

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

SECURE COMMUNICATION TECHNOLOGIES, LLC,
Patent Owner.

Case IPR2025-01183

Patent No. 11,687,971

**DECLARATION OF MARK LANNING IN SUPPORT
OF PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 11,687,971**

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I. INTRODUCTION

1. My name is Mark Lanning and I am currently the President of Telecom Architects, Inc., and Reticle Consulting, LLC. I have been retained on behalf of Google LLC (“Google” or “Petitioner”), to provide my opinions on certain issues related to U.S. Patent No. 11,687,971 (“the ‘971 patent”) in connection with the above-captioned inter partes review (IPR) proceeding. In particular, I have been asked to provide my insights, analysis, and opinions regarding whether claims 1-8, 10, 12-16, 18-19, 22-23, 26-30, 34-44, 46, 48-59, 62, 64-68, 72, 75-76, and 79-81 of the ‘971 patent (“Challenged Claims”) are obvious over the prior art references identified below.

2. The ‘971 patent is titled “EFFICIENT AND SECURE COMMUNICATION USING WIRELESS SERVICE IDENTIFIERS,” names as inventors James A. Proctor, Jr. and James Arthur Proctor, III, and is currently owned by Secure Communication Technologies, LLC. I have considered the ‘971 patent. I understand that the ‘971 patent has been provided as EX1001.

3. The file history of the ‘971 patent has been provided as EX1002. I have considered this file history, and I will refer to it as the “‘971 File History” or by its exhibit number.

4. I understand that the ‘971 patent claims to be a continuation of many patent applications (as shown on the first two pages of EX1001) and also claims

priority to provisional application Nos. 61/095,359 (filed September 9, 2008) and 61/095,001 (filed September 8, 2008) (“the Provisional Applications”). I have been asked to assume the Challenged Claims are entitled to the September 8, 2008 filing date for the purposes of rendering my opinions in this declaration.

5. My analysis and conclusions set forth in this declaration are based on my educational background and experiences in the field (see Section II). I am qualified to opine concerning what a person of ordinary skill in the art would have known and understood during that time. Before September 8, 2008, my level of skill in the art was at least that of a person of ordinary skill. I am qualified to opine concerning what a person of ordinary skill in the art would have known and understood at the time of the ‘971 patent’s purported invention. My analysis and conclusions herein are from the perspective of a person of ordinary skill in the art as of September 8, 2008.

6. As part of my independent analysis for this declaration, I have considered the following: the background knowledge/technologies that were commonly known to persons of ordinary skill in this art during the time before the earliest claimed priority date for the ‘971 patent; my own knowledge and experiences gained from my work experience in the field of the ‘971 patent and related disciplines; and my experience in working with others involved in this field and related disciplines.

7. I have considered the following non-exhaustive list of references in preparing my declaration. I have been instructed to assume that each of these references qualifies as prior art.

8. U.S. Patent Application Publication No. 2005/0250552 to Eagle et al., titled “COMBINED SHORT RANGE RADIO NETWORK AND CELLULAR TELEPHONE NETWORK FOR INTERPERSONAL COMMUNICATIONS” filed on May 5, 2005 and published on November 10, 2005. I understand that a copy of this reference has been designated as Exhibit EX1005. Throughout my declaration, references to “Eagle” are to Exhibit EX1005.

9. U.S. Patent Application Publication No. 2010/0138481 to Behrens, titled “DEVICE AND METHOD FOR ESTABLISHING SOCIAL NETWORKS THROUGH THE USE OF WIRELESS TECHNOLOGY” filed on April 30, 2008 and published on June 3, 2010. I understand that a copy of this reference has been designated as EX1006. Throughout my declaration, references to “Behrens” are to EX1006.

10. U.S. Patent No. 7,590,086 to Olkkonen et al., titled “AD HOC NETWORK DISCOVERY MENU,” filed on November 3, 2004 and issued on September 15, 2009. I understand that a copy of this reference has been designated as Exhibit EX1007. Throughout my declaration, references to “Olkkonen” are to EX1007.

11. I am being compensated by Google at my standard hourly consulting rate of \$550 for my time on this matter. My compensation is not dependent on the outcome of this proceeding or any other proceeding between the parties.

12. In forming my opinions, I relied on the documents cited in this declaration and the documents identified in the table below. These documents comprise patents, file histories, printed publications, and other related documents. As I discuss below, each document is a type that experts in my field would have reasonably relied upon when forming their opinions. Further, a person of ordinary skill in the art (“POSITA”) would have had access to each document either through the applicable patent offices and/or well-known libraries, conferences, or publications in the field. My opinions are also based upon my personal and professional experience.

Exhibit	Description
1001	U.S. Patent No. 11,687,971
1002	Prosecution History of U.S. Patent No. 11,687,971
1005	U.S. Patent Application No. 2005/0250552 (“Eagle”)
1006	U.S. Patent Application Publication No. 2010/0138481 (“Behrens”)
1007	U.S. Patent No. 7,590,086 (“Olkkonen”)
1008	Bluetooth Special Interest Group, Bluetooth Core Specification Version 2.1 + EDR (July 26, 2007)
1009	Bluetooth Special Interest Group, Assigned Numbers (December 14, 2002) (https://web.archive.org/web/20021214114356/http://www.bluetooth.org/g/assigned-numbers/baseband.htm)
1010	U.S. Patent Application Publication No. 2002/0131445
1011	U.S. Patent Application Publication No. 2002/0174364
1012	U.S. Patent Application Publication No. 2005/0164717

Exhibit	Description
1013	U.S. Patent Application Publication No. 2006/0165100
1035	Apple Inc., iPhone 3G Technical Specifications (https://web.archive.org/web/20080725084414/http://www.apple.com/iphone/specs.html)
1036	Apple Inc., iPhone User Guide for iPhone OS 3.1 Software (https://cdsassets.apple.com/live/6GJYWVAV/user/ma616_iphone_ios3_1_user_guide.pdf)

II. QUALIFICATIONS

13. I am qualified by education and experience to testify as an expert in the field of telecommunications including circuit-switched networks, multiple generations of cellular networks, and packet-switched networks. The following overview of my background pertains to my qualifications for providing expert testimony in this matter.

14. I am currently the president of two consulting companies: Telecom Architects, Inc. and Reticle Consulting, LLC. Telecom Architects provides consulting services to fixed and wireless telecom service providers and their equipment suppliers. I have been President of Telecom Architects since 1999.

15. I have over 40 years of experience working in the telecommunications industry that began in the U.S. Army Signal Corp. My experience relevant to this case includes my work as an architect of various telecommunications systems and my work developing equipment used in telecommunications systems. This experience includes extensive design, implementation and testing work on the

wireless interface functionality (between the base station and mobile phones) for multiple generations of cellular standards.

16. I received a B.S. in Computer Science from Southern Methodist University (SMU) in 1983.

17. DSC, now a part of Alcatel, hired me in 1983 where I was a software development manager on the team responsible for updating DSC's PSTN telephone switch into a Mobile Switching Center (MSC) for Motorola to sell as a part of their cellular product offering in the U.S. and many other countries.

18. In 1991, I began working as a consultant to Motorola for its "SuperCell" base station product and as a consultant to British Telecom to upgrade its current analog cellular network, and I was one of the network architects responsible for the design and rollout of its Global System for Mobile Communications (GSM) network known as Cellnet. Beginning in the early 1990s, I was responsible for implementation of the SMS service, including working with suppliers of the SMS Center (SMSC), Mobile Switching Centers (MSCs) and cellular phones to define and roll out the functionality that was to be provided.

19. I was personally involved with Nokia, Ericsson, Motorola and other equipment suppliers in this effort.

20. Since 1995, I have also provided second generation (2G) and third generation (3G) Code Division Multiple Access ("CDMA") network architecture

and equipment design and implementation consulting services to companies such as Sprint, Nextel, Nokia, and Ericsson. While consulting to Nextel, which has since become part of Sprint, as one of the network architects for its iDEN network, one of my responsibilities was to define the network and mobile phone functionality required to support MMS and advanced data communications capability.

21. In addition to the above, since at least 2007, I have experience analyzing Bluetooth functionality, designs and implementations related to smart phones, pads, watches, computers and other devices that use Bluetooth functionality to connect with these devices, for example, earpieces, headsets and music players. Specifically, I have performed detailed Bluetooth analysis on Apple iPhones, iPads, watches, Mac computers and at least Samsung's Android smart phones.

22. In addition to my cellular experience listed above, for at least the past ten years, I have kept up to date my knowledge of the present-day 3G, 4G, and 5G cellular network and wireless standards and their associated equipment and protocols. I have done this through my study of each new release of these standards, technical books and trade publications as well as my expert work in legal cases, which has involved evaluating the functionality of many different types of network equipment, mobile devices, and baseband chipsets. I have also

evaluated thousands of cellular technology patents, and most of these were for cellular phone and/or base station functionality.

23. I am a member of the Institute of Electrical and Electronics Engineers (IEEE), including the IEEE Standards Association. I am also a member of the Association for Computing Machinery (ACM). While employed at DSC, I was a member of the ANSI T1 and T1X1 standard groups responsible for the definition and standardization of the Advanced Intelligent Network (AIN) and Signaling System 7 (SS7) protocol.

24. A detailed record of my professional qualifications, including a list of publications, awards, and professional activities, is set forth in my curriculum vitae submitted with this report as EX1004.

III. LEGAL UNDERSTANDINGS

A. My Understanding of Claim Construction

25. I am not an attorney and offer no legal opinions, but in the course of my work, I have had experience studying and analyzing patents and patent claims from the perspective of a person skilled in the art.

26. I have been informed that patent claims are construed from the viewpoint of a person of ordinary skill in the art of the patent at the time of the invention (a “POSITA”). I have been informed that patent claims generally should be interpreted consistent with their plain and ordinary meaning as understood by a

person of ordinary skill in the art in the relevant time period (i.e., at the time of the purported invention, or the so called “effective filing date” of the patent application), after reviewing the patent claim language, the specification, and the prosecution history (i.e., the intrinsic record).

27. I have further been informed that a person of ordinary skill in the art must read the claim terms in the context of the claim itself, as well as in the context of the entire patent specification. I understand that in the specification and prosecution history, the patentee may specifically define a claim term in a way that differs from the plain and ordinary meaning. I understand that the prosecution history of the patent is a record of the proceedings before the U.S. Patent and Trademark Office and may contain explicit representations or definitions made during prosecution that affect the scope of the patent claims. I understand that an applicant may, during the course of prosecuting the patent application, limit the scope of the claims to overcome prior art or to overcome an examiner’s rejection, by clearly and unambiguously arguing to overcome or distinguish a prior art reference, or clearly and unambiguously disavowing claim coverage.

28. In interpreting the meaning of the claim language, I understand that a person of ordinary skill in the art may also consider “extrinsic” evidence, including expert testimony, inventor testimony, dictionaries, technical treatises, other patents, and scholarly publications. I understand this evidence is considered to ensure that

a claim is construed in a way that is consistent with the understanding of those of ordinary skill in the art at the time of the claimed invention. For example, this can be useful for a technical term whose meaning may differ from its ordinary English meaning. I understand that extrinsic evidence may not be relied on if it contradicts or varies the meaning of claim language provided by the intrinsic evidence, particularly if the applicant has explicitly defined a term in the intrinsic record.

B. My Understanding of Anticipation

29. I understand that a patent claim is invalid as “anticipated” if all the limitations of the claim are present, either expressly or inherently, in a single prior art publication or patent.

30. I also understand that a prior art reference can disclose a claimed feature because the feature is expressly described or because the feature is inherent in the disclosure. I understand that something is inherent in a prior art reference if the missing descriptive matter must necessarily be present, not merely probably or possibly present, and it would be so recognized by a person of ordinary skill in the art as of the priority date of the patent. I understand that it is acceptable to examine evidence outside of the prior art reference (i.e., extrinsic evidence) in determining whether a feature, while not expressly discussed in the reference, is necessarily present in it.

31. I have further been informed that where a reference discloses multiple

embodiments, the reference should not be limited to a preferred embodiment.

Instead, each disclosed embodiment may anticipate.

32. Moreover, I have been informed that as part of an anticipation analysis, it is proper to take into account not only specific teachings of the reference, but also the inferences that one skilled in the art would reasonably be expected to draw therefrom. A reference can anticipate a claim even if it does not expressly spell out all the limitations arranged or combined as in the claim, if a person of skill in the art, reading the reference, would at once envisage the claimed arrangement or combination.

C. My Understanding of Obviousness

33. I understand that a claim may be invalid if the subject matter described by the claim as a whole would have been obvious to a hypothetical person of ordinary skill in the art in view of a prior art reference or in view of a combination of references at the time the claimed invention was made. Therefore, I understand that obviousness is determined from the perspective of a hypothetical person of ordinary skill in the art and that the asserted claims of the patent should be read from the point of view of such a person at the time the claimed invention was made. I further understand that a hypothetical person of ordinary skill in the art is assumed to know and to have all relevant prior art in the field of endeavor covered by the patent in suit.

34. I have been informed that there are two criteria for determining whether prior art is analogous and thus can be considered prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the patentee's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the patentee is involved. I have also been informed that the field of endeavor of a patent is not limited to the specific point of novelty, the narrowest possible conception of the field, or the particular focus within a given field. I have also been informed that a reference is reasonably pertinent if, even though it may be in a different field from that of the patentee's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to a patentee's attention in considering their problem.

35. I have also been advised that an analysis of whether a claimed invention would have been obvious should be considered in light of the scope and content of the prior art, the differences (if any) between the prior art and the claimed invention, and the level of ordinary skill in the pertinent art involved. I understand as well that a prior art reference should be viewed as a whole.

36. I have also been advised that in considering whether a claimed invention would have been obvious over a combination of prior art references, I may assess whether there are apparent reasons to combine known elements in the

prior art in the manner claimed in view of interrelated teachings of multiple prior art references, the effects of demands known to the design community or present in the marketplace, and/or the background knowledge possessed by a person of ordinary skill in the art. I understand that other principles may be relied on in evaluating whether a claimed invention would have been obvious, and that these principles include the following:

- A combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results;
- When a device or technology is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or in a different one, so that if a person of ordinary skill can implement a predictable variation, the variation is likely obvious;
- If a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond their skill;
- An explicit or implicit teaching, suggestion, or motivation to combine two prior art references to form the claimed combination may demonstrate obviousness, but proof of obviousness does not depend on or require showing a teaching, suggestion, or motivation to combine;
- Market demand, rather than scientific literature, can drive design trends and may show obviousness;
- In determining whether the subject matter of a patent claim would have been obvious, neither the particular motivation nor the avowed purpose of the named inventor controls whether the claim is obvious;
- One of the ways in which a patent's subject can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims;

- Any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed;
- “Common sense” teaches that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle;
- A person of ordinary skill in the art is also a person of ordinary creativity, and is not an automaton;
- A patent claim can be proved obvious by showing that the claimed combination of elements was “obvious to try,” particularly when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions such that a person of ordinary skill in the art would have had good reason to pursue the known options within his or her technical grasp; and
- One should be cautious of using hindsight in evaluating whether a claimed invention would have been obvious.

37. I further understand that, in deciding as to whether the claimed invention would have been obvious to a person of ordinary skill, the Board may consider certain objective factors if they are present, such as: commercial success of products practicing the claimed invention; long-felt but unsolved need; teaching away; unexpected results; copying; and praise by others in the field. These factors are generally referred to as “secondary considerations” or “objective indicia” of nonobviousness. I understand, however, that for such objective evidence to be relevant to the obviousness of a claim, there must be a causal relationship (called a “nexus”) between the claim and the evidence, and that this nexus must be based on

a novel element of the claim rather than something in the prior art. I also understand that even when they are present, secondary considerations may be unable to overcome primary evidence of obviousness (such as motivation to combine with predictable results) that is sufficiently strong.

IV. TECHNOLOGY BACKGROUND AND STATE OF THE ART

A. The '971 Patent's Short Range or Bluetooth Wireless Protocol

38. The claims of the '971 patent require either a “short range wireless protocol” or “a Bluetooth wireless protocol” as the “the first wireless protocol.” Therefore, the “short range wireless protocol” can be the Bluetooth protocol.

39. The Bluetooth protocol is not novel to the disclosures or claims of the '971 patent. Multiple versions of the Bluetooth specifications were defined and were publicly available before the '971 patent.

B. The Bluetooth Standard

40. Specifically, the table and text below shows the Bluetooth specifications that were defined and that were publicly available before the September 8, 2008, Priority Date of the '971 patent. Specifically, the first version of the Bluetooth “Baseband and Link Manager Protocol” (version number 0.7) was defined on October 19, 1998 and the “first version of the Bluetooth Specification published on the public web site” (version 1.0a) was on July 26, 1999.

1.0a	July 26 1999	The first version of the Bluetooth Specification published on the public web site. Added part: Bluetooth Compliance Requirements.
1.0 draft	July 5th 1999	The following parts were added: Service Discovery Protocol (SDP), Telephony Control Specification (TCS), Bluetooth Assigned Numbers (appendix) and Message Sequence Charts (appendix)
0.9	April 130 1999	The following parts were added: IrDA Interoperability, HCI RS232 Transport Layer, HCI UART Transport Layer and Test Mode
0.8	Jan 21 1999	The following parts were added: Radio Specification, L2CAP, RFCOMM, HCI & HCI USB Transport Layer
0.7	Oct 19 1998	This first version only included Baseband and Link Manager Protocol

EX1008, p. 47 (highlighting in original).

41. Multiple updated and enhanced versions were also made publicly available after version 1.0a including the “Bluetooth Core V2.1 + EDR” specification, July 26, 2007 (“Bluetooth Specification”) that I am using to describe the Bluetooth functionality in this declaration. EX1008.



EX1008, p. 1.

a. Many Technology Companies and Engineers Are Involved with Defining the Bluetooth Specification

42. Many of the leading technology companies and their representatives were involved with the definition of the Bluetooth standards and compliance requirements as listed on 24 pages of this specification. EX1008, pp. 49-72. Based on at least the number of specifications that were published, the number of technical companies involved in defining and developing the functionality and the number of subject matter experts, and based on my own personal experience, the development and functionality of the Bluetooth functionality were of high interest to the communications industry and would have been well known by a person of ordinary skill in the art.

b. Bluetooth General Description

43. The Bluetooth Specification provides the following general description. I note that it is characterized as a “short-range communication system” that uses a “protocol stack,” which is related to how devices communicate in the ’971 patent and in the prior art.



1 GENERAL DESCRIPTION

Bluetooth wireless technology is a short-range communications system intended to replace the cable(s) connecting portable and/or fixed electronic devices. The key features of Bluetooth wireless technology are robustness, low power, and low cost. Many features of the core specification are optional, allowing product differentiation.

The Bluetooth core system consists of an RF transceiver, baseband, and protocol stack. The system offers services that enable the connection of devices and the exchange of a variety of classes of data between these devices.

EX1008, p. 87.

c. Overview of Operation

44. The Bluetooth Specification provides many Radio Frequency (RF) and protocol requirements that are beyond the scope of this declaration. I have highlighted some of the details in the passages below that are relevant.

The Bluetooth RF (physical layer) operates in the unlicensed ISM band at 2.4 GHz. The system employs a frequency hop transceiver to combat interference and fading and provides many FHSS carriers. RF operation uses a shaped, binary frequency modulation to minimize transceiver complexity. The symbol rate is 1 Megasymbol per second (Ms/s) supporting the bit rate of 1 Megabit per second (Mb/s) or, with Enhanced Data Rate, a gross air bit rate of 2 or 3Mb/s. These modes are known as Basic Rate and Enhanced Data Rate respectively.

During typical operation a physical radio channel is shared by a group of devices that are synchronized to a common clock and

frequency hopping pattern. One device provides the synchronization reference and is known as the master. All other devices are known as slaves. A group of devices synchronized in this fashion form a piconet. This is the fundamental form of communication in the Bluetooth wireless technology.

Devices in a piconet use a specific frequency hopping pattern, which is algorithmically determined by certain fields in the Bluetooth address and clock of the master. The basic hopping pattern is a pseudo-random ordering of the 79 frequencies in the ISM band. The hopping pattern may be adapted to exclude a portion of the frequencies that are used by interfering devices. The adaptive hopping technique improves Bluetooth co-existence with static (non-hopping) ISM systems when these are co-located.

The physical channel is sub-divided into time units known as slots. Data is transmitted between Bluetooth devices in packets, that are positioned in these slots. When circumstances permit, a number of consecutive slots may be allocated to a single packet. Frequency hopping takes place between the transmission or reception of packets. Bluetooth technology provides the effect of full duplex transmission through the use of a Time-Division Duplex (TDD) scheme.

Above the physical channel there is a layering of links and channels and associated control protocols. The hierarchy of channels and links from the physical channel upwards is physical channel, physical link, logical transport, logical link and L2CAP channel. These are discussed in more detail in Section 3.3 on page 33 to Section 3.6 on page 49 but are introduced here to aid the understanding of the

remainder of this section.

Within a physical channel, a physical link is formed between any two devices that transmit packets in either direction between them. In a piconet physical channel there are restrictions on which devices may form a physical link. There is a physical link between each slave and the master. Physical links are not formed directly between the slaves in a piconet.

The physical link is used as a transport for one or more logical links that support unicast synchronous, asynchronous and isochronous traffic, and broadcast traffic. Traffic on logical links is multiplexed onto the physical link by occupying slots assigned by a scheduling function in the resource manager.

A control protocol for the baseband and physical layers is carried over logical links in addition to user data. This is the link manager protocol (LMP). **Devices that are active in a piconet have a default asynchronous connection-oriented logical transport that is used to transport the LMP protocol signaling.** For historical reasons this is known as the ACL logical transport. **The default ACL logical transport is the one that is created whenever a device joins a piconet.** Additional logical transports may be created to transport synchronous data streams when this is required.

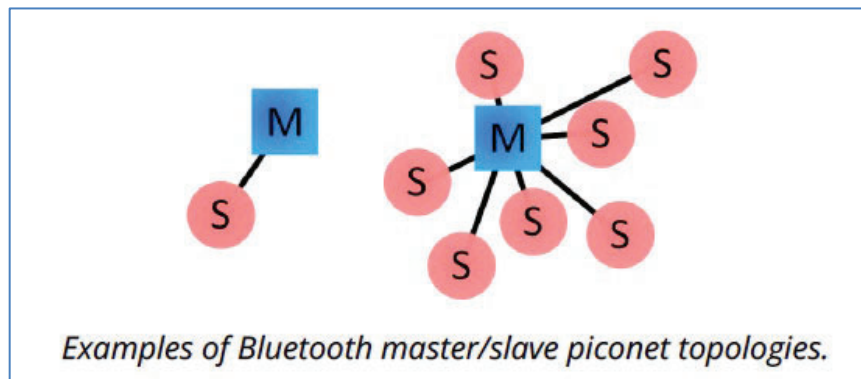
The Link Manager function uses LMP to control the operation of devices in the piconet and provide services to manage the lower architectural layers (radio layer and baseband layer). The LMP protocol is only carried on the default ACL logical transport and the default broadcast logical transport.

Above the baseband layer the L2CAP layer provides a channel-based abstraction to applications and services. It carries out segmentation and reassembly of application data and multiplexing and de-multiplexing of multiple channels over a shared logical link. L2CAP has a protocol control channel that is carried over the default ACL logical transport. Application data submitted to the L2CAP protocol may be carried on any logical link that supports the L2CAP protocol.

EX1008, pp. 87-88.

d. Topology and Communications

45. As described in the section directly above, a Bluetooth network is referred to as a piconet. A piconet uses a star topology and has a master device and one to a maximum of seven slave devices as shown by the basic diagram below.



(image from <https://learn.sparkfun.com/tutorials/bluetooth-basics>)

46. The Bluetooth Specification defines the same two topologies as the basic diagram above as “a” and “b” below. It also defines a larger and more complex network topology where one or more piconets can be interconnected to

form a scatternet as shown by “c” below.

Piconets that have common devices are called a *scatternet*, see (c) in [Figure 1.1 on page 59](#). Each piconet only has a single master, however, slaves can participate in different piconets on a time-division multiplex basis. In addition, a master in one piconet can be a slave in other piconets. Piconets shall not be frequency synchronized and each piconet has its own hopping sequence.

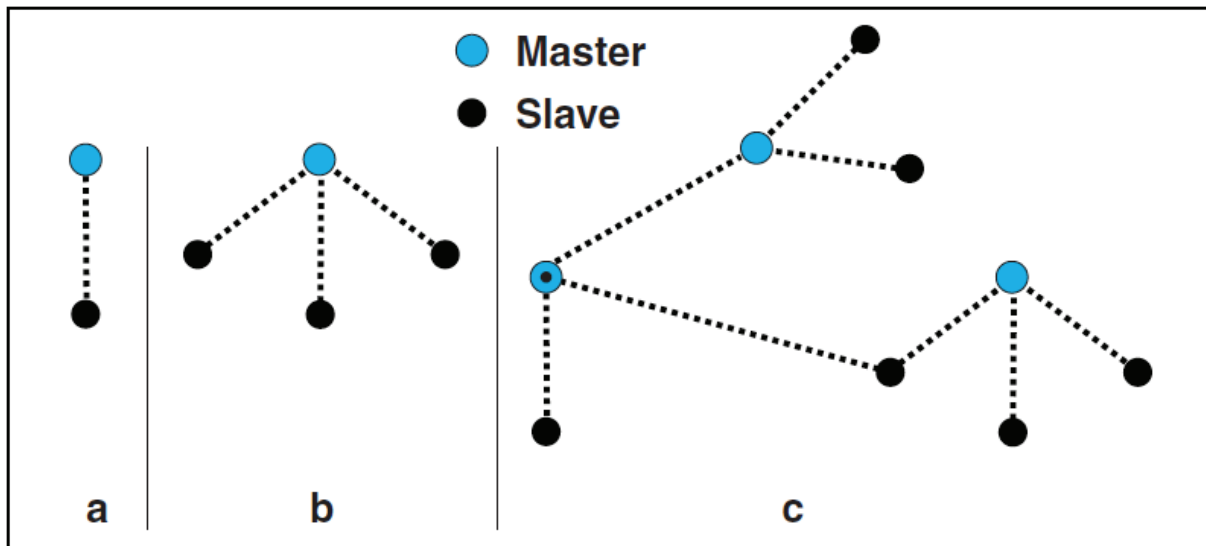


Figure 1.1: Piconets with a single slave operation (a), a multi-slave operation (b) and a scatternet operation (c).

EX1008, p. 229.

See also EX1008, pp. 124-125.

e. Bluetooth Operational Procedures and Modes

47. Bluetooth Devices can operate in multiple modes and there are many operational procedures that are used. However, the two relevant modes for this declaration are the (1) Inquiry and (2) Paging and Connection Mode, which are described below.

i) Inquiry (Discovering) Procedure

48. Basically, the Inquiry procedure is used for Bluetooth devices to

discover other devices that are operating in their area.¹ The Bluetooth Specification describes the Inquiry procedure with at least the following passage.

“Bluetooth devices use the inquiry procedure to discover nearby devices, or to be discovered by devices in their locality.

The inquiry procedure is asymmetrical. A Bluetooth device that tries to find other nearby devices is known as an **inquiring device and actively sends inquiry requests**. Bluetooth devices that are available to be found are known as discoverable devices and listen for these inquiry requests and send responses. The inquiry procedure uses a special physical channel for the inquiry requests and responses.”

EX1008, p. 126.

ii) ***The Inquiry Response Message Contains the Device Address, Class of Device and Extended Response Information***

49. As shown below, inquiry response messages contain a Bluetooth device address, Class of Device information, and extended inquiry response information.

¹ The typical indoor range for Bluetooth devices is about 10 meters (33 feet) and can extend up to 100 meters (330 feet) in optimal outdoor conditions.

6.1 GENERAL INQUIRY

6.1.1 Purpose

The purpose of the general inquiry procedure is to provide the initiator with the Bluetooth device address, clock, Class of Device, page scan mode, and extended inquiry response information of general discoverable devices (i.e. devices that are in range with regard to the initiator and are set to scan for inquiry messages with the General Inquiry Access Code). Also devices in limited discoverable mode will be discovered using general inquiry.

The general inquiry should be used by devices that need to discover devices that are made discoverable continuously or for no specific condition.

EX1008, p. 1288.

6.1.3 Description

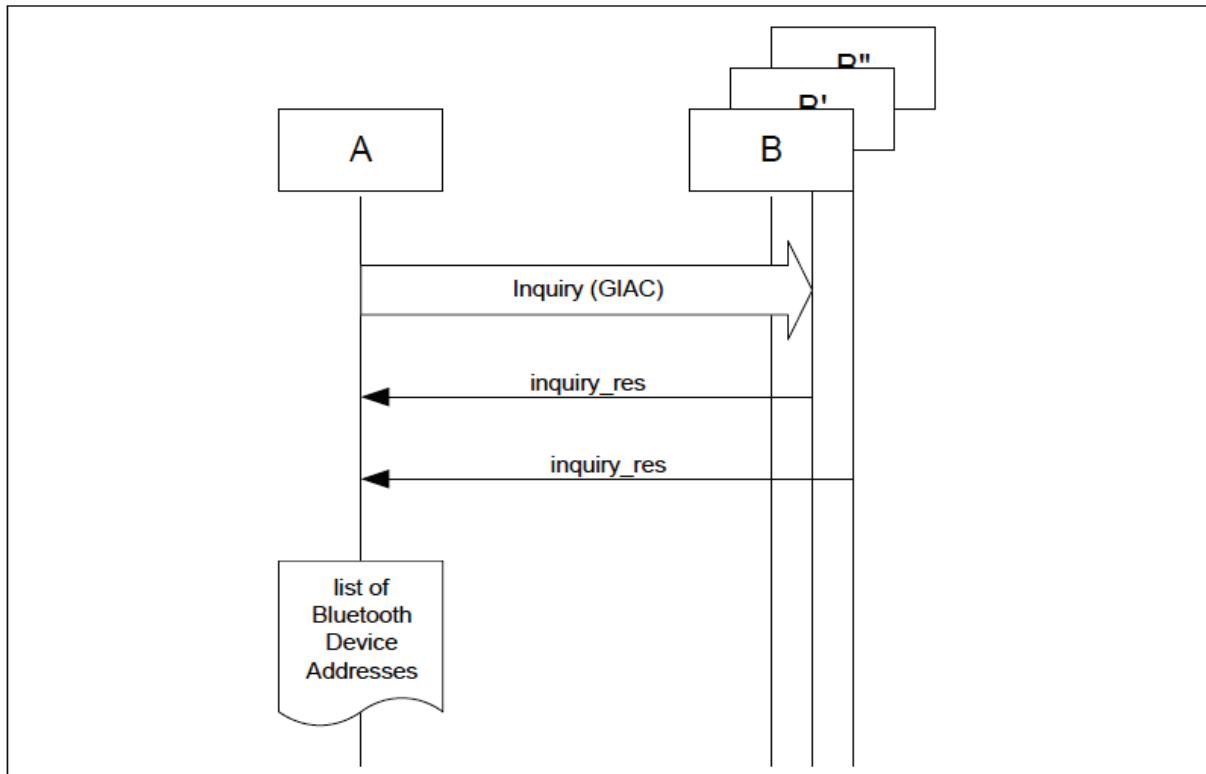


Figure 6.1: General inquiry, where B is a device in non-discoverable mode, B' is a device in limited discoverable mode and B'' is a device in general discoverable mode. (Note that all discoverable devices are discovered using general inquiry, independent of which discoverable mode they are in.)

EX1008, p. 1288.

50. This information is included in a frequency hop synchronization (FHS) packet that is transmitted for inquiry responses and that facilitates frequency hop synchronization between devices (so the devices align their transmitting and receiving frequencies). In addition to clock information, FHS packets include fields for the device address (Bluetooth device address, BD_ADDR, separated into

lower, upper, and non-significant address parts (LAP, UAP, NAP), class of device information, and bits indicating that extended inquiry response (EIR) follows. As I discuss further below, the EIR includes additional fields for names, service classes, and more.

6.5.1.4 FHS packet

The FHS packet is a special control packet containing, among other things, the Bluetooth device address and the clock of the sender. The payload contains 144 information bits plus a 16-bit CRC code. The payload is coded with a rate 2/3 FEC with a gross payload length of 240 bits.

Figure 6.9 on page 113 illustrates the format and contents of the FHS payload. The payload consists of eleven fields. The FHS packet is used in page master response, inquiry response and in role switch.

The FHS packet contains real-time clock information. This clock information shall be updated before each retransmission. The retransmission of the FHS payload is different than retransmissions of ordinary data payloads where the same payload is used for each retransmission. The FHS packet is used for frequency hop synchronization before the piconet channel has been established, or when an existing piconet changes to a new piconet.

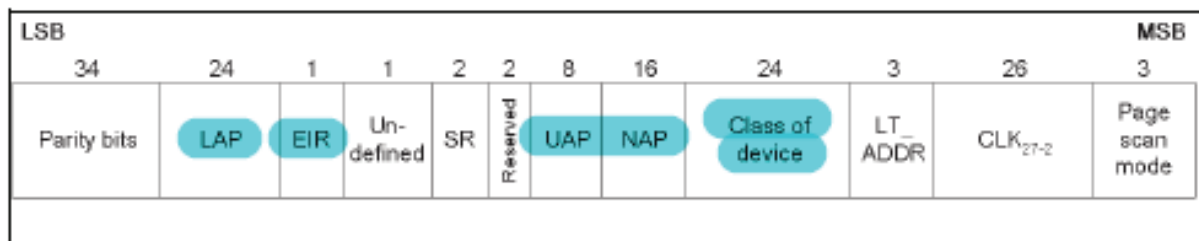


Figure 6.9: Format of the FHS payload.

Each field is described in more detail below:

Parity bits	This 34-bit field contains the parity bits that form the first part of the sync word of the access code of the device that sends the FHS packet. These bits are derived from the LAP as described in Section 1.2 on page 62 .
LAP	This 24-bit field shall contain the lower address part of the device that sends the FHS packet.
EIR	This bit shall indicate that an extended inquiry response packet may follow. See Section 8.4.3 on page 158 .
Undefined	This 1-bit field is reserved for future use and shall be set to zero.
SR	This 2-bit field is the scan repetition field and indicates the interval between two consecutive page scan windows, see also Table 6.4 and Table 8.1 on page 147
Reserved	This 2-bit field shall be set to 10.
UAP	This 8-bit field shall contain the upper address part of the device that sends the FHS packet.
NAP	This 16-bit field shall contain the non-significant address part of the device that sends the FHS packet (see also Section 1.2 on page 62 for LAP, UAP, and NAP).
Class of device	This 24-bit field shall contain the class of device of the device that sends the FHS packet. The field is defined in Bluetooth Assigned Numbers .
LT_ADDR	This 3-bit field shall contain the logical transport address the recipient shall use if the FHS packet is used at connection setup or role switch. A slave responding to a master or a device responding to an inquiry request message shall include an all-zero LT_ADDR field if it sends the FHS packet.
CLK ₂₇₋₂	This 26-bit field shall contain the value of the native clock of the device that sends the FHS packet, sampled at the beginning of the transmission of the access code of this FHS packet. This clock value has a resolution of 1.25ms (two-slot interval). For each new transmission, this field is updated so that it accurately reflects the real-time clock value.
Page scan mode	This 3-bit field shall indicate which scan mode is used by default by the sender of the FHS packet. The interpretation of the page scan mode is illustrated in Table 6.5 .

Table 6.3: Description of the FHS payload

EX1008, pp. 283-284.

iii) *The Bluetooth Device Address Provided in an Inquiry Response Message is the Same as a MAC Address*

51. The Bluetooth device address (BD_ADDR) provided in an inquiry

response message is a unique identifier for the responding device and is similar to a unique MAC address used for a Wi-Fi device. Both are a 48-bit value.

BLUETOOTH SPECIFICATION Version 2.1 + EDR [vol 2]
page 62 of 906

Baseband Specification

1.2 BLUETOOTH DEVICE ADDRESSING

Each Bluetooth device shall be allocated a unique 48-bit Bluetooth device address (BD_ADDR). This address shall be obtained from the IEEE Registration Authority. The address is divided into the following three fields:

- LAP field: lower address part consisting of 24 bits
- UAP field: upper address part consisting of 8 bits
- NAP field: non-significant address part consisting of 16 bits

The LAP and UAP form the significant part of the BD_ADDR. The bit pattern in Figure 1.5 is an example BD_ADDR.

LSB						MSB					
company_assigned						company_id					
LAP						UAP		NAP			
0000	0001	0000	0000	0000	0000	0001	0010	0111	1011	0011	0101

Figure 1.5: Format of BD_ADDR.

EX1008, p. 232.

- iv) *The Class of Device Information Field in the Inquiry Response Defines the Type of Bluetooth Device and the Services it Offers*

52. The class of device information receiving in an inquiry response includes Bluetooth Device Class and Bluetooth Service Type information defining the type of Bluetooth device that is responding and its supported services.

Class of device	This 24-bit field shall contain the class of device of the device that sends the FHS packet. The field is defined in Bluetooth Assigned Numbers .
------------------------	---

EX1008, p. 284 (blue text is in original).

6.25 CLASS OF DEVICE

The Class_of_Device parameter is used to indicate the capabilities of the local device to other devices.

Value	Parameter Description
0xXXXXXX	Class of Device for the device.

EX1008, p. 580.

3.2.4 Class of Device

3.2.4.1 Definition

Class of device is a parameter received during the device discovery procedure, indicating the type of device and which types of service that are supported.

3.2.4.2 Term on user interface level

The information within the Class of Device parameter should be referred to as 'Bluetooth Device Class' (i.e. the major and minor device class fields) and 'Bluetooth Service Type' (i.e. the service class field). The terms for the defined Bluetooth Device Types and Bluetooth Service Types are defined in [12].

When using a mix of information found in the Bluetooth Device Class and the Bluetooth Service Type, the term 'Bluetooth Device Type' should be used.

3.2.4.3 Representation

The Class of device is a bit field and is defined in [12]. The UI-level representation of the information in the Class of device is implementation specific.

EX1008, pp. 1259-1260.

53. Examples of Major Service Classes and Major Device Classes are shown below. A 2002 version of the Bluetooth Assigned Numbers is shown below, and while the Assigned Numbers list is a living document that changes over time, from 2002 to 2008 to 2025, its general usage and format has remained the same.

1.2 THE CLASS OF DEVICE/SERVICE FIELD

The Class of Device/Service (CoD) field has a variable format. The format is indicated using the 'Format Type field' within the CoD. The length of the Format Type field is variable and ends with two bits different from '11'. The version field starts at the least significant bit of the CoD and may extend upwards.

In the 'format #1' of the CoD (Format Type field = 00), 11 bits are assigned as a bit-mask (multiple bits can be set) each bit corresponding to a high level generic category of service class. Currently 7 categories are defined. These are primarily of a 'public service' nature. The remaining 11 bits are used to indicate device type category and other device-specific characteristics.

Any reserved but otherwise unassigned bits, such as in the Major Service Class field, should be set to 0.

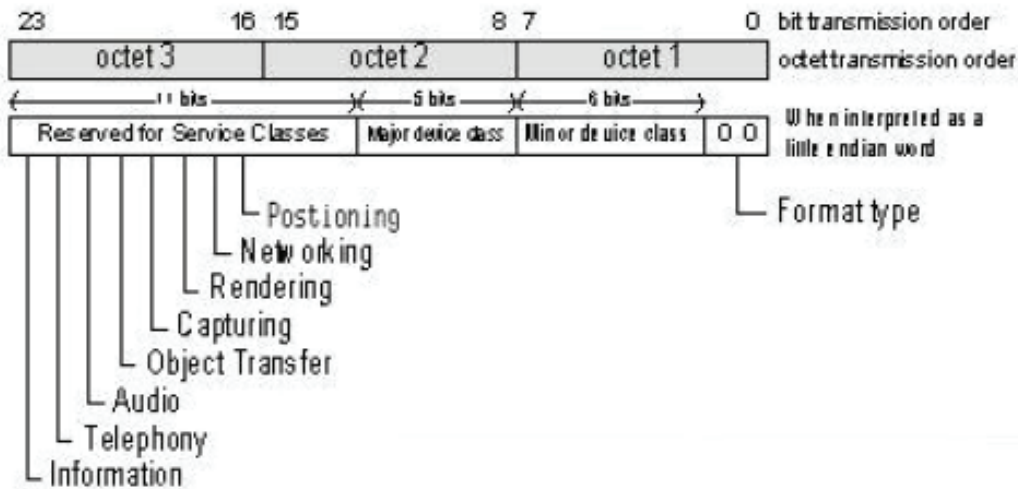


Figure 1.2: The Class of Device/Service field (first format type). Please note the order in which the octets are sent on the air and stored in memory. Bit number 0 is sent first on the air.

1.2.1 MAJOR SERVICE CLASSES

Bit no	Major Service Class
13	Limited Discoverable Mode [Ref #1]
14	(reserved)
15	(reserved)
16	Positioning (Location identification)
17	Networking (LAN, Ad hoc, ...)
18	Rendering (Printing, Speaker, ...)
19	Capturing (Scanner, Microphone, ...)
20	Object Transfer (v-Inbox, v-Folder, ...)
21	Audio (Speaker, Microphone, Headset service, ...)
22	Telephony (Cordless telephony, Modem, Headset service, ...)
23	Information (WEB-server, WAP-server, ...)

TABLE 1.2: MAJOR SERVICE CLASSES

[Ref #1 As defined in [See Generic Access Profile, Bluetooth SIG](#)]

1.2.2 MAJOR DEVICE CLASSES

The Major Class segment is the highest level of granularity for defining a Bluetooth Device. The main function of a device is used to determine the major class grouping. There are 32 different possible major classes. The assignment of this Major Class field is defined in Table 1.3.

12	11	10	9	8	Major Device Class
0	0	0	0	0	Miscellaneous [Ref #2]
0	0	0	0	1	Computer (desktop,notebook, PDA, organizers, ...)
0	0	0	1	0	Phone (cellular, cordless, payphone, modem, ...)
0	0	0	1	1	LAN /Network Access point
0	0	1	0	0	Audio/Video (headset,speaker,stereo, video display, vcr.....
0	0	1	0	1	Peripheral (mouse, joystick, keyboards, ...)
0	0	1	1	0	Imaging (printing, scanner, camera, display, ...)
1	1	1	1	1	Uncategorized, specific device code not specified
X	X	X	X	X	All other values reserved

EX1009, 1-2.

54. When a General Inquiry Access Code (GIAC) is used in the Inquiry Message, all the listening devices may respond. However, a Dedicated Inquiry Access Code (DIAC) may be specified in the Inquiry message so that only the devices that support this code respond as described by the passage below.

The inquiry message broadcast by the source does not contain any information about the source. **However, it may indicate which class of devices should respond.** There is one general inquiry access code (GIAC) to inquire for any device, and a **number of dedicated inquiry access codes (DIAC) that only inquire for a certain type of device.** The inquiry access codes are derived from reserved Bluetooth device

addresses and are further described in Section 6.3.1.

EX1008, p. 325.

55. The Class of Device (CoD) code is a “24-bit field shall contain the class of device of the device that sends the FHS packet. The field is defined in Bluetooth Assigned Numbers.” EX1008, p. 284. The Class_of_Device parameter is used to indicate the capabilities of the local device to other devices. EX1008, p. 580.

56. The Bluetooth Specification also defines the capability of the receiving device to filter Inquiry Responses based on at least the received “Class of Device” and/or the “BD_ADDR” as described by the following passage.

The Inquiry Result filter allows the Controller to filter out Inquiry Result events. The Inquiry Result filter allows the Host to specify that the Controller only sends Inquiry Results to the Host if the Inquiry Result event meets one of the specified conditions set by the Host. For the Inquiry Result filter, the Host can specify one or more of the following Filter Condition Types:

1. Return responses from all devices during the Inquiry process
2. A device with a specific Class of Device responded to the Inquiry process
3. A device with a specific BD_ADDR responded to the Inquiry process

The Inquiry Result filter is used in conjunction with the Inquiry and Periodic Inquiry command.

EX1008, p. 673.

v) ***The Extended Inquiry Response Fields Define the Responding Device’s Local Name and its Supported Services.***

57. The Extended Inquiry Fields in the Response message include at least

the device's local name and the services it supports as described by at least the passage below.

“Data types are defined for such things **as local name² and supported services, information that otherwise would have to be obtained during a connection.** A device that receives **a local name and a list of supported services in an extended inquiry response** does not have to connect to do a remote name request and an SDP service search, thereby shortening the time to useful information.”

EX1008, p. 126.

58. The following passage also describes that the device receiving the Inquiry Response message can determine if it desires to make a connection with it.

During the inquiry substate, the discovering device collects the Bluetooth device addresses and clocks of all devices that respond to the inquiry message. In addition, the discovering **device also collects extended information (e.g. local name and supported services)** from devices that respond with an extended inquiry response packet. **It can then, if desired, make a connection to any one of the discovered devices** by means of the previously described page procedure.

EX1008, p. 325.

59. The following describes and shows the Extended Inquiry Response Data Format. Specifically, the number of data fields contained is variable so each

² All emphasis and highlighting has been added by me unless otherwise noted.

type of data begins with a one-byte length indicator followed by its “EIR Data Type” and then the actual data. The receiving device uses these fields to decode the message and also to determine the number of data fields contained.

8 EXTENDED INQUIRY RESPONSE DATA FORMAT

The extended inquiry response data format is shown in Figure 8.1. The data is 240 octets and consists of a significant part and a non-significant part. The significant part contains a sequence of data structures. Each data structure shall have a length field of one octet, which contains the Length value, and a data field of Length octets. The first n octets of the data field contain the extended inquiry response (EIR) data type. The content of the remaining $\text{Length} - n$ octets in the data field depends on the value of the EIR data type and is called the EIR data. The non-significant part extends the extended inquiry response to 240 octets and shall contain all-zero octets.

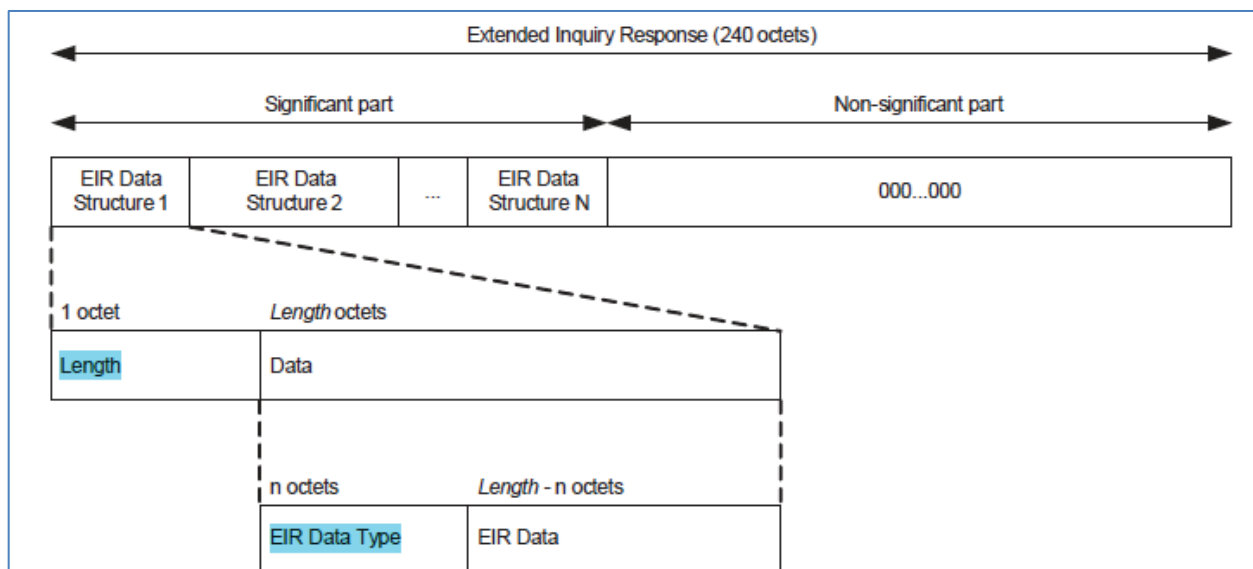


Figure 8.1: Extended Inquiry Response data format

- [1] The extended inquiry response data types are specified in the [Assigned Numbers](#) document.

EX1008, p. 1305.

vi) *Service Class UUIDs Can Be Included in the Inquiry Response Message*

60. The EIR data further includes service class universally unique identifiers (UUIDs).

The EIR data shall always be sent during inquiry response state. EIR data can contain device name, Tx power level, service class UUIDs, as well as manufacturers data, as defined in Section 8.1. In selecting the packet type to be used, FEC (DM1 or DM3) should be considered to maximize the range.

EX1008, p. 1305.

2.5.1 UUID

A UUID is a universally unique identifier that is guaranteed to be unique across all space and all time. UUIDs can be independently created in a distributed fashion. No central registry of assigned UUIDs is required. A UUID is a 128-bit value.

To reduce the burden of storing and transferring 128-bit UUID values, a range of UUID values has been pre-allocated for assignment to often-used, registered purposes. The first UUID in this pre-allocated range is known as the Bluetooth Base UUID and has the value 00000000-0000-1000-8000-00805F9B34FB, from the Bluetooth Assigned Numbers document. UUID values in the pre-allocated range have aliases that are represented as 16-bit or 32-bit values. These aliases are often called 16-bit and 32-bit UUIDs, but it is important to note that each actually represents a 128-bit UUID value.

EX1008, p. 1197.

The full 128-bit value of a 16-bit or 32-bit UUID may be computed by a simple arithmetic operation.

$$128_bit_value = 16_bit_value * 2^{96} + Bluetooth_Base_UUID$$

$$128_bit_value = 32_bit_value * 2^{96} + Bluetooth_Base_UUID$$

Id.

vii) *The Paging (Connecting) Procedure*

61. The procedure for forming a connection between two Bluetooth devices requires one device to send out a Page message and the other device, that is scanning for the Page message, responds. Only one Bluetooth device should respond to a Page message as described below.

4.2.2 Paging (Connecting) Procedure

The procedure for forming connections is asymmetrical and requires that one Bluetooth device carries out the page (connection) procedure while the other Bluetooth device is connectable (page scanning.) The procedure is targeted, so that the page procedure is only responded to by one specified Bluetooth device.

The connectable device uses a special physical channel to listen for connection request packets from the paging (connecting) device. This physical channel has attributes that are specific to the connectable device, hence only a paging device with knowledge of the connectable device is able to communicate on this channel.

Both paging and connectable devices may already be connected to other Bluetooth devices in a piconet. Any time spent paging or occupying the page scan physical channel needs to be balanced with the demands of the QoS commitments on existing logical transports.

EX1008, p. 127.

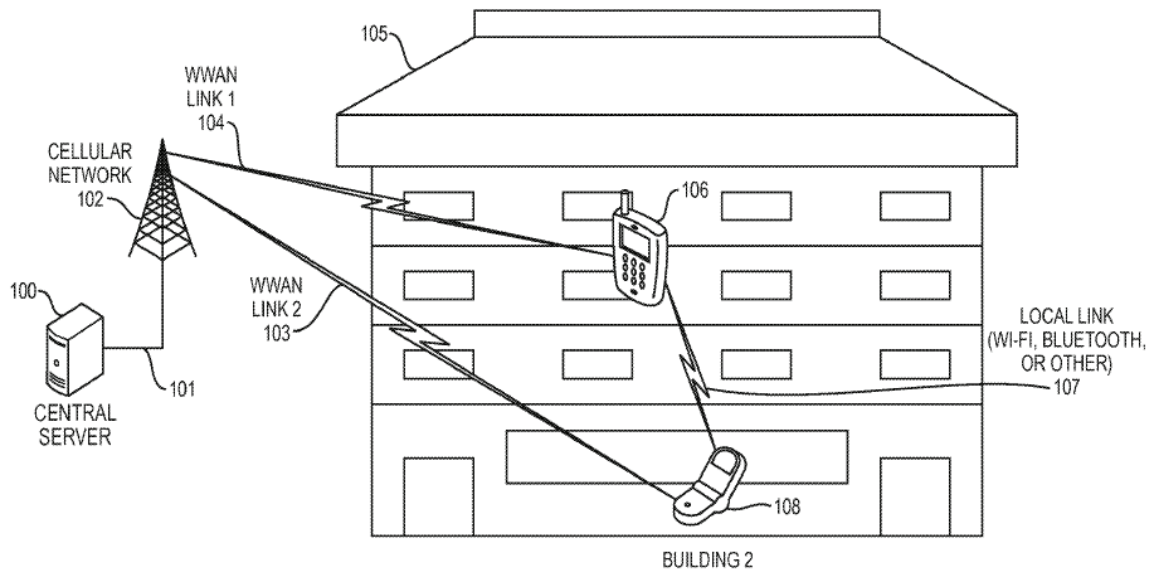
62. After a successful Paging Procedure, the two devices are connected in a piconet and this is referred to as the “Connected Mode.”

V. The ‘971 patent

A. Overview of the ‘971 patent

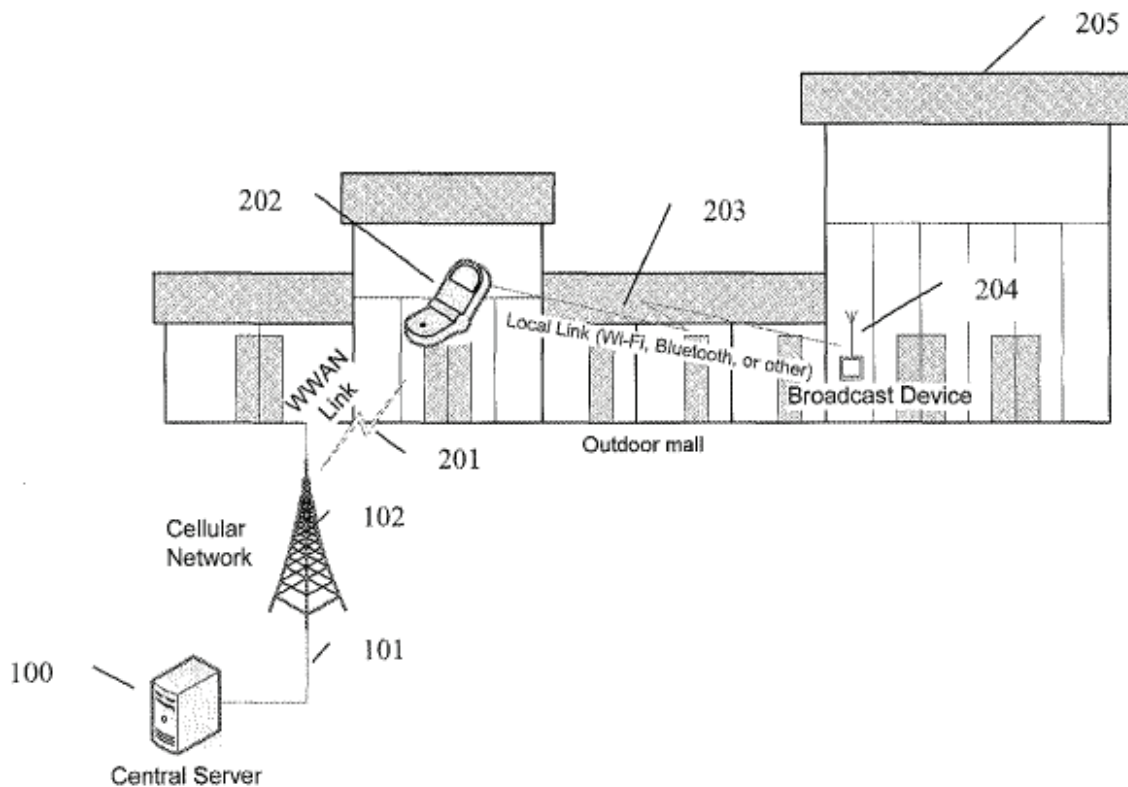
63. The ‘971 patent issued from U.S. Patent Application No. 17/942,197 (“‘971 Application”), filed September 12, 2022.

64. The purported “invention” of the ‘971 patent relates to the use of a server to manage communications between two devices. EX1001, Abstract, 1:37-45, 1:58-67. In particular, the ’971 patent concerns the facilitation of information between wireless devices having both short-range communications and long-range communications. EX1001, 1:5-24, 1:49-2:63. For example, in Fig. 1 (below), two devices 106 and 108 are in close proximity to each other and detect each other’s presence over short-range wireless link 107 (for example, Bluetooth), and each of the devices is separately in communication with central server 100 over wide area wireless network (WWAN) connection 103 or 104 (for example, a cellular network). EX1001, 3:46-55, 4:36-57.



65. Fig. 2 (below) shows one implementation with devices 202 and 204 in short-range communication, and device 202 and server 100 in long-range

communication. EX1001, 5:25-34.



66. Device 204 is, for example, a device associated with a museum exhibit that “transmits identifying information [to device 202] using short range wireless link 203,” which device 202 “passes... to the central server 100,” and the server 100 recognizes the identifying information as being associated with device 204. EX1001, 5:30-46. The server uses stored account settings or policy information to determine “what information and under which situations information may be disclosed to another device or user” to facilitate further short-range communications. EX1001, 6:60-7:2, 13:53-64, 18:42-60. The information returned and disclosed to the device may include “text, pictures, web pages,

application software such as games, informative display applications, or other content such as audio or video.” EX1001, 5:51-56.

67. The '971 patent explains that devices in short-range proximity (i.e., devices 202 and 204 in the example above) identify themselves with beacon transmissions including a MAC address, unique identifier, and beacon service identifier. EX1001, 2:15-20, 2:35-45. For example, a “MAC address is always broadcast in any operation of a Bluetooth or Wi-Fi link,” but a MAC address may also be used as a device identifier. EX1001, 7:35-40, 8:35-48. Examples of service identifiers in an ad hoc Wi-Fi network include basic service set identifiers (BSSIDs, such as a 48-bit address) and service set identities (SSIDs, which are network names). EX1001, 8:12-54. BSSIDs and SSIDs were well-known identifiers used in IEEE 802.11 (Wi-Fi) systems, and different but similar values used for identifying and connecting devices were also well-known for Bluetooth systems (such as class of device and addressing information). *See* Olkkonen, 32:20-25 (“[BSSID] is a unique identifier for a particular [IEEE 802.11] ad hoc network”), 33:44-60 (SSIDs have no format or content restrictions), 33:54-58 (SSID “can perform the same informational function as... the class of device (CoD) in the Bluetooth standard, such as designating a device’s node as a printer or fax machine”), 27:52-56 (Bluetooth piconets use “access codes” based on the piconet master device’s BD_ADDR for access), 12:24-30 and 18:60-19:39 (device

names and application programs as searchable service attributes).

B. The Prosecution History

68. During prosecution of the '971 patent, there were no substantive discussions of prior art with respect to the pending '971 patent claims. Examiner issued a double patenting rejection based on a parent patent (U.S. Patent No. 11,443,344), which the Patent Owner addressed by filing a terminal disclaimer. *See generally* EX1002, 127-140, 349-373.

C. Priority Date of the Claims

69. I have been asked to assume the Challenged Claims are entitled to a September 8, 2008 filing date for the purposes of rendering my opinions in this declaration.

VI. LEVEL OF ORDINARY SKILL IN THE ART

70. In rendering the opinions set forth in this declaration, I was asked to consider the patent claims and the prior art through the eyes of a person of ordinary skill in the art at the time of the alleged invention. I understand that the factors considered in determining the ordinary level of skill in a field of art include the level of education and experience of persons working in the field; the types of problems encountered in the field, the teachings of the prior art, and the sophistication of the technology at the time of the alleged invention. I understand that a person of ordinary skill in the art is not a specific real individual, but rather

is a hypothetical individual having the qualities reflected by the factors above. I understand that a person of ordinary skill in the art would also have knowledge from the teachings of the prior art, including the art cited below.

71. I have been informed that the POSITA's level of skill used in prior proceedings involving other patents in the same family as the '971 patent included a Bachelor's degree in electrical engineering, computer engineering, or the equivalent thereof, and approximately three years of professional experience working with wireless communications, where additional education could substitute for professional experience, or vice-versa. Upon consideration of the factors above, and based on my knowledge and experience in the field and my review of the '971 patent and file history, I agree that this is an appropriate level of skill for a POSITA.

72. Based on my experiences, I have at least the skills of a person having ordinary skill in the art as well as a good understanding of the capabilities of a person having ordinary skill in the art. To be clear, all of my opinions in this declaration are from the perspective of one of ordinary skill in the art as I have defined it here during the relevant timeframe.

VII. CLAIM CONSTRUCTION

73. I have been instructed that the Challenged Claims of the '971 patent are to be given their ordinary and customary meaning as understood by one of

ordinary skill in the art at the time of the alleged invention in light of the specification and the prosecution history pertaining to the patent. I have followed these principles in my analysis set forth in this document.

VIII. GROUNDS OF UNPATENTABILITY

74. As I explain above in Section IV above, methods of short-range communication were already well-known in the art via Bluetooth communications, including the various identifying information (for example, Bluetooth addresses) with which one Bluetooth device identifies itself to another.

75. In this section, I will explain why the teachings or combinations of teachings from the following references render obvious each of the Challenged Claims:

Name	Ex.	Publication/ Patent No.	Published/ Issued
Eagle	1005	2005/0250552	November 10, 2005
Behrens	1006	2010/0138481	June 3, 2010
Olkkonen	1007	7,590,086	September 15, 2009

I have been instructed to assume that each of these references qualifies as prior art.

76. As I explain below, the Challenged Claims are invalid based upon the following prior art grounds:

- **Ground 1:** the Challenged Claims of the '971 patent are rendered obvious by Eagle in view of Behrens and Olkkonen.

77. It is my opinion that Challenged Claims of the '971 patent are unpatentable as explained below. I note that in this discussion, I may focus on the particular language in the specific claims, but it should be understood that my analysis applies to the corresponding elements of all Challenged Claims containing identical or substantially identical language.

IX. DETAILED ANALYSIS OF GROUNDS FOR CHALLENGE

78. As I explain in Section V above, the '971 patent purports to have invented a method for managing communications between two devices using a remote server. However, such methods were well-known in the art. As described below, the cited prior art provides these teachings.

79. In this section, I explain why the Challenged Claims of the '971 patent are rendered obvious by the teachings of Eagle, Behrens, and Olkkonen. I note that, in this discussion, I may focus on the particular language in specific claims, but it should be understood that my analysis applies to the corresponding limitations of all claims containing identical or substantially identical language.

A. GROUND 1: EAGLE IN VIEW OF BEHRENS, AND FURTHER IN VIEW OF OLKKONEN, RENDERS OBVIOUS THE CHALLENGED CLAIMS

a. Overview of Eagle (EX1005)

80. U.S. Patent Application Publication No. 2005/0250552 to Eagle et al.

(“Eagle,” EX1005), titled “COMBINED SHORT RANGE RADIO NETWORK AND CELLULAR TELEPHONE NETWORK FOR INTERPERSONAL COMMUNICATIONS,” was filed on May 5, 2005 and published on November 10, 2005.

81. Eagle is directed to a mobile communication architecture or “social software introduction system” for “facilitating direct communications between consenting persons having similar interests.” Eagle, [0002], [0065].

82. The system includes cellular phones enabled with Bluetooth that “are able to... identify other such devices that are nearby” by a unique identification value such as a Bluetooth address value. Eagle, [0003], [0018]. When one device (hereinafter referred to as a “Requester Device”) detects a new device (hereinafter referred to as an “Identified Device”) using the Identified Device’s unique identification value, the Requester Device notifies a remote server of the unique identification value via a long-range cellular network. Eagle, [0003], [0020]. An example of two such devices 203 and 205, and a server 220, are shown in Fig. 2 (below).

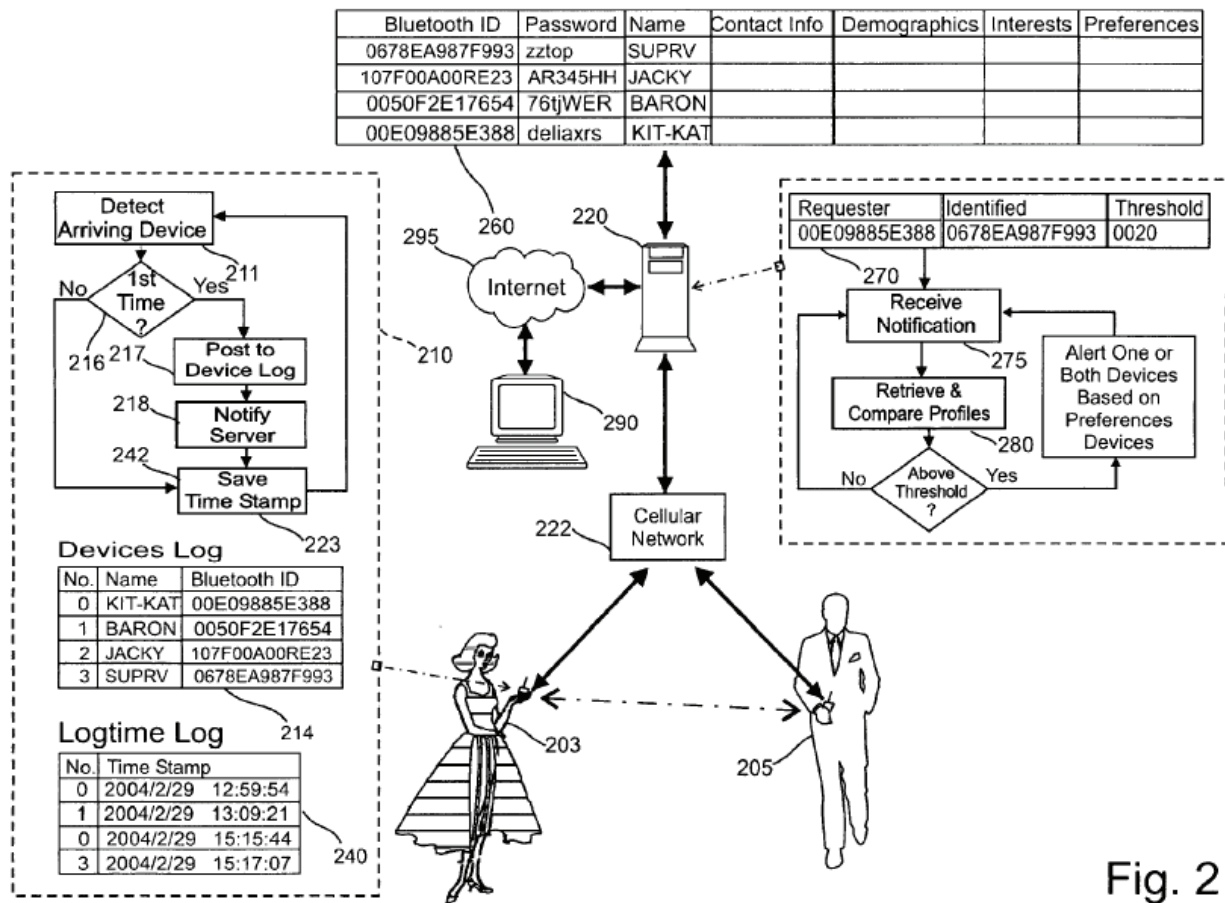


Fig. 2

83. The server stores profile data describing devices and their owners, and when it receives unique identification values in a notification, “fetches the profile data associated with each of the two identified devices and performs a comparison.” Eagle, [0005], [0020]. If the profiles of a Requester Device and an Identified device match (because, for example, their profiles indicate they attended the same college), then an alert message is sent to each device. Eagle, [0005]-[0007], [0045], [0047], [0063]. An alert may contain contact information, descriptions of the device’s owner’s personal interests, “or any other information which is of use in a specific application [that] may be of use to identify, or promote

communications between, nearby devices and their owners.” Eagle, [0007], [0021].

b. Overview of Behrens (EX1006)

84. U.S. Patent Application Publication No. 2010/0138481 to Behrens (“Behrens,” EX1006), titled “DEVICE AND METHOD FOR ESTABLISHING SOCIAL NETWORKS THROUGH THE USE OF WIRELESS TECHNOLOGY,” was filed on April 30, 2008 and published on June 3, 2010.

85. Behrens is directed to a system for automatically establishing contact between users who are in close proximity to each other. Behrens, Abstract, [0001].

86. In one example, a wireless device detects the presence of another wireless device by receiving unique identifiers (UIDs) via Bluetooth transmissions. Behrens, [0094], [0097]-[0098]. Behrens explains that UIDs used for this purpose “consist of any unique or quasi-unique code, number, address, symbol, or a combination thereof, which uniquely identifies a device, and, by association, the owner of the device,” and may include MAC addresses and Bluetooth Device Addresses. Behrens, [0097].

87. As discussed above, UIDs may be used in combination. Furthermore, a “user may... exercise control over which or how many UIDs are transmitted by his device.” Behrens, [0061], [0103], [0115], [0122]. Accordingly, a user has “multiple or changing UIDs.” Behrens, [0061], [0115]. Users supply their UIDs to servers, keeping device UIDs in sync with the servers. Behrens, [0065], [0076].

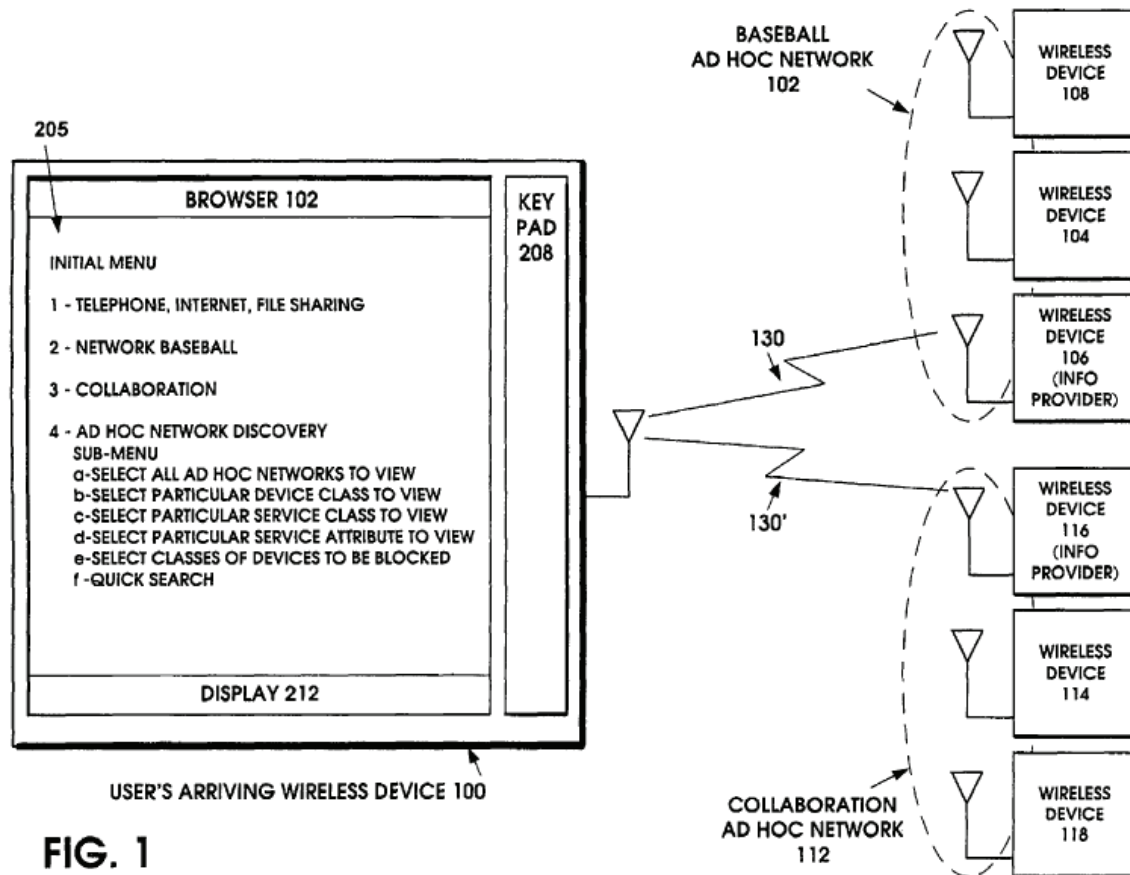
c. Overview of Olkkonen (EX1007)

88. U.S. Patent No. 7,590,086 to Olkkonen et al. (“Olkkonen,” EX1007), titled “AD HOC NETWORK DISCOVERY MENU,” was filed on November 3, 2004 and issued on September 15, 2009.

89. Olkkonen is directed to short-range wireless systems and connecting users for common purposes via ad hoc networking (for example within “piconets” in Bluetooth). Olkkonen, 1:13-16, 1:46-2:3. Piconets serve a variety of purposes, for example, “collaborative work projects, collaborative games, multi-user gateways to the Internet, and the like” that interested users may join. Olkkonen, 2:60-65. Olkkonen’s system thereby alerts users of nearby piconets (or other ad hoc networks) that are of interest. Olkkonen, 4:65-5:4.

90. Olkkonen teaches that a wireless device may search for nearby piconets through inquiry and discovery processes. Olkkonen, 12:39-60, 13:33-50, 18:49-63; *see also* piconet examples illustrated throughout, 13:29-31:25. For example, “when a new short-range wireless device arrives within the communication range of any member of [an] ad-hoc network, its inquiry signals are answered by a member detecting the inquiry,” who “responds with information... characterizing the ad hoc network.” Olkkonen, 5:27-33. Responses are compiled into a discovery menu listing those characteristics “in accordance with the type of characteristics of interest to the user.” Olkkonen, 6:29-38. An

exemplary menu 205 is shown in Fig. 1 (below).



91. Users have the ability to filter and view certain devices in the menu, for example by blocking and/or displaying devices associated with certain devices classes, service classes, or service attributes. Olkkonen, 11:33-60, 22:8-21.

d. Overview of Eagle's, Behrens', and Olkkonen's combined teachings

- i) *Eagle, Behrens, and Olkkonen are analogous art and their combined teachings renders obvious claims of the '971 patent*

92. The '971 patent is in the field of wireless communications and concerns, for example, secure communications using wireless service identifiers,

safety and privacy with locally stored policies, and facilitating the exchange of information between two entities associated with two wireless devices. *See* EX1001, 1:37-45, 1:49-51.

93. Eagle, Behrens, and Olkkonen are each analogous to the '971 patent, as they are in the same field of wireless communications and/or reasonably pertinent to the problems identified above. Eagle, Abstract (“Bluetooth enabled cellular phones[] communicate with and identify like devices that are nearby, and send notification messages to a remote server... [that] facilitates communications between the devices when appropriate”), [0008] (using Bluetooth communications “avoids some privacy problems”); Behrens, [0001] (“relates to... establishing contact... through the use of wireless technology,” “between users who come into proximity of one another”), [0136] (making contact between “individuals who are otherwise unknown”), [0141] (applications in social networking, Internet forums, blogs); Olkkonen, 1:13-16 (relating to short-range wireless systems), 4:65-5:4 (addressing need to provide a discovery menu listing collaborative activities in nearby networks that would interest users).

94. To the extent Eagle is argued by Patent Owner as failing to expressly disclose details of particular fields of information communicated from a wireless device via a short-range protocol as claimed in the '971 patent (for example, receiving different first and second different MAC addresses and unique

identifiers, and receiving a same beacon service identifier, as in claims 1-3 of the '971 patent), the filtering of unique identifiers (for example, selecting unique identifiers from a plurality of received unique identifiers, as in claims 1-2 of the '971 patent), or taking certain actions with respect to detected devices (for example, taking action with respect to a multiplayer game or shared application, as in claim 5 of the '971 patent), such obvious variations would have been well within the skill of a POSITA in view of Behren's teachings of changing the unique identifier transmitted from a same device for maintaining privacy, and in view of Olkkonen's teachings of service identifiers in ad hoc networking to facilitate collaborative activities via Bluetooth®.

95. For example, a POSITA seeking to address privacy risks in Eagle would have found it obvious to provide for changing unique identifiers from time to time, per Behrens. To make Eagle's system more efficient, a POSITA would have found it obvious to have participating devices broadcast a specific service identifier, per Olkkonen, to identify Eagle's social introduction application and/or allow a user's phone to filter out irrelevant services like printing or devices like headsets. A user's device would thus first filter unique identifiers for the correct service and then send the unique identifiers to Eagle's remote server, which maps unique identifiers to stored information (for example, user profile information) to facilitate connections between wireless devices and potential further action, such as

displaying contact information or joining a collaborative game as taught by Olkkonen.

ii) *Behrens teaches combined and changing UUIDs*

96. The claims of the '971 patent require receiving, at a wireless device from a same transmitting device, different beacon transmissions in two different time periods, including a first transmission with a MAC address and unique identifier, and a second transmission with a different MAC address and different unique identifier. See, for example, EX1001, claims 1-3, 37, 50-51. In other words, a device transmitting *via a short range wireless protocol (Bluetooth)* to the claimed *wireless device* changes its identifying data as a function of time to enhance security. EX1001, 7:66-8:11, 15:14-40, 18:35-41.

97. Eagle describes that Identified Devices identify themselves to Requester Devices with a “unique identification value, such as a Bluetooth device address value.” Eagle, [0003]. To the extent it is argued that Eagle does not explicitly describe the *wireless device* receiving different first and second MAC addresses and different unique identifiers from the same device, it would have been obvious to a POSITA for the following reasons.

98. Behrens teaches that devices in short-range proximity “uniquely identif[y]” themselves and their owners with “at least one unique identifier (UID),” which may “consist of” or be included in a “combination” of unique identifiers

(UIDs) including WLAN MAC addresses, Bluetooth Device addresses, unique numbers, and/or unique symbols. Behrens, [0061], [0097], [0111], [0115], [0122]. Moreover, a user can have “multiple or changing UIDs” and has “control over which or how many UIDs are transmitted by his device.” Behrens, [0103], [0115].

99. Thus, Behrens explicitly discloses above that the device can use at least two different MAC addresses as its UID. Specifically, the “WLAN MAC address” and the “Bluetooth Device address” are different 48-bit values that uniquely define a device; the WLAN MAC address is the unique 48-bit value for the device’s Wi-Fi Network Interface Card (NIC) and the Bluetooth Device Address (BD_ADDR) is the unique 48-bit value for the device’s Bluetooth NIC. Having both Wi-Fi and Bluetooth capabilities—and respective addresses—in wireless devices was a configuration well-known to POSITAs. For example, Apple Inc.’s iPhone 3G in 2008 included Wi-Fi and Bluetooth capabilities (*see* EX1035), and its documentation shows each having an address (*see* EX1036, 142). *See also* Behrens, [0077] (BD_ADDR and WLAN MAC addresses retrieved separately). The ’971 patent similarly acknowledges that the BD_ADDR can be considered the claimed *MAC address* within “some embodiments, the MAC address is a randomly generated 48 bit number matching a format of a Bluetooth BD_ADDR.” EX1001, 2:57-59. The Bluetooth BD_ADDR is explained in detail in Section IV above.

100. Behrens also teaches that the use of changing UIDs comprised of

combinations of different information advantageously allows a user to have a single managed account with different online identities (for example for different social events or parties). Behrens, [0115]. Eagle teaches adding an additional method for users to create distinct or particular profile data to “contact experts in a particular field” or for seeking “a person of the opposite sex of a particular age having common interests.” Eagle, [0063]. Thus “the same user may supply profile data for use in professional encounters, and other profile dat[a] for use in social encounters.” Eagle, [0063]. Thus, both Behrens and Eagle teach that a user may have a single account for an application that is capable of supporting multiple online identities (UIDs) for that user depending on specific interests and situations.

101. In addition to the benefits of providing multiple online identities for a user, a POSITA would have understood that there were other benefits that would be realized by changing the UID of the device. These benefits would provide anonymity, security, and anti-tracking.

102. A device would have anonymity because changing the UID would make it more difficult for the device to be tracked or identified by malicious devices even when it is transmitting a consistent signal. A changing UID would also provide additional security by making it harder for a malicious device to impersonate it and gain unauthorized access to data or security systems by capturing and replaying the device’s signal.

103. Thus, one implementation to meet these claim limitations, would be for a transmitting Bluetooth device to use its BD_ADDR (*MAC address*) in the *first time period* to uniquely identify itself to the *wireless device* over the *short range wireless protocol/Bluetooth protocol* and then use its WLAN MAC address in the *second time period* to uniquely identify itself to the *wireless device* over the *short range wireless protocol/Bluetooth protocol*.

104. A POSITA would have further recognized that (1) privacy and security concerns in short-range wireless devices that transmit beacons using fixed identifying information were well-known, and (2) changing identification information, as taught by Behrens, addresses those concerns. EX1010, [0002]-[0004] (temporary and/or randomly generated identification numbers mitigates threats to security and privacy); EX1011, Abstract, [0006] (randomizing Bluetooth addresses prevents the correlation of identities, routes, and activities with a device); EX1012, [0002]-[0008] (preventing tracking through a randomly generated Bluetooth address); EX1013, [0008]-[0011] (same). See also Behrens, [0003] (apprehension in sharing of personal information freely). Thus, where Bluetooth addresses and UIDs are potentially transmitted “continuously or repeatedly” (Behrens, [0097]; Eagle, [0003]), the changing of identifiers advantageously prevents the tracking and correlating of users, activities, and devices over time.

105. The described modification would have been further obvious to a POSITA as it is no more than the application of a known technique (for example, Behren's teaching of changing combination UUIDs) to a known device ready for improvement (for example, Eagle's system that identifies devices by unique identification values and identifies profile data by mode indicator values) to yield predictable results (for example, allowing for different online identities; enhancing privacy with changing UUIDs).

106. A POSITA would have also had a reasonable expectation of success in modifying Eagle with the teachings of Behrens. Use of UUIDs (which are data values used as identifiers) in place of Eagle's unique identification values would have required no more than ordinary software coding skills to change such values, and track, select, store, communicate, and analyze those values as known in the art. Moreover, where Behrens teaches that UUIDs borrow from existing values such as a wireless device's addresses, Behrens provides techniques for obtaining those values manually, and for updating the server with those UUIDs by supplying the UUIDs to the server. Behrens, [0065], [0076]-[0077]. Modification would have been well within the skill of a POSITA.

iii) *Eagle and Olkkonen teach filtering beacon service identifiers*

107. The claims of the '971 patent require that beacon transmissions

include a beacon service identifier that identifies that the unique identifier is relevant to stored information associated with a wireless beacon service. See, for example, EX1001, claims 1-2, 37, 50-51. The same claims further require filtering the beacon transmissions which include a particular beacon service identifier.

108. To the extent Patent Owner argues that Eagle does not explicitly describe *beacon service identifiers* as claimed, it would have been obvious to a POSITA to filter UUIDs based on beacon service identifiers (for example, service class and/or device class information) received in inquiry responses, consistent with the teachings of Olkkonen, for the following reasons.

109. Eagle teaches that it is unnecessary for a Requester Device to notify the server of every UUID that it receives from nearby Identified Devices. For example, when an Identified Device is detected, the Requester Device “determine[s] whether the detection of a given device warrants the transmission of a notification message to the server” by filtering out recently detected devices. Eagle, [0023]-[0025]. Thus, Eagle teaches selectively notifying the server of nearby devices such that the user is not alerted of every device that is nearby, and communications with the server and mobile device communication processing are minimized.

110. Olkkonen additionally teaches filtering techniques that would have been known to a POSITA in the context of Bluetooth ad hoc networks. For

example, service class information (which may include service “attributes”) describes and identifies programs running in ad hoc networks (for example, a network baseball game). Olkkonen, Fig. 5 (showing a service class with a program identity service attribute), 30:22-28. This service identification information is received in Bluetooth inquiry responses. *See* Olkkonen, 5:27-33, 12:40-48, 13:33-43, and 17:49-63 (Identified Devices’ inquiry responses include service registry information “characterizing the ad hoc network”); 5:13-17 and 17:17-22 (service classes “characterize the ad hoc network” and include, for example, the type of distributed program running). As another example, both Eagle and Olkkonen teach that device class information is also received in Bluetooth inquiry responses (for example, Class of Device or CoD information) and describes the type of the identified physical device (for example, a printer). Eagle, [0032] (class of device parameter received during discovery includes “device class” fields and a “service class” field); Olkkonen, 6:63-66. Discussed below, both service class and device class information would have been obvious criteria for filtering UIDs where some devices, such as printers, keyboards, etc., are not suited for use with a given application such as Eagle’s social introduction system.

111. Service class information (filtering for Eagle’s “BlueAware” application): It would have been obvious to use Olkkonen’s disclosed service class information to identify Eagle’s social introduction application (which is a service

and a program running on wireless devices) such that Identified Devices identifying Eagle's service are included in notifications to the server rather than non-participating devices.

112. For example, Olkkonen teaches that lists of discovered Identified Devices presented to the user in a discovery menu should be customized to user preferences, for example, by ignoring or blocking undesirable Identified Devices and by listing Identified Devices of interest. Olkkonen, 11:30-60. One such filter blocks all devices identifying themselves as providing an advertisement broadcast service. Olkkonen, 11:33-42, 22:34-43. While Olkkonen describes “advertisements” and “advertisement broadcaster” as classes of devices, a POSITA would have recognized that “ADVERTISEMENTS” was a non-standard type of Bluetooth device class. EX1009 (Bluetooth assigned numbers). To the extent “advertisement” is a non-standard class, a POSITA would have recognized that advertisement would have been a type of intended use or service provided by the device, and it would have been obvious to alternatively identify advertisement functions as custom service information. In another example, a user may only want to see devices in particular service classes or having particular service attributes (such as those identifying a particular program, such as a “GAME PROGRAM”). Olkkonen, 11:43-60.

113. As Eagle requires users to actively participate in its social introduction

system by running a particular program (“BlueAware”) on their devices (Eagle, [0019], [0029], [0038], [0065]) and by registering information with a server (Eagle, [0029], [0045]-[0046]), a POSITA would have recognized that it would have been wasteful and inefficient to notify the remote server of *every* Bluetooth device that the Requester Device encounters without screening/filtering them first as participating in the service. In this regard, Eagle emphasizes that its system links users with “selection criteria that [are] useful to service users.” Eagle, [0011]. A notification identifying a device that is not even participating in Eagle’s social introduction system would have been useless to the remote server and would have increased communications and server load for no benefit. Therefore, it would have been obvious to modify Eagle’s Identified Devices to specifically identify Eagle’s social introduction system within inquiry response service class information (when the particular Identified Device participates in Eagle’s services) and to modify Eagle’s Requester Device to filter inquiry responses so that only UIDs identifying themselves as being relevant to Eagle’s social introduction program would be notified to the server. As a result, only UIDs from Identified Devices that “warrant the transmission of a notification message to the server” (Eagle, [0024]) are actually notified to the server.

114. Device class information (filtering for appropriate device class): As discussed above, Eagle describes that Class of device information is also received

in inquiry responses. Eagle, [0032]. Thus, a POSITA would have recognized that information identifying devices by their functionality, such as the printers and faxes suggested by Olkkonen (12:12-19), are received within the class of device information identifying the device's type and capabilities. Eagle, [0032] (class of device parameters include device class and service class fields); EX1009, 47, 53 (showing printer device classes), 64 (showing "Fax" and "DirectPrinting" service classes). It would have been further obvious to a POSITA to filter UIDs according to device classes so that notifications and alerts are tailored to specific desired uses within an application.

115. In particular, Eagle describes configuring its social introduction system for particular uses. For example, "companies interested in facilitating internal collaboration can use the invention to introduce people who are working on similar projects." Eagle, [0065]. Other uses of the system include "meet[ing] people" and tracking "passengers" on a bus. Eagle, [0061], [0066].

116. Thus, the same rationale discussed above for filtering based on service class information would also apply to classes of devices—it would have been wasteful and inefficient to notify the remote server of *every* Bluetooth device that the Requester Device encounters without screening/filtering them first. For example, where a company is implementing Eagle's system to introduce "people," it would have been obvious to filter UIDs to device classes that are associated with

people, such as mobile phones that provide the additional benefit of enabling direct communications. Eagle, [0058] (alert message contains a phone number, “[enabling] one user to simply call [the] nearby person’s cell phone”). In that same scenario, a Bluetooth-connected printer would be an example of a device to be filtered out as not being a device associated with “people.” Filtering functions based on device class preferences were well-known in the art. *See* Olkkonen, 11:33-60 (blocking the listing of printers and fax machines, or viewing all photocopier devices).

117. Therefore, it would have been obvious to modify Eagle’s Requester Device to filter inquiry responses so that only UIDs from devices in device classes relevant to particular implementations of Eagle’s social introduction service would be passed to the server. As a result, only UIDs from Identified Devices that “warrant the transmission of a notification message to the server” (Eagle, [0024]) are actually notified to the server.

118. Additionally, Eagle teaches that wireless device resources are limited. Eagle, [0024] (conserving memory by deleting old logs of Identified Devices), [0026] (continuous scanning and logging expends phone battery life). This would also apply to only contacting the server with useful UIDs so its resources are further conserved. In other words, irrelevant Identified Devices do not need to be logged or tracked and do not need to be passed to the server using long-range

wireless communications.

119. The described modifications would have been further obvious to a POSITA as no more than the application of a known technique (for example, Olkkonen's teachings of including service information in inquiry responses and filtering responses based on that information) to a known device ready for improvement (for example, Eagle's system that determines whether detection of an Identified Device warrants notification to the server) to yield predictable results (for example, selectively notifying the server of Identified Devices).

120. A POSITA would have also had a reasonable expectation of success in modifying Eagle to implement Olkkonen's teachings to receive and analyze service information in inquiry responses. For example, a POSITA would have recognized that Bluetooth communications include several methods for conveying service and class information including, but not limited to, through various message fields within class-of-device information or extended inquiry responses (EIRs) that include fields for service class universally unique identifiers (UUIDs) and manufacturer specific data. Eagle, [0032]; EX1008, 1305-1310. Service and device information may be included in these fields or as appended to any inquiry response so that the necessary descriptive information is conveyed, as discussed above. Furthermore, the Bluetooth Specification defined using class of device or service class information as identifier values and the capability of a receiving

device to filter based on the values in these fields before the '971 patent, as described in Section IV.B.e.iv above, so a POSITA would have been aware of this functionality in at least one form. Filtering based on the values taught by Eagle and Olkkonen would have therefore required no more than ordinary message parsing and processing skills that would have been well within the skill of a POSITA.

iv) *Eagle, Behren, and Olkkonen teach performing actions*

121. Several claims of the '971 patent require taking a first and/or second “action” relating to stored information. Claimed examples include actions related to: a function being performed on a device (claim 4), a multiplayer game (claim 5), receiving and presenting advertising information (claim 6), allowing a user access to an object or device (claim 22), controlling communications between devices (claim 23), and others.

122. Eagle also broadly describes that its social introduction system “enables a diverse suite of applications,” for example, connecting people working on similar projects, connecting users with like interests, as greeting beacons at trade shows, notifications of nearby resources, and more. Eagle, [0061]-[0068]. Alerts returned to the Requester Device therefore include “any... information which is of use in a specific application” and useful to “promote communication between[] nearby devices and their owners,” including contact information. Eagle, [0007], [0041], [0050].

123. Olkkonen, like Eagle, teaches that users of wireless devices may connect for a variety of applications. For example, Olkkonen describes that wireless Bluetooth devices form ad hoc networks or piconets for telephone, internet, and file sharing services, participating in network games, collaborative CAD designs, and more. Olkkonen, 2:59-65, 6:19-21, 11:61-12:2, 18:60-63, 19:13-16, 20:41-43, 25:48-52, 25:63-26:33.

124. Behrens, like Eagle, teaches that when two wireless devices (and their users) detect each other in close proximity, further actions include receiving alerts from a server and connecting with the other device (Behrens, [0085], [0107]-[0110], [0139], [0158]-[0161]) or, alternatively, ignoring certain devices (Behrens, [0162]). Devices are ignored based on blacklist instructions received from a server. Behrens, [0026], [0101]-[0102], [0124].

125. Accordingly, to the extent Eagle leaves to a POSITA what further actions to take, which relate to the variety of purposes for which two wireless devices may want to connect, it would have been obvious to perform various actions, as taught by Olkkonen or Behrens. Eagle's system provides a framework for detecting nearby devices but leaves to the POSITA what specific actions devices are to perform, which Olkkonen and Behrens disclose. The performance of any particular action taught by Olkkonen or Behrens would have been no more than a simple substitution of known elements (for example, Olkkonen's and

Behren's actions and communications relate to Internet sharing, network baseball, CAD design, messaging, ignoring, etc.) for another (for example, Eagle's exemplary actions related to social networking, greeting beacons, transportation, etc.) to obtain predictable results (for example, facilitating the use of wireless devices in diverse ways).

126. Furthermore, none of the wide variety of actions claimed in the '971 patent require more than ordinary skill. For example, joining ad hoc networks to take advantage of network resource, as taught by Olkkonen, would have been well within the skill of a POSITA, as Bluetooth ad hoc network functions were well-known as part of the Bluetooth standard, and the multitude of uses for wireless computing devices were also varied and well-known. Olkkonen, 1:20-3:14. Olkkonen specifically provides means for finding users (such as those that a user would have been alerted to in Eagle's system) and joining their networks. Olkkonen, Fig. 2B-2C, 15:64-16:64. Other claimed functions, such as sending and receiving data, or preventing communications based on received information, or presenting advertising information—spread amongst the many dependent claims—are basic or well-known computing actions that would have required no more than ordinary skill to take.

e. The Challenged Claims

i) *Claim 1*

(1)[1.PRE] “A method comprising:”

127. Eagle teaches *a method* for facilitating networking communications among multiple devices (for example, phones) and a server. Eagle, Abstract, [0003]-[0005]. For example, Fig. 2 (below) illustrates communications between a first Bluetooth phone carried by individual 203, a second Bluetooth phone carried by individual 205, and remote server 220. Eagle, Fig. 2, [0018], [0022].

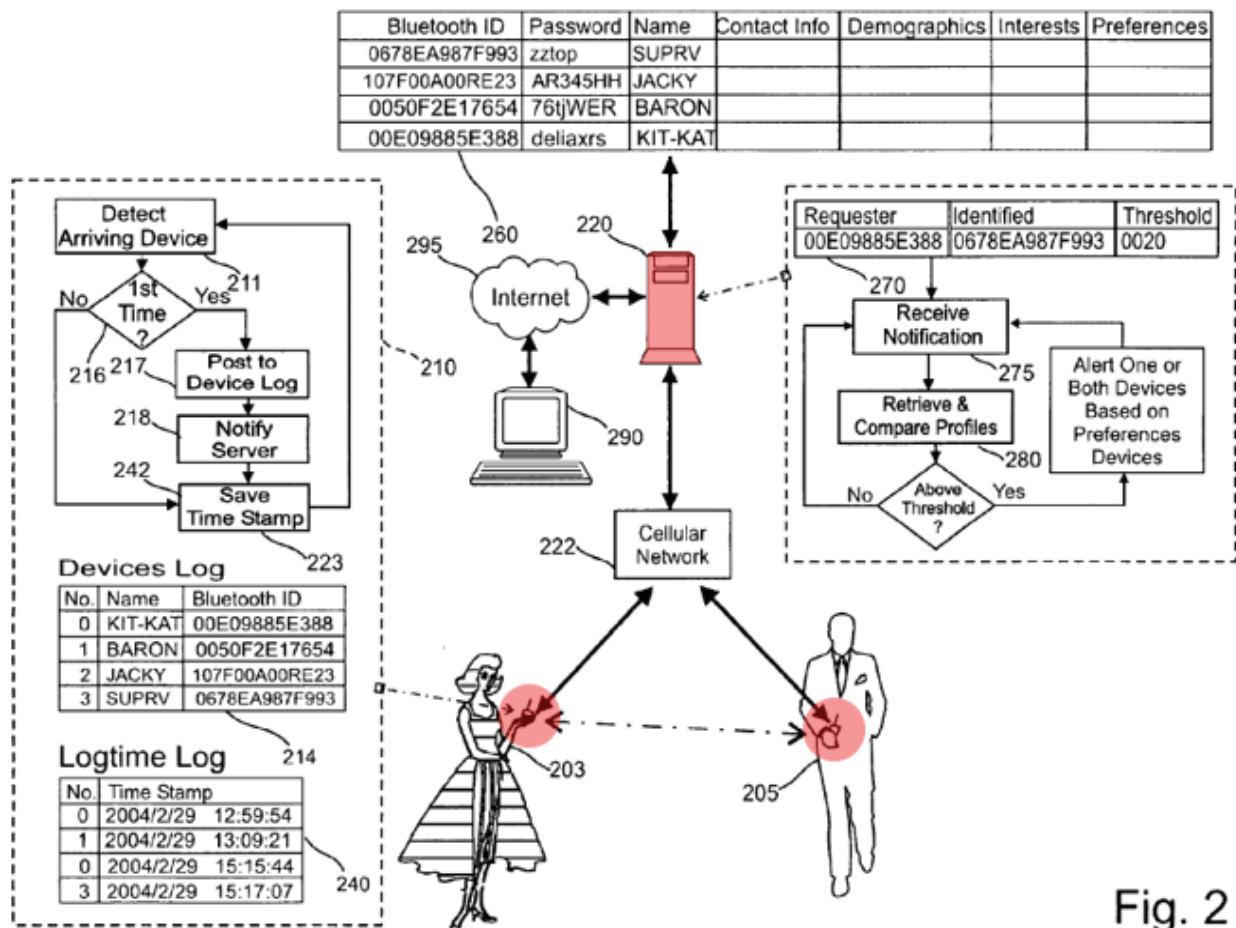


Fig. 2

(2) [1.A.I] “receiving, at a wireless device, via a short range wireless protocol, a first plurality of beacon transmissions, each beacon transmission comprising three fields”

128. Eagle-Behrens-Olkkonen teaches *receiving, at a wireless device* (for example, receiving at a first Bluetooth phone), *via a short range wireless protocol* (for example, via Bluetooth protocol), *a first plurality of beacon transmissions* (for example, inquiry responses containing identifying information), *each beacon transmission comprising three fields*.

129. Eagle describes that the first Bluetooth phone carried by individual 203 (a Requester Device) is a wireless device that includes “short range radio transceivers that use the Bluetooth protocol” for communications. Eagle, Fig. 2 (below), Abstract, [0018]. Eagle explains that Bluetooth devices transmit *beacon transmissions* when “used as beacons to identify a device to other nearby devices” by transmitting “device identification codes.” Eagle, [0008]. The device log shows exemplary separate fields “name,” “Bluetooth ID,” etc.

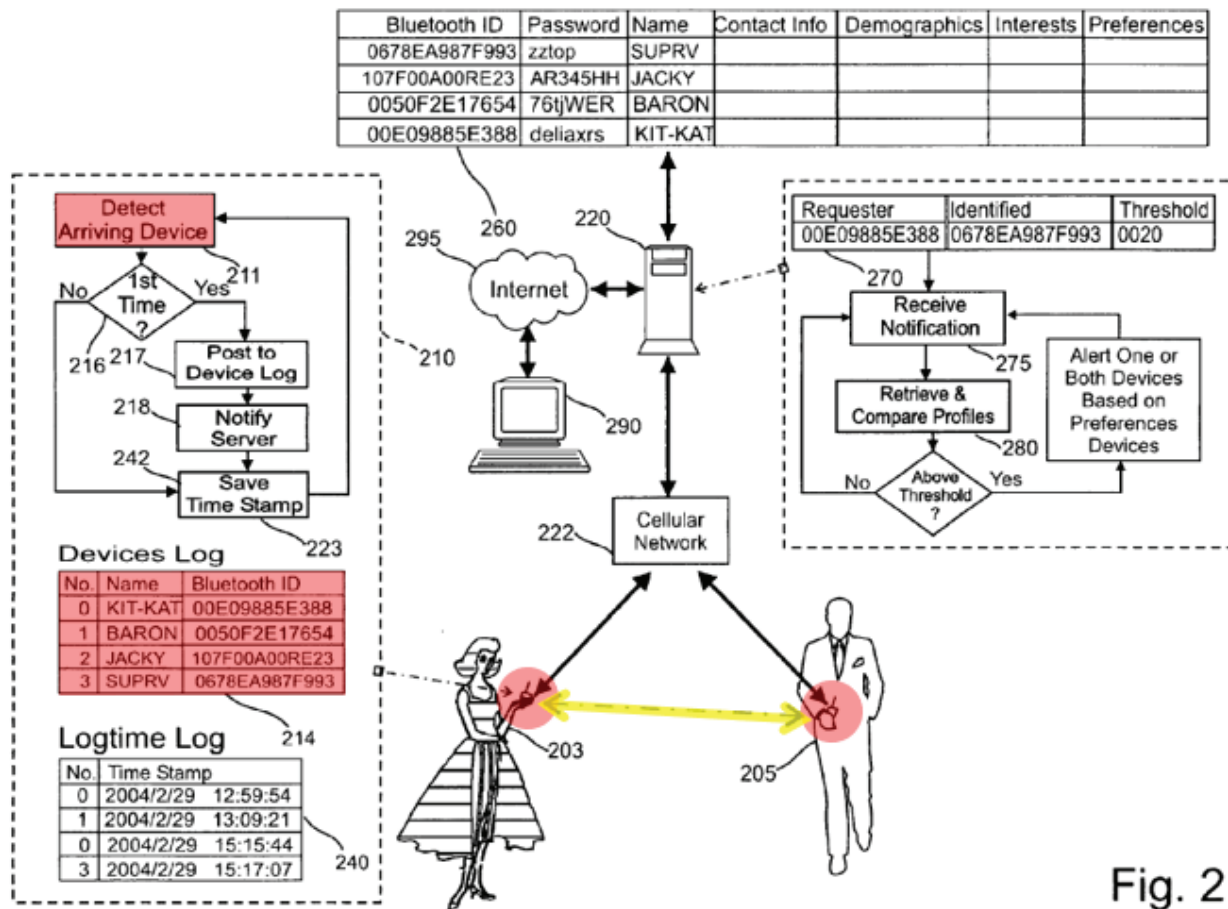


Fig. 2

130. By way of example, the Requester Device may detect the presence (step 211) of the second Bluetooth phone carried by individual 205 (an Identified Device) via reception of the Identified Device's beacon transmissions, including for example a "Bluetooth ID" (an assigned address value). Eagle, Fig. 2, [0022]. This information is received when a Requester Device "perform[s] an inquiry function to determine the identity and Device Class of other 'discoverable' Bluetooth devices," and the Identified Device responds to the inquiry. Eagle, [0033]-[0038].

131. Additionally, a Devices Log 214 stored in the Requester Device

“indexes every device encountered by the phone” and, as shown in Fig. 2 above, the Requester Device has encountered several devices. Eagle, [0022]-[0025]. Accordingly, based on communications with Identified Devices, Eagle teaches that the Requester Device receives a *first plurality of beacon transmissions* from a plurality of Identified Devices.

132. The '971 patent does not provide express formatting details or examples regarding beacon transmission “fields.” *See* EX1001, 2:15-53 (beacon transmissions “comprise” or “include” a MAC address, unique identifier, and beacon service identifier). However, a POSITA would have recognized that the use of *fields* facilitates the recognition and interpretation of relevant information received in transmissions. Thus, to the extent Eagle does not explicitly describe every type of information communicated in a “field,” it would have been obvious to format beacon transmissions with a variable number of fields and the length and identification number of each field so that the information being conveyed by the Identified Device may be understood by the Requester Device, as described by the Bluetooth Specification and discussed in Section IV.B.e.v above. *See also* Olkkonen, 27:12-20 (frequency hop synchronization (FHS) packet structure for an inquiry response includes information fields); EX1008, 283-285 (FHS packet sent in response to an inquiry contains address and EIR information in fields), 1288 (Bluetooth inquiry procedure provides address, clock, class of device, page scan

mode, and extended inquiry response (EIR) information), 1259-1260 (device classes and service types are conveyed in fields), 1305-1310 (EIR includes fields for service class UUIDs and other manufacturer specific data).

133. Discussed with respect to limitations [1.A.II]-[1.A.IV] below, Eagle-Behrens-Olkkonen teaches *each beacon transmission comprising three fields*.

(3)[1.A.III] “(a) a MAC address,”

134. Eagle-Behrens discloses the beacon transmission including *a MAC address* in two separate ways discussed below.

(a) UUIDs include a MAC address

135. Eagle-Behrens teaches *a MAC address* (for example, a BD_ADDR is included in the UUIDs).

136. As discussed above, Behrens teaches that the Identified Device identifies itself to the Requester Device with a transmission including a combination of UUIDs including, for example, a 48-bit “Bluetooth Device Address” or BD_ADDR. Behrens, [0061], [0097], [0122]. The ’971 patent similarly acknowledges that a “MAC address” may be a “48 bit number matching a format of a Bluetooth BD_ADDR” (*i.e.*, not requiring the actual device BD_ADDR) and that BD_ADDR addresses are a form of MAC address used in Bluetooth communications. EX1001, 2:57-59, 7:17-25.

137. Eagle-Behrens’s 48-bit BD_ADDR included as a UUID identifying the

Identified Device is therefore *a MAC address*.

(b) Bluetooth communications include a MAC address

138. Eagle teaches that the Requester Device and Identified Device use Bluetooth protocols. Eagle, [0018], [0028]. Accordingly, the Identified Device identifying itself to the Requester device would have included *a MAC address* in its inquiry response. Eagle, [0033]-[0037] (describing a Bluetooth discovery process between devices, such as a Requester Device (sending inquiries) and Identified Device (responding to inquiries)); Olkkonen, 2:23-31 (“inquiry response is a message packet containing the responding device’s Bluetooth Device Address”), 27:12-20 (FHS packet structure for an inquiry response contains a BD_ADDR and clock); EX1008, 283 (FHS packet sent in response to an inquiry contains the Bluetooth device address of the sender).

139. The ’971 patent similarly acknowledges that the MAC address of the transmitting device is “always broadcast in any operation of a Bluetooth or [Wi-Fi] link.” EX1001, 8:25-26, 8:42-44.

(4) [1.A.III] “(b) a unique identifier, wherein the unique identifier of each respective beacon transmission does not directly identify a location of a beacon transmitter, and”

140. Eagle-Behrens teaches each beacon transmission comprising *(b) a unique identifier, wherein the unique identifier of each respective beacon*

transmission does not directly identify a location of a beacon transmitter (for example, UIDs including a unique number uniquely identifying a device and its owner).

141. As discussed above, the Identified Device identifies itself to the Requester Device with a transmission including a combination of UIDs. Behrens teaches that UIDs are “any unique or quasi-unique code, number, address, symbol, or a combination thereof, which uniquely identifies a device, and, by association, the owner of the device.” Behrens, [0061], [0097]. Eagle-Behrens therefore teaches the beacon transmission including *a unique identifier*, such as a unique number or symbol that identifies the Identified Device and its owner. UIDs like a unique number or symbol are included in beacon transmissions in addition to the MAC address identified for [1.A.II] above because UIDs may be a combination of different unique identifiers. Behrens, [0097], [0122].

142. Furthermore, UIDs *do not directly identify a location of a beacon transmitter*. Behrens, [0061], [0097] (“identifies a device, and, by association, the owner”). For example, MAC addresses and numbers used for UIDs, absent specific intent (which is not found in Eagle-Behrens-Olkkonen), are combinations of letters and/or numbers that do not directly convey any location information. For example, unlike wireless GPS data that specifically contains information used to calculate locations, identifiers assigned to a device are merely representative of that device

itself and offer no information to directly locate that device at any instant point of time. *See also* Eagle, [0008] (Bluetooth beacon systems provide “proximity detection” but not an “absolute location,” which would be available via GPS and cellular location systems); EX1001, 4:54-57 (’971 patent describing Bluetooth and other short range wireless links allowing for “proximity detection”).

143. Accordingly, Eagle-Behrens’s UID includes *a unique identifier* that *does not directly identify a location of a beacon transmitter*.

(5) [1.A.IV] “(c) a beacon service identifier, wherein the beacon service identifier of each respective beacon transmission identifies that the unique identifier is relevant to stored information associated with a wireless beacon service,”

144. Eagle-Olkkonen teaches each beacon transmission comprising (c) *a beacon service identifier* (for example, service class and/or device class information), *wherein the beacon service identifier of each respective beacon transmission identifies that the unique identifier is relevant to stored information associated with a wireless beacon service* (for example, service class information and device class information each identify that the associated Identified Device UIDs (received in the same responses) are relevant to Eagle’s social introduction system, which stores profile information at a server).

145. As discussed above, it would have been obvious for an Identified Device to respond to inquiries from a Requester Device with *beacon service*

identifiers such as service class information and/or device class information for the purpose of filtering UIDs.

146. Service class information includes information that Identified Devices access from their service registries “characterizing the ad hoc network” of which it is a member. Olkkonen, 5:27-33, 12:40-48, 13:33-43, and 17:49-63. This information includes service class information identifying running application programs (Olkkonen, 5:13-17, 17:17-22, 30:22-28, Fig. 5) and, in view of Eagle, would have included an identification of Eagle’s social introduction system—the *wireless beacon service* provided by the application program and the server.

147. Device class information includes information that identifies the Identified Device’s type of device and is received in inquiry responses according to the Bluetooth specification. Eagle, [0032]; EX1008, 283-285, 1288 (inquiry response includes class of device).

148. As discussed above, it would have been obvious to use the service class and/or device class information to selectively provide UIDs of Identified Devices to the server, which analyzes its stored profile information based on those UIDs. Eagle, [0019]-[0021], [0041], [0045], [0051]. Behrens also confirms that it was known to use UIDs to reference account information. Behrens, [0075]. The stored profile information (*i.e., stored information* as claimed) includes information in a database that “describes each device and its owner,” such as

photographs, bibliographic and demographic information, and contact information. Eagle, [0005], [0045], [0050].

149. Accordingly, because Eagle's social introduction system's server uses received UUIDs to fetch stored profile information (*see* [1.B.II]), and because the UUIDs sent to the server are UUIDs that have been determined to be relevant to Eagle's social introduction system (by, for example, identifying Eagle's social introduction system as a service class, or by identifying a device class that is relevant to an implementation of Eagle's social introduction service (such as a phone for personal meetings)), the service class information and device class information are each *beacon service identifier[s]* that *identif[y] that the unique identifier is relevant to stored information associated with a wireless beacon service*. *See also* [1.B.I]-[1.B.II] below (describing the process of sending notifications to a server and receiving alerts in response) and [1.C] below (describing filtering unique identifiers based on beacon service identifiers to determine whether unique identifiers warrant notification to the server).

(6) [1.A.V] “wherein the stored information is not otherwise accessible to the wireless device utilizing the short range wireless protocol;”

150. Eagle teaches that *the stored information is not otherwise accessible to the wireless device utilizing the short range wireless protocol* (for example, stored profile information is not available using Bluetooth communications and is

only available to trusted devices).

151. Eagle teaches that the Requester Device may receive, from a server, an alert including stored information relating to an Identified Device. *See* [1.B.I] below; Eagle, [0007], [0020].

152. The Requester Device receives the alert over a “large area wireless network such as a cellular phone network and/or the Internet.” Eagle, [0039]-[0042]. The Requester Device is not connected to the server via Bluetooth, and therefore *the stored information is not otherwise accessible* to the Requester Device *utilizing the short range wireless protocol*.

153. Additionally, Eagle teaches that server profile data indicates thresholds that matches between two device profiles must exceed before alerts are sent (Eagle, [0006]-[0007], [0012], [0048]-[0049], [0052]-[0055]) and limits alert recipients to social circles (for example, friends; Eagle, [0056], [0060], [0066]-[0067]). Therefore, the stored information is additionally *not otherwise accessible to the wireless device utilizing the short range wireless protocol* unless certain thresholds are met.

(7)[1.B.I] “receiving, at the wireless device via a second wireless protocol, the stored information from one or more servers,”

154. Eagle teaches *receiving, at the wireless device via a second wireless protocol* (for example, receiving, at the Requester Device via a cellular

connection), *the stored information from one or more servers* (for example, stored profile information from the server).

155. When the Requester Device notifies the server of an Identified Device, the server compares the Requester Device's profile information with the Identified Device's profile information to determine whether they satisfy matching criteria. Eagle, [0005], [0020], [0024], [0040], [0042], [0048], [0051]. If so, an alert message is transmitted to the Requester Device. Eagle, [0006], [0020], [0052].

156. The alert message includes stored profile information associated with the matching Identified Device, for example, a picture, contact information, and “any other information which is of use in a specific application” and useful to “promote communication between[] nearby devices and their owners.” Eagle, [0007], [0020]-[0021], [0053], [0058].

157. Discussed above, communications between the Requester Device and the server are over a large area wireless network.

(8) [1.B.II] “the stored information relating to a particular entity or object associated with a first unique identifier, and”

158. Eagle teaches *the stored information relating to a particular entity or object associated with a first unique identifier* (for example, stored information relates UUIDs with Identified Devices and their owners).

159. Eagle teaches that a notification to the server includes the unique identifiers of the Identified Device (Eagle, [0048]; UIDs in view of Behrens), and the server uses the received UIDs to fetch the *stored information* from the profile database (Eagle, [0005], [0020], [0041], [0050]-[0051]).

160. As the profile database of *stored information* describes each device and its owner with photographs, bibliographic/demographic information, contact information, and more (*see* [1.B.I]), the *stored information* therefore *relates* to the Identified Device and device owner *associated with* the UIDs.

(9) [1.B.III] “wherein the second wireless protocol is different from the short range wireless protocol;”

161. Eagle teaches that *the second wireless protocol* (for example, large area wireless network; *see* [1.B.I]) *is different from the short range wireless protocol* (for example, Bluetooth; *see* [1.A.I]).

(10) [1.C] “causing selection of one or more of the unique identifiers from the first plurality of beacon transmissions, by filtering the beacon transmissions which include a particular beacon service identifier indicating that a particular received beacon transmission is associated with a particular wireless beacon service; and”

162. Eagle-Olkkonen teaches *causing selection of one or more of the unique identifiers from the first plurality of beacon transmissions* (for example, selecting UIDs for notification to the server), *by filtering the beacon transmissions*

which include a particular beacon service identifier indicating that a particular received beacon transmission is associated with a particular wireless beacon service (for example, filtering received transmissions that include service class and/or attribute information relating to Eagle’s social introduction system).

163. Eagle-Olkkonen teaches the Requester Device receiving, from Identified Devices, inquiry responses including *beacon service identifiers* such as service class and/or device class information identifying relevance to Eagle’s social introduction system. *See* [1.A.IV].

164. As discussed above, Eagle teaches the Requester Device determining “whether the detection of [each Identified Device] warrants the transmission of a notification message to the server” (Eagle, [0024]), and Olkkonen teaches that it would have been obvious to filter and select only the UIDs of Identified Devices that identify they are relevant to Eagle’s social introduction system based on the received service class (identifying service relevant to Eagle’s social introduction system; Olkkonen, 11:33-60, 22:34-43) and/or device class information (identifying a device type relevant to an implementation of Eagle’s social introduction system; Eagle, [0032], [0061], [0065]-[0065]). Selection and filtering techniques would have been well-known to a POSITA, including, for example, by analyzing received information and determining if they match a desired value. Olkkonen, 22:8-12, 22:34-43.

165. The UUIDs received from Identified Devices and chosen to be notified to the server are therefore *selected from the first plurality of beacon transmissions* and are based on *filtering the beacon transmissions which include a particular beacon service identifier indicating that a particular received beacon transmission is associated with a particular wireless beacon service.*

(11) [1.D] “taking first further action relating to the stored information, if the first unique identifier is present among the selected one or more unique identifiers.”

166. As discussed for [1.C], Eagle-Olkkonen teaches the *selection of one or more unique identifiers*, which as discussed for [1.B.II] are included in notifications to the server. The server uses received unique identifiers to fetch corresponding profile information from a database (*i.e.*, the *stored information*) and generate an alert for the Requester Device in alerts. Eagle, [0005], [0041], [0051]; *see also* [1.B.I]. The Requester Device receives the profile data and displays it. Eagle, [0019], [0021], [0058]. The user of the Requester Device is thereby alerted to the presence of users sharing similar personal interests, for example.

167. Each of the actions described above—*notifying the server, receiving profile information, and displaying received profile information*—are examples of *first further action relating to the stored information*. *See* EX1001, 24:41-50

(receiving information is an example of a further action), 25:3-8 (sending an identifier and receiving stored information in response is a further action).

Moreover, because these actions are only taken for UIDs that are selected as being relevant (and not filtered out as irrelevant) as discussed for [1.C], these actions are performed *if the first unique identifier is present among the selected one or more unique identifiers*.

ii) **Claim 2**

(1) [2.PRE] “The method of claim 1, wherein the receiving, at the wireless device, via a short range wireless protocol, of the first plurality of beacon transmissions occurs in a first time period, and”

168. For the purposes of this limitation, the *receiving of the first plurality of beacon transmissions* may be defined as occurring in a *first time period*. That is, the described receiving function is in a “first time period” that is not the same time as the “second time period” described below.

(2) [2.A] “wherein the method further comprises, during a second time period:”

169. Eagle teaches its system operating over many time periods, including a *second time period*. For example, Eagle teaches that the Requester Device periodically scans the environment for Identified Devices. Eagle, [0026], [0033]. Furthermore, the same Identified Device may be detected at different times (Eagle, [0023]) and a Requester Device may join and leave existing networks and

activities, or detect and re-detect other devices as they move in and out of range of each other (Olkkonen, 1:46-61, 2:51-65 (explaining Bluetooth operations)). Any device that is in Bluetooth range of the Requester Device and that is in a “discoverable” mode will respond to the Requester Device’s inquiries and be detected as an Identified Device. Eagle, [0019], [0033]-[0037].

170. For illustrative purposes to address this claim and other related limitations, it may be assumed that a particular Identified Device is detected one or more times in a *first time period*, and the same particular Identified Device is detected again one or more times in a *second time period* that follows the first time period. In both time periods, the Identified Device remains a participant in the same services and networks (for example, participating in Eagle’s social introduction system and running Eagle’s software, participating in an ongoing baseball game or CAD design project). For example, over the course of a work week or while attending a multi-day event (for simplicity, one day would be a first time period and a second day would be a second time period), a user of an Identified Device has “chang[ed] UUIDs” overnight to present themselves with a “new online identity” on the second day while still having a “single user account” on the server. Behrens, [0061], [0115]; *see also* [0103] (user “exercise[s] control over which or how many UUIDs are transmitted”). As discussed above, changing UUIDs in this manner prevents tracking over time, and Behrens explains that the user may

supply their UIDs to the server for synchronization. Behrens, [0065], [0076].

(3) [2.B.I] “receiving, at the wireless device, via a short range wireless protocol, a second plurality of beacon transmissions, each of the second plurality of beacon transmissions comprising three fields”

171. Eagle-Behrens-Olkkonen teaches receiving, at the wireless device (for example, receiving at the Requester Device), via a short range wireless protocol (for example, via Bluetooth protocol), a second plurality of beacon transmissions (for example, inquiry responses in the second time period) comprising three fields for the same reasons discussed for [1.A.I] and [2.A]. The three fields are discussed below.

(4) [2.B.II] “(a) a MAC address,”

172. Eagle-Behrens-Olkkonen teaches the *second beacon transmissions* including *a MAC address* in two separate ways discussed below.

(a) UIDs include a MAC address

173. As discussed above regarding the combined teachings and regarding [1.A.II], Eagle-Behrens teaches using a combination of UIDs and changing UIDs. An Identified Device’s UIDs may therefore be changed in the second time period to include, for example, a “WLAN MAC address.” Behrens, [0061], [0097], [0111], [0115], [0122].

174. A POSITA would have recognized that wireless communications device WLAN MAC addresses are different from their Bluetooth device addresses.

For example, Apple Inc.’s iPhone 3G in 2008 included Wi-Fi and Bluetooth capabilities (*see* EX1035), which had different addresses for each (*see* EX1036, 142).

(b) Bluetooth communications include a MAC address

175. As discussed for [1.A.II], Eagle teaches using Bluetooth protocols, which include a MAC address in each transmission.

(5) [2.B.III] “(b) a unique identifier, wherein the unique identifier of each respective beacon transmission does not directly identify a location of a beacon transmitter, and”

176. Eagle-Behrens teaches the *second beacon transmissions* including a *unique identifier, wherein the unique identifier of each respective beacon transmission does not directly identify a location of a beacon transmitter* (for example, UIDs including a unique symbol uniquely identifying a device and its owner).

177. As discussed above regarding the combined teachings and regarding [1.A.III], Eagle-Behrens teaches that UIDs may be a combination of different UID values, and further that UIDs change. An Identified Device’s UIDs may therefore be changed for the second time period to include, for example, a “unique... symbol” Instead of the unique number used in the first time period. Behrens, [0061], [0097], [0103], [0115], [0122].

178. As discussed for [1.A.III], UIDs such as symbols do not *directly identify a location of a beacon transmitter.*

(6) [2.B.IV] “(c) a beacon service identifier, wherein the beacon service identifier of each respective beacon transmission identifies that the unique identifier is relevant to stored information associated with a wireless beacon service,”

179. Eagle-Olkkonen teaches this limitation (for the second time period) for the same reasons discussed for [1.A.IV] (for the first time period).

180. Moreover, an Identified Device that is the same device continuing to participate in the same services, such as Eagle’s social introduction system, will include the same beacon service identifier (service class and/or device class).

(7) [2.B.V] “wherein the stored information is not accessible to the wireless device utilizing the short range wireless protocol;”

181. Eagle teaches this limitation (for the second time period) for the same reasons discussed for [1.A.V] (for the first time period).

(8) [2.C] “causing selection of one or more of the unique identifiers from the second plurality of beacon transmissions, by filtering the beacon transmissions which include the same particular beacon service identifier indicating that the particular received beacon transmission is associated with the same particular wireless beacon service; and”

182. Eagle-Olkkonen teaches this limitation (for the second time period) for the same reasons discussed for [1.C] (for the first time period).

183. Furthermore, as discussed above for [2.A], Eagle teaches periodically detecting devices in the first and second time periods. As the detection of Identified Devices—and subsequent transmissions of notifications and reception of alerts to/from the server, if any—is performed in each time period for the same purpose (*i.e.*, as part of Eagle’s social introduction system), Eagle-Olkkonen teaches *causing selection of one or more of the unique identifiers from the second plurality of beacon transmissions with the same particular beacon service identifier indicating an association with the same particular wireless beacon service* as those discussed for [1.C].

(9) [2.D.I] “taking second further action relating to the stored information, if a second unique identifier is present among the one or more unique identifiers selected from the second plurality of beacon transmissions,”

184. Eagle-Olkkonen teaches taking second further action in the second time period (relating to a second unique identifier), for the same reasons discussed for the first time period (relating to the first unique identifier). *See* [1.D].

185. For example, if the Identified Device has been removed from Eagle’s log of recently detected devices between the first and second time periods, then the same exemplary actions of notifying the server, receiving an alert, and displaying the alert will be performed again. Eagle, [0023]-[0024].

(10) [2.D.II] “wherein the first unique identifier and the second unique identifier are both associated with the same particular entity or object, and wherein the second unique identifier is not equal to the first unique identifier, and further wherein the received beacon transmissions including the first and second unique identifiers are received from a same transmitting device.”

186. Eagle-Behrens teaches that *the first unique identifier and the second unique identifier are both associated with the same particular entity or object* because the first and second transmissions including the first and second unique identifiers are received from the same detected Identified Device. *See* [2.A]. For the same reason, Eagle-Behrens teaches that *the received beacon transmissions including the first and second unique identifiers are received from a same transmitting device (i.e., the same Identified Device).*

187. Eagle-Behrens teaches that *the second unique identifier is not equal to the first unique identifier* because the first unique identifier is a unique number (*see* [1.A.III]) and the second unique identifier for the second time period has changed from the unique number to a unique symbol (*see* [2.B.III]). The same Identified Device, detected in the first time period and the second time period, therefore transmits *not equal* first and second unique identifiers, respectively.

iii) Claim 3

(1) [3.A] “The method of claim 2 wherein the MAC address received in a beacon transmission including the

second unique identifier is different from the MAC address received in a beacon transmission including the first unique identifier, but each such beacon transmission includes the same particular beacon service identifier, and”

188. Eagle-Behrens teaches MAC addresses in two separate ways. *See* [1.A.II] and [2.B.II]. Eagle-Behrens-Olkkonen further teaches this limitation for the following reasons.

(a) UIDs include a MAC address

189. Eagle-Behrens-Olkkonen teaches that *the MAC address received in a beacon transmission including the second unique identifier* (for example, WLAN MAC address; *see* [2.B.II]) *is different from the MAC address received in a beacon transmission including the first unique identifier* (for example, changed from the BD_ADDR used in the first time period; *see* [1.A.II]), *but each such beacon transmission includes the same particular beacon service identifier* (for example, the first and second transmissions, received from the same Identified Device participating in Eagle’s social introduction system, includes the same beacon service identifier; *see* [2.B.IV]).

(b) Bluetooth communications include a MAC address

190. To the extent Eagle does not explicitly describe that the first and second MAC addresses accompanying each transmission received from the Identified Device according to the Bluetooth protocol (*see* [1.A.II] and [2.B.II]) are

different, it would have been obvious to a POSITA to modify the Identified Device's MAC address for privacy and security.

191. In particular, as discussed above, a POSITA would have understood the concerns regarding privacy and tracking through identifiers—and the changing of identifiers as a solution to those concerns—was well-known in short-range wireless communications systems. Known solutions included the use of randomly generated identification numbers, such as a “randomized version of the BD_ADDR” to be “used in all the functions of the Bluetooth device that normally use the BD_ADDR.” EX1011, [0006]-[0013]. As documented in the prior art, one method for randomizing the BD_ADDR included generating a pseudonym BD_ADDR with a random number generator and substituting the pseudonym BD_ADDR for the real BD_ADDR in transmissions such as inquiry responses. EX1011, [0054], [0057], [0088].

192. Therefore, a POSITA would have been motivated to modify the Identified Device (and other Bluetooth devices in the system) to randomize the BD_ADDR value transmitted in Bluetooth communications, and would have had a reasonable expectation of success in doing so.

(2)[3.B] “wherein a plurality of beacon transmissions including the particular service identifier and the first unique identifier are received in the first time period, and no beacon transmissions including the same

particular service identifier and the second unique identifier are received in the first time period.”

193. Eagle-Behrens-Olkkonen teaches that *a plurality of beacon transmissions including the particular service identifier and the first unique identifier are received in the first time period.*

194. For example, as discussed for [2.A], a particular Identified Device may be detected by the Requester Device several times in the first time period. Eagle, [0023]. The same Identified Device that has not changed its UIDs (taught by Behrens) and that continues to participate in Eagle’s social introduction system will therefore include the same first unique identifier and service identifier in a *plurality of transmissions* during the first time period.

195. The same Identified Device continuing to participate in Eagle’s social introduction system transmits a second unique identifier (that is different from the first unique identifier) and a beacon service identifier (that is the same as the first beacon service identifier) in the second time period. *See* [2.B.III] and [2.B.IV]. The second unique identifier is different from the first unique identifier because the same Identified Device changes its combination of UIDs between the first and second time periods. *See* [2.D.II]. Accordingly, *no beacon transmissions including the same particular service identifier and the second unique identifier are received in the first time period* because the second time period’s UIDs are not used in the

first time period.

- iv) ***Claim 4: “The method of claim 3 wherein the second further action is based upon a function currently being performed on a device associated with the wireless beacon service.”***

196. Eagle-Olkkonen teaches that *the second further action is based upon a function currently being performed on a device associated with the wireless beacon service* (for example, joining and participating in a collaborative baseball game or CAD design in progress).

197. As discussed above, it would have been obvious to a POSITA for the Requester Device to take a variety of “actions” with respect to selected unique identifiers, including connecting with Identified Devices to take advantage of services or participate in collaborative activities.

198. Eagle explains that its social introduction system facilitates collaboration and presents the Requester Device with “information which is of use in a specific application” and useful to “promote communication” with Identified Devices. Eagle, [0007], [0041], [0050], [0065]. Collaboration may be for specific purposes, for example, for social functions, work projects, and other “job[s] or subject[s],” and information presented on the Requester Device therefore includes contact information useful for connecting with Identified Devices, including contact information, Bluetooth addresses, and Bluetooth device names. Eagle,

[0028], [0038], [0041], [0050], [0063]-[0065].

199. Olkkonen describes other similar collaborative uses of Bluetooth networks, including collaborative programs, CAD design projects, and games in which an Identified Device may already be a participant. Olkkonen, 11:29-30 (“joining... game that is... being played”), 19:51-20:25 and 24:48-61 (describing information exchanged for a network baseball application program to “play ball” and update scoreboards), 25:63-26:33 (collaborative CAD design routines update and share data among network members).

200. Accordingly, as Eagle teaches collaborative applications of its system for work projects and social functions, and as Olkkonen teaches examples of Bluetooth work projects (CAD design) and social functions (network baseball), it would have been obvious to a POSITA for the Requester Device to join those Bluetooth networks and participate in those collaborative functions.

201. As the Requester Device would be joining the Identified Device and participating in an in-progress CAD design project or baseball game, it is *based upon a function currently being performed on a device associated with the wireless beacon service*.

- v) ***Claim 5: “The method of claim 4 wherein the function is related to a current phone call, music being played, a video being played, a multi-player game, or a shared application.”***

202. As discussed for claim 4, *the function is*, for example, *related to a multi-player game* such as a baseball game, a *shared application* such as a CAD design project, or other “collaborative work projects, collaborative games..., and the like.” Olkkonen, 2:59-65, 20:41-43, 25:63-26:33.

- vi) ***Claim 6: “The method of claim 2 wherein the first or the second further action is related to receiving advertising information for presentation to a user of the wireless device, based upon the first or the second unique identifier, or information derived from the first or second unique identifier.”***

203. As discussed for [1.B.I] and [1.D], *the first further action* includes, for example, receiving and displaying information about an Identified Device *based upon the first unique identifier* (its UIDs). This information is *advertising information received for presentation to a user* of the Requester Device because it advertises the Identified Device (and its owner) as having interests relevant to the Requester Device (and its owner).

204. Eagle describes other actions based on UIDs, including receiving and presenting “special instructions or announcements” at a trade show, information regarding “nearby resources or facilities, such as an approaching free taxi, or a nearby public restroom,” and “products and expertise” from salesmen. Eagle,

[0061]-[0063]. These are also *advertising information for presentation*, as they make the user of the Requester Device aware of useful information and available goods and services.

- vii) ***Claim 7: “The method of claim 2 wherein one or more of the first and the second further action includes receiving content from a server based upon information derived from either the first unique identifier or the second unique identifier.”***

205. As discussed for [1.B.I], [1.D], and [2.D.I], *the first and the second further action includes*, for example, *receiving content from a server based on the first and second unique identifiers* (for example, receiving and displaying alerts based on the first and second unique identifiers used to search stored information in the server).

206. Eagle further teaches that the reception of content from the server is *based on information derived from the first and second unique identifiers*. For example, Eagle teaches that an alert is only provided to a Requester Device if profile data associated with an Identified Device (identified by unique identifier) indicates that the user associated with an Identified Device is “trusted” as a “friend” of the user of the Requester Device. Eagle, [0056], [0066]. As the profile data is fetched from the profile database based on the unique identifiers, the trust information is *derived from* the unique identifiers.

viii) ***Claim 8: “The method of claim 2, wherein the first or second further action includes sending a message to another device associated with an account related to the first and the second unique identifiers.”***

207. As discussed for claims 4-5, the Requester Device takes further actions such as participating in a network baseball game or collaborative CAD design. Such actions include *sending a message to another device* because all updates in those collaborations are relayed to all devices participating in those collaborations, including the devices associated with the first and the second unique identifier (for example, the Identified Device that is participating in the collaboration). The Identified Device is *another device* (i.e., not the Requester Device) and is *associated with an account related to the first and the second unique identifiers* (for example, the Identified Device and its owner have an account with profile information stored at the server, associated by its UIDs; *see* Eagle, [0045] (users are assigned user names and passwords to edit profile information); *see also* [1.B.II] (profile database information fetched by UIDs)).

208. For example, Olkkonen teaches that for the network baseball program, “update score” and “play ball” routines update game service records and send those updates to every member of the network. Olkkonen, 20:11-25; *see also* 7:15-18, 14:41-15:3, 18:4-13 (all updates are distributed to all network members). Updates for the collaborative CAD design program follow similar messaging steps.

Olkkonen, 25:63-26:2.

- ix) ***Claim 10: “The method of claim 2 wherein the second further action includes preventing sending of the second unique identifier or information derived from the second unique identifier by the wireless device to at least one of the one or more servers.”***

209. Eagle teaches that *the second further action includes preventing sending of the second unique identifier or information derived from the second unique identifier by the wireless device to at least one of the one or more servers* (for example, not sending a notification to the server if the associated device was previously encountered).

210. For example, Eagle teaches maintaining a timestamped log of devices that it has encountered. Eagle, [0022]-[0023]. Based on the timestamps, the Requester Device “determine[s] whether the detection of a given device warrants the transmission of a notification message to the server.” Eagle, [0024], [0048] (notifications include UIDs).

211. Therefore, in Eagle-Behrens-Olkkonen, if it is determined that the second unique identifier represents a device that had been recently detected, the Requester Device will not notify the server of the second unique identifier.

- x) ***Claim 12: “The method of claim 1 wherein the taking first further action includes causing the wireless device, to: send the first unique identifier or information derived from the first unique identifier to at least one of the one or more servers, and receive the stored information in response.”***

212. As discussed for [1.D], Eagle-Behrens teaches that taking first further action (for example, notifying the server) further includes causing the wireless device to send the first unique identifier or information derived from the first unique identifier to at least one of the one or more servers (for example, sending a notification including the unique identifier to the server), and receive the stored information in response (for example, receiving an alert containing stored profile information in response).

- xi) ***Claim 13: “The method of claim 1 wherein the stored information is received at the wireless device from at least one of the one or more servers prior to the taking of the first further action.”***

213. As discussed for [1.D], Eagle teaches that *the stored information is received at the wireless device from at least one of the one or more servers prior to the taking of the first further action* (for example, the alert containing stored profile information from the server is received prior to taking the first further action of displaying the information).

- xii) ***Claim 14: “The method of claim 2 wherein the stored information is received at the wireless device from at least one of the one or more servers prior to performing one or more of the first and the second further action.”***

214. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for the first further action in claim 13.

- xiii) ***Claim 15: “The method of claim 1 further comprising: using the stored information to determine if the first unique identifier is present among the first selected one or more unique identifiers.”***

215. Eagle-Behrens teaches *using the stored information to determine if the first unique identifier is present among the selected one or more of the unique identifiers from the second plurality of beacon transmissions* (for example, using received blacklist instructions to determine if a detected Identified Device is present among the selected received UIDs).

216. As discussed above, it would have been obvious for the Requester Device to take a variety of “actions” with respect to selected unique identifiers, including ignoring an Identified Device (detected in either the first or second time periods) if its UIDs are found on a blacklist received from a server. *See Behrens, [0101]-[0102], [0124]* (receiving blacklist instructions stored on a server and ignoring UIDs listed therein).

217. Eagle-Behrens-Olkkonen leaves to a POSITA the order of operations for the selection (for example, filtering based on service identifier as taught by

Olkkonen) and blacklist filtering (for example, ignoring blacklisted UUIDs as taught by Behrens), and it would have been obvious to perform the selection first and then filter based on the received blacklist, as there are only two finite and predictable options (filter first, blacklist second; or blacklist first, filter second) and they both produce substantially the same result (narrowing down Identified Devices based on two criteria).

xiv) *Claim 16: “The method of claim 2 wherein all beacon transmitter devices participating in the particular wireless beacon service have the same particular beacon service identifier.”*

218. Eagle-Olkkonen teaches that *all beacon transmitter devices participating in the particular wireless beacon service have the same particular beacon service identifier.*

219. As discussed above and for [1.A.IV] and [2.B.IV], an Identified Device participating in Eagle’s social introduction system will include the same beacon service identifier (service class and/or device class information) in different time periods. Similarly, other Identified Devices participating in Eagle’s social introduction system and that are the same type of device (for example, where Eagle’s system is applied to a social function for phones) will also transmit the same beacon service identifier.

- xv) ***Claim 18: “The method of claim 2 wherein the steps performed at the wireless device are performed as a result of an application program executing on the wireless device.”***

220. Eagle teaches that *the steps performed at the wireless device are performed as a result of an application program executing on the wireless device.*

221. Eagle teaches that the Requester Device “includes a processor that is specially programmed with an application program... that enable[s] the cellular phone to identify and log the presence of other... Bluetooth devices that are nearby, and to display an identification of those devices.” Eagle, [0019]. *See also* Eagle, [0020] (application program (“BlueAware”) executes on the processor to generate and send notification messages), [0029] (installing software and registering with the server); Olkkonen, 15:10-13, 15:31-42 (example executing a “network baseball application program”), 25:63-26:33 (program routines for collaborative CAD design).

- xvi) ***Claim 19: “The method of claim 2 wherein the second further action is related to either a product tied to a location or an advertisement tied to a location.”***

222. Eagle teaches that *the second further action is related to either a product tied to a location or an advertisement tied to a location.*

223. As discussed for [1.D] and [2.D.I], exemplary first and second further actions include displaying alerts based on profile information fetched at the server.

Eagle teaches that such information may be an advertisement of “special instructions or announcements whenever [the Requester Device] come[s] within range of a greeting beacon near the entrance to [a trade] show” and are therefore tied to the “physical infrastructure” at the trade show. Eagle, [0061].

224. Reception and display of instructions or announcements are therefore *related to a product or advertisement* (for example, the trade show product and its announcements) *tied to a location* (for example, tied to the trade show location). *See also* Eagle, [0061] (additional use includes identifying a nearby restroom, which is *a product or advertisement tied to a location*).

xvii) Claim 22: “The method of claim 2 wherein the second further action includes allowing a user associated with the wireless device to be provided access to an object or device associated with the wireless beacon service.”

225. Eagle-Olkkonen teaches that *the second further action includes allowing a user associated with the wireless device to be provided access to an object or device associated with the wireless beacon service* (for example, providing the user of the Requester Device access to printers, Internet gateways, and files through the Identified Device that is associated with Eagle’s social introduction system).

226. As discussed above, it would have been obvious for the Requester Device to take a variety of “actions” with respect to selected unique identifiers,

including connecting with Identified Devices to take advantage of services or participate in collaborative activities.

227. Olkkonen teaches that network services include providing user access to printers, fax machines, Internet gateways, and shared files. Olkkonen, 6:19-21, 18:60-63, 19:13-16, 25:48-52.

xviii) Claim 23: “The method of claim 2 wherein the taking second further action additionally comprises: controlling further communications between the wireless device and at least one device or server associated with an entity or object in proximity to the wireless device.”

228. Eagle-Behrens-Olkkonen teaches this limitation in two ways.

229. First, as discussed for claim 10, Eagle teaches that *the taking second further action additionally comprises: controlling further communications between the wireless device and at least one device or server* (for example, not sending a notification to the server if the associated device was previously encountered) *associated with an entity or object in proximity to the wireless device* (for example, the server is associated with the user being blocked, who is in Bluetooth proximity of the Requester Device and is registered with Eagle’s social introduction system).

230. Second, as discussed for claim 15, Eagle-Behrens teaches receiving, from a server, a blacklist of UIDs that the Requester Device should ignore. Behrens, [0101]-[0102], [0124]. A POSITA would have recognized obvious ways for implementing a blacklist of UIDs after the Requester Device receives a

blacklist from a server and stores it in its memory. A first method would have included not notifying the server when one of these UIDs responded to an inquiry and, as a result, no connection is established. *See* Eagle, [0023]-[0025] (“determining whether... detection of a given device warrants the transmission of a notification message to the server”). A second method would have included downloading the blacklist to other user devices that were members of a service so they would not respond to inquiries made by devices that were on the blacklist (for example, a Requester Device would not respond to inquiries from other Requester Devices on a blacklist. Other methods would have included blocking all further contact with blacklisted UIDs. *See* Behrens, [0026], [0101] (blacklists “stop the other user[s] from further contacting [the user to be ignored])).

231. Eagle-Behrens therefore further teaches that *taking second further action additionally comprises: controlling further communications between the wireless device and at least one device* (for example, instructing the Requester Device to ignore and block further contact with an Identified Device if its UID is on a blacklist received from a server) *or server* (for example, not notifying the server of that Identified Device) *associated with an entity or object in proximity to the wireless device* (for example, the Identified Device and the server are associated with the user being blocked, who is in Bluetooth proximity of the Requester Device and is registered with Eagle’s social introduction system).

- xix) Claim 26: “The method of claim 2 further comprising: using the stored information to determine if the second unique identifier is present among the selected one or more of the unique identifiers from the second plurality of beacon transmissions.”**

232. Eagle-Behrens-Olkkonen teaches this limitation (for the second unique identifier) for the same reasons discussed for claim 15 (for the first unique identifier).

- xx) Claim 27: “The method of claim 1 wherein the MAC address is a randomly generated 48 bit number matching a format of a Bluetooth BD_ADDR.”**

233. Eagle-Behrens-Olkkonen teaches that *the MAC address is a randomly generated 48 bit number matching a format of a Bluetooth BD_ADDR* (for example, it would have been obvious to use a randomized BD_ADDR). See [3.A].

- xxi) Claim 28: “The method of claim 3 wherein the short range protocol is derived from Bluetooth.”**

234. Eagle-Behrens-Olkkonen teaches the method of claim 3, including a randomized BD_ADDR to be “used in all the functions of the Bluetooth device that normally use the BD_ADDR.” EX1011, [0006]-[0013]. See [3.A].

Randomized BD_ADDR values were not part of the Bluetooth specification prior to the '971 patent (*i.e.*, Bluetooth version 2.1). Therefore, using randomized BD_ADDRs in Bluetooth communications would have been communicating using a non-standard Bluetooth version. However, this non-standard version would have been based on version 2.1 or an earlier version of Bluetooth. Therefore, this non-

standard version would be based on a *short range protocol derived from Bluetooth*.

xxii) Claim 29: “The method of claim 1 wherein the first further action is related to receiving advertising information for presentation to a user of the wireless device, based upon the first unique identifier, or information derived from the first unique identifier.”

235. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 6.

xxiii) Claim 30: “The method of claim 1 wherein the first further action includes receiving content from a server based upon information derived from the first unique identifier.”

236. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 7.

xxiv) Claim 34: “The method of claim 1 wherein the first further action is related to either a product tied to a location or an advertisement tied to a location.”

237. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 19.

xxv) Claim 35: “The method of claim 3 wherein the taking second further action additionally comprises: controlling further communications between the wireless device and at least one device or server associated with an entity or object in proximity to the wireless device.”

238. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 23.

xxvi) Claim 36: “The method of claim 1 further comprising: using the stored information to determine if the first unique identifier is present among the selected one or more of the unique identifiers from the first plurality of beacon transmissions.”

239. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 15.

xxvii) Claim 37

(1)[37.PRE] “A mobile wireless device comprising:”

240. Eagle-Behrens-Olkkonen teaches a *mobile wireless device* (for example, the Requester Device is a phone communicating via Bluetooth and cellular protocols). *See* [1.A.I].

(2)[37.A] “one or more radios for providing reception and transmission for each of a Bluetooth wireless protocol and a second wireless protocol;

241. Eagle teaches the Requester device including *one or more radios for providing reception and transmission for each of a Bluetooth wireless protocol and a second wireless protocol*. Eagle, [0018] (“cellular telephones which incorporate short range radio transceivers that use the Bluetooth protocol”), claim 2 (including a “short range radio transmitter” and “receiver,” and a “long range communications interface coupled to [a] long range communications network”); *see also* [0019]-[0020], [0022], [0028], [0038]-[0040].

(3)[37.B] “one or more processors; and”

242. Eagle teaches the Requester device including *one or more processors*.

Eagle, [0019] (“Each... Bluetooth enabled cellular phone[] includes a processor that is specially programmed”); *see also* [0020], [0028], claim 2.

(4) [37.C] “one or more memory devices coupled to the one or more processors, the one or more memory devices storing a set of instructions that when executed by the one or more processors cause the one or more processors to perform operations including:”

243. Eagle teaches the Requester Device including *one or more memory devices coupled to the one or more processors, the one or more memory devices storing a set of instructions that when executed by the one or more processors cause the one or more processors to perform operations* (for example, the processor executes programming installed on the Requester Device).

244. Eagle teaches that its method for facilitating networking communications is performed, in part, by executing an application program that is “downloaded” and “installed” on the Requester Device. Eagle, [0028]-[0029]. A POSITA would have recognized that downloading, installing, and executing an application program as described obviously, if not necessarily, requires a *memory* on the device that is coupled to the processor. Processors executing instructions stored on memory is a well-known configuration for digital computing systems. See Olkkonen, 15:31-34, 35:39-41, 49:56-59 (describing programs stored in memory and executed by processors). *See also* Eagle, [0023]-[0024] (describing a

memory for storing log data).

(5) [37.D] “receiving from a beacon transmitter, using the Bluetooth wireless protocol, a first plurality of beacon transmissions during a first time period, each of the beacon transmissions including (a) a MAC address, (b) a unique identifier, the unique identifier does not directly identify a location of the beacon transmitter, and (c) a beacon service identifier, wherein the beacon service identifier of each respective beacon transmission identifies that the unique identifier is relevant to stored information associated with a wireless beacon service, wherein the stored information is not otherwise accessible to the wireless device utilizing the Bluetooth wireless protocol;”

245. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons the Requester Device receives, from an Identified Device, the first plurality of beacon transmissions discussed for [1.A.I]-[1.A.V]. As discussed for [2.PRE], these first transmissions are in a first time period.

(6) [37.E] “receiving from one or more servers, using the second wireless protocol, stored information related to a entity or object associated with a first unique identifier;”

246. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for [1.B.I]-[1.B.II].

(7) [37.F] “selecting one or more unique identifiers from the first plurality of beacon transmissions, by filtering the beacon transmissions which include a particular beacon service identifier indicating that a particular received beacon transmission is associated with the particular wireless beacon service;”

247. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for [1.C].

(8) [37.G] “taking first further action relating to the stored information, if the first unique identifier is present among the selected one or more unique identifiers;”

248. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for [1.D].

(9) [37.H] “receiving, by the wireless device, using the Bluetooth wireless protocol, during a second time period, a second plurality of beacon transmissions, each of the second plurality of beacon transmissions comprising three fields (a) a MAC address, (b) a unique identifier, wherein the unique identifier of each respective beacon transmission does not directly identify a location of a beacon transmitter, and (c) the beacon service identifier, wherein the beacon service identifier of each respective beacon transmission identifies that the unique identifier is relevant to stored information associated with a wireless beacon service, wherein the stored information is not accessible to the wireless device utilizing the Bluetooth wireless protocol;”

249. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for [2.A]-[2.B.V].

(10) [37.I] “selecting one or more of the unique identifiers from the second plurality of beacon transmissions, by filtering the beacon transmissions which include the same particular beacon service identifier indicating that a particular received beacon transmission is associated with the same particular wireless beacon service;”

250. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for [2.C].

(11) [37.J] “taking second further action relating to the stored information, if a second unique identifier is present among the one or more unique identifiers selected from the second plurality of beacon transmissions, wherein the second unique identifier is associated with the same entity or object, and wherein the second unique identifier is not equal to the first unique identifier, and further wherein the received beacon transmissions including the first and second unique identifiers are received from a same transmitting device; and”

251. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for [2.D.I]-[2.D.II].

(12) [37.K] “wherein the MAC address received in a beacon transmission including the second unique identifier is different from the MAC address received in a beacon transmission including the first unique identifier, but each such beacon transmission includes the same particular beacon service identifier.”

252. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for [3.A].

xxviii) Claim 38: “The mobile wireless device of claim 37 wherein the operations further comprise: using the stored information to determine if the second unique identifier is present among the selected one or more of the unique identifiers from the second plurality of beacon transmissions.”

253. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons

discussed for claim 26.

xxix) Claim 39: “The mobile wireless device of claim 37 wherein each MAC address or a respective beacon transmission is a randomly generated 48 bit number matching a format of a Bluetooth BD_ADDR.”

254. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 27.

xxx) Claim 40: “The mobile wireless device of claim 37 wherein the second further action is based upon a function currently being performed on a device associated with the wireless beacon service.”

255. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 4.

xxxi) Claim 41: “The mobile wireless device of claim 40 wherein the function is related to a current phone call, music being played, a video being played, a multi-player game, or a shared application.”

256. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 5.

xxxii) Claim 42: “The mobile wireless device of claim 37 wherein one or more of the first further action and the second further action includes receiving content from a server based upon information derived from either the first unique identifier or the second unique identifier.”

257. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 7.

xxxiii) Claim 43: “The mobile wireless device of claim 37, wherein the first or second further action includes sending a message or causing a server to send a message to another device associated with an account related to the first and the second unique identifiers.”

258. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 8.

xxxiv) Claim 44: “The mobile wireless device of claim 37 wherein the second further action includes preventing sending of the second unique identifier or information derived from the second unique identifier by the mobile wireless device to at least one of the one or more servers.”

259. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 10.

xxxv) Claim 46: “The mobile wireless device of claim 37 wherein the operations further comprise: using the stored information to determine if the first unique identifier is present among the first selected one or more unique identifiers.”

260. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 15.

xxxvi) Claim 48: “The mobile wireless device of claim 37 wherein the second further action includes allowing a user associated with the mobile wireless device to be provided access to an object or device associated with the wireless beacon service.”

261. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 22.

xxxvii) Claim 49: “The mobile wireless device of claim 37 wherein the first or second further action additionally comprises: controlling further communications between the mobile wireless device and at least one device or server associated with an entity or object in proximity to the wireless device based upon information derived from the first or second unique identifier.”

262. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 23.

263. Additionally, because the actions of not notifying the server and blocking communications with an Identified Device are each based on information determined using those received UIDs (for example, that the UIDs have recently been detected or that the UIDs are on a blacklist), the controlling is *based upon information derived from the first or second unique identifier*.

xxxviii) Claim 50

(1) [50.PRE] “A computer program product for installation in a non-volatile memory in a wireless device, the computer program product comprising computer program instructions that, when read from the non-volatile memory, and then executed by one or more processors in the wireless device, cause the wireless device to:”

264. Eagle teaches this limitation. *See* [37.B]-[37.C]; Eagle, [0028]-[0029] (describing a wireless device including one or more memory devices coupled to one or more processors executing a program that is downloaded and installed on the wireless device from a server or other device). The use of “non-volatile”

memory for program installation would have been well-known to a POSITA because they advantageously provide storage that persists through power cycles, for example, avoiding the need to download and install programs every time the device is powered on. Different types of non-volatile memories would have been well-known to POSITAs, including FLASH memory commonly used in mobile wireless devices. Behrens, [0106] (device includes “memory, which may be FLASH memory.

(2) [50.A] “process a first plurality of beacon transmissions, received at the wireless device via a Bluetooth wireless protocol, each beacon transmission comprising three fields (a) a MAC address, (b) a unique identifier, wherein the unique identifier of each respective beacon transmission does not directly identify a location of a beacon transmitter, and (c) a beacon service identifier, wherein the beacon service identifier of each respective beacon transmission identifies that the unique identifier is relevant to stored information associated with a wireless beacon service, wherein the stored information is not otherwise accessible to the wireless device utilizing the Bluetooth wireless protocol;”

265. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for [37.D] (receiving beacon transmissions) and [37.F]-[37.G] (selecting one or more unique identifiers and, for example, notifying the server, requires *processing* the transmissions).

(3) [50.B] “process stored information transferred from one or more servers to the wireless device via a second

wireless protocol, wherein the stored information relates to an entity or object associated with a first unique identifier, and wherein the second wireless protocol is different from the Bluetooth wireless protocol;

266. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for [1.B.I]-[1.B.III] and [37.E] (receiving stored information) and [1.D] (taking first action relating to the stored information, for example, displaying the information; thereby *processing* the information).

(4) [50.C] “select one or more of the unique identifiers from the first plurality of beacon transmissions, by filtering the beacon transmissions which include a particular beacon service identifier indicating that a particular received beacon transmission is associated with a particular wireless beacon service; and”

267. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for [37.F].

(5) [50.D] “perform a first further action, the first further action relating to the stored information, if the first unique identifier is present among the selected one or more unique identifiers.”

268. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for [37.G].

xxxix) Claim 51

(1) [51.PRE] “The computer program product of claim 50 wherein the computer program instructions, when executed by the one or more processors in the wireless device, cause the wireless device to:”

269. See claim 50.

(2) [51.A] “during a first time period: process the first plurality of beacon transmissions in the first time period, and”

270. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for [50.A] (processing the first plurality of beacon transmissions) and [37.D] (the first plurality of beacon transmission are received in a first time period). The time period in which the processing occurs may be defined as a *first time period*.

(3) [51.B] “during a second time period:”

271. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for [37.H].

(4) [51.C] “process a second plurality of beacon transmissions, received at the wireless device via the Bluetooth wireless protocol, each beacon transmission comprising three fields (a) a MAC address, (b) a unique identifier, wherein the unique identifier of each respective beacon transmission does not directly identify a location of a beacon transmitter, and (c) a beacon service identifier, wherein the beacon service 30 identifier of each respective beacon transmission identifies that the unique identifier is relevant to stored information associated with a wireless beacon service, wherein the stored information is not otherwise accessible to the wireless device utilizing the Bluetooth wireless protocol;”

272. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for [37.H] (receiving second beacon transmissions in a second time

period) and [37.I]-[37.J] (selecting one or more unique identifiers and, for example, notifying the server, requires *processing* the transmissions).

(5) [51.D] “select one or more of the unique identifiers from the second plurality of beacon transmissions, by filtering the beacon transmissions which include the same particular beacon service identifier indicating that the particular received beacon transmission is associated with the same particular wireless beacon service; and”

273. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for [37.I].

(6) [51.E] “perform a second further action relating to the stored information, if a second unique identifier is present among the one or more unique identifiers selected from the second plurality of beacon transmissions, wherein the first unique identifier and the second unique identifier are both associated with the same particular entity or object, and wherein the second unique identifier is not equal to the first unique identifier, and further wherein the received beacon transmissions including the first and second unique identifiers are received from a same transmitting device.”

274. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for [37.J].

- xl) ***Claim 52: “The computer program product of claim 51 wherein the MAC address received in a beacon transmission including the second unique identifier is different from the MAC address received in a beacon transmission including the first unique identifier, but each such beacon transmission includes the same particular beacon service identifier, and wherein a plurality of beacon transmissions including the particular beacon service identifier and the first unique identifier are received in the first time period, and no beacon transmissions including the same service identifier and the second unique identifier are received in the first time period.”***

275. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for [37.K] and [3.A]-[3.B].

- xli) ***Claim 53: “The computer program product of claim 52 wherein the second further action is based upon a function currently being performed on a device associated with the wireless beacon service.”***

276. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 40.

- xlii) ***Claim 54: “The computer program product of claim 53 wherein the function is related to a current phone call, music being played, a video being played, a multi-player game, or a shared application.”***

277. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 41.

xliii) Claim 55: “The computer program product of claim 51 wherein the first or the second further action is additionally related to receiving advertising information for presentation to a user of the wireless device, based upon the first or the second unique identifiers, or based upon information derived from the first or second unique identifier.”

278. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 6.

xliv) Claim 56: “The computer program product of claim 50 wherein the first further action is additionally related to receiving advertising information for presentation to a user of the wireless device, based upon the unique identifier, or based upon information derived from the first unique identifier.”

279. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 29.

xliv) Claim 57: “The computer program product of claim 51 wherein one or more of the first further action and the second further action additionally includes causing the wireless device to receive content from a server based upon information derived from either the first unique identifier or the second unique identifier.”

280. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 42.

xlvi) Claim 58: “The computer program product of claim 52 wherein the first further action additionally includes causing the wireless device to receive content from a server based upon information derived from the first unique identifier.”

281. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 30.

xlvii) Claim 59: “The computer program product of claim 51, wherein the first or second further action additionally includes causing the wireless device to send a message to another device associated with an account related to the first or the second unique identifiers, or information derived from the first or the second unique identifiers.”

282. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claims 8 and 43.

xlvi) Claim 62: “The computer program product of claim 51 wherein the second further action additionally includes causing the wireless device to prevent sending the second unique identifier or information derived from the second unique identifier by the wireless device to at least one of the one or more servers.”

283. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 10.

xlix) Claim 64: “The computer program product of claim 50 wherein the first further action additionally includes causing the wireless device to: send the first unique identifier or information derived from the first unique identifier to at least one of the one or more servers, and subsequently receive the stored information in response thereto.”

284. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 12.

i) Claim 65: “The computer program product of claim 50 wherein the computer program instructions, when executed by the one or more processors in the wireless device, further cause the wireless device to receive stored information at the wireless device from at least one of the one or more servers prior to performing the first further action.”

285. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 13.

li) Claim 66: “The computer program product of claim 51 wherein the computer program instructions, when executed by the one or more processors in the wireless device, further cause the wireless device to: receive stored information at the wireless device from at least one of the one or more servers prior to performing one or more of the first and the second further action.”

286. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 14.

- lii) ***Claim 67: “The computer program product of claim 50 wherein the computer program instructions, when executed by the one or more processors in the wireless device, further cause the wireless device to: use the stored information to determine if the first unique identifier is present among the first selected one or more unique identifiers.”***

287. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 15.

- liii) ***Claim 68: “The computer program product of claim 51 wherein all beacon transmitter devices participating in the particular wireless beacon service have the same particular beacon service identifier.”***

288. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 16.

- liv) ***Claim 72: “The computer program product of claim 51 wherein the second further action is additionally related to either a product tied to a location or to an advertisement tied to a location.”***

289. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 19.

- lv) ***Claim 75: “The computer program product of claim 51 wherein the second further action additionally includes causing the wireless device to allow a user associated with the wireless device to access to an object or device associated with the wireless beacon service.”***

290. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 22.

- lvi) ***Claim 76: “The computer program product of claim 51 wherein the second further action additionally includes causing the wireless device to control further communications between the wireless device and at least one other device or server associated with an entity or object in proximity to the wireless device.”***

291. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 23.

- lvii) ***Claim 79: “The computer program product of claim 51 wherein the computer program instructions, when executed by the wireless device, further cause the wireless device to: use the stored information to determine if the second unique identifier is present among the selected one or more of the unique identifiers from the second plurality of beacon transmissions.”***

292. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 26.

- lviii) ***Claim 80: “The computer program product of claim 50 further comprising program instructions that, when executed by the one or more processors, cause the wireless device to: use the stored information to determine if the first unique identifier is present among the selected one or more of the unique identifiers from the first plurality of beacon transmissions.”***

293. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons discussed for claim 36.

- lix) ***Claim 81: “The computer program product of claim 50 wherein the MAC address is a randomly generated 48 bit number matching a format of a Bluetooth BD ADDR.”***

294. Eagle-Behrens-Olkkonen teaches this limitation for the same reasons

discussed for claim 27.

X. SECONDARY CONSIDERATIONS

295. The Challenged Claims of the '971 patent are rendered obvious by the grounds presented herein. In my opinion, the strength of the grounds that I discuss above cannot be overcome by any alleged objective indicia.

296. I am not currently aware of any alleged objective indicia that Patent Owner has asserted specifically for the '971 patent claims. To the extent Patent Owner asserts the existence of any additional secondary considerations in its responses, or presents additional evidence or arguments, I reserve my right to address any such evidence.

XI. CONCLUSION

297. In summary, I have concluded that the Challenged Claims are rendered obvious over the prior art references as discussed above. Specifically, in my opinion, for at least the reasons above, the Challenged Claims of the '971 patent obvious.

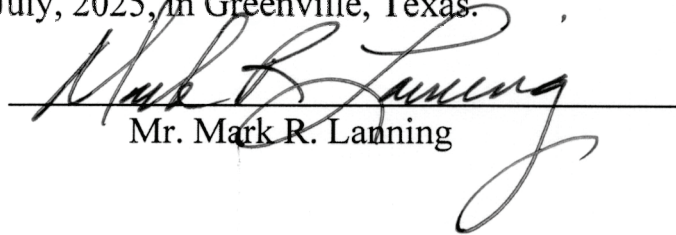
298. To the extent it is argued that any further disclosure is required for an element in the Challenged Claims that I have identified as being disclosed, a person of ordinary skill in the art would certainly have found that element obvious to include based on the sample explicit disclosure or inherent disclosures and analysis I have identified above.

299. I reserve the right to supplement my opinions in the future to respond to any arguments that Patent Owner or its expert(s) may raise and to take into account new information as it becomes available to me.

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

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

302. Executed this 2nd day of July, 2025, in Greenville, Texas.


Mr. Mark R. Lanning