main page GUI as the user’s primary focus. *See* EX1062, ¶¶53–54. Here, as before, Patent Owner faults

“by attacking [Martyn] individually,” *Bradium Techs.*, 923 F.3d at 1050, and disregarding the combined teachings of Martyn and Hotelling.

C. Third Way: Scrolling the Menu, Per Hotelling-Martyn-Cho

According to Patent Owner, “[a] POSITA would not have been motivated to combine Cho’s scrolling with Martyn’s App Snapshot menu because the contents of Martyn’s App Snapshot are all visible when the App Snapshot is first displayed (i.e., there are no list items that must be brought into view via scrolling).” POR, 53. But that argument is shortsighted because it only applies to the non-limiting examples shown in Martyn’s Figures 2–3. *See* POR, 53–54; EX1062, ¶¶55–56. Elsewhere, Martyn teaches that “the user...may define the kinds of functionality and/or stored data to be included in the App Snapshot for a given application.” EX1005, [0026].

So even if Martyn describes exemplary “implementation[s]” where the items in the App Snapshot are “limited” and the window can grow “slightly longer” to accommodate some additional items, (EX1005, [0015], [0017]; POR, 54–55), a POSITA would have understood nevertheless that when menus like Martyn’s are “customizable,” users will sometimes “add[so] many items” that the menu “becomes too long to fit on the screen,” (EX1022, p.138). EX1062, ¶¶56–58. When that scenario occurs, the operating system of the mobile device should “automatically” provide scrolling functionality, so that the user can access items in the customized App Snapshot that are not initially visible. EX1022, p.138 (“Users

can also scroll list picker[menu]s by dragging from the middle of the picker past the top or bottom of the picker.”); EX1003, ¶91. A POSITA with this background knowledge and understanding would have seen the swipe/slide-to-scroll functionality that Cho describes as a well-known technique that solves a well-known problem. Pet, 18–19 (citing EX1003, ¶¶89–91, ¶¶94–97); EX1062, ¶58.

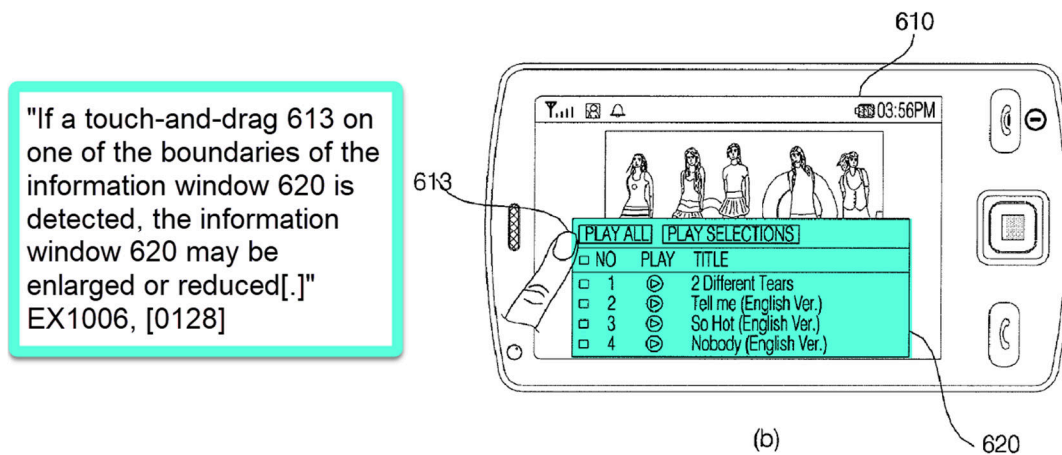
Moreover, as the Petition shows, Hotelling encourages the integration of Cho’s scrolling functionality by describing the use of touch gestures with “motion,” such as a “swipe” or “slid[e],” to provide “command signal[s]” for manipulating GUIs. EX1004, [0148], [0087]; *see also* Pet., 18. In one example, Hotelling assigns an “UP/DOWN” slide/swipe gesture to the action of “scroll[ing a] list.” EX1004, [0151], [0087], Figures 27A–B; *see also* Pet., 35; EX1003, ¶92. And Hotelling explains that the beneficial purpose of scrolling is to “allow[] a user to view consecutive sets of data currently outside of the view area,” which, like Martyn’s App Snapshot, “may only be a portion of the display screen (e.g., a window frame).” EX1010, [0074]–[0076] (explaining that “[a] user is able to linearly scroll...by moving his or her finger across a touch screen”); *see also* Pet., 44–45 (discussing EX1010 and its “scrolling” disclosures).⁴

⁴ As discussed above at Section II.A.1, this document is a patent application that Hotelling expressly incorporates by reference.

Accordingly, whether drawing from common knowledge or the express teachings of Hotelling, a POSITA would have been amply motivated to integrate Cho's slide/swipe-to-scroll functionality with the App Snapshot sub-menu from the combined teachings of Hotelling and Martyn. Patent Owner fails to show otherwise.

D. Fourth Way: Resizing the Menu, Per Hotelling-Martyn-Cho

As with scrolling, resizing a window is another known use of slide/swipe gestures that Cho teaches to interact with a contextual menu in an information window, and "applying it in the similar setting of the Hotelling-Martyn contextual menu window to obtain a substantially similar result would have been obvious as a matter of law under *KSR*." Pet., 18–19 (citing EX1003, ¶¶89–91, ¶¶94–97).



EX1006, Figure 17(b) (annotated).

Indeed, the kind of basic resizing manipulation that Cho teaches had been employed in GUI environments for decades, and it had also been applied to touch screen mobile devices long before 2011. See, e.g., EX1021, p.4 (describing

technology from the 1980s that “made it much easier to write programs to scroll a window (move an image through it), resize (enlarge or contract) it, and drag windows (move them from one location to another on-screen)”). Hotelling itself is a prime example. Hotelling describes a variety of different gestures, including slides and swipes, (EX1004, [0087], [0145], [0148], [0151], Figures 27A–B), and further explains that such “gestures can be created to...effect a user command to resize a window,” (EX1010, [0085])⁵. *See also* EX1010, [0025] (“gestures may be associated with...enlarging”), [0065] (explaining that “gestures 85 may be identified as commands for performing actions,” including “modifying GUI objects” by “sizing”), [0100] (explaining how motion gestures can be used to “enlarge the [GUI] object” and “reduce the GUI object”).⁶

⁵ As discussed above at Section II.A.1 and n4, this document is a patent application that Hotelling expressly incorporates by reference.

⁶ *See also* EX1034 (a 2007 patent application to Steven P. Hotelling et al.), [0096] (identifying “handheld computing devices”), [0104]–[0105] (describing touch gestures that provide “manipulative commands,” including “sizing”), [0153]–[0154] (describing how touch gestures can “change [the] size” of a GUI object), Figure 23, Figure 43 (“Move/resize window”).

Furthermore, as Patent Owner concedes, resizing the App Snapshot to accommodate more items is a functionality that Martyn expressly discloses. *See* POR, 54 (“Martyn teaches that this is accomplished by making the App Snapshot ‘longer’”) (quoting EX1005, [0017])). Incorporating Cho’s teaching of using a slide/swipe gesture to make this resizing controllable by a user cannot credibly be considered an inventive leap.

E. Fifth Way: Dismissing the Menu, Per Hotelling-Martyn-Cho

Patent Owner concedes the pertinent point when it argues that “Martyn already teaches multiple techniques for ending the display of its App Snapshot.” POR, 58. As the Federal Circuit recently explained, “[t]hat [Cho] and [Martyn] address the same problem [of dismissing an information window] and that [Cho’s swipe/slide gesture] was a known way to address that problem is precisely the reason that there’s a motivation to combine under *KSR*.” *Intel*, 61 F.4th at 1380. The Petition did not need to show that Cho’s slide/swipe gestures “would be an improvement to” the combined teachings of Hotelling and Martyn. POR, 58; *see Intel*, 61 F.4th at 1381 (explaining that “Intel never had to show...an ‘improvement’ in a categorical sense”). It is enough for the Petition to show (i) that dismissing an information window, particularly Martyn’s App Snapshot, in the context of a touch screen GUI was an evident design problem, (ii) that Cho’s slide/swipe-to-dismiss functionality suitably addresses that problem, and (iii) that combining Cho’s

teaching with Hotelling and Martyn was not beyond the skill of a POSITA. *Intel*, 61 F.4th at 1381. The Petition made this showing, and Patent Owner does not argue otherwise. Pet., 11, 17–20, 36, 38–39; EX1003, ¶¶59–60 (discussing commercial products that employ slides/swipes to invoke or dismiss menus), ¶¶70–72, ¶¶87–91, ¶143, ¶¶148–150; POR, 57–59.

IV. The Dependent Claims Are Not Patentably Distinct; Patent Owner Fails to Effectively Rebut the Petition

Dependent Claims 14, 15, and 61–64 recite rudimentary add-on features that do not materially change the question of patentability with respect to Independent Claims 1 and 16.

Claim 14: Patent Owner’s theory that “the Petition [does] not explain why a POSITA would read multi-part gestures into Hotelling” is easily disproved. POR, 60. The Petition plainly explains that Hotelling teaches the notion of “‘continuous gestures...performed in a single stroke.’” Pet., 44–45 (quoting EX1010, [0066]⁷); *see also* EX1010, [0072] (“the gesture inputs can be continuously input, either simultaneously or consecutively”), [0110] (“zooming, rotating and panning can all be performed during the [same] gestural stroke”). Hotelling’s express disclosure—

⁷ As discussed in the Petition and above at Section II.A.1 and n4, this document is a patent application that Hotelling expressly incorporates by reference.

which Patent Owner and Dr. Madisetti tellingly ignored—is why a POSITA would have understood that “a *slide/swipe gesture is capable of* being part of the *same* multi-part *gesture* as a *long/short* touch.” Pet., 44; *compare with* POR, 59–62; EX2005, ¶¶106–114.

Claims 15, 61–64:⁸ Here, Patent Owner merely incorporates its previously discredited theories regarding Elements [1.f] and [16.k]. *See supra*, §§III.

V. The Board Should Not Credit Dr. Madisetti’s Incomplete, Unsupported, and Contradictory Testimony

As revealed below, the testimony of Patent Owner’s Dr. Madisetti is demonstrably not credible. It is thus entitled little or no weight in this proceeding.

First, Dr. Madisetti’s testimony is based on insufficient facts and data. For example, Dr. Madisetti openly admits to having considered only a limited subset of Hotelling’s disclosure. *See* EX1059, 55:11–22. And because he “did not do any independent evaluation of Hotelling in its entirety,” (*id.*), Dr. Madisetti made bold declarative statements that are plainly incorrect. The analysis above on Dependent

⁸ Note that Patent Owner raises an additional argument at Claim 61 to address the “Third” independent basis in the Petition. But Patent Owner has no answer for the “First” and “Second” bases in the Petition beyond its arguments for Elements [1.f] and [16.k]. *Compare* Pet., 49–51, *with* POR, 62–63.

Claim 14 is illustrative. *See supra*, §IV. As discussed, the Petition quoted an incorporated-by-reference passage from Hotelling’s disclosure on “continuous gestures...performed in a single stroke” that directly contradicts Dr. Madisetti’s opinion about Hotelling having no suggestion of “multi-part gestures.” *Compare* Pet., 44 (quoting EX1010), *with* EX2005, ¶108. Dr. Madisetti testified during cross-examination that he had no recollection of reviewing Hotelling’s incorporated-by-reference material (EX1010), and it is not addressed in his declaration. *See* EX1059, 48:12–50:8 (“I don’t recall reviewing those.”).

This oversight also resulted in Dr. Madisetti not realizing that Hotelling’s incorporated-by-reference disclosure on “continuous gestures” extends to the notion of providing tactile feedback “concurrently,” (EX1010, [0068], [0083]), which contradicts his position that Hotelling is limited to “providing haptic feedback upon the initial press and/or upon release,” (EX2005, ¶56). *See supra*, §II.A.1. Relatedly, despite having not performed a search for supporting evidence, Dr. Madisetti makes the broad pronouncement that “the value of tactile feedback...was not fully appreciated [in 2011] and a POSITA at that time would not have recognized the wide range of uses that were possible.” EX2005, ¶56; *but see* EX1059, 69:22–70:20 (“Q: So, for example, you didn’t search online for any supporting documentation? A: I did not.”). Had Dr. Madisetti considered Hotelling in its entirety, read the multiple exhibits on tactile feedback submitted with the Petition, or conducted any research,

he would not have made this incredible statement that tactile feedback was somehow new or inventive in 2011. *See supra*, §§II.A.1–2.

Second, Dr. Madisetti’s testimony is discredited by the fact that he has repeatedly contradicted himself on the topics at issue in this proceeding. As one example, despite opining throughout his declaration that “multi-part gestures” are a core aspect of the ’212 patent’s alleged invention that distinguishes the prior art, he flatly disagreed during cross-examination that such gestures are claimed. *Compare* EX2008, ¶¶26–30, ¶¶34–35, ¶51, *with* EX1059, 75:1–9; *see supra* §I.

As another example, on the subject of GUI menus, Dr. Madisetti testified to the Board in IPR2022-00570 that “menus had known benefits and were standard fixtures of graphical user interface (GUI) implementations since at least the early 1980s,” but when asked to agree with the exact same statement during cross-examination in this proceeding, he refused. EX1065, ¶87; EX1059, 78:6–80:10 (“Q. You would not say that general statement is true? A. Yes. I would not. I would have to look at the specific context.”). As yet another example, Dr. Madisetti changed his tune on the subject of early-2000s touch screen mobile devices in the span of less than a year. When asked during cross-examination in this proceeding whether such devices were “well known in the earlier 2000s,” he said they were “less known and they were in specific contexts.” EX1059, 23:4–16. But just months earlier, when testifying in IPR2024-00246, Dr. Madisetti explained that these

devices were “well-known and commercially available” as of 2002. EX1064, ¶¶39–47. He even quoted a contemporaneous handbook characterizing them as “the largest group of Internet connectable pervasive devices.” *Id.*, ¶40.

Worst of all, Dr. Madisetti seems to have forgotten that he analyzed the same Hotelling reference (EX1004) differently when testifying in the earlier proceeding of IPR2023-01268. *See* EX1063, ¶6; EX1059, 45:1–9 (“I was not aware of this document.”). Tellingly, when Dr. Madisetti was engaged by the petitioner in IPR2023-01268, he relied upon the entirety of Hotelling’s disclosure, including the above-discussed portions in EX1010 that Hotelling incorporates by reference. *See* EX1063, ¶¶58–59 (identifying EX1010 in this proceeding as “Hotelling-521”).

59. As I discuss in greater detail in Section IX.D, Hotelling incorporates App. 60/658777 (“Hotelling-Prov.”) by reference, making Hotelling-Prov part of Hotelling’s disclosure. Hotelling, [0001]. Additionally, both Hotelling and Hotelling-Prov. each incorporate by reference Application No. 10/903,964, published as US2006/0026521 (“Hotelling-521”), making Hotelling-521 part of the disclosure of both Hotelling and Hotelling-Prov. Hotelling [0002]; Hotelling-Prov. 1:8-22. I have been instructed to treat Hotelling-521 as part of Hotelling’s and Hotelling-Prov.’s disclosure. But even if Hotelling-521 were considered a separate reference, a person of ordinary skill in the art would have been motivated to modify Hotelling’s (and Hotelling-Prov.’s) teachings with Hotelling-521’s teachings in light of the explicit incorporation of Hotelling-521 into Hotelling and Hotelling-Prov.; my analysis therefore would not change if Hotelling-521 were treated as a separate reference.

EX1063, ¶59. Here, though, when engaged by Patent Owner, and when those same incorporated-by-reference portions of Hotelling undermine Patent Owner’s case, Dr. Madisetti chose to completely disregard them. *See* EX1059, 48:8–50:8.

Not only did Dr. Madisetti consider Hotelling’s complete disclosure in his prior testimony for the petitioner in IPR2023-01268, but he also took a different view on how a POSITA would have understood and applied Hotelling’s teachings. In this proceeding, as discussed, Dr. Madisetti treats the POSITA as an automaton, unable to apply Hotelling’s broad teachings about tactile feedback, touch gestures, and contextual menus in any fashion other than the specific examples shown in Hotelling’s figures. *E.g., supra*, §II.A.1, §II.B.2. In his prior testimony, however, Dr. Madisetti liberally applied teachings from “Hotelling-521”⁹ about “floating controls” and a “virtual control knob,” (EX1063, ¶¶169–176), to disparate teachings from “Hotelling-Prov”¹⁰ about the “main menu” GUI of Figure 18 and the “Cell Phone” and “Music Player” GUIs of Figures 10 and 11, (*id.*, ¶¶151–168). Dr.

⁹ “Hotelling-521” is US 2006/0026521, the published version of non-provisional patent application No. 10/903,964, which Hotelling incorporates by reference. *See* EX1004, [0002]. This document was cited in the Petition as EX1010.

¹⁰ “Hotelling-Prov” is provisional patent application No. 60/658,777, which Hotelling incorporates by reference. EX1004, [0002].

Madisetti's position here that "Hotelling's disclosure does not support the combination of one GUI's functionality with another," (EX2005, ¶76), is belied by his prior testimony. The Board should not credit Dr. Madisetti because he simply cannot keep his story straight.

* * * * *

For all of the reasons in the Petition and this Reply, Petitioner respectfully requests that the Board find all of the '212 patent's Challenged Claims obvious and unpatentable.

Respectfully submitted,

Dated: July 29, 2025

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CERTIFICATION UNDER 37 CFR § 42.24

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petitioner's Reply to Patent Owner's Response totals 5,575 words, which is less than the 5,600 allowed under 37 CFR § 42.24(c)(1).

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR §§ 42.6(e)(1) and 42.6(e)(4)(iii), the undersigned certifies that on July 29, 2025, a complete and entire copy of this Petitioner's Reply to Patent Owner's Response and its supporting exhibits were provided via email to the Patent Owner by serving the email correspondence addresses of record as follows:

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