

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC and MOTOROLA MOBILITY LLC,
Petitioner,

v.

MULTIFOLD INTERNATIONAL INCORPORATED PTE. LTD.
Patent Owner

Case No. IPR2025-00058
U.S. Patent No. 9,158,494

DECLARATION OF RON CASSAR

I, Ron Cassar, declare as follows:

I. INTRODUCTION

1. My name is Ron Cassar. I am a Managing Partner and Cofounder of Pegmatis Inc., a world leader in product design and development. I submit this declaration to testify to my personal knowledge and involvement on the Imerj dual screen folding smartphone project, first at Flextronics (now Flex) and then at Imerj Design (a division of Flextronics) from January 2010 through January 2013. I have no financial interest in the outcome of this proceeding, in U.S. Pat. No. 9,158,494 (the “’494 Patent”), or in the outcome of any proceeding involving the ’494 Patent.

2. The Imerj smartphone project had various names such as “Imerj” and “Conquest” during development, but I will generally refer to it in this declaration by “Imerj,” which is the name the phone was ultimately marketed under, as well as the name of the Flextronics subsidiary (Imerj Design) later created to market it.

3. An example of an Imerj dual screen folding smartphone is shown below:



4. I was the Director of Software Development – Android System Services at Flextronics during the Imerj project, where I drove system architecture and development for the smartphone firmware. I was responsible for development of the Android-based software used on the Imerj smartphone.

II. THE IMERJ PROJECT

5. The Imerj project lasted approximately from 2009 through the end of 2011. During the 2010-2011 time frame, over 100 people were working full time to test and develop the Imerj smartphone. I personally managed a team of approximately 15-20 software engineers working full time developing the software

on the Imerj project during the 2010-2011 time frame.

6. I started with Flextronics around January 18, 2010. Initially I worked on other projects, but I transitioned onto the Imerj project full time within a few weeks.

7. When I arrived, the current approach made use of an operating system that was based on extensions of Android implementing a dual activity stack architecture. I was able to get windows to move on a screen using that architecture, but I redesigned the approach to use a single activity stack architecture. The single stack architecture was adopted, and would be used throughout the Imerj project. I implemented the single stack architecture within the first three or four months of 2010.

8. Exhibit 2031 is an email titled “Multi tasking designs” I received from Paul Reeves on April 5, 2010 requesting to “meet tomorrow to see where we are with the two multi-tasking designs.” The “two multi-tasking designs” are the single stack and dual stack architectures. At that meeting, we would decide to recommend the adoption of the single stack architecture and abandon the dual stack architecture. The recommendation was taken to Rod Schrock (the overall project sponsor) who agreed.

**A. Conception of Minimization and Maximization Applications In
Dual Portrait Mode**

9. The gesture functionality implemented in the Imerj smartphone was defined by Sanjiv Sirpal and his team. Sanjiv led the user experience team for the Imerj project. The user experience team was responsible for defining how the displays should behave and what functions would be performed by particular gestures. Sanjiv came up with the concept of minimizing and maximizing apps in dual portrait and dual landscape modes.

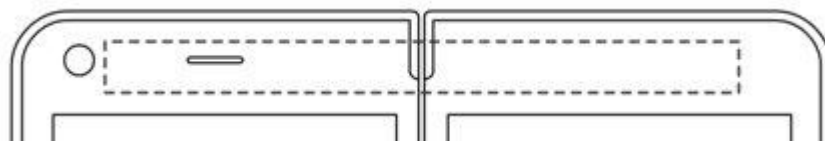
10. I directed implementation of the gesture functionality in the Imerj software based on specifications provided by Sanjiv. It was one of the first things I worked on at Imerj, and some of the gesture capability was available in the earliest prototypes. Sanjiv and his team provided specifications and helped ensure that the software met the specified functionality. From the beginning, I was confident we could develop a device that would work for its intended purpose based on the specifications provided by Sanjiv Sirpal.

11. I have reviewed Exhibit 2006 [UXOverview]. This document is titled “UX Foundation Overview” and was authored by Sanjiv Sirpal. It is dated November 18, 2010. This document is a PowerPoint presentation specifying certain functionality relevant to the user experience on the Imerj smartphones.

This document is typical of the requirements work Sanjiv was doing.

12. The presentation describes basic functionality of the Imerj dual screen phone, including with respect to gesture operations such as minimizing and maximizing apps in dual portrait mode on the Imerj smartphone and moving applications between windows. This document confirms my recollection that Sanjiv came up with the idea for the gesture functionality at issue here—including dual screen applications with parent/child relationships, minimization, and maximization functionality, and moving windows from one screen to another—no later than November 18, 2010.

13. For example, the presentation discusses that the dual screen handset includes a gesture strip across the top of the device shown by the dashed box in the figure below. *Id.*, 30, 31. This strip can be used for gesture input by a user to navigate through applications running on the device.

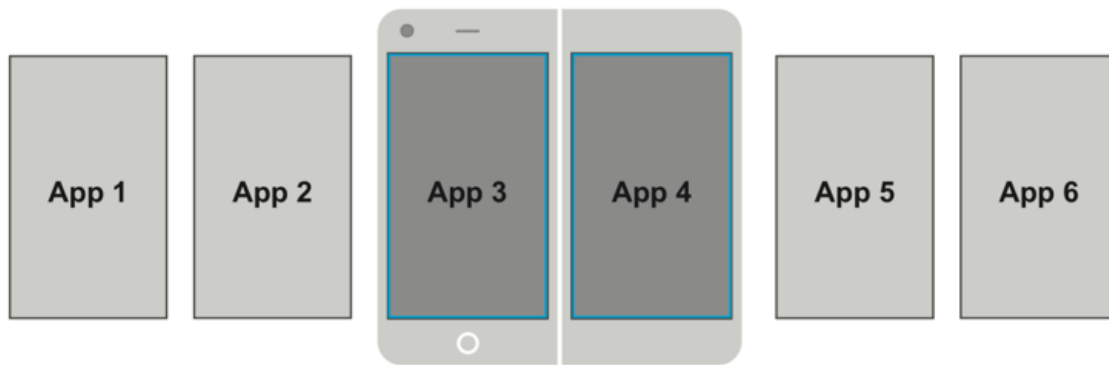


Id. at 30.

14. The presentation describes that the Gesture Strip supports “Drag,” “Flick” and “Long Drag” and “tracks the gestures that are used to” “Move,” “Maximize,” and “Minimize.” *Id.*, 30. The presentation explains that the

Gesture Strip “[p]rovides the ability to navigate through the applications running on the handset.” *Id.*

15. The slide deck further describes WPC operations including “Application Shuffling” and explains that applications “can be shuffled by dragging a finger across the gesture region. Applications will ‘move’ along with the users fingers”:



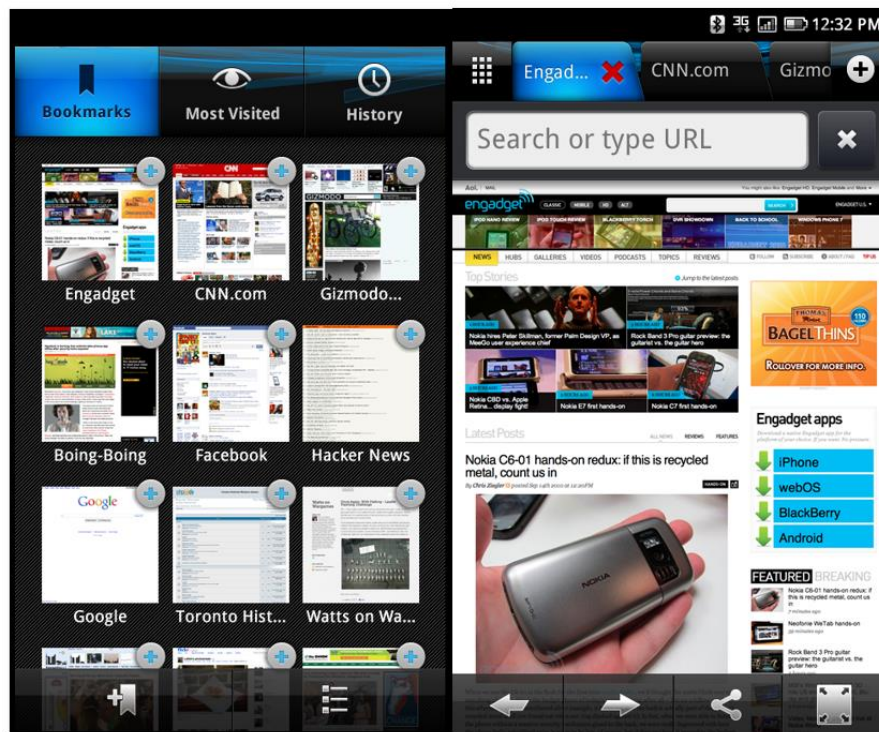
Id., 31.

16. The slide deck explains that “[w]hen new applications are launched, they insert themselves into the screen they were launched from. The previous application is not replaced, merely pushed out of view.” *Id.*, 31. The slide deck also describes “[d]ual screen capable applications” that “will first maximize, and then minimize.” *Id.*, 31.

17. Examples of such dual screen capable applications are provided

including a dual screen capable (or “Portrait Dual Screen” capable) internet browsing application:

Portrait Dual Screen



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Id., 79. The example above shows the internet browser in dual screen mode, with a parent page showing browser content (in this case, the webpage for Engadget) and the child page showing bookmarks for the browser. This document confirms my recollection that Sanjiv came up with the concept of minimizing and maximizing apps in dual portrait mode on the Imerj

smartphone, as well as moving applications between windows.

18. My recollection is that Sanjiv likely conceived of this functionality earlier than November 18, 2010. As discussed above, I was implementing basic gesture functionality in the spring of 2010. As discussed below, the parent/child functionality was implemented in working prototypes shortly after November 18, 2010—by December 2010. And my Project Plan (discussed below) lists work on the Minimize and Maximize Dual Display Application Transition Controllers as starting on September 3 and September 6, 2010. Exhibit 2033 [Project Plan], rows 55 and 56. We would not have started work implementing the minimization and maximization of dual screen portrait mode discussed in Exhibit 2006 [UX Foundation Overview] before receiving the design specification from Sanjiv and his team.

B. Reduction To Practice

19. There were many different gesture functionalities implemented in the Imerj smartphone and related tablet and laptop products. The functionality I understand is relevant here is dual portrait mode maximization and minimization. That is, displaying a parent application page in one display and a child application page in a second display. This functionality was added to Imerj EV-1 and EV-2 prototypes no later than December 2010 (EV-1) and January

2011 (EV-2).

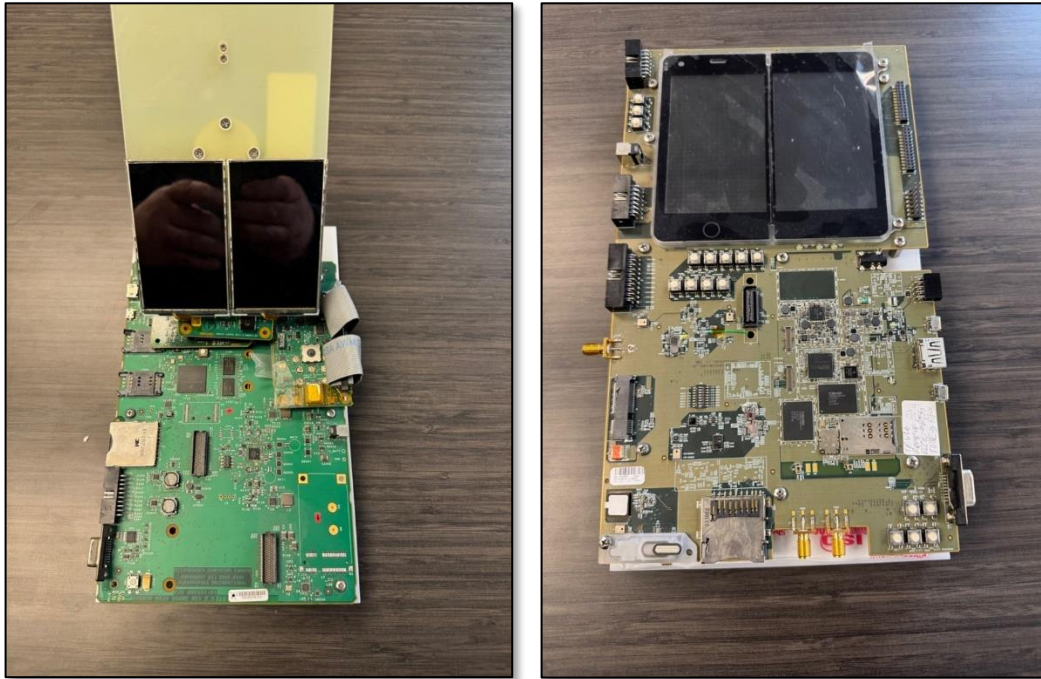
20. I recall at least the basic sliding functionality and window movement were operational in dual portrait mode in the spring of 2010 on the dev kits discussed below. The ability to move an application from one display to another had been implemented around this time. I recall this in part because I hired John Visosky as a member of my team in the spring of 2010 and I had already implemented that functionality in the software by the time he arrived.

21. From early 2010 through fall 2010 we tested the software on what we referred to as “dev kits.” The dev kits consisted of individual components of a phone connected to a bread board. The early-2010 dev kits had a single screen that simulated dual screen functionality on a single screen. A photo of an early single-screen dev kit is shown below:



Exhibit 2014.

22. Later-2010 dev kits implemented two screens to mimic the Imerj smartphone. Later-2010 dual screen dev kits are shown in the photos below:



Exhibits 2015, 2016. We were using these dev kits to test software functionality from early 2010 through fall of 2010. Basic gesture functionality was enabled on these dev kits.

23. In October and November of 2010, we manufactured EV-1 prototypes and installed the Imerj software I and my team had developed. A photo of an EV-1 prototype from 2010 is shown below:



Exhibit 2017.

24. In January of 2011, we manufactured EV-2 prototypes that had installed the Imerj software I and my team had developed. This software enabled the relevant gesture functionality (e.g., minimizing and maximizing apps in dual portrait mode on the Imerj smartphone) on the prototype. A photo of an EV-2 prototype is shown below:



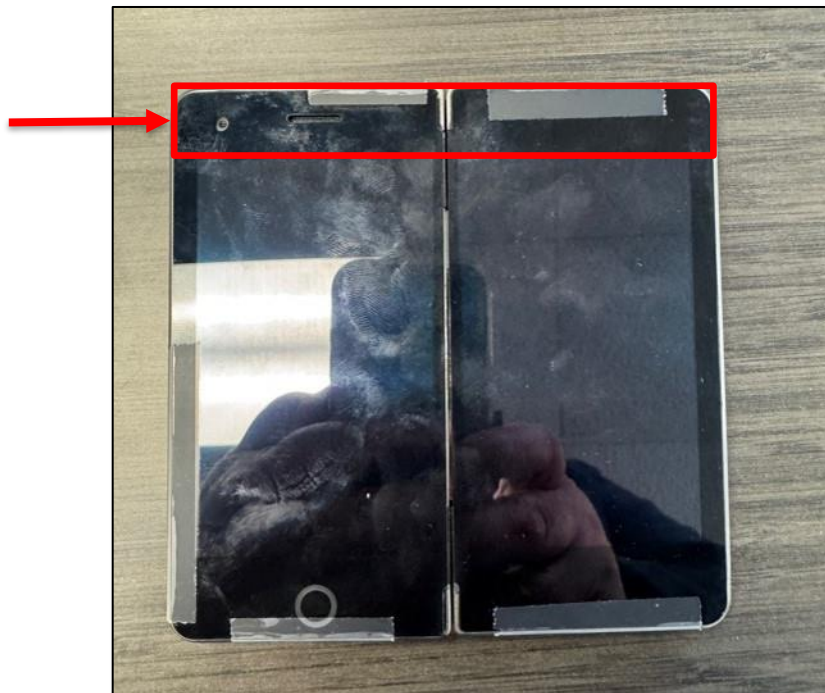
Exhibit 2018.

25. The gesture functionality of minimizing and maximizing apps in dual portrait mode on the Imerj smartphone was implemented in Imerj smartphones at least as early as the EV-1 (around December 2010) and EV-2 (January 2011) prototypes. The gesture functionality of swapping screens was developed much earlier and was also present in the EV-1 and EV-2 prototypes as of these dates.

26. The Imerj dual screen smartphone had a touch screen and a gesture capture region. Gestures on Imerj devices were performed on the gesture capture region. The gesture capture region of the Imerj devices was at the top of the

device when the device was in portrait mode. In the example Imerj EV-2 dual screen smartphone below, the gesture capture region is outlined in red:

**Gesture Capture
Region**



27. The gesture functionality in the Imerj dual screen smartphones was part of what we referred to on the project as Window Position Controls, or “WPC,” during the project. WPC includes the Imerj gesture functionality in general, as well as other inputs and interactions that could collectively affect how the user could interact with the phone, including orientation, open/close state, what type of application was visible and docking state (phone dock, tablet, laptop).

28. Imerj gesture functionality could display a child application page on one display and a parent application page on the second display, and then

minimize the child page with a gesture. Examples of this parent-child relationship include a web browser on one screen and bookmarks on the second screen, or an email inbox on one screen and an individual email on the other screen. A gesture to do this was to put a finger on the gesture capture region for the first display (with the child page) and then performing a long drag toward the second display.

29. When an application page was minimized, the display would then either display the desktop or a second application, if a second application were previously open and placed on the display. The application page could be re-maximized using the long drag discussed above, and the process of maximizing and minimizing the child display could be repeated indefinitely.

30. Exhibit 2034 [Re: Parent/Child] is a true and correct copy of an email I received on December 1, 2010 from Stanley Kurdziel. Stanley Kurdziel is responding to an email from Paul Reeves earlier that day. Paul Reeves was the VP of Applications and Systems Software on the Imerj Project. Paul Reeves stated “I understand that ParentChild may have been added to the framework.” *Id.* This time frame would have predated the EV-2 release, so Paul Reeves is referring to functionality on an EV-1 prototype. This is consistent with my recollection that dual screen parent/child functionality was implemented on EV-

1 prototypes no later than December 2010.

31. Exhibit 2035 [Heads Up – Meeting in Europe Next Week] is a true and correct copy of an email I received from Rod Schrock on January 12, 2011. Rod Schrock was the general manager of the Conquest/Imerj project. Part of his job was demoing the product for potential customers or partners. He was not involved with the technical development of the Imerj smartphone, but would review its functionality for purposes of keeping the project on schedule and demoing to potential customers and partners.

32. In the email, Rod Schrock states that he is “meeting with Vodaphone and CPW in Europe next week.” *Id.* Rod Schrock was demoing the Imerj smartphone to telecommunications companies sometime during the week of January 17, 2011. Vodaphone and CPW are companies we hoped would buy or distribute the Imerj smartphone. The demo units here were probably EV-1 units because EV-2 units were just being released and would need at least a few weeks of testing before demoing to potential customers and partners.

33. The email states that “Showcase system software will be Visual Multitasking (wpc) and App Manager. The showcase applications will be phone, email, browser, calendar.” *Id.* We would not have showcased WPC capabilities (e.g., gesture functionality) for the phone, email, browser, and calendar apps at

a demo for potential customers and partners if these features were not functioning for their intended purpose.

34. The email goes on to state “[w]e now have landscape WPC working so all apps should be optimized and verified to work well in this mode. It is really cool and could be the preferred mode of operation on the Smartpad.” *Id.* This confirms that WPC functionality worked on the Imerj smartphone in landscape mode as of January 12, 2011. The “Smartpad” is a tablet product that was being developed in conjunction with the Imerj smartphone. The Smartpad was essentially a tablet shell that the Imerj smartphone could plug into. The Imerj smartphone had the CPU and memory that operated the Smartpad. The Imerj smartphone had to support landscape and portrait modes on the Smartpad, in addition to modes on the smartphone.

35. While the email stated landscape “could be the preferred mode of operation on the Smartpad,” landscape mode was the secondary mode for the Imerj dual screen smartphone. Portrait mode was the primary mode for the Imerj dual screen smartphone. WPC was implemented in landscape mode on the smartphone after WPC was already working in portrait mode. Again, this indicates that the EV-1 prototype was operating in dual screen portrait mode for at least the phone, email, browser, and calendar apps.

36. Exhibit 2032 [Updated Project Plan] is a true and correct copy of an email I sent to my team members on January 14, 2011. The email attaches a pdf titled “SSA Project Plan (2011-01-13)”. Exhibit 2033 [SSA Project Plan (2011-01-13)]. The document is a true and correct copy of a Microsoft Project document I authored listing the Imerj project progress. *Id.* The third column of the document is “% Complete.” *Id.* At row 44, is a row titled “WPC.” *Id.* Rows 45-70 list various WPC functions, including, starting at line 49, Gestures. Every row from row 49 through row 70 lists “100%” in the “% Complete” column. *Id.* This confirms my recollection that the gesture capability necessary to support the relevant gesture functionality (minimization and maximization and parent/child relationships) was complete well before February 10, 2011.

37. Row 55 is “Minimize Dual Display Application Transition Controller.” *Id.* It is listed as 100% complete. *Id.* The listed completion date is “11/26/2010.” *Id.* This is consistent with my recollection. As of November 26, 2010, the screen minimization functionality in the Imerj dual screen phone was 100% functional.

38. Row 56 is “Maximize Dual Display Application Transition Controller.” *Id.* It is listed as 100% complete. *Id.* The listed completion date is “11/26/2010.” *Id.* This is consistent with my recollection. As of November 26,

2010, the screen maximization functionality in the Imerj dual screen phone was 100% functional.

39. Row 66 is “Integration with Parent / Child Infrastructure.” *Id.* It is listed as “100%” complete. *Id.* The listed completion date is “11/22/2010.” *Id.* This is consistent with my recollection. As of November 22, 2010, the parent/child functionality in the Imerj dual screen phone was 100% functional.

40. Exhibit 2036 [Conquest Software Review] is a true and correct copy of an email I received on January 17, 2011 from Rod Schrock. The email is discussing “an ad hoc multi-hour review of our handset” and “the verdict is ... the software user experience is remarkable! It is simply more powerful than any alternative.” This confirms my recollection that the software was fully functional for its intended purpose by January 17, 2011.

41. Exhibit 2036 [Conquest Software Review] also states “Soon everyone will have EV2 units to evaluate our user experience” and that “Factory is entering higher volume EV2 builds tomorrow.” These quotes confirm my recollection that EV-2 prototypes were released in January 2011. This email indicates, consistent with my recollection, that as of January 17, 2011, at least some project members already had working EV-2 prototypes and that more were on the way.

42. Exhibit 2037 [EV2-Whole Lotta Use Case Refinement Needed] is a true and correct copy of an email I received from Rod Schrock on January 25, 2011. It states “The EV-2 units are now relatively functional smartphones.” *Id.* While the email discusses several glitches and “use case refinement,” this is to be expected as we only had EV-2 prototypes for a week or two before this email. The email goes on to state that “[i]t’s kind of cool to be turning to the refined user experience stage of our design.” *Id.* This indicates that, as of January 25, 2011, the EV-2 prototypes were functional and testing was turning toward refining and improving the user experience rather than basic functionality of the phone.

43. Exhibit 2038 [Conquest Project Update] is a true and correct copy of a January 28, 2011 email I received from Rod Schrock. This is an email discussing test and development on EV2 handsets. At the first bullet point, the email states that “We now have 200 EV2 handsets in distribution and will soon have an additional 300.” *Id.* This is consistent with my recollection that EV-2 smartphones were manufactured in January 2011. At this stage, we had just received the EV-2 units over the prior couple of weeks. Note that the purpose of these EV-2 handsets was for testing the smartphone and resolving any hardware or software issues. As of January 28, there were approximately 200 EV-2 units

being tested every day with 300 more on the way.

44. The third bullet point states that “Sean and I met with our target U.S. operator on Monday with quite favorable results.” This indicates that the EV-2 prototypes had been shown to a potential customer with favorable results as of January 28, 2011.

45. The fourth bullet point states that “Dual displays are now working on kernel 35 for the first time! It is with this kernel that we are going to declare Alpha system software complete.” *Id.* To put this in context, the kernel is the core of the smartphone operating system. Dual displays had worked for several months on EV-1 prototypes using earlier software kernels. However, we had to update older software kernels to work with the new EV-2 prototypes we had just received. Kernel 35 is the kernel that we moved forward with for the Alpha version of our software. At this stage, the software worked for its intended purpose of performing minimization and maximization in dual portrait mode.

46. The fourth paragraph lists “three straight-forward goals for this quarter.” *Id.* These goals relate to improving performance to “acceptable EV2 quality standards,” system reliability testing, and improving user responsiveness. *Id.* These are examples of work being performed through first quarter 2011.

47. The sixth paragraph states “[r]egarding system reliability, we start

extensive testing in Beijing, Toronto and numerous outsourced US testing facilities during the month of February.” *Id.* This is consistent with my recollection that, starting in February 2011, numerous employees and contractors at various facilities were “extensive[ly] testing” the system reliability of the EV-2 prototypes. *Id.*

48. Paragraph 7 states that “we have initiated a full suite of handset performance tests compared to the Google Nexus S. January was spent putting the test plans and infrastructure in place to test in consistent, repeatable fashion. February and beyond will focus on design improvements to optimize user responsiveness.” *Id.* This is consistent with my recollection that significant, continuous testing and development was taking place throughout the first quarter of 2011.

49. Exhibit 2039 [Strategic Product Team Goals – 1Q 2011.ppt] is a true and correct copy of the PowerPoint slides attached to the January 28, 2011 email I received as Exhibit 2038 [Conquest Project Update]. The presentation restates the Q1 2011 goals discussed in Exhibit 2038 [Conquest Project Update].

50. I have reviewed Exhibit 2007 [Tiger Teams Kick-Off]. Exhibit 2007 [Tiger Teams Kick-Off] is a Power Point slide deck titled “Tiger Teams UX Polish.” The first page is dated February 18, 2011 and states “UX Polish.”

The term “UX” refers to user experience. The term “Polish” refers to refinement that is done on mature products that have core functionality already implemented and already tested to show they work for their intended purpose. Consistent with my recollection that gesture functionality had already been implemented, the term “Polish” indicates that core functionality like gesture functionality was already implemented and functioning in the EV-2 prototypes that had been tested sufficiently to establish they worked for their intended purpose, including minimizing and maximizing between portrait dual display and portrait single display.

51. Page 3 of Exhibit 2007 [Tiger Teams Kick-Off] lists eight different testing teams directed to different parts of the project such as “Device Rotation / Orientation” and “WPC.” As discussed above, WPC was the Window Position Controls software components responsible for providing gesture functionality. The Tiger teams were assigned to have some testing working with a developer to rapidly test and solve issues. The implementation was complete at this state.

52. Page 4 of Exhibit 2007 [Tiger Teams Kick-Off] lists the individuals assigned to each of the eight Tiger Team testing teams. There are approximately 40 people listed. The 40 or so members of the “Tiger Team” were not the only people testing the phone in this period. Instead, they are a group that was trying

to identify issues a user could experience during normal operation. Other employees and contractors were simultaneously testing the smartphones and resolving any issues identified. For example, though I am not listed as a member, I was responsible (together with my team) for resolving many of the issues identified. In addition, there was a QA team whose full time job was making sure that the Imerj dual screen smartphones met all specifications. Some of those QA team members are shown in blue on Page 4 of Exhibit 2007 [Tiger Teams Kick-Off].

53. Page 5 discusses the Tiger Team testing process. *Id.*, 5. It states that “UX lead delegates the daily EV2 build install for a specific time of the day using a EV2 from the one of the Tiger team members.” This confirms my recollection that testing and refinement was being performed on EV-2 prototypes using new software builds installed every day from at least late January through February 2011.

54. Page 6 states that the purpose of Tiger Teams was to “Identify all issues and prioritize the TopTen Usability issues for your team.” *Id.*, 6. This confirms that the purpose of the Tiger Team was to refine and test the new EV-2 prototypes to identify issues, prioritize issues, and resolve those issues. JIRA was software used for issue tracking. The database contained daily reports over

the life of the Imerj project.

55. I have reviewed Exhibit 2008 [Feb22_TigerTeamsToronto]. Exhibit 2008 [Feb22_TigerTeamsToronto] is a Power Point slide deck that, consistent with my recollection, shows issues identified during testing with the Imerj EV-2 smartphone prototypes over the course of January and the first part of February 2011. It shows identification and resolution for issues identified from January 26, 2011 through February 22, 2011. I am named as the Assignee for many of these issues, including each of the issues listed for WPC. *Id.*, 4. That means when issues were assigned to me, I would re-assign individual issues to my team members usually based on who I thought would be the best to resolve the issue. The assigned team member would then resolve the issue.

56. The issues listed in Exhibit 2008 [Feb22_TigerTeamsToronto] are not all of the issues being tested. There were thousands of different tests being performed on the EV-2 prototypes every day during January and February 2011, many of which did not result in issues or resulted in minor issues. This document only lists the top issues identified during the testing.

57. The issues listed in Exhibit 2008 [Feb22_TigerTeamsToronto] are examples of “polishing” issues and corner cases suggested by Exhibit 2007 [Tiger Teams Kick-Off]. For example, page 4 is titled “WPC – Top Ten.” Exhibit

2008 [Feb22_TigerTeamsToronto]. The issues listed include “WPC gestures on capacitive strip still work in lock screen for dual screen applications” and “WPC Maximization and Scrolling graphics performance is very choppy on K35.” *Id.*,

4. These are the type of refinement and corner case issues that I would expect to see during the polishing process. In addition, these issues indicate that “gesture” and “maximization” already functioned in January and February 2011 when the testing in this document was being performed. This is consistent with my recollection that gesture functionality was supported early in the Imerj development process.

58. Had issues with basic functionality, like maximizing or minimizing applications, or moving applications between screens, been assigned to me in January 2011, I would have flagged them “Top 10” issues for WPC. Those sorts of issues would be much more critical than the issues listed at page 4 of Exhibit 2008 [Feb22_TigerTeamsToronto]. Had any of those issues still existed in February 2011, they would have been listed here. The fact that they were not and the testing here is directed to “UX Polish” indicates that gesture functionality was already operational as of January 2011.

59. I have reviewed Exhibits 2040 – 2087. Exhibits 2040 – 2087 are true and correct copies of reports emailed to me and generated by JIRA, the

project management software the Imerj project used to track and resolve software development issues. These documents are a few samples of the many thousands of reports generated over the course of the Imerj project on a daily basis as software issues were logged and resolved. Reports were generated based on various actions, such as team members logging issues, me assigning issues to software engineers to resolve, and closing the report when the issue was resolved. These records were generated and stored as part of regular conducted business on the Imerj project.

60. Exhibits 2040 – 2087 demonstrate substantial testing was being performed from October 2010 through February 22, 2011, as well as daily diligence from late January through February 22, 2011. Many of the JIRA reports were generated by me. I was personally working on or managing the development and testing of the Imerj software on a daily basis from October 2010 through February 2011.

61. The number on the JIRA Report indicates the sequential number of cases that had been opened in JIRA for my department alone (SSA stands for single stack architecture). So for example, JIRA SSA-1430 was created on February 11, 2011. Exhibit 2079 [JIRA SSA-1430]. That indicates that it was the 1,430th JIRA case opened. JIRA SSA-709 was opened on November 19,

2010. Exhibit 2047 [SSA-709 created]. That indicates between November 19, 2010 and February 11, 2011, approximately 721 JIRA cases (roughly 8-9 cases per day) were opened to resolve software issues. Similarly, I reassigned JIRA SSA-1567 to John Visosky on February 22, 2011. Exhibit 2069 [JIRA SSA-1567]. That indicates that at least 137 JIRA cases had been opened from February 11 (when JIRA SSA-1430 was opened) to February 22, 2011 (roughly 11-12 per day).

62. Exhibits 2040 and 2041 [JIRA SSA-1057] show an example of how JIRA was used. This issue was created by Fuzhuo (Luke) Sun on December 20, 2010. Exhibit 2040 [SSA-1057 created]. Luke Sun was a member of our QA team. The issue logged was “WPC: view is not expanded to cross both screens when maximize [parent/child] dual screen application in LD [landscape] mode.” *Id.* I was unable to reproduce the issue when I independently tested for the issue (“Resolution: Cannot Reproduce”) and reassigned it to Luke Sun. Exhibit 2041 [SSA-1057 closed]. Luke Sun was also unable to reproduce the issue and closed it on February 22, 2011. *Id.* This example confirms that parent/child functionality was generally working correctly in Landscape mode. Landscape parent/child functionality is a higher or more mature level of functionality than portrait mode, thus confirming my recollection that portrait mode parent/child

functionality was already implemented and working correctly.

C. Functionality of the Imerj Dual Screen Smartphone Prototypes

63. EV-1 and EV-2 prototypes were folding smartphone prototypes with two screens. Two different pages of the same application (e.g., a primary page and an auxiliary page that is a child of the primary page) could be opened/displayed on the two different screens. A user input (gesture) can minimize the application to just one of the screens with the primary page remaining open/displayed on that one screen and the child page no longer being displayed on either screen.

64. For example, the EV-1 and EV-2 prototypes both permitted two pages from an application (e.g., an email inbox and a selected email in the inbox, or a web browser page and bookmarks page) to be open on two different screens at the same time in dual portrait mode. *Supra*, ¶¶ 28-29; Exhibit 2006 [UX Overview], 9, 12, 30, 35; Exhibit 2033 [SSA Project Plan], 1; Exhibit 2034 [RE_parent_child]. This was referred to as “maximizing” the dual portrait mode. Exhibit 2006 [UX Overview], 30, 35. Maximizing could be performed by first opening a dual screen capable application (on a single screen) by clicking on the application in the desktop, and once the application was open on a display the user could then perform a long drag across the gesture bar from the open

application page toward the other screen to open the second page of the application.

65. The EV-1 and EV-2 prototypes allow a user input to minimize the auxiliary or child page (e.g., the specific selected email) while the primary or parent page (e.g., the email inbox) remains open on one of the two screens by performing a long drag moving toward the opposite screen. *Supra*, ¶¶ 28-29; Exhibit 2033 [SSA Project Plan], 1; Exhibit 2034 [RE_parent_child]. This could be performed, for example, in the browser, gallery, or email applications. The EV-1 and EV-2 prototypes allow a user gesture input to minimize the auxiliary or child page of the browser application (bookmarks page) while the primary or parent page (web browser page) remains open on one of the two screens by performing a long drag moving toward the opposite screen. *Id.*

66. Dual portrait mode minimization and maximization was available for certain applications that were designed to support the functionality. These included at least the email, web browser, phone dialer and gallery, each of which had auxiliary/primary relationships with minimization functionality.

67. EV-1 and EV-2 were devices where user inputs could be received in a “gesture capture region” of the phone. The EV-1 and EV-2 prototypes had a gesture capture bar running across the top of both screens. *Supra*, ¶¶ 26-29;

Exhibit 2017 [EV-1 Photo], Exhibit 2018 [EV-2 Photo], Exhibit 2006 [UX Overview], 15, 30. The user could minimize a screen by performing a drag gesture. For example, swiping on the gesture capture bar for the parent page of a dual screen application such as email or browser toward the child page would minimize the child page.

68. The EV-1 and EV-2 prototypes were devices where a second application could be displayed on the screen where the child application had just been minimized from. For example, when an email (or browser) window is minimized, the EV-1 and EV-2 screens would then either display the desktop or a second application, if a second application were previously open and placed on the display. *Supra*, ¶29.

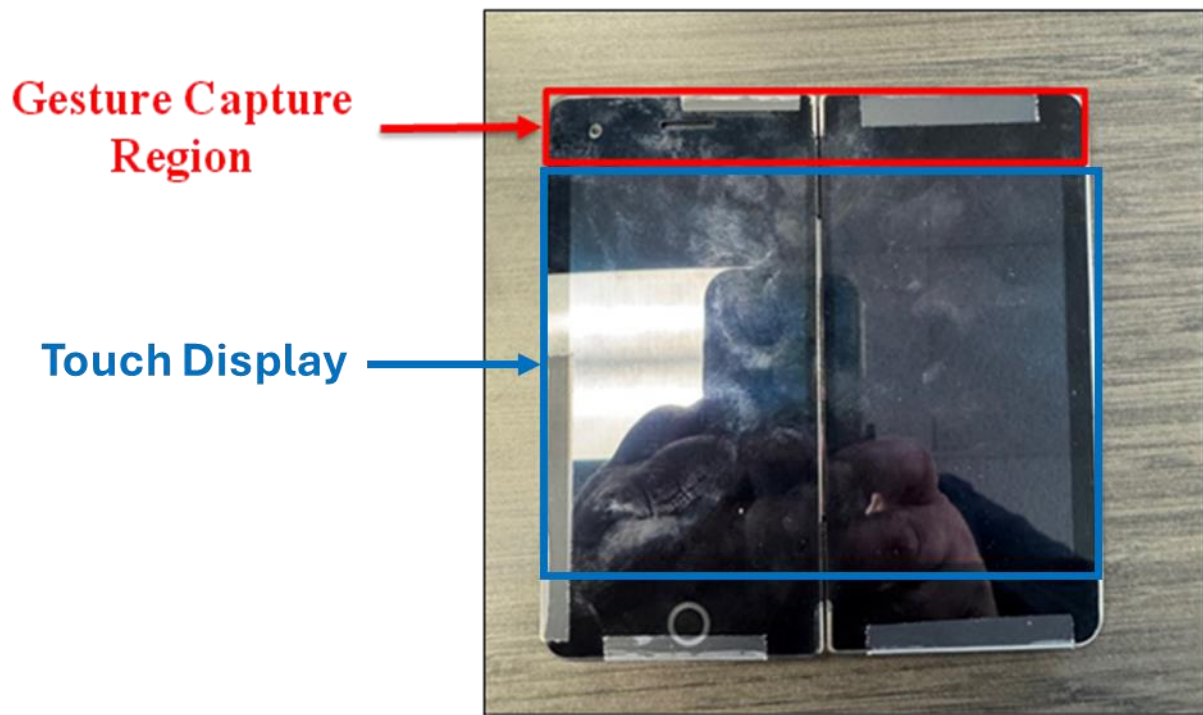
69. The EV-1 and EV-2 could be in dual portrait mode and receive a first input that is a gesture from the side of a left display moving toward the right display. This is essentially the long drag gesture described above to minimize a page. To minimize a child application window (e.g., email, web browser, etc.), the user could drag the gesture capture bar for the display with the child page, moving their finger toward the other display. EV-1 and EV-2 prototypes had this functionality. *Supra*, ¶26-29; Exhibit 2033 [SSA Project Plan], 1; Exhibit 2034 [RE_parent_child].

70. The EV-1 and EV-2 prototypes could receive a second input that maximizes an application across both display screens. In this context, maximizing means maximizing both pages of the application so that the first page (the child page) is presented on the first display and the second page (the parent page) is present on the second display. That is, restoring the child or auxiliary page to its original open position. This is the same maximization functionality discussed above. *Supra*, ¶29. Maximizing and minimizing the dual portrait mode could be repeated indefinitely on EV-1 and EV-2 prototypes. *Id.*

71. The EV-1 and EV-2 could take an input from the user dismissing the first page, with either a desktop or first page of a second application being displayed on the first display. As discussed above, when an application page is minimized, the display then shows either the desktop or a second application, if a second application had been previously opened on the display. *Supra*, ¶29. Technically, the second application that would display would be the next lower application in the activity stack that had been assigned to that display.

72. EV-1 and EV-2 prototypes had two displays, with each display having a touch display and gesture capture region. Exhibit 2017 [EV-1 photo], Exhibit 2018 [EV-2 photo]. Each display had a gesture capture region along the top of the display and a touch display encompassing most of the display below

the gesture capture region. The photo below is an EV-2 prototype with the gesture capture region annotated in red and the touch display region annotated in blue:



73. EV-1 prototypes had the same layout of Gesture Capture Region and Touch Display.

74. The EV-1 and EV-2 prototypes both had processors and memories, as well as programming stored in the memory that allowed for touch and gesture inputs. I was responsible for developing and managing the development of the firmware that provided the operating system on the phone and this included the

WPC functionality, which included touch and gesture programming.

75. On the EV-1 and EV-2 prototypes, a first display can show a child page of an application and the second display can show a parent page of the same application. This was present on the EV-1 and EV-2 prototypes for the reasons discussed above. *Supra*, ¶28. For example, the email application would open the email inbox (parent) on the left display and then a selected email (child) could be opened on the right display. For the web browser, the reverse was true. The parent (web browser) would display on the right display when the child (bookmark page) was opened. The bookmark page would open on the left display.

76. The EV-1 and EV-2 prototypes had the ability for user input to minimize a parent application page while the child application remained maximized. One example I recall is modal views in the child page. These are, for example, when a prompt is triggered on a child page (such as entering a password or entering an email address) that require user input before proceeding. Examples are discussed at Exhibit 2006 [UX Overview], 51-55. In these cases, any minimization action will result in the parent page minimizing. *Id.*, 53. This modal functionality was part of the “Minimize Dual Display Application Transition Controller” task at row 55 of my Project Plan. Exhibit 2033 [Project

Plan], row 55. As discussed above, this task was 100% complete by November 26, 2010.

77. As another example, when opened, the photo gallery application opens to a page showing different photo galleries. This page acts as the parent and is shown on one of the displays of the device. When a photo gallery is selected, a second app page will show thumbnails of the photos with-in the selected gallery. This second app page serves as the child page and is shown on the other display of the device. Upon attempted minimization of either page (through a long drag gesture), the parent page (showing the photo galleries) will minimize and the child page (showing thumbnails) will remain. The parent page can then be maximized by a maximize gesture such as performing a long drag from the child page toward the screen that the parent had been open on.

III. CONCLUSION

78. In signing this declaration, I recognize that the declaration will be filed as evidence in a contested proceeding before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross-examination in the proceeding and that cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination within the United States

during the time allotted for cross-examination.

79. I reserve the right to supplement my testimony in the future to account for new information as it becomes available to me.

80. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed on this 27th day of February, 2025, in Seabrook Island, South Carolina.

Ron Cassar

Ron Cassar