

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MAPLEBEAR INC. D/B/A INSTACART,
Petitioner,

v.

FALL LINE PATENTS, LLC,
Patent Owner.

Patent No. 9,454,748
Filing Date: October 22, 2010
Issue Date: September 27, 2016
Title: SYSTEM AND METHOD FOR DATA MANAGEMENT

Inter Partes Review No.: IPR2025-00958

**DECLARATION OF DR. HENRY HOUH IN SUPPORT OF PETITION
FOR *INTER PARTES* REVIEW OF U.S. PAT. NO. 9,454,748**

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I, Dr. Henry H. Houh, declare that I have personal knowledge of the facts set forth in this declaration and, if called to testify as a witness, could and would do so competently.

I. INTRODUCTION

1. I have been retained as an expert witness on behalf of the Petitioner, Maplebear Inc. d/b/a Instacart (“Instacart”), for the above-referenced *inter partes* review proceeding.

2. I have been asked to provide a declaration with my opinions regarding certain matters pertaining to the patentability of U.S. Patent No. 9,454,748 (“the ’748 Patent”). I understand that the ’748 Patent is owned by Fall Line Patents, LLC (“Patent Owner”).

3. I am being compensated at my usual consulting rate for my work on this matter. My compensation is in no way dependent upon my opinions or testimony or the outcome of this proceeding. I have no financial interest in the parties or in the outcome of this proceeding.

II. PROFESSIONAL BACKGROUND AND QUALIFICATIONS

4. My complete qualifications and professional experience are described in my *Curriculum Vitae*, a copy of which can be found in Exhibit 1003. The following is a brief summary of my relevant qualifications and professional experience.

5. I received a Ph.D. in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology (“MIT”) in 1998. I also received a Master of Science degree in Electrical Engineering and Computer Science in 1991, a Bachelor of Science degree in Electrical Engineering and Computer Science in 1989, and a Bachelor of Science degree in Physics in 1990, all from MIT.

6. I am currently self-employed as an independent technical consultant. I am also president of a company, Einstein’s Workshop, that provides supplemental science, technology, engineering, and mathematics (“STEM”) education to children of all ages.

7. I first entered the fields of computer networking and telecommunications in 1987 when I worked as a summer intern at AT&T Bell Laboratories as part of a five-year dual degree program at MIT. I continued to work at AT&T Bell Laboratories as part of this MIT program. While at MIT, I was a teaching assistant (“TA”) in the Electrical Engineering and Computer Science Department’s core Computer Architectures course. I first was a TA as a senior for a role typically reserved for graduate students. I later became head TA. The course covered various topics in computer architectures, as well as programming. As a TA, I helped write homework assignments, lab assignments (including those that involved programming), and exams. I also taught in the recitation sections.

8. Later, as part of my doctoral research at MIT from 1991-1998, I was a research assistant in the Telemedia Network Systems (“TNS”) group at the Laboratory for Computer Science. The TNS group built a high-speed gigabit computer networks and created applications that ran over the network. Example applications included ones for remote video capture, processing, and display of video on computer terminals. In addition to working on the design of core network components, designing and building the high-speed links (which included programmable logic devices), and designing and writing the device drivers for the interface cards (which included programmable logic devices), I also set up the group’s web server. Also, I helped to maintain, install, and upgrade the networking devices used within the group, along with other graduate students.

9. I also helped to build the web pages that initiated the above-mentioned video sessions via a web interface. Vice President Al Gore visited our group in 1996 and received a demonstration of—and remotely drove—a radio-controlled toy car with a wireless video camera mounted on it that was built by our group. Using a network-based application, this toy car device received commands transmitted over a network from a remote computer, and video data from the toy car was transmitted wirelessly then over a computer network back to the user controller. On occasion, we allowed users visiting our web site to drive the toy car from their remote computer, over a network, while they watched the video on their computer. The

video stream was encoded by TNS-designed hardware, streamed over the TNS-designed network, and displayed using TNS-designed software. We interfaced to the car's remote controller via a computer's serial port. Similarly, I also have experience interfacing programmatically with other devices via the serial port, such as an external GPS device, using an API for example, to retrieve GPS data.

10. I defended and submitted my Ph.D. thesis, titled "Designing Networks for Tomorrow's Traffic," in January 1998. As part of my thesis research, I analyzed local area and wide area flows to show a more efficient method for routing packets in a network, based on traffic patterns at the time. The traffic flow data included Ethernet, IP, TCP or UDP, and RTP header information, which I analyzed to come to the conclusions in my thesis.

11. From 1997 to 1999, I was a Senior Scientist and Engineer at NBX Corporation, a start-up that made business telephone systems for streaming packetized audio over data networks instead of using traditional telephone lines. NBX was later acquired by 3Com Corporation.

12. As part of my work at NBX, I designed the core audio reconstruction software algorithms for the telephones, as well as the packet transmission algorithms. I also designed and validated the core packet transport protocol used by the phone system. The protocol was used for all signaling in the phone system, including for the setup of conference calls. The NBX system also featured a

computer interface for initiating phone calls, which could also initiate conference calls. The NBX system also supported the Telephony Application Programming Interface (“TAPI”) that allowed other computer programs to integrate with our system telephony features. We obtained U.S. Patent No. 6,967,963, entitled “Telecommunication method for ensuring on-time delivery of packets containing time-sensitive data,” as part of this work. I also programmed the first prototype of our phone which communicated using IP, and I demonstrated our IP phones working over the Internet when we attended a trade show in California. The phone connected over the Internet to our headquarters in Andover, MA. I also programmed a data capture and analysis system that provided data on the operation of the system. While the NBX’s system’s telephones were initially used only over a wired connection, later system releases also included a software telephone that could be utilized on a computer that was not always connected to the network, such as a one in which the system and/or the network interface could be put into a low power sleep mode.

13. From 1999-2004, I was employed by Empirix or its predecessor company, Teradyne. Empirix was a leader in test tools for telecommunications protocols and systems, providing functional testing tools as well as load testing tools. From 2000-2001, I conceived and built a test platform for testing Voice-over-IP (VoIP). The first application on this new test platform was a cloud emulator for simulating the effects of transmitting VoIP over a busy network. The test platform

was based on a network processor chip, which could be programmed to cut-through packets while processing packet data such as various protocol layer headers including addresses included therein and even packet data contents. I also designed a protocol analyzer built on the same platform. The application captured and performed protocol decoding at various layers in the protocol stacks of captured packets, including detailed Ethernet header decoding, IP header decoding, TCP header decoding, UDP header decoding, RTP header decoding, and many other specified protocols. The application was also designed to reconstruct entire conversations that spanned multiple packets.

14. At Empirix, I also rearchitected the design of the Web Test division's core product, e-Test Suite. E-Test Suite was a software program designed to perform functional and load testing of network-based (e.g., client/server) web applications. These applications were designed to receive user input and to process that input at a server. Numerous e-Commerce companies used e-Test Suite software to test the capabilities of their web sites. I was technical lead on the project, and also worked on programming a JavaScript interpreter for the product. JavaScript is the flexible programming layer that allows users to interact with web pages through actions such as clicking and dragging that allows web page programmers to extend the functionality of a web page beyond clicking on links. As part of implementing the JavaScript interpreter, I personally designed and programmed the lexer and parser

for the interpreter. The lexer tokenized the JavaScript programs and I created the grammar specification in modified Backus-Naur form used to create the internal representation of the JavaScript program.

15. In 2006, as part of my role at BBN Technologies, I helped found PodZinger Inc., now known as RAMP Inc. PodZinger utilized BBN's speech recognition algorithms to search through the spoken words in audio and video segments. While I was Vice President of Operations and Technology, PodZinger followed its initial prototype with a full streaming audio and video search solution. I also created a social networking web site, which BBN sold to a venture-funded startup company. In the process of creating the web site, I designed and specified the authentication and authorization protocols.

16. I also worked with setting up accounting systems and integrating on-line payment systems on numerous occasions. In 1994, I started a company, Agora Technology Group, that set up web sites for targeted advertising, and later provided consulting services to companies and organizations to set up their web sites. I managed all the finances and bookkeeping for the company, including keeping all the books and ledgers. Starting in the early 2000's, I integrated web payment systems with various web sites.

17. At my educational company, Einstein's Workshop, I created the initial web site that included shopping cart technology and integrated it with online

payment solutions, that used client-server communications to execute a variety of functions. I also evaluated, sourced, and configured the point-of-sale system for the company, which also involved integration with and setup of mobile shopping terminals. Furthermore, I set up the accounting system, built the web site, integrated various web payment mechanisms with the web site, set up mobile payment systems, and also set up a mobile point of sale system. These websites and network applications collected and processed user responses in order to execute their functions, such as mobile payment and order fulfillment. At Einstein's Workshop, we teach programming to children of all ages, starting with Scratch programming for young elementary students and advancing through programming in Python and for game development for high school students. I conceived many of the programming classes and have taught programming to novice and more advanced students. We also created an educational computer-aided design tool, called BlocksCAD. We received a grant, on which I was the principal investigator, to further develop BlocksCAD and successfully met our grant objectives. BlocksCAD was spun-off from Einstein's Workshop and has been part of various incubator/accelerator programs in education as well as at the MIT Media Lab. Today, BlocksCAD is used worldwide in makerspaces as well as in schools throughout the U.S.

18. I have been awarded several United States patents, including the following examples:

- U.S. Patent No. 7,975,296, “Automated security threat testing of web pages”;
- U.S. Patent No. 7,877,736, “Computer language interpretation and optimization for server testing”;
- U.S. Patent No. 7,801,910, “Method and apparatus for timed tagging of media content”;
- U.S. Patent No. 7,590,542, “Method of Generating Test Scripts Using a Voice-Capable Markup Language”; and
- U.S. Patent No. 6,967,963, “Telecommunication method for ensuring on-time delivery of packets containing time-sensitive data.”.

III. MATERIALS REVIEWED

19. In connection with my study of this matter and reaching the opinions stated herein, I have reviewed a number of documents including the exhibits listed in Appendix A.

IV. UNDERSTANDING OF APPLICABLE LEGAL STANDARDS

20. Although I am not an attorney, I have a general understanding of the applicable legal standards pertaining to the patentability issues presented in this proceeding.

21. I understand that, in this *inter partes* review (IPR), Petitioner is challenging the patentability of claims 3, 4, and 6-15 of the '748 Patent. I understand that Petitioner has the burden of proving that each challenged claim is unpatentable by a preponderance of the evidence. I also understand that all claims of the '748 Patent not challenged here have previously been found unpatentable.

22. I understand that to be valid, a patent claim must be “novel,” and is invalid if “anticipated” by a single prior art reference. I further understand that a reference anticipates if it discloses each and every element as arranged in the claim, so as to enable a person of ordinary skill in the art (“POSA”) to make and use the claimed invention without undue experimentation.

23. I understand that a patent claim is unpatentable if, at the time of the invention, it would have been obvious to a POSA to combine the teachings of the prior art to yield the patent claim. I also understand that it is not required (although it is acceptable) that each element/limitation of a patent claim be found in a single reference in order to find a patent claim obvious. For a patent claim to be found obvious, all the elements/limitations of the patent claim may be found in a combination of references at which a person of ordinary skill in the art would have been reasonably expected to arrive. I understand that a proper analysis of whether an invention is unpatentable for obviousness includes a review of the scope and content of the prior art, the differences between the patent claims at issue and the

prior art, the level of ordinary skill in the field of the invention at the time of the invention, and other objective considerations identified below.

24. It is my understanding that the prior art and claimed invention should be viewed through the knowledge and understanding of a POSA – one should not use his or her own insight or hindsight in deciding whether a claim is obvious. I further understand that a claim may be rendered obvious if a POSA can implement the claimed invention as a predictable variation of a known product. I also understand that a POSA is presumed to have knowledge of the relevant prior art at the time of the claimed invention, which comprises any prior art that was reasonably pertinent to the particular problems the inventor faced.

25. I understand that a showing of obviousness requires some articulated reasoning with a rational underpinning to support the combination of the references. I understand that in consideration of the issue of obviousness it is important to identify whether a reason existed at the time of the invention that would have led a POSA to combine elements of the references in a way that yields the claimed invention.

26. I understand that a claim may be considered unpatentable for obviousness for various reasons. I have been informed that the following exemplary rationales may support a finding of obviousness:

- (A) combining prior art elements according to known methods to yield predictable results;
- (B) simply substituting one known element for another to obtain predictable results;
- (C) use of a known technique to improve similar devices in the same way;
- (D) applying a known technique to a known device ready for improvement to yield predictable results;
- (E) choosing from a finite number of identified, predictable solutions with a reasonable expectation of success;
- (F) known work in a field that prompts variations in the work in the same or a different field that leads to predictable results; and
- (G) some teaching, suggestion, or motivation in the prior art that would have led a person of ordinary skill in the art to modify a prior art reference or combine multiple prior art references or teachings to arrive at the claimed invention.

27. I understand that various objective or “real world” factors, also referred to as secondary considerations, may be indicative of non-obviousness. I understand that such factors/considerations include:

- (A) the commercial success of the claimed invention;

- (B) the existence of a long-felt, unresolved need for a solution to the problem solved by the claimed invention;
- (C) failed attempts to solve the problem solved by the claimed invention;
- (D) copying of the claimed invention;
- (E) unexpected results of the claimed invention;
- (F) praise for the claimed invention by others in the relevant field; and
- (G) willingness of others to accept a license under the patent because of the merits of the claimed invention.

28. It is my understanding that the prior art references themselves may provide a suggestion, motivation, or reason to combine, but other times the link may be common sense. I further understand that the obviousness analysis recognizes that market demand, rather than scientific literature, often drives innovation, and that is sufficient motivation to combine references.

29. It is my understanding that a particular combination may be proven obvious merely by showing that it was obvious to try the combination. For example, common sense is a good reason for a person of ordinary skill to pursue known options when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions.

30. I further understand that a proper obviousness analysis focuses on what was known or obvious to a person of ordinary skill in the art, not just the patentee.

Accordingly, it is my understanding that any need or problem known in the field at the time of invention and addressed by the patent can provide a reason for combining the limitations in the manner claimed.

V. OVERVIEW OF THE '748 PATENT

31. The '748 Patent Specification generally relates to the distribution of electronic forms via the Internet or to mobile devices, and in particular, to a method for the management of data collected from a remote computing device. Ex. 1001, Abstract. In particular, the '748 Patent describes using computerized questionnaires to allow a user to complete a form on a wireless device for transmission to a server. Ex. 1001, 10:44-54. A client can design a questionnaire by creating a list of questions, with corresponding tokens, and may include follow-up questions depending on responses to other questions. Ex. 1001, 8:51-9:2. When the questionnaire is complete, the questions and tokens can be transmitted to a handheld device, whose user can provide responses to the questions. Ex. 1001, 9:3-13. The responses can be stored on the handheld device and transmitted to the server, and the server can store the data in a database. Ex. 1001, 9:58-10:8. The '748 Patent describes that one question may be a location question that automatically obtains a Geographic Position System (GPS) information as a response to the question. Ex. 1001, 5:33-48, 10:55-65. In addition, the '748 Patent teaches that the handheld

device and server may be “loosely networked,” such that the server and handheld devices are “tolerant of intermittent network connections.” Ex. 1001, 4:64-5:7.

VI. PROSECUTION HISTORY

32. I understand that the '748 Patent was filed as U.S. App. No. 12/910,706 (“the '706 Application”) on October 22, 2010. I understand that the '748 Patent claims priority to U.S. App. No. 10/643,516, which issued as U.S. Patent No. 7,822,816 (“the '816 Patent”). I further understand that all claims of the '816 Patent were canceled on June 10, 2014 as a result of *ex parte* reexamination Control No. 90/012,829. Ex. 1017, 1-2; Ex. 1021, 3. I understand that the '748 Patent also claims priority back to U.S. Prov. App. No. 60/404,491 (“the '491 Provisional”), which has a filing date of August 19, 2002. I understand that the Patent Owner has alleged conception of the claims to date to “prior to... January 1, 2002” and has further alleged diligent reduction to practice from the '491 Provisional to the '748 Patent. Ex. 1004, 99.

33. I understand that the Examiner issued a first Non-Final Office Action for the '706 Application on March 16, 2011. Ex. 1004, 62. The Examiner rejected claims 1-11, encompassing all of the claims then presented in the '706 Application, for obvious-type double patenting over U.S. Patent No. 7,822,816 (“the '816 Patent”), the parent of the '706 Application. *Id.*, 64-67. The Examiner also rejected

claims 1, 5, and 7 under pre-AIA U.S.C. § 102 and claims 2-4, 6, and 8-11 under pre-AIA U.S.C. § 103 over various references. *Id.*, 67-75.

34. I understand that the applicant for the '706 Application ("Applicant") filed a response to the first Non-Final Office Action on September 16, 2011. *Id.*, 81-106. In the response, Applicant filed a terminal disclaimer covering claims 1-11. *Id.*, 98. Applicant also argued that the '706 Application was conceived "at least as early as January 1, 2002." *Id.*, 99.

35. I understand that the Examiner issued the second Non-Final Office Action for the '706 Application on September 20, 2012. *Id.*, 142. The Examiner issued rejections under pre-AIA 35 U.S.C. § 103 on new grounds (*id.*, 149-171), but also rejected Applicant's arguments regarding the date of conception and maintained the previous 35 U.S.C. § 103 rejections. *Id.*, 171-172.

36. I understand that Applicant filed a response to the second Non-Final Office Action on December 28, 2012. *Id.*, 191-224. I understand that Applicant again argued that the '706 Application was entitled to a conception date "at least as early as January 1, 2002" and that the rejections under 35 U.S.C. § 103 should be withdrawn. *Id.*, 216-217. I understand that Applicant also filed a terminal disclaimer, this time covering all pending claims. *Id.*, 248.

37. I understand that the Examiner issued a first Final Office Action on April 9, 2013. Ex. 1004, 337. I understand that in the first Final Office Action, the

Examiner accepted Applicant's arguments regarding the date of conception and withdrew some of the prior art rejections. *Id.*, 355. I understand that the Examiner maintained the prior art rejections first issued in the second Non-Final Office Action. *Id.*, 341.

38. I understand that on May 9, 2014, Applicant filed a Request for Continued Examination. *Id.*, 411-412. I understand that Applicant amended the independent claims, including claim 7, to recite limitations on location-specific questions and execution, including “a questionnaire customized for a particular location having branching logic” and “when said loosely networked computer is proximate to said particular location.” *Id.*, 418-419.

39. I understand that the Examiner issued a third Non-Final Office Action in response to the Request for Continued Examination on November 6, 2015. *Id.*, 491. I understand that the Examiner again issued a rejection under 35 U.S.C. § 103 and asserted that the “questionnaire customized for a location” and “loosely networked” limitations were found in one of the references. *Id.*, 496-499.

40. I understand that on May 6, 2016, Applicant responded to the third Non-Final Office Action. *Id.*, 568. I understand that Applicant amended the independent claims to recite features related to having “a GPS integral” to a handheld device and/or “at least one question requesting location identifying information” *Id.*, 570-582.

41. I understand that the Examiner issued a Notice of Allowance on July 7, 2016. *Id.*, 607. In the Reasons for Allowance, the Examiner clarified that “GPS integral thereto which obtain [sic] location identifying information” and “networked” should be interpreted as “a GPS obtaining GPS coordinates for the handheld device” and as “loosely networked,” respectively. *Id.*, 617-618. I understand that the Examiner also noted that “the prior art singly in combination does not teach the totality of the independent claims” and the claims “recite[] the use of a GPS integral thereto.” *Id.* However, as I explain below, at the time of the alleged invention of the ’748 Patent, these features would have been well known to a person of ordinary skill in the art.

42. I understand that the ’748 Patent issued from the ’706 Application on September 27, 2016. *Id.*, 645.

VII. RELATED LITIGATION

43. I understand that the ’748 Patent is the subject of pending litigation involving Petitioner: *Maplebear, Inc. d/b/a Instacart v. Fall Line Patents, LLC*, Case No. 25-cv-00137-MTS (N.D. Okla.). Ex. 1014. I understand that Petitioner filed a declaratory judgment action against Patent Owner seeking a non-infringement ruling for the ’748 Patent on behalf of Petitioner and Petitioner’s customers. *Id.*, 5.

44. I understand that the ’748 Patent has or its related patents have been involved or is currently involved in other litigations:

- *Fall Line Patents, LLC v. Grubhub Holdings, Inc. et al.*, 6:17-cv-00204-RWS (E.D. Tex.)
 - I understand this case was terminated on June 22, 2017, and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.
- *Fall Line Patents, LLC v. Cinemark Holdings, Inc. et al.*, 6:17-cv-00203-RWS (E.D. Tex.)
 - I understand this case was terminated on February 14, 2018, and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.
- *Fall Line Patents, LLC v. American Airlines Group Inc. et al.*, 6:17-cv-00202 (E.D. Tex.) (“202 E.D. Tex. case”)
 - I understand that this case was terminated on July 9, 2018, and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.
- *Fall Line Patents, LLC v. Choice Hotels International, Inc.*, 6:17-cv-00407 (E.D. Tex.) (“Choice Hotels case”)
 - I understand that this case was consolidated into the 202 E.D. Tex. case identified above. I understand this case was severed and terminated on July 9, 2018, and that prior to termination

claim construction briefing did not occur and a claim construction ruling was not issued.

- *Fall Line Patents, LLC v. Uber Technologies, Inc.*, 6:18-cv-00408 (E.D. Tex.)
 - I understand that this case was consolidated into the Choice Hotels case and then into the 202 E.D. Tex. case, both identified above. I understand this case was severed and terminated on July 9, 2018, and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.
- *Fall Line Patents, LLC v. Zoe's Kitchen, Inc. et al.*, 6:18-cv-00407 (E.D. Tex.) (“Zoe’s Kitchen case”)
 - I understand that claim construction briefing occurred and a claim construction order was issued January 23, 2023. I understand this case was terminated on August 23, 2023.
- *Fall Line Patents, LLC v. Papa John’s International, Inc. et al.*, 6:18-cv-00415 (E.D. Tex.)
 - I understand that this case was consolidated into the Zoe’s Kitchen case identified above. I understand that this case was terminated on January 9, 2023, and that prior to termination a claim construction ruling was not issued.

- *Fall Line Patents, LLC v. McDonalds Corporation et al.*, 6:18-cv-00415 (E.D. Tex.)
 - I understand that this case was consolidated into the Zoe's Kitchen case identified above. I understand this case was terminated on August 23, 2023.
- *Fall Line Patents, LLC v. Panda Restaurant Group, Inc. et al.*, 6:18-cv-00413 (E.D. Tex.)
 - I understand that this case was consolidated into the Zoe's Kitchen case identified above. I understand this case was terminated on January 26, 2021, before a claim construction ruling was issued.
- *Fall Line Patents, LLC v. Starbucks Corporation*, 6:18-cv-00411 (E.D. Tex.)
 - I understand that this case was consolidated into the Zoe's Kitchen case identified above. I understand this case was terminated on June 11, 2019, and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.
- *Fall Line Patents, LLC v. Regal Cinemas, Inc.*, 6:18-cv-00410 (E.D. Tex.)

- I understand that this case was terminated on April 28, 2021 and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.
- *Fall Line Patents, LLC v. Boston Market Corporation*, 6:18-cv-00409 (E.D. Tex.)
 - I understand that this case was consolidated into the Zoe's Kitchen case identified above. I understand this case was terminated on November 21, 2022 and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.
- *Fall Line Patents, LLC v. AMC Entertainment Holdings, Inc. et al.*, 6:18-cv-00408 (E.D. Tex.)
 - I understand that this case was consolidated into the Zoe's Kitchen case identified above. I understand this case was terminated on January 1, 2023 and that prior to termination claim construction had been filed but a claim construction ruling was not issued.
 - I understand that the defendant was a petitioner in IPR2019-00610, further discussed below.

- *Fall Line Patents, LLC v. Pizza Hut, LLC et al.*, 6:18-cv-00406 (E.D. Tex.)
 - I understand that this case was terminated on December 3, 2018 and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.
- *Fall Line Patents, LLC v. Arby's Restaurant Group, Inc.*, 5:23-cv-00110 (E.D. Tex.) (“the 110 E.D. Tex. case”)
 - I understand that this case was terminated on September 5, 2024 and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.
- *Fall Line Patents, LLC v. Whatabrands LLC et al.*, 5:23-cv-00121 (E.D. Tex.)
 - I understand that this case was consolidated into the 110 E.D. Tex. case identified above. I understand this case was terminated on May 17, 2024 and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.
- *Fall Line Patents, LLC v. Subway IP LLC et al.*, 5:23-cv-00119 (E.D. Tex.)

- I understand that this case was consolidated into the 110 E.D. Tex. case identified above. I understand this case was terminated on August 12, 2024 and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.
- *Fall Line Patents, LLC v. Wendy's International, LLC et al.*, 5:23-cv-00120 (E.D. Tex.)
 - I understand that this case was consolidated into the 110 E.D. Tex. case identified above. I understand this case was terminated on September 5, 2024 and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.
- *Fall Line Patents, LLC v. Sonic Franchising LLC et al.*, 5:23-cv-00118 (E.D. Tex.)
 - I understand that this case was consolidated into the 110 E.D. Tex. case identified above. I understand this case was terminated on May 2, 2024 and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.

- *Fall Line Patents, LLC v. Popeye's Louisiana Kitchen, Inc.*, 5:23-cv-00117 (E.D. Tex.)
 - I understand that this case was consolidated into the 110 E.D. Tex. case identified above. I understand this case was terminated on July 30, 2024 and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.
- *Fall Line Patents, LLC v. Panera, LLC et al.*, 5:23-cv-00116 (E.D. Tex.)
 - I understand that this case was consolidated into the 110 E.D. Tex. case identified above. I understand this case was terminated on May 9, 2024 and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.
- *Fall Line Patents, LLC v. Dunkin Brands, Inc. et al.*, 5:23-cv-00114 (E.D. Tex.)
 - I understand that this case was consolidated into the 110 E.D. Tex. case identified above. I understand this case was terminated on May 2, 2024 and that prior to termination claim construction

briefing did not occur and a claim construction ruling was not issued.

- *Fall Line Patents, LLC v. Little Caesar Enterprises, Inc.*, 5:23-cv-00115 (E.D. Tex.)

- I understand that this case was consolidated into the 110 E.D. Tex. case identified above. I understand this case was terminated on July 29, 2024 and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.

- *Fall Line Patents, LLC v. Chipotle Mexican Grill, Inc.*, 5:23-cv-00113 (E.D. Tex.)

- I understand that this case was consolidated into the 110 E.D. Tex. case identified above. I understand this case was terminated on July 29, 2024 and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.

- *Fall Line Patents, LLC v. Chick-fil-A, Inc.*, 5:23-cv-00112 (E.D. Tex.)

- I understand that this case was consolidated into the 110 E.D. Tex. case identified above. I understand this case was terminated on August 6, 2024 and that prior to termination claim

construction briefing did not occur and a claim construction ruling was not issued.

- *Fall Line Patents, LLC v. Burger King Company, LLC*, 5:23-cv-00111 (E.D. Tex.)
 - I understand that this case was consolidated into the 110 E.D. Tex. case identified above. I understand this case was terminated on July 29, 2024 and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.
- *Fall Line Patents, LLC v. Wingstop Inc. et al.*, 5:24-cv-00089 (E.D. Tex.) (“the 089 E.D. Tex. Case”)
 - I understand that this case is ongoing. I understand that claim construction briefing has not yet occurred and a claim construction ruling has not been issued.
- *Fall Line Patents, LLC v. Krispy Kreme, Inc. et al.*, 5:24-cv-00095 (E.D. Tex.)
 - I understand that this case was consolidated into the 089 E.D. Tex. case identified above. I understand that this case is ongoing.
- *Fall Line Patents, LLC v. Raising Canes Restaurants, L.L.C. et al.*, 5:24-cv-00096 (E.D. Tex.)

- I understand that this case was consolidated into the 089 E.D. Tex. case identified above. I understand that this case is ongoing.
- *Fall Line Patents, LLC v. El Pollo Loco, Inc. et al.*, 5:24-cv-00092 (E.D. Tex.)
 - I understand that this case was consolidated into the 089 E.D. Tex. case identified above. I understand that this case is ongoing.
- *Fall Line Patents, LLC v. Dine Brands Global, Inc. et al.*, 5:24-cv-00097 (E.D. Tex.)
 - I understand that this case was consolidated into the 089 E.D. Tex. case identified above. I understand this case was terminated on February 10, 2025 and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.
- *Fall Line Patents, LLC v. Jack in the Box, Inc. et al.*, 5:24-cv-00093 (E.D. Tex.)
 - I understand that this case was consolidated into the 089 E.D. Tex. case identified above. I understand this case was terminated on December 20, 2024 and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.

- *Fall Line Patents, LLC v. Jersey Mikes Franchise Systems, Inc. et al.*, 5:24-cv-00094 (E.D. Tex.)
 - I understand that this case was consolidated into the 089 E.D. Tex. case identified above. I understand that this case is ongoing.
- *Fall Line Patents, LLC v. Carl's Jr. Restaurants LLC et al.*, 5:24-cv-00090 (E.D. Tex.)
 - I understand that this case was consolidated into the 089 E.D. Tex. case identified above. I understand that this case is ongoing.
- *Fall Line Patents, LLC v. Domino's Pizza, Inc. et al.*, 5:24-cv-00091 (E.D. Tex.)
 - I understand that this case was consolidated into the 089 E.D. Tex. case identified above. I understand this case was terminated on November 22, 2024 and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.
- *Fall Line Patents, LLC v. 7-Eleven, Inc.*, 5:24-cv-00167 (E.D. Tex.) (“the 167 E.D. Tex. Case”)
 - I understand that this case is ongoing. I understand that claim construction briefing has not yet occurred and a claim construction ruling has not been issued.

- *Fall Line Patents, LLC v. Enterprise Holdings, Inc. et al.*, 5:24-cv-00180 (E.D. Tex.)
 - I understand that this case was consolidated into the 167 E.D. Tex. case identified above. I understand that this case is ongoing.
- *Fall Line Patents, LLC v. Lowe's Companies, Inc. et al.*, 5:24-cv-00181 (E.D. Tex.)
 - I understand that this case was consolidated into the 167 E.D. Tex. case identified above. I understand that this case is ongoing.
- *Fall Line Patents, LLC v. Sprouts Farmers Market, Inc. et al.*, 5:24-cv-00182 (E.D. Tex.)
 - I understand that this case was consolidated into the 167 E.D. Tex. case identified above. I understand that this case is ongoing.
- *Fall Line Patents, LLC v. DoorDash, Inc. et al.*, 5:24-cv-00179 (E.D. Tex.)
 - I understand that this case was consolidated into the 167 E.D. Tex. case identified above. I understand that this case is ongoing.
- *Fall Line Patents, LLC v. Darden Restaurants, Inc. et al.*, 5:24-cv-00178 (E.D. Tex.)
 - I understand that this case was consolidated into the 167 E.D. Tex. case identified above. I understand that this case is ongoing.

- *Fall Line Patents, LLC v. AutoZone, Inc.*, 5:24-cv-00173 (E.D. Tex.)
 - I understand that this case was consolidated into the 167 E.D. Tex. case identified above. I understand that this case is ongoing.
- *Fall Line Patents, LLC v. Best Buy Co., Inc. et al.*, 5:24-cv-00174 (E.D. Tex.)
 - I understand that this case was consolidated into the 167 E.D. Tex. case identified above. I understand that this case is ongoing.
- *Fall Line Patents, LLC v. Brookshire Grocery Company*, 5:24-cv-00175 (E.D. Tex.)
 - I understand that this case was consolidated into the 167 E.D. Tex. case identified above. I understand that this case is ongoing.
- *Fall Line Patents, LLC v. Chili's, Inc. et al.*, 5:24-cv-00176 (E.D. Tex.)
 - I understand that this case was consolidated into the 167 E.D. Tex. case identified above. I understand this case was terminated on March 12, 2025 and that prior to termination claim construction briefing did not occur and a claim construction ruling was not issued.
- *Fall Line Patents, LLC v. Cracker Barrel Old Country Store, Inc. et al.*, 5:24-cv-00177 (E.D. Tex.)

- I understand that this case was consolidated into the 167 E.D. Tex. case identified above. I understand that this case is ongoing.
- *Fall Line Patents, LLC v. Academy, Ltd. et al.*, 5:24-cv-00169 (E.D. Tex.)
 - I understand that this case was consolidated into the 167 E.D. Tex. case identified above. I understand that this case is ongoing.
- *Fall Line Patents, LLC v. Advance Auto Parts, Inc. et al.*, 5:24-cv-00170 (E.D. Tex.)
 - I understand that this case was consolidated into the 167 E.D. Tex. case identified above. I understand that this case is ongoing.
- *Fall Line Patents, LLC v. ALDI Inc. et al.*, 5:24-cv-00172 (E.D. Tex.)
 - I understand that this case was consolidated into the 167 E.D. Tex. case identified above. I understand that this case is ongoing.

A. IPRs Involving the '748 Patent

45. I understand that Unified Patents filed a petition for IPR (IPR2018-00043) on October 6, 2017 challenging claims 16-19 and 21-22 of the '748 Patent. Ex. 1018. I understand that the claims were alleged to be obvious under pre-AIA 35 U.S.C. § 103(a) in view of U.S. Patent No. 6,154,745 to Kari et al. ("Kari") and further in view of HTML 4 Unleased by Darnell et al. ("Darnell"), U.S. Patent No. 6,380,928 to Todd ("Todd"), and U.S. Patent No. 6,381,603 to Chan et al. ("Chan").

I understand that the PTAB instituted the IPR on April 5, 2018. Ex. 1019. On April 4, 2019, the PTAB issued a final written decision finding that claims 16-19 and 21-22 of the '748 Patent were unpatentable. Ex. 1020.

46. I understand that Patent Owner appealed to the Court of Appeals for the Federal Circuit ("CAFC") and that the CAFC affirmed the PTAB's decision. Ex. 1052. I understand that Patent Owner sought Director review of the PTAB decision, and that the Director denied the request and the PTAB's decision was made final. Ex. 1053.

47. I understand that Petitioner had no involvement in the Unified Patents petition. I had no involvement in that proceeding.

48. I understand that Starbucks Corporation, American Multi-Cinema, Inc. and AMC Entertainment Holdings, Inc., Boston Market Corporation, Mobo Systems, Inc. d/b/a as OLO Online Ordering, McDonald's Corporation and McDonald's USA, Panda Restaurant Group, Inc. and Panda Express, Inc., and Papa John's International Inc., Star Papa LP, and Papa John's USA, Inc., filed a petition for IPR (IPR2019-00610) ("Starbucks Petition") on January 22, 2019, challenging claims 1-2, 5, 7, and 19-22 of the '748 Patent. Ex. 1021. I understand that the Starbucks Petition asserted that claims 1, 7, and 19-22 were obvious over U.S. Patent No. 6,961,586 to Barbosa et al. ("Barbosa") and further in view of U.S. Patent No. 6,332,127 to Bandera et al. ("Bandera") or U.S. Patent No. 5,991,771 to Falls et al.

(“Falls”). I understand that the Starbucks Petition further asserted that claims 1, 2, 5, 7, and 19-22 were obvious in light of U.S. Patent No. 6,202,023 to Hancock et al. (“Hancock”), or, alternatively, in view of Hancock and Bandera, or, alternatively, in view of Hancock and Falls. *Id.* I understand that the PTAB instituted IPR on August 7, 2019. Ex. 1022. I understand that on August 5, 2020, the PTAB issued a final written decision finding claims 1, 2, 5, and 19-22 unpatentable but finding that claim 7 had not been shown unpatentable. Ex. 1023.

49. I further understand that the PTAB’s decision regarding claim 7 was appealed and that on May 17, 2022, the PTAB issued a new final written decision with respect to claim 7, finding that claim 7 had not been shown unpatentable but provided further explanation for that finding. Ex. 1024.

50. I understand that Petitioner had no involvement in IPR2019-00610. I had no involvement in that proceeding.

51. I understand that Uber Technologies, Inc., and Choice Hotels International, Inc., filed a petition for IPR (IPR2018-00535) on January 25, 2018, challenging claims 1, 2, 5, 9, 11, 13, and 15-22 of the ’748 Patent. Ex. 1025. I understand that the petitioners settled with Patent Owner and terminated the IPR before the PTAB decided whether to institute. Ex. 1026. I understand that Petitioner had no involvement in the IPR2018-00535. I had no involvement in that proceeding.

52. In summary, I understand that claims 1, 2, 5, and 16-22 of the '748 Patent have already been found unpatentable.

VIII. TECHNICAL BACKGROUND

A. Computer Hardware, Software, and Firmware

53. Originally, computers were composed only of physical circuits, known as hardware,¹ that were programmed by physically configuring wires (like a telephone switch board operator). Computer programs (a series of computer instructions) stored in memory are known as software, because they can be modified much more easily than hardware. In the late 1970's, personal computers (PCs) became commercial products (such as the Apple II in 1977). In some PCs, a bootstrap loader and other basic input and output programs were permanently stored in hardware chips, known as read-only-memories ("ROM"). Ex. 1043, 1:16-21. These programs recorded indelibly in ROM were no longer "soft" enough to be modified, but could be changed by replacing one socketed ROM with another ROM containing another version of the program. Because they are intimately bonded with the hardware, these programs are called firmware.²

¹ Hardware is the tangible components of a computing system, such as vacuum tubes, wires, circuit boards and other discrete components.

² Generally, firmware refers to CPU instructions stored in a programmable ROM.

B. Graphic Images and Graphical User Interfaces

54. Bitmaps can be used to store a graphic image as an array of color values for each point in the image. Ex. 1029, 1:41-2:3, 6:15-27. For example, the Macintosh used bitmaps for icons in its Graphical User Interface (GUI). Ex. 1031, 1:11-50. Further, Windows and OS/2 have a bitmap file format (.BMP). JPEG, TIFF, GIF, and PNG also store bitmaps in a compressed format. Ex. 1030, 2:42-45, 4:6-17.

55. Graphic images can also be drawn (or rendered) using graphic commands. Ex. 1029, 1:41-2:3, 6:15-27. Rectangles, circles, and other polygons can be drawn having different sizes and colors.

56. A GUI is characterized by a graphic display and an input device such as a mouse or a touch screen that is used to interact with the graphical elements or controls. Ex. 1031, 1:11-50.

C. Computer-Based Questionnaires

57. Computer-based questionnaires allow for dynamic presentation of questions; collection of data, including answers, time and data, locations; and storage of data in a database for various types of analysis and reporting.

58. Many early computer-based questionnaire systems were developed for education. For example, I understand that the Programmed Logic for Automated Teaching Operations distributed computer-based learning system originally

developed by the University of Illinois at Urbana-Champaign in the 1970s had an early GUI, which inspired Xerox PARC's GUI, which inspired the Macintosh GUI. Ex. 1032; Ex. 1033. PLATO IV recorded the terminal address, or location, along with the data for each response. Ex. 1032, 11, 13.

59. Well-known examples of computer-based questionnaires include surveys and field assessments. Ex. 1005, Abstract, 3:6-17, 6:58-7:10, 7:23-34, 7:42-8:3, 8:49-65, 9:3-14, 9:50-56, 10:10-31, 11:5-24, 12:45-54, Figs. 5-8, 10³; Ex. 1046, 7:3-21, 8:28-32, 8:65-9:30, 10:13-64; Ex. 1048, 1-7. For example, during field assessments a form or questionnaire program that requests information (e.g., location, job site information, or the like) related to a particular location might be provided to a handheld device. Ex. 1048, 4-6; Ex. 1005, 7:23-34, 8:49-65, 9:3-14, 9:50-10:31, Figs. 6-7. It was also known that surveys could be performed across a network (e.g., the Internet) to gather information from users of the network. Ex. 1045, Abstract, ¶¶[0001]-[0016], [0026], [0032]-[0037], Fig. 1.

60. It was also well-known to use programs (e.g., applets, applications, web interfaces) for creating questionnaires. Ex. 1055, 2:54-56 ("an automated survey mechanism causes an interface to be displayed to a client which allows the particular

³ Line numbers are cited based on the line numbering printed in the columns of the patent.

client to define a survey”); Ex. 1056, ¶¶[0034]-[0035] (“In the example shown in FIG. 2, the templates 42 include a question template and a branch template. ... the flowchart 40 may be created using the question template and the branch template via a “drag-and-drop” technique, where the question template and/or the branch template are dragged and dropped into the display area 38 to build the objects or elements (e.g., question blocks and branches) of the flowchart 40.”), [0037]-[0041], [0046], [0054]-[0055], [0080], Fig. 2; Ex. 1045, ¶¶[0034] (“The multimedia questionnaire designer 135 enables a user to retrieve multimedia questions from the question library 140 and to generate a multimedia-based questionnaire.”), [0037]-[0039]; Ex. 1057, ¶[0032] (“The first step is the user interface and interaction design step, and produces the interactive specification of the forms.”), [0036]-[0051]. For example, such programs included interfaces through which users could select or specify questions, identify possible responses and response types, as well as include branching logic. Ex. 1055, ¶[0028]; Ex. 1056, ¶¶[0034]-[0035], Fig. 2; Ex. 1045, ¶¶[0034]-[0039]. Such programs simplified the creation of questionnaires by using easy-to-understand interfaces.

D. Tokens and Tokenizing

61. A token is a unit of a program that may be an index or code representing an instruction or command.

62. It was well known that code could be “tokenized” to generate tokens, such as indexes, instructions, or commands, that represent something else. U.S. Patent Application Publication No. 2006/0129523 describes reading files, such as source code, and breaking “the words and symbols of the files into individual elements called tokens.” Ex. 1035, ¶[0025]. The application further explained that “meaningful words or symbols” are called “tokens” and “[t]he process of breaking down lines into tokens is called tokenizing.” Ex. 1035, ¶[0145]. Further, in U.S. Patent No. 7,016,417 filed on December 22, 1999, the term token is used in describing specific compressions methods: “[v]ariable length strings of symbols are encoded as single tokens. The tokens form an index to a dictionary.” Ex. 1034, 2:62-65. It was also well known that a program called a “lexer” was one type of program that was used to tokenize input strings, often representing computer programs. For example, lexers were used as early as the 1970s. Ex. 1013, xx (“Lex and yacc were both developed at Bell Laboratories in the 1970s.”), 1 (“In programs with structured input, two tasks that occur over and over are dividing the input into meaningful units, and then discovering the relationship among the units. For a text search program, the units would probably be lines of text, with a distinction between lines that contain a match of the target string and lines that don't. For a C program, the units are variable names, constants, strings, operators, punctuation, and so forth. This division into units (which are usually called tokens) is known as lexical analysis, or

lexing for short. Lex helps you by taking a set of descriptions of possible tokens and producing a C routine, which we call a lexical analyzer, or a lexer, or a scanner for short, that can identify those tokens. The set of descriptions you give to lex is called a lex specification.”); *see also id.*, 2-25.

E. Global Positioning System (GPS) and Location Identification

63. A Global Positioning System (GPS) is a system of satellites, computers, and receivers that is used to determine the coordinates (i.e., latitude and longitude) of a GPS receiver on the Earth. Ex. 1036, 1:6-2:21. The satellites have known positions relative to the Earth and to each other. By measuring the time it takes different signals to reach a receiver from different satellites, the location of the receiver can be determined. Ex. 1036, 1:6-2:21.

64. The rough position of a handheld device can be determined by GPS. Ex. 1036, 1:6-2:21. Further, handheld devices also have multiple axis position sensors that use a combination of accelerometers, gyrometers, and manometers to measure changes in position over time. These can be used to track fine movements and can be combined with GPS information to maintain accurate position and location information. Location information can also be determined based on network connections, such as WiFi. Ex. 1036, 2:43-53.

F. Data Synchronization

65. Data synchronization is the process of maintaining correct data across one or more devices in a distributed system, such as servers, personal computers, phones, and/or others. Ex. 1038, ¶¶[0006], [0080], [0352]. Synchronizing data across multiple devices is accomplished by determining differences between data stored on two or more devices and transmitting differences between devices. Ex. 1039, 6:14-19, 6:35-37; Ex. 1038, ¶¶[0027], [0080]. Developers can determine the conditions for when to trigger synchronization. Ex. 1038, ¶[0111]; Ex. 1039, 6:14-19, 6:27-37.

66. Data synchronization is also used to manage intermittent connections between devices. Ex. 1038, ¶[0108]. This allows users to continue using a device despite a dropped connection. Ex. 1038, ¶[0108]. When the connection is re-established, the device may send and receive updates from other devices in the distributed system. Ex. 1038, ¶[0097]. Data from user devices is also sent to a central server, which distributes data to other devices in the distributed system. Ex. 1038, ¶[0097] (“data in the local storage 324 is synchronized with the replica data 320 on the server”).

G. Making Data Available Over the Internet

67. The Internet is used to allow users/devices to communicate and access data stored on distributed servers. Ex. 1044, Abstract, 1:6-9, 2:18-21. A client/user

device sends a request over a network (e.g., the Internet) to a server for data, such as data associated with a web page or an electronic communication. Ex. 1044, 3:62-67. The server in turn sends the requested data to the client/user device. Ex. 1044, 4:1-4.

68. Additionally, users can trigger or choose to send data from a user device over the Internet to a server. Ex. 1038, see Fig. 3 (sending data to a server environment); Ex. 1044, 8:42-48. The server stores the received data in a database connected to the server. Ex. 1044, 9:33-39. The server then makes the stored data accessible to users via the Internet (e.g., via a URL). Ex. 1044, 11:9-12, 11:38-42, 12:5-14.

IX. OVERVIEW OF THE RELIED UPON PRIOR ART

A. Barbosa

69. I understand that U.S. Patent No. 6,961,586 to Barbosa et al. (“Barbosa”), which is being submitted as Ex. 1005, was filed on September 17, 2001 and issued on November 1, 2005. Ex. 1005, cover. Accordingly, I understand that Barbosa is prior art under at least pre-AIA 35 U.S.C. § 102(e) because Barbosa’s filing pre-dates the earliest priority date claimed by Patent Owner for the ’748 Patent (August 19, 2002). I also understand that Barbosa’s September 17, 2001 filing date pre-dates the earliest invention date claimed by Patent Owner (i.e., January 1, 2002). I also understand that Barbosa was found to be prior-art in IPR2019-00610.

70. Barbosa generally describes methods for conducting field assessments using handheld data management devices. Ex. 1005, Abstract. Barbosa further teaches synchronizing data between said handheld devices and a server to provide programs (e.g., questionnaires), receive responses, and provide the responses to remote devices (e.g., servers) for processing. Ex. 1005, 6:58-64, 7:23-37. Barbosa discloses providing the programs to assessor at potential job sites and using the programs to prompt the assessors for responses to various questions, such as location, customer name, date, type of job, and other specific questions for the particular job at hand. Ex. 1005, 8:49-9:14, 9:50-10:31. As an example, Barbosa describes a form which a user can select different types of HVAC projects, input criteria specific to each type, and send and receive information to/from a central server. Ex. 1005, 9:50-67, 10:1-21.

B. Falls

71. I understand that U.S. Patent No. 5,991,771 to Falls, et al. (“Falls”), which is being submitted herewith as Ex. 1006, was filed on July 18, 1996 and issued on November 23, 1999. Ex. 1006, cover. Accordingly, I understand that Falls is prior art under at least pre-AIA 35 U.S.C. § 102(b) because Falls’s November 23, 1999 issue date pre-dates the earliest effective filing date of the ’748 Patent (i.e., August 19, 2002) by more than one year. I also understand that Falls was found to be prior-art in IPR2019-00610.

72. Falls generally describes methods for synchronizing transactions across multiple devices connected via a “disconnectable network” (e.g., a loose network). Ex. 1006, Abstract. Falls teaches two or more devices which are “capable of being connected” over the Internet. Ex. 1006, 3:36-41. Falls further teaches receiving data at a first user device, such as a mobile device, and automatically sending updates to a second computer and/or server based on network availability, where the updates are made available over the network. Ex. 1006, 5:20-23, 5:32-38, 13:40-42. The updates are made available upon reconnection of a disconnected mobile computing device to synchronize operations performed during the period of disconnection. Ex. 1006, 3:16-35, 7:16-21, 16:24-55, 37:9-32.

C. Heath

73. I understand that U.S. Patent No. 6,006,034 to Heath et al. (“Heath”), which is being submitted herewith as Ex. 1007, was filed on September 5, 1996 and issued on December 21, 1999. Ex. 1007, cover. Accordingly, I understand that Heath is prior art under at least pre-AIA 35 U.S.C. § 102(b) because Heath’s December 21, 1999 issue date pre-dates the earliest effective filing date of the ’748 Patent (i.e., August 19, 2002) by at least a year.

74. Heath generally describes updating an application program installed on network-connected devices from a central server. Ex. 1007, Abstract. Heath further teaches receiving an update request from a user device, without first requesting user

input, and sending update information to the user device from the central server. Ex. 1007, 4:28-47. Heath further teaches the user device making updates to the application program based on the received update information. Ex. 1007, 5:41-43, 4:55-57.

D. Short

75. I understand that International Publication No. WO 00/31666 to Short et al. (“Short”) which is being submitted herewith as Ex. 1008, was filed November 22, 1999 and published June 2, 2000. Accordingly, I understand that Short is prior art under at least pre-AIA 35 U.S.C. § 102(b) because Short was published at least one year before the earliest effective filing date claimed of the ’748 Patent (August 19, 2002).

76. Short generally describes collecting, storing, and reporting data over the Internet. Ex. 1008, 3:14-19.⁴ Short teaches collecting data from a user device, such as responses entered by the user via an online survey, and storing collected data in a database. Ex. 1008, 5:14-23. Short further teaches making the collected data available via the Internet (e.g., using a web interface). Ex. 1008, 3:14-19, 5:12-7:2, 23:17-27:13, Figs. 1, 18-28.

⁴ Citations to Ex. 1008 is formatted as page:line, with the page number stamped at the bottom of each page.

E. Torrance

77. I understand that U.S. Patent Publication No. 2002/0107726 to Torrance et al. (“Torrance”), which is being submitted herewith as Ex. 1009, was filed December 21, 2001 and claims the benefit of U.S. Provisional Patent Application 60/259,848, filed December 22, 2000. Ex. 1009, cover. Accordingly, I understand that Torrance is prior art under at least pre-AIA 35 U.S.C. §§ 102(e) and (a) because Torrance’s December 21, 2001 filing date and December 22, 2000 priority date (i.e., earliest effective filing date) each pre-dates the earliest claimed priority date of the ’748 Patent (i.e., August 19, 2002) as well as the earliest invention date claimed by Patent Owner for the ’748 Patent (i.e., January 1, 2002).

78. Torrance describes sending questions receiving user responses to questions over a network, i.e., the Internet. Ex. 1009, Abstract. Torrance further teaches sending questions to users on behalf of a party, such as a commercial client. Torrance also teaches charging a fee for responses, where the fee may be collected from a third party. Ex. 1009, ¶[0057]. Torrance further teaches making the questions, responses, and associated data available to an administrator. Ex. 1009, ¶[0058].

F. Bandera

79. I understand that U.S. Patent No. 6,332,127 to Bandera et al. (“Bandera”), which is being submitted herewith as Ex. 1010, was filed January 28,

1999, and issued December 18, 2001. Accordingly, I understand that Bandera is prior art under at least pre-AIA 35 U.S.C. §§ 102(e) and (a) because Bandera's December 18, 2001 issue date pre-dates the earliest claimed priority date of the '748 Patent (i.e., August 19, 2002) as well as the earliest invention date claimed by Patent Owner for the '748 Patent (i.e., January 1, 2002). I also understand that Bandera was found to be prior-art in IPR2019-00610.

80. Bandera generally describes a mobile web client that collects GPS location information, transmits it to a server, and receives targeted advertisements based on the GPS location information. Ex. 1010, 2:2-3, 2:19-27. Bandera further teaches using the JAVA programming language to provide device indifferent code for performing its targeted advertising. Ex. 1010, 5:37-49. Bandera teaches using JAVA because "JAVA® is a portable and architecturally neutral language," allowing the same JAVA program to be compiled and executed in the same way by different operating systems and devices. Ex. 1010, 5:37-49.

G. Pinera

81. I understand that U.S. Patent No. 7,171,661 to Pinera et al. ("Pinera"), which is being submitted herewith as Ex. 1011, was filed October 19, 2000, and issued January 30, 2007. Accordingly, I understand that Pinera is prior art under at least pre-AIA 35 U.S.C. § 102(e) because Pinera's October 19, 2000 filing date pre-

dates the earliest claimed priority date of the '748 Patent (i.e., August 19, 2002), as well as Patent Owner's claimed earliest invention date (i.e., January 1, 2002).

82. Pinera generally describes providing automatic, real-time updates to software applications at client devices. Ex. 1011, Title, Abstract, 2:30-32, 3:18-29, 4:20-59, Figs. 1-3. Pinera's system includes a number of client positions where a client device might be located, in communication with a configuration server which identifies application components that are to be installed at the client positions. Ex. 1011, 4:20-43, Fig. 1. Pinera's client devices include applications which can be notified of any updates and, when said updates become available, the devices download the updates to the application components from the server in real-time. Ex. 1011, 4:20-59, 6:21-7:2, 7:14-17, Figs. 1, 2.

H. Morris

83. I understand that U.S. Patent No. 6,460,138 to Morris ("Morris"), which is being submitted herewith as Ex. 1012, was filed October 5, 1998 and issued on October 1, 2002. Accordingly, I understand that Morris is prior art under at least pre-AIA 35 U.S.C. § 102(e) because Morris's filing date pre-dates the earliest claimed priority date of the '748 Patent (i.e., August 19, 2002), as well as Patent Owner's claimed earliest invention date (i.e., January 1, 2002).

84. Morris generally describes a system and method for authenticating a user of a portable electronic device, such as a PDA. Ex. 1012, Abstract, 1:7-31, 4:2-

8. Morris describes that user authentication (e.g., the use of a PIN) was used to prevent access to data and programs at the portable device unless a user was able to successfully authenticate themselves with the device. Ex. 1012, Abstract, 1:13-18, 2:60-3:21, 4:43-5:39, Fig. 3.

I. Hamlin

85. I understand that U.S. Patent No. 6,477,504 to Hamlin *et al.* (“Hamlin”), which is being submitted herewith as Ex. 1055, was filed March 2, 1998, and issued on November 5, 2002. Accordingly, I understand that Hamlin is prior art under at least pre-AIA 35 U.S.C. § 102(e) because Hamlin’s filing date pre-dates the earliest claimed priority date of the ’748 Patent (i.e., August 19, 2002), as well as Patent Owner’s claimed earliest invention date (i.e., January 1, 2002).

86. Hamlin generally describes a system and method for automating electronic surveys over a network. Ex. 1055, Abstract, 2:50-64, 5:28-49. Additionally, Hamlin describes a program including interfaces (e.g., via JAVA Script/Applets) through which users can create a questionnaire, including specifying survey questions, possible question responses, and branching between particular responses and subsequent questions. Ex. 1055, Title, Abstract, 2:55-3:2, 5:40-9:28, 11:55-67, 14:40-15:33, Figs. 3-6.

X. THE RELEVANT ART AND LEVEL OF ORDINARY SKILL IN THE RELEVANT ART

87. In my opinion, the relevant field of art for the '748 Patent is methods and systems for management of data collected from remote computing devices. Ex. 1001, Abstract.

88. I understand that obviousness is determined from the vantage point of a hypothetical person having ordinary skill in the art (POSA) at the time of the alleged invention, which, for purposes of this declaration, I have assumed is the earliest claimed invention date of January 1, 2002.

89. I understand that the following four factors may be considered when identifying the appropriate level of a POSA: (i) the types of problems encountered by those working in the field and prior art solutions thereto; (ii) the sophistication of the technology in question, and the rapidity with which innovations occur in the field; (iii) the educational level of active workers in the field; and (iv) the educational level of the inventor. I understand that a POSA is one who is presumed to be aware of all pertinent art, thinks along conventional wisdom in the art, and is a person of ordinary creativity.

90. It is my opinion that, for the '748 Patent, a POSA would have had a bachelor's degree or higher in electrical engineering, computer engineering, computer science, or a similar discipline, and at least two years of relevant industry or research experience, including experience with data communications networks

and working experience developing applications for mobile devices that provide location-based services. Such working experience may include designing and/or programming graphical user interfaces and data driven Internet systems, and direct or indirect experience with location identification systems. Experience could take the place of some formal training, as domain knowledge and user interface design skills may be learned on the job. This description is approximate, and a higher level of education or skill might make up for less experience, and vice-versa. In addition, the prior art references discussed herein, which assume knowledge on how to program applications for mobile devices using programming languages such as JAVA or C++ to provide location based services, also reflect the appropriate level of skill at the time of the claimed invention.

91. I worked in the relevant field with persons meeting this definition of a POSA at, and leading up to, the time of the alleged invention of the '748 Patent (i.e., January 1, 2002). Therefore, I am familiar with the knowledge and skills that such persons had at the time. In my opinion, a POSA's skill set would have included client level and server level programming skills. More specifically, a POSA's skill set would have included computer programming languages and markup languages (e.g., C, C++, C#, JAVA, JavaScript, Visual Basic.NET, HyperText Mark-up Language (HTML), Extensible Markup Language (XML)) and knowledge of the

HyperText Transfer Protocol (HTTP). A POSA's skill set would have also included client-server architecture and database design skills.

92. In this Declaration, wherever I refer to a POSA, it should be understood that I'm referring to a hypothetical person at the time of the alleged invention of the '748 Patent (i.e., January 1, 2002) meeting the description I have provided in this section.

XI. CLAIM CONSTRUCTION

A. Constructions from Related IPRs

1. "GPS integral thereto"

93. I understand that in IPR2019-000610, the PTAB construed "GPS integral thereto" as "Global Positioning System equipment integral thereto." Ex. 1022, 14-16; Ex. 1023, 11.

2. "token"

94. I understand that in IPR2019-00610, the PTAB construed "token" as "a distinguishable unit of a program, such as an index, an instruction, or a command that can represent something else such as a question, answer, or operation." Ex. 1022, 16; Ex. 1023, 11. I also understand that, during prosecution, the Examiner asserted that the term "token" had "a special meaning (i.e., logical, mathematical or branching operation)", citing paragraph 54 of the as-filed specification (now Ex. 1001, 8:56-59). Ex. 1004, 617-618.

3. “central computer”/“originating computer”/“recipient computer”

95. I understand that in IPR2019-00610 the PTAB construed the Board construed each of “originating computer,” “recipient computer,” and “central computer” as encompassing a computer having the ability to perform functions associated with an originating computer, a recipient computer, and/or a central computer. Ex. 1022, 17; Ex. 1023, 11.

4. “loosely networked”

96. I understand that in IPR2019-00610 the PTAB construed “loosely networked” as “tolerant of intermittent network connections and tolerant of the type of network connection available.” Ex. 1022, 17-18; Ex. 1023, 11.

5. “executable”

97. I understand that in IPR2019-00610 the PTAB construed “executable” to mean “of, pertaining to, or being a program file that can be run.” Ex. 1024, 7. The parties agreed that JAVA and markup language (XML, HTML, JSON, etc.) are “executable” within this definition. *Id.*

B. Constructions from District Court Litigations

98. I understand that the Court in the Zoe’s Kitchen E.D. Tex. case issued a Claim Construction Order on January 23, 2023. Ex. 1027. I understand that the Court’s constructions of “loosely networked,” “GPS integral thereto,” and “executable” are identical (for “loosely networked” and “executable”) or nearly

identical (for “GPS integral thereto”) to the constructions found by the PTAB in IPR2019-00610. Ex. 1027, 7-18.

1. “customized for a particular location”

99. I understand that in the Zoe’s Kitchen case, the Eastern District of Texas construed “customized for a particular location” as having its plain and ordinary meaning. Ex. 1027, 7.

2. “questionnaire”

100. I understand that in the Zoe’s Kitchen case, the Eastern District of Texas construed “questionnaire” as “a program or form that includes a question or statement, which calls for a response.” Ex. 1027, 8.

3. “when said loosely networked computer is at said particular location, executing said transferred questionnaire on said loosely networked computer, thereby collecting responses from the user”

101. I understand that in the Zoe’s Kitchen case, the Eastern District of Texas construed the preceding term under its plain and ordinary meaning. Ex. 1027, 8-11.

4. “requests location identifying information”

102. I understand that in the Zoe’s Kitchen case, the Eastern District of Texas construed “requests location identifying information” as having its plain and ordinary meaning. Ex. 1027, 11-12.

5. “automatically transferring”

103. I understand that in the Zoe’s Kitchen case, the Eastern District of Texas construed “automatically transferring” as “transferring that is not initiated upon direction of the user.” Ex. 1027, 16-18.

104. In my analysis below, I have considered all the constructions discussed above in this section (XI), as well as the plain and ordinary meaning of each term and any other interpretations that would have been reasonable to a POSA at the time of the alleged invention.

XII. ANALYSIS

105. For the reasons that I discuss in detail below, it is my opinion that, at least by August 19, 2002 (the earliest claimed priority date), claims 7 and 8 of the ’748 Patent would have been obvious to a POSA. To summarize, it is my opinion that:

- Claims 3, 4, 9-11, and 13-15 would have been anticipated or obvious based on Barbosa;
- Claims 3, 4, 9-11, and 13-15 would have been obvious based on Barbosa in view of Bandera;
- Claim 6 would have been obvious based on Barbosa in view of Heath;
- Claim 6 would have been obvious based on Barbosa in view of Bandera and Heath;

- Claim 6 would have been obvious based on Barbosa in view of Heath and Pinera;
- Claim 6 would have been obvious based on Barbosa in view of Bandera, Heath, and Pinera;
- Claim 7 would have been obvious based on Barbosa in view of Falls;
- Claim 7 would have been obvious based on Barbosa in view of Falls and Heath;
- Claim 7 would also have been obvious based on Barbosa in view of Falls and Short;
- Claim 7 would also have been obvious based on Barbosa in view of Falls, Heath, and Short;
- Claim 8 would have been obvious based on Barbosa in view of Falls and Torrance;
- Claim 8 would also have been obvious based on Barbosa in view of Falls, Heath, and Torrance;
- Claim 8 would also have been obvious based on Barbosa in view of Falls, Short, and Torrance;
- Claim 8 would also have been obvious based on Barbosa in view of Falls, Heath, Short, and Torrance;
- Claim 12 would have been obvious based on Barbosa in view of and Morris;

- Claim 12 would have been obvious based on Barbosa in view of Bandera and Morris;
- Claim 3 would have been obvious based on Barbosa in view of Hamlin; and
- Claim 3 would have been obvious based on Barbosa in view of Bandera and Hamlin.

106. Further, I understand that Petitioner has assigned labels (e.g., [7pre], [7a], [7b], etc.) to different limitations of the claims to facilitate analysis of the claims. Accordingly, in my analysis below, I have referred to the claim limitations using those same labels, which are shown in the Claim Listing Appendix attached to this declaration as Appendix B.

A. Ground A: Barbosa in view of Falls Renders Obvious Claim 7

107. Barbosa describes systems and methods for executing programs that gather data from users of handheld computing devices (e.g., for conducting field assessments). Ex. 1005, Abstract, 6:58-7:10, 7:23-34, 7:42-8:3, 8:49-65, 9:3-14, 9:50-56, 10:10-31, 11:5-24, 12:45-54, Figs. 5-8, 10. The programs are designed to prompt the users for responses to various questions. Ex. 1005, 6:61-64, 7:42-8:3, 8:17-20, 8:49-65, 9:3-14, 9:50-56, 10:10-31, 11:5-24, Figs. 5-8, 10. For example, Barbosa describes a “remote management system” that provides an assessor at a potential job site with a program configured to gather responses to question such as job location, customer name, date, type of job, and other questions tailored to the

potential job. Ex. 1005, 7:23-34, 8:49-65, 9:3-14, 9:50-10:31, Figs. 6-7. The responses to questions posed by Barbosa's programs are transferred to a remote computer device (e.g., a server) for analysis. Ex. 1005, 6:9-27, 6:64-7:10, 7:54-66, 8:11-17, 9:3-14, 10:48-51, 11:14-22, Figs. 3, 5, 6-7, 10.

108. Barbosa's system, as described above, includes handheld devices such as mobile phones or PDAs, a management system such as a server or other computing device, and remote processors for analyzing data. Ex. 1005, 5:29-51, 6:21-25, 6:40-54, 6:58-7:10, 7:23-28, 7:54-66, Figs. 1-6. The management system transfers executable programs designed to prompt the users of the handheld devices to answer questions related to a field assessment. Ex. 1005, 7:23-34; *see also* Ex. 1005, 6:28-39, 8:17-20, Figs. 5-6. Barbosa describes that the programs may include a number of customized questions that are related to a user's location (e.g., a job site, or a particular type of field such as HVAC, plumbing, electrical, landscaping, etc.). Ex. 1005, 6:58-61 (describing programs asking questions related to a particular field problem), 7:57-8:3 (describing prompting the user for input of data, such as location information), 8:53-65 (describing asking the user specific question related to a particular field problem), 9:54-10:31 (describing a program prompting the use to identify the job location, customer name, date, and type of job), Figs. 6-8. The handheld devices possess integrated GPS modules that "may be used to determine a device location information" and "constantly update the user's current position,"

information which a POSA would have understood could be used to provide responses to the questions related to the user's location. Ex. 1005, 6:40-57, 7:42-8:3, 10:14-20, Figs. 5-8.

109. Once a handheld device has received access to a program, Barbosa's handheld device executes the program using "the microprocessor [to] ask questions" in "[an] interactive question and answer session...." Ex. 1005, 3:44-47, 6:58-64, Fig. 5. The user's responses to the questions are collected by the handheld device and analyzed in real-time. Ex. 1005, 7:42-66, 9:3-14. Barbosa explains that the analysis of the user's responses may be performed by a remote system or processor, such as a server or personal computer, which receives the responses from the handheld device. Ex. 1005, 7:47-66 (describing real-time analysis of data being performed by a remote processor), 8:11-22 (describing data being provided to remote systems with capabilities absent from the handheld devices), 9:3-14. For example, the responses in Barbosa are provided as data by synchronizing the handheld device with a server through via a wireless means (e.g., a network such as the Internet). Ex. 1005, 6:21-25 (describing the handheld device including a communications module for communicating over networks), 6:64-7:11 (describing handheld devices communicating with remote servers at different network locations), 9:3-14, 10:39-51 (describing synchronizing a handheld device with a server through wireless means), 12:51-58, Figs. 3, 5-7, 9.

110. As I explain in more detail below where I apply the prior art to the claims of the '748 Patent, it is my opinion that Barbosa teaches most of the features of the claims. However, to any extent Barbosa does not teach certain features, it is my opinion that such features would have been obvious in view of the combinations as further addressed below.

1. Independent Claim 7

111. As previously noted, it is my opinion that Barbosa teaches the majority of the features in claim 7. I understand that the Board has explicitly held that, with respect to claim 7, Barbosa discloses “an executable questionnaire, the transfer of an executable questionnaire, and data synchronization.” Ex. 1024, 8-11. I agree with these findings.

112. I also understand that the Board was not persuaded that Barbosa explicitly discloses automatic transfer of an executable questionnaire to loosely networks computers, as recited in element [7b], or making available user responses via the Internet recited in element [7f]. *Id.*, 26-27, 32-34. However, as explained below, to any extent Barbosa does not teach these features it is my opinion such features would have been obvious in view of Barbosa and Falls.

113. As I explain in more detail below, claim 7 of the '748 Patent describes “automatically transferring said designed questionnaire to at least one loosely networked computer having a GPS integral thereto.” Ex. 1001, Claim 7. It is my

opinion that a POSA would have understood Barbosa's handheld device, which integrates a GPS module and which may be connected to the management system and remote servers via one of a number of different types of networks (e.g., the Internet, paging networks, cellular phone networks, etc.) to be a "loosely networked computer having a GPS integral thereto." Ex. 1005, 6:7-57, 7:6-11, 7:42-8:3, 10:14-20, Figs. 3-8. To any extent that Barbosa does not disclose a "loosely networked computer," or a "loose network," it is my opinion that such features would have been obvious in view of Falls. Specifically, providing interactive question and answer applications and functionality to mobile devices connected through an intermittently-connected network (i.e., providing said applications and functionality to "loosely-network computer[s]" connected through a "loose network") would have been obvious in view of Falls, which teaches a network-based application system in which devices are intermittently connected to a network. Ex. 1006, Abstract, 3:16-35, 7:16-21, 16:35-37, 37:9-32; Section XI.A.4, above. As I explained above, Falls generally describes methods for synchronizing transactions across multiple devices connected via a "disconnectable network" (e.g., a loose network, where devices are intermittently connected). Ex. 1006, Abstract; Section IX.B, above. Falls teaches two or more devices which are "capable of being connected" over the Internet and may execute programs. Ex. 1006, 1:10-18, 1:30-52, 3:16-35, 6:52-7:15, 8:53-8:8, 13:60-65, 37:19-32, Figs. 1, 2. Falls further teaches receiving data at a first user

device, such as a mobile device, and automatically sending updates to a second computer and/or server based on network availability, where the updates are made available over the network. Ex. 1006, 5:20-23, 5:32-38, 13:40-42. The updates are made available upon reconnection of a disconnected mobile computing device to synchronize operations performed during the period of disconnection. Ex. 1006, 3:16-35, 7:16-21, 16:24-55, 37:9-32.

114. It is my opinion that a POSA would have found it obvious to combine Barbosa with Falls, in view of Falls's similar system connecting computing devices over a network and transferring information between the devices. Ex. 1006, Abstract, 3:16-35, 7:16-21, 16:35-37, 37:2-32. As I previously explained, Barbosa describes synchronizing a handheld device with other computing devices over a network. Ex. 1005, Abstract, 10:39-51, Fig. 9. Falls similarly describes synchronizing computing devices upon reconnection of a previously-disconnected device to a network. Ex. 1006, Abstract, 3:16-35, 7:16-21, 16:35-37, 37:2-32. Additionally, both Barbosa and Falls use computer network-connected mobile computers ("such as a laptop, palmtop, notebook, or personal digital assistant") that use applications configured to send and receive data over the network. Ex. 1006, 1:26-27, 3:16-35 (disclosing mobile computers and related networks in the summary of the invention), 6:52-61, Fig. 1. For example, Barbosa teaches that a user's handheld device may have wireless capabilities, and may connect and synchronize

to a computer network. Ex. 1005, 7:24-41, 8:4-10, Fig. 6. Barbosa teaches that handheld computing device 10 receives, from an originating computer, “a set of instructions in a code module” that “implement[]” the “invention” and/or “templates (e.g., task/punch lists) and/or programs” Ex. 1005, 6:1-2, 7:27-28. As I address further below where I apply Barbosa to the claims, Barbosa’s downloaded code modules, templates, and/or programs provides teachings of a questionnaire. Falls similarly teaches that mobile computer clients may wirelessly connect to other computers (e.g., servers) through a network, and may execute programs. Ex. 1006, 1:10-18, 1:30-52, 3:16-35, 6:52-7:15, 8:53-8:8, 13:60-65, 37:19-32, Figs. 1, 2. Falls further teaches a network in which the connected devices, such as a mobile computer, may intermittently connect and disconnected from the network, i.e., the claimed “loose network.” Ex. 1006, Abstract, 3:16-35, 7:16-21, 16:35-37, 37:9-32. For example, Falls describes a system and process for managing devices in such an intermittently-connected network (i.e., the claimed “loosely-networked devices) in a network-based application system, where the devices synchronize upon reconnection to the network after being disconnected. Falls teaches that such a system and process help to ensure that intermittently-connected devices successfully and reliably receive data and communications. Ex. 1006, Abstract, 3:16-35, 7:16-21, 16:35-37, 37:9-32.

115. It is my opinion that a POSA would have found it obvious to combine Barbosa with Falls such that, in the combined system, the handheld devices in Barbosa (loosely-networked devices) can access and use the interactive question and answer programs, provided by Barbosa, through a loose network such as that taught by Falls. Ex. 1006, 3:16-35, 5:20-31, 7:16-21, 16:35-37, 37:2-32; Ex. 1005, Abstract, 6:58-7:10, 7:23-34, 7:42-8:3, 8:49-65, 9:3-14, 9:50-56, 10:10-31, 11:5-24, 12:45-54, Figs. 5-8, 10. There are a number of teachings, suggestions, and motivations in the prior art that would have led a POSA to modify Barbosa and combine Barbosa with Falls in the ways that I have described. See Section IV (referring to obviousness rationale (G)). It is my opinion that a POSA would have been motivated to combine Barbosa with Falls to achieve a system for executing programs that gather data from users of handheld computing devices (e.g., as described in Barbosa), which system utilizes disconnectable handheld computing devices that are synchronized with Barbosa's management system storing the programs upon reconnection of the handheld computing devices to the network after a disconnect (e.g., in a loose network, as described in Falls). Ex. 1005, Abstract, 6:58-7:10, 7:23-34, 7:42-8:3, 8:49-65, 9:3-14, 9:50-56, 10:10-31, 11:5-24, 12:45-54, Figs. 5-8, 10; Ex. 1006, 1:45-53, 3:16-35, 5:20-31, 7:16-21, 16:35-37, 37:2-32. As a result of the combination, the Barbosa-Falls system would beneficially have been capable of accessing the interactive question and answer programs of Barbosa in a

loose network using Falls's techniques to ensure that the handheld devices receive the most recent versions of any executable programs, and that any responses to questions collected by the handheld devices are successfully transferred to remote processors for analysis. Ex. 1006, 1:45-53, 3:16-35, 5:20-31, 7:16-21, 16:35-37, 37:2-32.

116. Barbosa describes that its system is designed to more efficiently and accurately render field assessments, to ensure that information critical to field operations is not lacking. Ex. 1005, 1:25-32 (describing issue of even experiences professionals finding access to critical information lacking), 3:13-17 (describing the efficiency and accuracy benefits of Barbosa's system). Accordingly, it is my opinion that a POSA would have been motivated to combine Barbosa with Falls to improve the effectiveness and efficiency of Barbosa's system by utilizing Falls's techniques. Specifically, the combination of Barbosa-Falls would provide the most recent versions of any executable programs from Barbosa's management system to the handheld computing devices, and would provide any responses to questions collected by the handheld computing devices during a disconnect, automatically upon reconnecting the handheld computing devices (loosely-networked computing devices) to the management system after the disconnect. Ex. 1006, 1:45-53, 3:16-35, 5:20-31, 7:16-21, 16:35-37, 37:2-32. Therefore, in making the combination, a POSA would have improved the accuracy of Barbosa's system by preventing loss

of information critical to field operations when Barbosa's system experiences the known issues of remote computers occasionally disconnecting from a home network. *Id.*

117. Additionally, modifying Barbosa to utilize Falls's techniques to allow the interactive question and answer programs to be accessed and used by loosely-connected mobile handheld devices, through a loose network, would broaden the reach and accessibility of Barbosa's services and functions. For example, the modification would have allowed users of the loosely connected handheld devices to access the programs at remote locations with intermittent network connectivity by facilitating the handheld devices reconnecting with the intermittently-connected (i.e., "loose") network. Ex. 1006, 1:45-53, 3:16-35, 5:20-31, 7:16-21, 16:35-37, 37:2-32.

118. It is also my opinion that other rationales support my finding that the combination of Barbosa and Falls would have been obvious. First, the combination of Barbosa and Falls merely combines known prior art elements according to known methods to yield predictable results. See Section IV (referring to obviousness rationale (A)). The known prior art elements are Barbosa's system for executing computer programs, which system comprises a management system in communication with handheld mobile (i.e., loosely-networked) computing devices (like the mobile devices also described in Falls), and Falls's technique for utilizing

handheld computing devices in intermittently-connected networks. Ex. 1005, Abstract, 6:58-7:10, 7:23-34, 7:42-8:3, 8:49-65, 9:3-14, 9:50-56, 10:10-31, 11:5-24, 12:45-54, Figs. 5-8, 10; Ex. 1006, 1:45-53, 3:16-35, 5:20-31, 7:16-21, 16:35-37, 37:2-32. These known elements would have been combined according to known methods, such as method of configuring (e.g., programming) computing devices (such as Barbosa's management system and handheld computing devices) to operate with an intermittently-connected network as described in Falls, using programming techniques that would have been within the ordinary knowledge, skillset, creativity, and common sense of a POSA at the time of the alleged invention. Ex. 1006, 1:10-18, 1:30-53, 3:16-35, 5:20-31, 6:52-7:21, 8:53-8:8, 13:60-65, 37:19-32, Figs. 1, 2. Falls teaches such a known method for managing intermittently-connected devices in a loose network-based application system, particularly synchronizing devices upon reconnection to the intermittently-connected network after being disconnected to ensure that the devices successfully and reliably receive data and communications. Ex. 1006, Abstract, 3:16-35, 7:16-21, 16:35-37, 37:9-32. Finally, the combination yields predictable results, specifically it yields an improved system for executing computer programs with intermittently-connected devices and networks, which would have resulted in a system that was more widely accessible, and also more reliable. Ex. 1005, Abstract, 6:58-7:10, 7:23-34, 7:42-8:3, 8:49-65, 9:3-14, 9:50-56,

10:10-31, 11:5-24, 12:45-54, Figs. 5-8, 10; Ex. 1006, 1:10-18, 1:30-53, 3:16-35, 5:20-31, 6:52-7:21, 8:53-8:8, 13:60-65, 37:19-32, Figs. 1, 2.

119. It is further my opinion that a POSA would have recognized that the combination of Barbosa and Falls would have also been the use of a known technique to improve similar systems in the same way. See Section IV (referring to obviousness rationale (C)). The known technique is Falls's technique for allowing devices that rely on intermittently-connected networks (rather than constantly-connected networks) to be used to access Barbosa's assessment systems and applications. Ex. 1006, 1:45-53, 3:16-35, 5:20-31, 7:16-21, 16:35-37, 37:2-32. The known devices are Barbosa's management system and handheld computing devices, similar to Falls's server and mobile computers (both similar network-based application systems), both of which use data synchronization to transfer data through computer networks as I have described above. Ex. 1005, 6:21-25, 6:64-7:11, 9:3-14, 10:39-51, 12:51-58, Figs. 3, 5-7, 9; Ex. 1006, 1:10-18, 1:30-53, 3:16-35, 5:20-31, 6:52-7:21, 8:53-8:8, 13:60-65, 37:19-32, Figs. 1, 2. It is my opinion that it would have been obvious to a POSA to use loosely-connected networks and devices in the Barbosa system (e.g., to improve the reach and accessibility of Barbosa's interactive question and answer programs as I have described above in this section). By applying Falls's teachings, devices that rely on intermittently-connected networks (rather than constantly-connected networks) may be used to access Barbosa's

interactive question and answer programs and associated systems, which would have been improved Barbosa in the same way (enabling Barbosa's management system and handheld computing devices to be used with intermittently-connected networks such that users would not be limited to devices that only capable of accessing constantly-connected networks). Ex. 1005, Abstract ("[d]ata may be synchronized with a server over a network"), 3:29-36, 6:21-25, 7:24-41, 10:39-51, 11:14-22; Ex. 1006, 1:10-18, 1:30-53, 3:16-35, 5:20-31, 6:52-7:21, 8:53-8:8, 13:60-65, 37:19-32, Figs. 1, 2.

120. Finally, a POSA would have had a reasonable expectation of success in achieve the desired combination of Barbosa and Falls. This is because the combination involves routine techniques of programming computing devices to reconnect with an intermittently-connected network after a disconnect (and e.g., in order to get access to the most accurate data), which were well known at the time and would have been understood by a POSA. Ex. 1005, Abstract ("[d]ata may be synchronized with a server over a network"), 3:29-36, 6:21-25, 7:24-41, 10:39-51, 11:14-22; Ex. 1006, 1:10-18, 1:30-53, 3:16-35, 5:20-31, 6:52-7:21, 8:53-8:8, 13:60-65, 37:19-32, Figs. 1, 2. Further, a POSA would have had the skills, including programming and network communication design skills, to carry out this straightforward implementation of a system in which a computing device or set of devices (e.g., Barbosa's management system) automatically transfers information to

a mobile computer (e.g., Barbosa's handheld computing devices), and automatically receives transferred information from the mobile computer, via an intermittently-connected network. *Id.*; see also Sections VIII.A, X, above.

a. [7pre]: "A method for collecting survey data from a user and making responses available via the Internet, comprising:"

121. I have been asked to assume that the preamble is limiting. Accordingly, it is my opinion that Barbosa teaches this preamble. Barbosa describes providing handheld computing devices with programs configured to gather responses to questions. Ex. 1005, 7:23-34, 8:49-65, 9:3-14, 9:50-10:31, Figs. 6-7. Barbosa further describes that the handheld computing devices execute the programs to provide "[a]n interactive question and answer session." Ex. 1005, 6:58-7:22, 7:41-63, 9:36-49, 12:45-13:5, Figs. 6, 7 (steps 709, 710). As I previously explained in the introduction to Ground A above, Barbosa describes that the users' responses are made available over the Internet for a remote system or processor to analyze the responses. Ex. 1005, 7:12-22, 7:41-66 (describing real-time analysis of data being performed by a remote processor), 8:11-22 (describing data being provided to remote systems with capabilities absent from the handheld devices), 12:55-58 (describing the remote computing device being connected to the handheld devices via the Internet), Figs. 6 and 7 (steps 709, 710). Accordingly Barbosa, and thus the combination of Barbosa and Falls, teaches or renders obvious limitation [7pre].

- b. [7a]: “(a) designing a questionnaire including at least one question said questionnaire customized for a particular location having branching logic on a first computer platform wherein at least one of said at least one questions requests location identifying information;”**

122. As explained below where I apply the prior art to the limitation, it is my opinion that Barbosa (and thus, the combination of Barbosa and Falls) teaches or renders obvious limitation [7a].

123. As I have previously explained, Barbosa’s “remote management system 58” provides the programs, configured to gather response to questions, to the handheld computing devices. Ex. 1005, 7:23-34, 8:49-65, 9:3-14, 9:50-10:31, Figs. 6-7. Barbosa describes that the remote management system 58 is a platform such as “a server” or “desktop PC,” which a POSA would have understood to be a “first computer platform” as recited in limitation [7a]. Ex. 1005, 7:23-26, Fig. 6. Barbosa’s remote management system is the element of its system for executing programs creates “a set of instructions in a code module” that “implement[]” the “invention” and/or “programs” to be provided to a handheld device 10. Ex. 1005, 5:52-6:27, 7:23-41 (“Job templates and/or programs may also be centrally stored within one or more databases 61/59 accessible to management system”), Fig. 6. Accordingly, it is my opinion that a POSA would have understood that Barbosa’s remote management system creates custom-designed executable questionnaires because the downloaded code modules and programs created by Barbosa’s remote

management system are designed to prompt users of the handheld devices for responses to various questions. Ex. 1005, 6:61-64, 7:42-8:3, 8:17-20, 8:49-65, 9:3-14, 9:50-56, 10:10-31, 11:5-24, Figs. 5-8, 10. For example, Barbosa's remote management system would have used computer program code "written in an object oriented programming language such as Java" to provide a program that, when executed, creates "[a]n interactive question and answer session" including at least one question. Ex. 1005, 12:45-51, 6:40-62. Barbosa further describes that these programs are "operated by the microprocessor [to] ask questions or provide guidance related to a particular field problem." Ex. 1005, 6:58-7:22 ("The program would prompt the user for input of data related to the problem"), 7:42-8:3, 9:50-10:30. Therefore, by disclosing the creation of the programs (e.g., by developing the program code as discussed above) for the interactive question and answer program, Barbosa teaches the claimed "designing a questionnaire including at least one question...on a first computer platform."

124. I understand that the Board previously found claims 1 and 19 of the '748 Patent unpatentable over Barbosa. *See* Ex. 1023, 18-33, 37-40. It is my opinion that claims 1 and 19 describe limitations that are similar to [7a]. For example, claim 1 recites "creating a questionnaire comprising a series of questions customized for a location." Ex. 1001, Claim 1. The Board previously found that Barbosa alone teaches this feature, and I concur with the Board's determination. Ex. 1023, 32, 39-

40. Claim 19 does not recite creating/designing the questionnaire, but the claim does recite “receiving within said handheld computing device a transmission of **a tokenized questionnaire from said originating computer, said tokenized questionnaire including at least one question requesting location identifying information.**” Ex. 1001, Claim 19 (emphasis added). I understand that the Board found that Barbosa alone teaches this feature of claim 19, agreeing that the programs described in Barbosa (e.g., the interactive question and answer program) teach a tokenized questionnaire as recited in claim 19. Ex. 1023, 18-26. I also note that the Board previously determined that “Barbosa discloses an executable questionnaire” that is programmed to be operated by a microprocessor. Ex. 1024, 8-9. I agree with all the above findings of the Board and it is my opinion that, based on said findings, Barbosa teaches “designing a questionnaire including at least one question...on a first computer platform.”

125. Further, Barbosa teaches that its computer programs (claimed “questionnaire”) would include “at least one question” with “said questionnaire customized for a particular location having branching logic” as recited in limitation [7a]. As described above, because Barbosa’s teaches a program “operated by the microprocessor [to] ask questions or provide guidance related to a particular field problem” said program is a questionnaire that includes “at least one question.” Ex. 1005, 6:60-61, 7:47-48, 9:54-56. It is my opinion that a POSA would have

understood that a questionnaire (e.g., a computer program) written in an object-oriented programming language such as JAVA would have necessarily included, in the computer program code, distinguishable units, such as indexes, instructions, or commands that can represent something else (e.g., a question, an answer, and/or an operation of the program) in order to provide the “interactive question and answer” session described in Barbosa. Ex. 1005, 3:44-47, 6:40-42, 6:58-64, 12:45-51, Fig. 5. For example, Barbosa explains that “[t]he program may start by asking for the identification of [] the client or matter 703 (e.g., customer, or job site),” and “[t]he program may next ask the representative to identify the problem or type of assessment 704 (e.g., HVAC, plumbing, electrical, landscaping, etc.).” Ex. 1005, 8:54-59. Thus, a POSA would have understood that Barbosa’s questionnaire program would have included instructions that ask these questions (e.g., identification of type of assessment), as well as indexes, instructions, and/or commands corresponding to the available answers (e.g., HVAC, plumbing, electrical, or landscaping). As also explained in below, a POSA would have recognized that Barbosa’s questionnaire program would have included instructions and operations connecting the first question to the next, further teaching the claimed tokenization.

126. It is also my opinion that a POSA would also have understood that Barbosa’s program would have used these units with logical, mathematical, and

branching operations to provide the “interactive question and answer” session, such as to provide branching questions in response to different answers collected from users. Ex. 1005, 8:17-20, 8:49-65, 9:50-10:1, Figs. 7-8. For example, and as I noted above, Barbosa describes a questionnaire in the form of an “appraisal program.” Ex. 1005, 8:49-9:14. Barbosa explains that “only the most relevant questions and/or interaction [should] be invoked by the program.” Ex. 1005, 8:59-60. Figure 7 of Barbosa shows a flow chart for a construction application with a questionnaire. Ex. 1005, 7:42-47, 8:49-50, Fig. 7. In that flow chart, at a job site, the assessor starts an appraisal program 702 on device 10. Ex. 1005, 7:42-8:3, 8:49-9:14, Fig. 7. In particular, “[t]he program may start by asking for the identification of [] the client or matter 703 (e.g., customer, or job site),” and “[t]he program may next ask the representative to identify the problem or type of assessment 704 (e.g., HVAC, plumbing, electrical, landscaping, etc.).” Ex. 1005, 8:49-9:14. Based on the responses (i.e., the “identified subject matter 705”), “[t]he program would then start asking the user specific questions, or provide initial information, related to the identified subject matter 705.” Ex. 1005, 8:60-63. A POSA would have recognized that Barbosa’s program connects one question to the next with specific questions based on responses provided to previous questions and therefore teaches a questionnaire “having a branching logic.” Ex. 1005, 8:17-20, 8:49-65, 9:50-10:1, Figs. 7-8.

127. A POSA would have understood that Barbosa teaches a program that is a questionnaire “customized for a particular location” because Barbosa’s programs may include a number of customized questions that are related to a user’s location (e.g., a job site). Ex. 1005, 6:58-61 (describing programs asking questions related to a particular field problem), 7:56-8:3 (describing prompting the user for input of data, such as location information), 8:53-65 (describing asking the user specific question related to a particular field problem), 9:54-10:31 (describing a program prompting the use to identify the job location, customer name, date, and type of job), Figs. 6-8. As noted above, Barbosa also explains that “only the most relevant questions and/or interaction [should] be invoked by the program,” which a POSA would have understood to include questions relevant to the location where an assessor is located (e.g., a potential job site). Ex. 1005, 8:59-60. Additionally, Barbosa teaches questionnaire programs that may be used for various types of events such as an environmental catastrophe. Ex. 1005, 12:1-3. Barbosa explains that users may be “assigned/deployed to specific positions of the affected environment.” Ex. 1005, 12:1-3. A “specific position[]” describes a location. *Id.* Barbosa goes on to explain that “[a]t their respective positions, assessor[s] are provide[d] a template from the remote server 1302 comprising unique/updated instructions for their respective assessment of the position (e.g., data collection instructions).” *Id.*, 12:11-

14. This description of providing specific questionnaires for specific locations describes a questionnaire that is specific to, i.e., customized for, a particular location.

128. To any extent Barbosa is not explicit about a questionnaire being customized for a location, this would have been obvious. As noted above, Barbosa teaches a that different questions may be relevant to different industries, uses, environments, locations. Accordingly, a POSA would have found it obvious to have adopted location-specific (i.e., location customized) questionnaires because a POSA would recognize that different industries, locations, environments, and events would call for different questions. For example, a questionnaire program for an HVAC assessor may include air conditioning questions for a house or building in Miami, whereas a questionnaire for a house or building in Alaska would not. In another example, a POSA would have found it obvious to customize a plumbing questionnaire (as taught in Barbosa) based on location (e.g., state) because of different plumbing regulations in different states, towns, counties, or the like.

129. Such customization for Barbosa's questionnaire would have been at least the application of a known technique to improve a known product ready for improvement to yield predictable results. More specifically, the known product was Barbosa's questionnaire that, in some examples, are used for assessments in various industries and location, and the known improvement technique was customization of a questionnaire program, which Barbosa at least describes with respect to different

industries and purposes. Ex. 1005, 9:50-10:31 (“The assessor may then select the type of program 802 to be utilized (e.g., HVAC Estimating, trouble-shooting, efficiency assessment).”); *see also* Ex. 1005, 10:32-12:32, Figs. 8-13. Barbosa’s questionnaire was ready for improvement because Barbosa acknowledges that different locations might have different costs (i.e., location specific considerations) and more generally that the same questionnaire program cannot be used for all situations. Ex. 1005, 10:9-31. The results would have been predictable as well since a POSA would have known how to modify a questionnaire program (e.g., JAVA programming) and expected the result of the re-programming.

130. In addition to disclosing a questionnaire including at least one question, Barbosa teaches the claimed “wherein at least one of said at least one questions requests location identifying information.” As I described above, Barbosa’s programs may include a number of customized questions that are related to a user’s location. Ex. 1005, 6:58-61, 7:57-8:3, 8:53-65, 9:54-10:31, Figs. 6-8. For example, Barbosa describes that “[o]nce a program is opened on the handheld device, the assessor may be asked (e.g., prompted) to identify the job 801 (e.g., location, customer name, date, type of job).” Ex. 1005, 9:50-10:31. As I explained in the introduction to Ground A, Barbosa describes that its handheld devices possess integrated GPS modules that “may be used to determine a device location information” and “constantly update the user’s current position,” information which

a POSA would have understood could be used to provide responses to the questions related to the user's location. Ex. 1005, 6:40-57, 7:42-8:3, 9:50-10:31, 11:63-12:32, Figs. 5-8. A POSA would have understood that the location identifying information requested by the at least one question could be provided using GPS coordinates. Ex. 1005, 7:66-67, 12:30-32 ("GPS coordinate[s] associated with the collection of data [is an] important attribute[.]"). Additionally, Barbosa describes that one of the initial question responses could include the location identifying information described above, and that further questions are specified by the initial responses. Ex. 1005, 8:49-63, 7:51-66, 9:50-10:31. Therefore, as described above, Barbosa's program is a questionnaire that is customized for a particular location and includes branching logic with at least one question requesting location identifying information. Ex. 1005, 3:44-47, 6:40-57, 7:42-8:3, 8:49-9:14, 9:50-10:31, 12:30-32, Figs. 5-8, 10.

131. For all the reasons set forth above, it is my opinion that Barbosa (and thus, the combination of Barbosa and Falls) renders limitation [7a] obvious.

c. [7b]: "(b) automatically transferring said designed questionnaire to at least one loosely networked computer having a GPS integral thereto;"

132. As explained below where I apply the prior art to the limitation, it is my opinion that the combination of Barbosa and Falls teaches or renders obvious limitation [7b].

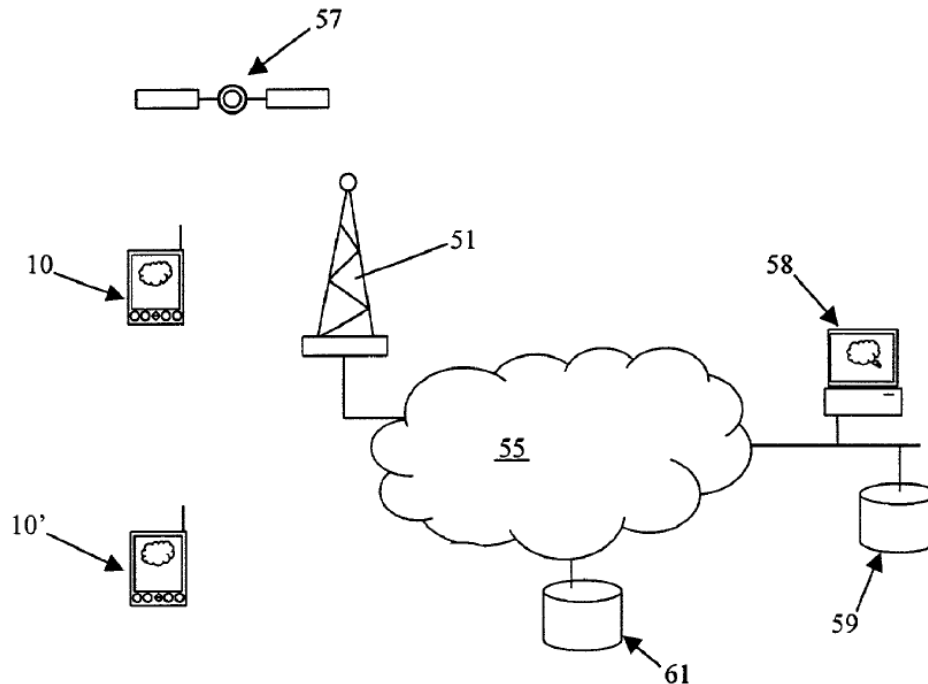
133. As I explained in the introduction to Section XII.A, above, Barbosa describes that a GPS is integral to the handheld computing devices. Ex. 1005, 6:40-57, 7:42-8:3, 10:14-20, Figs. 5-8. Specifically, the handheld devices are “equipped within a position module 46 to enable the handheld device to utilize positioning systems or methods known in the art such as satellite position (e.g., Global Positioning System (GPS)).” Ex. 1005, 6:40-44. As shown in Figure 5, the GPS receiver 46 is integral to the handheld computing device 10. Ex. 1005, Fig. 5. The GPS integral to the handheld computing device can provide the location identifying information using GPS coordinates. Ex. 1005, 7:66-67, 12:30-32 (“GPS coordinate[s] associated with the collection of data [is an] important attribute[.]”). Further, as I described in more detail above with respect to the combination of Barbosa and Falls, the combination teaches that Barbosa’s device 10 is loosely networked. Section XII.A.1, above (introduction explaining the combination); Ex. 1006, 3:16-35, 16:35-43, 37:9-32. Based on the above, Barbosa teaches “at least one loosely networked computer having a GPS integral thereto.”

134. Barbosa teaches “transferring said designed questionnaire” as recited in limitation [7b]. Barbosa’s remote management system 58 (the claimed “first computer platform”; see Section XII.A.1.b, above) provides the programs, configured to gather responses to questions, to the handheld computing devices. Ex. 1005, 7:23-34, 8:49-65, 9:3-14, 9:50-10:31, Figs. 6-7. Barbosa’s handheld

computing devices are mobile devices that are not physically coupled to the remote management system. Ex. 1005, 5:43-45 (“The device 10 [is] easily portable such that it substantially fit within the palm of a users hand.”), 5:29- 34. Barbosa therefore establishes connections between the remote management system and the handheld computing devices in order to provide the programs. Ex. 1005, 5:43-45, 5:29-34, 7:26-28, 12:51-58. Barbosa further explains that its invention is implemented as “a set of instructions in a code module resident in the RAM 26” of the handheld computing devices. Ex. 1005, 5:52-6:27 (wireless communication module 42), 7:23-41 (remote management system 58 providing programs to device 10), Fig. 6. The instructions (e.g., the programs, including the questionnaire) required to implement Barbosa’s invention are “downloaded from a server via the Internet.” Ex. 1005, 5:52-6:27 (wireless communication module 42), 7:23-41 (remote management system 58 providing programs to device 10), Fig. 6. Barbosa also describes that the handheld computing devices include a “[w]ireless communication module 42” which “provides wireless real-time access to servers.” Ex. 1005, 6:9-14, 6:21-22.

135. Barbosa’s remote management system transfers, using the connections established as described above, programs configured to gather responses to question such as job location, customer name, date, type of job, and other questions tailored to the potential job. Ex. 1005, 7:23-34, 8:49-65, 9:3-14, 9:50-10:31, Figs. 6-7. Specifically, Barbosa describes that “communication” (e.g., a connection) is

established between handheld computing device 10 and remote management system 58 to download “templates (e.g., task/punch lists) and/or programs.” Ex. 1005, 7:23-28, 7:31-37, Fig. 6. For example, the communication/connection would be established via a network 55 as shown in Figure 6 below:



Ex. 1005, Fig. 6

At least one of these programs would have been the claimed designed questionnaire, because Barbosa describes that the “programs operated by the microprocessor ask questions or provide guidance related to a particular field problem.” Ex. 1005, 6:60-61, 7:47-48 (“The program would prompt the user for input of data related to the problem”), 9:54-56; See Section XII.A.1.b, above (explaining that the designed questionnaire is executed by the microprocessor to gather responses to questions related to field problems). For the reasons set forth above, it is my opinion that

Barbosa teaches the claimed “transferring said designed questionnaire to at least one loosely networked computer.” Ex. 1005, 6:58-7:22; *see also id.*, 7:42-8:3, 9:50-10:31.

136. I understand that the Board previously held that the “designed questionnaire” of limitation [7b] must be an executable questionnaire, and that “executable” is construed as “of, pertaining to, or being a program file that can be run” and “Java and markup languages (XML, HTML, JSON, etc.) are ‘executable.’” Ex. 1024, 7-8; *see also* Section XI.A.5. I further understand that the Board previously recognized that Barbosa teaches or renders obvious such executable questionnaires. Ex. 1024, 8-11.

137. To any extent that the “designed questionnaire” of limitation [7b] must be an executable questionnaire, I concur with the Board’s previous determination that Barbosa teaches or renders obvious such a questionnaire. Barbosa describes that “[a] user in the field may utilize a handheld device 10 for assessment of a field problem ... [by] **execut[ing] a[n] industry-specific program** on the handheld device 10 related to the problem being addressed.” Ex. 1005, 7:42-47. (emphasis added). Barbosa teaches providing a template from a remote server (1302) to assessors and that this “template may operate in combination with programs resident in the handheld computer or may be accompanied by a **computer program transmitted from the sever (e.g., in the form of a JAVA applet).**” *Id.*, 11:63-

12:32 (emphasis added). Barbosa also teaches that the “[c]omputer program code for carrying out operations of the present invention can be written in an object oriented programming language **such as JAVA**, Smalltalk or C++.” Ex. 1005, 12:45-47 (emphasis added), 12:48-13:5, 5:52-6:27, 7:23-41. Barbosa’s handheld computing device receives, from an originating computer, “a set of instructions in a code module” that “implement[]” the program. Ex. 1005, 12:45-13:5, 5:52-6:27, 7:23-41. A POSA would therefore have understood that Barbosa’s system uses programming languages such as JAVA to program the “industry-specific program” to be executed on the handheld device, resulting in an executable program. Ex. 1005, 7:43-45.

138. I have been asked to consider two scenarios with respect to Barbosa’s teaching of limitation [7b]. The first is a scenario where it is argued that Barbosa does not disclose that the handheld computing device is “at least one loosely networked computer” as claimed. The second is a scenario where it is argued that Barbosa does not disclose that the questionnaire is transferred “automatically” as claimed. For the reasons set forth below, it is my opinion that these features would have been obvious to a POSA in view of the teachings of Barbosa, and/or the teachings of Falls.

139. As previously explained, it is my opinion that Barbosa teaches that the handheld computing devices are “at least one loosely networked computer.”

Barbosa explains that “[f]ield assessment data synchronization and/or delivery is enabled using wireless capabilities resident in handheld personal computing devices.” Ex. 1005, Abstract. Barbosa also teaches that such wireless communication may use cellular telecommunications technology. Ex. 1005, Abstract, 6:6-27, Fig. 6.

140. Barbosa describes that its handheld computing devices are capable of storing collected data (e.g., responses to the designed questionnaire) in local memory of the handheld computing devices for later use, such as synchronization with a server. Ex. 1005, 8:4-10. Further, as noted above, Barbosa explains that synchronization is enabled using the wireless capabilities of the handheld computing devices. Ex. 1005, Abstract; see also Ex. 1005, 6:9-14, 6:21-22 (describing the wireless communications components of the handheld computing devices for accessing remote servers). Therefore, though Barbosa may not expressly describe the handheld computing devices storing data for intermittent connections and automatically transmitting/receiving data after connections are restored, a POSA would have recognized that Barbosa describes the handheld computing devices as including components that provide the capability of performing such functions. Ex. 1005, Abstract, 6:9-14, 6:21-22, 8:4-10. A POSA would have been motivated to take advantage of a handheld computing device’s capability to store data for intermittent connections and automatically transfer data after connections are

restored (i.e., the capability to be tolerant of intermittent connections) in order to facilitate the efficient rendering of field assessments in situations where a stable connection cannot be maintained. Ex. 1005, 1:25-32, 3:13-17; Ex. 1037, 1:65-2:5, 2:7-16; Ex. 1038, Abstract, ¶[0006].

141. To any extent that the above described disclosures do not disclose elements of a “loosely networked” computer, it is my opinion that Falls teaches these features. For example, and as I explained above in the introduction to this ground, to any extent that Barbosa does not disclose that the handheld computing devices are “tolerant of intermittent network connections and tolerant of the type of network connection available,” Falls expressly describes handling intermittent network connections and techniques for synchronization between a mobile device which connects, disconnects, and reconnects with a computer network. Ex. 1006, 3:16-35; *See* Section XI.A.4, above. Specifically, as I described above when addressing the combination of Barbosa and Falls, Falls teaches a technique for operating handheld computing devices within such an intermittently-connected network and using intermittently-connected devices by synchronizing computers upon being reconnected. Ex. 1006, 16:35-37. As I previously noted, Falls describes that synchronization is an automatic process of updating a mobile computer, performed when the mobile computer reconnects to a network after a period of disconnection,

which process can be applied in a variety of situations. Ex. 1006, 3:16-35, 5:20-31, 7:16-21, 16:35-37, 37:2-32.

142. A POSA would have understood that the application of Falls's synchronization techniques to Barbosa's system renders the handheld computing devices tolerant of intermittent connections to the server in real-time and tolerant of different types of networks. Section XI.A.4, above. Falls teaches that the computers are synchronized upon being reconnected. Ex. 1006, 16:35-37. As noted above, Falls provides an overview of how the synchronizing of transactions between intermittently-connected devices can be applied in a variety of situations. Ex. 1006, 37:9-32. Because the synchronizing occurs after a disconnect and is applicable to a variety of situations (e.g., usage of different types of networks), Falls's synchronization techniques render Barbosa's handheld computing devices further tolerant of intermittent connections and tolerant of different types of networks. Ex. 1006, 3:16-35, 5:20-31, 7:16-21, 16:35-37, 37:2-32; Ex. 1005, Abstract (describing data synchronization), 8:4-10 (describing handheld computing devices storing data temporarily for subsequent use, such as synchronization). Synchronization techniques such as those described by Falls were known in the art as a useful means for maintaining up-to-date information across devices in systems with intermittent connections between devices. Section VIII.F, above; Ex. 1039, 1:53-2:7, 2:26-37, 6:14-19, 6:35-37, 25:11-17, Figs. 2-3; Ex. 1038, ¶¶[0027], [0080], [0097], [0108]-

[0111], [0351]-[0353]. I also understand that in IPR2019-00610, the Board agreed “that Falls expressly discloses storing data for intermittent connections and automatically transmitting such data after connections are restored.” Ex. 1024, 17. I agree with the Board’s determination. Further, as I explained in detail in the introduction to Section XII.A.1, a POSA would have been motivated to modify Barbosa to operate with loose networks and loosely-connected devices (e.g., by performing synchronization using Falls’s techniques) to ensure that the handheld devices 10 of Barbosa receive the most recent versions of any executable programs, and that any responses to questions collected by the handheld devices are successfully transferred to remote processors for analysis. Ex. 1006, 1:45-53, 3:16-35, 5:20-31, 7:16-21, 16:35-37, 37:2-32; *See* Section XII.A.1, above (describing additional motivations for modifying Barbosa based on Falls).

143. As for the claimed “automatically” transferring the designed questionnaire, Barbosa teaches these features because (as I explain further below) Barbosa describes the use of automatic synchronization techniques and providing real-time access to programs at remote servers, which a POSA would have understood involve the automatic transfer of data. Ex. 1005, 3:28-43 (“field assessment data synchronization and/or delivery using wireless capabilities resident in handheld personal computing devices” and “two-way communication between remote computing means (e.g., servers, desktop computers) and handheld data

management devices to facilitate real-time access to remote programs, assistance and/or information related to the field assessment being undertaken by using a handheld data management device user”), 5:52-6:39 (“... device 10 may include an integrated modem 40 to provide data transfer functions and for remote connectivity...”), 6:58-7:22 (“Interactivity may also be provided to remote resources when two-way communication is provided between the device and a remote server”), Fig. 6. A POSA would have understood that the transfer of data would have included programs because programs are fundamentally data. To the extent that the Patent Owner argues that data is different from programs, a POSA would have found it obvious to not only automatically transfer data, but also the programs that would use said data. *See, e.g.*, Ex. 1005, 6:61-64 (“An interactive [program] may also include the provision of checklists and relevant data in support of a user dialogue with the device”). As explained in the introduction to Section XII.A, above, Barbosa describes that its system is designed to more efficiently and accurately render field assessments, to ensure that information critical to field operations is not lacking. Ex. 1005, 1:25-32 (describing issue of even experiences professionals finding access to critical information lacking), 3:13-17 (describing the efficiency and accuracy benefits of Barbosa’s system). As I address below, synchronization involves the automatic transfer of data so as to provide the most up-to-date data to two or more devices. *See* Section VIII.F, above. It would have been obvious to a

POSA that the data, including the designed questionnaire, would have been transferred automatically and in real-time when a connection is established between the handheld computing devices and a remote server (e.g., the remote management system) in order for the user of the handheld computing device to efficiently render the field assessment using the most up-to-date data. Ex. 1005, 3:28-43, 6:21-39, 6:60-67, 7:23-28, 7:31-37, 7:47-48, 9:54-56, Fig. 6. To any extent that Barbosa does not explicitly disclose that the designed questionnaire would have been transferred automatically, a POSA would have been motivated to configure Barbosa's system to transfer the designed questionnaire when the connection is established in order to facilitate the efficient rendering of field assessments described in Barbosa. Ex. 1005, 1:25-32, 3:13-17.

144. Barbosa teaches "automatically transferring said designed questionnaire" based on its teachings of automatic synchronization. A POSA would have understood that during automatic synchronization on a wireless network, data is automatically transferred so as to align to or more devices with the most up-to-date data. For example, a POSA would have known that synchronization involves the automatic transfer of data when a connection is available, and temporarily storing the data for later transmission when a connection is unavailable, as this was a well-known characteristic of network communication protocols that relied on synchronization for transmission and delivery over a wireless network at the time.

Ex. 1039, 1:53-2:7 (describing synchronizing handheld computing devices and remote computing devices), 2:26-37 (describing synchronizing data between devices), 6:14-19 (describing synchronizing data between portable computers and desktop computers at predetermined times), 6:35-37 (describing storing information for later retrieval during synchronization), 25:11-17 (describing a synchronization function where stored information is indicated for later retrieval during synchronization), Figs. 2-3; Ex. 1038, ¶¶[0027], [0080], [0097], [0108]-[0111], [0351]-[0353]; Ex. 1005, Abstract (describing data synchronization), 8:4-10 (describing handheld computing devices storing data temporarily for subsequent use, such as synchronization). Through such synchronization, networked computers coordinate transmission of data between one another, sending data when appropriate and storing data for later transmission when a connection is established. *Id.* Such techniques for handling unreliable network connections were beneficial at that time given the unreliable nature of existing wireless data connections. Ex. 1037, 1:65-2:5 (describing the unreliable nature of mobile data connections), 2:7-16 (describing risks of intermittent connections with mobile devices and the downsides of manual (i.e., non-automatic) reconnection and synchronization); Ex. 1038, Abstract, ¶[0006].

145. To any extent that Patent Owner argues Barbosa’s synchronization teachings do not render “automatically transferring said designed questionnaire”

obvious, it is my opinion that a POSA would have found it obvious to modify Barbosa to utilize Falls similar technique for automatic synchronization between computers in an intermittently-connected network. Ex. 1006, 16:35-37, 37:9-32. As I have previously explained in this section, Falls addresses performing automatic synchronization upon reconnection of handheld computing devices to a network after a disconnect. Ex. 1006, 16:35-43, 37:9-32. Specifically, Falls explains that “upon reconnection of the mobile computer to the network, the invention synchronizes operations performed on the mobile computer during the disconnected interval with operations performed on the network during that interval,” with operations including “distributed software applications.” Ex. 1006, 3:26-35, 7:53-8:9; *see also id.*, 5:20-31, 37:9-32. Falls also provides that “[s]ynchronization is both substantially automatic and transactional, so minimal user intervention is needed.” Ex. 1006, 3:30-33.

146. It is my opinion that it would have been obvious to a POSA to modify Barbosa’s process of transferring an executable questionnaire (e.g., the interactive question and answer program) through a network in view of either the automatic data synchronization features of Barbosa (as discussed above) or the automatic synchronization in intermittent-connected networks features of Falls. As I have covered above, a POSA would have been motivated to ensure that the handheld devices receive the most recent versions of any executable programs, and that any

responses to questions collected by the handheld devices are successfully transferred to remote processors for analysis, and therefore would have modified Barbosa in view of Falls's synchronization technique for similar reasons to those that would have motivated a POSA to apply the synchronization technique of Falls to Barbosa to operate in a loose network with loosely-connected devices. Ex. 1006, 1:45-53, 3:16-35, 5:20-31, 7:16-21, 16:35-37, 37:2-32. A POSA would also have been motivated to apply the synchronization features of Barbosa or the automatic software application synchronization features of Falls in order to facilitate the efficient rendering of field assessments described in Barbosa. Ex. 1005, 1:25-32, 3:13-17.

147. It is also my opinion that other rationales support my finding that modifying Barbosa's process of transferring an executable questionnaire through a network in view of either the automatic data synchronization features of Barbosa or the automatic software application synchronization features of Falls to predictably result in a system that automatically transfers the executable questionnaire would have been obvious to a POSA. First, either modification merely applies a known technique to a known device/method ready for improvement, to yield predictable results. *See* Section IV (referring to obviousness rationale (D)). The known technique is Barbosa's or Falls's automated synchronization technique. Ex. 1005, 3:28-43, 6:21-39, 6:64-67; Ex. 1006, 16:35-37, 37:9-32. The known technique would have been applied to Barbosa-Falls's method of transmitting a customized,

executable questionnaire through an intermittently-connected network (as described above in this section). Finally, the combination yields predictable results, specifically it yields an improved system for executing computer programs that would also monitor for device reconnection before automatically synchronizing the devices and the customized executable questionnaire through the intermittently-connected network. Ex. 1005, Abstract, 3:28-43, 6:21-39, 6:58-7:10, 7:23-34, 7:42-8:3, 8:49-65, 9:3-14, 9:50-56, 10:10-31, 11:5-24, 12:45-54, Figs. 5-8, 10; Ex. 1006, 1:10-18, 1:30-53, 3:16-35, 5:20-31, 6:52-7:21, 8:53-8:8, 13:60-65, 16:35-37, 37:19-32, Figs. 1, 2. It is my opinion that a POSA would have recognized that synchronization of an executable application or program would have been substantially similar to the synchronization of data, and that the benefits of automating data transfer are equally applicable to the automation of transferring an executable questionnaire. Section VIII.F, above. For example, a POSA would have known that program code (e.g., for an interactive question and answer program) may be sent in the same or similar manner to data use by such programs, and a client device (e.g., a handheld computing device) would be configured to incorporate (e.g., add or replace) the received executable program code. Therefore, it is my opinion that applying the well-known synchronization techniques taught by Barbosa or Falls (which were already used in both references for transferring data) to Barbosa's executable questionnaire would have been well within the skillset of a POSA.

148. The combination of Barbosa and Falls also uses a known technique to improve similar systems in the same way. *See* Section IV (referring to obviousness rationale (C)). As I have previously discussed, Falls describes that in an intermittently-connected network, devices often connect, disconnect, and subsequently reconnect at which time synchronization occurs. Ex. 1006, 1:44-52, 2:55-59, 3:26-29, 7:53-8:9. As I explained above, the Barbosa-Falls combination would have provided intermittently-connected devices with access (e.g., to download or otherwise receive) the interactive question and answer program from Barbosa. The improvement would therefore have been to apply Falls's automatic synchronization technique to the Barbosa-Falls combined system so that both data and programs were automatically transferred between devices when a device reconnects to the network after a disconnect. For example, if a handheld device inadvertently disconnected from the loose network (e.g., based on the user entering an area of no service) then applying Falls's synchronization technique would have beneficially allowed Barbosa's management system to automatically provide an updated questionnaire program to the handheld device at a job site upon the handheld device reconnecting to the network. Ex. 1006, 1:10-18, 1:30-53, 3:16-35, 5:20-31, 6:52-7:21, 8:53-8:8, 13:60-65, 16:35-37, 37:19-32, Figs. 1, 2. Falls itself explains that it is important to "properly synchronizing transactions when a disconnectable computer is reconnected to a network" in order to "facilitate disconnected mobile

computing,” which would have also been important in the Barbosa-Falls system operating loosely-connected devices with a loose network, as described above. Ex. 1006, 2:56-59, 3:16-25. A POSA would have recognized this importance and would have been motivated to improve Barbosa-Falls with Falls’s synchronization technique in the same way that said technique improves Falls.

149. Finally, a POSA would have had a reasonable expectation of success in achieving the desired combination of Barbosa and Falls. This is because the combination involves routine techniques of programming computing devices to perform synchronization of data and programs after a device reconnects with an intermittently-connected network after a disconnect (and e.g., in order to get access to the most accurate data), which were well known at the time and would have been understood by a POSA. As I previously explained, Barbosa itself already perform synchronization techniques, and Falls explains a similar synchronization technique, both of which a POSA would have been capable of implementing. Ex. 1005, Abstract (“[d]ata may be synchronized with a server over a network”), 3:29-36, 6:21-25, 7:24-41, 10:39-51, 11:14-22; Ex. 1006, 1:10-18, 1:30-53, 3:16-35, 5:20-31, 6:52-7:21, 8:53-8:8, 13:60-65, 37:19-32, Figs. 1, 2. A POSA would have had the skills, including programming and network communication design skills, to carry out this straightforward implementation.

150. For the reasons set forth above, it is my opinion that Barbosa and/or the combination of Barbosa and Falls teaches or renders obvious limitation [7b].

d. [7c]: “(c) when said loosely networked computer is at said particular location, executing said transferred questionnaire on said loosely networked computer, thereby collecting responses from the user;”

151. As explained below where I apply the prior art to the limitation, it is my opinion that the combination of Barbosa and Falls teaches or renders obvious limitation [7c].

152. I previously explained, with respect to limitation [7b], that the combination of Barbosa and Falls teaches that Barbosa’s handheld computing device is “said loosely networked computer.” *See* Section XII.A.1.c, above. I also previously explained, with respect to limitation [7a], that Barbosa’s program is “customized for a particular location” because Barbosa’s program may include a number of customized questions that are related to a user’s location (e.g., a job site). Ex. 1005, 6:58-61 (describing programs asking questions related to a particular field problem), 7:57-8:3 (describing prompting the user for input of data, such as location information), 8:49-9:14 (describing asking the user specific question related to a particular field problem), 9:54-10:31 (describing a program prompting the use to identify the job location, customer name, date, and type of job), Figs. 6-8; Section XII.A.1.a, above. The combination of Barbosa and Falls teaches executing the transferred questionnaire on the handheld computing device “when said loosely

networked computer is at said particular location” as recited in limitation [7c]. For example, Barbosa describes providing an assessor at a potential job site with a program configured to gather responses to questions tailored to that particular location. Ex. 1005, 7:23-34, 8:49-9:14, 9:50-10:31, 12:1-14, Figs. 6-7. Barbosa also explains that an “assessor may initially be directed to the prospective job site 701 through GPS navigation means on the handheld device relevant to a particular field problem,” and “[o]nce at the job site, the assessor would start the [] appraisal program 702,” which appraisal program executes an interactive questionnaire as I previously described. Ex. 1005, 8:49-56; Section XII.A.1.a, above.

153. A POSA would also have understood that Barbosa teaches “executing said transferred questionnaire on said loosely networked computer, thereby collecting responses from the user.” Barbosa describes that its programs gather responses to the executable questionnaire such as job location, customer name, date, type of job, and other questions tailored to a potential job. For example, Barbosa teaches that execution of the interactive question and answer program (e.g., the appraisal program 702) includes collecting at least one response to the executable questionnaire from the user. Ex. 1005, 7:47-48 (“The program would prompt the user for input of data related to the problem.”), 8:63-65 (“The user would respond to program questions by providing specific answers/data 706, which would generally be provided in a format understandable by the program.”), 9:3-5 (“At completion of

the series of questions, the handheld device may automatically compile collected data 707 provided by user.”)

154. For all the reasons set forth above, it is my opinion that the combination of Barbosa and Falls teaches or renders obvious limitation [7c].

e. [7d]: “(d) while said transferred questionnaire is executing, using said GPS to automatically provide said location identifying information as a response to said executing questionnaire;”

155. As explained below where I apply the prior art to the limitation, it is my opinion that Barbosa teaches or renders obvious limitation [7d].

156. I previously explained, in relation to limitation [7a], that Barbosa describes a questionnaire that includes at least one question requesting location identifying information. *See* Section XII.A.1.b, above; Ex. 1005, 9:50-10:31. Barbosa also explains that location identifying information can be provided using GPS coordinates (claimed “using said GPS to automatically provide said location identifying information”). Ex. 1005, 7:42-8:3, 9:50-10:31, 12:26-32 (“GPS coordinate[s] associated with the collection of data [is an] important attribute[.]”). Barbosa describes that the location identifying information is obtained “automatically” using the GPS receiver integral to a handheld computing device. Ex. 1005, 10:14-17 (“[L]ocation information may be provided by the handheld device automatically via [the] resident GPS module.”). A POSA would have understood that Barbosa therefore utilizes the GPS module “to determine a device

location information” and “constantly update the user’s current position” in order to provide location identifying information as a response to the questions, presented while Barbosa’s questionnaire is executing, related to the user’s location. Ex. 1005, 6:40-57, 7:42-8:3, 10:14-20, Figs. 5-8. It is also my opinion that the previous determinations of the Board support my opinions set forth above in this section. Ex. 1023, 28-33 (finding that Barbosa teaches “using said GPS to automatically obtain location identifying information” recited in claim 19), 36 (addressing similar recitation in claim 21), 39-40 (finding that Barbosa teaches or suggests [1e] and [1f], reciting execution of a questionnaire and automatically entering GPS coordinates into the questionnaire)).

157. For all the reasons set forth above, it is my opinion that Barbosa, and thus the combination of Barbosa and Falls, teaches or renders obvious limitation [7d].

f. [7e]: “(e) automatically transferring via the loose network any responses so collected in real time to a central computer; and,”

158. Element [7e] of claim 7 recites automatic transfer of responses so collected in real-time to a central computer. Ex. 1001, Claim 7. It is my opinion that, consistent with the description in the specification of the ’748 Patent, the term “real time” modifies the automatic transfer of the responses to the central computer. Ex. 1001, 4:40-45, 5:3-14, 7:59-65, Claim 1 (element [g]); *see also* Ex. 1001, 4:10-

17. I understand that the Board has previously determined that Barbosa teaches such real-time transmission of user response data. Ex. 1023, 40 (finding that Barbosa teaches or suggests all limitations of claim 1, including “transmitting at least a portion of said response from the user to a server in real time via a network”). I agree with the Board’s previous determination. Ex. 1005, 7:54-58, 8:13-20, 8:54-65, 9:3-14, 9:50-10:30, Fig. 7; *see also id.*, 5:52-6:27 (describing “real-time access to servers and personnel in support of assessments”), Claims 15, 25. As explained below where I apply the prior art to the limitation, it is also my opinion that Barbosa, and/or the combination of Barbosa and Falls, teaches limitation [7e]. If the term “real time” were found to modify “collected” such that the collection of responses at the device is required to be in real-time, as opposed to the automatic transfer of the responses, it is my opinion that Barbosa also teaches and/or renders obvious such features.

159. Barbosa’s handheld computing devices store and compile responses to the designed questionnaire. For example, the “handheld data management device for field assessments can include a memory for storing field assessment programs and related data.” Ex. 1005, 3:44-58, 8:4-10 (“data collected with the device 10 ... may be stored in local memory for subsequent use”). The field assessment program described in Barbosa “may be used for gathering of data during a field assessment.” Ex. 1005, 6:21-27 (describing “real-time access to servers and personnel in support

of assessments”), 8:13-20, 8:54-65, 9:50-10:30, Claim 15 (reciting “real-time access to remote programs, assistance and/or information related to field assessment being undertaken by using a handheld data management device user [*sic*]”), Claim 25. The data stored in the memory of the handheld computing devices includes responses to the questions, said responses being automatically compile[d]” and “provided [] to a remote processor 709 via a network where the data will be analyzed.” Ex. 1005, 9:3-14, 7:54-58, 8:11-22, 8:54-65, 9:50-10:30, Fig. 7; *see also id.*, 5:52-6:27 (describing “real-time access to servers and personnel in support of assessments”), Claims 15, 25. As explained above, Barbosa collects (and therefore subsequently compiles) the responses from users, in real-time, to send, via the network used by the handheld computing device (“loose network”) to the remote server (“central computer”) for real-time analysis and feedback (e.g., guidance, assistance, information)

160. A POSA would have understood that Barbosa’s disclosure of compiling and providing user response data for real-time analysis teaches “automatically transferring via the loose network any responses so collected in real time to a central computer” for the reasons described above. Barbosa also teaches real-time communication of the user response data by describing providing real-time analysis of the responses and real-time feedback to a user who may need further guidance or assistance while on-site. Ex. 1005, 7:47-66 (describing real-time analysis of data

being performed by a remote processor), 8:11-22 (describing data being provided to remote systems with capabilities absent from the handheld devices), 9:3-49, Claims 15, 25; Section XII.A, above (introduction, describing Barbosa collecting responses in real-time); Ex. 1023, 40 (finding Barbosa teaches or suggests all claim 1 limitations, including “transmitting at least a portion of said response from the user to a server in real time via a network”). The ’748 Patent does not provide a definition for “a central computer.” Because the remote server in Barbosa is capable of receiving the responses collected in real-time, it is my opinion that the remote server has the ability to perform functions associated with “a central computer” as claimed. Ex. 1005, 7:47-66, 8:11-22, 9:3-14; *See* Section XI.A.3, above. Additionally, Barbosa’s description of compiling responses and subsequently sending the compiled responses to a remote server, as opposed to sending each response as it is provided, is consistent with the description in the ’748 Patent for transmitting responses to the questionnaire in real-time. Ex. 1001, 4:40-45, 5:3-14, 7:59-65, 6:37-49, 10:28-36, Claim 1 (element [g]); *see also* Ex. 1001, 4:10-17.

161. I have been asked to consider a scenario where Barbosa does not disclose the automatic transfer of the responses to the designed questionnaire. To any extent that Barbosa does not expressly disclose this feature, it is my opinion that such an automatic transfer would have been obvious to a POSA. As set forth above, Barbosa describes automatically compiling the responses to the questionnaires. Ex.

1005, 3:44-46, 7:54-58, 8:4-8, 9:3-14, Fig. 7. As I explained above with respect to limitation [7b], Barbosa teaches data synchronization, which would have been performed with the remote server to automatically transfer data, including the responses to the questionnaire, to the remote server. Section XII.A.1.c, above. As I further explained, to any extent that Barbosa's description of synchronization and automatic compilation of user responses does not disclose automatic transfer of information, Falls teaches these features based on its synchronization techniques. Section XII.A.1.c, above; Ex. 1006, 1:45-53, 3:16-35, 5:20-31, 7:16-21, 16:35-37, 37:2-32. For reasons similar to those that I explained above with respect to [7b] related to automatically synchronizing data and programs in the combination of Barbosa and Falls, it would have been obvious to a POSA to automatically transfer user responses to Barbosa's server, or to apply Falls's automatic synchronization technique (that includes the automatic transmission of data) to automatically synchronize user response data as well. *See* Section XII.A.1.c, above. For example, A POSA would also have found it obvious to automatically transfer user responses to the server in order to obtain real-time analysis and feedback for those user responses because doing so would merely involve the combination of known prior art elements (Barbosa's teaching of automatic data compilation, and methods of transferring user response data to a server) according to known methods (i.e., programming the transmission of data to be performed automatically). Ex. 1005,

3:37-43, 6:21-27, 7:42-66, 9:3-14, 12:18-26. The predictable result of this process would be that automatic transmission of user response data is performed by Barbosa (and thus, by the combination of Barbosa and Falls), similar to the manner in which Barbosa expressly describes automatic compilation of the user responses. Ex. 1005, 3:37-43, 6:21-27, 7:42-66, 9:3-14, 12:18-26. In Barbosa, and thus also in the combination of Barbosa and Falls, providing the automatic real-time transmission of user responses as discussed above would permit real-time feedback (e.g., performed by a remote server) as is expressly taught in Barbosa. Ex. 1005, 9:15-49, Claims 15, 25. A POSA would have recognized that automatic real-time transmission of user responses in Barbosa would align with and support Barbosa's goal of "facilitate[ing] real-time access to remote programs ... and/or information" by equipping assessors and other users with immediately relevant feedback or guidance, resulting in faster and more efficient task performance. Ex. 1005, 3:37-43.

162. A POSA would also have been motivated to combine Barbosa with Falls to provide the automatic real-time transmission of user responses. For example, the application of Falls's automatic synchronization techniques to automatically synchronize user response data would have been the obvious application of a known technique to known methods to yield predictable results. *See* Section IV, above (referring to obviousness rationale (D)). The known technique would have been to the automatic synchronization techniques (that include the

automatic transmission of data) taught by Falls (e.g., to the synchronization already disclosed by Barbosa). Ex. 1005, Abstract (“[d]ata may be synchronized with a server over a network”), 3:28-43, 6:21-39; Ex. 1006, 3:16-35, 16:35-37, 37:9-32. The technique would have been applied to the method of collecting user responses to an executable questionnaire taught by the combination of Barbosa and Falls, which would have yielded the predictable result of automatically synchronizing the user response data as part of collecting the user responses. In Barbosa, and thus also in the combination of Barbosa and Falls, the providing of automatic real-time transmission of user responses would allow for real-time feedback, such as guidance and/or instructions from an experienced technician, assessor, or other individual, as expressly taught in Barbosa. Ex. 1005, 9:29-49, Claims 12, 15. As I noted above, a POSA would have recognized that automatic real-time transmission of user responses in Barbosa would align with and support Barbosa’s goal of “facilitate[ing] real-time access to remote programs ... and/or information” by equipping assessors and other users with immediately relevant feedback or guidance, resulting in faster and more efficient task performance. Ex. 1005, 3:37-43.

163. Modifying Barbosa to utilize Falls’s automatic synchronization technique (which involves automatic transfer of data) to synchronize user response data would also have been the use of a known technique to improve similar processes in the same way. *See* Section IV, above (referring to obviousness rationale (C)). For

example, as I previously described, the handheld computing devices, which are intermittently-connected to the loose network in the combination of Barbosa and Falls, would have benefited from data synchronization upon reconnection (e.g., as taught by Falls). *See* Section XII.A.1.c, above; Ex. 1006, 2:56-59, 3:16-25. If a handheld computing device became disconnected from the loose network during collection of user response data, it would have been obvious to a POSA to beneficially automatically transfer the user response data upon reconnection of the handheld computing device to the loose network in the combination of Barbosa and Falls. For the reasons I previously explained in for limitation [7b], modifying Barbosa to utilize the synchronization techniques would have been within the skillset of a POSA and a POSA would have expected success in making the combination. Section XII.A.1.c.

164. For all the reasons set forth above, it is my opinion that the combination of Barbosa and Falls teaches or renders obvious limitation [7e].

g. [7f]: “(f) making available via the Internet any responses transferred to said central computer in step (e).”

165. As explained below where I apply the prior art to the limitation, it is my opinion that Barbosa, and/or the combination of Barbosa and Falls, teaches or renders obvious limitation [7f].

166. I understand that the Board previously found that limitation [7f] “requires, making available over the Internet, any responses that are (i) collected in real time while the transferred questionnaire is executing [and] (ii) transferred to the central computer” and that “Barbosa has disclosures that collectively might suggest or render obvious this limitation.” Ex. 1024, 33. I agree with the Board’s previous determination and it is my opinion that Barbosa indeed has disclosures that, alone or in view of the teachings of Falls, render limitation [7f] obvious.

167. I explained, with respect to [7pre], my opinion that Barbosa describes collecting responses to questions by executing a program that causes an interactive question and answer survey, and making the responses available via the Internet (e.g., by transferring the responses to the remote server (“central computer”). Sections XII.A.1.a, XII.A.1.f, above; Ex. 1005, 7:12-22, 7:41-66 (describing real-time analysis of data being performed by a remote processor), 8:11-22 (describing data being provided to remote systems with capabilities absent from the handheld devices), 12:55-58 (describing the remote computing device being connected to the handheld devices via the Internet), Figs. 6 and 7 (steps 709, 710). It is my opinion that a POSA would have found it obvious that Barbosa’s system “mak[es] available via the Internet any responses transferred to said central computer in step (e).” For example, Barbosa also explains that transmission of responses to the remote server provides “[t]he ability to manage data from several investigators ... wherein

comprehensive data from different sources may be analyzed, updated and reformatted for representation and distribution to plural case workers.” Ex. 1005, 11:41-62. Barbosa expressly notes that the distribution of the data is to “plural case workers,” and a POSA would have understood that each of these case workers would have found the data accessible over the Internet. *Id.*

168. Barbosa also describes that the data is transferred over the Internet using HTTP (i.e., web-based protocols), TCP/IP, and/or FTP, to provide functions such as the “[r]ealtime analysis of data obtained ... by remote processor” described above. Ex. 1005, 7:12-22, 7:41-63, 12:55-57, Figs. 6 and 7 (steps 709, 710). HTTP (web protocols), TCP/IP, and FTP are all well-known Internet communication protocols and therefore a POSA would have recognized that Barbosa teaches using such protocols for communication of the data over the Internet. *Id.*; Section VIII.G, above. Therefore, Barbosa teaches the claimed “making available via the Internet any responses transferred to said central computer in step (e)” because Barbosa teaches that user responses collected in real-time while the transferred questionnaire is executing are made available via the Internet. Ex. 1005, 7:12-22, 7:41-63, 9:45-49, 12:54-58, 14:47-48, Figs. 6 and 7 (steps 709, 710).

169. To any extent that Barbosa alone does not expressly teach [7f], it is my opinion that a POSA would have found [7f] obvious in view of Barbosa’s teachings. As I previously explained above, Barbosa teaches distributing user responses (e.g.,

assessment data gathered by executing an interactive question and answer program) to other users (e.g., plural case workers). Ex. 1005, 11:41-62. As I also noted, Barbosa teaches performing data transmission using well-known Internet protocols such as HTTP, TCP/IP, and FTP. Ex. 1005, 7:12-22, 7:41-63, 12:55-57, Figs. 6 and 7 (steps 709, 710). It is my opinion that distributing user response data using these Internet transmission protocols would have been obvious as the use of a known technique to improve similar processes in the same way. *See* Section IV, above (referring to obviousness rationale (C)). The internet protocols described in Barbosa were well-known and widely adopted, and a POSA would have been familiar with their operation. *See* Section VIII.G, above; Ex. 1005, 7:12-22, 7:41-63, 12:55-57, Figs. 6 and 7 (steps 709, 710). Distributing user responses from Barbosa's server through the Internet would have beneficially improved the accessibility and compatibility of the system. For example, the user response data in Barbosa would have been communicated in a manner (e.g., using HTTP, TCP/IP, and/or FTP) and over a network (e.g., the Internet) that was widely known and adopted at the time, which would have offered improvements over the use of less well-known protocols or networks that may have required special expertise to utilize or maintain. These benefits and improvements are the same as those provided by using the Internet to communicate from the user devices to the server, which Barbosa already expressly teaches. Ex. 1005, 7:41-63, Fig. 6. Therefore, a POSA would

have expected success in making the obvious modification to Barbosa described above.

170. For the above reasons, Barbosa, and thus the combination of Barbosa and Falls, teaches limitation [7f]. Finally, because the combination of Barbosa and Falls teaches all limitations of claim 7, it is my opinion that claim 7 would have been obvious to a POSA.

B. Ground B: Barbosa in view of Falls and Heath Renders Obvious Claim 7

171. As I explained in detail above in Section XII.A, it is my opinion that the entirety of claim 7 is rendered obvious by the combination of Barbosa and Falls. Section XII.A, above. However, I have been asked to consider a scenario where it is argued that the combination of Barbosa and Falls does not render obvious the “automatically transferring said designed questionnaire” of limitation [7b]. To any extent that the combination of Barbosa and Falls does not teach limitation [7b], it is my opinion that a POSA would have found it obvious to combine Barbosa with Falls and Heath. Heath describes well-known techniques for automatically updating programs (e.g., applications) and synchronizing the programs between different devices over a network. Section IX.C, above. As I explain in more detail below where I apply the Heath reference to the claims, it is my opinion that a POSA would have been motivated to make the combination of Barbosa, Falls, and Heath that renders claim 7 obvious.

1. Independent Claim 7

a. [7pre]: “A method for collecting survey data from a user and making responses available via the Internet, comprising:”

172. The combination of Barbosa, Falls, and Heath renders “[a] method for collecting survey data from a user and making responses available via the Internet” obvious for the same reasons I described above with respect to the combination of Barbosa and Falls. Section XII.A.1.a, above.

b. [7a] and [7c]-[7f]

173. I previously explained how the combination of Barbosa and Falls teaches the features recited in [7a] and [7c]-[7f]. Sections XII.A.1.b, XII.A.1.d-g. The addition of Heath to the combination of Barbosa and Falls does not alter my opinion as to why the combination of Barbosa and Falls renders obvious [7a] and [7c]-[7f]. Therefore, the combination of Barbosa, Falls, and Heath also renders [7a] and [7c]-[7f] obvious to a POSA for the same reasons I set forth above. Sections XII.A.1.b, XII.A.1.d-g.

c. [7b]: “(b) automatically transferring said designed questionnaire to at least one loosely networked computer having a GPS integral thereto;”

174. As explained below where I apply the prior art to the limitation, it is my opinion that the combination of Barbosa, Falls, and Heath teaches or renders obvious limitation [7b].

175. For the reasons I explained in Ground A, the combination of Barbosa and Falls renders obvious “automatically transferring said designed questionnaire” and “at least one loosely networked computer having a GPS integral thereto.” Section XII.A.1.c, above. A POSA would also have understood that the combination of Barbosa and Falls synchronizes data, using Falls’s synchronization techniques, after reestablishing a connection between devices (e.g., Barbosa’s remote management system and handheld computing devices). Ex. 1006, 3:16-35, 5:20-31, 7:16-21, 16:35-37, 37:2-32; Section XII.A.1.c, above. To any extent that the synchronization of data disclosed by the combination of Barbosa and Falls does not teach, specifically, “automatically transferring said designed questionnaire” to a handheld computing device (claimed “at least one loosely networked computer having a GPS integral there”), it is my opinion that such a feature would have been obvious in view of the teachings of Heath.

176. Heath describes methods and systems for dynamically and automatically updating/upgrading application programs, which provides the benefit of ensuring a client (e.g., a handheld computing device as described in Barbosa) have access to the latest versions of a program. Ex. 1007, 1:17-26, 1:40-55, 2:51-54. Heath’s automatic updating technique has many benefits, including keeping the application on the client device in the most current form, enhancing security and protection from file corruption, and improving efficiency for maintaining and

supporting dynamic applications. *Id.*, 1:1-26, 1:34-2:14, 4:27-58, 7:5-8:13, Claims 19, 55, 67. For example one such benefit is that automatically updating programs addresses the fact that many programs/applications are dynamic (i.e., they may change frequently) by ensuring that the user is able to access the latest version of an application/program. Ex. 1007, 1:17-26, 1:34-2:14, 4:27-5:5, 7:5-8:13, Claims 19, 55, 67. Heath's system and process for automatically updating applications/programs involves using certain temporal or event-based triggers to automatically transfer updated application code from a server. Ex. 1007, 1:34-2:61, 4:59-5:30 (describing maintaining a catalog of information for an application program at a server), 5:31-67 (describing automatically transferring information for updating an application program to a client device), 6:1-38 (describing automatically updating an application program), 7:33-8:13, Figs. 3A, 6A, 6B. For example, Heath describes that a catalog of information (e.g., including update information) for an application program is automatically transferred from a server to a client device (e.g., in response to a launcher program activating on the client device, such as when the device is powered on). Ex. 1007, 4:49-5:67, Fig. 3A. In response, the launcher program automatically uses the transferred information to update the application program at the client device. Ex. 1007, 6:1-38 (describing automatically updating an application program), 7:33-8:13, Figs. 3A, 6A, 6B.

177. There are a number of teachings, suggestions, and motivations in the prior art that would have led a POSA to modify Barbosa and combine Barbosa (with Falls) and Heath in the ways that I have described. *See* Section IV (referring to obviousness rationale (G)). It is my opinion that a POSA would have been motivated to combine Barbosa with Heath to achieve a system for executing programs that gather data from users of handheld computing devices (e.g., as described in Barbosa), where the programs would be automatically updated using Heath's techniques. Ex. 1007, 2:34-2:61, 4:59-5:67, 6:1-38, 7:33-8:13, Figs. 3A, 6A, 6B; Ex. 1005, 6:61-64, 7:42-8:3, 8:17-20, 8:49-65, 9:3-14, 9:50-56, 10:10-31, 11:5-24, Figs. 5-8, 10 (collectively describing the interactive questionnaire and gathering responses). As a result of this combination, the programs would beneficially have been updated, for example, whenever a question, response, operation logic, and/or other functions of the Barbosa's interactive questionnaire were modified or added. Heath describes several benefits of its automatic updates that would have motivated a POSA to combine Barbosa and Heath. For example, as I noted above, Heath explains that automatic updating keeps application programs current, which improves security and protection from file corruption. Ex. 1007, 1:17-26, 1:34-2:14, 4:27-58, 7:5-8:13, Claims 19, 55, 67. Heath also explains that automatic updating of applications may "alleviate[] the concerns of time and efficiency in any client-server network environment which requires highly dynamic application updates."

Ex. 1007, 1:49-55, 7:5-8. A POSA would have been aware that keeping information up to date in computer systems, and the corresponding benefits, were well-known at the time of the alleged invention. For example, a POSA would have been aware of the various issues (e.g., managing operations during a disconnect, manageability, providing dynamic properties, etc.) associated with the use of applications on mobile devices such as Barbosa's handheld computing devices. Ex. 1038, ¶¶[0006], [0009]-[0010]. A POSA would also have been aware that keeping information up to date was a well-known solution to such issues. Ex. 1038, Abstract, ¶¶[0115], [0127], [0157], [0372]. Therefore, a POSA would have been motivated to combine Barbosa and Heath to provide the well-known benefits of keeping information up to date.

178. Further, and as I have previously addressed, Barbosa describes that its system is designed to more efficiently and accurately render field assessments, to ensure that information critical to field operations is not lacking. Ex. 1005, 1:25-32 (describing issue of even experiences professionals finding access to critical information lacking), 3:13-17 (describing the efficiency and accuracy benefits of Barbosa's system). Therefore, in addition to the recognizable benefits of ensuring that Barbosa's programs are up to date (e.g., without needing to wait for a manual update), a POSA would also have understood that modifying Barbosa in view of Heath would improve the efficiency and accuracy of Barbosa's system by ensuring that users of the interactive questionnaire are receiving, and responding to, the most

recent and relevant questions related to a field assessment. Ex. 1007, 2:34-2:61, 4:59-5:67, 6:1-38, 7:33-8:13, Figs. 3A, 6A, 6B.

179. The combination of Barbosa, Falls, and Heath would have resulted in the executable program providing an interactive question and answer session as described in Barbosa being automatically updated or synchronized, using the techniques of Heath, with loosely networked handheld computing devices as taught in Falls. Section XII.A.1.c, above (describing Falls's teachings of managing and synchronizing data for loosely networked devices); Ex. 1007, 2:34-2:61, 4:59-5:67, 6:1-38, 7:33-8:13, Figs. 3A, 6A, 6B.

180. There are other rationales that also support my opinion that a POSA would have found it obvious to combine Barbosa, Falls, and Heath as described above. For example, modifying the manner in which Barbosa's applications are updated would have merely been the use of a known technique to improve a similar device, method, or product in the same way. *See* Section IV, above (referring to obviousness rationale (C)). Specifically, a POSA would have understood that Barbosa's network-based application program for providing an interactive question and answer session and Heath's network-oriented application programs are similar products. Ex. 1005, 6:57-7:22 ("the present invention may be effectively practiced together with a client/server programming environment."); Ex. 1007, Abstract ("The present invention relates to methods and systems for maintaining application

programs on a client computer in a client-server network environment.”), 1:17-27, 4:61-64, 5:37-40. For example, both Barbosa’s applications and Heath’s applications are configured to be transmitted through an open network (e.g., the Internet) and to communicate with a mobile user device. Ex. 1005, 6:58-7:40 (describing “an environment for extended operation/communication between a handheld device 10 (client) and remote management system 58 (e.g., server, desktop PC)” through which programs can be provided to users), 5:43-45, 5:29-34, 12:51-58; Ex. 1007, Abstract, 1:56-2:14. The known technique is Heath’s process for automatically updating application programs in order to improve the use and maintenance of those programs, which process would include the automatic transfer of executable program elements (e.g., code, modules, etc.) from a server to a client device in order to update the application program at the client device. Ex. 1007, Abstract, 1:56-2:14. For example, Heath describes the client application or an associated program (e.g., a launcher program) automatically triggering application updates based on a predefined schedule or a triggering event (e.g., execution of the program, and/or bootup). Ex. 1007, 1:34-2:61, 4:59-5:67, 6:1-38, 7:33-8:13, Figs. 3A, 6A, 6B. Heath describes that a catalog file is maintained at a server and is downloadable by the client, the catalog file that includes commands and information (e.g., code, etc.) for the application, including information for identifying whether the application includes components that are obsolete in a new version of the

application. Ex. 1007, 4:59-5:29. Heath further describes that, based on the update being automatically triggered, the catalog may be consulted to determine whether new versions or additional components (e.g., executable code) for an application are to be transferred to the client for implementation. Ex. 1007, 5:31-5:67, 6:1-38.

181. As I explained above, a POSA would have recognized the multiple benefits provided by automatic program updates as taught by Heath, including keeping the application on the client device in the most current form, enhancing security and protection from file corruption, and improving time and efficiency for maintaining and supporting dynamic applications. Ex. 1007, 1:17-26, 1:34-2:14, 4:27-58, 7:5-8:13, Figs. 3A, 6A-6B, Claims 19, 55, 67; Ex. 1038, Abstract, ¶¶[0006], [0009]-[0010], [0115], [0127], [0157], [0372]. It is my opinion that these benefits apply equally to the questionnaire in the combination of Barbosa and Falls as they do in Heath. A POSA would therefore have been motivated to modify the network-based interaction question and answer application program of Barbosa so that the question and answer application program were automatically updated to the latest version in the same way as Heath's application programs and in order to provide the same benefits. Ex. 1007, 1:17-26, 1:34-2:14, 4:27-58, 7:5-8:13, Figs. 3A, 6A-6B, Claims 19, 55, 67.

182. Modifying Barbosa based on the teachings of Heath as I have described above also would have been obvious as the application of a known technique to a

known system and process ready for improvement to yield predictable results. *See* Section IV (referring to obviousness rationale (D)). Barbosa describes known devices (e.g., a remote management system and handheld computing devices) and a process for providing an interactive question and answer program on a handheld computing device (collectively, a known system). Ex. 1005, 6:58-7:40, 8:49-65, 9:3-14, 9:50-10:31, Figs. 6-7; *See* Section XII.A, above (introduction, describing Barbosa’s system). As I have previously described, Barbosa discusses data synchronization. Ex. 1005, 3:28-43 (“field assessment data synchronization and/or delivery using wireless capabilities resident in handheld personal computing devices” and “two-way communication between remote computing means (e.g., servers, desktop computers) and handheld data management devices to facilitate real-time access to remote programs, assistance and/or information related to the field assessment being undertaken by using a handheld data management device user”), 6:21-39, 6:64-67; *See* Section XII.A.1.c, above. Though Barbosa does not expressly describe synchronization or updating specifically of the interactive question and answer program, Heath does describe a known technique for updating application programs, and explains the benefits of using such a technique. Ex. 1007, 1:34-2:61, 4:59-5:67, 6:1-38, 7:33-8:13, Figs. 3A, 6A, 6B. A POSA would have recognized that Barbosa’s interactive question and answer program, and its associated client/server system for providing the program, was ready for

improvement based on Heath's technique because Barbosa clearly acknowledges the benefits of synchronizing information. Ex. 1005, 3:28-43. A POSA would have understood that updating programs in a similar fashion to synchronizing other data in fact supports Barbosa's stated goal of ensuring information critical to a field assessment is provided to the appropriate experts. Ex. 1005, 1:25-32, 3:13-17. A POSA would further have recognized that the same benefits (e.g., improving security and keeping information up to date) achieved through automatic program updating in Heath would have been applicable to the system and program in Barbosa. Ex. 1007, 1:17-26, 1:34-2:14, 4:27-58, 7:5-8:13, Claims 19, 55, 67. Therefore, a POSA would have recognized that Barbosa's system was ready for such improvements. The predictable result of the combination would have been that the automatic program updating technique would be applied in the same manner as was already described in Heath to provide the resulting improved process for managing client/server-based applications, as was also already described in Heath. Ex. 1007, 1:34-2:61, 4:59-5:67, 6:1-38, 7:33-8:13, Figs. 3A, 6A, 6B. For example, a POSA would have appreciated that applying Heath's automatic program update techniques to Barbosa would have predictably resulted in Barbosa's interactive question and answer program being updated periodically or responsive to a triggering event, and an updated version of that program being provided to the user upon his or her next use of the program. Ex. 1007, 4:59-5:29, 5:31-5:67, 6:1-38.

183. Yet another rationale for modifying Barbosa in view of Heath is that doing so would have been the mere combination of known prior art elements according to known methods to yield predictable results. *See* Section IV, above (referring to obviousness rationale (A)). The known elements would have been Barbosa's client/server-based application that provides interactive question and answer functionality, and Heath's technique for automatically updating client/server-based applications. Ex. 1005, 6:58-8:3, Figs. 4, 5, 6; Ex. 1007, 1:34-2:61, 4:59-5:67, 6:1-38, 7:33-8:13, Figs. 3A, 6A-6B. The known methods would have been well-known techniques for programming such client/server-based applications and applying network protocols for automatically transferring updated program information (e.g., code) that would have been obvious and straightforward to a POSA. For example, such methods are explicitly taught in Heath (e.g., using a catalog stored at a server to maintain information for application programs, and executing automatic updates for the programs based on a temporal or event-based trigger). Ex. 1007, 1:34-2:61, 4:59-5:67, 6:1-38, 7:33-8:13, Figs. 3A, 6A-6B.

184. Finally, a POSA would have had a reasonable expectation of success in achieve the desired combination of Barbosa and Heath. This is because the combination involves routine techniques of programming a client/server system (e.g., the client application program and the server platform) such that the interactive question and answer program of Barbosa is automatically updated, techniques which

were well known at the time and would have been understood by a POSA. Ex. 1005, Abstract (“[d]ata may be synchronized with a server over a network”), 3:29-36, 6:21-25, 7:24-41, 10:39-51, 11:14-22; Ex. 1007, 1:34-2:61, 4:59-5:67, 6:1-38, 7:33-8:13, Figs. 3A, 6A-6B. A POSA would have had the skills, including programming and network communication design skills, to carry out this straightforward implementation in which update triggers (e.g., periodic triggers or other specific event triggers) cause automated actions in response to those triggers (e.g., the transfer of new or updated version of the application or application components). Ex. 1007, 1:34-2:61, 4:59-5:67, 6:1-38, 7:33-8:13, Figs. 3A, 6A-6B.

185. For the above reasons, the combination of Barbosa, Falls, and Heath teaches or renders limitation [7b] obvious. Finally, because the combination of Barbosa, Falls, and Heath teaches or renders obvious all limitations of claim 7, it is my opinion that claim 7 would have been obvious to a POSA.

C. Grounds C & D: Barbosa in view of Falls and Short, and Barbosa in view of Falls, Heath, and Short Render Obvious Claim 7

186. As I explained in detail above in Section XII.A, it is my opinion that the entirety of claim 7 is rendered obvious by the combination of Barbosa and Falls. Section XII.A, above. It is also my opinion that the entirety of claim 7 is rendered obvious by the combination of Barbosa, Falls, and Heath. Section XII.B, above. However, I have been asked to consider a scenario where it is argued that the combination of Barbosa and Falls, or the combination of Barbosa, Falls, and Heath,

does not render obvious the “making available [user responses] via the Internet” element of limitation [7f]. To any extent that the combination of Barbosa and Falls, or the combination of Barbosa, Falls, and Heath does not render obvious limitation [7f], it is my opinion that a POSA would have found it obvious to combine Barbosa with Falls and Short, and/or to combine Barbosa with Falls, Heath, and Short to teach [7f]. Short describes an Internet system that allows for collection of user response data and subsequently making that user response data available through the Internet. Section IX.D, above. For example, Short describes collecting user responses through the Internet via user devices. Ex. 1007, 1:34-2:14, 4:27-58, 7:5-8:13, Claims 19, 55, 67. Short also describes a research database that receives information from the user devices and stores the information for review and analysis over a network such as the Internet. Ex. 1008, Abstract, 23:17-27, 26:12-17, 27:7-13, Fig. 1. As I explain in more detail below where I apply the Short reference to the claims, it is my opinion that a POSA would have been motivated to make the combination of Barbosa, Falls, and Short, or the combination of Barbosa, Falls, Heath, and Short, that renders claim 7 obvious.

1. Independent Claim 7

a. [7pre]: “A method for collecting survey data from a user and making responses available via the Internet, comprising:”

187. The combination of Barbosa (with Falls, and/or with Falls and Heath) and Short renders “[a] method for collecting survey data from a user and making

responses available via the Internet” obvious for the same reasons I described above with respect to the combinations of Barbosa and Falls and of Barbosa, Falls, and Heath. Sections XII.A.1.a, XII.B.1.a, above.

b. [7a]-[7e]

188. I previously explained how the combinations of Barbosa and Falls, and of Barbosa, Falls, and Heath, each disclose the features recited in [7a]-[7e]. Sections XII.A.1.b-f, XII.B.1.b-c. The addition of Short to the combination of Barbosa and Falls, or to the combination of Barbosa, Falls, and Heath does not alter my opinion as to why the combinations render obvious [7a]-[7e]. Therefore, the combination of Barbosa, Falls, and Short, and the combination of Barbosa, Falls, Heath, and Short, each also renders [7a]-[7e] obvious to a POSA for the same reasons I set forth above. Sections XII.A.1.b-f, XII.B.1.b-c.

c. [7f]: “(f) making available via the Internet any responses transferred to said central computer in step (e).”

189. As explained below where I apply the prior art to the limitation, it is my opinion that the combination of Barbosa (with Falls, or with Falls and Heath) and Short teaches or renders obvious limitation [7f].

190. Short teaches a process for “making available via the Internet” responses from a user. For example, like Barbosa’s system of collecting user responses to an interactive question and answer session, Short describes a system for collecting user responses to questions entered through a user’s client device over the

Internet. Ex. 1008, 3:14-4:14, 5:14-6:18, Fig. 1; Ex. 1005, 6:61-64, 7:42-8:3, 8:17-20, 8:49-65, 9:3-14, 9:50-56, 10:10-31, 11:5-24, Figs. 5-8, 10 (collectively describing the interactive questionnaire and gathering responses). Short describes a research database (i.e., a “central computer”) that receives information from the user devices and stores the information for review and analysis over a network such as the Internet. Ex. 1008, Abstract, 23:17-27, 26:12-17, 27:7-13, Fig. 1. The research database receives the information after the user has responded (e.g., to a survey, like Barbosa’s questionnaire), and then publishes the information over the Internet using well-known Internet protocols such as HTML, which allows various users and devices access to the user response data (and corresponding reports) through, for example, a website (e.g., via a web browser). Ex. 1008, 23:17-27:13, Figs. 1, 18-28. Because Short describes collecting user responses to questionnaires, sending the responses to a central server and publishing the responses to other users via the Internet, and because Short describes performing these functions in a similar manner to how the ’748 Patent itself describes collecting user responses (Ex. 1001, 5:33-36), sending the responses to a central server (Ex. 1001, 5:56-6:7), and eventually making the data available for viewing via the Internet (Ex. 1001, 6:37-49), it is my opinion that Short teaches “making available via the Internet any responses transferred to said central computer,” as recited in element [7f].

191. There are a number of teachings, suggestions, and motivations in the prior art that would have led a POSA to modify Barbosa and combine Barbosa (with Falls and/or with Falls and Heath) and Short in the ways that I have described. *See* Section IV (referring to obviousness rationale (G)). It is my opinion that a POSA would have been motivated to combine Barbosa with Short to achieve a system for executing programs that gather data from users of handheld computing devices (e.g., as described in Barbosa), where the response data gathered from the users is made available over the Internet to various other users and devices as taught by Short. Ex. 1008, Abstract, 3:14-4:14, 5:14-6:18, 23:17-27:13, Figs. 1, 18-28; Ex. 1005, 6:61-64, 7:42-8:3, 8:17-20, 8:49-65, 9:3-14, 9:50-56, 10:10-31, 11:5-24, Figs. 5-8, 10 (collectively describing the interactive questionnaire and gathering responses). As a result of this combination, responses to Barbosa's interactive question and answer session would have been available in real-time to enable efficient responses to any issues faced by the user of the handheld computing device conducting the field assessment, and would give the ability to promptly see problems at the field site through the users' eyes. Ex. 1008, 3:14-19. A POSA would have been motivated to achieve these benefits, in particular given the importance of receiving critical information related to a job site as described in Barbosa. Ex. 1005, 1:25-32, 3:13-17.

192. There are other rationales that also support my opinion that a POSA would have found it obvious to combine Barbosa (with Falls or with Falls and Heath) and Short as described above. For example, applying Short's techniques for making user response data available over the Internet to Barbosa's Internet-enabled system would have merely been the use of a known technique to improve a similar device, method, or product in the same way. *See* Section IV, above (referring to obviousness rationale (C)). Specifically, a POSA would have understood that Barbosa's network-based application program that provides an interactive question and answer session and collects user response data for later analysis is similar to Short's Internet-based survey system that also collects user responses to a questionnaire from client devices and publishes the response data for analysis. Ex. 1005, 3:21-58, 5:35-45, 5:29-6:39, 6:40-7:22 (describing elements of Barbosa's system for executing the questionnaires), 7:23-8:22 (describing the environment and aspects of the operation of Barbosa's system), 8:23-9:56 (describing various applications of the questionnaire), 10:10-31, 11:5-24, Figs. 2, 4-8, 10; Ex. 1008, Abstract, 23:17-27:13, Figs. 1, 18-28. The known technique is Short's technique of publishing user response data gathered from the surveys such that the responses are available through the Internet to various users and devices (e.g., using HTML and Internet-accessible websites). Ex. 1008, 23:17-27:13, Figs. 1, 18-28. For example, Short allows the devices and users connected to the Internet to analyze the responses for a

variety of purposes, and explains that it would have been beneficial to provide such accessibility through the Internet. Ex. 1008, 23:17-22, 26:12-15. As I have previously explained, Barbosa describes that providing user responses to other devices (e.g., servers) for analysis is a desirable features. Ex. 1005, 7:48-66, 8:11-22, 8:44-48, 9:3-14, 9:36-10:30, 11:41-12:32, Figs. 6-8, 11-13; Section XII.A.1.g, above. A POSA would have been motivated to provide user responses to servers (e.g., using Short's technique) in order to allow more experienced technicians/assessors/experts to analyze the responses and render assistance to individuals performing a field assessment. Ex. 1005, 1:20-32, 9:36-49.

193. For the above reasons, it is my opinion that a POSA would have recognized that making Barbosa's user response data, gathered from executing the interactive question and answer program, would have offered the same improvements described above to Barbosa's system. For example, Barbosa describes a scenario where an inexperienced HVAC technician is providing responses that may be shared to an employer HVAC company for further review and/or shared between multiple case workers. Ex. 1005, 7:41-63, 11:41-62, Figs. 7, 12. In such a scenario, applying Short's techniques would have made the responses easily accessible in real-time over the Internet for these individuals to access and render assistance to the HVAC technician. Therefore, to any extent that it is argued that Barbosa does not teach making user response data available via the Internet,

Short's technique of using an Internet medium (e.g., a website) for accessing published user response data (e.g., using well-known protocols such as HTML) would improve Barbosa's system by allowing the collected data to be distributed across a wider network (e.g., the Internet) and to more devices, addressing the problem described in Barbosa of inexperienced technicians lacking critical information for field operations. Ex. 1005, 1:20-32, 9:36-49; Ex. 1008, 23:17-22 (explaining that its technique provides "remote access to the real time results . . . from anywhere with Internet access."), 26:12-15 ("the report site provides a very versatile, interactive tool for reviewing the survey results.").

194. Modifying Barbosa based on the teachings of Short as I have described above also would have been obvious as the mere combination of known prior art elements according to known methods to yield predictable results. *See* Section IV, above (referring to obviousness rationale (A)). The known elements would have been Barbosa's client/server-based application that provides interactive question and answer functionality (also used in the combination of Barbosa and Falls and the combination of Barbosa, Falls, and Heath), and Short's known method which provides users responses to question and answer type program (e.g., survey) questions over the Internet. Ex. 1005, 3:21-58, 5:35-6:39, 6:58-9:49, Figs. 2, 4, 6-7; Ex. 1008, 23:17-27:13, Figs. 1, 18-28. The known methods would have been well-known methods for programming devices to provide Internet-access to user

responses to question and answer type programs (e.g., a survey) that would have been obvious and straightforward to a POSA. For example, such methods are explicitly taught in Short, such as programming a central database to provide access to a website through which user response data can be accessed, reviewed, and analyzed by other users and devices. Ex. 1008, 23:17-27:13, Figs. 1, 18-28. A POSA would have been familiar with programming code such as PERL, which can be triggered by CGI scripts within a webpage to generate corresponding web content (e.g., in an HTTP or HTML format), as a means by which to provide a website interface as described in Short. Ex. 1008, 23:17-27, 27:14-21, 5:12-7:2. Based on the above disclosures, it is my opinion that Short teaches a well-known method for publishing user response data over the Internet that a POSA would have had the skills to implement to achieve a predictable result. The result would have been that—based on the combinations of Barbosa, Falls, and Short and of Barbosa, Falls, Heath, and Short—a server (such as Barbosa’s remote server) would generate a web interface in order to make the user response data accessible through the Internet (e.g., via websites and web browsers) to a variety of users, such as expert technicians, in addition to the distribution channels already described in Barbosa. Ex. 1005, 6:9-27, 6:64-7:10, 7:54-66, 8:11-17, 9:3-14, 10:48-51, 11:14-22, Figs. 3, 5, 6-7, 10; Ex. 1008, 3:14-19, 5:12-7:2, 23:17-27:13, Figs. 1, 18-28.

195. Finally, a POSA would have had a reasonable expectation of success in achieve the desired combinations of Barbosa with Falls and Short and of Barbosa with Falls, Heath, and Short. This is because each combination involves routine techniques of programming a server system with Short's web interface generation techniques such that the responses to Barbosa's interactive question and answer program are accessible via the Internet. A POSA would have had the skills, including programming and web development skills, to carry out this straightforward implementation in which the client/server system (e.g., the server platform of Barbosa) is configured to interface with a user response database and provide a web interface for users and other devices to interact with the stored user response data. Short itself describes examples of the code that would be used for this implementation, Barbosa already describes transferring the responses to a remote server, and any such programming and web development skills required for this implementation would have been well within the skill of a POSA viewing Barbosa and Short. Ex. 1005, 6:9-27, 6:64-7:10, 7:54-66, 8:11-17, 9:3-14, 10:48-51, 11:14-22, Figs. 3, 5, 6-7, 10; Ex. 1008, 3:14-19, 5:12-7:2, 23:17-27:13, Figs. 1, 18-28.

196. For the above reasons, the combination of Barbosa, Falls, and Short, and the combination of Barbosa, Falls, Heath, and Short each renders limitation [7f] obvious. Finally, because the combination of Barbosa, Falls, and Short, and the

combination of Barbosa, Falls, Heath, and Short each teaches all limitations of claim 7, it is my opinion that claim 7 would have been obvious to a POSA in view of either combination.

D. Grounds E-H: Barbosa in view of Falls and Torrance, Barbosa in view of Falls, Heath, and Torrance, Barbosa in view of Falls, Short, and Torrance, and Barbosa in view of Falls, Heath, Short, and Torrance Render Obvious Claim 8

1. Dependent Claim 8: “The method for collecting survey data according to claim 7 further comprising:

(f) assessing a charge for each transferred response received by said central computer.”

197. Claim 8 depends from claim 7 and further recites “assessing a charge for each transferred response received by said central computer”. Ex. 1001, Claim 8. As I explain in more detail below, each of (1) the combination of Barbosa and Falls, (2) the combination of Barbosa, Falls, and Heath, (3) the combination of Barbosa, Falls, and Short, and (4) the combination of Barbosa, Falls, Heath, and Short (collectively, “the Barbosa combinations”), in view of Torrance, renders claim 8 obvious.

a. “The method for collecting survey data according to claim 7 further comprising:”

198. As discussed above, claim 7, from which claim 8 depends, is taught by the Barbosa combinations. *See* Sections XII.A.1, XII.B.1, XII.C.1, above.

b. “(f) assessing a charge for each transferred response received by said central computer.”

199. As I previously explained with respect to [7e], the Barbosa combinations each teach “automatically transferring via the loose network any responses so collected in real time to a central computer” as claimed. Sections XII.A.1.f, XII.B.1.b, XII.C.1.b, above. To any extent that Barbosa does not teach assessing a charge for each transferred response received by said central computer (e.g., Barbosa’s remote server), it is my opinion that a POSA would have been motivated to modify Barbosa based on the teachings of Torrance, and that such features would have been obvious in view of Torrance. Specifically, it would have been obvious to a POSA to have included, in Barbosa’s interactive question and answer program (the questionnaire), questions that carry/assess a charge per response based on the teachings of Torrance. I explain this combination in more detail below.

200. Torrance is similar to Barbosa in that it describes “a method of collecting user responses to questions over a network,” like Barbosa’s method of using “interactive question and answer session.” Ex. 1009, Abstract; Ex. 1005, 6:58-7:21; *see also* Ex. 1005, Abstract. Torrance describes a system similar to that of Barbosa, where a server 218 (like Barbosa’s remote server) communicates with clients 202, 204 (e.g., computing devices with web browser capabilities, like Barbosa’s handheld computing devices). Ex. 1009, ¶¶[0038]-[0049], Figs. 1-4; Ex.

1005, 1:10-16 (describing the handheld computing devices as “Web/WAP-enabled”), 1:65-67, 5:35-39, 7:47-66, 8:11-22, 9:3-14. Like Barbosa’s interactive question and answer program, Torrance describes sending survey questions to user devices (e.g., clients 202, 204) and collecting responses to the survey. Ex. 1009, ¶¶[0039]-[0049].

201. Torrance expressly describes assessing charges for responses, to the survey, collected by the server 218. For example, Torrance explains that “[a] survey question from a commercial client can appear in the midst of questions submitted by non-commercial users” (e.g., in the midst of questions included in Barbosa’s interactive question and answer program) and that the commercial client pays a “small fee per response.” Ex. 1009, ¶¶[0056]-[0058]. The commercial clients include businesses and organizations interested in the preferences of consumers. Ex. 1009, ¶¶[0002], [0020]. Barbosa similarly describes a question response system for businesses undertaking field assessments. Ex. 1005, 1:20-48, 8:49-10:31.

202. Torrance describes a number of methods by which a fee may be assessed for responses collected by the server. For example, Torrance describes that “a commercial client may purchase a specified number of responses to a question for a fee.” Ex. 1009, ¶¶[0056]-[0058]. Alternatively, fees may be assessed for “a ‘time period’ for the system to collect responses.” *Id.* A POSA would have recognized that Torrance therefore teaches that a fee/charge may be assessed for

each response collected by the central computer at least in examples where a commercial client specifies a number of responses that meets or exceeds the total number of responses received by the central computer, and/or where a commercial client purchases a time period during which each response is transferred to the central computer. Ex. 1009, ¶¶[0056]-[0058].

203. It is my opinion that there are a number of teachings, suggestions, and motivations that would have led a POSA to modify the combination of Barbosa and Falls in view of the teachings of Torrance such that a charge is assessed for each response transferred to Barbosa's remote server. *See* Section IV, above (referring to obviousness rationale (G)). A POSA would have been motivated to enable commercial clients to have such access to the information collected by Barbosa's interactive question and answer program, and to have questions from a commercial client in the interactive question and answer program. Commercial client may wish to use user responses for various purposes and thus would have been willing to pay a fee for each user response. For example, entities (e.g., organizations) in the construction industry, such as tool manufacturers, equipment suppliers, and commercial training programs, would have desired better insight into customer preferences, and/or considerations of potential customers (e.g., technicians, performing field assessments for an entity such as an entity in the construction industry). Ex. 1005, 8:49-9:49. The commercial client would have paid a charge

for each response in order to obtain this insight. As noted above, Torrance explains that a benefit of its method of providing responses to commercial clients (for a fee) is that doing so allows commercial clients to better understand the customer preferences, and therefore the commercial clients would have been incentivized to pay a fee for each response received, as Torrance teaches. Ex. 1009, ¶¶[0056]-[0058]. A POSA would thus have been motivated to have the questions from the commercial client in the question and answer program, and to make the results accessible to the commercial client, for a fee, to allow the commercial client to better market their products or services through Barbosa's questionnaire (e.g., in the above example, a construction industry question and answer program). Ex. 1005, 8:49-9:49.

204. Torrance also explains that the commercial clients would have paid to have questions specific to the commercial clients included amongst non-commercial questions, like the field assessment questions described in Barbosa. Ex. 1009, ¶¶[0056]-[0058]. Modifying the Barbosa combinations to include Torrance would have achieved the dual benefits of providing commercial clients an improved understanding of consumer/potential client preferences (as described above) while also providing a mechanism for the system managing the questionnaire (e.g., Barbosa's remote server) to monetize its questionnaire service. For example, POSA would have been motivated to modify the Barbosa combinations to provide the

responses in exchange for the fee in order to provide an additional revenue stream to the operator of Barbosa's system by collecting a fee for each response received, as Torrance also teaches. Ex. 1009, ¶¶[0056]-[0058]. In an example, Barbosa's questionnaire system as modified by Torrance would have allowed a variety of companies to provide questionnaires to their employees, for a fee per response, by using Barbosa's platform. *Id.* As I previously noted, Barbosa and Torrance are both directed to similar methods of collecting user responses to questions over the Internet. Ex. 1005, 6:62, 9:38-40, 12:55-57; Ex. 1009, ¶¶[0056]-[0058]. For example, Barbosa and Torrance both involve collecting user responses to questions over the Internet (Barbosa's interactive question and answer session and Torrance's question and response system). Ex. 1005, 6:62, 9:38-40, 12:55-57; Ex. 1009, Abstract, ¶¶[0038]-[0039], [0056]-[0057]. This would have suggested to a POSA that the benefits of Torrance's method of assessing charges for responses to questions (e.g., allowing commercial clients to better understand customer preferences based on the purchases responses) would have similarly benefited the Barbosa combinations. Ex. 1009, ¶[0056]. Barbosa also describes that a goal of its interactive question and answer program is to "facilitate real-time access to remote programs ... and/or information," a goal which would have been facilitated by modifying the combinations to include Torrance such that the responses are provided to interested commercial clients. Ex. 1005, 3:37-43. A POSA would have

recognized questions from the commercial clients (e.g., equipment suppliers) would have resulted in a charge assessed to said commercial clients by the remote server (i.e., the claimed “assessing a charge for each transferred response received”). Ex. 1009, ¶¶[0056]-[0058].

205. For the reasons set forth above, it is my opinion that a POSA would have been motivated to modify the Barbosa combinations, in view of Torrance, such that commercial clients would pay for received commercial questions and those charges would be assessed by the remote server (claimed “assessing a charge for each transferred response received.”). As discussed above, those charges may be assessed to a third-party commercial client or to an organization wishing to use the questionnaire platform for its employees. For example, Barbosa’s platform would have assessed charges based on the fee structures from Torrance in which a payment for every received response is received by the platform.

206. I have been asked to consider a scenario where Patent Owner argues that claim 8 requires that *every* response collected carries an *individual* charge. First, I note that such a scenario is not described within the specification of the ’748 Patent. In fact, outside of claim 8 itself, the specification of the ’748 Patent does not appear to discuss assessing charges for collected responses at all. However, to the extent that claim 8 is argued to require such a feature, it is my opinion that Torrance teaches or renders such feature obvious. As I previously discussed in this section, Torrance

describes a number of methods by which a fee may be assessed for responses collected by the server. For example, Torrance describes that “a commercial client may purchase a specified number of responses to a question for a fee.” Ex. 1009, ¶¶[0056]-[0058]. Alternatively, fees may be assessed based on a commercial client “purchas[ing] a ‘time period’ for the system to collect responses.” *Id.* It is my opinion that a POSA would have found it obvious to include fee structures such as these in the combinations with Torrance, which would have provided fee structures in which fees are paid only for commercial questions as well as fee structures in which fees are paid for both commercial and noncommercial questions (i.e., for every question). Therefore, it is my opinion that the combinations with Torrance each render claim 8 obvious regardless of whether claim 8 is interpreted to require that a separate fee is assessed for every collected response.

207. It is also my opinion that other rationales support the position that it would have been obvious to a POSA to make the combinations based on the teachings of Torrance as described above. For example, combining Torrance with the each of the Barbosa combinations merely combines known elements according to known methods to yield predictable results. *See* Section IV, above (referring to obviousness rationale (A)). The known elements are Barbosa’s interactive question and answer program and Torrance’s commercial question response fee structure(s). Ex. 1009, ¶¶[0039]-[0049], [0056]-[0059]; Ex. 1005, Abstract, 6:58-7:10, 7:23-34,

7:42-8:3, 8:49-65, 9:3-14, 9:50-56, 10:10-31, 11:5-24, 12:45-54, Figs. 5-8, 10. Torrance teaches a known method of collecting a fee for each response received by a central computer. Ex. 1009, ¶¶[0056]-[0057]. The predictable result of these combinations would have been that an interactive question and answer program (questionnaire) assesses a fee for each response received by the central computer. Ex. 1009, ¶¶[0039]-[0049], [0056]-[0057]; Ex. 1005, Abstract, 6:58-7:10, 7:23-34, 7:42-8:3, 8:49-65, 9:3-14, 9:50-56, 10:10-31, 11:5-24, 12:45-54, Figs. 5-8, 10.

208. Additionally, each of the modifications (combining Torrance with the Barbosa combinations) merely applies a known technique to a known device ready for improvement. *See* Section IV (referring to obviousness rationale (D)). The known technique is Torrance's described technique of assessing a fee for responses in a survey/questionnaire result collection system. Ex. 1009, ¶¶[0039]-[0049], [0056]-[0057]. Barbosa's servers, which administer questionnaires and collect user responses, are ready for the improvements provided by Torrance's technique. For example, a POSA would have recognized that applying Torrance's technique would produce a new revenue stream for the owner of Barbosa's servers. Ex. 1009, ¶¶[0020], [0056]-[0057]. Additionally, the application of Torrance's technique would have provided the incentive to "facilitate real-time access to remote programs...and/or information) as described in Barbosa for market researchers or

other commercial clients who would be incentivized to provide fees for each response received by Barbosa's servers. Ex. 1005, 3:37-43.

209. Finally, a POSA would have had a reasonable expectation of success in achieving the desired combinations (Barbosa and Falls in view Torrance, Barbosa, Falls, and Heath in view of Torrance, Barbosa, Falls, and Short in view of Torrance, and Barbosa, Falls, Heath, and Short in view of Torrance). This is because the combinations involves routine techniques of programming computing devices (e.g., servers) and of database/server management to grant access to information, in exchange for a fee, which were well known at the time and would have been understood by a POSA. Barbosa already explains the process of collecting responses to the interactive questionnaire and transferring said responses to a central computer, a process that a POSA would have had the skills to implement. *See* Section XII.A.1.f, above (describing transfer of the responses to Barbosa's remote server). Torrance explains the technique by which the fees for collected responses to a similar survey are assessed (Ex. 1009, ¶¶[0056]-[0058]), and a POSA would have had the skills, including programming and database management skills, to carry out this straightforward implementation of Torrance's technique to Barbosa's system.

210. For the reasons set forth above, it is my opinion that the combination of Barbosa and Falls, the combination of Barbosa, Falls, and Heath, the combination

of Barbosa, Falls, and Short, and the combination of Barbosa, Falls, Heath, and Short, each further in view of Torrance, teaches or renders obvious claim 8.

E. Grounds I-J: Barbosa and Barbosa in view of Bandera Render Obvious Claims 3, 4, 9-11, and 13-15

211. I understand that the Board has previously found claims 1 and 19 of the '748 Patent unpatentable based on Barbosa, and based on the combination of Barbosa in view of Bandera. Ex. 1023, 18-33, 37-45. It is my opinion that, at least for the reasons set forth by the Board and discussed in IPR2019-00610, Barbosa and the combination of Barbosa and Bandera each teaches or renders obvious all limitations of claim 1. Further, I note that claim 9 bears a close similarity to claims 1 and 19, as shown in the table of Ex. 1049. In view of the close similarity, and for the reasons set forth below, it is my opinion that Barbosa and Barbosa in view of Bandera each teaches or renders obvious all limitations of claim 9. Along similar lines, Barbosa and Barbosa in view of Bandera also teaches or renders obvious claims 3 and 4, which depend from claim 1, and claims 10, 11, and 13-15, which depend from claim 9. Below, I address claim 9 first.

1. Independent Claim 9

212. As I previously noted, claims 1, 9, and 9 recite substantially similar limitations. Ex. 1049. Accordingly, and for the reasons I discuss in detail below, it is my opinion that Barbosa and the combination of Barbosa and Bandera each teaches or renders obvious claim 9.

a. [9pre]: “A method for managing data comprising the steps of:”

213. I have been asked to assume that the preamble is limiting. As explained above at the introduction to Section XII.A, Barbosa describes “methods of conducting field assessments utilizing handheld data management devices.” Ex. 1005, Abstract. Therefore, Barbosa teaches a method for managing data. A POSA would thus have recognized that Barbosa (and thus, Barbosa in view of Bandera) teaches this preamble, to any extent that it is limiting. *See* Ex. 1023, 33, 37-45.

b. [9a]: “(a) establishing communications between a handheld computing device and an originating computer wherein said handheld computing device has a GPS integral thereto;”

214. As I previously explained above with respect to element [7b], Barbosa teaches establishing communications between the remote management system 58 (“an originating computer”) and a handheld computing device 20. Ex. 1005, 5:43-45, 5:29-34, 7:23-37, 12:51-58; Section XII.A.1.c, above. Specifically, Barbosa describes that “communication” (e.g., a connection) is established between handheld computing device 10 and remote management system 58 to download “templates (e.g., task/punch lists) and/or programs.” Ex. 1005, 7:23-28, 7:31-37, Fig. 6. I further explained that the handheld computing device “has a GPS integral thereto.” Ex. 1005, 6:40-57, 7:42-8:3, 10:14-20, Figs. 5-8; Section XII.A.1.c, above. I also note that the ’748 Patent does not provide a definition for “an originating computer.” Because the remote management system 58 in Barbosa establishes connections with

the handheld computing device, and performs the functions recited in the claim elements below, it is my opinion that the remote server is “an originating computer” as claimed. Ex. 1005, 5:43-45, 5:29-34, 7:23-37, 12:51-58; *See* Section XI.A.3, above. Based on the above teachings, Barbosa (and thus, Barbosa in view of Bandera) teaches “establishing communications between a handheld computing device and an originating computer wherein said handheld computing device has a GPS integral thereto.”

c. [9b]: “(b) using said GPS to automatically obtain location identifying information for said handheld computing device;”

215. I have previously explained above with respect to element [7d] how Barbosa teaches automatically obtaining location identifying information for its handheld computing devices. Ex. 1005, 10:14-17 (“[L]ocation information may be provided by the handheld device automatically via [the] resident GPS module.”); Section XII.A.1.e, above. Therefore, Barbosa teaches “using said GPS to automatically obtain location identifying information for said handheld computing device.”

216. I have been asked to consider a scenario where [9b] must be performed before receiving the questionnaire as described below in [9d]. It is my opinion that Barbosa teaches or renders obvious such features. As noted above, Barbosa describes automatically obtaining location identifying information for the handheld

device using the GPS. Ex. 1005, 10:14-17. Barbosa further describes using the location information of the handheld device prior to receiving the questionnaire. For example, Barbosa's user device is also configured to provide navigational assistance to facilitate a user reaching the location of a field problem/job, prior to the handheld computing device of the user executing the questionnaire program. Ex. 1005, 6:40-57, 8:49-54, Fig. 7 (701, 702). A POSA would have understood that Barbosa's remote management server, which provides the questionnaire, could have and would have provided navigational assistance to users, as Barbosa teaches that "multiple client programs [may] share the services of a common server." Ex. 1005, 7:2-21. A POSA would have recognized that one such service would be the navigational assistance. Section VIII.E, above (describing using GPS systems of multiple computers and receivers to determine coordinates); Ex. 1036, 1:56-67 (describing benefits of a mobile device communicating with the resources of a remote server in order to receive route guidance services). For example, a POSA would have understood that Barbosa's remote management server was already configured to receive location information of the handheld computing device and Barbosa teaches providing navigational assistance to its handheld devices and users (e.g., by accessing the system of computers and receivers used to provide the GPS functionality to the handheld computing devices, and/or based on network

connections of the handheld computing device). *See* Section VIII.E, above; Ex. 1036, 2:43-53.

217. Accordingly, a POSA would have understood that Barbosa teaches or at least suggests that the remote management server would have provided the navigational assistance by automatically obtaining GPS location information of a user's handheld device and sending instructions via the established connection described above for limitation [9a]. *See* Section XII.E.1.b, above. I further note that Barbosa teaches that after a user is guided (e.g., using GPS navigation) to a job site (step 701), the user may execute the appraisal program at step 702. Ex. 1005, 8:49-65, Fig. 7 (step 702). Therefore, in Barbosa's client/server system, the appraisal program (i.e., the program providing the questionnaire) may be initially downloaded once the user is at the job site (step 702), after the GPS was used to obtain location identifying information to assist the user with reaching the job site. A POSA would have recognized that the ability to download a necessary questionnaire program in Barbosa was a benefit of Barbosa's describe client/server system. Accordingly, Barbosa, and thus Barbosa in view of Bandera, teaches or renders obvious [9b].

218. Additionally, it would have been obvious to a POSA to have provided a navigational program or services through the remote management server since the remote management server is configured to assist and guide a user for particular tasks, such as job functions. Ex. 1005, 8:49-65, Fig. 7 (step 702). A POSA would

have found it obvious to include navigational assistance as part of the guidance. This would have merely been the combination of known prior art elements according to known methods to yield predictable results. *See* Section IV (referring to obviousness rationale (A)). The known prior art elements would have been Barbosa's teaching of providing assistance and guidance to a user, via a handheld computing device, for particular tasks, and providing navigational assistance using GPS technology. Ex. 1005, 6:40-57, 8:49-9:14, 9:50-10:31, Fig. 7 (701, 702); *see also* Section VIII.E, above; Ex. 1036, 1:6-2:21, 2:43-53. The combination would have been performed according to known methods (programming the remote server to utilize the location identifying information and movement tracking provided by the GPS module). Ex. 1005, 6:40-57, 8:49-9:14, 9:50-10:31, Fig. 7 (701, 702); *see also* Section VIII.E, above; Ex. 1036, 1:6-2:21, 2:43-53. This would have yielded predictable results (i.e., the remote management server) providing navigational assistance as part of the guidance/assistance provided to the user in order to complete particular tasks. A POSA would have recognized that providing navigational assistance would have beneficially aided Barbosa's users in efficiently and accurately rendering field assessments.

219. Additionally, modifying Barbosa to include navigational assistance as part of the guidance rendered by the remote management server would have been the application of a known technique to a known method ready for improvement .

See Section IV, above (referring to obviousness rationale (D)). The known technique would have been providing navigational assistance using GPS technology, and the known method would have been Barbosa's method of rendering assistance and guidance to users carrying out particular tasks (e.g., at a job site). Ex. 1005, 6:40-57, 8:49-9:14, 9:50-10:31, Fig. 7 (701, 702); *see also* Section VIII.E, above; Ex. 1036, 1:6-2:21, 2:43-53. Barbosa's method would have been ready for the improvements offered by providing navigational assistance as part of the guidance rendered by the remote server because doing so would have beneficially facilitated the goal, described in Barbosa, of efficiently and accurately rendering field assessments. Ex. 1005, 1:25-32 (describing issue of even experiences professionals finding access to critical information lacking), 3:13-17 (describing the efficiency and accuracy benefits targeted by Barbosa's system). For example, the remote management server would have been capable of guiding the user to a job site, or to a location for performing a particular task, in order to help the user render the field assessment. Accordingly, Barbosa, and thus Barbosa in view of Bandera, teaches or renders obvious [9b].

d. [9c]: “(c) transmitting said location identifying information from said handheld computing device to said originating computer;”

220. I explained with respect to element [9b] and [7e] that Barbosa teaches transferring location identifying information to a remote server. Ex. 1005, 7:47-66

(describing real-time analysis of data being performed by a remote processor), 8:11-22 (describing data being provided to remote systems with capabilities absent from the handheld devices), 9:3-14, 9:29-49, Claims 15, 25; Sections XII.A (introduction, describing Barbosa collecting responses in real-time), XII.A.1.f, above. For example, Barbosa teaches transmitting the location identifying information from the handheld device 10 to the remote server 58 (“originating computer”) as part of a questionnaire response. Ex. 1005, 7:47-66 (describing real-time analysis of data being performed by a remote processor), 8:11-22 (describing data being provided to remote systems with capabilities absent from the handheld devices), 9:3-14, 9:29-49, Claims 15, 25; Sections XII.A (introduction, describing Barbosa collecting responses in real-time), XII.A.1.f, above. Therefore, Barbosa teaches “transmitting said location identifying information from said handheld computing device to said originating computer.”

221. Additionally, and as I also explained for [9b], transmission of location information of the handheld would also be used for a GPS navigation service provided through the remote management server 58. This process would include the handheld computing device 10 sending location information to the server to obtain directions. Section VIII.E, above (describing using GPS systems of multiple computers and receivers to determine coordinates); Ex. 1036, 1:56-67 (describing

benefits of a mobile device communicating with the resources of a remote server in order to receive route guidance services).

222. Accordingly, Barbosa and Barbosa in view of Bandera each teaches or renders obvious [9c].

- e. [9d]: **“(d) receiving within said handheld computing device a transmission of a tokenized questionnaire customized for a particular location from said originating computer, said tokenized questionnaire comprising a plurality of device indifferent tokens;”**

223. I previously explained, with respect to element [7a], that Barbosa teaches the remote management server 58 creating a custom-designed executable questionnaire (e.g., in the form of an interactive question and answer program). Ex. 1005, 6:61-64, 7:42-8:3, 8:17-20, 8:49-65, 9:3-14, 9:50-56, 10:10-31, 11:5-24, Figs. 5-8, 10; Section XII.A.1.b, above. I also explained that the questionnaire is customized for a particular location and has a branching logic to “ask questions or provide guidance related to a particular field problem.” Ex. 1005, 3:44-47, 6:40-42, 6:58-64, 7:47-48, 9:54-56, 12:45-51, Fig. 5; Section XII.A.1.b, above. As I previously explained with respect to element [7b], Barbosa also teaches the remote management server (“originating computer”) transferring the questionnaire to a handheld computing device. Ex. 1005, 6:5-6 (describing the handheld device downloading the questionnaire from a server), 7:23-34, 8:49-65, 9:3-14, 9:50-10:31, Figs. 6-7; Section XII.A.1.c, above. I note that the Board previously found that

Barbosa's system as described above teaches a limitation that is nearly identical to that of [9d]. Ex. 1023, 21-27 (finding that Barbosa teaches "receiving within said handheld computing device a transmission of a tokenized questionnaire from said originating computer, said tokenized questionnaire including at least one question requesting location identifying information, said tokenized questionnaire comprising a plurality of device independent token" recited in claim 19)). I agree with the Board's prior finding. In view of the above, it is my opinion that a POSA would have understood that Barbosa teaches "receiving within said handheld computing device a transmission of a...questionnaire customized for a particular location from said originating computer."

224. A POSA would have additionally recognized that Barbosa's questionnaire is tokenized. I note that the Board construed the term "token" for the '748 Patent in IPR2019-00610 to mean "a distinguishable unit of a program, such as an index, an instruction, or a command that can represent something else such as a question, answer, or operation." Section XI.A.2, above. I also understand that, during prosecution, the Examiner asserted that "token" had "a special meaning (i.e. logical, mathematical or branching operation)." Ex. 1004, 617-618. Barbosa's description of its interactive question and answer programs follows along similar lines to these constructions. For example, Barbosa describes that "[c]omputer program code for carrying out operations of the present invention can be written in

an object oriented programming language such as Java....” Ex. 1005, 12:45-51. A POSA would have understood that a program written in an object-oriented programming language such as JAVA would have necessarily included, in the computer program code, distinguishable units, such as indexes, instructions, or commands that can represent something else (e.g., a question, an answer, and/or an operation of the program). A POSA would have further recognized that, in order provide the “interactive question and answer” session described in Barbosa, the program would have included distinguishable units, such as indexes, instructions, or commands, that represent the questions, answers, or operations connecting the interactive questions and answers, so that the proper questions are provided in response to the answers entered by a user interacting with the program. Ex. 1005, 3:44-47, 6:40-42, 6:58-64, 12:45-51, Fig. 5; *See* Section VIII.D, above (describing tokenizing as breaking down and encoding lengths of strings (e.g., instructions or commands that represent questions, answers, or operations) as tokens, i.e., distinguishable units). For example, as I have previously described, Barbosa provides an example where “[t]he program may start by asking for the identification of [] the client or matter 703 (e.g., customer, or job site),” and “[t]he program may next ask the representative to identify the problem or type of assessment 704 (e.g., HVAC, plumbing, electrical, landscaping, etc.).” Ex. 1005, 8:49-9:14; Section XII.A.1.b, above. Thus, a POSA would have understood that Barbosa’s interactive

question and answer program would have included not only instructions that ask specific questions (e.g., identification of a type of assessment, customer, job site, etc.), but also indexes corresponding to the available answers (e.g., HVAC, plumbing, electrical, landscaping) as well as instructions and operations connecting each question to the next. *Id.* Based on the above disclosures, it is my opinion that Barbosa's questionnaire (i.e., interactive question and answer program) is "tokenized" consistent with how that term was construed by the Board and the Examiner.

225. Barbosa's tokenized questionnaire also includes "a plurality of device indifferent tokens" as recited in [9d]. For example, Barbosa teaches that the "computer program transmitted from the [server]" can be "in the form of a JAVA applet." Ex. 1005, 12:14-18. As I previously noted, Barbosa also teaches that "[c]omputer program code for carrying out operations of the present invention can be written in an object oriented programming language such as Java." Ex. 1005, 12:45-51. It is my opinion that a POSA would have understood that the use of an object-oriented programming language such as JAVA provides device independence—that is, the program coded in such a language may be executed irrespective of the particular hardware or operating system of any given device. Other references that include details on the state of the art at the time of the alleged invention provide further details on the well-known programming language JAVA.

For example, Bandera explains that “JAVA® is a portable and architecturally neutral language,” and “JAVA® source code is compiled into a machine-independent format that can be run on any machine with a JAVA® runtime system known as the JAVA® Virtual Machine (JVM).” Ex. 1010, 5:36-62. A POSA would have understood that JAVA is not only machine independent, but also operating-system independent such that code written in JAVA may be executed by any operating system. Ex. 1010, 5:47-49 (“[M]achines running under diverse operating systems, including UNIX, Windows NT, and MacIntosh having a JVM can execute the same JAVA® program.”) A POSA would have further understood that the platform independence—that is, the ability for a program to be written once but run on diverse machines, operating systems, and other platforms—has been a defining feature of the JAVA language used by Barbosa. Ex. 1010, 5:36-62; Ex. 1041, 14:54-56 (“It is preferable for the [] program to be written in Java ... making it possible to write a single program compatible with several telephones.”); Ex. 1042, 8:1-5 (“The client function is developed in Java, which makes it platform independent....”).

226. For the above reasons, because Barbosa teaches that its tokenized questionnaire is implemented using the JAVA programming language, it is my opinion that a POSA would have recognized that the tokenized questionnaire includes a plurality of device independent tokens (e.g., distinguishable units of the program such as instructions that ask specific questions (e.g., identification of a type

of assessment, customer, job site, etc.), indexes corresponding to the available answers (e.g., HVAC, plumbing, electrical, landscaping), as well as instructions and operations connecting each question to the next). Ex. 1005, 8:54-59; Section XII.A.1.b, above. I understand that the Patent Owner has previously offered infringement contentions in prior litigations involving the '748 Patent—it is my opinion that Barbosa's disclosure of its tokenized questionnaire is consistent with the subject matter identified as meeting [9d] in some of these infringement contentions. Ex. 1050, 14 ("Uber app is a tokenized questionnaire comprising a plurality of device independent tokens" because it "is downloaded as bytecode, typically a type of Java."); Ex. 1051, 13 (stating the same).

227. I have been asked to consider the possibility that Patent Owner argues that Barbosa alone does not teach or render obvious the feature "said tokenized questionnaire comprising a plurality of device indifferent tokens." It is my opinion that Barbosa in view of Bandera also teaches or renders obvious these features. As I have previously discussed, Bandera explains that JAVA provides machine-independent and operating system-independent (i.e., device-indifferent) functionality for coding programs such as Barbosa's questionnaire. Ex. 1010, 5:36-62. Accordingly, it is my opinion that it would have been obvious to modify Barbosa in view of Bandera to utilize the device-indifferent functionality of JAVA.

228. The result of the combination of Barbosa and Bandera would have been the tokenized program questionnaire of Barbosa (comprising distinguishable units, such as indexes, instructions, or commands representing the questions, answers, and/or operations of the program) including device indifferent tokens, based on being written using machine-independent and operating system-independent JAVA code as disclosed in Bandera. Ex. 1005, 12:45-51; Ex. 1010, 5:36-62. There are a number of rationales that would have led a POSA to modify Barbosa in view of Bandera as described. For example, modifying the computer program code for carrying out Barbosa's operations would have been the mere use of a known technique to improve similar devices and processes in the same way. *See* Section IV, above (referring to obviousness rationale (C)). Barbosa's object-oriented computer program code for carrying out operations such as programming the questionnaire program for Barbosa's handheld computing devices is a similar product to Bandera's JAVA code for its mobile application. Ex. 1005, 11:63-12:32, 12:45-58; Ex. 1010, 5:36-62. That is, applications in both Barbosa and Bandera use JAVA programming code. Like Bandera's applications, Barbosa's questionnaire program is an application configured to be transmitted to multiple different handheld computing devices. Ex. 1005, 7:26-28, 7:61-63; Ex. 1010, 2:33-35, 5:56-61. Further, both Barbosa and Bandera similarly describe that computer program code for carrying out operations of the respective systems can be written in an object

oriented programming language, such as JAVA. Ex. 1010, 5:26-35; Ex. 1005, 12:45-51. The known technique taught by Bandera is using a coding language such as JAVA to create device-indifferent programs, which a POSA would have improved the accessibility of those programs across different devices and operating systems. Ex. 1010, 5:36-6:2. For example, using Bandera's technique, an application compiled into a device-indifferent format can be run on any machine with a JAVA runtime system, which is found in diverse operating systems such as UNIX, Windows, and MacIntosh. Ex. 1010, 5:36-49. A POSA would have understood that applying Bandera's known technique to Barbosa's similar product would have provided similar improvements, namely implementing Barbosa's questionnaire program using device-indifferent and/or machine-independent JAVA code that would have allowed for use of Barbosa's program by a variety of different devices and/or operating systems, just as it does for Bandera. Ex. 1010, 5:36-6:2.

229. There are other benefits taught by Bandera that would have motivated a POSA to modify Barbosa in view of Bandera as described above. Section IV, above (referring to obviousness rationale (G)). For example, Bandera teaches that JAVA code is "a portable and architecturally neutral language" and "is compiled into a machine-independent format that can be run on any machine..." Ex. 1010, 5:37-43. Therefore, it is also my opinion that a POSA would have been motivated to modify Barbosa's questionnaire (e.g., the interactive question and answer

program) so that the questionnaire is implemented using the JAVA programming language and can be run on, and/or ported to, any machine or architecture.

230. Additionally, the modification of Barbosa based on the teachings of Bandera would have been obvious to a POSA as the application of a known technique to a known system and process ready for improvement to yield predictable results. Section IV, above (referring to obviousness rationale (D)). The known technique, as described above, is Bandera's technique of utilizing JAVA code to program device-indifferent applications. Ex. 1010, 5:36-62. The known system and process are Barbosa's system for providing an interactive question and answer program and process of coding such a program. Ex. 1005, 6:60-61, 7:47-48, 9:54-56, 12:14-18 (describing using "an object oriented programming language such as Java"). As noted above, Bandera expressly describes that JAVA is machine-independent and operating system-independent. Ex. 1010, 5:36-62. A POSA would have recognized that Barbosa's process of coding and providing the interactive question and answer program was ready for the improvement of the program being device-indifferent because Barbosa describes that multiple devices access its programs. Ex. 1005, 7:11-12, 7:23-41, 7:60-62. For example, multiple client programs on multiple handheld computing devices may share the services of a common server, such as the interactive question and answer program provided by the remote server. Ex. 1005, 7:11-12. A POSA would have recognized that utilizing

the JAVA programming language to create device-indifferent programs as described in Bandera would have provided these benefits to Barbosa's program and, therefore, Barbosa's system was ready for such improvements. It is my opinion that the predictable result of the modification of Barbosa in view of Bandera would have been that Barbosa utilizes Bandera's programming techniques to program its interactive questionnaire. The result would have been predictable because Bandera already explains how the JAVA programming technique would be applied to create an application, and further describes the resulting improved process for providing machine-independent and operating system-independent program applications. Ex. 1010, 5:36-6:2.

231. A POSA would have had a reasonable expectation of success in making the combination of Barbosa and Bandera because such a combination would have merely required routine programming skills that would have been well within the capacity of a POSA. JAVA was a well-known programming language that a POSA would have been familiar with using, and a POSA would have had the skills to utilize JAVA in programming Barbosa's questionnaire. Ex. 1005, 12:45-51; Ex. 1010, 5:36-6:2; Ex. 1041, 14:54-57; Ex. 1042, 8:1-4.

232. For all the reasons set forth above, it is my opinion that the combination of Barbosa, and Barbosa in view of Bandera, each teaches or renders obvious limitation [9d].

f. [9e]: “(e) ending said communications between said handheld computing device and said originating computer;”

233. I understand that the Board has previously found that Barbosa teaches or suggests a nearly identical limitation in IPR2019-00610. Ex. 1023, 33 (“Patent Owner has not disputed that Barbosa teaches or suggests [ending said communications between said handheld computing device and said originating computer] of claim 19 ... [and] Petitioner has proven that Barbosa teaches or suggests [this claim limitation]”). For the reasons set forth below, it is my opinion that Barbosa also teaches or suggests the nearly identical limitation [9e].

234. As I explained above with respect to both elements [9d] and [7b], Barbosa describes that the handheld computing device can download the questionnaire from a server. Sections XII.A.1.c, XII.E.1.e, above. Specifically, Barbosa explains that the questionnaire can be “downloaded from a server via the Internet until required by the device 10.” Ex. 1005, 6:5-6. Likewise, Barbosa teaches that after “communication between a handheld device 10 (client) and remote management system 58 (e.g., server, desktop PC)” is established to download the program, the program “may be stored locally on a user’s [device].” Ex. 1005, 7:23-30.

235. To any extent that it is argued that Barbosa does not expressly disclose ending communications, based on the above disclosures a POSA would have

understood that communications between the handheld device 10 and the remote management system 58 may end after downloading because Barbosa teaches local storage of the questionnaire on the handheld device following completion of being downloaded, meaning that no active communication is further required for the handheld computing device to receive the questionnaire. Ex. 1005, 6:28-39, 7:23-30. For example, a POSA would have understood, based on Barbosa's explicit use of synchronization techniques, that in certain scenarios such as a job site being at a location of poor network connectivity, the handheld computing device would still be able to execute the downloaded questionnaire from local storage and transmit responses at a later time (e.g., when the device reconnects to the network) even if the handheld computing device ended communications with the remote management server. Ex. 1005, 3:29-43. A POSA would have understood that, absent any reason to maintain connections between the server and the handheld computing device, communications between the two devices would have been ended. Accordingly, it is my opinion that Barbosa, and thus Barbosa in view of Bandera, teaches or renders obvious [9e].

g. [9f1]: “(f) after said communications has been ended, when said handheld computing device at said particular location: (f1) executing at least a portion of said plurality of tokens comprising said questionnaire on said handheld computing device to collect at least one response from a user, and,”

236. As I previously explained with respect to [9e], it is my opinion that Barbosa teaches ending communications with the remote management server that provides the questionnaire, after the download of the questionnaire from the server to the handheld computing device is completed. Section XII.E.1.f, above; Ex. 1005, 5:67-6:6, 7:23-41. I also explained how Barbosa describes that the downloaded questionnaire (i.e., program) is executed to provide an interactive question and answer session to gather responses from the user of the handheld computing device (e.g., as part of a field assessment). Section XII.E.1.f, above; Ex. 1005, 6:58-7:22, 7:42-8:22. Additionally, as I explained for element [7c], Barbosa teaches executing the downloaded questionnaire “when said handheld computing device [is] at said particular location.” Section XII.A.1.d, above; Ex. 1005, 6:58-7:34, 7:42-8:22; *see also* Ex. 1005, 8:49-65, 9:3-14, 9:50-10:31, Figs. 6-7. For the reasons set forth above, it is my opinion that Barbosa’s handheld device therefore executes the downloaded questionnaire “after said communications has been ended.”

237. The execution of the downloaded questionnaire occurs after the questionnaire has been downloaded and stored in local memory of the handheld computing device for subsequent use (e.g., when the user is at the particular location

for a field assessment). Ex. 1005, 7:23-34, 8:49-65, 9:3-14, 9:50-10:31, Figs. 6-7. A POSA would have recognized that Barbosa teaching the ability to locally store the questionnaire at the handheld device indicates that the questionnaire could and would be executed when no active communication link between the client and server exists. Moreover, nowhere does Barbosa describe a need to maintain client-server communications in using the questionnaire application. Indeed, Barbosa's description of synchronization is an explicit acknowledgment that a communication connection might not always be active. Ex. 1005, Abstract, 3:28-43, 5:52-6:39, 6:58-7:22, 8:4-10, Fig. 6.

238. Barbosa also teaches that its program (questionnaire) may be used for gathering data (e.g., user responses), such as from performing a field assessment. Ex. 1005, 6:21-27 (describing "real-time access to servers and personnel in support of assessments"), 8:13-20, 8:54-65, 9:50-10:30, Claim 15. As I explained with respect to [7e], Barbosa collects the user responses as a result of executing the program. Section XII.A.1.f, above. Accordingly, a POSA would have understood that the program executes "to collect at least one response from a user." Ex. 1005, 7:47-48 ("The program would prompt the user for input of data related to the problem."). Additionally, I note that the Board previously found that Barbosa teaches all limitations, including step (d), of claim 19. Ex. 1023, 27-33. I agree with the Board's prior finding. Step (d) of claim 19 is nearly identical to [9f1], which

further supports my opinion that Barbosa (and thus, Barbosa in view of Bandera) teaches or renders obvious [9f1]. Ex. 1049.

239. For the reasons set forth above, it is my opinion that Barbosa, and thus Barbosa in view of Bandera, teaches or renders obvious [9f1].

h. [9f2]: “[f] after said communications has been ended, when said handheld computing device at said particular location:] (f2) storing within said computing device said at least one response from the user;”

240. Barbosa teaches that the “handheld data management device for field assessments can include a memory for storing field assessment programs and related data.” Ex. 1005, 3:44-46. Barbosa further explains that “data collected with the device 10 ... may be stored in local memory for subsequent use.” Ex. 1005, 8:4-8. I have previously explained how the questionnaire in Barbosa is executed, and the questionnaire responses are collected after communications with the remote server have ended and the handheld computing device is at the particular location (e.g., the site of a field assessment). *See* Sections XII.E.1.g (describing how Barbosa teaches that the program is executed, and thus gathers responses, after the communications have ended), XII.A.1.d (describing executing the questionnaire and collecting responses), above. Therefore, it is my opinion that a POSA would have understood that Barbosa teaches storing at least one response from the user, with the handheld computing device, “after said communications has been ended, when said handheld computing device [is] at said particular location.” For example, Barbosa’s handheld

computing device would have stored the program for executing the questionnaire, and related data (e.g., responses), in local memory after the user arrived at a field assessment site and executed the downloaded program. Ex. 1005, 3:44-46; 8:4-8 (“data collected with the device 10 ... may be stored in local memory for subsequent use”), 8:13-20, 8:54-65, 9:50-10:30. As I noted above with respect to limitation [9f1], POSA would have recognized that Barbosa teaching the ability to locally store the questionnaire at the handheld device indicates that the questionnaire could and would be executed when no active communication link between the client and server exists. For example, as I previously noted, Barbosa’s description of synchronization is an explicit acknowledgment that a communication connection might not always be active. Ex. 1005, Abstract, 3:28-43, 5:52-6:39, 6:58-7:22, 8:4-10, Fig. 6. A POSA would have also recognized that Barbosa’s handheld computing device would have had to store the program for executing the questionnaire in local memory in order to execute the questionnaire when a communication is not active.

241. For the reasons set forth above, it is my opinion that Barbosa, and thus Barbosa in view of Bandera, teaches or renders obvious [9f2].

- i. **[9g]: “(g) establishing communications between said handheld computing device and a recipient computer; and,”**

242. As I previously explained with respect to elements [7b] and [9a], Barbosa discloses establishing communications between a handheld computing

device 10 and a recipient computer, such as a remote server. Sections XII.A.1.c, XII.E.1.b, above; Ex. 1005, 5:29-34, 5:43-49. I note that this is identical to step (g) of claim 19, which I understand the Board previously found unpatentable. Ex. 1023, 33; Ex. 1049. Barbosa describes that communications may be established between the handheld computing device and the remote server in order to transmit collected responses back to the server for further analysis. Barbosa explains that the analysis of the user's responses may be performed by a remote system or processor, such as the remote server, which receives the responses from the handheld device. Ex. 1005, 7:47-66 (describing analysis of data being performed by a remote processor), 8:11-22 (describing data being provided to remote systems with capabilities absent from the handheld devices), 9:3-14. Specifically, Barbosa discloses that analysis of data obtained may also be undertaken by a remote processor (e.g., server) and that "a transcript of the assessor's interaction with the handheld (e.g., questions and responses) may be transmitted to remote resources for further analysis." Ex. 1005, 7:54-56, 9:38-41, 9:3-7 ("At completion of the series of questions, ... [t]he data may then be ... provided [] to a remote processor 709 via a network where the data will be analyzed."). Barbosa also describes that the user's responses may be stored for later synchronization with the remote server. Ex. 1005, 8:4-10; *see also id.*, Abstract, 3:28-43, 5:52-6:39, 6:58-7:22, Fig. 6. A POSA would have understood that synchronization, such as described in Barbosa, is the transmitting of information

once a connection is re-established (e.g., after a disconnection). Section VIII.F, above. Accordingly, a POSA would have understood that Barbosa's system establishing communications between the handheld computing device and the remote server in order to transmit collected responses back to the server (e.g., to synchronize the handheld computing device and the remote server) for further analysis after communications had previously ended (e.g., as described above at limitation [9e]).

243. As I noted above at Section XI.A.3, I understand that the Board has previously construed the terms "central computer," "originating computer," and "recipient computer" to encompass "a computer having the ability to perform functions associated with an originating computer, a recipient computer, and/or a central computer." Section XI.A.3. Therefore, I understand that the terms "originating computer" and "recipient computer" may refer to the same computer having the ability to perform functions associated with the originating computer and the recipient computer. *See* Ex. 1001, Claim 11 ("wherein said originating computer and said recipient computer are a same computer"). To any extent that the "originating computer" and "recipient computer" are not same computer, it is my opinion that Barbosa teaches the functions described above for each respective computer being performed by different computers. For example, Barbosa explains that the questionnaire program may come from the databases 61/59, which a POSA

would have understood to be a different computer (having different components) from the remote server 58. Ex. 1005, 7:23-41, 8:49-9:14, Fig. 6. The databases 61/59 have the ability to perform the functions (e.g., receiving location identifying information, communicating with the handheld computer device to transmit the questionnaire program) associated with the “originating computer,” and the remote server 58 has the ability to perform the functions (e.g., establishing communications with the handheld computing device, such as to receive responses to the questionnaire program) associated with the “recipient computer.” Ex. 1005, 7:23-41, 7:54-56, 8:49-9:14, 9:38-40, Fig. 6.

244. Accordingly, for the reasons set forth above, it is my opinion that Barbosa, and thus Barbosa in view of Bandera, teaches or renders obvious element [9g].

j. [9h]: “(h) transmitting a value representative of each of said at least one response stored within said handheld computing device to said recipient computer.”

245. As I have previously explained with respect to element [9f2], Barbosa teaches that the responses collected as a result of executing the questionnaire program are stored by the handheld computing device (e.g., in local memory), which teaches the claimed “said at least one response stored within said handheld computing device.” Section XII.E.1.h, above. As I further explained with respect to element [9g], Barbosa teaches that the collected responses are transmitted to the

remote server for analysis. Section XII.E.1.i, above; Ex. 1005, 7:54-56, 9:38-40. A POSA would have understood that Barbosa transmits values that represent the responses to the remote server. For example, a POSA would have been more than familiar with well-known, basic concepts such as using numerical values to represent a date or time, which are examples of possible responses Barbosa's server may have collected from executing the program questionnaire. Ex. 1005, 1:44-47, 9:54-65. A current date or projected start date, provided in response to a question from the interactive question and answer session, would have been provided as numerical values (e.g., MM-DD-YYYY) representative of dates. Ex. 1005, 9:57-60. As another example, various characteristics or traits of a job site may be provided as numerical values, such as numerical values representing square footage, number of vents, and/or position of vents (e.g., measurements from a designated location). Ex. 1005, 9:20-26. Additionally, a POSA would have recognized that data transmitted over a computer network or other transmission medium is typically represented as bit values (i.e., 0s and 1s). For example, a POSA would have understood that at the physical layer of the Open System Interconnection (OSI) model, data is transmitted as bits. These bit values are then interpreted at the destination device into the transmitted data, whether text, numbers, images, program code or the like. Accordingly, even if the claim is found to require transmitting a representative value for every user response collected through the entire questionnaire, Barbosa and

Barbosa in view of Bandera would also teach this by virtue of its teaching of transmissions over a computer network (represented by bit values).

246. Accordingly, for the reasons set forth above, it is my opinion that Barbosa, and thus Barbosa in view of Bandera, each teaches or renders obvious element [9h], and thus, claim 9.

2. Dependent Claim 10

247. For the reasons I explain below, it is my opinion that Barbosa, and thus Barbosa in view of Bandera, teaches or renders obvious claim 10.

a. [10pre]: “The method for managing data according to claim 9, wherein step (d) comprises the steps of:”

248. As I explained above for [9pre], Barbosa teaches a method for managing data. Section XII.E.1.a, above. As I further explained for limitation [9d], Barbosa also teaches that the handheld computing device receives transmission of a tokenized questionnaire (i.e., step (d) of claim 9). Section XII.E.1.e, above. Therefore, to the extent that the preamble is limiting, Barbosa (and thus, Barbosa in view of Bandera) teaches or renders obvious [10pre].

b. [10d1]: “(d1) creating a questionnaire,”

249. As I previously explained for elements [7a] and [9d], and as I address further below for element [3a1], Barbosa teaches creating a questionnaire. Sections XII.A.1.b, XII.E.1.e, above; Section XII.E.7.b, below. In particular, Barbosa describes creating programs (e.g., by developing the code for the programs) for an

interactive question and answer program. Ex. 1005, 5:52-6:27, 6:40-62, 7:23--48, 9:50-10:31, 12:45-51. In order to create an interactive question and answer program the questionnaire logic and components (e.g., questions and answers) would need to be entered (e.g., defined, programmed, etc.) through a programming application. For example, Barbosa's remote management system would have used computer program code "written in an object oriented programming language such as Java" to provide a program that, when executed, creates "[a]n interactive question and answer session" including at least one question. Ex. 1005, 12:45-51, 6:40-64. Accordingly, Barbosa teaches "creating a questionnaire" as claimed.

250. Additionally, I note that the Board has previously determined that Barbosa teaches creating a questionnaire. Ex. 1024, 8-9 ("Barbosa teaches an executable questionnaire" that is programmed to be operated by a microprocessor); Ex. 1023, 39-40 (finding Barbosa teaches or suggests claim 1, which similarly recites "creating a questionnaire comprising a series of questions customized for a location.")). I agree with the Board's prior conclusion.

251. For the above reasons, it is my opinion that Barbosa, and thus Barbosa in view of Bandera, teaches or renders obvious [10d1].

c. [10d2]: “(d2) tokenizing said questionnaire, thereby producing a plurality of device independent tokens representing said questionnaire,”

252. As I previously discussed above for limitation [9d], and as I address further below for claim 4, Barbosa teaches a “tokenized questionnaire comprising a plurality of device indifferent tokens.” Section XII.E.1.e, above; Section XII.E.8, below. I explained that the tokenized questionnaire is created using program code, such as the JAVA programming language, and thus a POSA would have recognized that Barbosa and/or Barbosa in view of Bandera teaches “tokenizing said questionnaire, thereby producing a plurality of device independent tokens representing said questionnaire.” *Id.*; Ex. 1005, 12:14-18; Ex. 1010, 5:36-62. For example, Barbosa’s program transmitted from the server can be “in the form of a JAVA applet.” Ex. 1005, 12:14-18, 12:45-47. In tokenizing Barbosa’s questionnaire, each response field and function for submitting the response would be represented and defined by a programming instruction or command (e.g., JAVA code). Section XII.E.8.c, below. A POSA would have understood that the JAVA programming language is a programming language that provides device independence—it runs irrespective of the particular hardware or operating system of any given device. Section XII.E.1.e, above; Ex. 1010, 5:36-62. Thus, it is my opinion that Barbosa and/or Barbosa in view of Bandera teaches the claimed “tokenizing said questionnaire, thereby producing a plurality of device independent

tokens representing said questionnaire.” Section VIII.E.3.e; Ex. 1023, 18-25, 33, 38-39 (Barbosa teaches or suggests the claim 1 limitation “tokenizing said questionnaire, thereby producing a plurality of device indifferent tokens representing said questionnaire”).

d. [10d3]: “(d3) storing said plurality of tokens on a computer readable medium accessible by said originating computer,”

253. I have previously explained for elements [9d] and [7b] that Barbosa’s remote management system/remote server that provides the tokenized questionnaire is an “originating computer” within the meaning of the ’748 Patent. Ex. 1005, 5:67-6:6 (describing the handheld device downloading the questionnaire from a server), 7:23-34, 7:42-8:3, 8:49-9:14, 9:36-40, 9:50-10:31, Figs. 6-7; Sections XI.A.3, XII.A.1.c, XII.E.1.e, above. Barbosa describes that the tokenized questionnaire is stored by databases that are accessible to the remote server (e.g., to retrieve the questionnaire for transmission to a handheld computing device). Ex. 1005, 7:30-33 (“Job templates and/or programs may also be centrally stored within one or more databases 61/59 accessible to management system...”). Therefore, it is my opinion that a POSA would have understood Barbosa, and thus Barbosa in view of Bandera, teaches storing the plurality of tokens on a computer readable medium accessible by the remote server and teaches or renders obvious element [10d3].

e. [10d4]: “(d4) accessing said stored plurality of tokens from said originating computer,”

254. As I explained above for limitation [10d3], Barbosa stores its tokenized questionnaire in databases accessible to the remote server. Ex. 1005, 7:30-33. Barbosa also teaches subsequently accessing the stored tokens (i.e., the questionnaire program) from the originating computer. For example, Barbosa teaches providing the questionnaire to the handheld device and thus, the remote server (“originating computer”) would have accessed the tokenized questions to provide the questionnaire (including the questions therein) to the handheld computing device as I previously discussed for element [9d] (the remote server transfers the questions to the handheld computing device). Section XII.E.1.e, above; Ex. 1005, 6:5-6 (describing the handheld device downloading the questionnaire from a server), 7:23-34, 8:49-65, 9:3-14, 9:50-10:31, Figs. 6-7. Therefore, it is my opinion that Barbosa (and thus, Barbosa in view of Bandera) teaches or renders obvious accessing the stored plurality of tokens from the remote server in order to transmit the program (i.e., the plurality of tokens) to the user’s handheld computing device. Section XII.E.1.e, above. For these reasons, Barbosa (and Barbosa in view of Bandera) teaches or renders obvious [10d4].

f. [10d5]: “(d5) transmitting said stored plurality of tokens from said originating computer to said handheld computing device, and,”

255. As I described above for element [10d4], Barbosa teaches that its remote server accesses the stored tokenized questionnaire. Section XII.E.2.e, above. As I explained for element [9d], Barbosa further teaches that the remote server transmits the tokenized questionnaire, which would include the plurality of tokens, to the handheld computing device. Ex. 1005, 6:5-6 (describing the handheld device downloading the questionnaire from a server), 7:23-34, 8:49-65, 9:3-14, 9:50-10:31, Figs. 6-7; Sections XII.A.1.c, XII.E.1.e, above. I also note that the Board previously found that Barbosa teaches “receiving within said handheld computing device a transmission of a tokenized questionnaire from said originating computer.” Ex. 1023, 18-27 (finding that Barbosa teaches “receiving within said handheld computing device a transmission of a tokenized questionnaire from said originating computer, said tokenized questionnaire including at least one question requesting location identifying information, said tokenized questionnaire comprising a plurality of device independent token” recited in claim 19). I agree with this finding and it is my opinion that this process of the originating computer transmitting the tokenized questionnaire to the handheld device would include receiving the tokens contained within the tokenized questionnaire from the originating computer. For the reasons

set forth above, it is my opinion that Barbosa (and thus Barbosa in view of Bandera) teaches or renders obvious element [10d5].

g. [10d6]: “(d6) receiving within said handheld computing device said transmission of said tokenized questionnaire from said originating computer.”

256. As I previously explained for element [9d], Barbosa teaches that the handheld computing device receives the tokenized questionnaire from the remote server. Section XII.E.1.e, above. Additionally, I note that the Board previously found that Barbosa teaches “receiving within said handheld computing device a transmission of a tokenized questionnaire from said originating computer,” which is nearly identical to [10d6]. Ex. 1023, 18-27 (finding that Barbosa teaches “receiving within said handheld computing device a transmission of a tokenized questionnaire from said originating computer, said tokenized questionnaire including at least one question requesting location identifying information, said tokenized questionnaire comprising a plurality of device independent token” recited in claim 19). I agree with the Board’s prior finding on this matter. For the reasons set forth above, it is my opinion that Barbosa, and thus Barbosa in view of Bandera, teaches or renders obvious element [10d6], and thus, claim 10 as a whole.

3. Dependent Claim 11: “The method for managing data according to claim 9, wherein said originating computer and said recipient computer are a same computer.”

257. Claim 11 of the ’748 Patent depends from claim 9 and further requires “wherein said originating computer and said recipient computer are a same

computer.” Ex. 1001, Claim 11. As discussed above, claim 9, from which claim 11 depends, is taught by Barbosa and the combination of Barbosa and Bandera. Sections XII.E.1.a-j, above; Ex. 1005, 7:23-66. As I previously explained for elements [9d], [9g], and [9h], Barbosa teaches that its remote server 58 performs the functions of the “originating computer” (e.g., communicating with the handheld computing device, making download of the tokenized questionnaire available to the handheld computing device to transmit the questionnaire to the handheld computing device) and the functions of the “recipient computer” (e.g., communicating with the handheld computing device to receive values representative of responses. Section XII.E.1.e, XII.E.1.i-j, above.

258. As I noted above at Section XI.A.3, I understand that the Board has previously construed the terms “central computer,” “originating computer,” and “recipient computer” to encompass “a computer having the ability to perform functions associated with an originating computer, a recipient computer, and/or a central computer.” Section XI.A.3. Therefore, I understand that the terms “originating computer” and “recipient computer” may refer to the same computer having the ability to perform functions associated with the originating computer and the recipient computer. For the reasons set forth above, it is my opinion that Barbosa’s remote server performs the functions associated with both the originating computer and the recipient computer, and thus teaches that the originating computer

and the recipient computer are the same computer. Therefore, Barbosa (and Barbosa in view of Bandera) teaches or renders obvious claim 11.

4. Dependent Claim 13: “The method for managing data according to claim 9, wherein said questionnaire comprises at least one question that requests location identifying information and at least one other Question.”

259. Claim 13 of the '748 Patent depends from claim 9 and further requires “wherein said questionnaire comprises at least one question that requests location identifying information and at least one other Question.” Ex. 1001, Claim 13. As discussed above, claim 9, from which claim 13 depends, is taught by Barbosa and the combination of Barbosa and Bandera. *See* Sections XII.E.1.a-j, above. As I previously explained with respect to element [7a], Barbosa teaches that its interactive questionnaire program includes at least one question that “requests location identifying information.” Section XII.A.1.b, above; Ex. 1005, 6:58-67, 7:42-8:3, 9:50-10:31. Barbosa also describes a number of additional questions, included in its questionnaire, related to a field assessment. For example, Barbosa’s questionnaire includes questions such as “customer name, date, type of job,” and others “ask[ing] the representative to identify the problem or type of assessment.” Ex. 1005, 6:58-67, 8:49-63, 9:50-10:31. Therefore, it is my opinion that Barbosa (and thus, Barbosa in view of Bandera), teaches or renders obvious claim 13.

5. Dependent Claim 14: “The method for managing data according to claim 13, wherein at least one of said at least one other question is selected from a group consisting of a food quality question, a service quality question, a waiting time question, a store number question, a location question, a time question, a date question, a temperature question, and a time of day question.”

260. Claim 14 of the '748 Patent depends from claim 13 and further requires “wherein at least one of said at least one other question is selected from a group consisting of a food quality question, a service quality question, a waiting time question, a store number question, a location question, a time question, a date question, a temperature question, and a time of day question.” Ex. 1001, Claim 14. As discussed above, claim 13, from which claim 14 depends, is taught or rendered obvious by Barbosa and the combination of Barbosa in view of Bandera. *See* Section XII.E.4, above.

261. As I previously explained above for claim 13, Barbosa discloses that its questionnaire includes a number of additional questions, such as a location question, and a date question, that meet the limitation of claim 14. Section XII.E.4, above. For example, Barbosa explains that, while executing the questionnaire program, “the assessor may be asked (e.g., prompted) to identify the job 801 (e.g., location, customer name, date, type of job).” Ex. 1005, 9:50-10:31. A POSA would have recognized the location question identifying the job location might be a different question than the “at least one question that requests location identifying

information” of claim 13. For example, the question in claim 13 may be a request for GPS coordinates, and the location question identifying the job location may be a request for the address information of the job site or a zip code, city, county, or the like. For the reasons set forth above, it is my opinion that Barbosa, and the combination of Barbosa and Bandera, teaches or renders obvious the limitations of claim 14.

6. Dependent Claim 15: “The method for managing data according to claim 9, wherein step (a) comprises the step of establishing communications via a global computer network between said handheld computing device and said originating computer.”

262. Claim 15 of the ’748 Patent depends from claim 9 and further requires “wherein step (a) comprises the step of establishing communications via a global computer network between said handheld computing device and said originating computer.” Ex. 1001, Claim 15. As discussed above, claim 9, from which claim 15 depends, is taught by Barbosa and the combination of Barbosa and Bandera. *See* Sections XII.E.1.a-j, above.

263. As I previously explained, Barbosa, and thus the combination of Barbosa and Bandera, teaches establishing communications between a handheld computing device and an originating computing device as recited in step (a) of claim 9. Section XII.E.1.b, above. Barbosa describes that these communications may occur over the Internet. Ex. 1005, 6:2-6 (“The set of instructions may [be]

downloaded from a server via the Internet”), 6:21-25. A POSA would have understood that the Internet is a “global computer network” as recited in claim 15 because it connects computers across the world. Ex. 1005, 7:15-22. Therefore, it is my opinion that Barbosa, and thus Barbosa in view of Bandera, teaches or renders obvious claim 15.

7. Dependent Claim 3

a. [3pre]: “The method for managing data of claim 1 wherein step (a) includes the substeps of:”

264. Claim 3 depends from claim 1 and, as explained above, claim 1 was found unpatentable in IPR2019-00610. For at least the reasons discussed in IPR2019-00610, Barbosa renders obvious “creating a questionnaire comprising a series of questions customized for a location” of claim 1 (i.e., step (a) of claim 1). Ex. 1023, 37-40.

265. I previously explained, in relation to limitation [7a], that Barbosa describes creating a questionnaire comprising a series of questions customized for a location. *See* Section XII.A.1.b, above; Ex. 1005, 9:54-56. As I have previously explained, Barbosa’s “remote management system 58” provides the programs, configured to gather response to questions, to the handheld computing devices. Ex. 1005, 7:23-34, 8:49-65, 9:3-14, 9:50-10:31, Figs. 6-7. Barbosa’s remote management system creates “a set of instructions in a code module” that “implement[]” the “invention” and/or “programs” to be provided to a handheld

device 10. Ex. 1005, 6:1-2, 7:23-28, 7:31-37 (“Job templates and/or programs may also be centrally stored within one or more databases 61/59 accessible to management system”), Fig. 6. It is my opinion that a POSA would have understood that Barbosa’s remote management system therefore creates custom-designed executable questionnaires because the downloaded code modules and programs created by Barbosa’s remote management system are designed to prompt users of the handheld devices for responses to various questions. Ex. 1005, 6:61-64, 7:42-8:3, 8:17-20, 8:49-65, 9:3-14, 9:50-56, 10:10-31, 11:5-24, Figs. 5-8, 10. Stated another way, in order to provide a questionnaire program, the program would have to be created first. For example, Barbosa’s remote management system would have used computer program code “written in an object oriented programming language such as Java” to provide a program that, when executed, creates “[a]n interactive question and answer session” including at least one question. Ex. 1005, 12:45-51, 6:40-62. Barbosa further describes that these programs are “operated by the microprocessor [to] ask questions or provide guidance related to a particular field problem.” Ex. 1005, 6:60-61, 7:47-48 (“The program would prompt the user for input of data related to the problem.”), 9:54-56. Therefore, by disclosing the creation of the programs (e.g., by developing the program code as discussed above) for the interactive question and answer program, Barbosa teaches the claimed “creating a questionnaire comprising a series of questions....” Ex. 1023, 39-40 (finding Barbosa

teaches or suggests claim 1(a)); Ex. 1024, 8-9 (“Barbosa teaches an executable questionnaire” that is programmed to be operated by a microprocessor).

266. Barbosa discloses that its computer programs (claimed “questionnaire”) include “a series of questions customized for a location” as recited in limitation [1a]. As described above, because Barbosa discloses a program “operated by the microprocessor [to] ask questions or provide guidance related to a particular field problem,” that program is a questionnaire that includes “a series of questions.” Ex. 1005, 6:60-61, 7:47-48, 9:54-56. A POSA would have understood that Barbosa discloses a program that is a questionnaire “customized for a location” because Barbosa’s programs may be customized for a particular job type (i.e., a location type), as well as include a number of customized questions that are related to a user’s location (e.g., a job site). Ex. 1005, 6:58-61 (describing programs asking questions related to a particular field problem), 7:57-8:3 (describing prompting the user for input of data, such as location information), 8:53-65 (describing asking the user specific question related to a particular field problem) 9:54-10:31 (describing a program prompting the use to identify the job location, customer name, date, and type of job), Figs. 6-8. As noted above, Barbosa also explains that “only the most relevant questions and/or interaction [should] be invoked by the program,” which a POSA would have understood to include a questionnaire that is customized (i.e.,

presenting questions most relevant) to the location where an assessor is located (e.g., a potential job site). Ex. 1005, 8:59-60.

267. For all the reasons set forth above, it is my opinion that Barbosa alone and Barbosa in view of Bandera , teaches or renders obvious limitation [3pre] as Barbosa alone and Barbosa in view of Bandera teaches or renders obvious limitation [1a] of claim 1.

b. [3a1]: “(a) creating a questionnaire by: (i) entering a series of questions into a questionnaire design computer program;”

268. As explained below where I apply the prior art to the limitation, it is my opinion that Barbosa alone and Barbosa in view of Bandera teaches or renders obvious limitation [3a1].

269. I previously explained, in relation to limitation [7a], that Barbosa discloses “[c]omputer program code for carrying out operations of the present invention can be written in an object oriented programming language such as Java” including “[a]n interactive question and answer session” including a series of questions. Section XII.A.1.b, above; Ex. 1005, 12:45-51, 6:40-62, *see also* 6:1-2, 7:23-37, Fig. 6. Additionally, the “programs operated by the microprocessor ask questions or provide guidance related to a particular field problem.” Ex. 1005, 6:60-61, 7:47-48, 8:54-59, 9:54-56. As I stated above, in order to create a questionnaire program the questionnaire logic and components would need to be entered (e.g.,

defined, programmed, etc.) through a programming application. Accordingly, a POSA would have recognized that Barbosa teaches a questionnaire design computer program, e.g., as part of the programs provided by the server. A POSA would have further understood that, in order to have questions in the questionnaire program, those questions would need to be entered into the questionnaire design program by a designer or creator of the questionnaire as part of programming the executable questionnaire. Accordingly, it is my opinion that creating the question and answer application with a series of questions appropriate for a particular application, e.g., appraisal questions for the appraisal program, would have included “entering a series of questions into a questionnaire design computer program.”

270. For all the reasons set forth above, it is my opinion that Barbosa, and thus also Barbosa in view of Bandera, teaches or renders obvious limitation [3a1].

c. [3a2]: “[(a) creating a questionnaire by:] (ii) identifying within said questionnaire design computer program the type of response allowed for each question of said series of questions; and”

271. As explained below where I apply the prior art to the limitation, it is my opinion that Barbosa alone and Barbosa in view of Bandera teaches limitation [3a2].

272. I previously explained, in relation to limitation [7a], that Barbosa describes a variety of question types and suitable responses. *See* Section XII.A.1.b, above. Such responses include “identification of [] the client or matter 703 (e.g., customer, or job site),” “the problem or type of assessment 704 (e.g., HVAC,

plumbing, electrical, landscaping, etc.),” “identify the job 801 (e.g., location, customer name, date, type of job),” “current date,” “projected start date,” “the type of program 802 to be utilized (e.g., HVAC Estimating, trouble-shooting, efficiency assessment),” “approximate size of the building 803 being assessed,” “structural characteristics of the building 804 (e.g., glass-type and location, the direction a building faces for determining solar exposure, ceiling height and ceiling type),” “wall type, insulation type/rating, duct work type/insulation, pre-existing equipment type/rating,” and “[p]roject location information may be provided by the handheld device automatically via a resident GPS module.” Ex. 1005, 8:49-10:31. Thus, Barbosa teaches possible response options to include identification of a customer or job site, type of assessment, date, location, among others.

273. With Barbosa’s questionnaire, “[t]he user would respond to program questions by providing specific answers/data 706, which would generally be provided in a format understandable by the program” and that responses are provided “within a template recognizable by the remote processor/program.” Ex. 1005, 8:49-9:14. In order for the questionnaire program to provide data in a recognizable format, a POSA would have understood that the questionnaire program code would have specified the types of response allowed for each question of the series of questions. For example, program code of the questionnaire may specify that a current date and projected start date must be entered in a MM/DD/YYYY date

format, or that the size of building would have to be entered in a numeric format or through a selection of numeric ranges, or that a type of program or assessment would be selected through a menu of possible options (e.g., HVAC, plumbing, electrical, landscaping). Each of these response types would be identified within the computer program so that when a user executes the program, the response options would be appropriately defined and enforced.

274. For all the reasons set forth above, it is my opinion that Barbosa alone and Barbosa in view of Bandera teaches or renders obvious limitation [3a2].

d. [3a3]: “[a] creating a questionnaire by: (iii) identifying within said questionnaire design computer program a branching path in said questionnaire for each possible response to each question of said series of questions.”

275. As explained below where I apply the prior art to the limitation, it is my opinion that Barbosa alone and Barbosa in view of Bandera each teaches or renders obvious limitation [3a3].

276. I previously explained, in relation to limitation [7a], Barbosa’s questionnaire has functionality that provides internal branching logic between questions and that identifies types of response allowed for each question of the series of questions. *See* Section XII.A.1.b, above; *see also* Section XII.E.7.c, above (addressing similar features for [3a2]). In particular, Barbosa explains that the questionnaire has branching logic such that “enable only the most relevant questions

and/or interaction[s] to be invoked.” Ex. 1005, 8:59-63. Barbosa provides that, based on user responses (i.e., the “identified subject matter 705”), “[t]he program would then start asking the user specific questions . . . related to the identified subject matter 705.” *Id.*, 8:60-63. By asking specific and different questions based on responses to previous questions, Barbosa teaches branching logic between the questions. A POSA would recognize that Barbosa’s follow-on questions may similarly be followed by further/additional questions that are specifically related to the user’s responses to those follow-on questions. For example, Barbosa’s interactive question and answer program may start by asking for identification of a client or job site. Based on the user’s response, the program may ask the representative to identify the problem or type of assessment (e.g., HVAC, plumbing, electrical, landscaping, etc.). Ex. 1005, 8:49-9:14. A POSA would have understood that Barbosa’s questionnaire would then ask specific questions based on the selected problem type or type of assessment. *Id.* That is, a POSA would have recognized that Barbosa’s questionnaire would include branching logic for each of a series of questions, and not just one question in a series of question.

277. To any extent Patent Owner argues that a POSA would not have recognized Barbosa to teach each of a series questions have branching logic, this would have been an obvious modification to Barbosa. Barbosa already teaches branching logic for questions and response. This allows better tailoring of guidance

to a user was a known technique. Each question in Barbosa are similar, they ask a question and may provide follow-on guidance, including questions. Accordingly, it would have been obvious to simply apply the same technique (i.e., branching logic) to similar elements of the questionnaire (i.e., each question in a series of question) to improve the questionnaire in the same—further tailoring of a user’s question and answer experience. A POSA would have had the skillset to program each question in a series of question to have branching logic, and would have expected the results of such serial branching.

278. Additionally, a POSA would also have recognized that, in order for a program to present different questions depending on a user’s response, the program would include code that defines those branches in questioning based on the user’s response.

279. Defining the code in a programming application (as I discussed for element [3a1]) teaches or renders obvious “identifying within said questionnaire design computer program a branching path in said questionnaire for each possible response to each question of said series of questions.” Section XII.E.7.b.

280. For all the reasons set forth above, it is my opinion that Barbosa alone and Barbosa in view of Bandera teaches or renders obvious limitation [3a3], and thus claim 3.

8. Dependent Claim 4

a. [4pre]: “The method for managing data of claim 1 wherein step (b) includes the substeps of:”

281. Claim 4 depends from claim 1 and, as I noted above, I understand that claim 1 was found unpatentable in IPR2019-00610. *See* XII.E (introduction). Though [4pre] references “step (b)” of claim 1, this appears to be a mistake since the elements of this claim, limitations [4b1]-[4b3], recite features related to “tokenizing said questionnaire thereby producing a plurality of tokens representing said questionnaire,” which is recited in step (c) of claim 1. Thus [4pre] presumably refers instead to step (c). Regardless, Barbosa alone and Barbosa in view of Bandera each teaches or renders obvious both of steps (b) and (c) of claim 1, and renders claim 4 obvious, as explained below.

282. For at least the reasons discussed in IPR2019-00610, as well as my analysis of claim elements [7a], [7d], and [9d], it is my opinion that Barbosa alone and Barbosa in view of Bandera renders obvious “said questionnaire including at least one question requesting GPS coordinates” and “tokenizing said questionnaire thereby producing a plurality of tokens representing said questionnaire” of claim 1 (i.e., steps (b) and (c) of claim 1, respectively). Ex. 1023, 37-40; Sections XII.A.1.b, XII.A.1.e, XII.E.1.e, above.

283. Though it appears that [4pre] mistakenly refers to 1(b) when it should refer to 1(c), for the sake of completeness I note that Barbosa teaches or renders

obvious 1(b). As I previously explained, in relation to limitation [7a], Barbosa describes creating a questionnaire wherein at least one of the questions requests location identifying information. *See* Section XII.A.1.b, above. As I also described above, Barbosa's programs may include a number of customized questions that are related to a user's location. Ex. 1005, 6:58-61, 7:57-8:3, 8:53-65, 9:54-10:31, Figs. 6-8. For example, Barbosa describes that "[o]nce a program is opened on the handheld device, the assessor may be asked (e.g., prompted) to identify the job 801 (e.g., location, customer name, date, type of job)." Ex. 1005, 9:54-56. Barbosa describes that its handheld devices possess integrated GPS modules that "may be used to determine a device location information" and "constantly update the user's current position," information which a POSA would have understood could be used to provide responses to the questions related to the user's location. Ex. 1005, 6:40-57, 7:42-8:3, 10:14-20, Figs. 5-8. A POSA would have understood that the information requested by the at least one question could be provided using GPS coordinates. Ex. 1005, 7:66-67, 12:30-32 ("GPS coordinate[s] associated with the collection of data [is an] important attribute[.]"). Additionally, Barbosa describes that one of the initial question responses could include the location identifying information described above, and that further questions are specified by the initial responses. Ex. 1005, 8:49-63; 7:51-66; 9:50-10:31. Therefore, as described above, Barbosa's program is a questionnaire that includes at least one question requesting

GPS coordinates. Ex. 1005, 3:44-47, 6:40-57, 7:42-8:3, 8:49-63, 9:50-10:31, 12:30-32, Figs. 5-8, 10.

284. As to step (c) of claim 1, Barbosa describes tokenizing said questionnaire, thereby producing a plurality of device indifferent tokens representing said questionnaire. *See* Section XII.E.1.d, above. Consistent with the Board's findings in IPR2019-00610, Barbosa's questionnaire is tokenized. For example, Barbosa teaches that "[c]omputer program code for carrying out operations of the present invention can be written in an object oriented programming language such as Java...." Ex. 1005, 12:45-51. A POSA would have appreciated that a questionnaire (e.g., downloaded code modules, templates, and/or programs) written in an object-oriented programming language such as JAVA would have included an index, an instruction, or a command that can represent something else such as a question, answer, or operation. Therefore, Barbosa teaches a tokenized questionnaire.

285. Barbosa's program provides "[a]n interactive question and answer session." Ex. 1005, 6:62. To provide an interactive question and answer session, the program would have included distinguishable units, such as indexes, instructions, or commands, that represent the questions, answers, or operations connecting the interactive questions and answers. For example, Barbosa teaches that "[t]he program may start by asking for the identification of [] the client or matter

703 (e.g., customer, or job site),” and “[t]he program may next ask the representative to identify the problem or type of assessment 704 (e.g., HVAC, plumbing, electrical, landscaping, etc.).” Ex. 1005, 8:54-59. Thus, a POSA would have understood that Barbosa’s program would have included instructions that ask these questions (e.g., identification of type of assessment), as well as indexes corresponding to the available answers (e.g., HVAC, plumbing, electrical, or landscaping), and additionally would have included instructions and operations connecting the first question to the next. Accordingly, Barbosa’s questionnaire is “tokenized” when applying the construction of the term “token,” as explained above in Section XI.A.2.

286. Even under the construction of “token” offered by the Examiner during prosecution of the ’748 Patent, Barbosa’s questionnaire is still “tokenized.” A POSA would have understood that Barbosa’s program that provides “[a]n interactive question and answer session” would have included logical, mathematical and branching operations. Such functionality also provides internal branching logic between questions. For example, Barbosa provides an example of a questionnaire that represents an “appraisal program.” Ex. 1005, 8:49-54. Barbosa explains that “only the most relevant questions and/or interaction [should] be invoked by the program.” Ex. 1005, 8:59-60. In particular, “[t]he program may start by asking for the identification of [] the client or matter 703 (e.g., customer, or job site),” and “[t]he program may next ask the representative to identify the problem or type of

assessment 704 (e.g., HVAC, plumbing, electrical, landscaping, etc.).” Ex. 1005, 8:54-59. Based on the responses (i.e., the “identified subject matter 705”), “[t]he program would then start asking the user specific questions, or provide initial information, related to the identified subject matter 705.” Ex. 1005, 8:60-63. By asking specific questions based on responses to previous questions, a POSA would have understood that Barbosa teaches branching logic between the questions. Accordingly, under any reasonable construction of “tokens,” it is my opinion that Barbosa discloses this limitation.

287. Barbosa further teaches that the questionnaire program comprises a plurality of device-independent tokens. For example, Barbosa teaches that the “computer program transmitted from the [server]” can be “in the form of a JAVA applet.” Ex. 1005, 12:14-18. Likewise, Barbosa teaches that the “[c]omputer program code for carrying out operations of the present invention can be written in an object oriented programming language such as Java....” Ex. 1005, 12:45-47.

288. A POSA would have understood that the JAVA programming language is a programming language that provides device independency—it runs irrespective of the particular hardware or operating system of any given device. For example, the knowledge of a POSA regarding JAVA is reflected in Bandera, which explains that “JAVA® is a portable and architecturally neutral language,” and “JAVA® source code is compiled into a machine-independent format that can be run on any

machine with a JAVA® runtime system known as the JAVA® Virtual Machine (JVM).” Ex. 1010, 5:36-62. A POSA would have further understood that JAVA code is not only machine independent, it also is operating system independent. Ex. 1010, 5:47-49 (“[M]achines running under diverse operating systems, including UNIX, Windows NT, and MacIntosh having a JVM can execute the same JAVA® program.”). Furthermore, a POSA would have understood that such platform independence—allowing a program to be written once but run on diverse platforms—has been a defining feature of JAVA. *See* Ex. 1041, 14:54-56 (“It is preferable for the navigational aid program to be written in JAVA by Sun and be resident on the telephone, making it possible to write a single program compatible with several telephones.”); *see also* Ex. 1042, 8:1-5 (“The client function is developed in JAVA, which makes it platform independent”).

289. Accordingly, Barbosa’s disclosure that its tokenized questionnaire is implemented using the JAVA programming language would have informed a POSA that it comprises a plurality of device independent tokens. Accordingly, it is my opinion that Barbosa teaches tokenizing said questionnaire, thereby producing a plurality of device indifferent tokens representing said questionnaire.

290. For all the reasons set forth above, it is my opinion that Barbosa alone and Barbosa in view of Bandera, each teaches or renders obvious limitation [4pre]

as Barbosa alone and Barbosa in view of Bandera each teaches or renders obvious limitation [1c] (as well as limitation [1b]) of claim 1.

b. [4b1]: “(b) tokenizing said questionnaire thereby producing a plurality of tokens representing said questionnaire by: (i) assigning at least one token to each question of said series of questions;”

291. As explained below where I apply the prior art to the limitation, it is my opinion that Barbosa alone and Barbosa in view of Bandera each teaches or renders obvious limitation [4b1].

292. As explained above, I understand that the PTAB previously determined that Barbosa and Barbosa-Bandera each teaches or renders obvious the tokenizing the questionnaire features of step 1(c). I agree with that conclusion. For example, to provide an interactive question and answer session, Barbosa’s program would have included distinguishable units, such as indexes, instructions, or commands, that represent the questions, answers, or operations connecting the interactive questions and answers. Ex. 1005, 8:49-63, 12:14-18, 12:45-47. And a POSA would have understood that Barbosa’s program would have included instructions and code for asking each of the questions. *Id.* Defining and generating instructions and code for each of the questions thus teaches “assigning at least one token to each question of said series of questions.” *Id.*

293. For all the reasons set forth above, it is my opinion that Barbosa alone and Barbosa in view of Bandera each teaches or renders obvious limitation [4b1].

c. [4b2]: “[b] tokenizing said questionnaire thereby producing a plurality of tokens representing said questionnaire by:] (ii) assigning at least one token to each response called for in said series of questions to identify the type of response required; and”

294. As explained below where I apply the prior art to the limitation, it is my opinion that Barbosa alone and Barbosa in view of Bandera teaches limitation [4b2].

295. I previously explained, in relation to limitation [3a2], Barbosa’s questionnaire requests user responses of various types. Ex. 1005, 7:47-48, 8:49-65, 9:3-5; Section XII.E.7.c. A POSA would understand that different types of user responses, such as text input, checkboxes, radio buttons, and the like, and would be coded differently the question and answer program. Ex. 1005, 9:3-9, 9:50-10:31; Each type of response field would be indicated by “a distinguishable unit of a program, such as an index, an instruction, or a command,” i.e., a token. Section XI.A.2. For example, each response field and function for submitting the response would be represented and defined by a programming instruction or command (e.g., JAVA code). As such, Barbosa’s questionnaire program “assign[s] at least one token to each response called for in said series of questions to identify the type of response required.”

296. For all the reasons set forth above, it is my opinion that Barbosa alone and Barbosa in view of Bandera each teaches or renders obvious limitation [4b2].

d. [4b3]: “[b) tokenizing said questionnaire thereby producing a plurality of tokens representing said questionnaire by:] (iii) assigning at least one token to each branch in said questionnaire to identify the required program control associated with said branch.”

297. As explained below where I apply the prior art to the limitation, it is my opinion that Barbosa alone and Barbosa in view of Bandera teaches limitation [4b3].

298. As I previously explained for limitations [4b1] and [4b2], Barbosa teaches an interactive question and answer program that is a tokenized questionnaire because that program includes distinguishable units of a program (e.g., code segments, instructions, commands, indexes). And as I explained for limitation [7a], Barbosa teaches branching logic that defines which question or questions would be presented based on a user’s response to another question. Section XII.A.1.c; Ex. 1005, 12:45-51, 6:40-62. That branching logic (e.g., program commands, instructions) includes program code (e.g., JAVA code) defining what question to ask next. Ex. 1005, 12:45-51, 6:40-62. The definition of the program code teaches the claimed “assigning at least one token to each branch in said questionnaire to identify the required program control associated with said branch.” Section XI.A.2; Ex. 1023, 21-25 (“program with instructions that ask questions and has indexes corresponding to available answers is a tokenized questionnaire”), 37-45. Accordingly, a POSA would have understood that each branch of Barbosa’s questionnaire would be represented by at least one token. Thus, Barbosa (and thus,

Barbosa in view of Bandera) teaches or renders obvious assigning at least one token to each branch in the questionnaire to identify the required program control associated with the branch.

299. For all the reasons set forth above, it is my opinion that Barbosa alone and Barbosa in view of Bandera teaches or renders obvious limitation [4b3], and therefore claim 4 as a whole.

F. Grounds K-L: Barbosa in view of Heath and Barbosa in view of Bandera and Heath Render Obvious Claim 6

1. Dependent Claim 6

a. [6pre]: “A method for modifying a questionnaire used in data management according to the method of claim 1 including the steps of:”

300. Claim 6 of the '748 Patent depends from claim 1 and further requires making an incremental change to the questionnaire, tokenizing the change, transmitting the tokenized change, and incorporating the transmitted change tokens. Ex. 1001, Claim 6. As discussed above, claim 1 was previously found to be unpatentable over Barbosa and Barbosa in view of Bandera. Ex. 1023, 39-40, 63 (finding Barbosa and Barbosa in view of Bandera each teaches or suggests claim 1). As I previously described above with respect to elements [4b2] and [9d], Barbosa, and Barbosa in view of Bandera, teaches tokenizing Barbosa's questionnaire and transmitting the tokenized questionnaire to the handheld computing device. *See* Sections XII.E.8.c, XII.E.1.e, above. To any extent that it is argued that neither

Barbosa, nor Barbosa in view of Bandera, teaches the features of making incremental changes to portions of the questionnaire, tokenizing the changes, transmitting the tokenized changes, and incorporating the transmitted change tokens included in claim 6, it is my opinion that it would have been obvious to a POSA to modify Barbosa (and thus, to modify Barbosa in view of Bandera) to produce a system that teaches or renders obvious the features of claim 6.

301. I previously explained, with respect to claim 7, that Heath teaches methods and systems for dynamically and automatically updating/upgrading application programs, which provides the benefit of ensuring a client (e.g., a handheld computing device as described in Barbosa) have access to the latest versions of a program. Ex. 1007, 1:17-26, 1:40-55, 2:51-54; Section XII.B, above. I also explained that there are a number of motivations that would have led a POSA to modify Barbosa and combine Barbosa with Heath such that Barbosa's interactive question and answer program (i.e., the "executable questionnaire") would be automatically updated based on the techniques described in Heath. Section XII.B.1.c, above; Ex. 1007, 2:34-2:61, 4:59-5:30, 5:31-67, 6:1-38, 7:33-8:13, Figs. 3A, 6A, 6B; Ex. 1005, 6:61-64, 7:42-8:3, 8:17-20, 8:49-65, 9:3-14, 9:50-56, 10:10-31, 11:5-24, Figs. 5-8, 10 (collectively describing the interactive questionnaire and gathering responses). It is my opinion that a POSA would have recognized that the addition of Bandera does not affect the rationales supporting the obviousness of

combining Barbosa with Heath. For example, modifying the computer program code for carrying out Barbosa's operations based on Bandera's techniques of using a coding language such as JAVA to create device-indifferent programs would not have changed the manner in which Heath's techniques for automatically updating the questionnaire are implemented. Sections XII.E.1.a-XII.E.1.g, above (describing the combination of Barbosa and Bandera). Thus, for the reasons set forth below, it is my opinion that each of the combination of Barbosa and Heath, and the combination of Barbosa, Bandera, and Heath, teaches or renders obvious the features of claim 6 and therefore teaches or renders obvious the method of [6pre].

b. [6a]: "making at least one incremental change to a portion of the questionnaire"

302. As I have previously explained with respect to claim 7, Heath teaches automatically updating applications/programs involves using certain temporal or event-based triggers to automatically transfer updated application code from a server. Ex. 1007, 1:34-2:61, 4:59-5:30 (describing maintaining a catalog of information for an application program at a server), 5:31-67 (describing automatically transferring information for updating an application program to a client device), 6:1-38 (describing automatically updating an application program), 7:33-8:13, Figs. 3A, 6A, 6B; See Section XII.B.1.c, above. Heath also teaches applying the automatic updating technique to make incremental changes and updates to a network application. For example, Heath describes that "[b]y intelligently and

automatically selecting to download and update only the **needed and changed components of an application program**, the present method alleviates the concerns of time and efficiency in any client-server network environment which requires highly dynamic application updates.” Ex. 1007, 1:50-55 (emphasis added), 2:58-62, 4:49-58. A POSA would have understood that because Heath only updates the needed and changed components of an application program, Heath teaches making incremental changes to portions of the program while leaving other portions/components of the program unchanged. Ex. 1007, 1:50-55, 2:58-62, 4:49-58. In the combination of Barbosa and Heath, the interactive question and answer program of Barbosa would similarly be updated using Heath’s technique, such that only the needed and changed components of the question and answer program are updated. *See* Section XII.B.1.c, above; Ex. 1007, 1:50-55, 2:58-62, 4:49-58. Each time an automatic update is provided to less than all portions/components of the interactive question and answer program, an incremental change to the program is made. For the reasons set forth above, the combination of Barbosa and Heath (and thus, the combination of Barbosa, Bandera, and Heath) teaches or renders obvious “making at least one incremental change to a portion of the questionnaire”.

c. [6b]: “tokenizing said at least one incremental change to said questionnaire to obtain tokens;”

303. As I have previously described with respect to claim 4, Barbosa, and the combination of Barbosa and Bandera, each teaches tokenizing the questionnaire

to produce tokens. *See* Section XII.E.8, above. It is my opinion that a POSA would have understood that Barbosa, and the combination of Barbosa and Bandera, teaches “tokenizing said at least one incremental change to said questionnaire to obtain tokens” for the same reasons, as the incremental changes could be tokenized in the same manner. *Id.* Additionally, I note that in IPR2019-00610, the Board found both claims 1 and 19 unpatentable, including limitations relating to tokenizing, based on Barbosa’s teachings of tokenizing a questionnaire into a plurality of tokens (elements [1b] and [19b]). Ex. 1023, 21 (“Third, Barbosa teaches the use in device 10 of a program with a tokenized questionnaire”), 22 (“Therefore, a program with instructions that ask questions and has indexes corresponding to available answers is a tokenized questionnaire. We are persuaded that these disclosures in Barbosa teach or suggest [1b]”), 26-27, 33, 37-40. The Board also found that Barbosa’s question and answer program “has indexes corresponding to available answers [and] is a tokenized questionnaire.” *Id.*, 22. It is my opinion that a POSA would have understood, based on Barbosa’s disclosures and in alignment with the previous findings of the Board, that any changes to the questions and/or answers of the questionnaire (i.e., “at least one incremental change”) would have been tokenized to obtain tokens. As I have previously explained, Barbosa’s program would have included distinguishable units, such as indexes, instructions, or commands, that represent the questions, answers, or operations connecting the interactive questions

and answers. Ex. 1005, 8:49-63, 12:14-18, 12:45-47; Section XII.E.8.b, above. Therefore, the distinguishable units representing the changes to the questionnaire (i.e., the changes to the questions, answers, or operations) in the combinations of Barbosa and Heath and of Barbosa, Bandera, and Heath teach the recited “tokenizing said at least one incremental change to said questionnaire to obtain change tokens” and render [6b] obvious.

d. [6c]: transmitting at least a portion of said change tokens to said remote computing device in real time, said transmitted change tokens comprising less than the entire tokenized questionnaire;

304. As I have previously explained with respect to elements [7b] and [6pre], Heath teaches automatically transferring updated portions of a program to a client device. Sections XII.B.1.c, XII.F.1.a, above. Therefore, the combination of Barbosa and Heath and the combination of Barbosa, Bandera, and Heath also teach these features. For example, as previously described, Heath teaches that updating a program may include downloading “only the needed and changed components of an application program.” Ex. 1007, 1:50-55, 2:58-62, 4:49-58. Therefore, in the combinations with Heath, only the tokens that represent the incremental changes (i.e., the needed and changed components) of the tokenized questionnaire would be transmitted (e.g., downloaded) to the handheld computing device of Barbosa. Ex. 1007, 1:50-55, 2:58-62, 4:49-58, 6:1-38 (describing automatically updating an application program), 7:33-8:13, Figs. 3A, 6A, 6B; Ex. 1005, 6:61-64, 7:42-8:3,

8:17-20, 8:49-65, 9:3-14, 9:50-56, 10:10-31, 11:5-24, Figs. 5-8, 10 (collectively describing the interactive questionnaire and gathering responses). Accordingly, it is my opinion that Barbosa in view of Heath, and Barbosa in view of Bandera and Heath, teach “said transmitted change tokens comprising less than the entire tokenized questionnaire” and “transmitting at least a portion of said change tokens to said remote computing device” as recited in claim 6.

305. Heath also teaches that its needed and changed code (i.e., the “change tokens” representing the incremental updates) are transmitted in response to a request by the client. Ex. 1007, 3:20-38, 4:34-48, 5:30-67, 6:39-57, 7:33-55, Figs. 3A-C, 4A-E. Heath does not indicate that its system delays sending the code after the request is received. A POSA would have recognized that the immediate transmitting of the changed code, responsive to the client’s request, teaches that the at least a portion of said change tokens are transmitted “in real time” as claimed. Ex. 1007, 3:20-38, 4:34-48, 5:30-67, 6:39-57, 7:33-55, Figs. 3A-C, 4A-E. .

306. I have been asked to consider the possibility that Patent Owner argues Heath does not teach *real-time* transmission application updates. Under that assumption, it is my opinion that a POSA would have found real-time application updates to be obvious in view of Barbosa’s teachings. For example, Barbosa describes that its questionnaire system includes real-time processes including automatic collection of user responses and analysis of those responses. It would

have been obvious to a POSA to have further programmed the application update process as taught by Heath to be in real-time as well. Such a system would have been the combination of prior art elements according to known methods to yield predictable results. More specifically, Barbosa teaches the known element of downloading a questionnaire to a user's handheld device as well as real-time analysis and feedback/guidance. Ex. 1005, Abstract, 3:37-43, 5:52-6:27, 6:58-7:21, 8:49-49, Claims 15, 25. Heath teaches the known element of updating applications as I explained above. Ex. 1007, 3:20-38, 4:34-48, 5:30-67, 6:39-57, 7:33-55, Figs. 3A-C, 4A-E. Known methods existed to modify the Barbosa-Heath questionnaire updating process to be in real-time. For example, a POSA would have used known programming algorithms to combine Barbosa's teachings of real-time operations with Barbosa-Heath's application updating process to transmit the updated application components as soon as they are made available (i.e., in real-time). This combination would have yielded predictable results. That is, a POSA would have predicted that the combination the real-time aspects of Barbosa with Barbosa-Heath's application updating process would have resulted in change tokens being transmitted to a user's device in real-time. A POSA would have recognized that, in Barbosa-Heath and Barbosa-Bandera-Heath, providing real-time transmission of application updates would result in providing the latest questionnaire functionality

and content, which would lead to more up-to-date feedback and guidance (e.g., based on new or updated questions).

307. For the reasons set forth above, it is my opinion that the combination of Barbosa and Heath, and the combination of Barbosa, Bandera, and Heath, teaches or renders obvious [6c].

e. [6d]: (d) incorporating said transmitted change tokens into said questionnaire at said remote computing device.

308. The combination of Barbosa and Heath, and the combination of Barbosa, Bandera, and Heath, each teach that the transmitted change tokens (i.e., tokenized updates to the program code) would be incorporating at the handheld computing device (“said remote computing device”). For example, Heath explains that after a client device downloads application updates, those updates are implemented at the client device. Ex. 1007, 1:56-2:5, 2:63-3:6, 6:1-19, 6:39-67. In addition, as previously described, Heath teaches that updating a program may include downloading “only the needed and changed components of an application program.” Ex. 1007, 1:50-55, 2:58-62, 4:49-58. The same process would occur with Barbosa’s handheld computing devices after the program updates are received via Heath’s automatic update techniques. *Id.* A POSA would have understood that implementing the updates to Barbosa’s questionnaire program would have caused the questionnaire to incorporate the changes (e.g., to the questions and/or to the

answers of the questionnaire) after receiving transmission of the changes to the program code. Therefore, the combination of Barbosa and Heath, and the combination of Barbosa, Bandera, and Heath, each teaches or renders obvious the claimed “incorporating said transmitted change tokens into said questionnaire at said remote computing device” and render [6d] obvious.

309. For the reasons set forth above, each of Barbosa in view of Heath and Barbosa in view of Bandera and Heath each teaches or renders obvious all the elements of claim 6 and therefore renders claim 6 obvious to a POSA. Sections XII.F.1.a-e, above.

G. Grounds M-N: Barbosa in view of Heath and Pinera and Barbosa in view of Bandera, Heath, and Pinera Each Renders Obvious Claim 6

310. As I previously described above, it is my opinion that each of the combination of Barbosa in view of Heath and the combination of Barbosa in view of Bandera and Heath teaches claim 6. Sections XII.F.1.a-e, above. I explained that Heath, and thus the above combinations including Heath, teaches the immediate transmitting of the change tokens, responsive to a client’s request, which teaches that the at least a portion of said change tokens are transmitted “in real time” as claimed. Section XII.F.1.d, above; Ex. 1007, 3:20-38, 4:34-48, 5:30-67, 6:39-57, 7:33-55, Figs. 3A-C, 4A-E. I have been asked to consider a scenario where it is argued that the combination of Barbosa and Heath and/or the combination of Barbosa, Bandera, and Heath does not teach transmitting the change tokens in real-time. It is my

opinion that, in such a scenario, a POSA would have been motivated to combine each of Barbosa in view of Heath, and Barbosa in view of Bandera and Heath, further in view of Pinera to teach these features. The application of Pinera teaches that the change tokens are transmitted “in real time” as explained below, but does not change my arguments as to how the combination of Barbosa and Heath or the combination of Barbosa, Bandera, and Heath, teaches the features of [6a], [6b], or [6c]. Therefore, each of the combination of Barbosa, Heath, and Pinera and the combination of Barbosa, Bandera, Heath, and Pinera teaches [6a], [6b], and [6c] for the reasons I previously explained. Sections XII.F.1.b-d, above.

311. Pinera teaches a method and system for providing a real-time application update to a client device. Ex. 1011, Title, Abstract, 2:30-32, 3:18-29, 4:20-59, Figs. 1-3. For example, Pinera describes that in a system with a server, a communications network, and a number of client positions (e.g., computing devices), “the system of the present invention can perform real-time application updates of application components in active client positions.” Ex. 1011, 4:20-43, Fig. 1. Pinera further explains that when an update becomes available at the server the clients may be notified (e.g., based on a broadcast message) and the updates can be automatically retrieved by the clients and applied to the application in real-time. Ex. 1011, 4:20-59, 6:21-7:2, Figs. 1, 2, Claims 1, 3, 5, 6. Specifically, Pinera describes that the clients download the updated application components, responsive

to the notification, in real-time. Ex. 1011, 2:30-49, 6:21-7:2, Claims 1, 3, 5, 6; *see also id.*, 1:23-34, 2:15-26.

312. It is my opinion that it would have been obvious to apply Pinera's teachings of providing application updates in real-time from a server (e.g., Barbosa's remote server) to a client device (e.g., Barbosa's handheld computing device) to Barbosa (and thus, to the combination of Barbosa and Heath or the combination of Barbosa, Bandera, and Heath) because there are a number of teachings, suggestions, and motivations in the prior art that would have led a POSA to make the combination. *See* Section IV (referring to obviousness rationale (G)). For example, real-time application updates as described in Pinera satisfy a need for efficient distribution of application updates while the host platform is actively running other applications. Ex. 1011, 2:15-26; *see also* Ex. 1011, 4:20-59, 6:21-7:2, 7:14-17, Figs. 1, 2. A POSA would have recognized that it is beneficial to provide application updates in real-time so that a user would have access to the most up-to-date version of an application quickly (e.g., as soon as the updates are available). Ex. 1047, 1:12-41 (describing that it is generally beneficial to analyze real-time data "as the data becomes available or soon thereafter"). Heath also explains the benefits of updating applications efficiently, such as that doing so may "alleviate[] the concerns of time and efficiency in any client-server network environment which requires highly dynamic application updates." Ex. 1007, 1:49-54, 7:5-8. Additionally, Heath

describes that keeping application programs current improves security and protection from file corruption. Ex. 1007, 1:17-26, 1:34-2:14, 4:27-58, 7:5-8:13, Claims 19, 55, 67. A POSA would therefore have been motivated to apply Pinera to the combination of Barbosa (and thus, the combination of Barbosa and Heath and, for similar reasons, the combination of Barbosa, Bandera, and Heath), so as to improve the efficiency with which program updates are provided to the handheld computing devices of Barbosa.

313. It is also my opinion that other rationales support my position that the combination of Barbosa, Heath, and Pinera, and the combination of Barbosa, Bandera, Heath, and Pinera, would each have been obvious. For example, the combinations merely combine known prior art elements according to known methods to yield predictable results. *See* Section IV (referring to obviousness rationale (A)). For example, the incremental updates to a client application, automatically transferred to the handheld computing device, as taught by the combination of Barbosa and Heath in the manner I described above, are a known prior art element. Section XII.B.1, above. Pinera teaches another known prior art element, namely the updating of client applications in real-time. Ex. 1011, 2:30-32, 3:18-29, 4:1-59, 6:21-7:2, 7:14-9:9, Figs. 1-3. The known methods would have been the simple programming of communication protocols (e.g., known automated push or pull techniques), such as those described in Pinera and in Barbosa, in order to

deliver updated application components at the time the updates are made available (e.g., by Barbosa's server). Ex. 1011, 4:20-59, 6:21-7:2, 7:14-9:9, Figs. 1-3; Ex. 1005, 2:1-3:5 (describing a variety of known communication protocols); *see* Ex. 1040, Abstract, 1:53-58, 2:61-3:12, 5:21-38, 6:46-8:62, Figs. 3, 5. Pinera explicitly describes an automated pull method performed responses to real-time notifications, and similar automated push methods were similarly well-known in the art. Ex. 1011, 4:20-59, 6:21-7:2, 7:14-9:9, Figs. 1-3; Ex. 1040, Abstract, 1:53-58, 2:61-3:12, 5:21-38, 6:46-8:62, Figs. 3, 5. The combination yields predictable results, specifically Barbosa's server providing application updates to the interactive question and answer program that are automatically downloaded by the handheld computing device (e.g., as described in the combination of Barbosa and Heath) in real-time (e.g., as described by Pinera). Section XII.B.1, above; Ex. 1011, 2:30-32, 3:18-29, 4:1-59, 6:21-7:2, 7:14-9:9, Figs. 1-3.

314. Further, the combination of Barbosa, Heath, and Pinera, as well as the combination of Barbosa, Bandera, Heath, and Pinera, each merely uses a known technique to improve similar devices/systems/processes in the same way. *See* Section IV (referring to obviousness rationale (C)). The known technique is Pinera's technique of downloading an update to an application (e.g., in response to a real-time alert that an update is available) in real-time. Ex. 1011, 2:30-32, 3:18-29, 4:1-59, 6:21-7:2, 7:14-9:9, Figs. 1-3. The processes are the process of transmitting (e.g.,

from a remote server) incremental updates to program code (e.g., change tokens) for an interactive question and answer program to a handheld computing device in the combination of Barbosa and Heath, and Pinera's similar process of providing updates to applications at client devices (e.g., from a similar remote server). Ex. 1011, Title, Abstract, 2:30-32, 3:18-29, 4:20-59, Figs. 1-3; Section XII.F.1.d, above. These processes are improved in the same way, namely enabling the handheld computing devices in the combination of Barbosa and Heath to effect its update of the interactive question and answer program in real-time, in the same manner that Pinera's application updates are performed in real-time (e.g., to improve the efficiency of distribution of updates to the applications/programs). Ex. 1011, 2:15-26; *see also* Ex. 1011, 4:20-59, 6:21-7:2, 7:14-17, Figs. 1, 2.

315. Finally, a POSA would have had a reasonable expectation of success in achieving the above-described combinations of Barbosa, Heath, and Pinera and of Barbosa, Bandera, Heath, and Pinera. This is because the combination involves routine techniques of changing the programming of the application update processes in the combinations (i.e., as described by the combination of Barbosa with Heath) that would have been well within the skills of a POSA. Ex. 1011, 2:30-32, 3:18-29, 4:1-59, 6:21-7:2, 7:14-9:9, Figs. 1-3. As I have previously explained, it is my opinion that a POSA would have recognized that the addition of Bandera does not affect the rationales supporting the obviousness of combining Barbosa with Heath,

and the same is true for the obviousness of combining Barbosa and Heath with Pinera. For example, modifying the computer program code for carrying out Barbosa's operations based on Bandera's techniques of using a coding language such as JAVA to create device-indifferent programs would not have changed the manner in which Pinera's techniques for real-time update of applications are applied to the combinations. Section XII.E.1.e, above (describing the combination of Barbosa and Bandera). Therefore, for all the reasons set forth above, it is my opinion that the combination of Barbosa, Heath, and Pinera, and the combination of Barbosa, Bandera, Heath, and Pinera, each teaches or renders obvious claim 6.

H. Grounds O-P: Barbosa in view of Morris and Barbosa in view of Bandera and Morris Each Renders Claim 12 Obvious

1. Dependent Claim 12

316. For the reasons I explain below, it is my opinion that the combination of Barbosa and Morris and the combination of Barbosa, Bandera, and Morris each renders obvious claim 12.

a. [12pre]: "The method for managing data according to claim 9, wherein said step (f1) comprises the steps of:"

317. Claim 12 of the '748 Patent depends from claim 9. Ex. 1001, Claim 12. As discussed above, claim 9, from which claim 12 depends, is taught by Barbosa and the combination of Barbosa and Bandera. *See* Sections XII.E.1.a-j, above. As I explained with respect to [9pre], Barbosa (and thus, the combination of Barbosa and Bandera) teaches a method for managing data. Section XII.E.1.a, above. As I

further explained with respect to [9f1], Barbosa (and thus, the combination of Barbosa and Bandera) teaches executing a tokenized questionnaire on a handheld computing device. Section XII.E.1.g, above. For the reasons set forth below, the combination of Barbosa and Morris and the combination of Barbosa, Bandera, and Morris each teach the steps of claim 12 and therefore teach [12pre].

b. [12i]: “(i) requiring a user to authenticate with said handheld computing device,”

318. To any extent that Barbosa and Bandera do not expressly describe implementing user authentication for a handheld computing device, Morris does. Morris teaches that it was well-known to require user authentication in order to unlock, access, and use a handheld device such as a PDA. Ex. 1012, Abstract, 1:13-18, 2:60-3:21, 4:43-5:39, Fig. 3. For example, Morris describes prompting a user for a personal identification number (PIN) on a mobile device, determining whether the PIN matches a stored PIN to authenticate a user (e.g., based on cryptography), and only allowing access to the device if the user authenticated. Ex. 1012, 2:60-3:21, 4:43-5:39, Fig. 3. A POSA would have recognized that, because the user is only allowed to access the device upon user authentication (e.g., PIN verification), Morris teaches the recited “requiring a user to authenticate with said handheld computing device.”

319. It is my opinion that there are a number of teachings, suggestions, and motivations in the prior art that would have led a POSA to make the combinations

of Barbosa in view of Morris and of Barbosa in view of Bandera and Morris. *See* Section IV (referring to obviousness rationale (G)). For example, a POSA would have recognized the benefits of utilizing user authentication, such as PIN verification, to improve the security of Barbosa's handheld computing devices and prevent unauthorized access. Ex. 1012, 1:7-31, 3:18-20, 5:35-39. A POSA would have been motivated to provide these benefits by implementing user authentication on Barbosa's handheld computing devices (such as a PDA), which a user would have had to successfully complete in order to access Barbosa's interactive question and answer program stored on said PDA. *Id.*

320. It is also my opinion that other rationales support my finding that the combination of Barbosa and Morris (and thus, the combination of Barbosa, Bandera, and Morris) would have been obvious. First, the combinations would have been obvious as the use of a known technique to improve similar devices in the same way. *See* Section IV (referring to obviousness rationale (C)). The known technique is Morris's process for requiring user authentication to access and use a portable computing device. Ex. 1012, 2:60-3:21, 4:3-8, 4:43-5:38, Figs. 2, 3. The similar devices are the handheld computing device of Barbosa and the portable electronic device in Morris, both of which may be a PDA. Ex. 1005, 1:49-67, 3:21-4:26, 5:29-8:10, 8:23-48, Figs. 1-6; Ex. 1012, 2:60-3:21, 4:3-8, 4:43-5:38, Figs. 2, 3. As I described above, the application of Morris's technique to a handheld computing

device improves the security of the device, and this technique would have enhanced the handheld computing device (e.g., PDA) of Barbosa in the same way the technique improves the portable device (e.g., PDA) of Morris. Ex. 1012, 2:60-3:21, 4:43-5:39, Fig. 3. For example, unknown or unauthorized individuals would and could be prevented from accessing sensitive or confidential information and programs on Barbosa's handheld computing. *Id.*

321. Second, a POSA would have found the combination of Barbosa and Morris (and thus, the combination of Barbosa, Bandera, and Morris) obvious because each combination is merely the combination of known prior art elements according to known methods to yield predictable results. The prior art elements were Barbosa's handheld computing device (e.g., a PDA) and a user authentication process for portable devices, such as a PDA, as described in Morris. Ex. 1005, 1:49-67, 3:21-4:26, 5:29-8:10, 8:23-48, Figs. 1-6; Ex. 1012, 2:60-3:21, 4:3-8, 4:43-47, Figs. 2, 3. Morris also teaches a known method for implementing user authentication in a portable handheld device that prevents access to the device unless authentication is verified. Ex. 1012, 4:43-5:38, Fig. 3. It is my opinion that a POSA would have found the results of the combination predictable – namely, that Barbosa's portable handheld computing device would require user verification before data and/or programs (e.g., the interactive question and answer program) of the handheld computing device could be accessed by the user. As mentioned, both Barbosa and

Morris expressly describe that the respective handheld/portable devices may be a PDA. Ex. 1005, 1:49-67, 3:21-4:26, 5:29-8:10, 8:23-48, Figs. 1-6; Ex. 1012, 2:60-3:21, 4:3-8, 4:43-47, Figs. 2, 3. Therefore, it would have been predictable to a POSA that applying Morris's user authentication techniques to Barbosa would have predictably resulted in the user authentication preventing access to the handheld computing device in the same manner that the user authentication prevents access to the portable device of Morris. *Id.*

322. Finally, a POSA would have had a reasonable expectation of success in achieving the combinations of Barbosa and Morris and of Barbosa, Bandera, and Morris. This is because the combinations involve routine techniques of implementing a user authentication process on portable devices, such as a PDA. Ex. 1012, 2:60-3:21, 4:3-8, 4:43-47, Figs. 2, 3. A POSA would have had the skills, including device programming skills, to carry out this straightforward implementation of a handheld computing device, such as a PDA, implementing a user authentication process as described in Morris. *Id.*

- c. [12ii]: **“(ii) only if the user is able to authenticate with said handheld computing device, executing at least a portion of said plurality of tokens comprising said questionnaire on said handheld computing device to collect at least one response from a user, and,”**

323. As I explained above with respect to element [12i], Morris teaches that users are unable to access data or programs on a device until the user successfully

authenticates themselves with the device, at which time the user is granted access. Section XII.H.1.b, above. A POSA would have understood that, once he user authenticates themselves with Barbosa's handheld computing device (e.g., PDA) in the combination of Barbosa and Morris or the combination of Barbosa, Bandera, and Morris, the user would attain access to the programs such as the interactive question and answer program and would have had the ability to execute such programs. Ex. 1012, Abstract, 1:13-18, 2:60-3:21, 4:43-5:39, Fig. 3. As I previously explained above with respect to claim 9, the interactive question and answer program described in Barbosa is tokenized. Section XII.E.1, above. Therefore, the combination of Barbosa and Morris and the combination of Barbosa, Bandera, and Morris each teaches "executing at least a portion of said plurality of tokens comprising said questionnaire on said handheld computing device to collect at least one response from a user."

d. [12iii]: "(iii) if the user is unable to authenticate with said handheld computing device, taking no further action."

324. I previously explained above, with respect to element [12i], that Morris teaches a user must authenticate themselves with the device before access to the device is granted. Ex. 1012, Abstract, 1:13-18, 2:60-3:21, 4:43-5:39, Fig. 3. A POSA would have understood that the converse is also true in view of Morris's disclosures. That is, Morris teaches that if a user is unable to authenticate themselves

with a handheld computing device, the user is prevented from accessing the data and programs on the device. Ex. 1012, 3:3-17, 1:13-18, 1:39-48, 2:1-8, 5:9-34 (describing a required process “[t]o unlock the portable electronic device 110”). A user would not be able to access any functionality of the device protected by the user authentication (i.e., any data or programs stored in the device), including the interactive question and answer program, unless they are able to authenticate with the device. *Id.* As a result, the executable question and answer program cannot and would not be executed if user authentication fails. No further action would be taken, and the user would be left to attempt to authenticate again if they wished to access the device’s data or programs. *Id.* This teaches the claimed “if the user is unable to authenticate with said handheld computing device, taking no further action.”

325. As described above, the combination of Barbosa and Morris and the combination of Barbosa, Bandera, and Morris each teaches all of the features of claim 12. Sections XII.H.1.a-d. Accordingly, the combinations each render obvious claim 12.

I. Grounds Q-R: Barbosa in view of Hamlin and Barbosa in view of Bandera and Hamlin

326. As I explained above with respect to Grounds I and J, it is my opinion that Barbosa and Barbosa in view of Bandera each teaches or renders obvious claim 3. Section XII.E.7. I have been asked to consider a possible argument that Barbosa and/or Barbosa in view of Bandera does not teach or render obvious the recited

“questionnaire creation program” of claim 3. It is my opinion that, even if that were true, it would have been obvious to include a questionnaire creation program in Barbosa (and thus, Barbosa in view of Bandera) in view of the teachings of Hamlin. Hamlin describes a program interface through which a user may create a questionnaire or survey. In one example, Hamlin describes that the interface may be a web interface. Ex. 1055, 5:29-49, 6:4-37, Figs. 1, 2A, 2B. This is the same type of interface described in the ’748 Patent as one example for building a questionnaire. *See* Ex. 1001, 6:36-49.

327. Hamlin further teaches that through this interface, a user may create a questionnaire by specifying survey questions (element [3a1]), possible question responses (element [3a2]), and branching between particular responses and subsequent questions (element [3a3]). Ex. 1055, Title, Abstract, 2:55-3:2, 5:40-9:28, 11:55-67, 14:40-15:33, Figs. 3-6. For example, Hamlin describes including an option in the interface that allows a user to “enter/select questions and responses for defining a survey.” Ex. 1055, 7:5-26. Hamlin further discloses that “the client may include ‘branching’ in defining the survey.” Ex. 1055, 8:60-61, 9:15-28. Accordingly, these disclosures teach the elements of claim 3.

328. I further note that Hamlin was not the only program for assisting users in creating questionnaires and other programs or applications. As I discussed in

Section VIII.C, such program- or questionnaire-creation programs were well-known in the art. *See* Ex. 1045; Ex. 1056; Ex. 1057.

329. Modifying Barbosa (and Barbosa in view of Bandera) such that the questionnaire could and would be created through a questionnaire creation program, such as that taught in Hamlin, would have been obvious. In particular, the use of a questionnaire design program to design an electronic questionnaire would have been the simple use of a known technique (programs for designing questionnaires) to a known system (Barbosa and Barbosa-Bandera's systems in which computer programmers create electronic questionnaires) ready for improvement to yield predictable results (a questionnaire design program is used to readily design the questionnaire). *See* Section IV (referring to obviousness rationale (D)), above. For example, Barbosa and Barbosa-Bandera's system were ready for improvement since Barbosa does not explicitly describe a program that simplifies questionnaire creation for a user. Hamlin offers such an improvement to the user-friendliness of the Barbosa system (and thus, the Barbosa in view of Bandera system) in creating the questionnaire. Indeed, a POSA would have recognized that to create an electronic questionnaire, a user would need an electronic computer interface. Simplifying that interface would have allowed a greater variety of users (with varying computer skillsets) to create questionnaires. The combination would also have been obvious as the combination of known prior art elements (the first element being the

questionnaire system in Barbosa, and in the combination of Barbosa and Bandera, and the second element being Hamlin's program for creating questionnaires) according to known methods, such as using interfaces (e.g., presented via HTML or JavaScript interfaces) to create questionnaires. Ex. 1055, 5:34-42. The combination would have yielded the predictable result of questionnaires in Barbosa (and Barbosa-Bandera) being created using a questionnaire-creation program. As I noted above, Barbosa and the combination of Barbosa and Bandera each teach questionnaire programs created using Java, while Hamlin teaches using Java interfaces to create questionnaires. Ex. 1005, 12:45-51, 6:40-62, 5:52-6:27, 7:23-48, 8:49-9:15, 9:50-10:31, Fig. 6; Ex. 1010, 5:37-6:2; Ex. 1055, 5:40-9:28, 11:55-67, 14:40-15:33, Figs. 3-6; Ex. 1002.

330. A POSA would have had the skills and motivation to program a questionnaire design program to create the customized questionnaire. This would have required routine and basic programming skills that would have been within the skillset of a POSA at the time of the alleged invention. *See* Sections VIII.C (describing certain knowledge a POSA would have had regarding computer-based questionnaires), VIII.B (describing general technical knowledge related to GUI user interfaces that would have been known to a POSA).

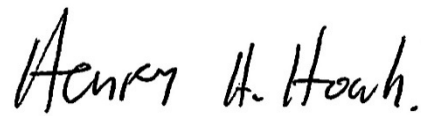
331. Accordingly, it is my opinion that Barbosa in view of Hamlin and Barbosa in view of Bandera and Hamlin each teaches or renders obvious claim 3.

XIII. EVIDENCE OF NON-OBVIOUSNESS

332. It is my understanding that in order for evidence of non-obviousness or secondary considerations to be relevant, there must be a nexus between the claimed invention and the evidence. I am not aware of any evidence of non-obviousness or secondary considerations.

XIV. CONCLUSION

333. All of the statements made in this declaration of my own knowledge are true. All statements made based on information and belief are believed to be true. Further, these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code.

A handwritten signature in black ink that reads "Henry H. Houh." The signature is written in a cursive, slightly slanted style.

Date: May 6, 2025

Dr. Henry H. Houh

APPENDIX A

- Ex. 1001: U.S. Patent No. 9,454,748 (“the ’748 patent”)
- Ex. 1002: Expert Declaration of Dr. Henry Houh
- Ex. 1003: Curriculum Vitae of Dr. Henry Houh
- Ex. 1004: Excerpts of the Certified Prosecution History of U.S. Patent No. 9,454,748 (“the ’748 Patent”)
- Ex. 1005: U.S. Patent No. 6,961,586 (“Barbosa”)
- Ex. 1006: U.S. Patent No. 5,991,771 (“Falls”)
- Ex. 1007: U.S. Patent No. 6,006,034 (“Heath”)
- Ex. 1008: PCT International Patent Publication No. WO 00/31666 (“Short”)
- Ex. 1009: U.S. Patent Pub. No. 2002/0107726 (“Torrance”)
- Ex. 1010: U.S. Patent No. 6,332,127 (“Bandera”)
- Ex. 1011: U.S. Patent No. 7,171,661 (“Pinera”)
- Ex. 1012: U.S. Patent No. 6,460,138 (“Morris”)
- Ex. 1013: John R. Levine. et al., UNIX Programming Tools: lex & yacc, O'Reilly & Associates, Inc. (2d ed. 1995)
- Ex. 1014: Complaint, *Maplebear, Inc., d/b/a Instacart v. Fall Line Patents, LLC*, No. 4:25-cv-00137-MTS, Dkt. No. 2 (N.D. Okla. Mar. 25, 2025)
- Ex. 1015: Complaint, *Fall Line Patents, LLC v. Sprouts Farmers Market, Inc., et al.*, No. 5:24-cv-00182-RWS, Dkt. No. 1, (E.D. Tex. Nov. 25, 2024)
- Ex. 1016: Complaint, *Fall Line Patents, LLC v. Aldi Inc., et al.*, No. 5:24-cv-00172-RWS, Dkt. No. 1, (E.D. Tex. Nov. 25, 2024)

- Ex. 1017: *Ex Parte* Reexamination Certificate in *Ex Parte* Reexamination No. 90/012,829, canceling claims 1-14 of U.S. Patent No. 7,822,816
- Ex. 1018: Petition, *Unified Patents Inc. v. Fall Line Patents, LLC*, IPR2018-00043
- Ex. 1019: Institution Decision, *Unified Patents Inc. v. Fall Line Patents, LLC*, IPR2018-00043
- Ex. 1020: Final Written Decision, *Unified Patents Inc. v. Fall Line Patents, LLC*, IPR2018-00043
- Ex. 1021: Petition, *Starbucks Corp., et al. v. Fall Line Patents, LLC*, IPR2019-00610
- Ex. 1022: Institution Decision, *Starbucks Corp., et al. v. Fall Line Patents, LLC*, IPR2019-00610
- Ex. 1023: Final Written Decision, *Starbucks Corp., et al. v. Fall Line Patents, LLC*, IPR2019-00610
- Ex. 1024: Final Written Decision on Remand, *Starbucks Corp., et al. v. Fall Line Patents, LLC*, IPR2019-00610
- Ex. 1025: Petition, *Uber Technologies Inc., et al. v. Fall Line Patents, LLC*, IPR2018-00535
- Ex. 1026: Termination Decision, *Uber Technologies Inc., et al. v. Fall Line Patents, LLC*, IPR2018-00535
- Ex. 1027: Claim Construction Order, *Fall Line Patents, LLC v. Zoe’s Kitchen, Inc., et al.*, No. 6:18-cv-00407-RWS, Dkt. No. 228 (E.D. Tex. Jan. 23, 2023)
- Ex. 1028: Order Granting Stay Pending *Inter Partes* Review of the Patent-In-Suit, *Fall Line Patents, LLC v. Zoe’s Kitchen, Inc.*, No. 6:18-cv-00407, Dkt. No. 110 (E.D. Tex. Aug. 9, 2019)
- Ex. 1029: U.S. Patent No. 5,241,625 (“Epard”)
- Ex. 1030: U.S. Patent No. 7,689,387 (“Mathews”)

- Ex. 1031: U.S. Patent No. 5,588,105 (“Foster”)
- Ex. 1032: Stifle, Jack (1972), The Plato IV Architecture, CERL Report (revised ed.), Urbana, IL: University of Illinois, X-20
- Ex. 1033: Smith, Stanley G.; Sherwood, Bruce Arne (April 1976), “Educational Uses of the PLATO Computer System,” Science, 192 (4237), 344-52, DOI: 10.1126/science.769165
- Ex. 1034: U.S. Patent 7,016,417 (“Roman I”)
- Ex. 1035: U.S. Patent Pub. No. 2006/0129523 (“Roman II”)
- Ex. 1036: U.S. Patent No. 6,185,427 (“Krasner”)
- Ex. 1037: U.S. Patent No. 6,546,425 (“Hanson”)
- Ex. 1038: U.S. Patent Pub. No. 2002/0069192 (“Aegerter”)
- Ex. 1039: U.S. Patent No. 8,156,074 (“Multer”)
- Ex. 1040: U.S. Patent No. 7,003,767 (“Larkin”)
- Ex. 1041: U.S. Patent No. 6,381,535 (“Durocher”)
- Ex. 1042: PCT International Patent Publication No. WO 00/49530 (“Parasnis”)
- Ex. 1043: U.S. Patent No. 5,522,076 (“Dewa”)
- Ex. 1044: U.S. Patent No. 6,845,448 (“Changanti”)
- Ex. 1045: U.S. Patent Pub. No. 2001/0052009 (“Desai”)
- Ex. 1046: U.S. Patent No. 6,704,396 (“Parolkar”)
- Ex. 1047: U.S. Patent No. 5,404,488 (“Kerrigan”)
- Ex. 1048: Nick Ryan et al., “FieldNote: A Handheld Information System for the Field” (1999)
- Ex. 1049: Table Comparing Claims 1, 9, and 19 of the ’748 patent
- Ex. 1050: Patent Owner’s Infringement Contention Charts Against Uber Techs., Inc.

- Ex. 1051: Patent Owner's Infringement Contention Charts Against Choice Hotels Intl., Inc.
- Ex. 1052: *Fall Line Patents, LLC v. Unified Patents, LLC*, No. 19-1956, Dkt. No. 127 (Fed. Cir. 2022) (decision affirming Final Written Decision in IPR2018-00043)
- Ex. 1053: Order Denying Request for Director Review, *Unified Patents Inc. v. Fall Line Patents, LLC*, IPR2018-00043
- Ex. 1054: Preliminary Infringement Contentions, *Fall Line Patents, LLC v. 7-Eleven, Inc., et al.*, No. 5:24-cv-00167-RWS, (E.D. Tex. Mar. 13, 2025)
- Ex. 1055: U.S. Patent No. 6,477,504 ("Hamlin")
- Ex. 1056: U.S. Patent Pub. No. 2007/0208573 ("Malden")
- Ex. 1057: U.S. Patent Pub. No. 2006/0075070 ("Merissert")

APPENDIX B

CLAIM LISTING APPENDIX

U.S. Pat. No. 9,454,748

Designation	Claim Language
Claim 3	
[3pre]	3. The method for managing data of claim 1 wherein step (a) includes the substeps of:
[3a1]	(a) creating a questionnaire by: (i) entering a series of questions into a questionnaire design computer program;
[3a2]	(ii) identifying within said questionnaire design computer program the type of response allowed for each question of said series of questions; and
[3a3]	(iii) identifying within said questionnaire design computer program a branching path in said questionnaire for each possible response to each question of said series of questions.
Claim 4	
[4pre]	4. The method for managing data of claim 1 wherein step (b) includes the substeps of:
[4b1]	(b) tokenizing said questionnaire thereby producing a plurality of tokens representing said questionnaire by: (i) assigning at least one token to each question of said series of questions;
[4b2]	(ii) assigning at least one token to each response called for in said series of questions to identify the type of response required; and
[4b3]	(iii) assigning at least one token to each branch in said questionnaire to identify the required program control associated with said branch.
Claim 6	
[6pre]	6. A method for modifying a questionnaire used in data management according to the method of claim 1 including the steps of:
[6a]	making at least one incremental change to a portion of the questionnaire;

Designation	Claim Language
[6b]	tokenizing said at least one incremental change to said questionnaire to obtain tokens;
[6c]	transmitting at least a portion of said change tokens to said remote computing device in real time, said transmitted change tokens comprising less than the entire tokenized questionnaire
[6d]	(d) incorporating said transmitted change tokens into said questionnaire at said remote computing device.
Claim 7	
[7pre]	7. A method for collecting survey data from a user and making responses available via the Internet, comprising:
[7a]	(a) designing a questionnaire including at least one question said questionnaire customized for a particular location having branching logic on a first computer platform wherein at least one of said at least one questions requests location identifying information;
[7b]	(b) automatically transferring said designed questionnaire to at least one loosely networked computer having a GPS integral thereto;
[7c]	(c) when said loosely networked computer is at said particular location, executing said transferred questionnaire on said loosely networked computer, thereby collecting responses from the user;
[7d]	(d) while said transferred questionnaire is executing, using said GPS to automatically provide said location identifying information as a response to said executing questionnaire;
[7e]	(e) automatically transferring via the loose network any responses so collected in real time to a central computer; and,
[7f]	(f) making available via the Internet any responses transferred to said central computer in step (e).
Claim 8	
[8a]	8. The method for collecting survey data according to claim 7 further comprising:
[8b]	(f) assessing a charge for each transferred response received by said central computer.
Claim 9	
[9pre]	9. A method for managing data comprising the steps of:

Designation	Claim Language
[9a]	(a) establishing communications between a handheld computing device and an originating computer wherein said handheld computing device has a GPS integral thereto
[9b]	(b) using said GPS to automatically obtain location identifying information for said handheld computing device;
[9c]	(c) transmitting said location identifying information from said handheld computing device to said originating computer;
[9d]	(d) receiving within said handheld computing device a transmission of a tokenized questionnaire customized for a particular location from said originating computer, said tokenized questionnaire comprising a plurality of device indifferent tokens;
[9e]	(e) ending said communications between said handheld computing device and said originating computer;
[9f1]	(f) after said communications has been ended, when said handheld computing device at said particular location: (f1) executing at least a portion of said plurality of tokens comprising said questionnaire on said handheld computing device to collect at least one response from a user, and,
[9f2]	(f2) storing within said computing device said at least one response from the user;
[9g]	(g) establishing communications between said handheld computing device and a recipient computer; and,
[9h]	(h) transmitting a value representative of each of said at least one response stored within said handheld computing device to said recipient computer.
Claim 10	
[10pre]	10. The method for managing data according to claim 9, wherein step (d) comprises the steps of:
[10d1]	(d1) creating a questionnaire;
[10d2]	(d2) tokenizing said questionnaire, thereby producing a plurality of device independent tokens representing said questionnaire;
[10d3]	(d3) storing said plurality of tokens on a computer readable medium accessible by said originating computer;
[10d4]	(d4) accessing said stored plurality of tokens from said originating computer,

Designation	Claim Language
[10d5]	(d5) transmitting said stored plurality of tokens from said originating computer to said handheld computing device, and,
[10d6]	(d6) receiving within said handheld computing device said transmission of said tokenized questionnaire from said originating computer.
Claim 11	
11	11. The method for managing data according to claim 9, wherein said originating computer and said recipient computer are a same computer.
Claim 12	
[12pre]	12. The method for managing data according to claim 9, wherein said step (f1) comprises the steps of:
[12i]	(i) requiring a user to authenticate with said handheld computing device,
[12ii]	(ii) only if the user is able to authenticate with said handheld computing device, executing at least a portion of said plurality of tokens comprising said questionnaire on said handheld computing device to collect at least one response from a user, and,
[12iii]	(iii) if the user is unable to authenticate with said handheld computing device, taking no further action.
Claim 13	
13	13. The method for managing data according to claim 9, wherein said questionnaire comprises at least one question that requests location identifying information and at least one other Question.
Claim 14	
14	14. The method for managing data according to claim 13, wherein at least one of said at least one other question is selected from a group consisting of a food quality question, a service quality question, a waiting time question, a store number question, a location question, a time question, a date question, a temperature question, and a time of day question.
Claim 15	
15	15. The method for managing data according to claim 9, wherein step (a) comprises the step of establishing communications via a global computer network between

Designation	Claim Language
	said handheld computing device and said originating computer.