NON-CONFIDENTIAL
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.

ON APPEAL FROM THE UNITED STATES INTERNATIONAL TRADE COMMISSION IN INVESTIGATION NO. 337-TA-750

CORRECTED OPENING BRIEF AND ADDENDUM OF APPELLANT APPLE INC.

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CERTIFICATE OF INTEREST

Counsel for appellant certifies the following:

1. We represent Apple Inc.

2. That is the real name of the real party in interest.

3. Apple Inc. has no parent corporation. No publicly held company owns 10 percent or more of Apple Inc.'s stock.

4. The following law firms and partners or associates appeared for Apple Inc. in the ITC or are expected to appear in this court:

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ADDENDUM

Material has been deleted from pages 1, 6-14, 17-18, 25-27, 37-40, 45-46, 58-59, 61, and 77-78 of the Non-Confidential Opening Brief of Appellant Apple 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.

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STATEMENT OF RELATED CASES

No other appeal from this International Trade Commission ("ITC") proceeding was previously before the Court or any other appellate court.

There are no cases that will directly affect or be directly affected by the Court's decision in the pending appeal. Apple Inc. ("Apple") filed a complaint with the ITC alleging (as relevant here) that Motorola Mobility, Inc. ("Motorola") is infringing Apple's patents including (as relevant here) U.S. Patent Nos. 7,633,607 and 7,812,828. A case pending between Apple and Samsung Electronics Co. originally involved the patents at issue here, but the claims involving both patents were dismissed without prejudice. *Apple Inc. v. Samsung Elecs. Co.*, Case No. 11-CV-01846-LHR (N.D. Cal. filed Apr. 15, 2011). There are several other district court actions in which Apple has alleged that Motorola and other makers of electronic devices infringe different Apple patents.

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INTRODUCTION

Rarely has one product revolutionized an industry as Apple's touchscreen has. Just five years after Apple released the iPhone, it is hard to remember a time when we did not routinely touch the screens of our cell phones, tablets, and other portable electronic devices with our fingers. We did not tap to select "apps"; flick our index finger through articles, books, photographs, and music; or pinch our fingers together or apart to zoom in and out of pictures, maps, and text. We commanded our devices with keypads, track balls, or styluses.

One reason it is hard to remember that world is that virtually every major device manufacturer has mimicked Apple's patented touchscreen. This case is about one such copycat. Motorola tried to develop a useful touchscreen of its own, but failed. When Apple routed Motorola in the marketplace, [redacted] and copied Apple's hardware and software.

After Motorola initiated a patent attack against Apple in the fall of 2010, including in the ITC, Apple brought this action. Without a hint of irony, Motorola defended on the ground that this revolutionary technology—which the once-prolific innovator could not figure out for itself—was obvious and anticipated. The ITC agreed and invalidated one of Apple's core patents. It gutted another patent by construing a critical claim limitation in a nonsensical way that neither party had proposed.

Those rulings are wrong—and detrimental to future innovation. Apple is "unique" among its competitors because "it designs and develops nearly the entire solution for its products, including the hardware, operating system, numerous software applications, and related services." A14,162. The development of both hardware and software is expensive. Apple "must make significant investments in research and development" and has protected its investments by obtaining "a significant number of patents." *Id.* Here, Apple's investments resulted in a patent on a "transparent" touch sensor that can "detect multiple touches or near touches that occur at a same time and at distinct locations." A561, col. 21:34-41. Apple has invested in innovation expecting that the patent system "promote[s] ... Progress," U.S. Const. art. 1, § 8, cl. 8, by rewarding innovation. When an agency invalidates or guts patents as path breaking as these, it discourages further investment and restrains Progress.

JURISDICTIONAL STATEMENT

Apple invoked the ITC's authority under Section 337 of the Tariff Act of 1930, as amended. A737. *See* 19 U.S.C §§ 1337(a)(1)(B)(1), (b)(1). On March 28, 2012, the ITC issued its final determination finding no violation of Section 337. A529. Apple timely filed its petition for review on April 12, 2012. *See* 19 U.S.C. § 1337(c); 28 U.S.C. § 1295(a)(6).

STATEMENT OF THE ISSUES

Apple's skilled engineers created the first touchscreen that could accurately and quickly sense and interpret multiple touches on a transparent screen. That touchscreen spurred the spectacular success of a revolutionary electronic device, the iPhone. The questions presented are:

1. Did the ITC err in declaring the patented touchscreen obvious, where (i) Apple alone recognized the problem with existing user interfaces and thus Apple alone saw a reason to combine technologies to create a new user interface; (ii) Apple's engineers had to overcome significant technical problems to make the touchscreen work; (iii) the touchscreen was largely responsible for the praise, copying, and

commercial success of the iPhone; and (iv) the Patent and Trademark Office granted Apple a patent fully aware of the cited prior art?

2. Did the ITC err in finding that another prior art reference anticipated Apple's new touchscreen where the reference (i) teaches only a touchscreen that senses "a single touch[]" by "either a finger or a special stylus"; (ii) operates differently; and (iii) does not predate Apple's invention?

3. Did the ITC err in superimposing on the claim term "mathematically fitting an ellipse" in another Apple patent the anachronistic requirement that the software "actually" fit an ellipse *before* ellipse parameters are calculated even though that was contrary to both the parties' proposed claim constructions and the patent's preferred embodiment?

STATEMENT OF THE CASE

On October 29, 2010, Apple filed a complaint with the ITC under 19 U.S.C. § 1337, alleging that Motorola's products infringed three Apple patents. Two—U.S. Patent Nos. 7,633,607 and 7,812,828—are at issue in this appeal. (Apple does not seek review on the third patent, which will expire in August 2013.) The ITC initiated an investigation.

On January 13, 2012, Administrative Law Judge ("ALJ") Theodore Essex issued an initial determination finding that Motorola did not violate Section 337. Apple petitioned the ITC for review. Motorola filed a contingent petition. The ITC granted review in part on March 16, 2012, and affirmed the finding of no violation on March 28, 2012.

STATEMENT OF FACTS

Apple Makes It A Priority To Invent A Transparent Full Image Multi-Touch Sensor

Before the iPhone, no one was touching transparent screens on handheld devices in the fashion we routinely do now. There were transparent touchscreens that could detect a *single* touch in a specific spot—like an ATM that beeps in confused protest when you accidentally touch two places at once. A6657. There were also transparent screens that could *sometimes* detect more than one touch—depending upon exactly where on the screen they were—but not always and not reliably. A551, col. 2:3-9, 16-22; A7164, 7382. In industry parlance, these were not "full image" touchscreens. Engineers had figured out ways to provide full image multi-touch capability only on *opaque* surfaces.

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Thus, for example, they could embed the requisite sensors in the now-familiar laptop trackpad:

Opaque Touch-Pad
(Cannot Have LCD Display Under Touch Pad)

A6711. But no one had invented a *transparent, full image* touchscreen that accurately detected and responded to multiple touches at once, regardless of where the screen is touched, in a way that has now become standard.

In the summer of 2003, Steve Jobs, then CEO of Apple, aspired to devise a touchscreen unlike any other. Jobs had long focused on how users interact with electronic devices. He had led Apple to develop the Mac with its metaphorical desktop and user-friendly mouse. Then came the iPod with a click wheel. He imagined an encore performance even more revolutionary than what came before. [redacted]

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[redacted] A15,431; *see* A30,258-59.

So, at Jobs's direction, Apple set out to achieve what no one else had ever done. A15,431; *see* A30,233-35. Running the touchscreen effort was Steve Hotelling, [redacted] A15,431, A7379-80. Hotelling knew it was a head-scratcher—[redacted] A15,431. [redacted] *Id.* (emphasis added). But the challenge energized him, because [redacted] *Id.* (emphasis added); *see* A30,257-58.

The team was not lacking in experience or expertise. A named inventor of more than 50 patents, A30,144, Hotelling was a Stanford-trained electrical engineer, A7379. By the time he joined Apple in 2002, he had spent a decade inventing solutions for input devices. A7379,

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13,719, 30,216-17. Hotelling hired Josh Strickon, who had three degrees (including a Ph.D.) from the Massachusetts Institute of Technology. A15,557. His master's thesis project at MIT was a multipoint touchscreen using a fiber optic touch pad. *Id.*

Apple's Engineers Choose One Tentative Path Among Many Possible Options

For all its intellectual firepower and experience, the team did not hit upon a solution quickly or directly. It got there through inspired guesswork, parallel research tracks, a few false starts, and healthy doses of ingenuity.

As if to illustrate the numerous challenges for posterity, early in the life of the project, [redacted] A15,733 (emphasis added). [redacted] *Id.*; A15,742-48. [redacted] A15,733.

Step one was a bet on which of the several approaches was most promising. As the project started, [redacted] A15,431. [redacted]

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[redacted] *Id.* Capacitance is an object's ability to store electricity. Capacitance sensing is based on the simple fact that when a finger approaches a charged object, it sucks electrons from the object. A555, col. 9:23-26. The stolen electrons cause a tiny reduction in the object's capacitance. A555, col. 9:26-31; A30,230. The typical way to measure this change was with a tiny voltmeter. A555, col. 9:31-36; *see* A31,728-29.

Step two was to figure out what to make the sensor out of. Hotelling chose indium tin oxide, or "ITO." A7643, 15,431. ITO has the advantage of being relatively transparent when painted in a thin layer over a surface, A30,262-63, but it is not completely transparent, which presented some problems. It also conducts electricity, but unfortunately very poorly, which presented other problems.

Step three was how to deal with the transparency problems—specifically, how to enable a display to shine through a layer of ITO without illuminating a distracting pattern of sensors and circuits etched across the face of the screen. [redacted]

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[redacted] A15,431. [redacted] *Id.*

[redacted] A7643 (emphasis added).

[redacted]

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Id.

[redacted] A7644. By "pixel array," Hotelling was referring to rows and columns of individual sensors. *Id.*; 30,266-67. The ITO (or other conductive medium) is painted onto the screen and etched into a checkerboard pattern. Each tiny square is an individual sensor separated from the others by tiny channels. A30,233; *see* A553, col. 5:29-34. It is therefore called "*self*-capacitance." A533, col. 5:29-34. In order for each box in the checkerboard to act as an individual sensor, it was necessary to run a lead from each box to a capacitive sensing circuit. The circuitry for each box had to be crammed in the channels running between the checkerboard rows and columns. [redacted]

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[redacted]

A7644.

Ingenious. But, as with any experimental technology, the solution raised more problems. One problem, [redacted]

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A7643; *see* A542, fig. 7 (depicting an illustrative pattern). [redacted] A13,878. [redacted] A7643.

Apple's Engineers Refine The Design

Not satisfied that the particular capacitance design that Hotelling sketched was perfect, the Apple team examined all sorts of multi-touch demonstrations on *opaque* surfaces in the hopes of learning something about how best to apply the technology to *transparent* surfaces. A13,877, 15,422-23, 16,145. They also [redacted] A13,878.

One of the most fruitful contacts was with a company named FingerWorks. A7402-03, 13,874. One of FingerWorks' most intriguing inventions was a way of detecting the size, shape, and relative position of each touch. Earlier methods of processing touch data could not distinguish between a finger tap and a pinch or finger and a palm. A13,263. But FingerWorks figured out a way that could distinguish

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among many types of hand touches and gestures. A618-19, col. 6:66-7:46; A7339-400, 30,041-45, 30,357-59. The solution was software that mathematically converted each cluster of touched electrodes into parameters defining an ellipse. A7399-402. By 2003, *The New York Times*, *Time*, and *Wired* had all praised the software in FingerWorks' multitouch keyboards. A7408-09, 7485-87.

FingerWorks' devices were opaque. Unlike small trackpads on laptops, FingerWorks had developed capacitive touch sensors on large opaque multi-touch surfaces that replaced keyboards and mice. A7399-400, 7402-03, 30,338-39. FingerWorks had never layered a capacitive sensor over a transparent screen. A15,515-16, 30,251. [redacted] A15,516. But they agreed to collaborate with Apple to give it a try. Eventually, Apple acquired FingerWorks. A7418. With it, Apple also acquired a groundbreaking patent—the '828 patent—covering FingerWorks' ellipse-fitting multi-touch process. A7420, 7452; *see* A565 (assignee).

The Apple team also drew lessons from an approach that Sony Computer Science Laboratories developed. Sony described its approach in an article entitled, *SmartSkin: An Infrastructure for Freehand Manipulation on Interactive Surfaces*. A13,597-604. SmartSkin involves a "grid" of "copper wires" running vertically and horizontally. A13,598. Each "crossing point" in the grid "acts as a (very weak) capacitor." *Id.* When a "conductive and grounded object"—e.g., a finger—"approaches a crossing point," it sucks electrons away from the grid. *Id.* "As a result, the received signal" becomes "weak" and by "measuring this effect, it is possible to detect proximity of a conductive object." *Id.* Because the change in capacitance is measured by comparing a horizontal wire to a vertical one, A30,032, this design is called "mutual capacitance," as distinguished from "self capacitance." A555, col. 9:52-62.

Like conventional input devices, the SmartSkin sensor was opaque; that was the only way to hide the copper wires. Sony's engineers were not focused on transparent touchscreens. Their agenda was to "extend[] [the] computerized workspace *beyond* the computer screen" by "turn[ing] *real-world surfaces, such as tabletops or walls*, into interactive surfaces." A13,597 (emphasis added). They would project images onto those surfaces (and onto the user's hand) as depicted below.

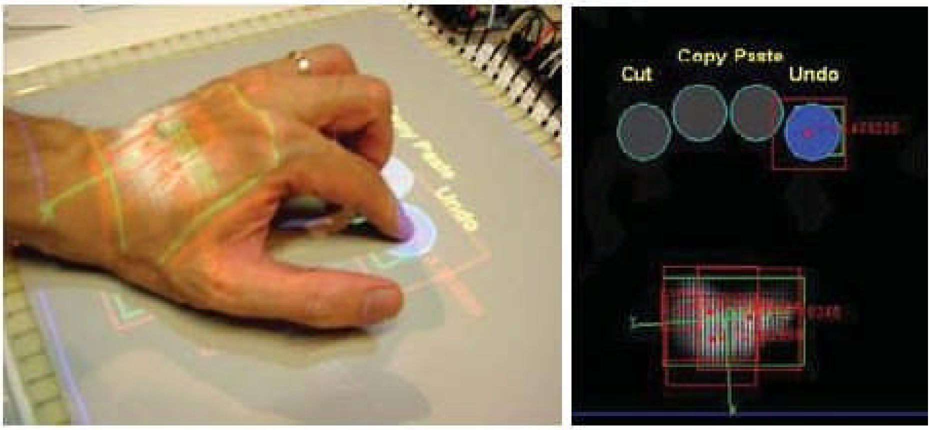

Figure 14: A palm is used to trigger a corresponding action (opening menu items). The user then taps on one of these menu items.

A13,601.

In a section entitled "Conclusions and Directions for Future Work," the SmartSkin article provides a few sentences on four "research directions" that the authors were "interested" in maybe some day exploring. A13,603. For example, they dreamed of inventing "'pet' robots" that "would behave more naturally when interacting with humans" and devices that could "infer the user's emotions." *Id.* The final possible direction was the "[u]se of transparent electrodes." *Id.* None of these suggestions for future work included any detail about how to make the sensor. Nearly 10 years after SmartSkin was published, Sony's engineers never created a transparent sensor and, so far as appears from the record, they never even tried. It remained in

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the dusty folder of ideas abandoned as impractical or pointless, along with the empathetic robotic Fido.

[redacted]

A16,145 (emphasis added). [redacted] A30,271-73.

As intriguing as the SmartSkin approach was, the Apple team did not drop everything to pursue it. [redacted] A14,335. [redacted] *Id.*

Translating the SmartSkin approach to a transparent screen presented numerous quandaries. The main problems arose from the huge difference in conductivity between the copper wires that SmartSkin used and the transparent ITO in Apple's adaptation.

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Copper "has a very high conductivity" (or low resistance). A31,782. Even with the very conductive copper wire, the capacitance signal that the SmartSkin grid generates is "very weak," A13,598, and becomes weaker still upon the touch of a finger. But the difference is detectable with a sensitive voltmeter. In contrast to copper wires, ITO has a very low conductivity (or high resistance). A31,783. The difference is at least 100-fold. *Id.*; *see* A14,576. When the electrons are slogging through ITO, they have even lower energy, so the capacitance signal starts out 100 times weaker than it is in copper. A31,783. This makes it even harder to detect the (even tinier) downward fluctuation a finger touch causes, A14,576, 15,561, and extremely difficult to do so with a voltmeter, A31,783.

Existing solutions were unsatisfactory. [redacted] A14,335. They figured out that they could discern whether a finger was draining electrons by literally counting electrons (i.e., charge) at the measuring point, rather than measuring their energy (i.e., voltage). A545, figs. 12-13; A559, col. 17:12-61; A31,728-29, 31,773, 31,780-81, 31,784. While it was generally known "that you could count charge," "prior to the '607, no one figured out … that you could finally get to use ITO in these mutual capacitance systems that implement multi-touch" by counting charge. A31,731-32.

Apple's engineers also solved several other "significan[t] complexities" in mounting a transparent sensor in front of a display. A15,565-66. Most significant of these was that "the patterned ITO can become *quite visible*," i.e., no longer transparent, "thereby producing a touch screen with undesirable optical properties." A557-58, col. 14:65-15:3; *see* A7643, 13,875, 15,565-66. The '607 patent details several solutions, including an elaboration on Hotelling's ITO caulking idea. A556-59, col. 12:24-13:6, 14:60-17:11.

Apple Files For A Patent On Its New Touchscreen

In May 2004, the Apple engineers filed the patent application that ultimately became the '607 patent. The application summarized existing touchscreen technologies and explained their inability to detect multiple touches accurately. A7164, 7382, 8845-46, 6663-66, 30,028-29; *see* A551, col. 1:34-2:22.

The application illustrates a mutual capacitance sensor. A8892, figs. 9-10; A8894, figs. 12-13; *see also* A557-59, col. 13:7-16:49, 17:12-61.[1] The mutual capacitance embodiment uses a screen built with multiple (almost) transparent layers. A543, fig. 10; A553, col. 5:47-49; A557, col. 13:62-64. On one layer is a set of parallel "driving" lines and on another is a set of parallel "sensing" lines, placed orthogonally to the driving lines. A543, fig. 9; A553, col. 5:49-50; A557, col. 13:62-66. Each intersection forms a capacitive coupling node that can sense a finger touch. A543, fig. 9; A553, col. 5:50-60; A557, col. 13:16-20.

The touch panel's circuitry sends current through each row (the driving lines) in rapid succession while continuously checking all columns (the sensing lines) for changes in capacitance using the charge-counting method described above. A553, col. 5:62-65. After all rows are driven and all nodes are scanned, the sequence starts over. A557, col. 13:45-48. Using this method, the touch panel scans quickly enough to report touch information for each node "at about the same time (as

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[1] The '607 patent application also illustrates a self capacitance device like the one Hotelling sketched in September. A8890-91; *see also* A7644. But Apple eventually cancelled these self capacitance claims. A10,412-15.

viewed by a user) so as to provide multipoint sensing." A559, col. 17:33-35.

After sensing any change in capacitance, the touch panel circuitry interprets the changes to accurately detect multiple touches. Figure 3 shows multiple objects in contact with the touch panel (contact patches 44), with each touch spanning multiple sensing nodes (42):

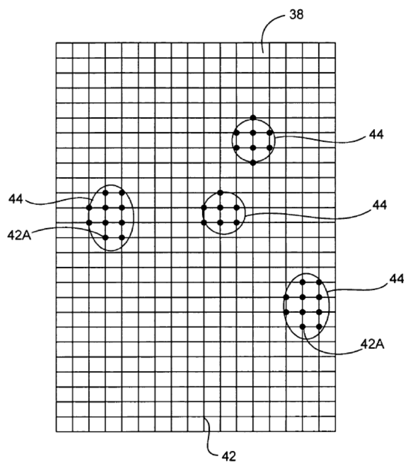

FIG. 3

A539, fig. 3; A553, col. 6:7-14. The touch panel circuitry recognizes these changes in capacitance as four different touches at distinct locations. A553, col. 6:14-25. It then reports touch information to a host device, such as a handheld device or tablet. A552-53, col. 4:28-30, 6:35-40.

Apple informed the Patent and Trademark Office ("PTO") about the SmartSkin article. A8937-44, 9268-75. The examiner reviewed the article twice (in 2005 and again in 2006), A9938, 9961, but nevertheless found the invention patentable, A9943-44; *see also* A10,140, 10,427-28.

In 2010, after six years of study, the PTO issued the '607 patent, entitled "Multipoint Touchscreen." A532. Claim 1 provides in relevant part:

> 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 ….

A561, col. 21:35-41 (emphasis added). The emphasized words are referred to as the "multi-touch limitations." Claim 10 has substantially similar text. *See* A561, col. 22:23-35.

The New Touchscreen Spurs The iPhone's Spectacular Success

While the lengthy patent prosecution was running its course, Steve Jobs introduced Apple's iPhone during his 2007 Macworld Conference keynote presentation. A30,130. Front and center was the transparent multi-touch user interface: "[W]e have invented a new technology called multi-touch, which is phenomenal. It works like magic. You don't need a stylus. It's far more accurate than any touch display that's ever been shipped. It ignores unintended touches, it's super-smart. You can do multi-finger gestures on it. And boy, have we patented it."[2]

Industry observers were blown away. One prominent critic lauded "Apple's Magic Touch Screen." A7826-27. The "sophisticated multipoint touch screen," he enthused, is "the most impressive feature of the new iPhone." A7826. *Time* named the iPhone "invention of the year." A7483-84. And it singled out the touchscreen for special plaudits: "Because there's no intermediary input device—like a mouse or a keyboard—there's a powerful illusion that you're physically handling data with your fingers." A7490.

Consumers agreed. iPhones flew off the shelves. When Apple released the iPhone in June 2007, "analysts were speculating that customers would snap up about 3 million units by the end of 2007, making it the fastest-selling smartphone of all time." A8259. Within a mere four years, iPhone sales reached into the *billions* of dollars. Over the past three years, net sales rocketed from $6.7 billion in 2008 to $47

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[2] Steve Jobs, CEO, Apple Inc., Address at the Macworld Conference and Expo (Jan. 9, 2007), *available at* http://www.iphonebuzz.com/complete-transcript-of-steve-jobs-macworld-conference-and-expo-january-9-2007-23447.php.

billion in 2011. A14,184; Apple Inc. Annual Report (Form 10-K) 32 (Oct. 26, 2011).[3] In 2011 alone, Apple sold an eye-popping 72 million iPhones worldwide, almost twice the 40 million units sold the previous year. 2011 Apple 10-K at 31-32; A14,184. Those sales figures translated into a 19% share of the worldwide smartphone market in 2011.[4]

The revolutionary touchscreen contributed to the success of Apple's next market sensation—the iPad, which Apple released to similar acclaim in 2010. A14,155. Within five months, the iPad had already netted nearly $5 billion. A14,185. Once again, the iPad "left nearly every other big computer and consumer-electronics maker racing to get into the tablet market that [Apple's] iPad had suddenly created." A17,715.

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3 *Available at* http://investor.apple.com/secfiling.cfm?filingID=1193125-11-282113&CIK=320193 ("2011 Apple 10-K").

4 Lance Whitney, *Apple Crowned Top Smartphone Vendor of 2011 By Gartner*, CNET, Feb. 15, 2012, http://news.cnet.com/8301-13579_3-57378209-37/apple-crowned-top-smartphone-vendor-of-2011-by-gartner/.

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Motorola Copies Apple's Touchscreen After Unsuccessfully Trying To Develop Its Own

While Apple was developing its new touchscreen, Motorola had also been working on a touchscreen. It bet on resistive, instead of capacitive, technology. A30,140-41, 31,052-54. Resistive touchscreens include an electrically conductive panel and an electrically resistive panel that meet when the top panel is touched. A551, col. 1:38-43. In 2006, Motorola released a phone called "Ming" with a resistive touchscreen. A30,141, 31,052-54. But, [redacted] and as Apple's '607 patent notes, these resistive touchscreens could not detect multiple touches. A551, col. 1:63-2:3; *see* A30,141-42, 31,055-56.

For a time, the crudeness of Motorola's touchscreen did not matter. Motorola enjoyed a 22% market share in 2006, A8255, and made what "was once the top-selling U.S. handset," A8252. But immediately after the iPhone came out Motorola's market share "plummeted" to "around 4.5% in 2009"—a fifth of where it stood three years earlier. A8249, 8252. Industry analysts were already writing Motorola's obituary, fretting that Motorola was "stuck heavily in [a] handset death spiral." A8249.

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Motorola's only hope was to produce a multi-touch screen that could compete with Apple's. [redacted] A7496 (emphasis added), [redacted] *Id.* [redacted] *Id.*; *see* A12,858-59 [redacted] That was more than four years after Hotelling's Eureka moment.

[redacted] A7511. [redacted] A7546. [redacted] A7498. [redacted] A7552. [redacted]

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[redacted] A7554. [redacted]

[redacted]

The ITC Refuses To Bar Motorola's Infringing Touchscreen Products

Apple filed a complaint with the ITC seeking to exclude Motorola's infringing products. A717-40. It asserted infringement of claims 1-7 and 10 of the '607 patent (claims 2-7 depend from claim 1) and claims 1, 2, 10, 11, 24-26, and 29 of the '828 patent, as well as another patent not raised in this appeal. A730. It accused 18 Motorola mobile devices of infringing both the '607 and '828 patents, and another three products of infringing just the '828 patent. A47.

The ALJ opinion. The ALJ found no violation. A36. With respect to the **'607 patent**, the ALJ found that all 18 of the accused Motorola devices infringe all asserted claims. A148-68, 244. But he found no violation because he believed the '607 patent was invalid as both obvious and anticipated. A244.

Specifically, the ALJ found all asserted claims obvious in light of Sony's SmartSkin combined with another reference by the SmartSkin author, Unexamined Japanese Patent Application No. 2002-342033A ("Rekimoto '033") that is no longer relevant on appeal (because the ITC declined to rely on it with regard to the claim limitations at issue here, A523). A213-16. The ALJ acknowledged both "the iPhone 4's commercial success," A216-17, and that the iPhone practices the patent, A238-42. But he concluded that objective indications of nonobviousness "cannot overcome the strong showing of obviousness in this instance." A216-17.

The ALJ did not believe that SmartSkin anticipated the invention claimed in the '607 patent. A187-89. Nevertheless, the ALJ ruled that all asserted claims were anticipated by U.S. Patent No. 7,372,455 to Perski et al. ("Perski"). A182-86; *see* A16,601-36. Perski discloses a transparent touchscreen that uses mutual capacitance, but scans differently—and much more slowly—than the '607 patent. It also uses a voltmeter rather than Apple's innovative charge sensor. The ALJ found the differences irrelevant. *Id.* Finally, the ALJ rejected Apple's argument that Perski was not prior art because it was filed the year after Apple's invention. A181-82. He held that Perski could claim priority back to an earlier provisional application. A181.

With respect to the **'828 patent**, the ALJ found that it was valid, A179-81, 211-12, and that the iPhone practices it, A237-38. He held, however, that Motorola was not infringing it. A244. Critical to that ruling was a claim construction—of "mathematically fitting an ellipse," A645, col. 60:5-16, and similar phrases—that no party had proposed. A58-70.

The ITC opinion. The ITC reviewed only the ALJ's finding that the asserted claims of the '607 patent are obvious. A517. The ITC agreed with the ALJ that the invention was obvious in light of SmartSkin, but for "different reasons." A523; *see also* A518 ("modified reasoning"). For example, the ITC "disagree[d] with the ALJ's conclusion that Rekimoto '033," in addition to SmartSkin, "teaches the use of transparent electrodes." A523. Moreover, the ITC held that SmartSkin provides the "reason to combine" the "use of transparent electrodes made of materials such as ITO with the mutual capacitance sensor for detecting multiple touches on the sensor surface disclosed in SmartSkin." A522-23. The ITC also found that "one of ordinary skill" would have had a "reasonable expectation of success" in that combination. A523.

The ITC did "not review, and therefore d[id] not address, the [ALJ's] findings concerning secondary considerations." *Id.* The ITC also did not review the ALJ's analysis of the Perski patent or the '828 claim construction ruling. These determinations therefore became effective by operation of law. *See* 19 C.F.R. § 210.42(h)(2).

SUMMARY OF THE ARGUMENT

I. On "the question of obviousness," the Supreme Court's "cases have set forth an expansive and flexible approach." *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 415 (2007). That flexible inquiry compels a finding of nonobviousness here. It was not possible to produce a "transparent" touch sensor that can "detect multiple touches or near touches that occur at a same time and at distinct locations"—as the claims require—without significant innovation. It is undisputed that at the moment Steve Jobs told his engineers that his highest priority was to invent a revolutionary new touchscreen, no technology on the market could do what he had in mind. Until Jobs issued his edict, there was no "motivation to combine" capacitive sensing with transparent screens. *Id.* at 418. Even after Apple defined the problem in a "new revelatory way," *Mintz v. Dietz & Watson, Inc.*, 679 F.3d 1372, 1377 (Fed. Cir. 2012), Apple's experienced and accomplished engineers explored various twists and turns before settling on the right path. The PTO was correct in concluding (as Apple's team had) that "[n]one of the cited art teaches or suggests a touch panel comprising a transparent capacitive sensing medium" that provided full image multi-touch. A10,427.

Moreover, objective indicia can compel a finding of nonobviousness even where "standing alone, the prior art provides significant support for the … contention that the … patent would have been obvious." *Alco Standard Corp. v. Tennessee Valley Auth.*, 808 F.2d 1490, 1499-1500 (Fed. Cir. 1986). Rarely has a single invention garnered as much praise as Apple's touchscreen. And the decision by just about every major manufacturer of cellphones to "follow[] Apple's lead" and "us[e] transparent full-image, multitouch sensors based on mutual capacitance" confirms their view of the touchscreen's novelty and utility. A7390; *see* A7828.

In declaring the '607 patent invalid, the ITC made basic errors of patent law. Most fundamentally, the ITC would deny Apple a patent to an invention that is, by all reasonable accounts, a revolutionary invention that occurred only because Apple invested resources on the assumption that the patent system would live up to its constitutional promise. The ITC ignored Apple's technical innovations, such as figuring out how to measure the subtle changes in capacitance that occurred on the transparent screen, and ignored the high level of skill deployed by Apple's engineers. Impermissibly relying on hindsight, the ITC declared the Apple sensor an obvious combination of familiar technologies even though both the prior art and the record of Apple's critical and commercial success demonstrates that the sensor was new. And the ITC paid no mind to the PTO's careful consideration of the relevant prior art, disregarding the presumption of validity and the particularly high burden of showing invalidity where, as here, the PTO specifically considered the prior art.

II. Anticipation requires strict identity, not mere similarity, between the prior art's disclosure and the claimed invention, and as a result anticipation cases are "quite rare." *Trintec Indus., Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 1296-97 (Fed. Cir. 2002). Perski's touchscreen was first disclosed in a patent application filed in January 2004, *after* Steve Hotelling and his colleagues conceived their innovative touchscreen and reduced it to practice. Moreover, the '607 patent claims define the invention by *both* how it is built *and* what it can do. The touchscreen disclosed in Perski is *built* somewhat similarly but *operates* differently than the touchscreen in the ’607 patent. The ’607 patent describes and claims a *full image multi-touch* sensor while Perski does not. The ’607 patent’s touchscreen advances over Perski, just as it advances over the many touchscreens disclosed in the 300-plus prior art references considered by the PTO. The decision below rests on a reading of the ’607 patent’s claims that is contrary to the evidence about what multi-touch means to those skilled in the art.

III. Before the ALJ, “[t]he key dispute for the ’828 Patent [wa]s whether ‘mathematically fitting an ellipse’ is limited to the methodology defined in the patent.” A59. Yet after agreeing with Apple that the “fitting terms” were not limited to that methodology, the ALJ then adopted a construction not proposed by any party: “Performing a mathematical process whereby an ellipse is actually fitted to the data consisting of one or more pixel groups and from that ellipse various parameters can be calculated.” A58-70. The ALJ’s circular construction obscures the claim’s meaning and defies the intrinsic evidence. Chief among its problems is that it separates calculating parameters from the ellipse fitting when *an ellipse is fitted by calculating parameters*.

Apple respectfully requests a remand directing the ALJ to assess infringement under the correct construction.

STANDARD OF REVIEW

This Court reviews the ITC's legal determinations without deference and reviews factual findings for substantial evidence. *Crocs, Inc. v. ITC*, 598 F.3d 1294, 1302 (Fed. Cir. 2010). Under the substantial evidence standard, "[a] reviewing court must consider the record as a whole, including that which fairly detracts from its weight, to determine whether there exists such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." *Nippon Steel Corp. v. United States*, 458 F.3d 1345, 1351 (Fed. Cir. 2006) (citations omitted).

Claim construction is a legal determination. *Sorenson v. ITC*, 427 F.3d 1375, 1378 (Fed. Cir. 2005). Obviousness is a question of law based on underlying factual inquiries. *Crocs*, 598 F.3d at 1308. Whether prior art anticipates a patent claim is a question of fact. *Vizio, Inc. v. ITC*, 605 F.3d 1330, 1342 (Fed. Cir. 2010).

ARGUMENT

I. THE ITC ERRED IN HOLDING THAT APPLE'S TRANSPARENT FULL IMAGE MULTI-TOUCH SENSOR WAS OBVIOUS

Apple invented a touchscreen that no one else had ever achieved. As described in the claims, Apple invented a "touch panel" that could "detect multiple touches … at a same time." A561, col. 21:35-41. The "touch panel" could accurately discern the "location of the touches," even if they were "at distinct locations" anywhere on the screen. *Id.* What's more, the "touch panel" was "transparent," which means that it had to be see-through—i.e., that the user would not see a "quite visible" pattern of electrodes superimposed over the display. A557-58, col. 14:65-15:7. To achieve these results, Apple had to solve technological problems that no one before it had ever solved.

The factors that are relevant to obviousness under 35 U.S.C. § 103(a) lead inexorably to the conclusion that this invention was not obvious. *See infra* Point I.A. The ITC's contrary conclusion was based on several legal errors that warrant reversal. *See infra* Point I.B.

A. Apple's Transparent Full Image Multi-Touch Sensor Is Exactly The Type Of Innovation The Patent System Is Meant To Foster

On "the question of obviousness," the Supreme Court's "cases have set forth an expansive and flexible approach." *KSR*, 550 U.S. at 415. The framework entails two categories of factors. One category frames an analysis of the prior art: "'the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved.'" *Id.* (quoting *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966)). The other category, sometimes called "secondary considerations," is an assortment of objective indicia of nonobviousness. *KSR*, 550 U.S. at 406. Among them are "commercial success, long felt but unsolved needs, failure of others, etc.," any of which "give light to the circumstances surrounding the origin of the subject matter sought to be patented." *Id.* (citation and internal quotation marks omitted). We address the two sets of factors in turn.

1. The prior art factors strongly support the conclusion that the '607 patent was not obvious

Apple's improvement on the prior art is evident from every relevant angle—from the very framing of the problem to be solved and

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the motivation to combine and improve technologies, to the various design choices the team had to make along the way, to the ingenuity with which they solved technological problems that no one else had ever solved.

To start, it is undisputed that at the moment Steve Jobs told his engineers that his highest priority was to invent a revolutionary new touchscreen—one that satisfied all the claimed criteria described immediately above—no technology on the market could do what he had in mind. *See supra* at 7. More to the point, no one had articulated a meaningful plan to do so. But Apple surveyed existing user interfaces and found them unsuitable. *See supra* at 8, 13-15. Only Apple envisioned a future user experience [redacted] A8384-89, 7379, 7390,15,431. Thus, a significant part of Apple's "inventive contribution lies in defining the problem in a new revelatory way." *Mintz*, 679 F.3d at 1377.

Until Jobs issued his edict, there was no "motivation to combine" capacitive sensing with transparent screens. *KSR*, 550 U.S. at 418. Unlike in *KSR*, there was no "exist[ing] marketplace that created a

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strong incentive" to combine those elements. *Id.* at 424. "Technological developments" certainly had not "made it clear" that this new approach "would become standard." *Id.* Apple *created* the marketplace and defined the *new* standard. As this Court has held, that inventive contribution, alone, would defeat an obviousness challenge even if an artisan would have been "virtually certain" to have figured out how to achieve Apple's vision once he heard it and concluded it was worth pursuing. *Mintz*, 679 F.3d at 1377.

But, in fact, Apple's ultimate success in achieving that vision was far from certain, even after Apple defined the problem in a "new revelatory way." *Id.* One skilled in the art would have had numerous design decisions to make and obstacles to overcome. As detailed above, the artisan would have had to choose which among at least *five* types of touchscreen technologies to build upon, all of which Apple had studied and considered to be [redacted] A15,733; *see supra* at 8. Resistive, for example, was probably not the right choice, as Motorola discovered to its dismay. A7496. Or the artisan would have had to decide whether to try to devise a different technology entirely. Ex ante, there was no way to be sure which design

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path would succeed. [redacted] A15,431—[redacted] But, as Motorola learned from its ill-fated focus on a resistive technology—[redacted] A7496—that choice could not be taken for granted.

The twists and turns that Apple's inventive process took before the optimum solution emerged further underscores that the expectation of success was fairly slim. *See Rolls-Royce, PLC v. United Techs. Corp.*, 603 F.3d 1325, 1339 (Fed. Cir. 2010) ("The important question is whether the invention is an 'identified, predictable solution' and an 'anticipated success.'") (citation omitted). Hotelling correctly predicted that the team would [redacted] A15,431 (emphasis added). Particularly relevant here was the team's detour through a less fruitful form of capacitance sensing, [redacted] A16,145. [redacted]

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[redacted] A14,335.

All this was especially telling in light of the Apple team's expertise. They were far more experienced and accomplished than the hypothetical engineer "of ordinary skill in the art," which the ITC defined as one who "'would have a bachelor's degree in electrical engineering, physics, computer engineering, or a related field and [two to three] years of work experience with input devices.'" A522 (quoting ALJ) (alterations in original). If a technique was obvious to one skilled in the art, it should have been obvious to these considerably more experienced and proven innovators. *See Innovention Toys, LLC v. MGA Entm't, Inc.*, 637 F.3d 1314, 1323 (Fed. Cir. 2011) ("fewer inventions are obvious to a person with a lower level of skill than to one with a higher level of skill").

In view of the prior art, the PTO was correct in concluding (as Apple's team had) that "[n]one of the cited art teaches or suggests a touch panel having a transparent capacitive sensing medium" that provided full image multi-touch. A10,140, *see also* A9943-44. That was certainly true of Sony's SmartSkin, which the examiner twice analyzed.

A8937-44, 9268-75, *see also* A9938, 9961. SmartSkin technology was impressive, but did not solve Apple's puzzle: Copper wires are not invisible and SmartSkin was thus necessarily opaque. Sony's objective was the opposite of Apple's. Whereas Sony aspired to "extend[] [the] computerized workspace *beyond* the computer screen" by "turn[ing] *real-world surfaces, such as tabletops or walls*, into interactive surfaces," A13,597 (emphasis added), Apple was zeroing in directly on the computer screen in the hopes of making *it* the interactive surface, obviating any need for additional surface area for built-in touchscreens (e.g., trackpads) or external devices (e.g., a mouse, a joystick, a tabletop, or a wall).

Sony itself underscored the point when it mused about one day, in the "Future," adapting SmartSkin technology to a transparent surface just as it dreamed about some day applying it to an empathetic robo-pet. A13,603. Sony never studied how to achieve that goal. Thus, as the ALJ held, the "Future Work" section of the article "indicates" that use of transparent electrodes "likely was not contemplated" by Sony because "it would seem more likely that this would be entitled 'alternatives' or 'other embodiments' or some similar language." A188.

That should have been the end of the inquiry. As is evident from all the work the Apple team had to do to adapt mutual capacitance to ITO, it was not as simple as substituting "ITO" for "copper" wherever the SmartSkin design spec calls for "copper wire." SmartSkin did not teach how to overcome the thorny problems that arose from the fact that ITO's resistivity is at least 100 times greater than copper wire, thereby eliminating a voltmeter as an option to measure capacitance as SmartSkin did. And without a solution to that problem, a "transparent" "touch panel" would have been incapable of "detect[ing] multiple touches … at a same time." A561, col. 21:35-41. (Apple's solution: Count electrons rather than measuring voltage. *See supra* at 18-19.) Nor did Sony teach how to make a display that a user could see through multiple layers of ITO without the distracting grid of ITO strips. And without a solution to that problem, the touchscreen would not be "transparent." A557-58, col. 14:66-15:7; A561, col. 21:35-41. (Apple's solution: Caulk the gaps with non-conducting ITO, among other things. *See supra* at 12-13, 19.)

To the contrary, as is true of other prior art references that this Court has found insufficient to support an obviousness finding, SmartSkin did not even give "'general guidance'" on how to construct a transparent multi-touch sensor. *In re Roemer*, 258 F.3d 1303, 1309-10 (Fed. Cir. 2001) (citation omitted). The article's "assertion" that it might be possible—with more "[w]ork"—to design such a sensor using ITO "is not accompanied by any teaching of how to adopt" the disclosed opaque sensor for use with a transparent screen displaying a graphical user interface. *Id.* at 1309. The SmartSkin article "does not teach or suggest how to specially design" a transparent multi-touch sensor that would work with ITO "nor does it [even] suggest the need" to alter the structure of the disclosed sensor in any way to accommodate the differences in electrical properties between copper and ITO. *Id.*

Apple—not Sony—invented all that. And it did so through the very sort of inventiveness that is synonymous with the Apple brand and that the patent system is supposed to encourage. Did Apple draw inspiration from SmartSkin? Of course. A16,145. "[I]nventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known." *KSR*, 550 U.S. at 418-19. If an invention is invalid merely because it builds upon publicly available works, the PTO could just shutter its operations and deny every patent.

2. Objective indications reinforce the conclusion the '607 patent was not obvious

Objective indicia can compel a finding of nonobviousness even where "standing alone, the prior art provides significant support for the … contention that the … patent would have been obvious." *Alco Standard*, 808 F.2d at 1499-1500. If ever there were a case for applying that principle, this is it. Three of the most significant criteria—praise, imitation, and commercial success—compel a finding of nonobviousness.

First, "praise in the industry that specifically relate[s] to features of the patented invention … 'indicat[es] that the invention was not obvious.'" *Power-One, Inc. v. Artesyn Techs., Inc.*, 599 F.3d 1342, 1352 (Fed. Cir. 2010) (quoting *Allen Archery, Inc. v. Browning Mfg. Co.*, 819 F.2d 1087, 1092 (Fed. Cir. 1987)). Rarely, has a single invention garnered as much praise as Apple's touchscreen—from the commentator who lauded "Apple's Magic Touch Screen," A7826-27, to *Time* naming the iPhone the "invention of the year," A7483, and marveling about the touchscreen's "powerful illusion that you're physically handling data with your fingers," A7490, to the AT&T

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executive who deemed the iPhone "'the best device I have ever seen,'" based in part on its "brilliant screen," A8259.

Second, "imitation of" an invention is a "concession to its advance beyond the prior art and of its novelty and utility." *Diamond Rubber Co. v. Consolidated Rubber Tire Co.*, 220 U.S. 428, 441 (1911); *see also Crocs*, 598 F.3d at 1311 (reversing the ITC's holding of obviousness, noting that "[c]opying may indeed be another form of flattering praise for inventive features"). The decision by just about every major manufacturer of cellphones to "follow[] Apple's lead" and "us[e] transparent full image, multitouch sensors based on mutual capacitance" confirms their view of the touchscreen's novelty and utility. A7390; *see* A7828.

Especially probative in this regard was [redacted] A7537, [redacted] A7511. *See supra* at 25-27; *Crocs*, 598 F.3d at 1311. This is a classic example of an accused infringer's "redesign process [being] documented in the record in internal emails from [the accused infringer's] engineers discussing [the patent owner's] approach [and] identifying weaknesses

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in [the accused infringer's] approach," and the accused infringer "ultimately deciding to switch to the [patent owner's] system." *Akamai Techs., Inc. v. Cable & Wireless Internet Servs., Inc.*, 344 F.3d 1186, 1196-97 (Fed. Cir. 2003). If the touchscreen was so obvious, Motorola's acclaimed engineers would have solved the technological problems itself, [redacted] A7498.

Third, "[i]f in fact a product attains a high degree of commercial success, there is a basis for inferring that such attempts have been made and have failed." Richard L. Robbins, *Subtests of "Nonobviousness": A Nontechnical Approach to Patent Validity*, 112 U. Pa. L. Rev. 1169, 1175 (1964) (cited in *Graham*, 383 U.S. at 18). By this metric, Apple's touchscreen is about as nonobvious as can be, with worldwide revenues from the iPhone and related products almost doubling year on year, from $7 billion in 2008, to $13 billion in 2009, to $25 billion in 2010, to $47 billion in 2011, A14,184, 2011 Apple 10-K at 33, resulting in a 19% market share in 2011. *See* Whitney, *supra* at 24 n.4.

* * *

With all these indications of nonobviousness, this case bears a striking resemblance to *Diamond Rubber*, 220 U.S. at 428, where the Supreme Court long ago rejected an obviousness argument. Like the invention at issue there, Apple's touchscreen "was not the result of chance or the haphazard selection of parts; [its] success could only have been achieved by a careful study of the scientific and mechanical problems necessary to overcome the defects which rendered the then-existing [sensors] ineffective and useless." *Id.* at 443-44. Like the invention in *Diamond Rubber*, the touchscreen in phones "immediately established and has ever since maintained its supremacy over all other [sensors], and has been commercially successful while [all other designs] have been failures." *Id.* at 441. The "extensive use" the iPhone's touchscreen has attained "could only have been the result of its essential excellence, indeed, its pronounced superiority over all other forms." *Id.* at 442. Moreover, the touchscreen "possess[es] such amount of change from the prior art to have received the approval of the Patent Office, and is entitled to the presumption of invention which attaches to a patent." *Id.* at 434.

B. The ITC's Rationale For Finding Apple's Touchscreen Obvious Was Legally Flawed

The ITC overlooked or discounted all of this evidence of true innovation to hold that "the use of transparent ITO in combination with the mesh grid touch sensor of SmartSkin is just the type of 'combination of familiar elements'" that was obvious under Supreme Court precedent. A525 (quoting *KSR*, 550 U.S. at 416). The ITC would not have reached this conclusion but for several fundamental mistakes of patent law.

Using the invention to define the problem. This Court has repeatedly warned against the temptation to infect the obviousness analysis with various "form[s] of prohibited reliance on hindsight." *Mintz*, 679 F.3d at 1377. The ITC did just that in the passage quoted immediately above by using "the invention to define the problem that the invention solves." *Id.* The ITC did not so much as acknowledge the point (discussed above) that Apple's "inventive contribution" lay, in part, in defining the problem "in a new revelatory way." *Id.* Instead, it collapsed the entire inventive process, entailing multiple layers of complexity and design choice, into the ultimate technical solution disclosed in the patent.

This myopic focus on how to make mutual capacitance work on a transparent surface is the analytical equivalent of reducing Thomas Edison's light bulb down to the question, "If I'm going to make an incandescent bulb using an especially strong vacuum, a high-resistance lamp, and a carbon filament, how thick should I make the carbon filament?"

Undervaluing ingenuity. Even accepting the ITC's focus on the narrow technical problem solved—how to replace the copper wires in SmartSkin with transparent ITO—the ITC erroneously undervalued Apple's ingenuity. The ALJ did not address Apple's technical innovations. Announcing "different reasons" than the ALJ, A523, the ITC dismissed the technical challenge of measuring capacitance changes in a material as non-conductive as ITO. It also entirely ignored the ingenuity behind hiding the pattern of ITO circuitry, which, as the specification indicated, would otherwise be "quite visible" (and hence not transparent) to the user. A557-58, col. 14:65-15:7; *see supra* at 12-13, 19.

The ITC made passing reference only to the former innovation, not the latter. All it said was that "Apple's arguments concerning the difficulty of implementing a transparent ITO sensor with a voltage-sensing system are irrelevant," because "the claimed invention is not drawn to a particular sensing arrangement." A528. That is incorrect. While the claims do not explicitly mention "charge counting," they *do* explicitly require a transparent sensor to meet the multi-touch limitations, and "the way you can get there in the '607 [patent] is with the charge counter." A31,784. Apple's expert testified, at length and without contradiction, that simply swapping ITO for copper in SmartSkin would not have created the claimed invention. The multi-touch limitations, he explained, would not be met because SmartSkin's voltage-sensing circuitry could not detect drastically weaker signals. A31,770-85. The '607 patent solves this problem by employing charge-counting sensing circuitry, which is described in every embodiment. A31,773; *see also* A545, figs. 12, 13; A559, col. 17:12-61.

In the end, the ITC fell into another trap the Supreme Court warned of long ago: "[E]xpert witnesses may be brought forward to show that the new thing which seemed to have eluded the search of the world was always ready at hand and easy to be seen by a merely skillful artisan." *Diamond Rubber*, 220 U.S. at 435. That is all Motorola's expert did with his facile pronouncement that "to a person who understands [the SmartSkin] paper, figure 2 tells you exactly how they would do it with a transparent sensor." A31,451; *see* A525. That testimony is conclusory and demonstrably wrong. Nowhere in the SmartSkin article is there any hint on how to overcome the technical problems Apple solved, much less direction on "exactly how" to do it.

Objective indicia of obviousness. The ALJ's analysis of the objective indications of obviousness (which the ITC declined to "review," A523) mentioned only one factor—commercial success—and ignored the ample evidence of the other factors. A216-17. That, alone, was error. But even its analysis of that one factor was doubly flawed.

First, the ALJ violated this Court's repeated direction that a fact finder must "consider the objective evidence *before* reaching an obviousness determination" and "may not defer examination of the objective considerations until after [it] makes an obviousness finding." *In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.*, 676 F.3d 1063, 1075, 1079 (Fed. Cir. 2012) (emphasis added); *see also Mintz*, 679 F.3d at 1379 (holding that district court erred in "believ[ing] that it need not fully weigh objective indicia evidence");

Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1380 (Fed. Cir. 1986).

The ALJ did the opposite here. He first concluded, based on the prior art factors, that Apple's solution was obvious. A216. Only then did he ask, in a brief afterthought, whether the one objective factor he considered could "overcome the strong showing of obviousness" based on prior art. A216-17. Approaching the inquiry this way negates the critical role the Supreme Court assigned to objective factors: preventing hindsight bias in the examination of prior art. *See In re Cyclobenzaprine Hydrochloride Litig.*, 676 F.3d at 1079 (citing *Graham*, 383 U.S. at 36). Objective evidence "constitutes *independent* evidence of nonobviousness" and "is not just a cumulative or confirmatory part of the obviousness calculus." *Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1365 (Fed. Cir. 2008) (emphasis added).

Second, the ALJ also erred in holding that "the required nexus between the commercial success of the iPhone 4 and the specific features covered by the '607 patent does not exist" because "the evidence shows that the iPhone's success stems from other product characteristics." A217. Reversing the ITC just two years ago, this

Court held that where, as here, a product is commercially successful and practices a patent, these two facts, alone, establish a prima facie case of nexus between the patent and the commercial success. *Crocs*, 598 F.3d at 1310-11. Motorola could not overcome that prima facie case merely by noting that "many market forces unrelated to the inventiveness of [a] patent may influence commercial success." *Id.* at 1311. It was required to "make a *convincing case* that those market forces indeed were the likely cause of success." *Id.* (emphasis added).

Motorola did not come forward with any competent evidence, much less "convincing" evidence. It adduced nothing but its technical expert's unsupported assertion that Apple's products "have been successful primarily because of other … characteristics" unrelated to the touchscreen. A18,188 (cited by ALJ at A217). Since this witness was an engineer with no expertise in marketing or consumer behavior, his opinion lacked any foundation. But even if he was qualified to testify on the subject, he conceded that his opinion was baseless: He had "not done any surveys about why consumers buy the iPhone 4" and had no evidence as to "why people are buying the iPhone 4 in droves." A31,486.

Failure to grant the PTO any deference. Even in the usual case, the ITC would have to presume the '607 patent valid, and would not be able to declare it invalid without holding Motorola to the especially high burden of proving obviousness by clear and convincing evidence. *Microsoft Corp. v. i4i Ltd. P'ship*, 131 S. Ct. 2238, 2246 (2011). But the threshold is even higher than usual here. The PTO took six years to study the relevant prior art and technology, including SmartSkin. So Motorola had the "added burden of overcoming the deference that is due" to the PTO where, as here, the relevant prior art plainly was disclosed to and considered by the examiner. *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1353 (Fed. Cir. 2001). Yet the ITC failed even to mention that the art at issue in this case was before the PTO.

* * *

"The inherent problem" that the obviousness requirement addresses is "weeding out those inventions which would not be disclosed or devised but for the inducement of a patent." *Graham*, 383 U.S. at 11. An inventor who "has added a new and valuable article to the world's utilities … is entitled to the rank and protection of an inventor."

Diamond Rubber, 220 U.S. at 435. Apple did just that—in the most spectacular way. Apple did so, as it has done it time and again, by applying its business strategy of designing and developing "nearly the entire solution for its products, including the hardware, operating system, numerous software applications, and related services." A14,162. The only way Apple can maintain this strategy—and continue to innovate—is by "mak[ing] significant investments in research and development." *Id.* But for every innovation that does work, countless others fail. If this Court wishes to encourage this sort of innovation, it must grant them patent protection when they pan out. The Patent Act will not "promote … Progress," U.S. Const. art. 1, § 8, cl. 8, if it is interpreted to invalidate patents like this one. The ITC must be reversed.

II. THE ALJ ERRED IN HOLDING THAT THE PERSKI PATENT ANTICIPATED APPLE'S TRANSPARENT FULL IMAGE MULTI-TOUCH SENSOR

The ITC also erred in leaving intact the ALJ's conclusion that the '607 patent was invalid as anticipated by the Perski '455 patent. First, Perski came after the '607 patent's invention, and the earlier application that Motorola invoked to relate the Perski patent back to an earlier date omits disclosures critical to Motorola's anticipation argument. *See infra* Point II.B. Second, the Perski invention did not satisfy every claim limitation in the '607 patent. *See infra* Point II.A. Because the first argument is easier to understand in light of the claim limitations, we begin with the second.

A. Motorola Did Not Sustain Its Burden Of Proving That Perski's Sensor Was Sufficiently Fast And Accurate For Full Image Multi-Touch

It was improper for the ITC to find anticipation unless Motorola presented clear and convincing evidence that "the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent." 35 U.S.C. § 102(e); *see Microsoft*, 131 S. Ct. at 2242. It is "quite rare" for this Court to find a patent invalid on this ground because anticipation requires "strict identity" between the prior art's disclosure and the invention. *Trintec Indus.*, 295 F.3d at 1296-97.

Perski does not teach a full image multi-touch sensor, much less pose the solutions necessary to make it a reality. A16,604, col. 1:14-2:60; A31,794. Perski was explicit about its intention to "teach[]" "a *single touchscreen* that can detect either *a finger* or *a special stylus,*" A18,160-62 (emphasis added), to allow "natural and intuitive operation of an 'on-screen-keyboard,'" which necessarily involves one touch at a time. A16,607, col. 8:33-37; *see* A16,604, col. 1:14-2:60; A16,607, col. 8:9-13; A31,794. Because that was all Perski was trying to address, it is unsurprising that the patent describes a touchscreen that differs from the '607 patent's claimed invention in two crucial respects: the *speed* and the *accuracy* of multi-touch detection. The '607 patent's touchscreen advances over Perski, just as it advances over the many touchscreens disclosed in the 300-plus prior art references considered by the PTO.

1. Motorola presented no evidence that Perski's disclosed scanning algorithm can detect touches "at the same time as viewed by a user"

As we explain more fully below, the undisputed evidence was that Perski scanned for touches much more slowly than the '607 patent—and not nearly fast enough to enable multi-touch. But the ALJ ignored all this evidence on the ground that "the speed at which multiple touches [are] detected [is] irrelevant" to the claims. A186. That was a clear error of law.

The '607 patent defines the invention by *both* how it is built *and*

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what it can do. The plain language of the relevant claims requires a touchscreen that is "configured to detect multiple touches … that occur *at a same time*." A561, col. 21:35-56 (claim 1) (emphasis added); *see also* A561, col. 22:23-55 (claim 10 requires a touchscreen "capable of recognizing multiple touch events that occur at different locations on the touch panel at a same time"). The specification confirms that these limitations are not satisfied unless all nodes are sensed at "about the same time (as viewed by a user) so as to provide multipoint sensing." A559, col. 17:33-36; A7167, 7195-96. If you have to leave your fingers fixed on the same spots on a touchscreen for a long while before the screen recognizes them as distinct touches, the technology is not "multi-touch." It is press-and-freeze, which is of limited value.

Both Apple and Motorola agreed that these "at the same time" limitations required the claimed touchscreen to detect multiple touches quickly. Indeed, Motorola insisted that "at the same time" allowed for no delay at all—perceptible or not. A19,316-19, 19,333, 19,336-37; *see also* A1008-09, 1013, 1032-35. Motorola's expert argued that [redacted] A19,316-19; *see* A19,336-37.

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The extrinsic evidence supported Apple's and Motorola's view. [redacted] A7510. [redacted] *Id.* [redacted] *Id.*

Despite all this, the ALJ held that speed was irrelevant. That would mean that a touchscreen that required a user to hold his fingers still for minutes, or even hours, to register as multiple touches would still qualify as a device that detects touches that occur "at a same time." That is obviously wrong. And the ALJ himself seemed to acknowledge as much elsewhere: He looked to scanning speed in Motorola's products [redacted] as evidence that they infringed the "at the same time" limitations. A149-50.

Had the ALJ applied the claims correctly in deciding anticipation, he would have had to conclude that Motorola failed to sustain its burden of proving that the Perski sensor was fast enough to satisfy this "at the same time" limitation. The touchscreen disclosed in Perski is *built* somewhat similarly but *operates* differently than the touchscreen claimed in the '607 patent. The only evidence in the record supports Apple's position that the Perski sensor is too slow to detect multiple touches "at the same time."

Perski itself explains why: Perski requires many more steps in detecting a touch, and those extra steps drastically slow down the sensor. Essentially, in an array of rows and columns of ITO, Perski will not detect multiple touches unless and until it scans each individual sensor sequentially, one at a time. A16,610, col. 14:20-31. For *m* rows and *n* columns, that is *n***m* scanning steps. A16,610, col. 14:31-35. And the specification states that the scan must "typically" be performed twice, for *n***m**2 steps. A16,610, col. 14:35-37. In contrast, the invention described in the '607 patent achieves the same result by scanning *all the rows at once*, while measuring each column sequentially, which means just *m* steps. It is like the difference between one farmhand scanning the whole grid, plant by plant, versus 50 farmhands racing down 50 rows of tomato plants scanning for ripe tomatoes.

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Put another way, consider an array of the sort described in the '607 patent—with 50 sensing lines (rows) and 38 driving lines (columns). A557, col. 14-57-59. To scan each individual sensor twice, Perski would require 3,800 scanning steps (50*38*2). *See* A16,610, col. 14:20-24, col. 14:31-35, A31,790-92. In contrast, the '607 patent can do the same job just by scanning all 50 rows at once for each drive pulse—***or 100 times faster***. Perski *itself* cites this as the "disadvantage" of its detection method. A16,610, col. 14:31-56.

Apple's expert unequivocally testified that the sheer number of scanning steps described in Perski made the device so slow that it could not detect multiple touches at the same time. A31,743, 31,749-50, 31,790-94, 31,812-24. [redacted] A14,574, 14,577, [redacted] A14,574; *see* A7202-03, 7208-10. In other words, scanning one sensor at a time does not disclose or enable multi-touch.

The ALJ turned Motorola's burden upside down when he reasoned that "[t]here is nothing in Perski '455 to indicate that the method disclosed therein *would not* be able to detect touches 'at the same time' as viewed by a user." A186 (emphasis added). The ALJ seemed to forget that he could not find that '607 patent anticipated without clear and convincing evidence that Perski *could* meet the '607 patent's claim limitations. *See Microsoft*, 131 S. Ct. at 2242. This was Motorola's burden, not Apple's. And the ITC did nothing to acknowledge or correct the ALJ's plain burden-shifting error.

The simple fact is that despite its burden of proof, Motorola presented *no evidence* whatsoever that the Perski sensor could detect multiple touches quickly enough to satisfy the multi-touch limitations. This basic failure of proof by Motorola precludes a finding of anticipation. Motorola simply repeated its mantra that Perski and the '607 patent were "similar" or "virtually identical," which the ALJ accepted without acknowledging the actual, unrebutted evidence (discussed above) of how the scanning algorithms in Perski and the '607 patent differed. *See* A183-85.

2. Motorola presented no evidence that Perski's disclosed method can accurately detect multiple touches

Motorola's expert agreed that "[t]he '607 patent … requires detecting two or more touches anywhere on the touch panel …. Anything else would be inconsistent with the teachings of the patent." A19,317-19. But Motorola presented no evidence that Perski is capable of sensing simultaneous touches anywhere on the touch panel. The only evidence on the record is that Perski does not, for its goal was to improve a "single touch[]" device. A18,161-62. All Perski says on the subject is: "When an output signal is detected on more then [sic] one conductor that means more than one finger touch is present." A16,610, col. 14:38-40. This way of interpreting signals will inevitably result in inaccurate simultaneous multi-touch detection. For example, as Apple's expert testified, Perski would not accurately report the number of touches in any scenario where "a single large touch could cause an output signal to be detected on more than one conductor line," because it would report that one touch as multiple touches. A8748-51, 31,753-54.

The ALJ mistakenly stated that "Apple concedes that Perski '455 does, in fact, disclose multitouch detection." A186 (citing A31,757-58). The cited testimony came moments after the above-quoted passage in which Apple's expert said exactly the opposite. A31,753-54. In the passage the ALJ cited, the expert merely agreed that Perski's detection method would not suffer from one specific sort of problem called "shadowing." A31,757-58. But as Apple's expert explained, "shadowing" is just one of several types of multi-touch detection problems. A7164. He cited a variety of "*other problems that prevent the accurate detection of multiple touches*." *Id.* (emphasis added).

B. Perski Is Not Prior Art To The '607 Patent

Even if Perski did describe the '607 patent's inventions, the ALJ still erred in finding that Perski anticipated the '607 patent. Apple conceived of the '607 patent's inventions and reduced them to practice in 2003. *See supra* at 6-19; A8728-8734. That was *before* Perski filed his patent application in 2004, which means that Perski could not have anticipated the '607 patent. The ALJ erred in concluding that Perski could claim priority back to an earlier provisional application (the "'808 application") that predated the '607 patent.

The ALJ was required to reject Motorola's backdating effort unless it presented clear and convincing evidence "that the provisional application … provide[d] written description support for the claimed [Perski] invention" (and in turn the '607 patent claims that Perski allegedly anticipates). *In re Giacomini*, 612 F.3d 1380, 1383 (Fed Cir. 2010); *see Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1576 (Fed. Cir. 1996) (burden applies to "all issues relating to the status of [Perski] as prior art").

The '808 application does not provide written description support for Perski in two respects. First, the provisional application does not disclose any way of determining whether multiple fingers touch the screen. The critical sentence in Perski that Motorola and the ALJ seized upon in reasoning that Perski satisfied the multi-touch limitation—*the only sentence on the subject in Perski*—was this: "When an output signal is detected on more than one conductor that means more than one finger touch is present" such that the touch panel "enables the detection of multiple finger touches." A184-85 (citing 16,610, col. 14:20-43). No such proposition appears anywhere in the '808 application. A16,147-55; *see also* A31,796-97; A6856-57 (redline indicating additions and deletions between the '808 application and Perski); A8752-53. This disclosure makes its first appearance in the 2004 Perski application. A16,412. Without this disclosure, Motorola has not cited a shred of support for the argument that the provisional application discloses how to determine whether multiple fingers touch the screen. *See* A16,147-55, 16,610, col. 13:26-14:59; A18,341-42.

Second, in attempting to show that the '808 application provides written description support for the "output this information to a host device to form a pixilated image" element of claim 10, Motorola entirely relied on another provisional application, Morag '662. Specifically, Motorola relied on that application's descriptions of a "Front End" and "Digital Unit." A18,416-17, 18,432-33, 18,460-74, 18,475-80. But the '808 application does not incorporate by reference that particular material from Morag '662. Motorola's expert acknowledged that only "certain portions" of Morag '662 are incorporated by reference in the '808 application, namely the transparent sensor's description—not the "Front End" and "Digital Unit" descriptions. A18,412-13; *see* A16,577-81, fig. 1. When the incorporation statement is limited in this way, it cannot be read to incorporate "separate and distinct" elements of the referenced document. *Zenon Envt'l, Inc. v. U.S. Filter Corp.*, 506 F.3d 1370, 1380 (Fed. Cir. 2007).

Because Perski is not entitled to the '808 application's priority date, it is not prior art to the '607 patent. For this reason, alone, the ALJ's anticipation ruling must be reversed.

III. THE COMMISSION BASED ITS FINDING THAT THE '828 PATENT WAS NOT INFRINGED ON THE ALJ'S INCORRECT CONSTRUCTION OF THE "MATHEMATICALLY FITTING AN ELLIPSE" TERM IN THE '828 PATENT

By acquiring the '828 patent, entitled "Ellipse Fitting for Multi-Touch Surfaces," Apple was able to combine its innovative hardware with cutting-edge software that made multi-touch even more precise and seamless. A7403-04. The relevant claims focus on a way of tracking multiple simultaneous finger and palm contacts on or near a touch surface. The program begins by taking an image representing a scan of electrodes (a "proximity image") and arranging it into groups (called "pixel groups" or "electrode groups"). A645, col. 60:5-16 (claim 1); A7095-96. Figure 13 below is a sample proximity image:

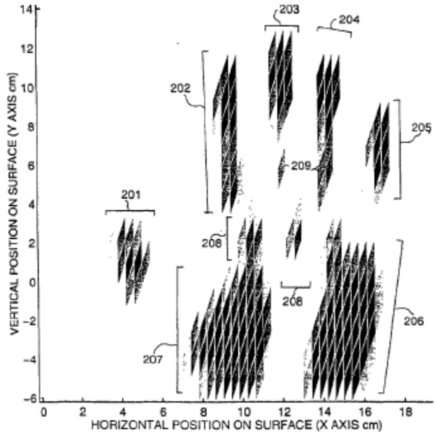


FIG. 13

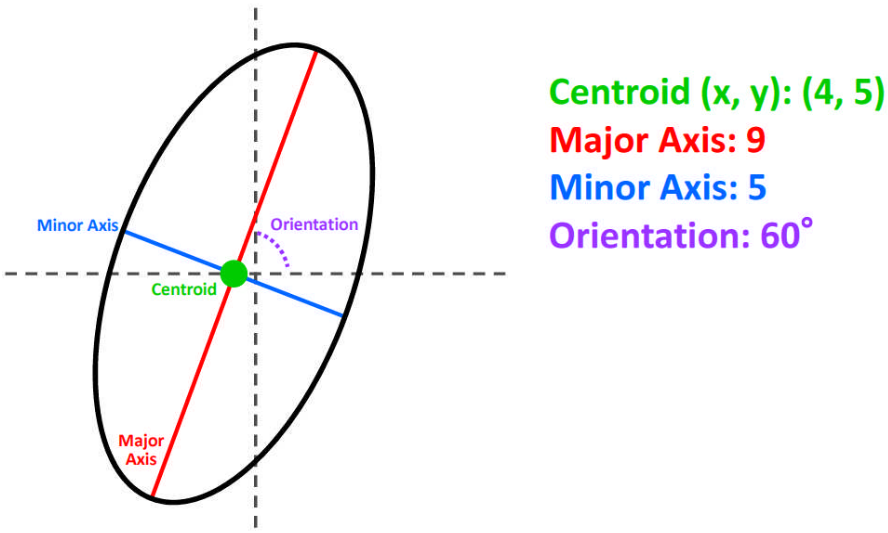
A583, fig. 13. The software then "mathematically fit[s]" one or more pixel groups into an ellipse. A588, fig. 18.

Claim 1 describes:

> 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, col. 60:5-16 (emphasis added). Claim 10 uses the nearly identical term, "mathematically fit an ellipse," A645, col. 60:49-67, and Claim 24 uses, "fitting an ellipse," A646, col. 62:4-13. Motorola's entire non-infringement position revolved around this claim limitation.

The disputed claim limitation applies principles of data fitting. Data fitting is about finding a geometric shape—here, an ellipse—that approximates the shape of a cluster of data points. A6715. "An ellipse can be fully described" in mathematical terms with five numbers, indicated the graphic below: "(1) X position of centroid [the center point of the shape]; (2) Y position of centroid; (3) minor axis length; (4) major axis length; and (5) orientation angle." A4495; *see* A18,058.



A6716.

The most reliable way to fit a cluster of data points to a shape is "mathematical fitting," which entails applying a series of mathematical formulas directly to the data points. Before the advent of high-speed computers, performing these calculations on paper was arduous. So engineers would routinely take a shortcut: The engineer could plot the data points on graph paper, eyeball the cluster, and actually draw a standard geometric shape that approximates the data. The draftsman could then take a ruler and measure the size, the *x* and *y* locations, and the exact contours of the approximated shape. A30,703-04.

The '828 patent invokes a far more reliable mathematical fitting, which is now much easier through modern computers. Mathematical fitting is not accomplished by drawing a shape (here, an ellipse) first. Rather, the software plugs data from the pixel group into a series of equations. A628, col. 25:54-26:56; A7116-17. The equations then yield numbers representing the parameters of an ellipse that approximates the shape of the pixel group. A7116-17, 18,062.

Both Apple and Motorola agreed that "mathematically fitting an ellipse," as used in the relevant claims, means calculating the five parameters of a standard ellipse. *See, e.g.*, A4475 ("[t]he '828 patent refers to the mathematical modeling of pixel data resulting from touches by fingers and other hand parts as 'ellipse fitting'"); *see also*

A7116, 7401, 8691-712, 18,057-58, 18,062, 18212-13, 30,071, 30,329-30, 30,366. That was the concept behind Apple's proposed construction of "mathematically fitting an ellipse," which was to "comput[e] numerical parameters that mathematically define an ellipse which approximates the shape of at least one of the pixel groups." A3112-16.

Motorola did not dispute how mathematical fitting works, instead arguing only a much narrower point: that in this particular patent there is an additional, unstated limitation, requiring that any calculation of the ellipse parameters be performed using particular equations recited in the specification. A30,613-14 (Motorola's counsel frames the difference between Apple's and Motorola's positions as "whether you need to include some specific procedure or whether you can use any mathematical procedure to compute the parameters"). Thus, the Apple-Motorola dispute was a classic claim construction question of the kind this Court has resolved many times: should a facially broad claim be limited in scope to cover only the preferred embodiment?

Instead of resolving that narrow dispute between the parties, the ALJ overrode the agreement between Apple and Motorola regarding the meaning of "mathematically fitting an ellipse" and announced his own new construction. He construed the term to require a two-step process: "[1] performing a mathematical process where by an ellipse is *actually fitted* to the data consisting of one or more pixel groups and [2] *from that* ellipse various parameters can be calculated." A70 (emphasis and bracketed numbers added). In this construction, ellipse parameters are calculated only *after* an ellipse has somehow been "actually fitted."

The ALJ's two-step construction betrays a fundamental misunderstanding about how a mathematical fitting process works and (more importantly) of what the '828 patent says. The specification itself exposes the ALJ's mistake in three ways. First, the preferred embodiment—which all parties agree practice the claims—fits an ellipse *by calculating the parameters of that ellipse*. A628, col. 25:54-26:67; A7401, 18,212-13, 30,318-20. The patent lists a series of equations that output a set of ellipse parameters. A628, col. 25:54-26:67. (These same equations are used to fit an ellipse in the iPhone. A237-38.) The ALJ's construction has it backwards. In the ALJ's view, it is as if the software were a human draftsman fitting an ellipse the old fashioned way—by actually drawing a shape with a pencil around data points on graph paper. But, in fact, no ellipse is "actually fit" first before the parameters are calculated. There is no way to read this illustration—or any other sentence in the specification—and conclude that the invention requires the software to mathematically fit an ellipse *before* calculating ellipse parameters.

Second is the specification's explanation of a flow chart (Figure 18) that tracks the steps of claim 1. A588, fig. 18; *see* A6144, 7095-96, 7116-17, 20,030-39, 30,070. The figure shows steps in boxes with verbs (e.g., "fit," "combine") and inputs/outputs of the steps in circles. A588, fig. 18; A627, col. 23:9-15, 23:20-23, 23:58-60; A628, col. 25:11-14; 25:54-56. For present purposes, the key step is step 272, toward the bottom of the chart, labeled "FIT ELLIPSES TO COMBINED GROUPS," which corresponds to "mathematically fitting an ellipse" in the claims.

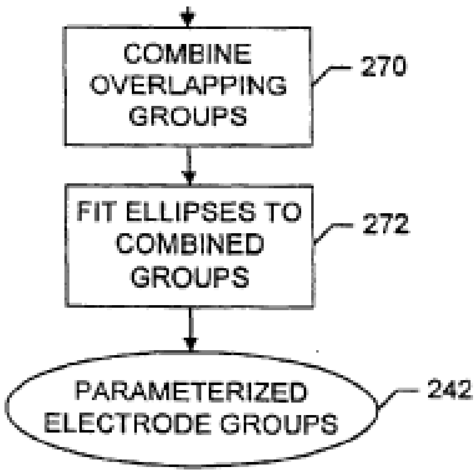


FIG. 18

A588, fig. 18 (cropped); A621, col. 11:55-56; *see* A6144, 7095-96, 7116-17, 30,070. The specification explains: "The last step 272 of the segmentation process is to extract shape, size, and position *parameters* from each electrode group." A628, col. 25:54-56 (emphasis added). It further notes that, for "most [pixel] groups," "their shape is well approximated by *ellipse parameters*." A628, col. 26:17-18 (emphasis added); *see also* A586, fig. 16; A588, fig. 18; A625, col. 19:8-12. Likewise, "fit[ting] ellipses" results in "parameterized electrode groups" in Figure 18. A588, fig. 18. Nowhere does the flow chart or the specification suggest that the computer "actually" draws or fits an ellipse first and then measures the parameters from that ellipse. Of course, the specification's express definition of mathematically fitting should control. *See, e.g.*, *Sinorgchem Co., Shandong v. ITC*, 511 F.3d 1132, 1136 (Fed. Cir. 2007). But the ALJ did not even mention step 272.

Third, the ALJ's construction also reads out of the patent an alternative way to perform step 272 described in the patent. A629, col. 27:1-8; A30,350-51; *see also* A7117-18 (testimony confirming that this section describes a second embodiment of the "fit ellipses" step). In the second embodiment, like in many Motorola products, default values are used for some ellipse parameters. A629, col. 27:3-6. This second embodiment does not "actually" fit an ellipse before measuring ellipse parameters either.

Even the extrinsic evidence that the ALJ cited confirms the same point. For example, the ALJ cited a dictionary definition of "curve fitting" as "the empirical determination of a curve or function that *approximates a set of data*." A69 (emphasis added). This definition does not require the drawing of a curve first, before calculating the parameters that "determin[e] a curve."

The ALJ also found inventor testimony "informative." A70. And it is—albeit in Apple's favor. The inventor testified that "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." A69 (emphasis added). That is precisely our point. You manipulate the "collection of data points" to "find the parameters that describe that ellipse." You do not draw the ellipse first, and then "find the parameters."

In short, all the extrinsic evidence confirms that you do not need to do anything more than "mathematically fit" an ellipse than to calculate ellipse parameters. In the words of Motorola's expert, the "five parameters are" all that is "required to ***fully describe*** an ellipse." A18,057, 18062 (emphasis added). Based on similar evidence, a district court in California recently agreed with Apple's construction, holding that "mathematically fitting an ellipse" ordinarily means calculating the parameters of an ellipse, and that the "fitting terms" should be given that ordinary meaning. *Apple Inc. v. Samsung Elecs. Co.*, No. 11-cv-01846, 2012 WL 1123752, at *19-20, 25 (N.D. Cal. Apr. 4, 2012).

Here, the ALJ rejected Apple's construction for two reasons. First, the ALJ held that Apple's construction was wrong because the parameters that define an ellipse (centroid position, axes lengths, and orientation) theoretically could define other shapes as well. A64. But the ALJ's logic overlooks a basic point of patent law: A claim is infringed if an ellipse is mathematically fitted; it is irrelevant that the same fitting process results in variables that could, in theory, *also* define other shapes. *See, e.g., Radio Steel & Mfg. Co. v. MTD Prods., Inc.*, 731 F.2d 840, 848 (Fed. Cir. 1984) ("[A]n accused device that contains the same feature as the patented device cannot escape infringement because in it that feature performs an additional function

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it does not perform in the patented device.”). Indeed, even the ’828 patent’s preferred embodiment—which the ALJ and all parties agree “mathematically fit an ellipse”—merely computes variables (centroid position, axes lengths, orientation) that could define shapes other than an ellipse. A628, col. 25:65-26:67; A8691-92.

Second, the ALJ believed that Apple’s construction “would ***read out*** the requirement that an ‘ellipse’ be ‘fitted’ ‘mathematically’ to the pixel groups.” A63 (emphasis added). Not so. Apple’s construction contemplates “fitting” by specifically stating that the ellipse must “approximate the shape” of the pixel group. Apple’s construction also entails the “mathematical” limitation, because it requires “computing numerical parameters,” which is a mathematical operation.

* * *

The ALJ’s finding that Motorola did not infringe the ’828 patent flowed directly from his incorrect construction of “mathematically fitting an ellipse.” Apple will prevail under its construction. [redacted]

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[redacted]

A6813, 13,706, 17,991, 19,289-90, 19,292, 30,741-43, 31,120-26. [redacted] A7135, 6162-65, 19,288-92, 30,710. Accordingly, this Court should reverse the ALJ's conclusion that Motorola did not infringe the '828 patent.[5]

CONCLUSION

For the foregoing reasons, the judgment of the ITC should be reversed and the case remanded.

[5] This appeal focuses on the threshold legal issue of claim construction. On remand, and if necessary in any subsequent appeal, Apple will address both literal and doctrine of equivalents infringement under the correct construction, as well as the ALJ's erroneous finding that prosecution history estoppel applies. *See* A145-47.

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