NON-CONFIDENTIAL
Appeal No. 2012-1338

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

APPLE INC.,

Appellant,

v.

INTERNATIONAL TRADE COMMISSION,

Appellee,

and

MOTOROLA MOBILITY, INC.,

Intervenor.

Appeal from the United States International Trade Commission
in Investigation No. 337-TA-750

BRIEF OF INTERVENOR MOTOROLA MOBILITY, INC.

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CERTIFICATE OF INTEREST

Counsel for Intervenor Motorola Mobility, Inc. certifies the following:

1. The full name of every party or amicus represented by me is:

Motorola Mobility LLC, formerly known as Motorola Mobility, Inc. On June 22, 2012, Intervenor Motorola Mobility, Inc. was converted into a Delaware limited liability company, changing its name to Motorola Mobility LLC.

2. The name of the real parties in interest represented by me is:

None.

3. All parent corporation and any publicly held companies that own 10 percent or more of the stock of the party or amicus curiae represented by me are:

Motorola Mobility LLC is a wholly owned subsidiary of Google Inc., a publicly held company.

4. The names of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency or are expected to appear in this Court are:

See the Addendum to Motorola's Certificate of Interest on the following page.

ADDENDUM TO MOTOROLA'S CERTIFICATE OF INTEREST

The names of all law firms and partners or associates that appeared for the party now represented by me in the agency or that are expected to appear in this court are:

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Material has been deleted from pages 2, 3, 13, 24-27, 31, 54, 55, 57, 59, 60, and 69 of the Non-Confidential Brief of Intervenor Motorola Mobility, Inc. This material is deemed confidential business information pursuant to 19 U.S.C. § 1337(n) and 19 C.F.R. § 210.5, and pursuant to the Protective Order entered November 30, 2010, and the Orders Amending the Protective Order entered January 14, 2011, and June 16, 2011. The material omitted from these pages contains confidential deposition and hearing testimony, confidential business information, confidential patent application information, and confidential licensing information.

TABLE OF AUTHORITIES

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TABLE OF ABBREVIATIONS

A_____	The cited page(s) of the Joint Appendix
ALJ	Administrative Law Judge
App. Br.	Corrected Opening Brief and Addendum of Appellant Apple Inc.
Commission	United States International Trade Commission
ID	Initial Determination (A35-253)
Perski ’455	U.S. Patent No. 7,372,455 (A16601-36)
Perski ’484 provisional	U.S. Provisional Patent Application No. 60/501,484 (A16156-85)
Perski ’808 provisional	U.S. Provisional Patent Application No. 60/446,808 (A16147-55)
Rekimoto ’033 application	Japanese Unexamined Patent Application Publication No. 2002-342033 (A10349-830)
Section 337	19 U.S.C. § 1337
SmartSkin	*SmartSkin: An Infrastructure for Freehand Manipulation on Interface*, CHI 2002, April 22-25, 2002 (A13597-604)
Staff	Office of Unfair Import Investigations
’607 Asserted Claims	Claims 1-7 and 10 of U.S. Patent No. 7,663,607
’607 patent	U.S. Patent No. 7,663,607 (A531-63)
’828 Accused	The Motorola products accused of infringing the

Products	’828 patent, including: Atrix, Backflip, Bravo, Charm, Citrus, Cliq 2, CliqXT/Quench, Defy, Droid, Droid 2, Droid 2 Global, Droid 3, Droid Bionic, Droid Pro, Droid X, Droid X2, Flipout, Flipside, i1, Titanium, Xoom, and XPRT
’828 Asserted Claims	Claims 1, 2, 10, 11, 24-26, and 29 of U.S. Patent No. 7,812,828
’828 patent	U.S. Patent No. 7,812,828 (A564-647)

STATEMENT OF RELATED CASES

No other appeal from this International Trade Commission ("Commission") proceeding was previously before this or any other Article III court.

The patents that are the subject of this appeal, U.S. Patent Nos. 7,663,607 ("the '607 patent") and 7,812,828 ("the '828 patent"), are currently pending in a district court action between Appellant Apple Inc. ("Apple") and Intervenor Motorola Mobility, Inc. ("Motorola") in the United States District Court for the Western District of Wisconsin. *See Apple Inc. v. Motorola Mobility, Inc.*, Case No. 10-CV-00661-BBC (W.D. Wisc. filed Oct. 29, 2010). That action, which also involves several Motorola patents asserted against Apple in the International Trade Commission, *see* Inv. No. 337-TA-745, has been stayed pending resolution of Commission proceedings pursuant to 28 U.S.C. § 1659.

The '607 and '828 patents were previously asserted by Apple against Samsung Electronics Co. in the United States District Court for the Northern District of California, but Apple stipulated to dismissal without prejudice of its infringement assertions with respect to the '607 and '828 patents in that case. *See Apple Inc. v. Samsung Elecs. Co.*, Case No. 11-CV-01846-LHR (N.D. Cal. filed Apr. 15, 2011).

INTRODUCTION

Apple tells a compelling story about the development of the iPhone touchscreen as it relates to the '607 patent.[1] Unfortunately, Apple told its story in equal parts fiction, hyperbole, and litigation-inspired hindsight. Most, if not all, of Apple's story has no basis in the actual facts of this case, no applicability to the asserted claims of the '607 patent, and thus, no bearing on the issues either Apple or Motorola have presented to this Court.

One thing is clear from Apple's brief: Apple is asking this Court to believe that the success and popularity of its iPhone and iPad devices ***must*** mean Apple actually invented all of their individual components. This is the "fiction" part of Apple's story. The facts lead to a different conclusion. The major hardware components for the iPhone and iPad all existed prior to Apple's entry into the mobile device market, and the facts show that Apple borrowed copiously from the work of others. This is certainly true for the allegedly novel touchscreen described in the '607 patent.

Apple argues that the iPhone touchscreen sensor is "exactly the type of innovation the patent system is meant to foster" (App. Br. 36), but the patent laws do not protect great marketing; they protect valid inventions.

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[1] Apple devoted only a small portion of its statement of facts to the '828 patent; Apple did not develop the technology described in the '828 patent.

The Staff, ALJ, and Commission all agreed, which is why the ’607 patent was invalidated on multiple grounds. While much of Apple’s story appears to focus on differentiating its touchscreen from the SmartSkin reference the ALJ and Commission found to render the ’607 patent obvious, both also found that the Perski ’455 patent anticipated the ’607 patent.

Apple also exaggerates the facts behind the development of its touchscreen—the “hyperbole” in Apple’s story. First, with due respect, Steve Jobs is not a named inventor of the ’607 patent. Presumably, Apple referenced Mr. Jobs multiple times in its brief in an attempt to raise the profile of the ’607 patent. However, he has no bearing on the issues presented to this Court.

Apple then presents a tale of “twists and turns” that reads like an engineer’s action adventure with facts that have no real basis in the record. Apple states that it had to “bet” on one of a few well-known design choices for the type of sensing it would use, boldly telling this Court it was “[i]ngenious” to think of a [redacted] a layout known for decades, which Apple then abandoned after its inventors studied the SmartSkin reference and saw a far superior mutual capacitance sensor. Next, Apple tells the Court it had to “figure out” the material needed to make a transparent touch sensor, even though ITO was known for 20 years as a transparent conductor and was specifically discussed in the SmartSkin reference the '607 inventors studied. But most of all, Apple tells this Court "[t]he Apple team also drew lessons from an approach that Sony Computer Science Laboratories developed," the authors of the SmartSkin reference. This is perhaps the ultimate hyperbole in all of Apple's brief. The facts show that [redacted] Apple's engineers could not figure out how to make a suitable touchscreen, but [redacted]

Next, Apple spends considerable resources telling the Court one of the difficulties it faced in designing its touchscreen was how to [redacted] This is the "litigation-inspired" portion of Apple's story. Apple never once mentioned the special "charge counting" circuitry leading up to the hearing. The reason: Apple's expert, Dr. Subramanian, concocted this argument for the first time during his re-direct examination on the last day of the hearing. Dr. Subramanian's testimony was a transparent attempt to save the validity of the '607 patent in light of the SmartSkin reference; he argued earlier that "capacitive monitoring circuitry"—the relevant ***claim*** language—has "nothing to do with counting charge or applying a stimulus" for infringement purposes. A30923; *see also* A3029.

What Apple has done since its expert created his "charge counting" theory on the stand, and especially in its brief, is re-invent its touchscreen development story to account for this "special circuitry." For Apple to suggest to this Court that "Apple—not Sony—invented that" circuitry is simply false. A charge amplifier is taught in engineering 101; certainly it was not the roadblock with which Apple's "considerably more experienced" inventors—Stanford and MIT-trained electrical engineers—struggled. Indeed, Mr. Hotelling, a '607 patent inventor, failed to mention this "special circuitry" that was such a hurdle in his witness statement describing the conception of the '607 patent (since, of course, it was written long before Dr. Subramanian took the stand on rebuttal). Even references dating back to 1992 disclose charge amplifiers in mutual capacitance touch sensors. A16638, A16645; *see also* A16674, A16678. Similarly, the Perski '455 patent that the Commission found to anticipate the '607 patent teaches exactly the type of circuitry (measuring voltage) Apple's expert said was not possible for an ITO-based multitouch sensor. The Commission saw through Apple's "argument," and this Court should as well. A512-15.

By doing everything in its power to draw this Court's attention away from the relevant claim language of the '607 patent, Apple invites this Court to judge Apple on its reputation, not the facts. The facts show Apple was not the first or even second company to develop its touchscreen technology and that it was only after Apple was "inspired" by one of these predecessors that Apple was able to file the '607 patent.

COUNTERSTATEMENT OF THE ISSUES

The Commission correctly determined that Motorola did not violate Section 337 with respect to either the '607 or the '828 patents. The questions presented are:

1. Does substantial evidence support the Commission's finding that the asserted claims of the '607 patent are anticipated by Perski '455 where (i) the Commission correctly found that Perski '455 is prior art to the '607 patent; (ii) the Commission correctly found that Perski '455 discloses every limitation of the asserted claims; and (iii) Apple relies on distinctions between Perski '455 and the '607 patent not found in any of the asserted claims?

2. Did the Commission err in finding that the asserted claims are not anticipated by the SmartSkin article based upon the erroneous legal conclusion that disclosures in a prior art reference relating to "future work"

are not sufficient to establish anticipation under 35 U.S.C. § 102, thereby providing an alternative grounds for affirmance?

3. Did the Commission correctly determine that the asserted claims of the ’607 patent are obvious based on the SmartSkin prior art article where substantial evidence supports the Commission’s findings that (i) SmartSkin in combination with the Rekimoto ’033 reference, discloses every limitation of the asserted claims; (ii) a person of ordinary skill in the art would have been able and motivated to make and use the claimed inventions based on these disclosures; and (iii) there was no nexus between Apple’s alleged secondary considerations evidence and the asserted claims of the ’607 patent?

4. Did the Commission correctly find that Motorola’s Accused Products do not infringe the asserted claims of the ’828 patent where (i) Apple’s proposed construction for “mathematically fitting an ellipse to the one or more pixel groups” is inconsistent with the claim language, specification, and prosecution history; and (ii) the Commission’s factual findings regarding the operation of the Accused Products support the Commission’s finding of non-infringement under Apple’s proposed construction?

COUNTERSTATEMENT OF FACTS

Apple's story-telling aside, the issues presented to this Court center on the adjudged invalidity of the '607 patent, and the adjudged non-infringement of the '828 patent. Notably absent from Apple's brief is any real analysis of the '607 and '828 Asserted Claims, or the intrinsic records of those patents, as they relate to the issues this Court is being asked to consider.

The '607 and '828 patents both relate generally to touch sensors. The '607 patent relates to touch sensor hardware, and the '828 patent relates to a particular method for processing information from a touch sensor. Touch sensing technology is used to turn a "touch event" (for example, placing a finger on a glass surface, then moving up) into a "computer event" (for example, scrolling a document). A551 at 1:25-33.

As the '607 patent points out, converting finger touches on a surface into actions on a computer screen requires three basic components: a touch panel, a controller, and a software driver. A551 at 1:25-33. Each component has a distinct use. First, the touch panel registers touch events and sends these signals to the controller. *Id.* The controller then processes these signals and sends the data to the computer system. *Id.* Finally, the software driver translates the touch events into computer events. *Id.* The

’828 patent makes a similar distinction, including in the claims. A571; A645-46 (claims 10-11).

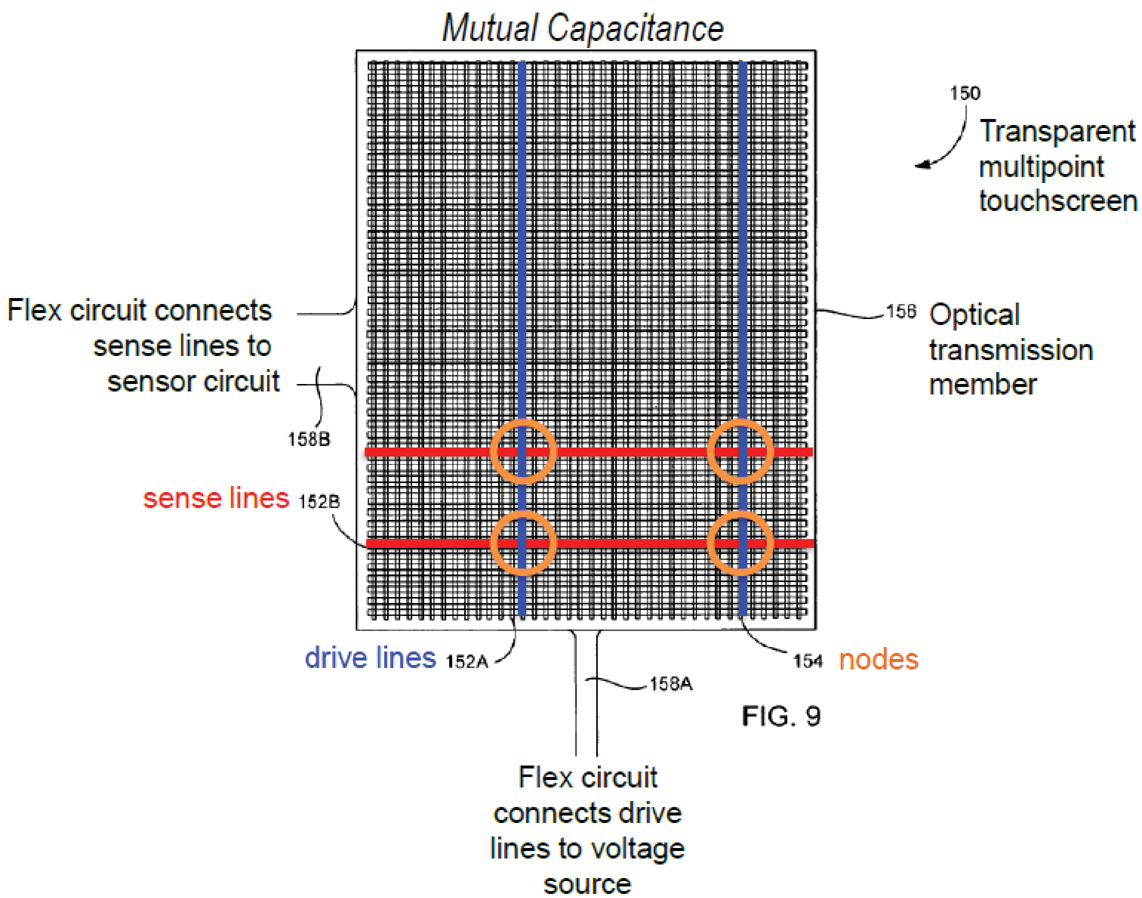
The characteristics of these three components of a touch sensing system, and the role each plays in detecting or interpreting touch input, is important to understanding Apple’s arguments on appeal for both patents. Most notably, the detection of multiple touches claimed in the ’607 patent is limited to a touch panel, and the ellipse-fitting limitations of the ’828 patent are limited to the controller.

I. THE ’607 PATENT

The ’607 patent generally concerns “a touch panel having a transparent capacitive sensing medium configured to detect multiple touches or near touches that occur at the same time and at distinct locations in the plane of the touch panel.” A532. Capacitance is the ability to store an electrical charge. Because the human body, particularly a finger, provides a measurable amount of capacitance, human touches can be detected using capacitance sensing. A18052-53.

There are two major types of capacitive touch sensors: mutual capacitance sensors and self-capacitance sensors. *Id.* The focus of this case is on mutual capacitance sensors.

A mutual capacitance touch sensor includes a two-layer grid of spatially conductive lines. A557 at 13:11-14; A30783-84. Lines on separate layers serve different functions: the lines on one layer are driving lines and the lines on the other layer are sense lines. A30776-77; A557 at 13:25-37. The driving lines are connected to a voltage source. A557 at 13:25-17, 14:5-6; A30777-78. The sensing lines are connected to a capacitive sensing circuit that monitors changes in capacitance. A30778-79; A553; A557. In the simplest case, the upper layer includes lines in rows while the lower layer includes lines in columns. A18068-69. When the touch panel is in operation, a current is driven through the drive lines one at a time. A30780-82; A557. The sensing circuit continuously senses all of the sensing lines. A30785-86; A557. As shown in the graphic below, the sensing points are provided at the intersections, or nodes, of the rows and columns:



A15620; A543. Thus, when a finger or other conductive object touches the touch sensor, the change in capacitance at the junction or node between a particular drive line and a particular sense line is detected and a touch is registered. A553 at 5:39-6:6. As described *infra*, the use of mutual capacitance touch sensors was well-known in the prior art.

In contrast, self-capacitance touch sensors are based on an array of independent electrodes arranged in a grid on a single layer. The electrodes are constructed in "zones" or "pads" that are electrically isolated from one another, and each pad is then connected to sense electronics, which detect any change in capacitance that is caused by a finger or other conductive object touching the pad. A18067-68. The use of self-capacitance touch sensors was also well-known in the prior art. *Id.*

Independent claim 1 of the ’607 patent is as follows:

> **1.** A touch panel comprising a transparent capacitive sensing medium configured to detect multiple touches or near touches that occur at a same time and at distinct locations in a plane of the touch panel and to produce distinct signals representative of a location of the touches on the plane of the touch panel for each of the multiple touches, wherein the transparent capacitive sensing medium comprises:
>
> a first layer having a plurality of transparent first conductive lines that are electrically isolated from one another;
>
> and a second layer spatially separated from the first layer and having a plurality of transparent second conductive lines that are electrically isolated from one another, the second conductive lines being positioned transverse to the first conductive lines, the intersection of transverse lines being positioned at different locations in the plane of the touch panel, each of the second conductive lines being operatively coupled to capacitive monitoring circuitry;
>
> wherein the capacitive monitoring circuitry is configured to detect changes in charge coupling between the first conductive lines and the second conductive lines.

A561. This claim relates to a mutual capacitance sensor. A31414-15. Independent claim 10 is slightly different, but has no additional limitations relevant to the issues presented to this Court; it is also directed to a mutual capacitance embodiment. *Id.* The “multitouch” limitation, found in the preamble of claim 1, is relevant to Apple’s appeal as it relates to the Perski ’455 patent. The “transparent” limitations are relevant to Apple’s appeal as it relates to the SmartSkin reference. Although never explicitly referenced by Apple, the "capacitive monitoring circuitry" limitation is relevant to Apple's appeal as it relates to the SmartSkin reference.

A. Apple Was Not The First Company To Invent The Touch Sensor Claimed By The '607 Patent

Every element of the '607 Asserted Claims was well-known prior to the '607 filing date. By that date, at least three different prior art references taught transparent, mutual-capacitance, row-and-column touch panels configured to detect multiple touches and to produce distinct signals representative of a location of those touches, as claimed in the '607 patent.

1. Late 1990s: Transparent, Mutual Capacitance Touch Panel Comprising Rows And Columns With Multitouch Capability

Mutual capacitance touchscreens have been known since at least the 1960s, and the basic materials used to construct them have not changed significantly in the intervening four decades. *See, e.g.,* A21061-62; A20010-11 (patent filed in 1965 for mutual capacitance touchscreen with transparent thin film conductor patterned into electrodes on a transparent insulator).

Moreover, two-layer, row-and-column mutual capacitance sensors, as well as the drive and sense circuitry and processing required to operate such sensors, have been widely known and used since at least the 1980s. *See, e.g.,* A21001; A21004; A21009; *see also* A18179-86. This design paradigm was no different if the mutual capacitance touch sensor was opaque (such as a computer touchpad) or transparent (such as on a mobile device). *See, e.g.,* A21050; A21054-55 (Nokia patent for mutual capacitance touch sensor with two layers of "striped ITO electrodes"); A21034 (Synaptics patent for transparent mutual capacitance touchscreen comprising two layers of transparent ITO etched on transparent insulators); A16602 (Perski '455); A532 ('607 patent).

In fact, a mutual capacitance, multitouch touch panel having the same row-and-column design, scanning algorithms and sensing circuits as the '607 patent was publicly disclosed no later than 1997, by Synaptics, a leading touchscreen designer [redacted] A16638, at A16653, A16657 & A16666 (integrating charge amplifier as measuring circuit); *see also* A7645 [redacted]

2. 2001-2002: Sony Develops The SmartSkin Sensor

By mid-2001, multiple entities, including Seiko Epson, Palm, and Microsoft were motivated to use capacitive touchscreen technology to create a transparent, multitouch touchscreen in a tablet-sized mobile device. A12472, A12492-94; A15478-79; A16114-17.

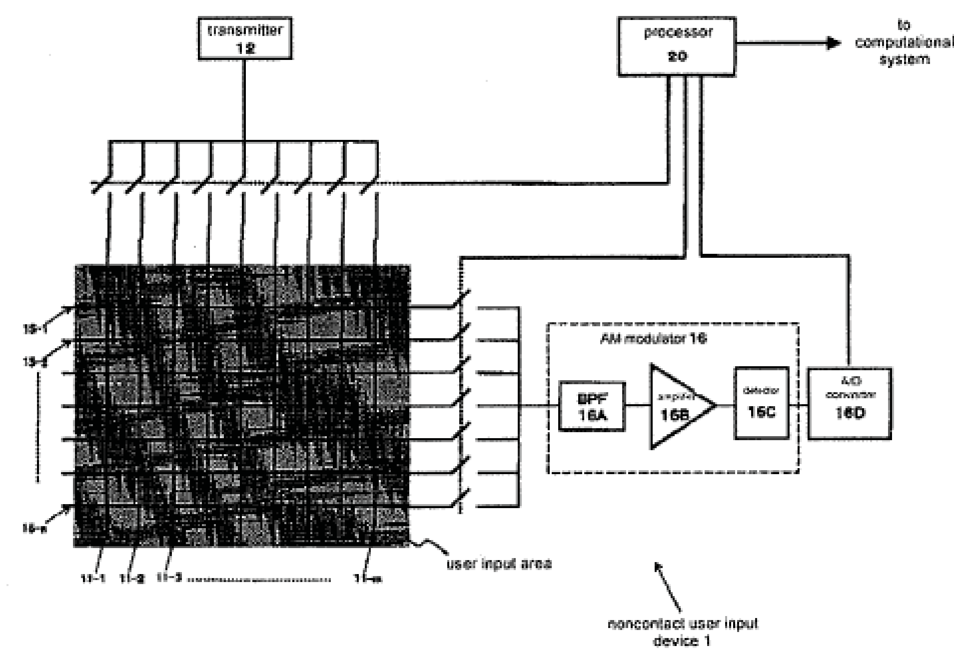
Indeed, by 2001, at least one company—Sony—had already put all the pieces together to design a transparent, mutual capacitance, multitouch touchscreen. Sony's new touchscreen sensor, called "SmartSkin," was developed by Jun Rekimoto, a researcher at Sony's Computer Science Laboratories in Tokyo. The SmartSkin sensor is described in two separate prior art references: Japanese Unexamined Patent Application Publication No. 2002-342033 (the "Rekimoto '033 application"), filed on May 21, 2001 and published on November 29, 2002, (A10349-83) and Jun Rekimoto, *SmartSkin: An Infrastructure for Freehand Manipulation on Interface*, CHI 2002, April 22-25, 2002 ("SmartSkin"). A13597-604.

As explained by the Rekimoto '033 application, the SmartSkin sensor was a response to two perceived needs in the prior art. First, unlike Rekimoto's touch panels, prior art input devices such as "mice, TrackPoints, joysticks, tablets and touchpads" did not allow a user "to directly indicate a desired display object with one's own fingertip" and these prior art devices required a user to remove their line of sight from the screen. A10352. Second, according to Rekimoto, "conventional touch panels" could not detect and identify two or more simultaneous touches or recognize the shape of nearby touch objects. A10352-53.

To solve these problems, Rekimoto created a touch panel in which: (1) "object operations, commands, and the like can be input directly to a computer using a user's fingertip"; and (2) the touch panel can "recognize two or more points of information, the shape of proximate objects, information on the distance to an object and the like." A10353.

Figure 1 of the Rekimoto '033 application illustrates the basic architecture of Rekimoto's invention:

[FIG. 1]



A10364. As shown in Figure 1, the touch panel designed by Rekimoto comprises an array of linear transmission and reception electrodes that sense the location, shape, and proximity of multiple touches using mutual capacitance. A10355-56. In particular, because AC current was applied individually to each transmitter electrode in sequence and the AC current for each reception electrode (which was proportional to object proximity due to mutual capacitance at each intersection) could be individually measured, it was possible to independently measure object proximity at every intersection. A10355-58. The proximity information for the entire input area was sent as digital data to a processor to detect two-dimensional user input, measure proximity, measure locations of several of objects at the same time, and track object movement. A10358-59.

Finally, because "[a]n object of the invention [wa]s to provide an excellent user input device, with which object operations, commands, and the like can be input directly to a computer using a user's fingertip" (A10353) so that "there [wa]s no need for the user to remove their line of sight from the screen" (A10352), Rekimoto '033 taught that his touch panel could be either "overlaid on a display screen of a display device" (A10351) or "united with a display device." A10355.

After filing his application, Dr. Rekimoto continued to develop his SmartSkin sensor, and by April 2002, he had built "two working systems: an interactive table system and a hand-gesture sensing tablet." A13597. He publicly demonstrated his SmartSkin sensor at the Conference on Human Factors in Computer Systems in Minneapolis, Minnesota in April 2002.

A13597. In connection with this conference, Dr. Rekimoto published a journal article describing the technology behind his SmartSkin sensor. A13597-604.

The sensor described by the SmartSkin article is virtually identical to the sensor described in the Rekimoto ’033 application:

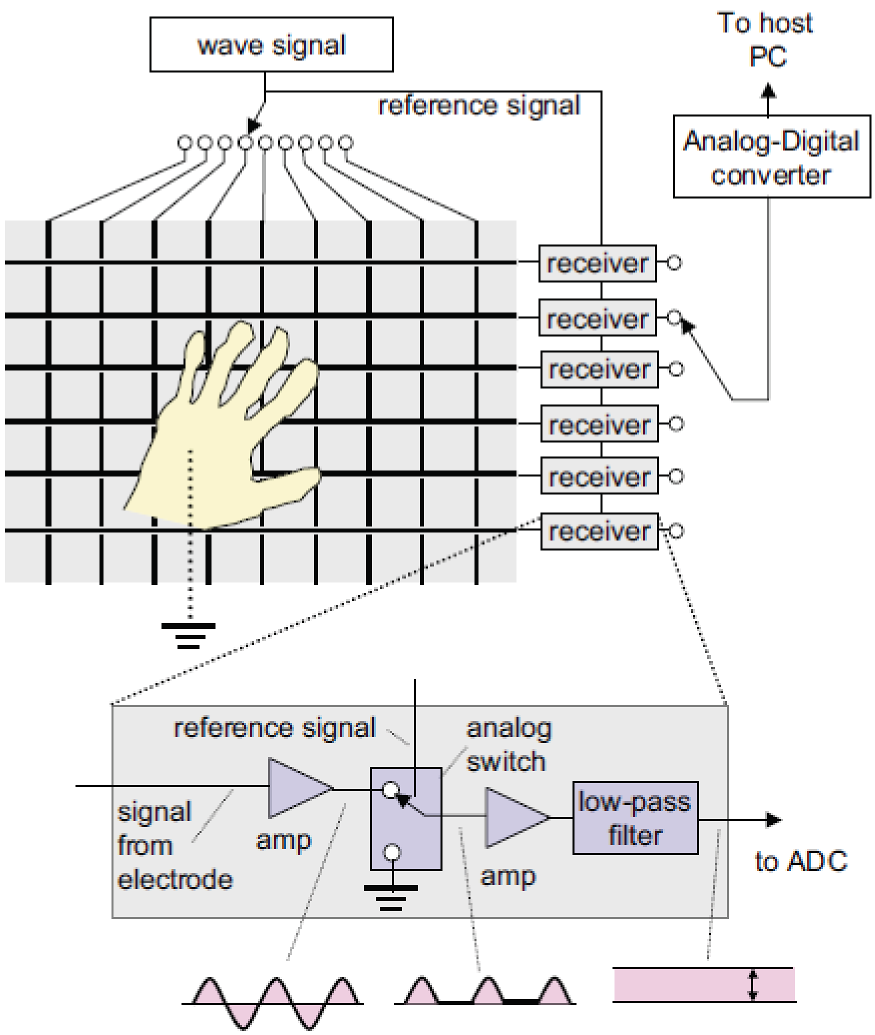


Figure 2: The SmartSkin sensor configuration: A mesh-shaped sensor grid is used to determine the hand’s position and shape.

A13598. The SmartSkin sensor consisted of a matrix of transmitter and receiver electrodes. A13598. A transmitter supplies an AC signal to each receiver electrode in a time-divided sequence. The receiver then receives this wave signal through capacitive coupling at transmitter-receiver intersections. When a conductive and grounded object, such as a human hand, approaches an intersection, it capacitively couples to the electrodes and drains the wave signal, thereby allowing the proximity of the conductive object to be measured. A13597-98. The values from the receiver electrodes were integrated to form two-dimensional values called "proximity pixels," and once these values were obtained, algorithms similar to those used in image processing could be applied to recognize multiple objects, the shape of objects, and gestures. *Id.*

Because "each crossing point (transmitter/receiver pairs) acts as a (very weak) capacitor," the SmartSkin article taught two ways in which the signal received at receiver electrodes could be amplified. A13598. In the first method, "[t]he magnitude of the received signal is proportional to the frequency and voltage of the transmitted signal." *Id.* The second method uses "lock-in amplifier" "[t]o accurately measure signals only from the transmitter electrode", thereby allowing for significant amplification even where noise was significant. *Id.*

As noted earlier, Rekimoto described two working prototypes in the SmartSkin article, an "interactive table" and a "Gesture-Recognition Pad"—a "tablet-sized system" designed to recognize the position and shape of multiple fingers as well as coordinated multi-finger gestures. A13597, A13600-02. The tablet-sized prototype used thin-film printed circuit board in a fine-pitched grid. A13600. SmartSkin explained that tablet-sized prototypes had been tested with "a map browsing system" in which "[s]imultaneous control of scrolling and zooming is intuitive, because the user feels as if his or her fingers are fixed to the map's surface," as shown below in Figure 12 from the SmartSkin article.

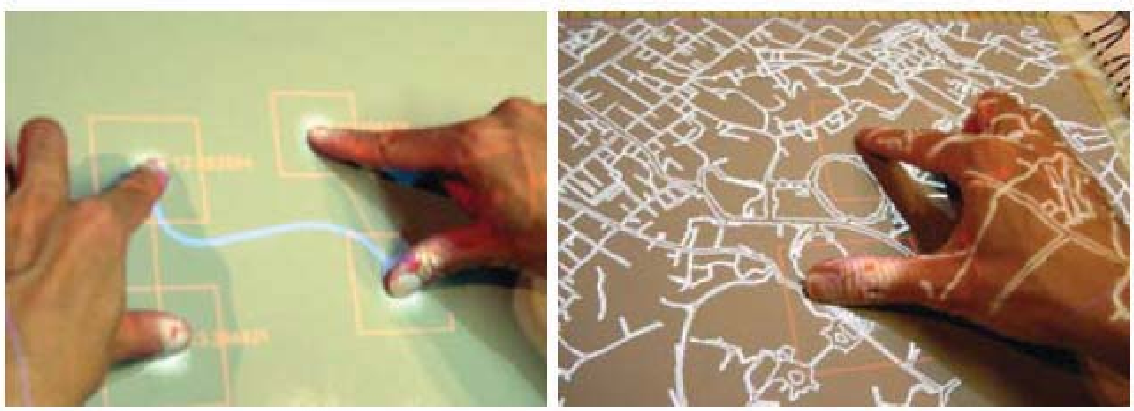


Figure 12: Examples of uses of multiple-finger interfaces: left: curve editing. right: a map browsing system. The user can use one finger for panning, or two or more fingers for simultaneous panning and scaling.

A13601; *see also* A19411 at 00:35-51 (video of "pinch-to-zoom" pictured in Figure 12).

Recognizing that his "work is still at an early stage and may develop in several directions," Dr. Rekimoto concluded his article with a section dedicated to "directions for future work." A13603. Dr. Rekimoto explained that "interaction using multiple fingers and shapes is a very new area of human-computer interaction, and the interaction techniques described in this paper are just a few examples. More research is needed, in particular, focusing on careful usability evaluation." A13603. Dr. Rekimoto then described four possible directions for additional research: (1) "[u]sing a non-flat surface as an interaction medium," for example a "pet" robot that could be petted[2]; (2) "[c]ombination with tactile feedback," whereby a sensor vibrates to create the sensation of manipulating a real object; (3) "[u]se of transparent electrodes," allowing the SmartSkin sensor to be placed in front of a flat panel display; and (4) "[d]ata communication between the sensor surface and other objects," whereby a SmartSkin sensor sends information to a PDA or cellular telephone. *Id.*

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[2] Throughout its brief, Apple attempts to disparage the work done by Rekimoto because he cited several ways his multitouch sensor could be applied, including placing it on a robotic pet. *See, e.g.,* App. Br. 16-17. Apple's attempt to belittle SmartSkin is nothing more than an effort to distract attention from the substance of SmartSkin's disclosure.

With respect to the use of transparent electrodes, the SmartSkin article accurately describes both how to make a transparent SmartSkin sensor and how to integrate a transparent SmartSkin sensor into a display device:

> A transparent SmartSkin sensor can be obtained by using Indium-Tin Oxide (ITO) or a conductive polymer. The sensor can be mounted in front of a flat panel display or on a rear-projection screen. Because most of today's flat panel displays rely on active-matrix and transparent electrodes, they can be integrated with SmartSkin electrodes. This possibility suggests that in the future, display devices that will be interactive from the beginning, and will not require "retrofitting" sensor elements into them.

Id.

In addition to publishing the technical details of his SmartSkin sensor, Dr. Rekimoto also posted on his website videos of his two SmartSkin prototypes, including video of a person performing a "pinch-to-zoom" gesture on a tablet-sized SmartSkin prototype.[3] A19410-19. As explained *infra*, both the SmartSkin article and the website videos "inspired" the '607 inventors. A15574.

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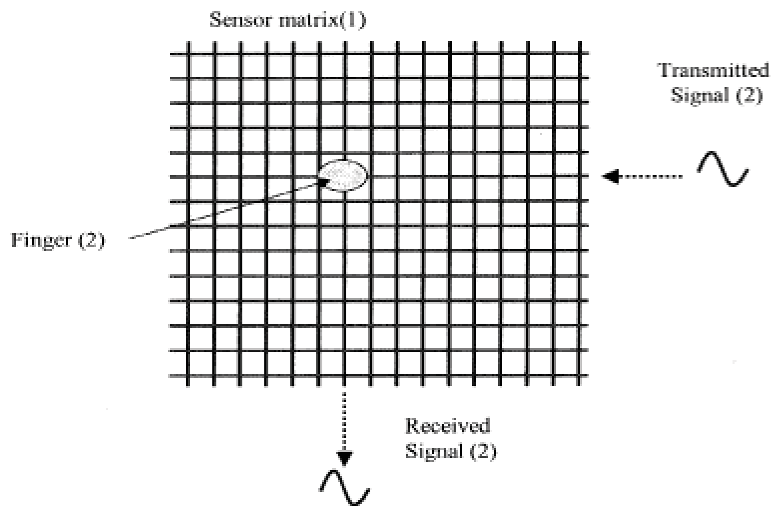
[3] The videos are still available today. http://www.sonycsl.co.jp/person/rekimoto/movies/chi02-1-mp1.mpg; http://www.sonycsl.co.jp/person/rekimoto/ movies/ chi02-2-mp1.mpg (last visited Oct. 2, 2012).

3. February 2003: N-Trig Develops a Transparent, Mutual Capacitance, Multitouch Touchscreen

By February 2003, another company, the Israeli touchscreen company N-Trig, had also developed a transparent, mutual capacitance, multitouch touchscreen. N-Trig's touchscreen is described in U.S. patent No. 7,372,455 ("Perski '455"). A16601-36. Perski '455 claims priority to two provisional patent applications, No. 60/446,808 (the "Perski '808 provisional"), filed on February 10, 2003 (A16147-55), and No. 60/501,484 (the "Perski '484 provisional"), filed on September 5, 2012. A16156-85.

The Perski '808 provisional is directed to "a patterned transparent conductive foil system ... in order to enable multiple and simultaneous finger inputs directly on the display ... in devices such as a tablet PC...." A16149. N-Trig's Perski '808 provisional describes a transparent touchscreen "built of two transparent foils, one containing a set of vertical conductors and the other a set of horizontal conductors." *Id.* N-Trig's transparent touchscreen uses mutual capacitance to sense multiple touches using a variety of scanning algorithms. A16151-52. Using these algorithms, the sensor "is capable of detecting multiple finger touches simultaneously." A16151. The Perski '808 provisional illustrates its sensor as follows:



A16154.

N-Trig's Perski '808 provisional application states that the finger detection methods it discloses were to be used in connection with a "positioning device capable of detecting multiple physical objects ... located on top of a flat screen display"—a device described in another N-Trig patent application from the same inventors, U.S. Provisional Patent Application No. 60/406,662 ("Morag '662"). A16573-600. The Perski '808 provisional goes on to explain that "[i]n the present invention, detection of stylus [*sic*] is done in a method similar to the method described in" the Morag '662 provisional. A16149. Morag '662 contains a detailed description of the circuitry used to create a sensor, and, in particular, it teaches how to implement a voltage-sensing (as opposed to a charge counting) system with high-resistance transparent electrodes such as ITO. A16578.

The Perski ’484 provisional similarly discloses a touch sensor comprising “a grid of conductive line made of conductive polymers patterned on a PET foil.” A16158. The touch senor described by the Perski ’484 provisional is capable of detecting “simultaneous and separate inputs either from a stylus or from a finger” and provides additional details regarding filtering, noise filtration, and parasitic capacitance. A16158-68.

On January 15, 2004, N-Trig filed a non-provisional patent application claiming priority to the Perski ’808 and ’484 provisionals and incorporating by reference the disclosures of the Perski ’808 and ’484 provisionals and the disclosure of the Morag ’662 provisional. That application matured into the Perski ’455 patent. A16601. Like the provisionals to which it claims priority, Perski ’455 describes a transparent sensor that is “able to detect more than one finger touch at the same time.” A16610 at 14:15-19.

B. The ’607 Inventors “Conceived” Of The ’607 Patent After Studying The SmartSkin Article

Apple admits that the ’607 inventors reviewed the SmartSkin article and [redacted] That is not the whole story. The record shows is that for [redacted] the ’607 inventors were unable to devise a satisfactory solution but [redacted] of seeing SmartSkin, the ’607 inventors had [redacted] A7387-88.[4]

Apple’s brief sets forth three steps that presented “numerous challenges” to the design of its touchscreen (that lead to filing the ’607 patent): the first step was to determine which type of sensing to use; the second centered on what to make the sensor out of; and the third was how to deal with transparency issues. App. Br. 8-9. After copying a page from Mr. Hotelling’s notebook dated [redacted] Apple states it was “[i]ngenious,” creating the impression that Apple had settled on the layout of its touchscreen and completed the first step. App. Br. 12. However, the notebook page cited in Apple’s brief shows [redacted] and, of course, Apple [redacted]

The key date in Apple’s development timeline is [redacted] On that date, ’607 patent inventor Joshua Strickon [redacted] A16145. Dr. Strickon admits that [redacted]

[4] Apple repeats several times that the SmartSkin article was considered during the prosecution of the ’607 patent. It was, along with over 300 other references. A532-36. Perhaps if the PTO knew how central SmartSkin was to the invention of the ’607 patent, instead of being buried among 300-plus references, the prosecution would have gone differently.

Confidential Material Omitted

[redacted]

[redacted]

A15564. Indeed, [redacted]

[redacted]

[redacted]

Id. Mr. Hotelling also admitted to seeing the [redacted] A30271-74. [redacted] the '607 inventors were on their way. [redacted] A7388.

Apple's brief characterizes these facts as "[t]he Apple team [drawing] lessons from an approach that Sony Computer Science Laboratories developed." App. Br. 14. That is putting it mildly. Reading SmartSkin was the "eureka" moment for the '607 inventors. It solved all of Apple's "numerous challenges"—it disclosed a multitouch mutual capacitance sensor and it disclosed the use of ITO, a transparent conductor, for that sensor. A13597-603.

Everything else about Apple's design story is window-dressing. With respect to Dr. Subramanian's "charge counting" theory that Apple belatedly weaved into its story—that the SmartSkin sensor's circuitry could not work for an ITO sensor—Dr. Strickon admitted the '607 inventors used [redacted] A15571. [redacted] A15574.

II. THE '828 PATENT

The '828 patent relates to the touchscreen controller, which processes the signals received from a touch panel. More specifically, the '828 patent is directed to mathematically fitting an ellipse to a pixel group in a touch sensor. A645-46. As explained by '828 inventor, Wayne Westerman, the primary reason for mathematically fitting an ellipse is to be able to distinguish one hand part from another on a touch device. A30310-11.

Apple did not invent the technology described in the '828 patent. Rather, the '828 patent arose out of Westerman's doctoral research at the University of Delaware and also names Westerman's advisor, John Elias, as a co-inventor. The '828 patent family was originally assigned to the

University of Delaware. A30305-08. Apple acquired it in February 2005 along with Westerman and Elias' startup company, FingerWorks. *Id.*

As explained in identical language in Westerman's thesis (A13298) and in the '828 patent (A628 at 26:18-55), the ellipse-fitting procedure Westerman developed used a very particular mathematical method—a unitary transformation of a covariance matrix—to statistically model an ellipse. A30319-30. By applying a unitary transformation of a group covariance matrix of second moments of pixel values, Westerman was able to generate the parameters of a model ellipse—X and Y position, major and minor axis, and orientation—that best fit the underlying pixel data to identify and track separate finger contacts. *Id.*; *see also* A628 at 26:18-45.

Apple asserted claims 1-2, 10-11, 24-26, and 29 of the '828 patent. A43. Of these, claims 1 (method), 10 (apparatus), and 24 (apparatus) are independent. Independent claim 1 of the '828 patent states as follows:

> **1.** A method of processing input from a touch-sensitive surface, the method comprising:
>
> receiving at least one proximity image representing a scan of a plurality of electrodes of the touch-sensitive surface;
>
> segmenting each proximity image into one or more pixel groups that indicate significant proximity, each pixel group representing proximity of a distinguishable hand part or other touch object on or near the touch-sensitive surface; and
>
> mathematically fitting an ellipse to at least one of the pixel groups.

A645. The limitations requiring "mathematically fit[ting] an ellipse" are relevant to Apple's claim construction argument. Claim 10 contains virtually identical language while claim 24 requires "means for fitting an ellipse." A645-46.

SUMMARY OF THE ARGUMENT

I. The Commission correctly determined that Perski '455 anticipates the '607 patent because it discloses every limitation in the asserted claims of the '607 patent. Apple only disputes whether Perski '455 discloses the "multitouch" limitations in claims 1 and 10 of the '607 patent. Apple makes this argument despite unequivocal disclosures in Perski '455 that state, for example, "that this algorithm is preferably able to ***detect more than one finger touch at the same time***." A16610 at 14:15-19 (emphasis added).

According to Apple, Perski '455 "requires" a scanning method that is "too slow" to permit detecting multiple touches at the same time and not accurate enough. Even taking Apple's technical arguments as correct, which they certainly are not, its arguments have no applicability to the '607 patent ***claim language***. Plainly missing from the '607 Asserted Claims are speed or accuracy limitations. Indeed, the Perski '455 patent recites exactly the same scanning algorithm as recited in the '607 patent, and the '607 patent provides no additional guidance for the speed and accuracy limitations Apple is attempting to read into those claims to save their validity.

Finally, Apple argues that Perski ’455 is not prior art to the ’607 patent. However, the record shows that Perski ’455 is entitled to the February 10, 2003 filing date of the Perski ’808 provisional, which is seven months before Apple’s earliest alleged conception date for the ’607 patent.

II. The Commission erred by finding that SmartSkin does not anticipate the ’607 patent. Although the ALJ considered it to be “an extremely close call,” he found that SmartSkin does not anticipate the ’607 patent because “the disclosure of using ITO in SmartSkin is insufficient to meet the additional heavy burden of showing by clear and convincing evidence that SmartSkin discloses the use of transparent conductive lines using ITO.” A187-88 (emphasis in original). The ALJ’s finding that SmartSkin’s disclosure of clear electrodes made of ITO is “uncertain” because it is characterized as “future work” is legal error. This Court has repeatedly held that “anticipation does not require actual performance of suggestions in a disclosure. Rather, anticipation only requires that those suggestions be enabling to one of skill in the art.” *Bristol-Myers Squibb Co. v. Ben Venue Labs., Inc.*, 246 F.3d 1368, 1378-79 (Fed. Cir. 2001).

III. The Commission correctly determined that SmartSkin renders the ’607 Asserted Claims obvious. Apple conceded both before the Commission and on appeal that SmartSkin discloses ***every*** limitation of the asserted claims except use transparent electrodes made of ITO. And SmartSkin contains an explicit teaching to add the very features that Apple alleges are not disclosed by SmartSkin: “A transparent SmartSkin sensor can be obtained by using Indium-Tin Oxide (ITO) or conductive polymer.” To make a transparent touch sensor that meets all of the limitations of the asserted claims, a person of ordinary skill in the art would simply need to read the SmartSkin article and follow its explicit instructions. Nothing could be more obvious. Apple’s inventors admitted to doing just that—they were “inspired” by the SmartSkin article and even used [redacted]

To counter a clear obviousness case in light of SmartSkin, Apple essentially argues that all [redacted] billion in iPhone sales from 2007 to 2011 are attributable to its touchscreen sensor. The ALJ correctly found that Apple failed to establish a nexus between the ’607 patent and its alleged secondary considerations. This Court should not disturb those findings.

IV. The Commission correctly determined that Motorola does not infringe the ’828 patent. The ALJ found that none of Motorola’s accused products infringe the ’828 patent because none of the accused products mathematically fit an ellipse, as required by the ’828 Asserted Claims. Apple’s sole basis for challenging the Commission’s finding of non-infringement is to attack the ALJ’s claim construction for the “ellipse-fitting” limitations. As the ALJ correctly noted, Apple’s proposed construction is completely divorced from the concept of “fitting an ellipse.”

ARGUMENT

I. THE COMMISSION CORRECTLY DETERMINED THAT PERSKI ’455 ANTICIPATES THE ’607 ASSERTED CLAIMS

The Perski ’455 patent, which was not considered by the PTO, discloses a transparent touch sensor that is “able to detect more than one finger touch at the same time”—the exact features claimed by the ’607 patent. A16610 at 14:15-19. Given the disclosures in Perski ’455, it is not surprising that the ALJ determined that Perski ’455 anticipates the ’607 Asserted Claims under 35 U.S.C. § 102(e), finding that “Perski ’455 discloses a transparent mutual capacitance sensor that is indisputably similar to that of the ’607 Patent.” A184 (citations omitted). The Commission determined not to review the ALJ’s finding that Perski ’455 anticipates the

’607 patent (A499-500), thereby making the ALJ’s findings the Commission’s determination. 19 C.F.R. § 210.43(h).

Apple’s brief pays scant attention to the ALJ’s factual finding with respect to Perski ’455, choosing instead to focus instead on its own alleged invention story and products, neither of which is relevant to the question of whether Perski ’455 is anticipates. With respect to Perski ’455, Apple rehashes arguments that were considered and rejected by the ALJ as being “unpersuasive” (A185-86) and improperly attempts to introduce new arguments it failed to raise before the Commission. Try as it might, Apple cannot avoid the fact that Perski ’455 discloses every limitation of the asserted claims.

A. Perski ’455 Discloses Every Limitation Of The Asserted Claims Of The ’607 Patent

On appeal, Apple identifies only a single limitation in each asserted claim—the “multitouch” limitation—that Perski ’455 allegedly fails to disclose. Perski ’455 contains explicit disclosures that its touch sensor can detect multiple touches at the same time. Perski ’455 also discloses the same scanning methods as the ’607 patent, thereby providing an enabling disclosure for this limitation. The only other distinctions that Apple identifies—the alleged speed and accuracy of Perski’s touch sensor—are not found in any ’607 Asserted Claim limitation.

1. Perski ’455 Discloses The “Multitouch” Limitations Of The ’607 Patent

The “multitouch” limitations of the asserted claims require that the touch panel be “configured to detect multiple touches or near touches that occur at a same time and at distinct locations” (claim 1) or be “capable of recognizing multiple touch events that occur at different locations on the touch panel at a same time” (claim 10). A561. The ALJ did not construe the phrase “at a same time.”

Perski ’455 expressly states that its touch sensor can detect more than one finger touch at the same time and at distinction locations (junctions):

> The goal of the finger detection algorithm, in this method, is ***to recognize all of the sensor matrix junctions that transfer signals*** due to external finger touch. It should be noted that this algorithm is preferably able to ***detect more than one finger touch at the same time***.

A16610 at 14:15-19 (emphasis added). Indeed, Perski ’455 discusses the ability to detect multiple touches at the same time throughout its specification. A16605 at 3:61-64 (“the detection circuitry is adapted to detect a signal ... for interpretation as a number of touching objects”); *id.* at 4:1-3 (“multiple conductive objects can be detected based on the interpretation of properties of the detected signal”); *id.* at 4:33-35 (“[t]he detector is preferably configured to interpret a property of a signal detected at the at least one conductor in terms of a number of touching conductive objects"); *id.* at 4:44-46 ("the detection circuitry is configured to interpret a property of a detected signal as a number of touches of a corresponding conductor").

Despite the unequivocal disclosures in Perski '455 of a touch sensor that can detect multiple touches at the same time, Apple still argues that Perski '455 fails to disclose the "multitouch" limitations. Apple previously abandoned this argument; in its Petition for Review, Apple acknowledged that Perski '455 discloses a touch sensor that could simultaneously detect multiple touches. Apple instead argued that this disclosure was not ***enabling***: "the ALJ erred in the Final ID in finding that the mere use of the words 'preferably able to detect more than one finger touch at the same time' or 'enables the detection of multiple fingers' would actually have enabled one of ordinary skill in the art to practice all of the limitations of the Asserted Claims of the '607 Patent." A5137.

Regardless of whether Apple is arguing that Perski '455 does not disclose a touch sensor that can detect multiple touches at the same time or that it does disclose this feature but fails to enable it, Apple's arguments do not withstand scrutiny. Perski '455 both discloses the "multitouch" limitations, as detailed above, and provides an enabling disclosure, as explained *infra*.[5]

2. Apple Impermissibly Attempts To Read A "Speed" Requirement Into The Claims

According to Apple, Perski '455 "requires" a scanning method that is "too slow" and thus does not enable detection of multiple touches at the same time. App. Br. 60. However, the '607 Asserted Claims do not have a "speed" requirement. All they require is detection of multiple touches "at a same time." A561.

The specification of Perski '455 directly contradicts Apple's argument that the Perski scanning method is "too slow." The scanning method that Apple refers to, actually called the "direct approach" by Perski '455, provides a signal to each of the drive lines one at a time and detects the junctions (nodes) where touches occur. A16610 at 14:20-31. Perski '455 explains that using the "direct approach" requires $n*m$ steps, where n is the number of vertical lines and m is the number of horizontal lines and Perski '455 then states that it is often preferable to repeat this process, resulting in $n*m*2$ steps. *Id.* at 14:20-43. Perski '455 does not describe this method as "slow," let alone "too slow" to detect multiple touches at the same time, as

[5] The disclosures in Perski '455 are presumed to be enabling. *See Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1354-56 (Fed Cir. 2003).

required by the claims. To the contrary, Perski ’455 expressly states that "this method enables the detection of multiple finger touches." A16610 at 14:37-38. In fact, the description of the "direct approach" follows immediately after this statement: "[T]his algorithm is preferably able to detect more than one finger touch ***at the same time***." A16610 at 14:15-19 (emphasis added).

Moreover, Apple's claim that Perski "requires" use of the "direct approach" is not accurate. In addition to the "direct approach," Perski ’455 discloses several additional scanning methods that Apple's brief ignores. Among these scanning methods is the exact scanning method disclosed in the ’607 patent.

After describing the "direct approach," Perski ’455 then describes a "faster" approach. Using this approach, a signal can be applied to "any subset" of the conductors on one axis—*i.e,* the drive lines can be driven one at a time, two at a time, or even all at once. A16610 at 14:44-56. Likewise, the sense lines are sampled in groups or all at once. *Id*. The Perski ’455 patent explains that the number of steps in the "faster" approach requires a maximum of $n+m$ steps, and in the case of driving all of the drive lines at once and sampling all of the sense lines at once, the number of steps is reduced to two. A16610 at 14:50-56. Perski ’455 then describes an "optimal" approach that "combine[s] the above methods, starting with the faster method and switching to the direct approach upon detection of a possible ambiguity." A16610 at 14:57-59. Thus, Perski '455 teaches that a range of scanning methods can be employed, requiring anywhere from $n*m*2$ steps to two steps and that the "optimal" approach is combine more than one of these methods to get the best possible combination of speed and accuracy.

For example, the Perski '808 provisional, "the contents of which are ... incorporated by reference" by Perski '455 (A16604), identifies one such combination of approaches that "sample[s] a group of reception lines at the same time, and even to sample all reception lines simultaneously, thus reducing the number of steps to n." A16152 (emphasis added). This is the exact scanning algorithm disclosed by the '607 patent. A553 at 5:47-6:6. If Apple's own scanning algorithms disclose and enable the detection of multiple touches "at a same time," then the disclosures of Perski '455 do as well—Perski '455 discloses Apple's exact scanning algorithm (as well as several others that can be combined with it to achieve "[a]n optimal approach"). *Id.* Accordingly, the ALJ correctly rejected Apple's argument that Perski's disclosure of a touch sensor "able to detect more than one finger touch at the same time" was not enabling. A186.

On its "speed-based" argument, Apple alleges that the ALJ committed "plain burden-shifting error." App. Br. 62. Apple is incorrect. The portion of the ALJ's opinion that Apple cites relates to its argument that Perski '455 does not enable the multitouch limitations: "There is nothing in Perski '455 to indicate that the method described therein ***would not be able*** to detect touches 'at the same time' as viewed by a user." A186 (emphasis added). Under this Court's precedent, Perski's disclosure is presumed to be enabling, and it was Apple's burden to establish that the disclosures of Perski '455 were not enabling. *Amgen*, 314 F.3d at 1354-56. Thus, the ALJ did not impermissibly shift the burden. Rather, the ALJ first determined that Perski '455 discloses a sensor that is "'preferably able to detect more than one finger touch at the same time.'" A183-84 (quoting A16610). Second, the ALJ addressed Apple's enablement argument and found that Apple failed to meet its burden of showing that the scanning methods disclosed in Perski '455 are unable to detect more than one touch at the same time. A186.

Moreover, even if Motorola did have the burden, it showed by clear and convincing evidence that Perski '455 both directly discloses a touch sensor that can detect multiple touches at the same time and provides an enabling disclosure of how to make and use this touch sensor by disclosing the same scanning algorithm as the '607 patent, among others.

3. Apple Impermissibly Attempts To Read An "Accuracy" Requirement Into The Claims

Apple alleges that Perski '455 does not anticipate the '607 patent because "Motorola presented no evidence that Perski's disclosed method can accurately detect multiple touches." App. Br. 63. Just like Apple's "too slow" argument, Apple never identifies any limitations in the claims that require "accurate" detection of multiple touches, because there is none.[6] A561.

Apple appears to argue that the "accuracy" requirement is found in the "multitouch" limitations. Yet the "multitouch" limitations merely require the ability to detect multiple touches at the same time; they recite no requirement that the touch sensor have 100% or some lesser amount of accuracy. Indeed, Apple never explains what level of "accuracy" is allegedly required by the claims. Apple certainly has never established the level of accuracy achieved by the '607 patent's touch sensor or that

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[6] Apple selectively quotes Motorola's expert, Dr. Wolfe, to support its attempt to read an accuracy requirement into the claims. App. Br. 63. The testimony cited by Apple relates to Dr. Wolfe's comparison of the Accused Products to a specific prior art device described in the '607 patent that could detect multiple touches only in the unique situation where the two touches occur along the same drive electrode. A19317-318. Dr. Wolfe never testified that the asserted claims contain an accuracy requirement, as Apple alleges.

Motorola's products satisfy the "accuracy" requirement it is now attempting to read into the claims.

Ironically, the one "inaccuracy" that Apple identifies with respect to Perski '455—a single large touch being interpreted as two separate touches—does not even relate to the accurate detection of multiple touches, which is what Apple alleges the claims require. App. Br. 63. Rather, Apple's example relates to the accurate detection of a ***single*** touch, a concept that is found nowhere in the '607 patent claims.

Moreover, the Perski '455's touch sensor is at least as accurate as the touch sensor described by the '607 patent. Perski '455 is explicit. Its touch sensor is "able to detect more than one finger touch at the same time." A16610. As described above, Perski then goes on to describe the exact scanning algorithms disclosed by the '607 patent as well as other, more advanced scanning algorithms. Moreover, after the signals from the Perski '455 sensor are detected by these algorithms, they are sent to a touch ASIC and run through a differential amplifier, filtered and sampled and then sent to a digital unit. A16608 at 10:7-15. The digital unit then "reads the sampled data, processes it, and determines the position of the physical objects." *Id.* at 10:30-33. Apple never explains how the same scanning algorithms are sufficient to provide an enabling disclosure in the '607 patent while at the same time are insufficient to meet the alleged “accuracy” requirement found in the asserted claims.

B. Perski ’455 Is Prior Art To The ’607 Patent

Perski ’455 was filed on January 15, 2004—almost four months before the filing date of the ’607 patent. A16602; A532. Thus, Perski ’455 is prior art unless Apple can establish an earlier date of conception. Apple’s alleged conception date of “between September and November of 2003” rests entirely on uncorroborated inventor testimony, which is legally insufficient. *See, e.g.*, *Chen v. Bouchard*, 347 F.3d 1299, 1309-10 (Fed. Cir. 2003). Neither the ALJ nor the Commission found that Apple established an earlier conception date, and Apple does not challenge this lack of fact finding on appeal. Accordingly, Perski ’455 is prior art to the ’607 patent.

However, even assuming *arguendo* that Apple’s alleged conception date is corroborated by contemporaneous evidence, Perski ’455 is still prior art to the ’607 patent because it is entitled to the February 10, 2003 filing date of the Perski ’808 provisional, which was filed seven months before Apple’s earliest alleged conception date. A16602; A16147-55. Under this Court’s holding in *In re Giacomini*, 612 F.3d 1380, 1383 (Fed. Cir. 2010), Perski ’455 is entitled to the filing date of the Perski ’808 provisional as long as the provisional "provide[s] written description support for the claimed invention."[7]

Motorola introduced extensive evidence regarding the written description support for Perski '455 found in the Perski '808 provisional, including expert testimony demonstrating where each limitation of the asserted claims are found in the Perski '808 provisional. A18144, A18148-49, A18412-502; A31469-76. Relying on this testimony, as well as the disclosures of the Perski references themselves, the ALJ found that "[t]he evidence shows that Perski '455 finds support in the Perski '808 provisional." A181-82.

On appeal, Apple asserts that the Perski '808 provisional fails to provide written description support for two limitations: 1) the "multitouch limitation" of each asserted claim and 2) the "pixilated image" limitation of claim 10. App. Br. 66-7. However, the record shows that both of these limitations are explicitly disclosed in the Perski '808 provisional, and the

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[7] The "claimed invention" for which the Perski '808 provisional must provide support is the '607 patent, not the claims of the Perski '455. *Giacomini*, 612 F.3d at 1383-84 (holding that the Tran provisional must provide written description support for the invention claimed by Giacomini).

ALJ's factual determination[8] that "Perski '455 finds support in the Perski '808 provisional" is supported by substantial evidence. A181.

1. The Perski '808 Provides Support For The Multitouch Limitations

The "multitouch" limitations, quoted *supra* page 34, require the ability to detect multiple touches. A561. According to Apple, the "critical sentence" in Perski '455 relied upon by Motorola and the ALJ to support the "multitouch" limitations is missing from the Perski '808 provisional. App. Br. 65.

This argument has a number of flaws. First, it misstates the evidence relied upon by the ALJ. Far from relying upon a single "critical sentence" in Perski '455 to find support for the "multitouch limitation," the ALJ relied upon an entire paragraph of Perski '455 as well as the Perski '808 provisional and the testimony of Dr. Wolfe. A184-85.

Second, the record shows that the Perski '808 provisional explicitly discloses the detection of multiple touches at the same time, as required by the "multitouch" limitations:

> The present invention utilizes a patterned transparent conductive foil system ... in order to

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[8] "Compliance with the written description requirement is a question of fact." *Enzo Biochem, Inc. v. Gen-Probe Inc.*, 323 F.3d 956, 962-63 (Fed. Cir. 2002).

> enable ***multiple and simultaneous finger inputs directly on the display***….
>
> The goal of the finger detection algorithm, in this method, is to ***recognize all of the sensor matrix junctions that bypass signals due to external finger touch***. It should be noted that this algorithm is ***able to detect more than one finger touch at the same time***.

A16149; A16152 (emphases added). In particular, the "critical sentence" that Apple alleges is missing from the provisional states "[w]hen an output signal is detected on more than one conductor that means more than one finger touch is present." App. Br. 65 (citing A16610). Yet, this exact concept is described in the Perski '808 provisional: "The goal of the finger detection algorithm, in this method, is to recognize all of the sensor matrix junctions that bypass signals due to external finger touch. It should be noted that this algorithm is able to detect more than one finger touch at the same time." A16152. Thus, the Perski '808 provisional provides direct written description support for the "multitouch" limitations, and the ALJ's findings with respect to this limitation are supported by substantial evidence.

2. The Perski '808 Provides Support For The "Pixilated Image" Limitation

With respect to the "pixilated image" limitation, Apple argues that Motorola improperly relied upon the disclosure of the Morag '662 provisional, which is incorporated by reference into the Perski '808 provisional.[9] According to Apple, only certain portions of the Morag '662 provisional are incorporated by reference. App. Br. 66.

This appeal is the first time Apple has contended that "the incorporation statement" in Perski '808 "is limited" to "the transparent sensor's description—not the 'Front End' and 'Digital Unit' descriptions." App. Br. 66-67. Because Apple failed to "specifically assert" this argument in its petition for review to the Commission (A5133-36), it has waived its right to appeal this point. *Finnigan Corp. v. Int'l Trade Comm'n*, 180 F.3d 1354, 1362-63 (Fed. Cir. 1999).

Even if the merits of Apple's argument are considered, the record demonstrates that the Perski '808 provisional incorporates the relevant portions of the Morag '662 provisional. When determining whether a patent application incorporates material by reference, "the standard is whether one reasonably skilled in the art would understand the application as describing with sufficient particularity the material to be incorporated." *Harari v. Lee*, 656 F.3d 1331, 1334 (Fed. Cir. 2011). The Perski '808 provisional references the Morag '662 patent in two places—in the Background section and in the Technical Description. A16149 (Technical Description: "In the

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[9] The "pixilated image" limitation appears only in claim 10. Thus, Apple's argument only affects Perski '455's prior art status with respect to claim 10.

present invention, detection of the stylus is done in a method similar to the method ... detailed in US provisional patent application 60/406,662. Both patents describe a ***sensing device*** that is capable of detecting multiple physical objects located on top of a flat screen display." (emphasis added)). The unequivocal language of the Perski '808 provisional shows that it incorporates the sensing device described by Morag '662. The "Front End" and "Digital Unit" are both part of Morag '662's sensing device.

Likewise, Dr. Wolfe testified that a person of ordinary skill in the art would understand that these statements in the Perski '808 provisional incorporate the disclosures in Morag '662 relating to "the sensor" and the "***electronics to drive and read the sensor***" of a "patterned transparent conductive foil ***system***, used for detecting the location of an electro magnetic stylus on top of a display surface." A18412-13 (emphases added). This system includes both the "Front End" and "Digital Unit" that are described by Morag '662.

However, even assuming *arguendo* that the "Front End" and "Digital Unit" portions of Morag '662 are not incorporated by reference, Dr. Wolfe explained that the "General" section of the "Technical Description" of Morag '662 provides support for the "pixilated image" limitation. That section describes a "digital unit" that "run[s] digital processing algorithms" and outputs this information to the host device. A16577; A18462-66. Apple has never disputed that this section of Morag ’662 is incorporated into Perski ’808. Thus, even if Apple’s incorporation arguments are correct (they are not), the ALJ’s finding that Perski ’808 provides written description support for Perski ’455 is supported by substantial evidence not found in either of the two sections of Morag ’662 that Apple alleges were not incorporated by reference.

As shown above, the ALJ’s determination that Perski ’455 is entitled to the filing date of the Perski ’808 provisional is correct.

II. THE COMMISSION ERRED BY FINDING THAT SMARTSKIN DOES NOT ANTICIPATE THE ’607 PATENT

The Commission’s determination not to review the ALJ’s finding that SmartSkin does not anticipate the ’607 Asserted Claims constitutes legal error and provides an alternative grounds for affirming the Commission determination finding no violation with respect to the ’607 patent.

Although he considered it to be “an extremely close call,” the ALJ found that SmartSkin does not anticipate the ’607 patent because “the disclosure of using ITO in SmartSkin is insufficient to meet the additional heavy burden of showing by clear and convincing evidence that SmartSkin discloses the use of transparent conductive lines using ITO.” A187-88 (emphasis in original). The ALJ based his finding on the fact that SmartSkin discloses the use of transparent electrodes made of ITO in a section entitled "Directions for Future Work," leading him to conclude "[t]he description of ITO in the 'Directions for Future Work' section appears to indicate that it could be used with the SmartSkin products, but that such use would require additional work. The uncertainty surrounding this disclosure fails to rise to higher clear and convincing burden faced by Motorola." A188-89.

The ALJ's finding that SmartSkin's disclosure of clear electrodes made of ITO is "uncertain" because it is characterized as "future work" is legal error. This Court has repeatedly held that "anticipation does not require actual performance of suggestions in a disclosure. Rather, anticipation only requires that those suggestions be enabling to one of skill in the art." *Bristol-Myers*, 246 F.3d at 1378-79; *see also In re Montgomery*, 677 F.3d 1375, 1385 (Fed. Cir. 2012) (Lourie, J., dissenting) ("A description of a process, even if not carried out, is an anticipation of that process."); *Schering Corp. v. Geneva Pharms., Inc.*, 339 F.3d 1373, 1380 (Fed. Cir. 2003) ("Anticipation does not require the actual creation or reduction to practice of the prior art subject matter; anticipation requires only an enabling disclosure.").

As the ALJ recognized, SmartSkin discloses the use of clear electrodes made of ITO. A187. Indeed, SmartSkin could not be more direct: "A transparent SmartSkin sensor can be obtained by using Indium-Tin Oxide (ITO) or a conductive polymer." A13603. There is no "ambiguity" in this disclosure, and the ALJ's finding that SmartSkin's disclosure of ITO is insufficient because it "would require additional work" is directly contrary to the opinions in *Bristol-Myers Squibb*, *Montgomery*, *Schering*. Rather, in light of SmartSkin's unambiguous disclosure of clear electrodes made of ITO, the only question under this Court's caselaw is whether SmartSkin provides an enabling disclosure. The Commission's opinion directly addresses this point: "The evidence supports th[e] conclusion" "that the use of ITO in creating transparent conductive lines or electrodes was well-known at the time of the invention of the '607 Patent." A524. Thus, SmartSkin provides an enabling disclosure of a transparent sensor using ITO electrodes.

The only other limitation of asserted claims that the ALJ determined was not disclosed by SmartSkin was the use of clear glass layers. A189. As Dr. Wolfe explained, using a clear glass layer instead of the opaque layers used in the SmartSkin working prototype is inherent to making a "transparent SmartSkin sensor." A18588; A13603. Indeed, common sense dictates that clear electrodes are useless unless the rest of the sensor is also made transparent. The ALJ rejected these arguments for the same reasons that he found that SmartSkin does not disclose clear electrodes. A189. For the reasons discussed above, this finding constitutes legal error.

III. THE COMMISSION CORRECTLY DETERMINED THAT SMARTSKIN RENDERS THE ASSERTED CLAIMS OBVIOUS

The Supreme Court has warned that "[g]ranting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, in the case of patents combining previously known elements, deprive prior inventions of their value or utility." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 419 (2007). This case presents a textbook illustration of the Supreme Court's concerns.

The basic facts regarding the SmartSkin article are largely undisputed. Apple conceded before the Commission that SmartSkin discloses ***every*** limitation of the asserted claims except using transparent electrodes made of ITO (and the corresponding use of transparent glass layers to serve as a substrate for the ITO). A5144. There is likewise no dispute that SmartSkin contains an explicit teaching to add the very features that Apple alleges are not disclosed by SmartSkin: "A transparent SmartSkin sensor can be obtained by using Indium-Tin Oxide (ITO) or conductive polymer." A13603. Finally, Apple does not dispute that ITO had been used to make clear electrodes for over twenty years and that a person of ordinary skill in the art would have been well aware of the conductive properties of ITO. A510.

To make a transparent touch sensor that meets all of the limitations of the asserted claims, a person of ordinary skill in the art would simply need read the SmartSkin article and follow its instructions. Nothing could be more obvious. A31451. Indeed, Apple's inventors did just that after seeing the SmartSkin system in action. The '607 patent illustrates the Supreme Court's fears. By granting a patent to a straight-forward combination of known elements, the true innovator—in this case, Sony, the creator of SmartSkin—has been deprived of the value of its invention.

A. SmartSkin Defines The Problem And Provides The Solution To That Problem

Apple repeatedly argues that it took the "genius" of Steve Jobs to "define the problem." In Apple's world, prior to Mr. Jobs' insights in the summer of 2003 "no one had articulated a meaningful plan" to make a transparent touch sensor having the feature recited in the asserted claims of the '607 patent. App. Br. 37. Apple's version of the facts is inconsistent with the record. First, Apple has produced no evidence that Mr. Jobs' "meaningful plan" was anything more than a directive to his engineers to make a transparent touch sensor able to detect multiple touches at the same time. Mr. Jobs' "meaningful plan" certainly did not include a suggestion to use a mutual capacitance touch sensor with clear electrode made of ITO—those technical details were left to Apple's engineers. Indeed, Mr. Jobs was not an engineer and he is not named as an inventor of the '607 patent.

Moreover, Mr. Jobs' idea to pursue a transparent touch sensor that could detect multiple touches at the same time was at least fifteen months too late—SmartSkin disclosed the same idea in April 2002 (not to mention the Perski '455 patent detailed *supra*). SmartSkin explains that it was defining the same problem as Mr. Jobs:

> One goal of this research has been to turn real-world surfaces, such tabletops or walls, into interactive surface.... For these systems to work, the user's hand positions often must be tracked and the user's gestures must be recognizable to the system.

A13597. With respect to transparency, SmartSkin recognizes that a transparent version of its sensor "can be mounted in front of a flat panel display or on a rear-projection screen," allowing the flat display to become an interactive device. A13603.

Unlike Mr. Jobs, however, SmartSkin not only defined the problem; it also provided the solution. SmartSkin describes two working prototypes, a table-size system and a tablet-size system, and provides a description of each working prototype. A13597-602. The article explains that the prototypes are based on capacitive sensing technology and can be used for "two-handed operation." A13597; A13599. SmartSkin also provides a solution to the problem of how to make a transparent touch sensor: "A transparent SmartSkin sensor can be obtained by using Indium-Tin Oxide (ITO) or conductive polymer." A13603. It strains credulity for Apple to argue that "[u]ntil Jobs issued his edict, there was 'no motivation to combine' capacitive sensing with transparent screens." App. Br. 37. SmartSkin contains an explicit teaching linking capacitive sensing (a SmartSkin sensor) with transparent electrode made of ITO. A13603. All a person of ordinary skill in the art had to do was simply follow the directions contained in the "Future Work" section of SmartSkin.

B. The "Inspiration" That SmartSkin Provided The '607 Inventors Establishes The Obviousness Of The Asserted Claims

By Apple's own admission, the inventors of the '607 patent "dr[e]w inspiration" from SmartSkin. App. Br. 43. In fact, Apple's invention shows that SmartSkin was more than just an inspiration—it was the solution to all of Apple's problems. The record shows that from the time Mr. Jobs issued his "edict" in [redacted] Apple's engineers could not figure out how to make a transparent multitouch sensor. For example, as of [redacted]—not the mutual capacitance sensor disclosed by

SmartSkin and later claimed by the ’607 patent. A7644. Likewise, Dr. Strickon admitted that he [redacted] A15564.

Then on [redacted] Strickon sent an email to the development team stating that [redacted] A16145. Strickon showed Hotelling [redacted] A30271-74. [redacted] A7387-88.

In other words, the development timeline shows that [redacted] This is because the ’607 inventors did what any other person of ordinary skill in the art would have done—[redacted] Far from undervaluing ingenuity as Apple alleges (App. Br. 49), the Commission correctly determined that there is nothing innovative about simply following the teachings of the prior art. A522-25.

C. Apple's Reliance On Unclaimed Features Is Irrelevant To The Obviousness Analysis

Apple relies heavily on the alleged innovation of its charge counting solution to support its nonobviousness arguments; however, there is no limitation in any of the asserted claims that requires Apple's charge counting technique. A561. The Commission correctly rejected these arguments as irrelevant to the question of whether the ***claims*** of the '607 patent are rendered obvious by SmartSkin: "It is axiomatic that, in evaluating an assertion of obviousness, the correct comparison is between the prior art and the claims." A527 (citing *Procter & Gamble Co. v. Teva Pharm. USA, Inc.*, 566 F.3d 989, 994 (Fed. Cir. 2009)). All the claims require is "capacitive monitoring circuitry," which Apple's expert concedes has "nothing to do with counting charge or applying a stimulus." A30923. Accordingly, the Commission properly found that "Apple's arguments concerning the difficulty of implementing a transparent ITO sensor with a voltage-sensing system are irrelevant since the claimed invention is not drawn to a particular sensing arrangement." A528. These factual findings combined with SmartSkin's teaching to make a transparent SmartSkin sensor establish the obviousness of the '607 patent.

In addition, the Commission's factual findings refute Apple's contention that its charge counting solution is necessary to making a transparent mutual capacitance touch sensor. As the Commission found, Perski '455, which incorporates the Morag '662 application by reference, teaches that a voltage sensing system can be used with high resistance transparent electrodes. A529. Thus, the Commission's findings demonstrate that Apple's charge counting technique is neither required nor necessary to practice the claims and is irrelevant to the obviousness analysis.

Likewise, Apple's other alleged innovation—caulking the gaps between the electrodes—is not required by the claims. All that is required by the claims is that the electrodes be transparent. While caulking the voids such that the edges of the electrodes do not show may be commercially desirable, Apple cannot uphold the validity of the '607 patent based on this unclaimed feature.

D. Apple Failed To Establish A Nexus Between The '607 Patent And Its Alleged Secondary Considerations

If Apple's brief is to be believed, all [redacted] billion in iPhone sales from 2007 to 2011 is attributable to its touchscreen sensor. App. Br. 46. The ALJ correctly rejected these arguments, citing a litany of factors unrelated to the '607 patent that contribute to the iPhone's success: "[T]he evidence shows that the iPhone's success stems from other product characteristics such as its slim profile, light weight, good battery life, attractive design, easy to use software, and availability of numerous popular applications, songs and videos." A217.

This Court's caselaw provides ample support for the ALJ's conclusions. "For commercial success to be probative evidence of nonobviousness, a nexus must be shown between the claimed invention and the evidence of commercial success." *Wm. Wrigley Jr. Co. v. Cadbury Adams USA LLC*, 683 F.3d 1356, 1363 (Fed. Cir. 2012); *see also Western Union Co. v. MoneyGram Payment Sys. Inc.*, 626 F.3d 1361, 1373 (Fed. Cir. 2010) ("Our case law clearly requires that the patentee must establish a nexus between the evidence of commercial success and the patented invention."). Relying on a single case, *Crocs, Inc. v. Int'l Trade Comm'n*, 598 F.3d 1294 (Fed. Cir. 2010), Apple argues that a mere showing that a product is commercially successful and practices the patent establishes a *prima facie* nexus between sales and the patent. App. Br. 53. However, *Crocs* is readily distinguishable from this case. *Crocs* involved a patent directed to footwear in which the entire product was covered by the patent. 598 F.3d at 1298. That is not the case here where the iPhone contains countless features that are completely unrelated to the subject matter of the '607 patent. Moreover, the standard Apple articulates is directly contrary to the caselaw cited above.

Similarly, for the remaining two objective indicia identified in Apple's brief—praise and copying—Apple was required to establish a nexus but failed to do so. *Wm. Wrigley*, 683 F.3d at 1364 (copying); *In re Paulsen*, 30 F.3d 1475, 1482 (Fed. Cir. 1994) (praise). With respect to industry recognition, Apple attempts to rely on awards, such as *Time*'s "invention of the year," that were given to the iPhone. However, Apple made no attempt to establish a nexus between any of this industry recognition and the claimed invention. At best, this industry recognition singles out Apple's touchscreen; however, there are many components that make up a fully functional touchscreen, including many components unrelated to the touch sensor claimed by the '607 patent. This is demonstrated by Apple's patent filings. As of [redacted] Apple had filed [redacted] patent applications related to its touchscreen, including [redacted] A14346. Without any evidence connecting industry recognition to the claimed invention, Apple's industry recognition is legally insufficient to support a finding of nonobviousness.

Apple's copying story is equally flawed. Apple has failed to come forward with any evidence demonstrating that Motorola copied Apple's touch sensor. What the evidence does show is that like any competitor, Motorola evaluated itself against competitive products, for example by

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[redacted] A7552. Indeed, as the ’607 patent acknowledges, there are many “aspects” of touch that have nothing to do with the asserted claims, such as the software driver. A551 at 1:25-33. Similarly, one of the other documents cited by Apple explains [redacted] A7554 (emphasis added). Finally, the fact that Motorola [redacted] does not show that Motorola copied Apple’s claimed invention. Rather the document cited by Apple shows that Motorola was studying how [redacted]—a fact completely unrelated to the claimed invention. A7498. Apple failed to present ***any*** evidence that Motorola copied any of the features claimed by ’607 patent. Thus, the ALJ was correct to dismiss Apple’s copying argument.

IV. THE COMMISSION CORRECTLY DETERMINED THAT MOTOROLA DOES NOT INFRINGE THE ’828 PATENT

Apple’s sole basis for challenging the Commission’s finding of non-infringement with respect to the ’828 patent is to attack the ALJ’s claim construction for the “ellipse-fitting” limitations: “mathematically fit[ting] an ellipse” (claims 1 and 10) and “means for fitting an ellipse” (claim 24).

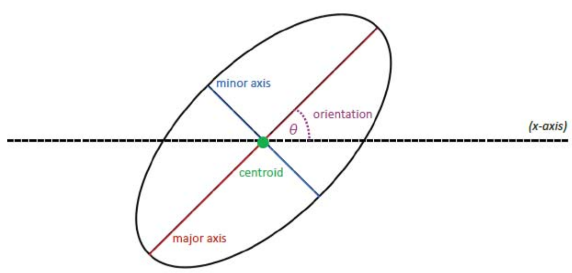
App. Br. 67-77. As explained below, the ALJ properly rejected Apple's proposed construction, finding that it "is inconsistent with the claim language in that it would read out the requirement that an 'ellipse' must be 'fitted' 'mathematically' to the pixel groups. Moreover, the specification and prosecution history also do not support Apple's arguments...." A63.

Finally, Apple ignores that its own expert conceded that even under Apple's proposed construction, none of Motorola's products infringe. A30655; *see also* A30769-70. Therefore, Apple's claim construction arguments are immaterial to the Commission's determination that Motorola does not infringe the '828 patent.

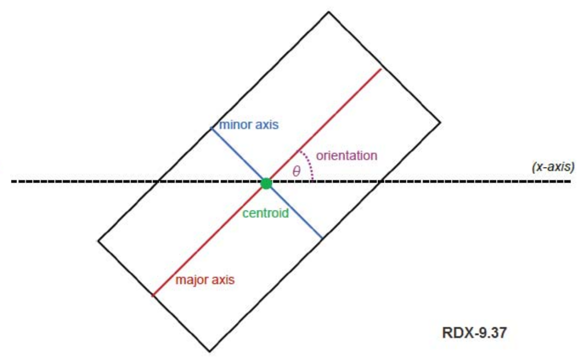
A. The ALJ Properly Rejected Apple's Proposed Construction Of "Mathematically Fitting An Ellipse"

Each of the asserted independent claims of the '828 patent require either "mathematically fit[ting] an ellipse" (claims 1 and 10) or "means for fitting an ellipse" (claim 24). A645-46. The ALJ construed these ellipse-fitting limitations to mean "performing a mathematical process where by an ellipse is actually fitted to the data consisting of one or more pixel groups and from that ellipse various parameters can be calculated." A70. The ALJ rejected Apple's proposed construction, which requires "computing numerical parameters that mathematically define an ellipse." A58-59.

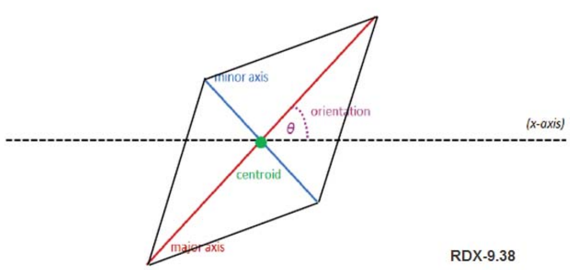
As the ALJ correctly noted, Apple's proposed construction is completely divorced from the concept of "fitting an ellipse." A63-64. An ellipse can be mathematically described by five numerical parameters: the *x* and *y* position of the centroid, the major and minor axes, and the orientation. A18057-58. However, as both parties' experts testified, these five parameters do not define ellipse. A18058-61; A30607-08. Rather, these same five parameters can describe an ellipse, a rectangle, a parallelogram, or simply two intersecting lines:



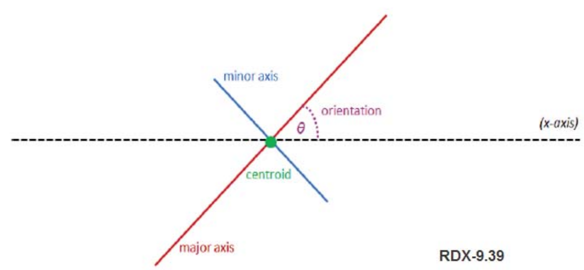
RDX-9.36



RDX-9.37



RDX-9.38



RDX-9.39

A15653-56; A18058-61. Despite this mathematical ambiguity, Apple's proposed construction simply requires the calculation of these five parameters. The result is a construction that bears no resemblance to the words of the claim. Under Apple's construction, "fitting an ellipse" would also include fitting a rectangle or any other shape that could be described by the same parameters that could describe an ellipse.

The ALJ correctly rejected Apple's construction as being unhinged from the claim language:

> [T]he claim term itself requires that an "ellipse" be "mathematically fit(ted)" to the "pixel group." Apple's construction would eliminate nearly all of those limitations.... Merely calculating the parameters that ***could*** define an ellipse does not mean that the figure "fitted" to the data is an ellipse since these same parameters can define many different geometric figures.

A63-64 (emphasis added). The ALJ recognized that under Apple's construction, "[a] parameter, generated in any way possible could be used *ex post* to generate an ellipse that could be fitted over the pixel groups would meet [Apple's] construction." A68. Instead, the ALJ found that "[t]he claim language demands a different process, whereby a fitting procedure (such as the group covariance matrix method described in the specification) could be used to fit an ellipse to the pixel group from which parameters could be derived." A68-69; *see also* A64 ("the claim language requires greater precision than merely calculating ellipse parameters; the claim language requires actually fitting an ellipse to the data").

The ALJ's construction is consistent with specification's description of mathematical ellipse-fitting. For example, the specification explains that pixel groups "are parameterized ***by*** fitting an ellipse to the positions and proximity measurements of the electrodes within each group." A625 at 19:8-12 (emphasis added). The specification then explains that "[t]he ellipse-fitting procedure requires a unitary transformation of the group covariance matrix G_{eov} of second moments Q_{xx}, Q_{xy}, G_{yy}." A628 at 26:18-21. Once the ellipse is fit using the unitary transformation of the group covariance matrix, the parameters of the ellipse are determined: "The eigenvalues λ_0 and λ_1 of the covariance matrix G_{eov} determine the ellipse axis lengths and orientation." A628 at 26:36-37. Thus, the specification describes the same two-step process required by the ALJ's construction—first, fit an ellipse to the data, then obtain the parameters that describe the ellipse.

The '828 prosecution history also supports the ALJ's construction. When filed, claims 1 and 10 contained the limitation "fit[ting] an ellipse to at least one of the [one or more] pixel groups." A10602-03. In an office action dated December 24, 2009, the PTO rejected all the asserted claims based on U.S. Patent No. 5,825,352 ("Bisset"). A11859-76. Just like Apple's proposed construction, the Bisset reference disclosed computing ellipse parameters (A31506), and in the view of the PTO, performing these measurements on ellipse-like fingers constituted "fit[ting] an ellipse to at least one of the [one or more] pixel groups." A11859-61. The applicants disagreed with the PTO, and they made the nature of their disagreement clear in an interview with the examiner (A11906); in amendments to claims 1 and 10 (A11908-09); and in written remarks. A11920-23. Central to the applicants' disagreement with the PTO was a simple fact: the PTO had, in the applicants' view, failed to consider the meaning of "fitting an ellipse" as defined by the specification. A11920. According to the applicants, the PTO's interpretation was that "merely *obtaining* measured data is the same as *fitting an ellipse to* the data, so long as the measured data happens to be measured from an object that 'is in general ellipse-like.'" *Id.* (emphasis in original). The applicants disagreed, explaining:

> [U]nder the plain meaning of the language of the claims, without more, one skilled in the art would not interpret "fitting an ellipse to at least one of the pixel groups in such a manner." Furthermore, the Office Action's interpretation is particularly unreasonable when the claim language is viewed in light of the specification, as it must be viewed. In this regard, Applicants submit that the Office Action fails to consider the disclosure of the specification when interpreting at least the feature of "fitting an ellipse to at least one of the pixel groups…."
>
> Nonetheless, claim 1 has been amended to recite *mathematically* fitting an ellipse to at least one of the pixel groups.... Claim 10 has been similarly amended.

A11920-21 (emphasis in original). Thus according the applicants, "mathematically fitting an ellipse" requires more than just calculating parameters; it requires fitting an ellipse to the data.

Finally, although it is less useful than the intrinsic evidence, the extrinsic evidence further demonstrates the unreasonableness of Apple's construction. First, '828 inventor John Elias explained that mathematically fitting an ellipse requires finding an ellipse that minimizes the differences between the data and the model:

> Well, from a mathematical point of view of a[n] electrical engineering point of view, to fit an ellipse, as an example, to a collection of data points means that you want to find the parameters that describe that ellipse, ***such that it minimizes the differences between the ellipse, the model, and the data***.

A69 (quoting A18257) (emphasis added). Similarly, Apple's expert admitted that "to mathematically fit an ellipse, [one] need[s] to fit an ellipse ... [n]ot a square, not a rectangle, [and] not a triangle." A30602-03.

Apple alleges that there are three reasons why the ALJ's construction is wrong. None of them withstand scrutiny. First, Apple alleges that the ALJ's construction is inconsistent with the '828 patent's preferred embodiment. App. Br. 72-73. However, Apple fails to accurately describe this embodiment. As described above, the preferred embodiment describes a two-step process in which an ellipse is first modeled by calculating the unitary transformation of the group covariance matrix and then the parameters of that ellipse are obtained using eigenvalues of the covariance matrix. A628 at 26:17-48. Apple is simply not correct when it states "no ellipse is 'actually fit' first before the parameters are calculated." App. Br. 73. Performing the unitary transformation calculation means that an ellipse has been fitted such that it best approximates the underlying data. A18056; A18062.

Second, Apple argues that the ALJ's construction is inconsistent with Figure 18 of the '828 patent. App. Br. 73-74. However, that figure merely shows that "fit[ting] ellipses to combined groups" results in "parameterized electrode groups"—a fact that is fully consistent with the ALJ's construction, which states that "various parameters can be calculated" once the ellipse is fitted. A70. By its own description, the step of "fitting ellipses to combined groups" requires actually fitting an ellipse to the data obtained from the touch sensor.

Third, Apple alleges that the ALJ's construction excludes an alternative embodiment. App. Br. 74. The embodiment identified by Apple does not refer to fitting an ellipse at all. It refers to using default values instead of the measured values of the fitted ellipse. A629 at 27:1-8. This fact was confirmed by Dr. Westerman, who explained that this embodiment refers to a process by which fitted ellipse parameters such as major and minor axis and orientation can be defaulted after they are calculated by mathematically fitting an ellipse. A30361. The ALJ considered and rejected this same argument: "[I]t is clear from the specification that the 'second embodiment' is not a method of mathematically fitting an ellipse – it is a completely alternative method to analyze proximity data." A65.

The ALJ's construction addresses the foundational premise behind the '828 patent, while Apple's proposed construction does not. As the ALJ correctly recognized, unless an ellipse is mathematically fit ***to*** a pixel group, the claims of the '828 patent are potentially boundless in scope and have nothing to do with modeling the shape of a contact. A68.

B. Motorola Does Not Infringe Under Apple's Construction For The "Ellipse-Fitting" Limitations

Apple states that "Motorola's entire non-infringement position revolved around [the ellipse-fitting] claim limitation" and therefore should this Court reverse the ALJ's construction, it must remand this matter. App. Br. 69, 77-78. Apple is incorrect. The undisputed facts demonstrated that none of the '828 Accused Products infringe under either party's construction.

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Most notably, Apple's expert actually conceded at the hearing that there is no literal infringement under ***any*** party's proposed construction with respect to the '828 Accused Products that do not compute [redacted]—every product except the old version of the Motorola Xoom:

[redacted]

A30655; *see also* A30769-70. Moreover, with respect to the one product that does compute a [redacted] the Xoom, the ALJ found that it does not infringe "under any construction." A133. Apple has not challenged this factual finding on appeal. Finally, the ALJ found that Apple's claim for infringement under the doctrine of equivalents was barred by prosecution history estoppel—another finding that stands unchallenged on appeal. A145-47.

CONCLUSION

Motorola respectfully requests that the Commission's judgment be affirmed.

Dated: October 15, 2012 By: *s/Edward J. DeFranco*

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CERTIFICATE OF SERVICE

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CERTIFICATE OF COMPLIANCE WITH
FED. R. APP. P. 32(a)(7) AND FEDERAL CIRCUIT RULE 32

Counsel for Intervenor Motorola Mobility, Inc. certifies that the brief contained herein has a proportionally spaced 14-point typeface, and contains 13,943 words, based on the "Word Count" feature of Word 2007, including footnotes and endnotes. Pursuant to Fed. R. App. P. 32(a)(7)(B)(iii) and Federal Circuit Rule 32(b), this word count does not include the words contained in the Certificate of Interest, Table of Contents, Table of Authorities, and Statement of Related Cases.

Dated: October 15, 2012

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