

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner

v.

TELCOM VENTURES LLC,
Patent Owner

Patent No. 9,832,708

**DECLARATION OF DR. SANDEEP CHATTERJEE
IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 9,832,708**

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I, Sandeep Chatterjee, declare as follows:

I. INTRODUCTION

1. I have been retained as an independent expert consultant in this proceeding before the United States Patent and Trademark Office (“PTO”) regarding U.S. Patent No. 9,832,708 (“the ’708 patent”) (EX1001).¹ I have been asked to consider whether prior art references disclose or suggest the features recited in claims 1-19 (“the challenged claims”) of the ’708 patent. My opinions are set forth below.

II. BACKGROUND AND QUALIFICATIONS

2. My qualifications are stated more fully in my curriculum vitae, which is attached as Ex. 1003. Below is a summary of my education, work experience, and other qualifications.

3. I am the Chief Executive Officer of Experantis LLC (“Experantis”), a technology consulting company. Previously, I was the Co-founder, Executive Vice President and Chief Technology Officer of SourceTrace Systems, Inc., a technology and services company enabling the delivery of secure remote electronic services over landline and wireless telecommunications networks.

¹ In this Declaration, I refer to exhibits that I understand are to be attached to the petition for *Inter Partes* Review of the ’708 patent.

4. I received my Bachelor's degree in Electrical Engineering and Computer Science from the University of California, Berkeley in 1995. I received my Master's degree in Computer Science from the Massachusetts Institute of Technology (MIT) in 1997, and my Doctorate in Computer Science from MIT in 2001. I received a certificate of completion for an executive education program on global leadership from Harvard University in 2011.

5. My doctoral dissertation at MIT, entitled "Composable System Resources for Networked Systems," involving networked and distributed computer systems and architectures, was selected as one of the top inventions in the history of MIT's Laboratory for Computer Science. This invention is showcased in a time capsule at the Museum of Science in Boston, Massachusetts. Other recipients of this honor include Bill Gates, the founder of Microsoft, and Tim Berners-Lee, the inventor of the World Wide Web.

6. As part of applications of my doctoral research, I developed hardware and software systems for intelligent environments within homes and offices. Some of these devices included televisions, digital picture frames, refrigerators and children's toys. The distributed computing system of these intelligent environments included distributed data storage and retrieval.

7. In 2011, I was named a Young Global Leader. This honor, bestowed each year by the World Economic Forum, recognizes and acknowledges the top

leaders—all below the age of 40—from around the world for their professional accomplishments, commitment to society, and potential to contribute to shaping the future of the world. In 2016, I was appointed to the World Economic Forum's expert network as an expert in technology and innovation.

8. From 1997, I was the Entrepreneur-in-Residence at FidelityCAPITAL, the venture capital arm of Fidelity Investments. In 1999, I founded and served as President and Chief Technology Officer (CTO) of Satora Networks, which developed tools and technologies for building appliances and services for the Internet using wireless and other technologies to extend it beyond the desktop.

9. In 2001, I joined Bluestone Software's Mobile Middleware Labs as a Senior Engineer developing applications and systems infrastructure for enterprise Java/J2EE, Web services, and enterprise mobile solutions. After the completion of Hewlett-Packard's (HP) acquisition of Bluestone, I became a Senior Member of the Technical Staff at HP's Middleware Division. I was responsible for architecting and developing the company's next-generation Web services platform for enterprise as well as mobile environments, known as the Web Services Mediator.

10. I was part of the Expert Group that developed the JSR-00172 J2ME (Java 2 Platform, Micro Edition) Web Services Specification, the worldwide

industry standard for mobile Web services. I am the co-author, with James Webber, of the book “Developing Enterprise Web Services: An Architect’s Guide” (published by Prentice-Hall in 2004). This book has been adopted by over 100 universities and colleges around the world, and has been translated or reprinted in a number of countries around the world.

11. I have significant experience in developing complex computing systems. For example, through a contract between HP and the United States Agency for International Development (USAID), I architected and led the development of one of the first mobile banking solutions. This system enabled customers to use their mobile phones and other wireless handsets to connect with the core banking systems of banks and other financial institutions, and perform transactions without having to travel to bank branches. This system supported many banking transactions, including deposits, withdrawals, loan applications, loan disbursements and loan repayments.

12. Later, after SourceTrace Systems’ acquisition of this technology, I led the expansion of this solution into multiple countries and into multiple industries. Banks and other financial services companies utilized this technology to make their tellers more efficient, to provide self-service ATMs within branches, and to provide remote access to banking services. Additionally, through our licensing agreement with Telefonica, one of the largest cellular and telecommunications

companies in the world, this solution was deployed in various other industries, including logistics and asset management and customer relationship management. Bloomberg Television selected and featured this technology and the company I co-founded to commercialize this technology on Bloomberg TV's "Bloomberg Innovators" program.

13. I have been a retained expert witness for various disputes that involved significant technology issues, and I have been qualified as a technology expert by U.S. District and State Courts, including in California, Delaware, Florida and Texas in technology areas that are relevant to this case, including but not limited to: computer software systems, distributed computing systems, and mobile and wireless systems. I have previously testified through declaration or expert report, at deposition, and at trial in numerous intellectual property and commercial litigation matters, including for patent litigation, copyright and trade secret misappropriation litigation, and contract dispute cases. I have submitted more than one hundred and ninety expert declarations and expert reports, testified at deposition more than ninety times, and testified at trial or at hearings at least seventeen times. I have been identified as one of the top 1000 patent professionals in the world, and I am listed in the IAM Patent 1000, which identifies the world's leading patent litigation and prosecution attorneys, as well as damages and technology expert witnesses.

14. Experantis is being compensated for my time on this matter at my standard hourly rate and reimbursed for any expenses that I incur related to my work in this matter. Neither Experantis nor I have any financial interest in the outcome of this matter, and Experantis will be paid for my time regardless of the outcome of this matter.

III. MATERIALS REVIEWED

15. The opinions contained in this Declaration are based on the documents I reviewed, my professional judgment, as well as my education, experience, and knowledge regarding systems and processes in the field of graphics interface technology.

16. In forming my opinions expressed in this Declaration, I reviewed the following materials:

Declaration of Dr. Sandeep Chatterjee
U.S. Patent No. 9,832,708

EX1001	U.S. Patent No. 9,832,708 to Karabinis et al. (“the ’708 patent”)
EX1004	Prosecution History of U.S. Patent App. No. 15/251,882
EX1005	U.S. Patent Application Publication No. 2009/0170483 A1 to Barnett et al. (“Barnett”)
EX1006	International Patent Publication No. WO 2006/087503 A1 to Waters et al. (“Waters”)
EX1007	U.S. Patent No. 7,434,723 to White et al. (“White”)
EX1008	International Patent Publication No. WO 2006/094048 A2 to Morrison (“Morrison”)
EX1009	U.S. Patent Application Publication No. 2002/0116345 A1 to Harrison (“Harrison”)
EX1010	U.S. Patent Application Publication No. 2003/0061111 A1 to Dutta et al. (“Dutta”)
EX1011	U.S. Patent Application Publication No. 2008/0140569 A1 to Handel (“Handel”)
EX1012	U.S. Patent Application Publication No. 2009/0070263 A1 to Davis et al. (“Davis”)
EX1013	U.S. Patent Application Publication No. 2010/0145850 A1 to Nagai et al. (“Nagai”)
EX1014	International Patent Publication No. WO 2008/065232 A1 to Jalkanen (“Jalkanen”)
EX1015	U.S. Patent Publication No. 2008/0207269 A1 to Byrne et al. (“Byrne”)
EX1016	U.S. Patent Application Publication No. 2002/0159413 A1 to Tsubouchi et al. (“Tsubouchi”)
EX1017	U.S. Patent No. 7,413,113 to Zhu (“Zhu”)

I also considered any other documents and materials I refer to in this Declaration.

17. My opinions contained in this declaration are based on the documents I reviewed and my knowledge and professional judgment. My opinions have also been guided by my appreciation of how a person of ordinary skill in the art would have understood the state of the art, the prior art, and the claims and the specification of the '708 patent at the time of the alleged invention, which I discuss below.

18. I have been asked to consider that the time of the alleged invention of the '708 patent was around 2008 (including and up to November 4, 2008), which corresponds to the filing date of the earliest application associated with the '708 patent. (EX1001, Cover.)

19. Based on my experience and expertise, it is my opinion that certain references disclose and/or suggest all the features recited in challenged claims of the '708 patent, as I discuss in detail below.

IV. PERSON OF ORDINARY SKILL IN THE ART AND THE TIME OF THE ALLEGED INVENTION

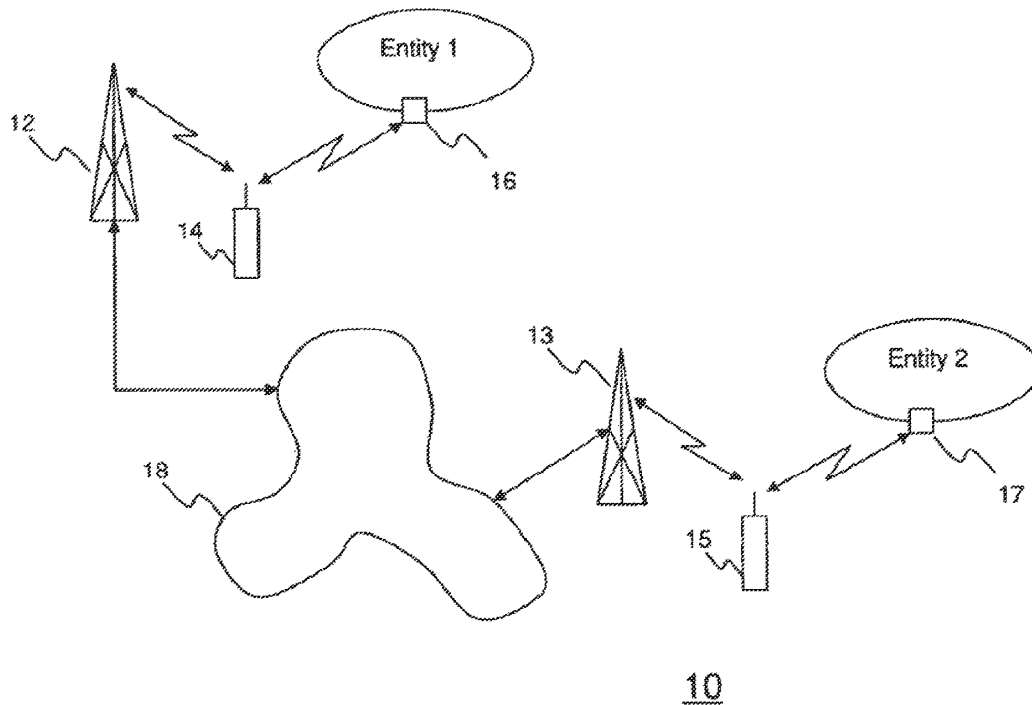
20. I am familiar with the level of ordinary skill in the art regarding the '708 patent as of around November 4, 2008. Considering the '708 patent, the technology, the educational level and experience of workers in the field relating to the patent, and problems and solutions in that field, and drawing on my own experience, I believe a person of ordinary skill in the art at the time of the alleged invention (around November 4, 2008) would have had an undergraduate degree in electrical engineering, computer engineering, computer science or a related field along with two years of work experience in the field of mobile communication applications. More education can supplement practical experience and vice versa.

21. My opinions in this Declaration regarding the '708 patent and the prior art (including the state of the art) are from the perspective of one of ordinary skill in the art as I defined above, during the relevant timeframe (e.g., the time of the alleged invention), which I discussed above as being around November 4, 2008.

V. OVERVIEW OF THE '708 PATENT

22. The '708 patent relates to “systems, devices, and/or methods that may be used to provide an adaptive enablement of one or more communications modes based upon having satisfied a proximity criterion,” where the “one or more communications modes may be one or more wireless and/or non-wireless communications modes.” (EX1001, 1:17-22.)

23. The '708 patent describes a system containing what it refers to as a first device 14, a second device 15, an entity 1 and entity 2, and a communications system 18, among other components. (EX1001, 8:64-10:35, FIG. 1.) The '708 patent explains that the devices 14 and 15 may be mobile devices such as a mobile phone. (*Id.*, 3:4-13.) Entity 1 and entity 2 may be “a person, an animal, a vehicle..., a building..., a product that is for sale, a store that sells one or more products, a check-out counter in a store, a shopping cart that may be used by a customer to carry one or more products selected by the customer for purchase, one or more locations in time and/or space, a geographic area and/or a multi-dimensional region in time and/or space.” (*Id.*, 3:42-50.) The communications system 18 may be, for example, a wireless communications system that wirelessly communicates with the first and second devices. (*Id.*, 12:10-14.)



(*Id.*, FIG. 1.)

24. The '708 patent broadly describes communication features between these devices and entities. For example, “a method in a system 10 is provided comprising: detecting that a proximity criterion is satisfied between a first device 14, such as a mobile subscriber device, and Entity 1; and enabling a mode of the first device and/or a mode of a second device 15 responsive to the detecting.” (*Id.*, 8:67-9:5.) “In one particular embodiment, a mobile subscriber device 14 linked to a communications system 18 via base station 12 can enable a function when the device 14 comes within a proximity of Entity 1.” (*Id.*, 9:9-12.)

25. The claims of the '708 patent generally describe a “system...and method...[that] comprises a detector that is configured to enable a mode of a first

device...and/or to enable a mode of a second device...responsive to a detection that a proximity criterion is satisfied between the first device and an entity...and responsive to at least one of a position, velocity and a Time-Of-Day....” (*Id.*, Abstract.) The claims also address embodiments where “the second device 15 is not the Entity 1 and is not associated with the Entity 1 and wherein the Entity 1 is not involved in providing a communications service to the first and/or second device.” (*Id.*, 9:5-9.)

VI. OVERVIEW OF THE PRIOR ART

A. Barnett (EX1005)

26. Barnett discloses a “system and method of communicating shopping information between a consumer and a retailer,” including a “system for enabling a consumer to obtain shopping information from a retailer, and the retailer to obtain information from the consumer, using a communication device, such as a mobile phone.” (EX1005, ¶[0001].) Barnett explains that “a consumer may utilize...a portable communications device 14, such as a mobile phone” (“smartphone”) (*id.*, ¶[0011]), which is “adapted to communicate with a Near Field Communication (NFC) device, a wireless network, such as a Wi-Fi system, and a Bluetooth system, as well as a cellular phone system” (*id.*, ¶[0012]). Barnett describes that the “mobile phone 14 combines the functions of a Wi-Fi device, a contact-less credit card, and a cell phone.” (*Id.*, ¶[0012].)

27. Barnett explains that a store may have “stand-alone NFC-enabled devices 34 [which] are used to identify products to NFC-enabled devices.” (EX1005, ¶[0023].) As shown in Figure 1 below, a consumer may place their “NFC-enabled mobile phone 14” (in red below) “proximate to the product identifier 34” (in yellow below) so that “information is extracted from the product identifier 34 and transmitted to, and stored within, the NFC-enabled mobile phone 14 in a manner similar to a bar code reader.” (*Id.*, ¶[0023].) For example, the

consumer may “retrieve and store information” such as “the identity of the product” (*id.*, ¶[0033]), which may further include “the name of the produce and the price of the product, as well as technical information about the product, such as the specifications” (*id.*, ¶[0023]).

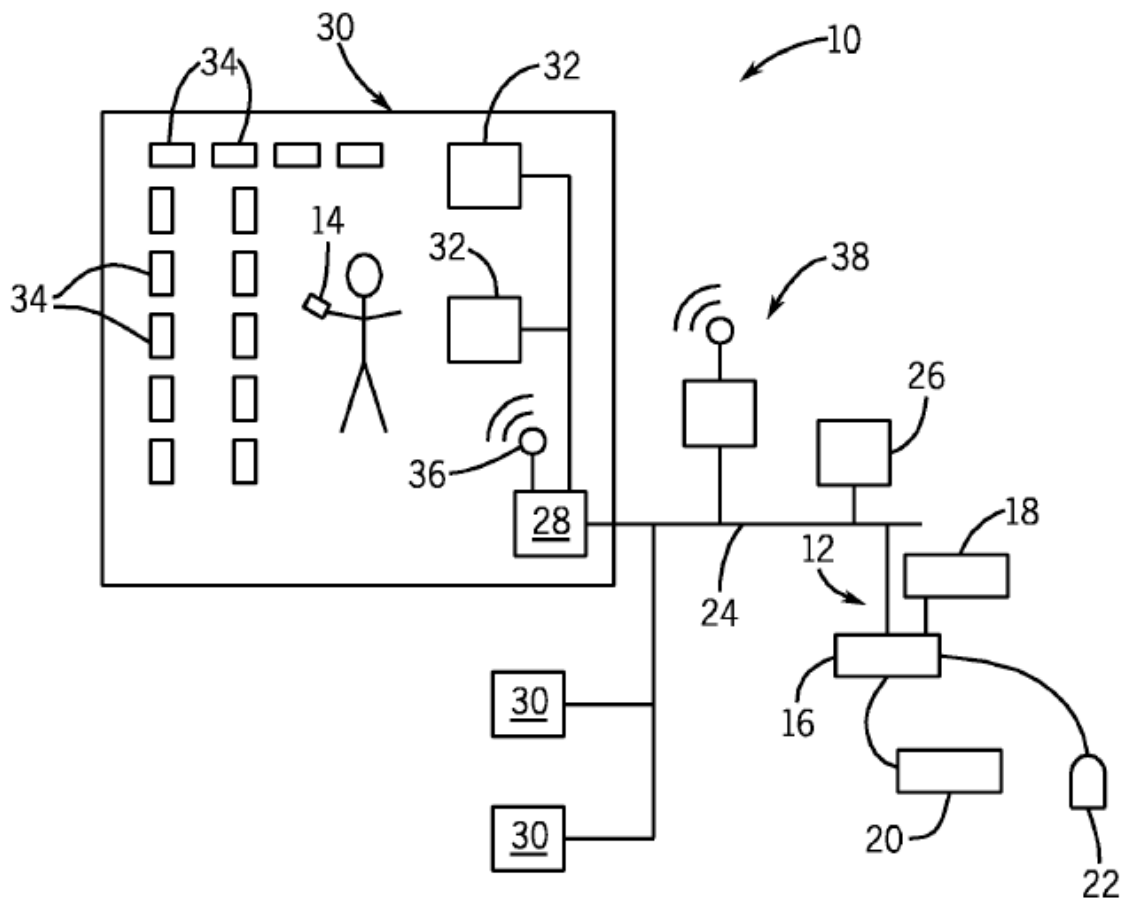


FIG. 1

(*Id.*, FIG. 1.)

28. Barnett also explains that “[w]ithin the store 30 are a series of displays 32 that are connected to the store computing system 28.” (EX1005, ¶[0021].) These “displays 32” may be “NFC-enabled displays that can interact with a NFC-enabled mobile phone 14 using device-to-device communication.” (*Id.*) “Alternatively, the displays 32 may be Bluetooth-enabled communications devices” such that “when a Bluetooth-enabled mobile phone is located near the display 32, information is transmitted between the Bluetooth-enabled mobile phone 14 and the display 32.” (*Id.*, ¶[0022].)

29. Barnett explains that the NFC displays 32 have multiple purposes. First, Barnett discloses that after retrieving product identity information from devices 34, a “consumer may then place the mobile phone 14 proximate to a NFC-display 32 which reads the product identity information from the mobile phone 14 and retrieves additional information regarding the product to the consumer.” (EX1005, ¶[0033].) The NFC display 32 may also be used to enable Wi-Fi communication in a consumer’s mobile phone so that the consumer can obtain additional information from the retailer. (*Id.*, ¶¶[0016] (“The system 10 is adapted to provide information to a consumer’s mobile phone 14 within a store without requiring the consumer to incur a mobile phone usage charge. That is, instead of using the data connection on a cellular carrier, the consumer uses a Wi-Fi network inside the store that has a connection to the Internet.”), [0026] (“The store’s Wi-Fi

system can be used to retrieve more information about products using the information on the NFC tag located near the product....The consumer may use the mobile phone 14 to access the websites hosted by the central computing system 26 and/or the store computing systems 28, or any other website.”), [0035]

(“[I]nformation to enable the consumer to use the store’s Wi-Fi system 36 may be retrieved from the NFC-enabled display 32. In this embodiment, all of the information needed to automatically configure the mobile phone 14 to use the stores Wi-Fi system 36 is provided to the mobile phone 14 via the NFC-enabled display 32.”).)

30. Barnett explains that a display 32, as shown in Figure 3 below, may also “us[e] the NFC interface...to complete the transaction using the cell phone as a credit card, debit card, or electronic purse.” (*Id.*, ¶[0040]; *see also id.*, ¶[0037] (“The consumer can use the cell phone as a credit card to complete the purchase process by using a NFC-enabled payment register.”).) As shown in Figure 3 below, “[t]he NFC-enabled display 32 has an NFC interface 58” “that is adapted to transmit data between the mobile phone 14 and the display 32.” (*Id.*, ¶[0038].) For example, Barnett discloses that “the mobile phone 14 may be programmed to provide a specific credit card number when the mobile phone 14 is used in making purchases in a specific store.” (*Id.*, ¶[0032].)

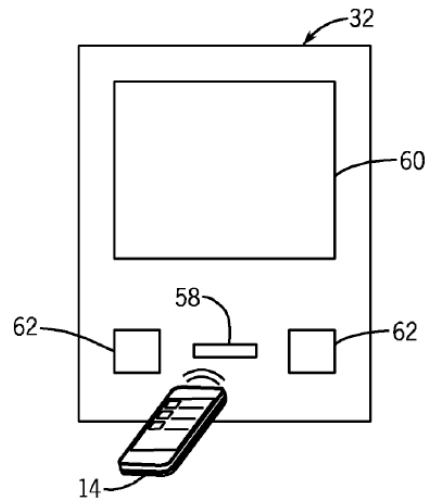


FIG. 3

(*Id.*, FIG. 3.)

31. Barnett discloses that transmission of data between the consumer's phone and the NFC display 32 via NFC interface 58 may occur when devices are within "a short distance, such as a decimeter." (EX1005, ¶[0013].)

B. White (EX1007)

32. White discloses a system/method of using a mobile device to perform a financial transaction at a point-of-sale device. White describes a "system and method of completing a pending purchase." (EX1007, Abstract.) "The system and method include one or more communication devices, wherein a first communication device participates in a transaction with a point-of-sale [device]." (*Id.*, 3:21-23.) White discloses that the consumer's device (the first communications device) may be a mobile phone. (*Id.*, 3:35-36 ("The first communications device may be a mobile device such as a wireless handset.")),

4:15-17 (“In the preferred embodiment, the first communication device 120 is a mobile communication device, such as a mobile telephone or mobile device.”).)

The “point-of-sale (POS) device...records sales and mediates payments for products or services.” (*Id.*, 3:46-56.) For example, “[i]n credit card transactions, the POS device 102 may communicate with a credit card payment system to obtain payment or payment authorization.” (*Id.*, 3:56-58.) “The POS device 102 may mediate payment from an electronic purse, a debit card, or other payment methods.” (*Id.*, 3:58-60.) White explains that “[t]he POS device 102 communicates with the first communication device 120 to provide purchase information and to receive...payment information, such as credit card numbers.” (*Id.*, 3:60-65.) The user’s mobile device (the first communication device) “may include one or more adapters for communicating with the POS device 102,” such as a “contactless chip operable to provide a communication link with a compatible device using contactless communication.” (*Id.*, 5:6-10.)

33. White additionally discloses that its system/method may be used for “mobile payment approval.” (EX1007, 1:23-25.) White discloses that the “system 100 for subscriber payment approval” is shown in Figure 1 below and “includes a point-of-sale (POS) device 102” (in green below), “a network 110, a first communication device 120” (in red below), “a second communication device 130” (in blue below), “and a proxy subscriber approval server 140.” (*Id.*, 3:46-50.) Like

the first communication device (in red below), the second communication device (in blue below) may be a computer-based entity such as a mobile phone. (*Id.*, 4:11-15 (“The first communication device 120 and the second communication device 130 may be computer-based entities, such as personal digital assistants (PDAs), mobile phones, personal computers (PC), laptop computers, or traditional wireless or wire-line telephones.”).) Communication between the first and second communication devices occurs “through the network 110” (*id.*, 4:17-19), which may include “the Internet, a telecommunication wired/wireless network, and/or other computer-based networked systems” (*id.*, 4:5-7).

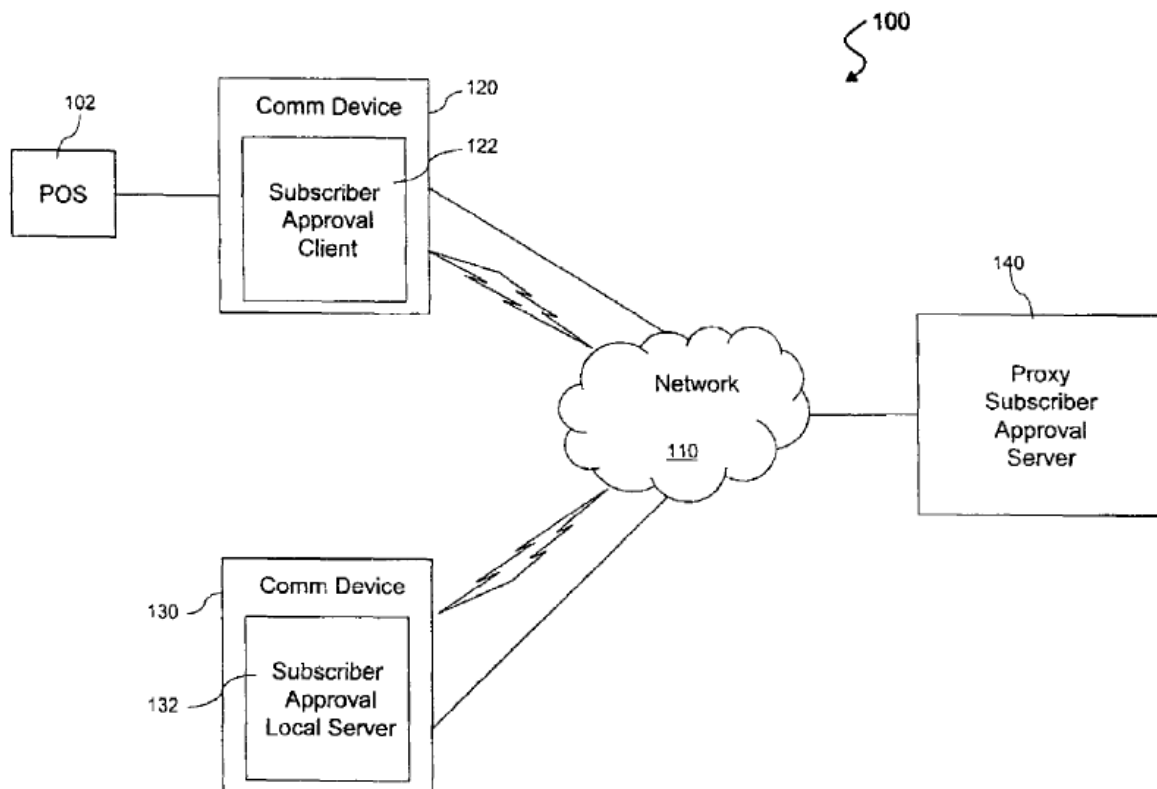


Figure 1

(*Id.*, FIG. 1.)

34. White discloses that when initiating a transaction, a consumer's first communication device 120 is first "presented to the POS device 102." (EX1007, 4:43-44.) "The POS device 102 communicates purchasing information to the first communication device 120 that may include purchase price, identity of the purchased item, identity of the vendor and/or location of the POS device 102." (*Id.*, 4:44-48.) Upon receiving the purchasing information from the POS terminal/device, the first communication device then initiates a subscriber payment approval process in which the first device transmits a subscriber approval request (containing the purchasing information) to the second communication device, which is responsible for approving the pending purchase. (*Id.*, 1:41-44 ("The method also comprises transmitting a subscriber approval request from the first communication device to a second device, wherein the subscriber approval request includes the purchase information."), 4:48-52 ("The first communication device 120 initiates a subscriber payment approval process that may involve the first communication device 120 communicating with the second communication device 130 to provide purchasing information to the second communication device 130 and the second communication device 130 determining approval and communicating approval to the first communication device 120.")) The second communication device 130 communicates approval of the transaction via a

subscriber approval response sent to the first communication device 120. (*Id.*, 1:45-48 (“The method further comprises providing payment information from the first communication device to the point-of-sale device to complete the pending purchase based on a subscriber approval response.”), 4:52-54 (“[T]he second communication device 130 determin[es] approval and communicat[es] approval to the first communication device 120.”).)

35. If the second communication device 130 does not acknowledge the communication of the first communication device 120, the first communication device 120 may either interpret the lack of response as a rejection or may direct the approval request to the proxy subscriber approval server 140, a computer-based entity (e.g., a general purpose computer) which can decide whether to approve the transaction based on certain rules. (EX1007, 3:26-31 (“The second communication device and/or the first communication device may also communicate with a proxy server wherein one or more rules may be stored. The rules determine approval of transactions with a point-of-sale on behalf of the first communication device.”), 4:59-5:5 (“In the event that the second communication device 130 does not acknowledge the communication of the first communication device 120, such as when the second communication device 130 is unavailable, the first communication device 120 may direct an approval request to the proxy subscriber approval server 140. The proxy subscriber approval server 140 performs the

approval that otherwise the second communication device 130 would provide. This behavior may be considered a fall-back or optional response by the first communication device 120. In another embodiment, the first communication device 120 interprets the lack of response as equivalent to a response rejecting the request for approval and no approval request is directed to the proxy subscriber approval server 140.”), 7:4-7 (“The proxy subscriber approval server 140 includes one or more computer-based entities, such as a general-purpose computer system.”).)

36. White explains that while communicating with the proxy subscriber approval server may be a fall-back procedure, it may also be used to apply approval rules without communicating with a second communication device (e.g., a parent). (*Id.*, 5:30-44 (“[T]he first communication device 120 includes a subscriber approval client 122...[which] may also operate to communicate with...the proxy subscriber approval server 140 through the network 110.”), 6:27-39 (“Alternatively, the proxy subscriber approval server 140 may apply the rules to approve payment via the subscriber approval client 122....[C]ertain rules may allow for immediate approval while other rules require an attempt to communicate with the second communication device 130 before exercising the rule to determine approval as a fall-back procedure.”), FIG. 2B (depicting at blocks 212 and 214 that

the proxy subscriber approval server may be initially chosen as the approval entity), 7:53-8:3 (describing FIG. 2B); *see also id.*, 5:30-44.)

37. If, however, the transaction is approved (e.g., by the second communication device or the proxy subscriber approval server), the consumer's "first communication device 120 then provides credit card information, debit card information, or electronic purse information to the POS device 102 to complete the payment transaction." (EX1007, 4:55-58.) The POS device then sends that payment information to an authorization entity, such as a financial institution, which returns a response upon authorization, thereby completing the payment approval process. (*Id.*, 3:31-39 ("Following approval, authorization is requested from the credit card company by the point-of-sale system, typically through normal means."), 3:56-58 ("In credit card transactions, the POS device 102 may communicate with a credit card payment system to obtain payment or payment authorization."), 7:40-44 ("The POS device 102 receives payment information from the subscriber approval client 122, submits this payment information to an authorization entity, such as a financial institution, and receives a response back from the authorization entity. The process then exits.").)

38. White discloses that the above steps performed by the first communication device 120 may be performed by the first device's "subscriber approval client 122...enabled as a software program, an application, or a function"

which “operate[s] to collect pending purchase information from the POS device 102,” “includes information for completing the pending purchase,” and “may also operate to communicate with the second communication device 130 and/or the proxy subscriber approval server 140 through the network 110.” (EX1007, 5:30-44.) Similarly, White discloses that the above steps performed by the second communication device 130 may be performed by the second device’s “subscriber approval local server” which “include[s] one or more payment information associated with a credit card number, a debit card number, and/or other monetary account information,” as well as “rules established within the subscriber local approval server” which may be “appl[ied]...to approve payment via the subscriber approval client 122.” (*Id.*, 6:9-39.)

39. White discloses that the above payment approval process is applicable to a variety of different scenarios, such that the second communication device to approve the transaction is selected based on the context. For example, an owner of a credit card may be required to remotely authorize (e.g., from a second, remotely located device) transactions performed by an authorized user of the credit card (e.g., using a first device). (EX1007, 3:7-21 (“[T]he owner of a credit card can block or limit available credit to an authorized user of a credit card....[T]he embodiments discussed below contemplate a system and method for completing a pending purchase at a point-of-sale involving a purchase-by-purchase approval by

the owner or controller of the credit card or other financial account, for example by a remote device or individual controlling the remote device.”.) In other remote authorization scenarios, “the operation of the system 100 for subscriber payment approval may be employed for parental control of child spending at the POS device 102,” where the parent’s “second communication device 130 may be alerted through voice, video, and/or text messaging” and the “parent may have the option of approving or rejecting the pending purchase.” (*Id.*, 6:9-64.) Alternatively, “a user of the second communication device 130 may include an employer (i.e., a boss or manager of a business) while, the first communication device 120 may be operated by an employee,” where “[t]he employer may in real-time control the pending purchase(s) made on behalf of the employee.” (*Id.*, 6:65-7:3.)

C. Byrne (EX1015)

40. Byrne relates to a method/system for “increas[ing] the capacity of cellular telecommunications systems.” (EX1015, ¶[0002].) Byrne specifically discloses a “basestation for use in a cellular telecommunications system, and in particular to a basestation for use as a femtocell basestation.” (EX1015, ¶[0001].) Byrne explains that “[a] traditional cellular telecommunications system includes a number of basestations, each serving a part of the total coverage area of the system, these areas being termed cells.” (*Id.*) “Each basestation is connected to the core network of the system, typically over a wired connection.” (*Id.*) “A user of a

wireless communications device, located in one of these cells, is able to establish wireless communications with the relevant basestation, and the traffic is passed over the wired connection to the core network, where it can be routed as required.”

(*Id.*) Byrne discloses that “in order to increase the capacity of cellular telecommunications systems, femtocell basestations can additionally be provided.” (*Id.*, ¶[0002].)

41. The femtocell basestation is intended “to provide coverage over a very small area, for example within a single home or office building.” (*Id.*, ¶[0021]; *see also id.*, ¶[0002] (“[A] femtocell basestation could be obtained by a customer of the mobile network operator, and located within that customer’s premises, which may for example be a home or a relatively small office.”).) “The femtocell basestation 18 is connected into the mobile network operator’s core network 10 over the internet 14, by means of the customer’s existing broadband internet connection 20.” (*Id.*, ¶[0021].) Byrne also describes a microcell basestation 16 that “provide[s] coverage to the whole of the intended service area including the location of the femtocell basestation 18 and the location of the mobile phone 22 while it is in the coverage area of the femtocell basestation 18.” (*Id.*, ¶[0022].) Byrne explains that “the network is configured such that, when a mobile device that is allowed to be registered with the femtocell basestation 18 is within the coverage area of the femtocell basestation 18, then it will preferentially establish a

connection with the femtocell basestation 18 rather than with the microlayer basestation 16.” (*Id.*) Byrne discloses that “a user of a conventional mobile phone 22 can establish a connection through the femtocell basestation 18 with another device, in the same way that any other mobile phone can establish a connection through one of the other basestations of the mobile network operator’s network, such as the basestation 16.” (*Id.*, ¶[0021].)

42. Byrne explains that the basestation of its invention provides “software that allows the basestation to terminate and/or interrogate messages sent from a mobile device that are intended for the network, and/or allows the basestation to terminate and/or interrogate messages sent from the network that are intended for the mobile device.” (*Id.*, ¶[0004].) This basestation “has the advantage that, in some situations, the number of messages transferred between the basestation and the network can be reduced.” (*Id.*, ¶[0005].) Byrne explains that this is an improvement on existing basestations, which may require “large numbers of messages to be transferred between the basestation and the core network.” (*Id.*, ¶[0003].)

VII. CLAIM CONSTRUCTION

43. I understand that when considering the meaning of patent claims, one must consider the language of the claims, the specification, and the prosecution history of the patent. I also understand that claim terms are typically given their ordinary and customary meanings as would have been understood by a person of ordinary skill in the art at the time of the invention for the patent. For the '708 patent, as I explained above in Section IV, the relevant time that I have been asked to consider is around November 4, 2008. For purposes of my opinions in this declaration, I have been asked to consider the challenged claims under their plain and ordinary meanings as understood by a person of ordinary skill in the art at the time of the alleged invention, and I have applied such understandings in my analysis of the '708 patent and the prior art.

**VIII. THE PRIOR ART DISCLOSES OR SUGGESTS THE SUBJECT
MATTER OF CLAIMS 1-19 OF THE '708 PATENT**

44. In my opinion, the prior art I discuss below discloses and/or suggests the limitations of claims 1-19.²

A. Barnett and Byrne Disclose and/or Suggest Claims 1-3, 5-9, 11-13, 15, 17, and 19

1. Claim 1

- i) **[1.pre] “A method of operating a smartphone using a first air interface and a second air interface that differs from the first air interface, the method comprising:”**

45. I understand that this limitation is a preamble of the claim and I have been asked to assume that the preamble of claim 1 is limiting. Under that assumption, it is my opinion that Barnett discloses the limitations therein.

46. Barnett discloses a “system and method of communicating shopping information between a consumer and a retailer,” including a “system for enabling a consumer to obtain shopping information from a retailer, and the retailer to obtain information from the consumer, using a communication device, such as a mobile

² In this section (Section VIII), I refer to exhibits other than those identified prior art reference(s) that disclose and/or suggest the claimed limitations. Such exhibits reflect the state of the art known to a person of ordinary skill in the art at the time of the alleged invention.

phone.” (EX1005, ¶[0001].) Barnett explains that “a consumer may utilize...a portable communications device 14, such as a mobile phone” (“smartphone”) (*id.*, ¶[0011]), which is “adapted to communicate with a Near Field Communication (NFC) device, a wireless network, such as a Wi-Fi system, and a Bluetooth system, as well as a cellular phone system” (*id.*, ¶[0012]). Barnett describes that the “mobile phone 14 combines the functions of a Wi-Fi device, a contact-less credit card, and a cell phone” (*id.*, ¶[0012]), and thus a person of ordinary skill in the art would have understood that a consumer’s mobile phone operates as a “smartphone” because it has advanced features beyond the standard calling and texting features of a cellular phone.

47. Barnett explains that a store may have “stand-alone NFC-enabled devices 34 [which] are used to identify products to NFC-enabled devices.” (EX1005, ¶[0023].) As shown in Figure 1 below, a consumer may place their “NFC-enabled mobile phone 14” (in red below) “proximate to the product identifier 34” (in yellow below) so that “information is extracted from the product identifier 34 and transmitted to, and stored within, the NFC-enabled mobile phone 14 in a manner similar to a bar code reader.” (*Id.*, ¶[0023].) For example, the consumer may “retrieve and store information” such as “the identity of the product” (*id.*, ¶[0033]), which may further include “the name of the produce and

the price of the product, as well as technical information about the product, such as the specifications” (*id.*, ¶[0023]).

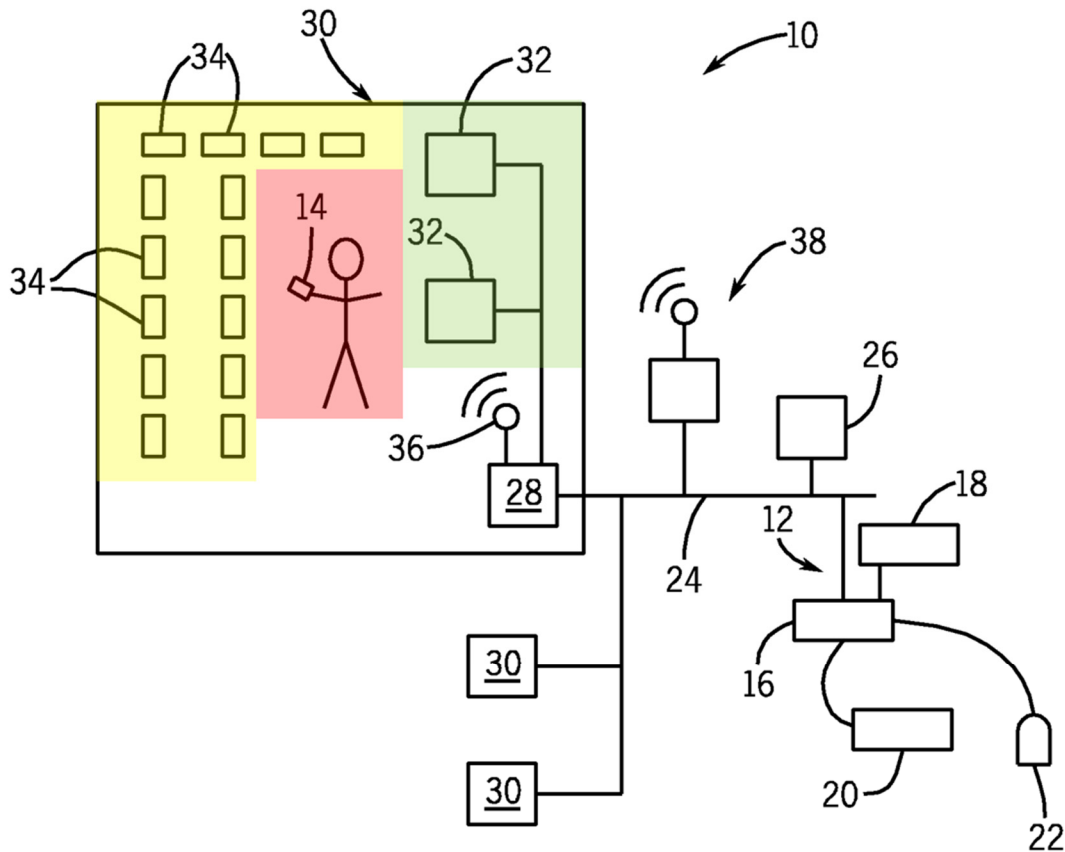
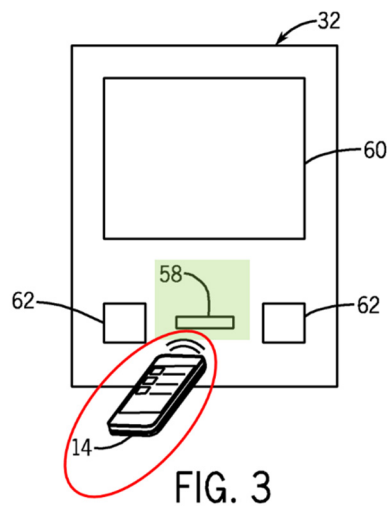


FIG. 1

(*Id.*, FIG. 1 (annotated).)

48. Barnett also explains that “[w]ithin the store 30 are a series of displays 32 that are connected to the store computing system 28.” (EX1005, ¶[0021].) These “displays 32” (in green above) may be “NFC-enabled displays that can interact with a NFC-enabled mobile phone 14 using device-to-device

communication.” (*Id.*) After retrieving product identity information from devices 34, a “consumer may then place the mobile phone 14 proximate to a NFC-display 32 which reads the product identity information from the mobile phone 14 and retrieves additional information regarding the product to the consumer.” (*Id.*, ¶[0033].) “The display [32], using the NFC interface, may be used to complete the transaction using the cell phone as a credit card, debit card, or electronic purse.” (*Id.*, ¶[0040]; *see also id.*, ¶[0037] (“The consumer can use the cell phone as a credit card to complete the purchase process by using a NFC-enabled payment register.”).) “The NFC-enabled display 32,” as shown in Figure 3 below, “has an NFC interface 58” (in green) “that is adapted to transmit data between the mobile phone 14 and the display 32.” (*Id.*, ¶[0038].) For example, Barnett discloses that “the mobile phone 14 may be programmed to provide a specific credit card number when the mobile phone 14 is used in making purchases in a specific store.” (*Id.*, ¶[0032].)



(*Id.*, FIG. 3 (annotated).) Barnett discloses that transmission of data between the consumer’s phone (in red above) and the NFC display 32 via NFC interface 58 (in green above) may occur when devices are within “a short distance, such as a decimeter.” (EX1005, ¶[0013].)

49. Thus, Barnett discloses “[a] method of operating a smartphone,” e.g., to perform a financial transaction, using NFC communication (“using a first air interface”).

50. Barnett also discloses that the smartphone may be operated using various other communication interfaces, including using either a cellular communication system (“using...a second air interface that differs from the first air interface”) or Wi-Fi system to access the Internet. Barnett explains that the mobile phone comprises a “cellular phone system 38 [that] enables the consumer to use the mobile phone as a phone...[and] enables the consumer to use the mobile phone

14 to access the Internet.” (EX1005, ¶[0027].) For example, “[i]nformation from the retailer may be provided to the mobile phone 14 via the cellular phone system 38.” (*Id.*, ¶[0027].) Barnett explains that its system is also “adapted to provide information to a consumer’s mobile phone 14 within a store without requiring the consumer to incur a mobile phone usage charge,” i.e., “instead of using the data connection on a cellular carrier, the consumer uses a Wi-Fi network inside the store that has a connection to the Internet.” (*Id.*, ¶[0016].)

51. For all of these reasons, and additionally for the reasons I discuss below with respect to limitations [1.a]-[1.d], Barnett discloses “[a] method of operating a smartphone using a first air interface and a second air interface that differs from the first air interface.”

- ii) [1.a] **“communicating between the smartphone and an entity using the first air interface responsive to a proximity criterion having been satisfied between the smartphone and the entity to provide information to the entity over a short-range link between the smartphone and the entity”**

52. Barnett discloses this limitation. Barnett discloses that a consumer’s mobile phone (“smartphone”) may be used as a credit card to complete a transaction at an NFC-enabled check-out display 32 (“entity”). (EX1005, ¶¶[0037] (“The consumer **can use the cell phone as a credit card** to complete the purchase process by using a NFC-enabled payment register [32].”), [0040] (“The display [32], using the NFC interface, may be used to **complete the transaction using the**

cell phone as a credit card, debit card, or electronic purse.”).) Barnett explains that when the mobile phone is used as a credit card at an NFC-enabled check-out display, the mobile phone uses NFC (“first air interface”) to provide payment “information” (e.g., credit card number) (“communicating between the smartphone and an entity using the first air interface...to provide information to the entity”). (EX1005, ¶[0032] (“Normally, when a consumer goes to pay for a product, the payment terminal, such as a smart card reader, expects a credit card to provide the right data. Here, the mobile phone 14 may act as the credit card....[T]he **mobile phone 14 may be programmed to provide a specific credit card number when the mobile phone 14 is used in making purchases** in a specific store. For example, the mobile phone 14 may be programmed to provide a first credit card number when the consumer is in a first store and provide a second credit card number when the consumer is in a second store.”).)

53. Barnett discloses that this payment information may be communicated to the NFC-enabled check-out display 32 (“communicating between the smartphone and an entity using the first air interface”) if the phone and display are within a specific proximity (“responsive to a proximity criterion having been satisfied between the smartphone and the entity”). Barnett explains that when “the consumer places their mobile phone 14 proximate to an NFC-enabled display 32...[t]he mobile phone 14 may receive information from the retailer, as well as

provide the retailer with information.” (EX1005, ¶[0031]; *see also id.*, ¶[0032]

(“[O]nce this [payment] information is initially programmed into the mobile phone 14, the configuration of the mobile phone 14 as a credit card is done automatically simply by **placing the mobile phone 14 proximate to the NFC-enabled display 32 so that the desired information may be exchanged between the two.**”).)

Indeed, “a connection through a NFC link indicates that the two devices are in close physical proximity to each other.” (*Id.*, ¶[0025].) Barnett describes this NFC link as “short-range high frequency wireless communication...which enables the exchange of data between devices over about a short distance, such as a decimeter” (“short-range link between the smartphone and the entity”). (*Id.*, ¶[0013].)

54. Accordingly, Barnett discloses communicating between a mobile phone and NFC-enabled check-out display using NFC (“communicating between the smartphone and an entity using the first air interface”) in response to the mobile phone being brought within proximity (e.g., less than a decimeter) of the NFC display (“responsive to a proximity criterion having been satisfied between the smartphone and the entity”) to provide payment information to the display (“to provide information to the entity”) over the short-range NFC link established between the devices (“over a short-range link between the smartphone and the entity”).

- iii) [1.b] **“refraining from communicating between the smartphone and the entity by the smartphone using the first air interface absent the proximity criterion having been satisfied between the smartphone and the entity; and;”**

55. Barnett discloses this limitation. As I discussed above for limitation [1.a], the NFC communication between the mobile phone and NFC-enabled check-out display is only enabled if the devices are within a short distance, such as a decimeter. (*See* my analysis and discussion above in Section VIII.A.1.ii.) Indeed, Barnett describes this range as the “effective range,” i.e., the range in which communication is possible. (EX1005, ¶[0013] (“In this case, ‘short-range’ refers to a wireless communications technology having an **effective range** of one meter or less.”).) Thus, a person of ordinary skill in the art would have understood that the phone and display refrain from communicating with each other over NFC if the proximity criterion is not satisfied because NFC communication is not possible at all if the proximity criterion is not satisfied (“refraining from communicating between the smartphone and the entity by the smartphone using the first air interface absent the proximity criterion having been satisfied between the smartphone and the entity”). In other words, Barnett’s system and method is configured not to communicate (“refraining from communicating”) between the mobile phone and display by the mobile phone using the NFC link (“first air interface”) unless the mobile phone is within a certain distance of the display

(“absent the proximity criterion having been satisfied between the smartphone and the entity”).

- iv) [1.c] “**communicating between the smartphone and a base station using the second air interface to receive a communications service from the base station via the second air interface, wherein the smartphone receives the communications service from the base station via the second air interface but does not receive the communications service from the entity via the first air interface,**”

56. Barnett in view of Byrne discloses and/or suggests this limitation. As I discussed for limitation [1.pre], Barnett discloses communicating using a cellular communication system (“communicating...using the second air interface”) to receive cellular service via the cellular communication system (“to receive a communications service...via the second air interface”), where the consumer’s mobile phone receives the cellular service via the cellular communication system (“wherein the smartphone receives the communications service...via the second air interface”) but not from the NFC-enabled check-out display via NFC (“but does not receive the communications service from the entity via the first air interface”). (See my analysis and discussion above in Sections VIII.A.1.i.) In my opinion, a person of ordinary skill in the art would have further understood that in a traditional cellular communication system at the time of the alleged invention, the phone communicates with a base station using the cellular communication system in order to receive the cellular service. (See, e.g., EX1015, ¶[0001] (“A traditional

cellular telecommunications system includes a number of basestations, each serving a part of the total coverage area of the system, these areas being termed cells. Each basestation is connected to the core network of the system, typically over a wired connection. A user of a wireless communications device, located in one of these cells, is able to establish wireless communications with the relevant basestation, and the traffic is passed over the wired connection to the core network, where it can be routed as required.”); EX1016, ¶[0008] (“**In the wireless communication network system for mobile stations, for example, for personal handy phone or PHS, the base stations must be set up in every some kilometers in an average. And every base station must be connected with the wired network with each other. In the system, a constitution is taken that the mobile stations and the respective base stations are communicating with each other by means of the wireless communication as far as the radio wave from the base station is possible to reach.”).**)

57. I have been asked to consider a scenario in which Barnett does not explicitly disclose that the consumer’s phone communicates with and receives the cellular service from a base station. Under that scenario, it is my opinion that a person of ordinary skill in the art would have been motivated to further modify the Barnett system/method in view of Byrne such that it performs the following bolded/italicized features: “communicating between the smartphone and a base

station using the second air interface to receive a communications service *from the base station* via the second air interface, wherein the smartphone receives the communications service *from the base station* via the second air interface but does not receive the communications service from the entity via the first air interface.”

58. Like Barnett, Byrne discloses methods compatible with cellular networking. Byrne relates to a method/system for “increas[ing] the capacity of cellular telecommunications systems.” (EX1015, ¶[0002].) Thus, Byrne is similar to Barnett, which as I discussed above for limitation [1.pre], discloses a method for using a mobile phone as a contact-less credit card, where the phone is also adapted to operate as a cell phone, using a cellular communication system to connect to a cellular network. (See my analysis and discussion above in Section VIII.A.1.i.) A person of ordinary skill in the art would have therefore been motivated to consider the teachings of Byrne when implementing the cellular communication system of the Barnett system/method.

59. Byrne specifically discloses a “basestation for use in a cellular telecommunications system, and in particular to a basestation for use as a femtocell basestation.” (EX1015, ¶[0001].) Byrne explains that “[a] traditional cellular telecommunications system includes a number of basestations, each serving a part of the total coverage area of the system, these areas being termed cells.” (*Id.*) “Each basestation is connected to the core network of the system, typically over a

wired connection.” (*Id.*) “A user of a wireless communications device, located in one of these cells, is able to establish wireless communications with the relevant basestation, and the traffic is passed over the wired connection to the core network, where it can be routed as required.” (*Id.*) Byrne discloses that “in order to increase the capacity of cellular telecommunications systems, femtocell basestations can additionally be provided.” (*Id.*, ¶[0002].)

60. The femtocell basestation is intended “to provide coverage over a very small area, for example within a single home or office building.” (*Id.*, ¶[0021]; *see also id.*, ¶[0002] (“[A] femtocell basestation could be obtained by a customer of the mobile network operator, and located within that customer’s premises, which may for example be a home or a relatively small office.”).) “The femtocell basestation 18 is connected into the mobile network operator’s core network 10 over the internet 14, by means of the customer’s existing broadband internet connection 20.” (*Id.*, ¶[0021].) Byrne also describes a microcell basestation 16 that “provide[s] coverage to the whole of the intended service area including the location of the femtocell basestation 18 and the location of the mobile phone 22 while it is in the coverage area of the femtocell basestation 18.” (*Id.*, ¶[0022].) Byrne explains that “the network is configured such that, when a mobile device that is allowed to be registered with the femtocell basestation 18 is within the coverage area of the femtocell basestation 18, then it will preferentially establish a

connection with the femtocell basestation 18 rather than with the microlayer basestation 16.” (*Id.*) Byrne discloses that “a user of a conventional mobile phone 22 can establish a connection through the femtocell basestation 18 with another device, in the same way that any other mobile phone can establish a connection through one of the other basestations of the mobile network operator’s network, such as the basestation 16.” (*Id.*, ¶[0021].)

61. Byrne explains that the basestation of its invention provides “software that allows the basestation to terminate and/or interrogate messages sent from a mobile device that are intended for the network, and/or allows the basestation to terminate and/or interrogate messages sent from the network that are intended for the mobile device.” (*Id.*, ¶[0004].) This basestation “has the advantage that, in some situations, the number of messages transferred between the basestation and the network can be reduced.” (*Id.*, ¶[0005].) Byrne explains that this is an improvement on existing basestations, which may require “large numbers of messages to be transferred between the basestation and the core network.” (*Id.*, ¶[0003].) Thus, Byrne discloses that a user’s mobile phone may communicate with a femtocell base station (e.g., located in a home or office building) to receive cellular service from the core network of the cellular telecommunications system.

62. Because Barnett and Byrne each describe features (e.g., cellular networking) that are reasonably pertinent to a problem the ’708 patent purports to

address (e.g., integration of cellular communication systems in a multi-function mobile phone), Barnett and Byrne are analogous art. Thus, a person of ordinary skill in the art would have looked to Byrne when considering and implementing the Barnett system/method.

63. In particular, a person of ordinary skill in the art would have been motivated to implement Barnett's cellular communication system such that it implements a femtocell base station, similar to that disclosed by Byrne, that is provided in a store to enhance cellular service. A person of ordinary skill in the art would have understood that implementing such a femtocell base station would have been beneficial because, as discussed above, the base station would have increased the capacity of cellular telecommunications systems while reducing traffic over the network by reducing the number of messages transferred between the base station and the core network. A person of ordinary skill in the art would have understood that increasing system capacity while reducing traffic would have improved the overall efficiency and reliability of cellular communication systems, and would have specifically enhanced cellular service for consumers shopping within the store environment.

64. A person of ordinary skill in the art would have had the skill to implement and reasonable expectation of success in achieving such a modification because it would have involved a combination of known technologies (e.g., known

system/method for performing integrating a cellular communication system in a mobile phone (Barnett)) according to known methods (e.g., known methods of improving cellular communications systems using a femtocell base station (Byrne)) to yield the predictable result of a modified Barnett system/method that further uses a femtocell base station through which mobile phones receive cellular service.

- v) **[1.d] “wherein the communicating between the smartphone and the entity using the first air interface responsive to the proximity criterion having been satisfied between the smartphone and the entity to provide information to the entity over the short-range link between the smartphone and the entity is performed concurrently with the communicating between the smartphone and the base station using the second air interface to receive a communications service from the base station via the second air interface.”**

65. The Barnett-Byrne combination discloses and/or suggests this limitation. Barnett discloses “communicating between the smartphone and the entity using the first air interface responsive to the proximity criterion having been satisfied between the smartphone and the entity to provide information to the entity over the short-range link between the smartphone and the entity” for the same reasons as I discussed for limitation [1.a], which recites nearly identical claim language and describes NFC communication between a phone and NFC-enabled check-out display, in response to the phone being brought within proximity of the NFC display,

such that payment information is provided to the NFC display over the NFC short-range link between the phone and display. (See my analysis and discussion above in Section VIII.A.1.ii.)

66. The Barnett-Byrne combination also discloses and/or suggests “communicating between the smartphone and the base station using the second air interface to receive a communications service from the base station via the second air interface” for the same reasons as I discussed for limitation [1.c], which recites nearly identical claim language and describes communicating between a phone and a cellular base station using a cellular communication system to receive cellular service from the base station via the cellular communication system. (See my analysis and discussion above in Section VIII.A.1.iv.)

67. Barnett discloses that “the mobile phone 14 combines the functions of a Wi-Fi device, a contact-less credit card, and a cell phone,” where “these three identities are combined into a unified package.” (EX1005, ¶[0012].) Barnett discloses the various ways the mobile phone 14 operates as a contact-less credit card (e.g., NFC (“first air interface”)) and a cell phone (e.g., cellular communication (“second air interface”)). (EX1005, Abstract (“A mobile phone is provided that is adapted to communicate with Near Field Communication (NFC) devices and wireless Internet Protocol (IP) based network, or Internet system, as well as operate as a cellular phone. The mobile phone is configured to bridge information between

the various protocols used to enable the mobile phone to communicate with an NFC device, a wireless Internet system, and a cellular phone system.”), ¶¶[0005] (“A mobile phone is provided that in addition to operating with a cellular network, is also adapted to communicate with one or more additional wireless communication systems, such as Near Field Communication (NFC), IEEE 802.11, Wi-Fi, Bluetooth, or IEEE 802.15.”), [0014] (“The NFC protocol enables the mobile phone 14 to operate in several modes. One mode allows the phone to act as a passive tag, allowing a NFC terminal to read the information stored in the mobile phone 14.”), [0021] (“When a consumer enters the store 30, the consumer can place their NFC-enabled mobile phone 14 proximate to the [NFC-enabled] display 32 to establish communications with the store computing system 28.”), [0027] (“The illustrated embodiment of the system 10 also comprises a cellular phone system 38. The cellular phone system 38 enables the consumer to use the mobile phone as a phone. In addition, the cellular phone system 38 also enables the consumer to use the mobile phone 14 to access the Internet. Information from the retailer may be provided to the mobile phone 14 via the cellular phone system 38.”), [0032] (“Here, once this information is initially programmed into the mobile phone 14, the configuration of the mobile phone 14 as a credit card is done automatically simply by placing the mobile phone 14 proximate to the NFC-enabled display 32 so that the desired information may be exchanged between the two.”), [0041] (“Referring generally to

FIG. 4, an embodiment of a mobile phone 14 is presented. As noted above, this embodiment of the mobile phone 14 has NFC capability, Wi-Fi capability, and Bluetooth capability, in addition to having cellular phone capability. Inside the mobile phone 14 are a cellular phone interface, a Wi-Fi interface, and a Bluetooth interface.”). In other words, Barnett’s mobile phone is enabled to operate as a credit card in a store via the NFC functionality while simultaneously being enabled to operate as a cell phone to receive phone calls, text messages, etc. via its cellular communication functionality. Thus, the functions associated with using the phone as a contact-less credit card (e.g., NFC (“first air interface”)) and the functions associated with using the phone as a cell phone (e.g., cellular communication (“second air interface”)) would have been combined into a unified package, such that the above-described “communicating...using the first interface” and “communicating...using the second air interface” would have been “performed concurrently.”

68. I have been asked to consider a scenario in which Barnett does not explicitly disclose that the above NFC communication and cellular communication are “performed concurrently.” Under that scenario, it is my opinion that a person of ordinary skill in the art would have been motivated in view of Barnett to implement the Barnett-Byrne system/method in this manner.

69. Barnett discloses that the “cellular phone system 38 enables the consumer to use the mobile phone as a phone” and also “enables the consumer to use the mobile phone 14 to access the Internet.” (EX1005, ¶[0027].) In my opinion, a person of ordinary skill in the art would have been motivated to configure the consumer’s phone to keep the cellular service active (i.e., such that the consumer’s phone is still communicating with a base station to receive cellular service) while the NFC communication is in use so that the mobile phone may continue to operate as both a cellular phone and a means to access the Internet.

70. First, a person of ordinary skill in the art would have understood that allowing the phone to continue to receive phone calls, even while NFC is in use, would have improved user experience by allowing users to answer a phone call in the case of emergency, even if a transaction is in process. Indeed, while a lack of cellular service may be unavoidable at times (e.g., due to the building’s location, construction, etc.), a person of ordinary skill in the art would have recognized that configuring the consumer’s phone to permanently deactivate the cellular service when NFC is in use could present safety and convenience concerns.

71. Second, a person of ordinary skill in the art would have recognized the benefits of allowing a phone to access the Internet via cellular service while NFC is in use. Barnett discloses that the NFC-enabled display 32 may return to the consumer’s mobile phone via NFC various information that may be accessed via the

Internet, such as a “URL for the store’s website.” (EX1005, ¶[0035].) Thus, Barnett discloses applications in which the Internet may be advantageously used while NFC is also in use. Barnett discloses that “instead of using the data connection on a cellular carrier,” there are benefits to “us[ing] a Wi-Fi network inside the store that has a connection to the Internet” because it does not “requir[e] the consumer to incur a mobile phone usage charge.” (EX1005, ¶[0016].) However, a person of ordinary skill in the art would have understood that it would have been beneficial to configure the consumer’s phone to allow cellular service to remain active while NFC is in use so that a consumer still has the flexibility to access the Internet via cellular service in the event the in-store Wi-Fi network is down.

72. In my opinion, a person of ordinary skill in the art would have also had a reasonable expectation of success in implementing the Barnett-Byrne system/method such that cellular service remains active when NFC is in use because it would have involved an implementation that Barnett already suggests is feasible—i.e., allowing the “mobile phone 14 [to] combine[] the functions of...a contact-less credit card, and a cell phone” where these “identities are combined into a unified package.” (EX1005, ¶[0012].) In my opinion, a person of ordinary skill in the art would have recognized that both NFC and cellular service could function simultaneously in a mobile phone because each operates on different frequencies and uses different protocols, thus making interference unlikely. In my

opinion, a person of ordinary skill in the art would have had the skill to implement and reasonable expectation of success in achieving such a modification because it would have involved a combination of known technologies (e.g., known systems/methods for performing financial transactions using an NFC-enabled mobile phone (Barnett)) according to known methods (e.g., known methods of implementing cellular service alongside NFC in a mobile phone (Barnett)) to yield the predictable result of a modified Barnett-Byrne system/method such that NFC communication (e.g., performed at the time of payment) and cellular communication (e.g., consumer's phone communicating with a base station to receive cellular service) are "performed concurrently."

2. Claim 2: "The method according to claim 1, further comprising detecting that the proximity criterion between the smartphone and the entity is satisfied."

73. Barnett discloses this limitation. As I discussed for limitation [1.a], when a consumer presents their mobile phone proximate to an NFC-enabled display 32, the phone detects that the proximity criterion between the phone and display is satisfied ("detecting that the proximity criterion between the smartphone and the entity is satisfied") and in response, communicates payment information to the display over NFC. (See my analysis and discussion above in Section VIII.A.1.ii.)

3. Claim 3

- i) **[3.pre] “The method according to claim 2, wherein the detecting comprises:”**

[3.a] “detecting that a proximity criterion of less than 10 meters in distance is satisfied between the smartphone and the entity,”

74. Barnett discloses this limitation. As I discussed for claim 2, Barnett’s system/method involves detecting that the proximity criterion is satisfied between the mobile phone and the NFC-enabled check-out display. (*See* my analysis and discussion above in Section VIII.A.2.) As I discussed for limitation [1.a], this proximity criterion is a short distance such as a decimeter (“detecting that a proximity criterion of less than 10 meters in distance is satisfied between the smartphone and the entity”). (*See* my analysis and discussion above in Section VIII.A.1.ii.)

- ii) **[3.b] “wherein the detecting is performed by the smartphone, by a device that is associated with the entity and/or by a system that is associated with the smartphone.”**

75. Barnett discloses this limitation. As I discussed for claim 2, the mobile phone detects that the proximity criterion is satisfied (“wherein the

detecting is performed by the smartphone”).³ (See my analysis and discussion above in Section VIII.A.2.)

4. **Claim 5: “The method according to claim 1, wherein the communicating, over the short-range link, between the smartphone and the entity using the first air interface responsive to the proximity criterion having been satisfied is performed over a point-to-point short-range link between the smartphone and the entity using a time division duplex protocol.”**

76. Barnett discloses and/or suggests this limitation. As I discussed for limitation [1.a], Barnett discloses communicating payment information over a short-range NFC link between the mobile phone and NFC-enabled display 32 using NFC (“communicating, over the short-range link, between the smartphone and the entity using the first air interface”), in response to the mobile phone and display satisfying the proximity criterion (i.e., being within the effective range) (“responsive to the proximity criterion having been satisfied”), where the short-range NFC language is between two communication endpoints (i.e., point-to-point, between the phone and display) (“performed over a point-to-point short-range link between the smartphone and the entity”). (See my analysis and discussion above in Section VIII.A.1.ii.)

³ This claim limitation recites several options in the alternative. By teaching “wherein the detecting is performed by the smartphone,” the remaining options are not required.

77. While NFC communication does not perform communication using a time division duplex protocol, Barnett explains that the communication between a consumer's mobile phone and the NFC-enabled display 32 may occur via Bluetooth ("first air interface") instead of NFC. In particular, Barnett explains that a consumer's mobile phone may also be "adapted to communicate with...a Bluetooth system" in addition to NFC. (EX1005, ¶[0012].) Barnett discloses that instead of the displays 32 (used as payment registers) being NFC-enabled displays, "[a]lternatively, the displays 32 may be Bluetooth-enabled communications devices" such that "when a Bluetooth-enabled mobile phone is located near the display 32, information is transmitted between the Bluetooth-enabled mobile phone 14 and the display 32." (*Id.*, ¶[0022].) In my opinion, a person of ordinary skill in the art would have understood that Bluetooth provides a "point-to-point short-range link" between devices "using a time division duplex protocol" as these were standard features of Bluetooth communication. (EX1005, ¶[0017] ("Bluetooth provides a way to connect and exchange information between devices...over a secure, globally unlicensed **short-range radio frequency**."); EX1008, 48:5-6 ("Bluetooth technology provides the effect of full duplex transmission through the use of a **Time-Division Duplex (TDD) scheme**.").)

78. I have been asked to consider a scenario in which Barnett does not explicitly disclose that the "first air interface" uses Bluetooth. Under that scenario,

it is my opinion that a person of ordinary skill in the art would have been motivated to implement the Barnett system/method in this manner.

79. Barnett discloses that Bluetooth is beneficial because it “provide[s] low-rate mesh networking, allowing low-cost devices to form networks within the retail environment.” (EX1005, ¶[0017].) In my opinion, a person of ordinary skill in the art would have thus been motivated to consider Bluetooth instead of or in addition to NFC when implementing the communication features between a mobile phone and NFC-enabled check-out display in the Barnett system/method. In my opinion, a person of ordinary skill in the art would have also understood that Bluetooth would have been beneficial in stores where a longer communication range is desired (e.g., up to 10 meters), or where faster data transfer speeds are desired.

80. In my opinion, a person of ordinary skill in the art would have also had a reasonable expectation of success in implementing the Barnett system/method in this manner because it would have involved an implementation that Barnett already suggests is feasible—using Bluetooth instead of NFC to perform transactions using mobile phones at payment registers/check-out displays. In my opinion, a person of ordinary skill in the art would have had the skill to implement and reasonable expectation of success in achieving such a modification because it would have involved a combination of known technologies (e.g., known systems/methods for performing transactions using an NFC-enabled mobile phone

at NFC-enabled check-out displays (Barnett)) according to known methods (e.g., known methods of using Bluetooth instead of NFC for mobile phone transactions at check-out displays (Barnett)) to yield the predictable result of a modified Barnett system/method that further uses Bluetooth communication (which provides “a point-to-point short-range link between the smartphone and the entity using a time division duplex protocol,” as I discussed above) instead of NFC.

5. Claim 6: “The method of claim 1, further comprising enabling a function by the smartphone in response to an identity, wherein the identity is communicated between the smartphone and the entity.”

81. Barnett discloses this limitation. Barnett discloses that “[t]he mobile phone 14 may be programmed to be in an operating mode to learn about the current store using the NFC display 32.” (EX1005, ¶[0031].) “For example, the mobile phone 14 may send a query to the NFC-enabled display 32 to inform the mobile phone 14 the identity of the retailer” (“an identity, wherein the identity is communicated between the smartphone and the entity”) “and the location of the retailer’s store.” (*Id.*) Barnett explains that the phone is configured to automatically activate/enable a specific credit card or loyalty card (“enabling a function by the smartphone in response to an identity”) based on this received retailer identity information (“in response to an identity”), such that a different credit card may be

used in each store.⁴ (*Id.*, ¶¶[0031] (“This [retailer identity] information may be used to **configure the mobile phone 14 as a loyalty card for the specific retailer....**”), [0032] (“This [retailer identity] information received from the NFC-enabled display 32 may be used to **configure the mobile phone 14 for the specific retailer and/or the specific store....**For example, the **mobile phone 14**

⁴ This payment “function” (i.e., the credit card selection function) is consistent with functions described in the ’708 patent, which describes “functions” broadly as encompassing an “ever-increasing suite” of features/tasks, including various payment functions. (EX1001, 1:27-31 (“People are relying more and more on mobile wireless devices to perform an ever-increasing suite of function such as, for example, navigation, e-mail, web surfing, streaming video, etc.”), 4:29-6:5 (enabling a “pay toll” function), 8:8-60 (enabling a “pay” function), 9:14-24 (describing a “function” broadly as “any number of functions at the mobile subscriber device 14 or even at the mobile subscriber device 15” (i.e., at first or second mobile device), and explaining that the “function enabled can be a financial transaction, the transmission of communications, such as data, and/or some other function that may provision the mobile subscriber device 14 and/or the mobile subscriber device 15 with additional functionality not previously available/activated at the respective devices”).)

may be programmed to provide a first credit card number when the consumer is in a first store and provide a second credit card number when the consumer is in a second store. Here, once this information is initially programmed into the mobile phone 14, the **configuration of the mobile phone 14 as a credit card is done automatically simply by placing the mobile phone 14 proximate to the NFC-enabled display 32** so that the desired information may be exchanged between the two.”.)

6. Claim 7: “The method of claim 6, wherein the enabling the function is performed in response to comparing the identity with one or more identities.”

82. Barnett discloses this limitation. Barnett discloses that “the mobile phone 14 may be programmed with a plurality of different credit card numbers,” where a “first credit card number” is programmed to be used in a “first store,” a “second credit card number” is programmed to be used in a “second store,” etc. (EX1005, ¶[0032].) Moreover, as explained for claim 6, Barnett explains that the information received from the NFC-enabled display 32 (e.g., the identity of the retailer (“identity”)) is used to automatically configure the phone for a specific retailer (i.e., to configure the phone to use the credit card associated with the retailer identity) (“enabling the function”). (See my analysis and discussion above in Section VIII.A.5; EX1005, ¶¶[0031]-[0032].) By configuring/enabling use of a particular credit card associated with a received retailer identity (“wherein the

enabling the function is performed”), from a plurality of different credit card numbers (each associated with a retailer identity), Barnett teaches choosing the received identity from among the plurality of identities saved/programmed on the phone, or in other words would have involved comparing the received retailer identity to the plurality of retailer identities (“in response to comparing the identity with one or more identities”).

7. Claim 8: “The method of claim 6, further comprising establishing the short-range link between the smartphone and the entity in further response to the identity.”

83. Barnett discloses this limitation. As I discussed for limitation [1.a], Barnett discloses establishing a short-range NFC link between the mobile phone and NFC-enabled display 32 (“establishing the short-range link between the smartphone and the entity”) in order to communicate payment information (e.g., credit card number) to the NFC-enabled display. (See my analysis and discussion above in Section VIII.A.1.ii.) As I discussed for claims 6 and 7, the credit card number shared over the link is based on and in response to the retailer identity received from the NFC-enabled display (“in further response to the identity”). (See my analysis and discussion above in Sections VIII.A.5-6.) Thus, when a transaction is being completed at an NFC-enabled display 32 functioning as a check-out display, the NFC link established to send payment information is based

on and in response to the received retailer identity (“establishing the short-range link between the smartphone and the entity in further response to the identity”).

8. Claim 9: “The method of claim 1, further comprising providing a notification at the smartphone in response to receiving a signal from the entity.”

84. Barnett discloses this limitation. Barnett explains that when a mobile phone and NFC-enabled display 32 are proximate to each other, the NFC-enabled display 32 may return information that is displayed on the mobile phone (“providing a notification at the smartphone”). For example, a “consumer may hold their mobile phone next to a product identifier 34 and retrieve and store information regarding the product, such as the identity of the product.” (EX1005, ¶[0033].) “The consumer may then place the mobile phone 14 proximate to a NFC-display 32 which reads the product identity information from the mobile phone 14 and retrieves additional information regarding the product to the consumer.” (*Id.*) For example, for a given product read by the NFC-enabled display 32, “product location information...such as the row and aisle number, [may be] displayed on...the mobile phone 14.” (*Id.*, ¶[0034].) In my opinion, a person of ordinary skill in the art would have understood this feature to be a “notification” since it displays a message/alert providing timely information as to where to find a product in the store.

85. In my opinion, a person of ordinary skill in the art would have also understood that this product location information notification would have been

provided “in response to receiving a signal from the entity.” As I discussed for claim 2, when a mobile phone is sharing information with an NFC terminal (such as the NFC-enabled display 32), the phone may act as a passive tag and would thus receive an RF signal from the NFC terminal. (*See* my analysis and discussion above in Section VIII.A.2; EX1005, ¶[0014]; EX1006, 9; EX1014, 7:28-8:19.) Barnett further discloses that the phone may “act in a peer-to-peer exchange mode, whereby the mobile phone 14 may transmit and receive information between the mobile phone 14 and another NFC device.” (EX1005, ¶[0014].) For example, the above-described exchange, in which the phone sends product identity information to a display and the display returns product location information, is an example of peer-to-peer exchange. In my opinion, a person of ordinary skill in the art would have understood that, as with a one-way transfer of information from phone to NFC display, a peer-to-peer exchange would have also involved the mobile phone receiving an RF signal from the NFC display (e.g., before the phone sends a product identity information to the display, which returns related product location information). (*Id.*; *see also* EX1014, 1:26-30 (describing how in a peer-to-peer exchange, both NFC devices may be in an active mode where “both NFC devices generate their own radio frequency fields to transfer data”).) Accordingly, both the product identity information shared with the NFC display and the product location information shared to the consumer’s mobile phone (“providing a notification at

the smartphone”) are responses to an RF signal received from the NFC display by the consumer’s mobile phone (“in response to receiving a signal from the entity”).

9. Claim 11

i) [11.pre] “A smartphone comprising:”

86. I understand that this limitation is a preamble of the claim and I have been asked to assume that the preamble of claim 11 is limiting. Under that assumption, it is my opinion that Barnett discloses the limitations therein. As I discussed for limitation [1.pre], Barnett discloses a mobile phone (“smartphone”) with “smart” features to perform the functions of a Wi-Fi device, a contact-less credit/debt card, and a cell phone, enabled by NFC, Wi-Fi, Bluetooth, and cellular communication. (See my analysis and discussion above in Section VIII.A.1.i.)

ii) [11.a] “a processor that is configured to control the smartphone to perform operations comprising:”

87. Barnett discloses this limitation. In my opinion, a person of ordinary skill in the art would have understood that any mobile phone with “smart” features (e.g., those discussed above for limitation [11.pre]) would have had a processor/CPU configured to control the phone to perform operations (“a processor that is configured to control the smartphone to perform operations”) for performing a transaction, including those recited below for limitations [11.b]-[11.e]. (See, e.g., EX1017, 2:16-27 (describing a portable device, similar to that disclosed by Barnett (see EX1005, ¶[0032] (describing credit card selection)), for “selecting virtual

cards for transactions based on a context,” where the “portable device also includes a **processor to process rules** and select at least one of the virtual cards based on the context of the transaction”), 3:28-33 (explaining that the “portable device may be, for example, a wireless or mobile telephone, a handheld device, such as a PDA or other portable device, combination device,” etc.); *see infra* my analysis and discussion above in Sections VIII.A.9.iii-vi.)

- iii) **[11.b] “communicating between the smartphone and an entity using a first air interface responsive to a proximity criterion having been satisfied between the smartphone and the entity to provide information to the entity over a short-range link between the smartphone and the entity;”**

88. Barnett discloses this limitation for the same reasons as I discussed for limitations [1.pre] (discussing “first air interface”) and [1.a] (reciting nearly identical language as limitation [11.b]). (*See* my analysis and discussion above in Sections VIII.A.1.i-ii.)

- iv) **[11.c] “refraining from communicating between the smartphone and the entity by the smartphone using the first air interface absent the proximity criterion having been satisfied between the smartphone and the entity; and”**

89. Barnett discloses this limitation for the same reasons as I discussed for limitation [1.b]. (*See* my analysis and discussion above in Section VIII.A.1.iii.)

- v) **[11.d] “communicating between the smartphone and a base station using a second air interface to receive a communications service from the base station via the second air interface, wherein the smartphone receives the communications service from the base station via the second air interface but does not receive the communications service from the entity via the first air interface,”**

90. The Barnett-Byrne combination discloses and/or suggests this limitation for the same reasons as I discussed for limitations [1.pre] (discussing “first air interface” and “second air interface”) and [1.c] (reciting nearly identical language as limitation [11.d]). (See my analysis and discussion above in Sections VIII.A.1.i, VIII.A.1.iv.)

- vi) **[11.e] “wherein the communicating between the smartphone and the entity using the first air interface responsive to the proximity criterion having been satisfied between the smartphone and the entity to provide information to the entity over the short-range link between the smartphone and the entity is performed concurrently with the communicating between the smartphone and the base station using the second air interface to receive a communications service from the base station via the second air interface.”**

91. The Barnett-Byrne combination discloses and/or suggests this limitation for the same reasons as I discussed for limitation [1.d]. (See my analysis and discussion above in Section VIII.A.1.v.)

10. Claim 12: “The smartphone according to claim 11, wherein the operations further comprise detecting that the proximity criterion between the smartphone and the entity is satisfied.”

92. Barnett discloses this limitation for the same reasons as I discussed for claim 2. (*See* my analysis and discussion above in Section VIII.A.2.)

11. Claim 13

i) [13.pre] “The smartphone according to claim 12, wherein the detecting comprises:”

[13.a] “detecting that a proximity criterion of less than 10 meters in distance is satisfied between the smartphone and the entity,”

93. Barnett discloses these limitations for the same reasons as I discussed for limitations [3.pre]-[3.a]. (*See* my analysis and discussion above in Section VIII.A.3.i.)

ii) [13.b] “wherein the detecting is performed by the smartphone, by a device that is associated with the entity and/or by a system that is associated with the smartphone.”

94. Barnett discloses this limitation for the same reasons as I discussed for limitation [3.b]. (*See* my analysis and discussion above in Section VIII.A.3.ii.)

- 12. Claim 15: “The smartphone according to claim 11, wherein the communicating, over the short-range link, between the smartphone and the entity using the first air interface responsive to the proximity criterion having been satisfied is performed over a point-to-point short-range link between the smartphone and the entity using a time division duplex protocol.”**

95. Barnett discloses and/or suggests this limitation for the same reasons as I discussed for claim 5. (*See* my analysis and discussion above in Section VIII.A.4.)

13. **Claim 17: “The method according to claim 16, wherein the communicating by the smartphone using the second air interface to receive the communications service via the second air interface comprises communicating between the smartphone and a base station using the second air interface to receive the communications service from the base station via the second air interface.”**

96. The Barnett-Byrne combination discloses and/or suggests this limitation. As an initial matter, Barnett discloses and/or suggests independent claim 16, which as I have discussed below for Section VIII.B.1, recites similar limitations to various claims addressed here in Section VIII.A, but does not recite the “base station” for which Byrne is relied upon in the Barnett-Byrne combination in Section VIII.A. (*See* my analysis and discussion below in Section VIII.B.1.) The Barnett-Byrne combination discloses and/or suggests dependent claim 17 for the same reasons as I discussed for limitation [1.c], where I explained that using the mobile phone to communicate using the cellular communication system (“wherein the communicating by the smartphone using the second air interface”) to receive cellular service via the cellular communication system (“to receive the communications service via the second air interface”) involves the mobile phone communicating with a base station using the cellular communication system (“comprises communicating between the smartphone and a base station using the second air interface”) in order to receive the cellular service from the base station via the cellular communication system (“to receive the communications service

from the base station via the second air interface”). (*See* my analysis and discussion above in Section VIII.A.1.iv.)

14. **Claim 19: “The smartphone according to claim 18, wherein the communicating by the smartphone using the second air interface to receive the communications service via the second air interface comprises communicating between the smartphone and a base station using the second air interface to receive the communications service from the base station via the second air interface.”**

97. The Barnett-Byrne combination discloses and/or suggests this limitation. As an initial matter, Barnett discloses and/or suggests independent claim 18, which as I have discussed below for Section VIII.B.2, recites similar limitations to various claims addressed here in Section VIII.A, but does not recite the “base station” for which Byrne is relied upon in the Barnett-Byrne combination in Section VIII.A. (*See* my analysis and discussion below in Section VIII.B.2.) The Barnett-Byrne combination discloses and/or suggests claim 19 for the same reasons I have discussed above for claim 17. (*See* my analysis and discussion above in Section VIII.A.13.)

B. Barnett Discloses and/or Suggests Claims 16 and 18

1. Claim 16

- i) **[16.pre] “A method of operating a smartphone using a first air interface and a second air interface that differs from the first air interface, the method comprising:”**

98. Barnett discloses this limitation for the same reasons as I discussed for limitation [1.pre]. (*See my analysis and discussion above in Section VIII.A.1.i.*)

- ii) **[16.a] “communicating between the smartphone and an entity using the first air interface responsive to a proximity criterion having been satisfied between the smartphone and the entity to provide information to the entity;”**

99. Barnett discloses this limitation for the same reasons as I discussed for limitation [1.a], which recites identical limitations (but additionally recites limitations relating to a “short-range link”). (*See my analysis and discussion above in Section VIII.A.1.ii.*)

- iii) **[16.b] “refraining from communicating between the smartphone and the entity by the smartphone using the first air interface absent the proximity criterion having been satisfied between the smartphone and the entity; and”**

100. Barnett discloses this limitation for the same reasons as I discussed for limitation [1.b]. (*See my analysis and discussion above in Section VIII.A.1.iii.*)

- iv) **[16.c] “communicating, by the smartphone, using the second air interface to receive a communications service via the second air interface, wherein the smartphone receives the communications service via the second air interface but does not receive the communications service from the entity via the first air interface,”**

101. Barnett discloses this limitation for the same reasons as I discussed for limitation [1.c], which recites substantially similar limitations (but additionally recites limitations relating to a “base station”). (See my analysis and discussion above in Section VIII.A.1.iv.)

- v) **[16.d] “wherein the communicating between the smartphone and the entity using the first air interface responsive to the proximity criterion having been satisfied between the smartphone and the entity to provide information to the entity is performed concurrently with the communicating by the smartphone using the second air interface to receive the communications service via the second air interface,”**

102. Barnett discloses and/or suggests this limitation for the same reasons as I discussed for limitation [1.d], which recites substantially similar limitations (but additionally recites limitations relating to a “short-range link” and “base station”). (See my analysis and discussion above in Section VIII.A.1.v.)

- vi) **[16.e] “wherein the communicating between the smartphone and the entity using the first air interface responsive to the proximity criterion having been satisfied between the smartphone and the entity to provide information to the entity is performed over a point-to-point short-range link between the smartphone and the entity using a time division duplex protocol, and”**

103. Barnett discloses and/or suggests this limitation for the same reasons as I discussed for limitation [1.a] (describing the “short-range link”) and claim 5, which recites substantially similar limitations. (*See* my analysis and discussion above in Sections VIII.A.1.ii and VIII.A.4.)

- vii) **[16.f] “wherein the entity is not involved in providing the communications service.”**

104. Barnett discloses this limitation. As I discussed for limitations [1.a] and [1.c], the NFC-enabled check-out display (“entity”) used for completing a transaction via NFC is not involved in providing cellular service to the phone (“not involved in providing the communications service”). (*See* my analysis and discussion above in Sections VIII.A.1.ii, VIII.A.1.iv.)

2. Claim 18

i) [18.pre] “A smartphone comprising:”

105. Barnett discloses this limitation for the same reasons as I discussed for limitation [11.pre]. (*See my analysis and discussion above in Section VIII.A.9.i.*)

ii) [18.a] “a processor that is configured to control the smartphone to perform operations comprising:”

106. Barnett discloses this limitation for the same reasons as I discussed for limitation [11.a]. (*See my analysis and discussion above in Section VIII.A.9.ii.*)

iii) [18.b] “communicating between the smartphone and an entity using a first air interface responsive to a proximity criterion having been satisfied between the smartphone and the entity to provide information to the entity;”

107. Barnett discloses this limitation for the same reasons as I discussed for limitation [11.b], which recites identical limitations (but additionally recites limitations relating to a “short-range link”). (*See my analysis and discussion above in Section VIII.A.9.iii.*)

iv) [18.c] “refraining from communicating between the smartphone and the entity by the smartphone using the first air interface absent the proximity criterion having been satisfied between the smartphone and the entity; and”

108. Barnett discloses this limitation for the same reasons as I discussed for limitation [1.b]. (*See my analysis and discussion above in Section VIII.A.1.iii.*)

- v) **[18.d] “communicating, by the smartphone, using a second air interface to receive a communications service via the second air interface, wherein the smartphone receives the communications service via the second air interface but does not receive the communications service from the entity via the first air interface,”**

109. Barnett discloses this limitation for the same reasons as I discussed for limitations [1.pre] (discussing “first air interface” and “second air interface”) and [16.c] (reciting nearly identical language as limitation [18.d]). (*See* my analysis and discussion above in Sections VIII.A.1.i, VIII.B.1.iv.)

- vi) **[18.e] “wherein the communicating between the smartphone and the entity using the first air interface responsive to the proximity criterion having been satisfied between the smartphone and the entity to provide information to the entity is performed concurrently with the communicating by the smartphone using the second air interface to receive the communications service via the second air interface,”**

110. Barnett discloses and/or suggests this limitation for the same reasons as I discussed for limitation [16.d]. (*See* my analysis and discussion above in Section VIII.B.1.v.)

- vii) **[18.f] “wherein the communicating between the smartphone and the entity using the first air interface responsive to the proximity criterion having been satisfied between the smartphone and the entity to provide information to the entity is performed over a point-to-point short-range link between the smartphone and the entity using a time division duplex protocol, and”**

111. Barnett discloses and/or suggests this limitation for the same reasons as I discussed for limitation [16.e]. (*See* my analysis and discussion above in Section VIII.B.1.vi.)

- viii) **[18.g] “wherein the entity is not involved in providing the communications service.”**

112. Barnett discloses this limitation for the same reasons as I discussed for limitation [16.f]. (*See* my analysis and discussion above in Section VIII.B.1.vii.)

C. Barnett, Byrne, and White Disclose and/or Suggest Claims 4, 10, and 14

1. Claim 4

i) [4.pre] “The method according to claim 1,”

[4.a] “wherein the entity comprises a first device,”

113. Barnett discloses these limitations. As I discussed for limitations [1.pre]-[1.a], the “entity” is an NFC-enabled check-out display 32 (“wherein the entity comprises a first device”). (See my analysis and discussion above in Sections VIII.A.1.i-ii.)

ii) [4.b] “wherein the information provided to the entity comprises first information, and”

114. Barnett discloses this limitation. As I discussed for limitation [1.a], the consumer’s smartphone acts as a credit card and provides payment information (e.g., credit card number) (“information”) to the NFC-enabled check-out display 32 (“entity”) when completing a transaction (“wherein the information provided to the entity comprises first information”). (See my analysis and discussion above in Section VIII.A.1.ii.)

iii) [4.c] “wherein the method further comprises:”

[4.d] “selectively sending, by the smartphone, second information to a second device and receiving, by the smartphone, third information from the second device responsive to the proximity criterion having been satisfied between the smartphone and the entity,”

115. Barnett in view of Byrne and White discloses and/or suggests these limitations. While Barnett does not explicitly disclose “selectively sending, by the smartphone, second information to a second device and receiving, by the smartphone, third information from the second device” in response to the mobile phone being brought within the effective range of the NFC-enabled check-out display 32 (“responsive to the proximity criterion having been satisfied between the smartphone and the entity”), a person of ordinary skill in the art would have been motivated to implement this feature in view of White.

116. Like Barnett, White discloses a system/method of using a mobile device to perform a financial transaction at a point-of-sale device. White describes a “system and method of completing a pending purchase.” (EX1007, Abstract.) “The system and method include one or more communication devices, wherein a first communication device participates in a transaction with a point-of-sale [device].” (*Id.*, 3:21-23.) White discloses that the consumer’s device (the first communications device) may be a mobile phone. (*Id.*, 3:35-36 (“The **first communications device may be a mobile device** such as a wireless handset.”)),

4:15-17 (“In the preferred embodiment, the **first communication device 120 is a mobile communication device, such as a mobile telephone** or mobile device.”).)

The “point-of-sale (POS) device...records sales and mediates payments for products or services.” (*Id.*, 3:46-56.) For example, “[i]n credit card transactions, the POS device 102 may communicate with a credit card payment system to obtain payment or payment authorization.” (*Id.*, 3:56-58.) “The POS device 102 may mediate payment from an electronic purse, a debit card, or other payment methods.” (*Id.*, 3:58-60.) White explains that “[t]he POS device 102 communicates with the first communication device 120 to provide purchase information and to receive...payment information, such as credit card numbers.” (*Id.*, 3:60-65.) The user’s mobile device (the first communication device) “may include one or more adapters for communicating with the POS device 102,” such as a “contactless chip operable to provide a communication link with a compatible device using contactless communication.” (*Id.*, 5:6-10.) Thus, White is similar to Barnett, which discloses a system/method of purchasing products in a store at a point-of-sale terminal using a chip-enabled mobile phone (e.g., NFC, which a person of ordinary skill in the art would have understood is implemented via a chip/tag in the mobile phone). (*See my analysis and discussion above in Section VIII.A.1.i.*) In my opinion, a person of ordinary skill in the art would have therefore been motivated to consider the teachings of White when implementing the Barnett system/method.

117. White additionally discloses that its system/method may be used for “mobile payment approval.” (EX1007, 1:23-25.) White discloses that the “system 100 for subscriber payment approval” is shown in Figure 1 below and “includes a point-of-sale (POS) device 102” (in green below), “a network 110, a first communication device 120” (in red below), “a second communication device 130” (in blue below), “and a proxy subscriber approval server 140.” (*Id.*, 3:46-50.) Like the first communication device (in red below), the second communication device (in blue below) may be a computer-based entity such as a mobile phone. (*Id.*, 4:11-15 (“The first communication device 120 and **the second communication device 130 may be computer-based entities, such as** personal digital assistants (PDAs), **mobile phones**, personal computers (PC), laptop computers, or traditional wireless or wire-line telephones.”).) Communication between the first and second communication devices occurs “through the network 110” (*id.*, 4:17-19), which may include “the Internet, a telecommunication wired/wireless network, and/or other computer-based networked systems” (*id.*, 4:5-7).

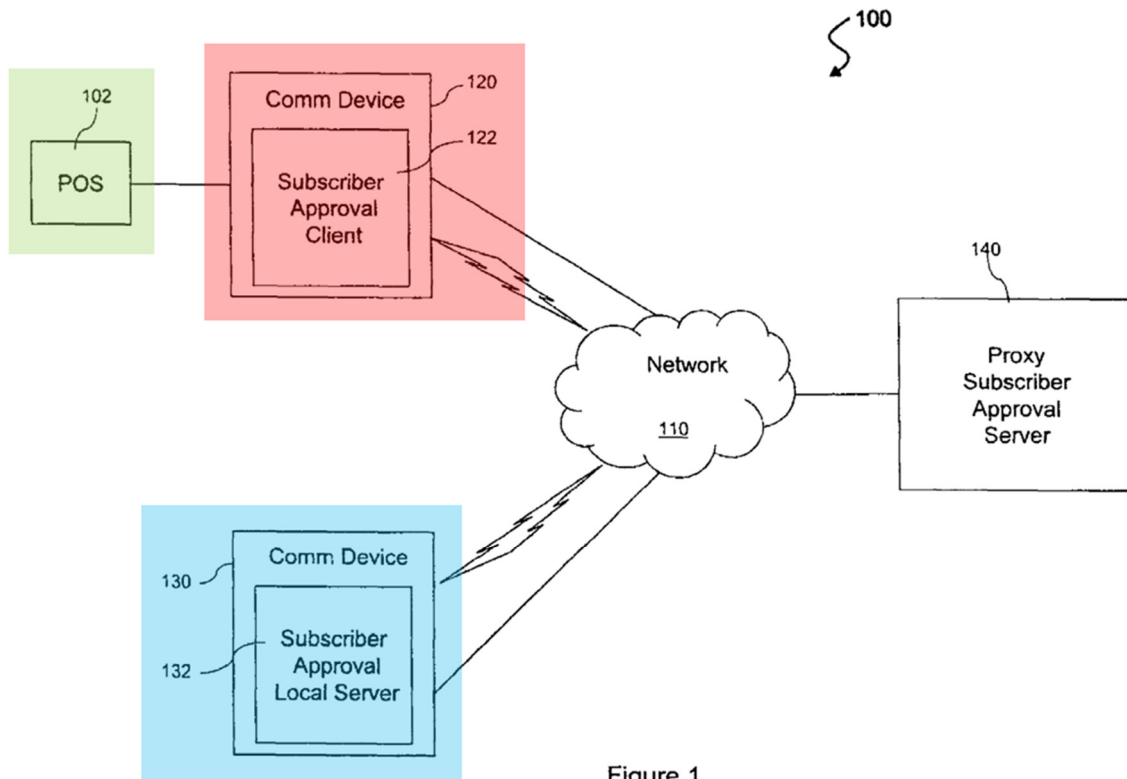


Figure 1

(*Id.*, FIG. 1 (annotated).)

118. White discloses that when initiating a transaction, a consumer's first communication device 120 is first "presented to the POS device 102." (EX1007, 4:43-44.) "The POS device 102 communicates purchasing information to the first communication device 120 that may include purchase price, identity of the purchased item, identity of the vendor and/or location of the POS device 102." (*Id.*, 4:44-48.) Upon receiving the purchasing information from the POS terminal/device, the first communication device then initiates a subscriber payment

approval process in which the first device transmits a subscriber approval request (containing the purchasing information) to the second communication device, which is responsible for approving the pending purchase. (*Id.*, 1:41-44 (“The method also comprises transmitting a **subscriber approval request** from the first communication device to a second device, wherein the subscriber approval request includes the purchase information.”), 4:48-52 (“The first communication device 120 initiates a **subscriber payment approval process that may involve the first communication device 120 communicating with the second communication device 130 to provide purchasing information to the second communication device 130 and the second communication device 130 determining approval and communicating approval to the first communication device 120.**”).) The second communication device 130 communicates approval of the transaction via a subscriber approval response sent to the first communication device 120. (*Id.*, 1:45-48 (“The method further comprises providing payment information from the first communication device to the point-of-sale device to complete the pending purchase based on a **subscriber approval response.**”), 4:52-54 (“[T]he **second communication device 130** determin[es] approval and **communicat[es] approval to the first communication device 120.**”).)

119. If the second communication device 130 does not acknowledge the communication of the first communication device 120, the first communication

device 120 may either interpret the lack of response as a rejection or may direct the approval request to the proxy subscriber approval server 140, a computer-based entity (e.g., a general purpose computer) which can decide whether to approve the transaction based on certain rules. (EX1007, 3:26-31 (“The second communication device and/or the first communication device may also communicate with a **proxy server wherein one or more rules may be stored. The rules determine approval of transactions** with a point-of-sale on behalf of the first communication device.”), 4:59-5:5 (“In the event that the **second communication device 130 does not acknowledge the communication** of the first communication device 120, such as when the second communication device 130 is unavailable, the **first communication device 120 may direct an approval request to the proxy subscriber approval server 140. The proxy subscriber approval server 140 performs the approval** that otherwise the second communication device 130 would provide. This behavior may be considered a fall-back or optional response by the first communication device 120. In another embodiment, the **first communication device 120 interprets the lack of response as equivalent to a response rejecting the request for approval** and no approval request is directed to the proxy subscriber approval server 140.”), 7:4-7 (“The **proxy subscriber approval server 140** includes one or more **computer-based entities**, such as a **general-purpose computer system.**”).)

120. White explains that while communicating with the proxy subscriber approval server may be a fall-back procedure, it may also be used to apply approval rules without communicating with a second communication device (e.g., a parent). (*Id.*, 5:30-44 (“[T]he first communication device 120 includes a **subscriber approval client 122**...[which] may also operate to **communicate with...the proxy subscriber approval server 140** through the network 110.”), 6:27-39 (“Alternatively, the **proxy subscriber approval server 140** may apply the rules to approve payment via the subscriber approval client **122**....[C]ertain rules may allow for immediate approval while other rules require an attempt to communicate with the second communication device 130 before exercising the rule to determine approval as a fall-back procedure.”), FIG. 2B (depicting at blocks 212 and 214 that the proxy subscriber approval server may be initially chosen as the approval entity), 7:53-8:3 (describing FIG. 2B); *see also id.*, 5:30-44.)

121. If, however, the transaction is approved (e.g., by the second communication device or the proxy subscriber approval server), the consumer’s “first communication device 120 then provides credit card information, debit card information, or electronic purse information to the POS device 102 to complete the payment transaction.” (EX1007, 4:55-58.) The POS device then sends that payment information to an authorization entity, such as a financial institution,

which returns a completion response upon authorization, thereby completing the payment approval process. (*Id.*, 3:31-39 (“Following approval, **authorization is requested from the credit card company by the point-of-sale system**, typically through normal means.”), 3:56-58 (“In credit card transactions, **the POS device 102 may communicate with a credit card payment system to obtain payment or payment authorization.**”), 7:40-44 (“The **POS device 102** receives payment information from the subscriber approval client 122, **submits this payment information to an authorization entity, such as a financial institution, and receives a response back from the authorization entity.** The process then exits.”).)

122. White discloses that the above steps performed by the first communication device 120 may be performed by the first device’s “subscriber approval client 122...enabled as a software program, an application, or a function,” where the subscriber approval client 122 “operate[s] to collect pending purchase information from the POS device 102,” “includes information for completing the pending purchase,” and “may also operate to communicate with the second communication device 130 and/or the proxy subscriber approval server 140 through the network 110.” (EX1007, 5:30-44.) Similarly, White discloses that the above steps performed by the second communication device 130 may be performed by the second device’s “subscriber approval local server” which

“include[s] one or more payment information associated with a credit card number, a debit card number, and/or other monetary account information,” as well as “rules established within the subscriber local approval server” which may be “appl[ied]...to approve payment via the subscriber approval client 122.” (*Id.*, 6:9-39.)

123. White discloses that the above payment approval process is applicable to a variety of different scenarios, such that the second communication device to approve the transaction is selected based on the context. For example, an owner of a credit card or debit card may be required to remotely authorize (e.g., from a second, remotely located device) transactions performed by an authorized user of the credit card (e.g., using a first device). (EX1007, 3:7-21 (“**[T]he owner of a credit card can block or limit available credit to an authorized user of a credit card....[T]he embodiments discussed below contemplate a system and method for completing a pending purchase at a point-of-sale involving a **purchase-by-purchase approval by the owner or controller of the credit card or other financial account, for example by a remote device or individual controlling the remote device.**”), 4:38-42 (“For example, the **first communication device 120 and/or the second communication device 130 may include** information such as a **credit card number, a debit card number, other account information, and rules on which to base decisions.**”), 4:43-58 (“The first communication device**

120 initiates a subscriber payment approval process that may involve the **first communication device 120 communicating with the second communication device 130 to provide purchasing information to the second communication device 130 and the second communication device 130 determining approval and communicating approval to the first communication device 120.** The first communication device 120 then provides credit card information, debit card information, or electronic purse information to the POS device 102 to complete the payment transaction.”.) In other remote authorization scenarios, “the operation of the system 100 for subscriber payment approval may be employed for parental control of child spending at the POS device 102,” where the parent’s “second communication device 130 may be alerted through voice, video, and/or text messaging” and the “parent may have the option of approving or rejecting the pending purchase.” (*Id.*, 6:9-64.) Alternatively, “a user of the second communication device 130 may include an employer (i.e., a boss or manager of a business) while, the first communication device 120 may be operated by an employee,” where “[t]he employer may in real-time control the pending purchase(s) made on behalf of the employee.” (*Id.*, 6:65-7:3.) In other words, White discloses that the second communication device that is sent a subscriber approval request by the first communication device may be selectively chosen based on the card used and the relationship between users (i.e., the request is sent

to a remotely located device operated by the owner of a specific card used by the authorized user, or by the parent or boss of that authorized user) or based on various approval rules (i.e., the rules determine whether the request may be initially sent to the proxy subscriber approval server).

124. Accordingly, White discloses that the consumer's phone (first communication device) obtains authorization to conduct a financial transaction by selectively sending a subscriber approval request to a second communication device (e.g., a device corresponding to the owner of the card used for the transaction, or alternatively a proxy subscriber approval server, depending on the approval rules in place) ("selectively sending, by the smartphone, second information to a second device") and receiving a subscriber approval response ("receiving, by the smartphone, third information from the second device"). As I discussed above, this authorization process is performed in response to the phone (which may contain a contactless chip) is presented to a POS terminal ("responsive to the proximity criterion having been satisfied between the smartphone and the entity").

125. In my opinion, a person of ordinary skill in the art would have been motivated to further modify the Barnett system/method to incorporate such an authorization feature, similar to that disclosed by White, to enable the authorization communication mode and send an authorization request to a second

communications device in response to the presentation of the consumer's mobile device in proximity to an NFC-enabled payment terminal. It was well known at the time of the alleged invention that authorization rules could be established such that one individual (or their device) could remotely authorize transactions performed by another individual using a mobile phone. (*See, e.g.*, EX1006, 12 (parent may set times during which their child is able to use a near field/RF tag to make payments, e.g., for school lunch); EX1009, ¶¶[0004], [0022], [0028] (describing transaction approval by the device of an "authorizer"); EX1010, FIG. 1, ¶[0016] (authorizing party may approve e-transactions of a proposing party); EX1011, FIG. 2, Abstract, ¶¶[0011]-[0012] (a third party authorizer/approver (e.g., parent or legal guardian of a child) may approve the purchaser's e-commerce transactions according to certain authorization rules); EX1012, ¶¶[0027], [0050]-[0059] (describing approval of a transaction/funds transfer by a third party, such as a parent); EX1013, Abstract, ¶¶[0174]-[0200] (parent may use their own mobile phone to authorize charges requested by a child's mobile phone).) Thus, a person of ordinary skill in the art would have been motivated to consider various authorization methods in order to allow for purchase approval in the Barnett system/method.

126. White discloses that its authorization method is beneficial because unlike other prior art authorization methods, it allows for an owner of a card/payment method to remotely approve transactions on a purchase-by-purchase

basis. (EX1007, 3:7-21 (“Currently, the owner of a credit card can block or limit available credit to an authorized user of a credit card. The owner may limit an authorized user of the credit card to specific type of purchases and/or types of point-of-sale. The limitations are applied by the credit card company when a point-of-sale entity attempts to authorize payment from the credit care. The limitations may be defined by the credit card owner. **However, the credit card owner may not readily revise the limitations at any time and/or on a purchase-by-purchase basis....[T]he embodiments discussed below contemplate a system and method for completing a pending purchase at a point-of-sale involving a purchase-by-purchase approval by the owner or controller of the credit card or other financial account, for example by a remote device or individual controlling the remote device.”**), 6:9-64 (describing similar parental approval process on a purchase-by-purchase basis), 6:65-7:30 (describing employer approval process which may be performed with “real-time control”).) Thus, a person of ordinary skill in the art would have understood that White’s authorization method would have allowed for enhanced flexibility, while still offering the security benefits of an authorization process that allows a card owner to approve transactions performed by authorized users. In my opinion, a person of ordinary skill in the art would have also understood that White’s authorization method would have improved security by increasing oversight of transactions and

reducing the risk of unauthorized or inappropriate transactions, consistent with Barnett's security goals. (EX1005, ¶¶[0005], [0012], [0017].)

127. In my opinion, a person of ordinary skill in the art would have also had a reasonable expectation of success combining the teachings of Barnett and White. As I discussed above, both references are in the same field of art. Moreover, Barnett suggests that its system/method is flexible and modifications to the NFC-enabled mobile phone are contemplated. (EX1005, ¶[0044].) In my opinion, a person of ordinary skill in the art would have understood that White's authorization method would have been easily implemented in the Barnett system/method because Barnett and White use similar technologies. For example, White discloses that the first mobile device may communicate with a second mobile devices via the Internet or similar wireless network communication (EX1007, 4:3-19), and Barnett discloses that the consumer's mobile phone can communicate over a Wi-Fi system (EX1005, ¶¶[0016], [0026], [0035]). In addition, Barnett already discloses configuring Wi-Fi communication in response to a user presenting their mobile phone in proximity to an NFC-enabled display/payment terminal. (*Id.*, ¶[0035].) Thus, a person of ordinary skill in the art would have recognized that it would be straightforward to modify the Barnett system/method to include a feature similar to that disclosed by White, in which the first mobile device uses the store's Wi-Fi network to communicate with a remote

second mobile device in response to the first device being presented in proximity to an NFC-enabled display/payment terminal.

128. In my opinion, a person of ordinary skill in the art would have had the skill to implement and reasonable expectation of success in achieving such a modification because it would have involved a combination of known technologies (e.g., known systems/methods for performing financial transactions using an NFC-enabled mobile phone (Barnett)) according to known methods (e.g., known approval mechanisms for authorizing purchases in mobile phone payment systems (White)) to yield the predictable result of a modified Barnett-Byrne-White system/method that further implements a process in which, in response to a user presenting their mobile device in proximity to a POS terminal and receiving purchase information in return (“responsive to the proximity criterion having been satisfied between the smartphone and the entity”), transaction authorization request is obtained by the mobile device from a second communication device (e.g., a device corresponding to the card owner and selectively chosen based on the card used for the transaction, or a proxy subscriber approval server, selectively chosen based on the approval rules in place) by sending a subscriber approval request to the second device and receiving a subscriber approval response in return (“selectively sending, by the smartphone, second information to a second device and receiving, by the smartphone, third information from the second device”).

iv) [4.e] “wherein the smartphone does not receive the communications service from the second device.”

129. The Barnett-Byrne-White combination discloses and/or suggests this limitation. As I discussed for limitation [1.c], the consumer’s mobile phone receives the cellular service (“communications service”) from a base station. (*See* my analysis and discussion above in Section VIII.A.1.iv.) As I discussed for limitations [4.c]-[4.d], the “second device” is a second mobile device or proxy subscriber approval server used to authorize a transaction, where communication between the mobile device and second device may occur over Wi-Fi. (*See* my analysis and discussion above in Section VIII.C.1.iii.) Accordingly, “the smartphone does not receive the communications service from the second device.”

2. Claim 10

i) [10.pre] “The method of claim 1,”

[10.a] “wherein the entity comprises a first device to which the smartphone provides the information over the short-range link, and”

130. Barnett discloses these limitations. As I discussed for limitations [1.pre]-[1.a], the “entity” is a NFC-enabled check-out display 32 (“wherein the entity comprises a first device”) to which the consumer’s phone provides payment information over the NFC short-range link (“to which the smartphone provides the information over the short-range link”). (*See* my analysis and discussion above in Sections VIII.A.1.i-ii.)

- ii) **[10.b] “wherein the method further comprises sending the information to a second device responsive to the proximity criterion having been satisfied between the smartphone and the entity.”**

131. The Barnett-Byrne-White combination discloses and/or suggests these limitations. As I discussed for limitation [4.d], a person of ordinary skill in the art would have been motivated to modify the Barnett system/method in view of White such that a consumer’s mobile phone seeks authorization for a transaction by sending a subscriber approval request (which includes the payment/purchasing information (“the information”)) to a second communication device or proxy subscriber approval server (“sending the information to a second device”) in response to the mobile phone being brought within the effective range of the NFC-enabled check-out display (“responsive to the proximity criterion having been satisfied between the smartphone and the entity”). (See my analysis and discussion above in Section VIII.C.1.iii.)

3. Claim 14

- i) **[14.pre] “The smartphone according to claim 11,”**
[14.a] “wherein the entity comprises a first device,”

132. Barnett discloses these limitations for the same reasons as I discussed for limitations [4.pre]-[4.a]. (See my analysis and discussion above in Section VIII.C.1.i.)

ii) [14.b] “wherein the information provided to the entity comprises first information, and”

133. Barnett discloses this limitation for the same reasons as I discussed for limitation [4.b]. (*See* my analysis and discussion above in Section VIII.C.1.ii.)

iii) [14.c] “wherein the operations further comprise:”

[14.d] “selectively sending, by the smartphone, second information to a second device and receiving, by the smartphone, third information from the second device responsive to the proximity criterion having been satisfied between the smartphone and the entity,”

134. The Barnett-Byrne-White combination discloses and/or suggests these limitations for the same reasons as I discussed for limitations [4.c]-[4.d]. (*See* my analysis and discussion above in Section VIII.C.1.iii.)

iv) [14.e] “wherein the smartphone does not receive the communications service from the second device.”

135. The Barnett-Byrne-White combination discloses and/or suggests this limitation for the same reasons as I discussed for limitation [4.e]. (*See* my analysis and discussion above in Section VIII.C.1.iv.)

IX. CONCLUSION

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



Dated: August 11, 2025

By: _____

Sandeep Chatterjee