

*Inter Partes Review of USPN 8,311,523*  
*Declaration of David H. Williams (EX 1003)*

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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GOOGLE INC., NEST LABS, INC., AND DROPCAM, INC.  
Petitioners

v.

E.DIGITAL CORPORATION  
Patent Owner

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Case IPR No. Unassigned  
U.S. Patent 8,311,523

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**DECLARATION OF DAVID HILLIARD WILLIAMS**

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I, David Hilliard Williams, declare as follows:

**I. Overview**

1. I have been jointly retained on behalf of Google Inc., Nest Labs, Inc., and Dropcam, Inc. (the “Petitioners”) for the above-captioned *Inter Partes* Review (IPR) proceeding. I am being compensated for my time in connection with this IPR at my standard consulting rate. I understand that this proceeding involves U.S. Patent No. 8,311,523 (“the ’523 patent”, EX 1001) titled “System And Method For Managing Mobile Communications” by Patrick Nunally and that the ’523 patent is currently assigned to e.Digital Corporation.

2. I have reviewed and am familiar with the specification of the ’523 patent. I understand that the ’523 patent resulted from U.S. Application No. 13/047,290, filed on March 14, 2011. The ’290 application was a continuation of U.S. Application No. 12/891,875, filed on September 28, 2010. I understand that the ’523 patent has been provided as EX 1001. I will cite to the specification using the following format: (EX 1001, 1:1-10). This example citation points to the ’523 patent specification at column 1, lines 1-10. Throughout the declaration, emphasis is added, unless otherwise indicated.

3. In preparing this Declaration, I have reviewed the ’523 patent and considered each of the documents cited herein, in light of general knowledge in the

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art. In formulating my opinions, I have relied upon my experience in the relevant art. I have also considered the viewpoint of a person of ordinary skill in the art (*i.e.*, a person of ordinary skill in the field of mobile communication and/or context awareness, defined further below in Section IV) prior to September 28, 2010. I am familiar with the technology at issue as of the September 28, 2010 effective filing date of the '523 patent. I am also familiar with the level of ordinary skill in the art with respect to the technology at issue as of the September 28, 2010 effective filing date.

4. I have reviewed and am familiar with the file history of the '523 patent. I understand that the file history of the '523 patent has been provided as EX 1002.

**II. List of Documents Considered in Formulating My Opinion**

5. I have reviewed and am familiar with the following prior art used in the Petition for *Inter Partes* Review of the '523 patent:

**U.S. Patent Publication No. 2009/0300525 A1 to Jolliff *et al.*,** titled "Method And System For Automatically Updating Avatar To Indicate User's Status," ("Jolliff"). Jolliff was filed on May 27, 2008, more than two years before the earliest possible benefit date of the '523 patent. I understand Jolliff has been provided as EX 1005.



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**U.S. Patent Publication No. 2009/0094179 A1 to Jager**, titled “Classifying Environment Of A Data Processing Apparatus,” (“Jager”). Jager was filed on October 8, 2007, more than two years before the earliest possible benefit date of the ’523 patent. I understand Jager has been provided as EX 1006.

**International Patent Publication No. WO 2009/043020 A2 to Miluzzo *et al.***, titled “System And Method For Injecting Sensed Presence Into Social Networking Applications,” (“Miluzzo”). Miluzzo was issued on April 2, 2009, more than one year before the earliest possible benefit date of the ’523 patent. I understand Miluzzo has been provided as EX 1007.

**U.S. Patent Publication No. 2006/0004680 A1 to Robarts, *et al.***, titled “Contextual Responses Based On Automated Learning Techniques” (“Robarts”). Robarts was issued on January 5, 2006, more than four years prior to the earliest possible benefit date of the ’523 patent. I understand Robarts has been provided as EX 1008.

**“On Protecting Private Information in Social Networks: A Proposal” by Luo *et al.***, (“Luo”), Data Engineering, ICDE ’09. IEEE 25th International Conference on March 29 - April 2, 2009. I understand Luo has been provided as EX 1017.

6. I have also reviewed and am familiar with the following other prior art documents:

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**“Multi-Sensor Context-Awareness in Mobile Devices and Smart Artefacts” by Gellersen *et al.*, (“Gellersen”),** Mobile Networks and Applications v.7 n.5, p.341-351, October 2002. I understand Gellersen has been provided as EX 1009.

**U.S. Patent Publication No. 2009/0170480 A1 to Lee,** titled “Systems And Methods For Intelligent And Customizable Communications Between Devices,” (“Lee”), published on July 2, 2009. I understand Lee has been provided as EX 1010.

**“A Privacy Framework for Mobile Health and Home-Care Systems” by Kotz *et al.*, (“Kotz”),** SPIMACS ’09 (November 13, 2009). I understand Kotz has been provided as EX 1011.

**U.S. Patent Publication No. 2006/0085419 A1 to Rosen,** titled “System And Method For Location Based Social Networking,” (“Rosen”), published on April 20, 2006. I understand Rosen has been provided as EX 1012.

**U.S. Patent Publication No. 2008/0140650 A1 to Stackpole,** titled “Dynamic Geosocial Networking,” (“Stackpole”), published on June 12, 2008. I understand Stackpole has been provided as EX 1013.

**“Wearable Computing and Contextual Awareness” by T. Starner, (“Starner”),** Ph.D. thesis, MIT Media Lab., April 30, 1999. I understand Starner has been provided as EX 1015.

**“Designing for privacy in ubiquitous computing environments” by V. Bellotti and A. Sellen, (“Bellotti”),** In Proc. European

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Conference on Computer-Supported Cooperative Work, Milano, Italy, September 1993. I understand Bellotti has been provided as EX 1016.

**U.S. Patent Publication No. US 2010/0275129A1 to Besecker**, titled “Internet-based small-business promotional network” (“Besecker”), filed on April 23, 2009. I understand Besecker has been provided as EX 1018.

**“7 Things You Should Know About ... Microblogging” by Educause Learning Initiative (“ELI”)**, July, 2009. I understand ELI has been provided as EX 1019.

**“A Brief History of Microblogging” by E. Naone (“Naone”)**, Technology Review 111 (5) 26, 2008. I understand Naone has been provided as EX 1020.

**“Micro-blogging, latest tool in the web” by Sethi, S. K. (“Sethi”)**, Indian Pediatrics, (46), 188, February 17, 2009. I understand Sethi has been provided as EX 1021.

**“Social Connectedness on Facebook – An Explorative Study on Status Message Usage” by Kobler *et al.* (“Kobler”)**, in Proceedings of the Sixteenth Americas Conference on Information Systems, Lima, Peru, paper 247, August 12-15, 2010. I understand Kobler has been provided as EX 1022.

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**“Privacy and Online Social Networking Websites” by Goettke *et al.*** (“Goettke”), in Computer Science 199r: Special Topics in Computer Science Computation and Society: Privacy and Technology, May 14, 2007. I understand Goettke has been provided as EX 1024.

7. The ’523 patent describes and claims a system, method, and computer readable medium which “automatically provides differing levels of information according to a predetermined social hierarchy.” (EX 1001, Claim 1.) I am familiar with the technology described in the ’523 patent as of its earliest possible benefit date of September 28, 2010.

8. I have been asked to provide my technical review, analysis, insights, and opinions regarding the ’523 patent and the above-noted references that form the basis for the grounds of rejection set forth in the Petition for *Inter Partes* Review of the ’523 patent.

### **III. My Background and Qualifications**

9. In formulating my opinions, I have relied upon my training, knowledge, and experience in the relevant art. A copy of my current *curriculum vitae* is provided as EX 1004, and it provides a comprehensive description of my academic and employment history over the last thirty-plus years.

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10. I am currently the President of the company E911-LBS Consulting, and I have been with the company since 2002. As the President of E911-LBS Consulting, I provide services across the entire wireless value chain, particularly with respect to technology and business strategic planning and product design and development associated with Location Based Services (LBS), Global Positioning Satellite (GPS) systems, Wireless 911 (E911), Real-Time Location Systems (RTLS), Radio Frequency Identification (RFID), beacon, and other location determination and sensing technologies and services.

11. I have very extensive expertise in all aspects of Location Based Service delivery across the wireless location ecosystem including enabling network, map data, geospatial platform, chipset, data management, device, and location determination infrastructure and integration providers. I am expert in all related aspects of LBS, including data privacy and security management.

12. For example, I managed the development and launch of several consumer-oriented LBS applications including mobile social networking, family tracking and local search for a major wireless carrier. This work included the development of corporate-wide location data privacy policies and their systemic implementation for all LBS customers. My work in both data privacy and mobile social networking resulted in my co-inventing a patent in this field titled “Method

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and apparatus for providing mobile social networking privacy.” (U.S. Patent Number 8,613,109, issued on December 17, 2013).

13. In another example, I developed the LBS product/technology strategy for a leading North American carrier. This work resulted in some of the earliest LBS applications into the U.S. market, and included extensive research into the potential use of presence technologies in providing location-based services.

14. I have authored multiple books on wireless location, including:

- *The Definitive Guide to GPS, RFID, Wi-Fi, and Other Wireless Location-Based Services* (2005 and 2009 versions);
- *The Definitive Guide to Wireless E911*; and
- *The Definitive Guide to Mobile Positioning and Location Management* (co-author).

15. I received a B.S. degree, in Electrical Engineering, from Purdue University, in 1983. I received a MBA degree, in Information Systems Management, from University of Texas, Austin, in 1987.

#### **IV. Legal Principles**

16. I understand that my analysis requires an understanding of the scope of the '523 patent claims. I understand that claims subject to *Inter Partes* review are given the “broadest reasonable construction in light of the specification of the patent in which it appears.” 42 C.F.R. § 42.100(b).

17. I understand that a claim is unpatentable if it is anticipated or obvious. I understand that anticipation of a claim requires that every element of a claim is expressly or inherently disclosed in a single prior art reference. I do not render opinions regarding anticipation in connection with this proceeding.

##### **A. My Understanding of Claim Construction**

18. I understand that the challenged claims must be given their broadest reasonable interpretations (“BRI”) in light of the specification of the '523 patent, which means that the words of the claims should be given their broadest possible meaning consistent with the specification of the '523 patent.<sup>1</sup>

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<sup>1</sup> I also understand that the broadest reasonable interpretation used here may be different from the interpretation that a POSA may give to the claims in another context—*e.g.*, in litigation—and that the broadest reasonable interpretation may be informed by the construction advanced by a patentee in litigation.

**B. My Understanding of Obviousness**

19. I understand that an obviousness analysis involves comparing a claim to the prior art to determine whether the claimed invention would have been obvious to a person of ordinary skill in the art at the time of the invention (“POSA”) in view of the prior art and in light of the general knowledge in the art. I also understand that when a POSA would have reached the claimed invention through routine experimentation, the invention may be deemed obvious.

20. I also understand that obviousness can be established by combining or modifying the teachings of the prior art. Specific teachings, suggestions, or motivations to combine any first or primary prior art reference with a second prior art reference can be explicit or implicit, but must have existed before the ’523 patent was filed. I understand that prior art references themselves may be one source of a specific teaching or suggestion to combine features of the prior art, but that such suggestions or motivations to combine art may come from other sources as well. Specifically, the sources may include logic, judgment, and common sense available to a POSA rather than explicit statements in the prior art. I understand that it is not proper to combine references when there is a teaching away of such a combination. However, a reference’s mere disclosure of more than one alternative does not constitute teaching away from any of these alternatives.



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21. I further understand that whether there is a reasonable expectation of success from combining references in a particular way is also relevant to the analysis. I understand there may be a number of rationales that may support a conclusion of obviousness, including:

- Combining prior art elements according to known methods to yield predictable results;
- Substitution of one known element for another to obtain predictable results;
- Use of known technique to improve similar devices (methods, or products) in the same way;
- Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
- “Obvious to try” – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
- Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art; or

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- Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art teachings to arrive at the claimed invention.

22. I understand that it is not proper to use hindsight to combine references or elements of references to reconstruct the invention using the claims as a guide. My analysis of the prior art is made as of the time the invention was made.

23. I understand that so-called objective considerations may be relevant to the determination of whether a claim is obvious should the Patent Owner allege such evidence. Such objective considerations can include evidence of commercial success caused by an invention, evidence of a long-felt need that was solved by an invention, evidence that others copied an invention, or evidence that an invention achieved a surprising result. I understand that such evidence must have a nexus, or causal relationship to the elements of a claim, in order to be relevant to the obviousness or non-obviousness of the claim. I am unaware of any such secondary considerations having a nexus to the claims at issue in this proceeding.

24. I understand that for a reference to be used to show a claim is obvious, the reference must be analogous art to the claimed invention. I understand that a reference is analogous to the claimed invention if the reference is from the same

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field of endeavor as the claimed invention, even if it addresses a different problem, or if the reference is reasonably pertinent to the problem faced by the inventor, even if it is not in the same field of endeavor as the claimed invention. I understand that a reference is reasonably pertinent based on the problem faced by the inventor as reflected in the specification, either explicitly or implicitly.

**V. Level of Ordinary Skill in the Art**

25. I understand that a person of ordinary skill in the art is one who is presumed to be aware of all pertinent art, thinks along conventional wisdom in the art, and is a person of ordinary creativity. A person of ordinary skill in the art (“POSA”) would have had knowledge of the mobile communication and/or context awareness field, and various related technologies as of 2010.

26. Applying the above understanding, it is my opinion that, as a general matter, a POSA at the time of the filing of the ’523 patent would have had at least a B.S. degree in Electrical Engineering, Computer Engineering, Computer Science, or an equivalent field, as well as at least 2-5 years of academic or industry experience in mobile communication and/or context awareness.

27. By equivalent field, I mean that the required levels of educational and industry experience is on a sliding scale relative to each other. For example, a

person of ordinary skill could have a more advanced educational degree with less industry experience.

## **VI. Overview of the '523 patent**

28. The '523 patent describes and claims a system, method, and computer readable medium which “automatically provides differing levels of information according to a predetermined social hierarchy.” (EX 1001, Claim 1.) Despite the linguistic complexity of the '523 patent claims, these claims do no more than add a few well-known features to a conventional method of deriving user status information based on sensor data (including optical and acoustic sensor data), and provide different levels of information as specified by a privacy profile (*e.g.*, the claimed “social template”). The added features include privacy profiles allowing different levels of information based on “a predetermined social hierarchy” and the use of a “social signature” which is nothing more than a set of sensor data. As discussed further below, these added features themselves were well known in the art well before the earliest possible benefit date for the '523 patent.

29. In the system described in the '523 patent, “a mobile device 100 monitors location, acceleration, orientation, audio and optical samples using a set of sensors.” (EX 1001, 9:19-21.) Then, a “user’s activity is classified based on the set of social statistics obtained from the sensors.” (*Id.*, 9:23-25.) To do so, a detected social signature is created using sensor data. (*See id.*, 1:48-49.) “Each

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social signature is indicative of a different type of activity.” (*Id.*, 15:38-39.) As TABLE 1 of the ’523 patent shows, a social signature includes a set of sensor data values/ranges. (*See id.*, 15:56-66.)

30. The ’523 patent system stores a plurality of social templates. Each social template specifies different levels of information to provide based a predetermined social hierarchy. TABLE 2 of the ’523 patent shows an example of four levels of a predetermined social hierarchy, including “Father,” “Friend,” “School, Work,” and “Strangers.” Each level is provided with a different amount of information. (*See id.*, 16:1-18.)

31. “[E]ach social template correspond[s] to a unique social signature.” (*Id.*, Claim 1.) To select an appropriate social template, “the calculating logic 150 compares the detected social signature with the social signature of the social templates ... and selects the [closest match] social template ... to the detected social signature.” (*Id.*, 16:23-28.)

**VII. Background of the Technologies Disclosed in the ’523 patent**

32. By 2010 and prior to the invention, all the technology at issue in the ’523 patent was broadly applied and well known by developers of mobile communication and/or context awareness. No individual elements of the ’523 claims were novel at the time of the alleged invention, and there was nothing novel

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about the manner in which those elements were combined in the claims. Further, there were no technological barriers to combining these elements to form the claimed invention. Indeed, the topics of contextual awareness and mobile communications have been a hotbed of research and development since the late 1990s.

**A. Deriving user context based on sensor data was well-known**

33. Contextual awareness, which is also referred to as presence detection, is a well-known term that refers to determining a user's current status based on sensed environmental conditions. Deriving user context, status, or activity based on light and sound sensor data was well known long before the earliest possible benefit date of the '523 patent in 2010.

34. As early as 1999, researchers recognized the importance of understanding a user's context in pervasive computing environments. In his 1999 thesis, Starner said "[t]he importance of context in communication and interface can not [sic] be overstated." (EX 1015, p. 24.) Starner was concerned with the emerging field of wearable computers defined by their mobility, unobtrusiveness, and contextual understanding. (*Id.*, p. 21-23.) Starner and other researchers had been exploring how to use these wearable computers as early as 1993. (*Id.*, p. 21.)

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35. The context Starner refers to is “features of the [physical] environment not created explicitly to be input to the system.” (*Id.*, p. 24.) Starner describes hardware that senses this environmental context with “sensors such as *cameras, microphones*, inertial sensors, and Global Positioning System receiver may be mounted on the user’s body” which “results in a drastic increase in available data about the user’s environment.” (*Id.*, p. 25.) This sensory input and the associated context “can be critical in conveying necessary information and mood.” (*Id.*, p. 24.)

36. The importance of “context in mobile devices” was also recognized in 2002 by Gellersen. (EX 1009, Abstract, p. 1.) “Context is what surrounds, and in mobile and ubiquitous computing the term is primarily used in reference to the physical world that surrounds the use of a mobile device.” (*Id.*, 2.)

37. Examples of sensors used by a mobile device include light and sound sensors: “[t]he device integrates two light sensors, two microphones, a two-axis accelerometer, a skin conductance sensor and a temperature sensor.” (*Id.*, 9.)

38. According to Gellersen, “*audio*, motion, and *light* sensors contribute to context-awareness in most settings while the utility of other sensors is more dependent on the target application.” (*Id.*, 10.) Table 1 of Gellersen (reproduced below) illustrates how real world user situations can be derived from various

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sensor data. For example, consider the case where a user is sleeping, a light level of “dark” and a sound level of “silent” would contribute to deriving the context of “user sleeping.”

**Table 1.** Real world situations related to sensor data (adapted from [29]).

<b>Situation</b>	<b>Sensor Data</b>
User sleeps	It is dark, room temperature, silent, type of location is indoors, time is “night-time”, user is horizontal, specific motion pattern, absolute position is stable
User is watching TV	Light level/color is changing, certain audio level (not silent), room temperature, type of location is indoors, user is mainly stationary
User is cycling	Location type is outdoors, user is sitting, specific motion pattern of legs, absolute position is changing.

39. Similarly, some “instant messaging applications can automatically determine the state of a user and inform the user’s instant messaging contacts of that state.” (EX 1010, ¶ [0003].) Further, Lee discloses detecting certain activities based using sensors including light and sound sensors: “[i]n some embodiments, certain activities can be detected by one or more sensors, such as a location sensor (*e.g.*, GPS and a RF triangulation sensor or detector), an environment sensor (*e.g.*, temperature sensor, *light sensor*, motion sensor, orientation sensor, distance sensor, pressure sensor, or *sound sensor*), a Nike+ sensor, any other suitable sensors, or any combination thereof.” (*Id.*, ¶ [0040].)

**B. Privacy control at different authorization levels was well known**

40. As the user context/status/activities derived from sensor data are often private, privacy control was needed. It is not surprising that data privacy control at multiple authorization levels was also well known before the earliest possible



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benefit date of the '523 patent. Starner in his thesis states that “[o]ne of the most fundamental issues in ubiquitous computing is privacy.” (EX 1015, p. 96.) In one paper referenced in the Starner thesis, Bellotti describes a framework for designing for feedback and control in ubiquitous computing environments, including the accessibility of “Who and what has access to what information about me. I can set automatic default behaviours [sic] and permissions.” (EX 1016, p. 8.) Further, many references discuss that multiple authorization levels can be based on a social hierarchy. For example, Lee states that “the user can provide customized information (*e.g.*, state, icon, message, and communication modes) for display to a subset of the user’s contacts. The subset of the user’s contact can include individual contacts and contact groups. For example, the user can choose to display an ‘Available’ state to a *family group* and display an ‘Away’ state to a *work group*. In some embodiments, the communications device can automatically create a rest-of contacts group that can include contacts that have not been configured to receive customized information.” (EX 1010, ¶ [0009].) These privacy settings can be saved in data structures such as profiles: “the user may create a communications profile for a contact group called ‘work group’ that can include the user’s co-workers. The user may also create a communications profile for a contact group called ‘family group’ that can include the user’s family members.” (*Id.*, ¶ [0088].)

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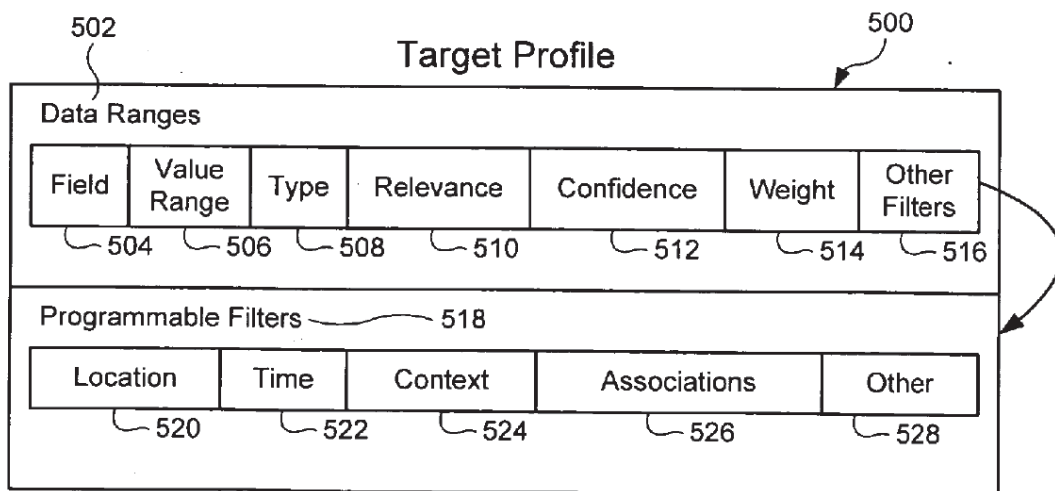
41. Similarly, Kotz discloses privacy settings that allow a user “to control data collection by enabling him to specify times of the day during which data can be collected – by turning ON/OFF location sensing, audio sensing, and medical sensing.” (EX 1011, p. 10.) The privacy settings also allow the user “to control data dissemination by specifying *who (people, roles, or organizations)* has access to his PHI and at what level of detail.” (*Id.*, 10.) For example, the user may allow “detailed access to his PHI [(“Personal Health Information”)] (including context) to his *doctor and spouse*, allows the *insurance company* access to his aggregate health trends, and allows *researchers* access to anonymized aggregate data only.” (*Id.*, 10.)

**C. Profile retrieval based on value-range comparison was well-known**

42. As discussed, privacy settings can be saved in multiple profiles. There are multiple well-known ways of organizing multiple profiles and retrieving one appropriate profile. Associating each profile with one or more ranges and retrieving an appropriate profile based on value-range comparison is one simple and conventional method before the earliest possible benefit date of the ’523 patent.

43. For instance, Rosen discloses a target profile including target data ranges. (*See* EX 1012, FIG. 5, block 502 reproduced below.) The target data ranges are used for finding matching profiles. “The example target profile 500 may be

stored in a relational database and may have associated tables for storing target data ranges 502 and programmable filters 518. The data range table 502 may include a plurality of entries for characteristics for the system to use in determining whether another user matches the target profile.” (*Id.*, ¶ [0049].) One type of the sensor data used for matching is location data. (*See id.*, ¶ [0045].) And Rosen further suggests that “other ‘scores’ from various real-life activities can be integrated into your profile to help with matching.” (*Id.*, ¶ [0042].)



**FIG. 5**

44. Similarly, Stackpole teaches that a “user creates a personal profile and a preference profile using the client application. The preference profile refers to characteristics the user seeks in potential members of the geosocial network. The user transfers the personal and preference profiles to the social networking server. The social networking server registers a location and range selected by the user for the geosocial network.” (EX 1013, Abstract.) For searching, the social networking

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server in Stackpole “identifies potential members *within the registered location and range* by matching the personal profile of each of the potential members with the preference profile and/or the personal profile of the user, and/or from the profiles created by the friends or other relations of the user.” (*Id.*, ¶ [0008].) Then, “[i]n response to a search, the user may receive ranked personal profiles of new contacts or potential members *within the range* of the registered geosocial network.” (*Id.*, ¶ [0010].)

**D. Social networking services and privacy protection**

45. Social network services “build[] online communities of people who share interests and/or activities, or who are interested in exploring the interests and activities of others.” (EX 1018, ¶ [0011].) Popular social network services include Facebook, MySpace, and LinkedIn. (*See id.*, ¶¶ [0012]-[0014].) People often use different social networks for different purposes and different groups of contacts. For example, “Myspace and Facebook are seen mainly as personal, non-business marketing and communication among friends to share personal preferences in music, people, and other social topics.” (*Id.*, ¶ [0013].) On the other hand, LinkedIn “is a business-oriented social networking site” and “attempt[s] to create a virtual community that it is focused on professional interactions instead of social interactions.” (*Id.*, ¶ [0014].) Similarly, Luo states that “people trust LinkedIn as a professional/business network.” (EX 1017, § I, p. 1.)

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46. As social networking get more popular, “it becomes increasingly critical to preserve user privacy.” (*Id.*, § I, p. 1.) In many cases, as users provide information to various social network services, “the information could be easily accessed from outside of the context due to wrong configuration, mal-functioning code, or user’s misunderstanding.” (*Id.*, § I, p. 1.) Different social networking services have different openness levels (*i.e.*, a measure of how information in a social network could be accessed. For example, “[i]n some social networks, information is accessible to the general public, while others require registration, contribution to the network, consent of information owner, or other authentication.” (*Id.*, § II, p. 2.) Similarly, Goettke breaks up social networking websites in to five tiers of privacy protection scales, from tier 1 for websites with users’ information completely transparent to third parties to tier 5 for websites completely ensuring the privacy protection of all users. (EX 1024, p. 3.) For instance, Goettke classifies MySpace as a tier 3 website while Facebook as a tier 4. (*Id.*, pp. 3-4.) Accordingly, “users of multiple social networks may not want information from different contexts to mix up with each other. For instance, people in a professional network may not talk about their hobbies; or people do not want to reveal their education background in a leisure community.” (EX 1017, § I, p. 1.)

**E. Microblogging**

47. Microblogging is nothing more than the practice of posting small piece of information (*e.g.*, brief text or image updates) on the Internet. For example, in *7 Things You Should Know about Microblogging*, microblogging is defined as “the practice of posting small pieces of digital content—which could be text, pictures, links, short videos, or other media—on the Internet.” (EX 1019, p. 1.) Examples of microblogging services included Twitter, Facebook, Myspace, and LinkedIn. (*See* EX 1020, p. 1.) For example, it was well known that Facebook provided microblogging services through status updates. (EX 1021, p. 5 (“The ‘status’ feature of social-networking services such as Facebook (<http://www.facebook.com/>) provides another example of micro-blogging”) (emphasis in original); EX 1022, Abstract (describing “the results of a survey (N=109) analyzing Facebook’s micro-blogging function available through users’ status updates”); *see also* EX 1019, p. 1.)

**VIII. Grounds of Unpatentability**

48. Below, I will first describe the relevant disclosures of Jolliff, Jager, Miluzzo, and Robarts, and then how they would have been combined to show each feature of the challenged claims. Particularly, I explain the different grounds of unpatentability:

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Ground	35 USC	Index of Reference(s)	Claims
1	§103(a)	Jolliff in view of Jager	1, 3, 4, 8-10, 19, 21, 23, 25, and 26
2	§103(a)	Jolliff in view of Jager in further view of Luo	6
3	§103(a)	Miluzzo in view of Robarts	1, 3, 4, 8-10, 19, 21, 23, 25, and 26
4	§103(a)	Miluzzo in view of Robarts in further view of Luo	6

**A. Ground 1: Claims 1, 3, 4, 8-10, 19, 21, 23, 25, and 26 are obvious over Jolliff in view of Jager**

**1. Overview of Jolliff**

49. Jolliff discloses a system that “automatically update[s] a user’s virtual world avatar to provide a more accurate representation of the user’s current real world status or activity.” (EX 1005, ¶ [0006].) To determine the proper avatar to display for a user, Jolliff teaches incorporating “the data from a variety of sensors” and using the sensed condition “to update or generate avatars which can be displayed to reflect the user’s status, location, mood and/or activity.” (*Id.*, ¶ [0050].) These sensors include “a camera or light sensor for sensing ambient light” (*i.e., first sensor data*) and “a microphone for sensing ambient noise.” (*i.e., second sensor data*) (*Id.*, ¶ [0006].)

50. Jolliff determines the proper avatar to display by first creating a “parameter table 602” (*i.e., a detected social signature*) from the combination of

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the collected sensor data (*i.e.*, light and microphone data), and then matching the parameter table against an “avatar selection logic table 603” (*i.e.*, a memory storing social templates) (shown below). (*Id.*, ¶¶ [0125]-[0126].) As shown below, each record (*i.e.*, the social template) in the avatar selection logic table 603 correlates sensed information (*i.e.* the social signature), such as noise and light sensor ranges with an avatar and an authorization level (*i.e.*, the social hierarchy):<sup>3</sup>

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<sup>3</sup> This analysis is consistent with the Patent Owner’s own assertions that data for the claimed social signature is not limited to optical and acoustic sensor data, but “data compiled and formatted for the social signature can come from any number of sensor types,” since the patent “expressly contemplate[s] using other sensors in addition to optical and acoustic sensors.” (EX 1023, pp. 5-6.)



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Social Signatures                      Social Hierarchies

603

	GPS	Noise	Light	Accel	Temp.	Calendar	Wallpaper	Ringtone	Authorization Level	Avatar
650	Office; 0 mph	<30db	Bright	0-2 g, random	70-75	Board Meeting	Company logo	any	No	Work
651	Office; 0 mph	<30db	Bright	0-2 g, random	70-75	Board Meeting	Company logo	any	Yes	Meeting
652	Home; 0 mph	any	Dark	0 g, random	any	any	any	any	Yes	Sleep
653	Home; 0 mph	any	Dark	0 g, random	any	any	any	any	No	Busy
654	Golf Course; 1-4 mph	any	Bright	0-3 g, random	>75	Weekday	any	silent	Family	Busy
655	Golf Course; 1-4 mph	any	Bright	0-3 g, random	>75	Weekday	any	silent	Buddy List	Golfing
656	Golf Course; 1-4 mph	any	Bright	0-3 g, random	>75	Weekday	any	silent	Boss	Work
657	Mall; >0 mph	>50 db	Bright	0-3 g, periodic	70-75	any	any	loud	any	Shopping
658	Track; >2 mph	any	Bright	5-1 g, periodic	>75	any	any	loud	any	Running
659	Restaurant; 0 mph	>50 db	Dark	0-2 g, random	70-75	any	any	loud	any	Eating
660	Movie Theater; 0 mph	>50db	Dark	0-2 g, random	70-75	any	any	silent	any	Movie
661	Campus; 0 mph	<30db	Bright	0-2 g, random	70-75	Study Group	any	silent	any	Studying
662	Variable; >10 mph	>50db	any	5-2 g, random	70-75	any	any	loud	any	Driving

Social Template                      Amount of information

FIG. 19b

51. Jolliff's authorization level determines what information to share based on the relationship of the person receiving the information to the user: "the user may also set permission or authorization levels for avatars to control who may view a particular avatar, at what times, and during what activities." (*Id.*, ¶ [0056].)

52. Jolliff also describes determining the proper values to use in the "avatar logic selection table" via a calibration process: in "a calibration process, the mobile device 301 can record the sensor values and device settings during the activity, average the values, and store the average or range within the avatar selection logic table 601." (*Id.*, ¶ [0090].) "Users may repeat the [calibration]process...at any time to update the calibration or criteria for a

particular avatar or to add selection criteria for a newly created avatar.” (*Id.*, ¶ [0093].)

## **2. Overview of the Combination of Jolliff and Jager**

53. As discussed above, Jolliff discloses collecting sensor data from light and audio sensors, storing the collected sensor data in a “parameter table,” and then comparing the parameter table against record in an “avatar selection logic table” to determine an avatar to display. Jolliff also discloses that different avatars can be displayed to different groups of people based on their relationship to the user. For example, FIG. 19b demonstrates displaying a “Busy” avatar to a person in the group “Family” in line 654, a “Golfing” avatar to a person in the “Buddy List” group in line 655, and a “Work” avatar to a person in the “Boss” group in line 656. (EX 1005, FIG. 19b.) Each group represents a different relationship to the user, and each group is presented with a different avatar based on this relationship because the sensory input for each of lines 654-656 is the same. (*Id.*)

54. Correlating Jolliff to the claims, the sensed data in a given record (including the noise and light values) is the “social signature,” the same record’s map between the authorization level and the displayed avatar is the “social hierarchy,” and the combination of the two, shown as the entire record, is the “social template.” But, as shown above in FIG. 19b, while each social template has a social signature and is selectable to provide a specific hierarchy, multiple records

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in Jolliff's "avatar selection logic table" may include duplicate sensed values corresponding to different hierarchies. So Patent Owner may allege Jolliff does not clearly show that "each social template correspond[s] to a unique social signature."

55. However, a POSA would have understood that duplicating data parameters across separate rows for different actions was simply a design choice. A POSA would be familiar with the flexible nature of databases. For example, when there are multiple repeated data parameters in a database table, a POSA would recognize several different approaches that may provide a spectrum of benefits and trade-offs. Some known techniques to reduce duplicate data in a database involve serializing data, storing binary objects representing a list of data, or in a relational database using references to other tables to store data. Each of these approaches may enable a designer to store multiple values in a single database entry. But each comes with benefits and costs, and every implementation may lead one to a slightly different approach. A single value repeated many times over several rows of a database may be chosen if storage space is plentiful and the design favors simplicity over efficiency. In other situations, a POSA may want to reduce memory usage at the expense of some additional complexity in implementation. In some scenarios this additional complexity may, on balance, speed up processing of databases. For example, if a designer knows that a database

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column is unique and sorted, a variety of searching algorithms may be employed to make finding a particular entry much faster. A variety of other factors also influence what approach is ultimately selected. Such factors may involve cost of implementation, the hardware limitations and restrictions, speed of development, the ease of future maintenance, or external compatibility requirements. In summary, a POSA would recognize that there is very often more than one way to implement a given database that give a variety of benefits and come with a variety of tradeoffs. Only the designer, at the time of implementation, knows which one is right for their situation. The choice of Jolliff's designers to replicate data across rows is such a design choice.

56. It was understood well before the earliest date of the '523 patent that removing duplicate records and merging their actions together (*e.g.*, combining two rows of a table into one) would lower the overall memory storage required and speed evaluation of the data parameters. Here, having duplicate data in lines 654-656 requires a search algorithm to compare more data than if uniqueness were enforced on the sensory data. In the example above, once a search algorithm searching for the sensory input described in line 654 found a match in line 654, it would have to also search lines 655 and 656 to retrieve all avatars and authorization level matches. Even further, it would have to search each and every record in the table, because there is no guarantee that hypothetical line 663 is not a

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match. In comparison, if uniqueness on sensory input were enforced by combining the sensory input into a single column, and requiring uniqueness on that column, a search algorithm could stop its search once the first match was found in line 654. By sorting this unique column, a common procedure in computer databases, search algorithms can efficiently search many records more efficiently than comparing each and every record in a database. A POSA would understand these common database design principles and seek out methods to make the table disclosed in Jolliff more amenable to sorting and searching.

57. For example, “[i]n order to limit memory usage,” Jager describes removing duplicate profiles and merging their “actions” together, thereby ensuring that each profile is unique (EX 1006, ¶ [0078].) As discussed above, a POSA recognizing Jolliff’s inefficient duplication of data across multiple rows in its “avatar selection logic table” would have been motivated to seek out more efficient ways to store context data, such as those described in Jager. Jager approaches a similar design problem as Jolliff and makes a different design choice. The designers behind Jager’s invention chose to enforce uniqueness among database entries, rather than allow multiple rows with lots of repeated data as Jolliff chose. The advantage in Jager is that memory usage is decreased while at the same time the database is made amenable to faster processing.

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58. Jager teaches a context aware mobile device similar to Jolliff. (*Id.*, ¶ [0037].) Like Jolliff, the Jager invention senses “ambient light” and “noise” and then stores these values in a “profile.” (*Id.*, ¶ [0082].) Jager’s profiles store the same kinds of information as Jolliff’s “avatar logic selection table”: sensor values and an action to take when sensory input matches those values. (*Id.*, ¶ [0035].) To determine the proper “context,” Jager compares observed sensory input with stored profiles to find the profile with the “highest score,” *i.e.*, the unique profile that most closely matches the sensory input. (*Id.*, ¶ [0050] and [0035].) This highest scoring profile is sent to an action module to initiate some action stored in the profile, such as “setting the smartphone to ‘silent mode’.” (*Id.*, ¶ [0073].) In this way, Jager describes a more efficient storage scheme where each profile has a unique set of attributes (*i.e.*, a unique social signature).

59. As also explained above, Jolliff discloses “calibrating” its “avatar selection logic table.” Jolliff further discloses that users may manually perform the calibration: “Users may repeat the [calibration]process ... at any time to update the calibration or criteria for a particular avatar or to add selection criteria for a newly created avatar.” (EX 1005, ¶ [0093].) While Jolliff does not provide details on its calibration process, it was well understood long before the earliest priority date of the ’523 patent that context awareness applications depend on properly calibrated data to ensure that context represented by received sensor data properly matches

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the detected context. Thus, a POSA would have been motivated to seek out methods for implementing such calibration automatically, such as those disclosed in Jager.

60. Jager also describes a process of training or calibrating its stored profiles: “stored profiles may be automatically adapted and adjusted based on differences between observed profiles and stored profiles.” (EX 1006, ¶ [0036].) Specifically, Jager discloses determining a score, which represents the similarity (or dissimilarity) between the observed profile and the closest matching stored profile. For every attribute that matches, an associated value (*i.e.*, the “predication factor”) is added to the overall score and for every attribute that does not match, the value is subtracted from the score. For example, Jager discloses iterating over each attribute (tracked by variable “h”) of each stored profile (tracked by variable “g”), and comparing each attribute to an observed profile: “Attribute(h) of profile(g) is then compared with the attributes of the observed profile 314, S412. If attribute(h) is found in the observed profile 314 then that process control flows to step S414 where the prediction factor assigned to attribute(h) is added to the ‘score’ value. If attribute(h) is not found in the observed profile 314 then the prediction factor for attribute(h) is subtracted from the ‘score’ value, S416.” (*Id.*, ¶ 50.) This process is illustrated by FIG 4(a):

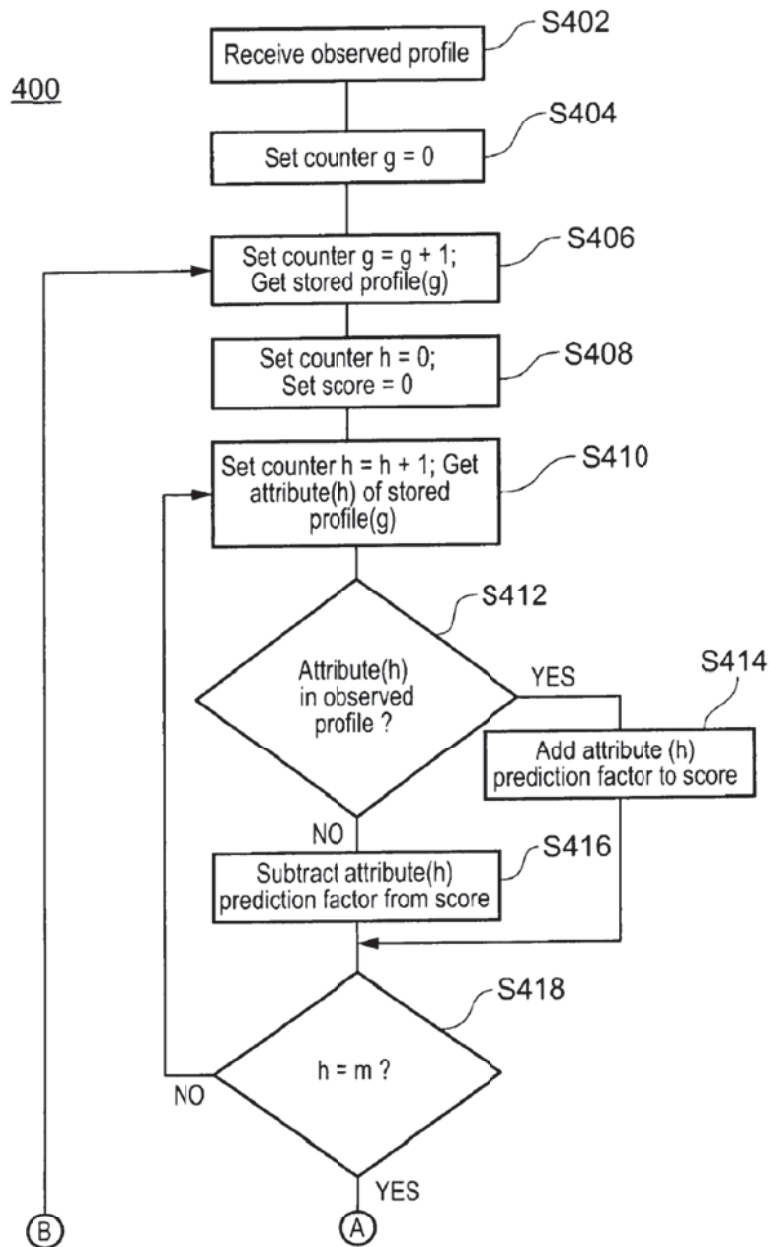
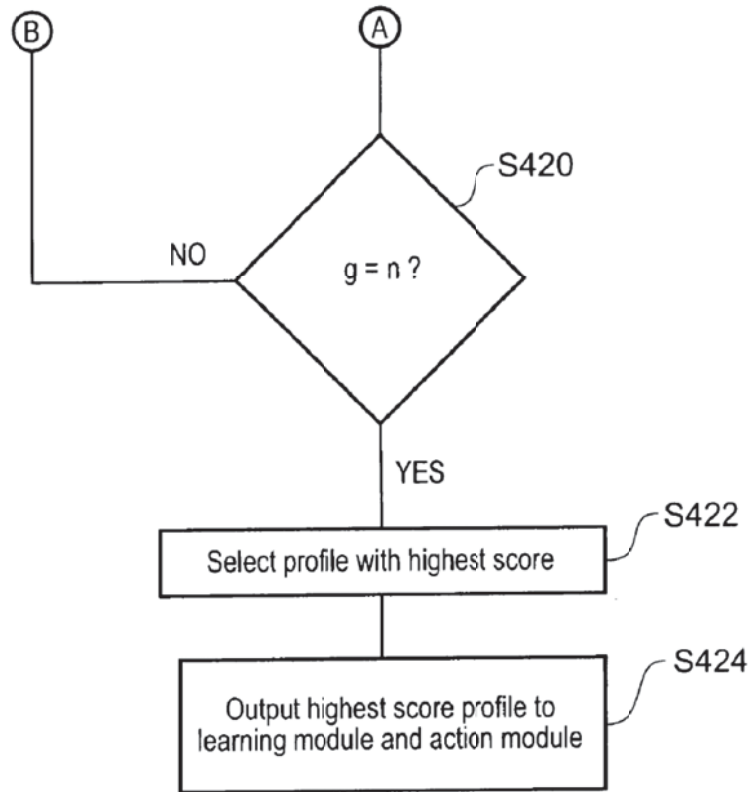


FIG. 4(a)

61. (*Id.*, FIG 4(a).) Once all attributes of a stored profile are compared (*i.e.*, when  $h=m$  at step S418), the next stored profile is retrieved in step S420. This process continues until all stored profiles have been evaluated (*i.e.*, when  $g=n$  at step S420).





**FIG. 4(b)**

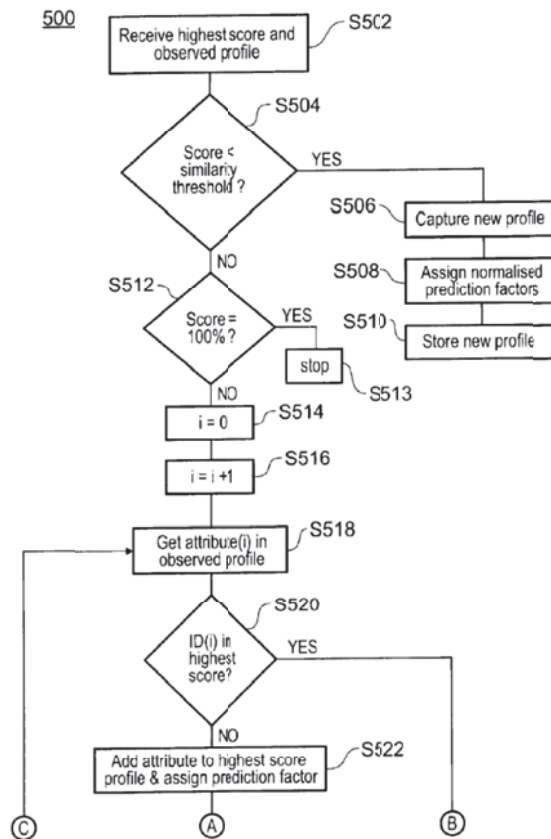
62. (*Id.*, FIG 4(b).) At this point, at the beginning of step S422, all stored profiles have been compared to the sensed profile and assigned a score reflective of how many attributes matched as described above. At step S422, the profile with the highest score is selected and output to “both learning module 210 and action module 212.” (*Id.*, ¶ 50.) This stored profile with the highest score is “[t]he best match.” (*Id.*)

63. Jager then discloses establishing a “similarity threshold,” and “[i]f the highest score is less than the similarity threshold then ... the observed profile is

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treated as a newly created profile.” (*Id.*, ¶ [0052].) The score compared to the “similarity threshold” is a measure of similarity between the sensed profile and the best match profile. A lower value indicates that the sensed profile may not represent the same sensed environment as the best match profile. A higher value reflects a higher degree of confidence that the sensed profile indicates the same environment as the best match profile. For example, Jager teaches a value of 30% is “suitable.” (*Id.*, [0051].) This would represent the point at which 30% of the (weighted) attributes of the sensed profile match the selected best match profile. This decision process is further illustrated in FIG. 5(a):

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64. When the best match profile falls below this threshold, it is stored as a new profile. (*See id.*, ¶ [0052]; FIG. 5(a), Steps S506-S510.) When the best match profile is above the threshold and a 100% match, meaning the stored profile perfectly represents the sensed profile, no further learning is possible or required and “the learning module then stops.” (*Id.*, ¶ [0052]; FIG. 5(a) Step S513.) Profiles above the threshold but not a perfect match represent profiles that are close, and likely accurately reflect the environment. However, because the match is not 100%, the stored profile may be updated to reflect the differences to improve

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future matches. This process of updating stored profiles is further illustrated in steps S514-S522 of FIG. 5(a) and continues in FIG. 5(b):

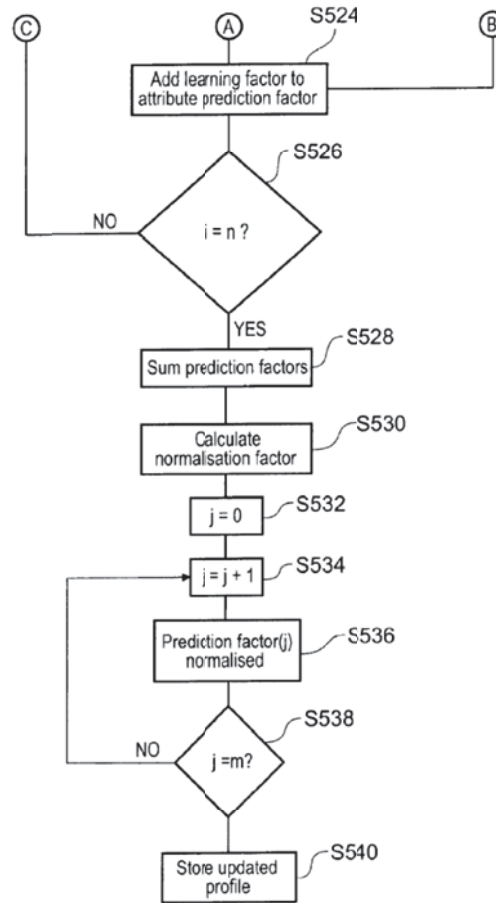


FIG. 5(b)

65. The learning process begins by iterating over all attributes in the observed profile (S518-S526) and adding any attributes present in the observed profile but not present in the highest score profile (S522). (*Id.*, FIG. 5(b).) Each attribute's weighting (*i.e.*, "prediction factor") is adjusted by a "learning factor" which "may be any suitable value" in step S524. (*Id.*, ¶ [0058]; FIG. 5(b).) Finally, all of the prediction factors are normalized to a common value. (*Id.*, ¶¶ [0060]-

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[0063]; FIG. 5(b), steps S528-S538.) The updated profile is “loaded into the profiles database” after any error between the sensed profile and the stored profile has been accounted for. (*Id.*, ¶ [0064]; FIG. 5(b), step S540.)

66. As discussed above, it would have been obvious to a POSA to incorporate Jager’s automatically updating profiles and more efficient storage of context data with Jolliff in order to minimize the storage footprint of Jolliff’s system and also make the table more closely represent the sensed context. All of the techniques taught by Jager were well known in the art. Incorporating Jager’s more efficient storage of context information into Jolliff’s “avatar selection logic table” is merely using Jager’s known technique of more efficient data storage to improve the similar processes described in Jolliff. Furthermore, incorporating Jager’s automatically adapting profiles and more efficient storage of context information with Jolliff’s calibration process and “avatar selection logic table” is merely using Jager’s known technique of automatically adapting profiles and more efficient data storage to improve the similar processes described in Jolliff.

67. Accordingly, as demonstrated below, the combination of Jolliff and Jager teaches all elements of claims 1, 3, 4, 6, 8-10, 19, 21, 23, 25 and 26 of the ’523 patent.

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**3. Jolliff in view of Jager under 35 U.S.C. § 103 renders independent claim 1 obvious.**

**a) “A server in communication with a communication device via a network and which automatically provides differing levels of information according to a predetermined social hierarchy, the server comprising”**

68. Jolliff discloses a system including a server in communication with a communication device that “*automatically update[s]* a user’s virtual world avatar to provide a more accurate representation of the user’s current real world status or activity.” (EX 1005, ¶ [0006].) Jolliff provides “differing levels of information” in the form of different avatars based on different authorization levels of the requesting users (*i.e.*, “predetermined social hierarchy”). Specifically, the Jolliff system, “receive[s] data from the one or more sensors, calendar data and device settings, compare sensor, calendar, device settings data, and *an authorization level of a requesting user* to avatar selection criteria, and *select an avatar* based upon the comparison.” (*Id.*, Abstract.) Jolliff discloses this system in the context of a server in communication with a communication device via a network: “the mobile computing device 301 may transmit the sensor, calendar, and settings data to another computing device, such as *server 109* ..., so that the avatar determination, step 404, *can be performed by the processor of the receiving computing device.*” (*Id.*, ¶ [0074].) The mobile computing device may “communicate [with the server] via a cellular telephone network” or “a wireless data network.” (*Id.*, ¶ [0044].)

**b) “a memory which stores social templates, each social template corresponding to a unique social signature”**

69. Jolliff discloses storing “social templates” in memory via its “avatar selection logic table”: “[the] avatar selection logic table 603 shown in FIG. 19b may be stored in memory of the computing device which determines the appropriate avatar to display.” (EX 1005, ¶ [0127].) Each record in the avatar selection table corresponds to the claimed “social template” because they contain data that correlates context information with a social signature and a social hierarchy. Specifically, each row in the avatar selection table includes light and noise values (*i.e.*, a social signature), information that is to be shared with others (the avatar), and an authorization level that controls the level of disclosure depending on the group the information is shared with (*i.e.*, a social hierarchy). (*Id.*, FIG. 19b.)

70. But, as explained above, Jolliff’s does not explicitly disclose that “each social template correspond[s] to a unique social signature” because the “avatar selection logic table” may include the same light and audio ranges for multiple records (*i.e.*, social templates). However, as described above, this is an inefficient approach to storing this information and it was well understood long before the earliest priority date of the ’523 patent that efficient storage of data was desirable.

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71. More efficient storage of data can lead to lower costs by decreasing hardware requirements, and also faster speeds. For example, decreasing the number of rows of data by combining duplicate data would lead to fewer rows of data to process. A POSA would be familiar with such advantages to storing data more efficiently. Thus, a POSA recognizing Jolliff's inefficient duplication of data in its "avatar selection logic table" would have been motivated to seek out more efficient data structures of context data, such as described in Jager.

72. In the same field as Jolliff, Jager teaches such data structures in the form of profiles. Each profile in Jager uniquely corresponds to a different user status: "in an office environment an observed profile may match a stored profile which is the profile when the user is at their desk, or in a conference room." (EX 1006, [0010].) Jager's profiles are similar to the claimed social templates because they both store sensor values that correspond to context, *i.e.*, what is happening around the device and the user. Jager teaches selecting a profile by comparing sensor data with the unique attributes of Jager's stored profiles: "The input module 104 may collect attributes of the environment observed by sensors 102. Classification module 106 may compare the newly observed profile to see if its attributes match any of the stored profiles." (*Id.*, [0035].)



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73. Jager further discloses that “[i]n order to limit memory usage” removing duplicate profiles and merging their “actions” together, thereby ensuring that each profile is unique (*Id.*, ¶ [0078].) In this way, Jager describes a more efficient storage scheme where each profile has a unique set of attributes (*i.e.*, a unique social signature).

74. It would have been obvious to a POSA to combine Jolliff’s avatar selection table with Jager’s profiles such that Jolliff’s data records avoid the storage of duplicate data in Jager’s “avatar selection logic table,” and each social template corresponds to a unique social signature. As described above, a POSA would have been motivated to do so because such modification saves memory space and speeds up the avatar selection process (the same selection criteria only needs to be stored once, and compared once at the selection time). A POSA would also have recognized that such modification would further Jolliff’s goal of “provid[ing] users with flexibility and control over the selection process” (EX 1005, ¶ [0127]) because a user only needs to enter the same selection criteria once. As described above, a POSA would apply the teachings of Jager to “limit memory usage [] [and] reduce search times” by “automatically eliminate[ing] [] duplicate profiles.” (EX 1006, ¶ [0078].) Such techniques are well known in the art and a POSA would think to apply them to improve efficiency. Thus, combining Jager’s profile with Jolliff’s avatar selection table is nothing more than use of a

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known technique (Jager's profile including attributes of sensor data) to improve a similar system (Jolliff's server storing data records in an avatar selection table) in the same way.

**c) “[the] unique social signature comprising a first sensor value range and a second sensor value range other than the first sensor value range”**

75. As explained above, Jolliff discloses that each row (*i.e.*, a social template) in its avatar selection table, includes a noise and light value (*i.e.*, a social signature). Jolliff further discloses that the avatar selection logic table can include ranges for sensor data such as temperature, suggesting that other values could be specified as ranges too:

603

	GPS	Noise	Light	Accel	Temp.	Calendar	Wallpaper	Ringtone	Authorization Level	Avatar
650	Office; 0 mph	<30db	Bright	0-.2 g, random	70-75	Board Meeting	Company logo	any	No	Work

650

76. (EX 1005, FIG. 19b). For example, Jolliff discloses accelerometer data “stored as a range of acceleration values.” (*Id.*, ¶ 83.) Similarly, noise and light are represented as range values (“<30db,” “Bright”). Even if Patent Owner argues otherwise, a POSA would recognize that a computer that can store and process ranges for one sensor reading could also store and process sensor data for another sensor. Sensor values are stored in a computer as a series of numbers or values. Regardless of what physical phenomenon a sensor detects, if the value is

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processed by a computer a POSA would understand that any processing done to one value could also be done to another. It is another design choice to store values as single numbers or ranges. Jolliff teaches how to process some sensor values, such as accelerometer readings, as ranges. Thus, a POSA would have found it obvious to specify the noise and light values in the avatar selection logic table as ranges. Indeed, it was well understood to POSAs long before the earliest benefit date of the '523 patent that one could specify light or noise values in ranges. For example, there is a difference between a dark room, a well lit room, and the light levels outside on a sunny day. To categorize these three levels in a system like Jolliff a POSA would think to represent light as a ranged value. Similarly, there are a variety of sound levels that may be desirable to characterize such as a rock concert, normal conversation, and sleeping. Each of those situations may require a different response, and a POSA would be motivated to use Jolliff's teaching or ranged sensor variables to represent those three different sound levels in a system like Jolliff's. Accordingly, the combination of Jolliff in view of Jager renders obvious that the "unique social signature compris[es] a first sensor value range and a second sensor value range other than the first sensor value range."

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**d) “each social template being selectable to provide, for each level of the predetermined social hierarchy, a corresponding differing amount of information to each member of the predetermined social hierarchy”**

77. Jolliff discloses providing “a differing amount of information” to different groups of people by displaying different avatars to different people based on their authorization level (*i.e.*, level in the social hierarchy): “[a] user may program the avatar selection logic table 603 with multiple levels of authorization such that more than two different avatars may be displayed for the identical sensor, calendar and settings data depending upon the authorization level of the requestor.” (EX 1005, ¶ [0132].) In other words, each row (*i.e.*, social template) in the avatar selection logic table provides information (*i.e.*, an avatar), which is different depending on the requestor’s “authorization level.” (*Id.*, FIG. 19b.)

78. This authorization level corresponds to a requestor’s level in a “predetermined social hierarchy.” For example, consider the “Golf Course” social template disclosed by Jolliff. (*See id.*, FIG. 19b (rows 654-656); *see also id.*, [0132].) In this case, Jolliff discloses a predetermined social hierarchy that includes multiple groups of people: a first group of people includes members of a person’s “Family,” a second group of people includes members of a “Buddy List,” and third group of people includes the person’s “Boss.” For each level of the predetermined social hierarchy different amounts of information are shared: “in data records 654-

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656 [in FIG. 19b] ... , a requester whose authorization level indicates that the requestor is on the user's *buddy list* will be sent the 'golfing' avatar (see data record 655). However, the user's spouse may have an authorization level of 'family' which causes the 'busy' avatar to be selected for display. Additionally, the user's boss may have an authorization level which would cause a 'work' avatar to be selected for display." (*Id.*, ¶ [0132]; *see also* FIG. 19b, rows 654-656.)

79. By describing sharing the "busy" avatar with "family," and the "golfing" avatar with "friends," Jolliff discloses sharing a different *amount* of information between members of the social hierarchy because "busy" is less information than "golfing." "Golfing" is a subset of the broader description of "busy," in the same way that "driving" is another type of "busy." Both a driver and a golfer are "busy," so a person receiving the status of "busy" doesn't know if the user is driving or golfing or doing something else that constitutes "busy." The differing amounts of information taught by Jolliff are the same types of differing amounts of information disclosed in the '523 patent. The example given in the '523 patent of a mother and a baby sleeping provides the first level of social hierarchy, the father, with "the location, for how long, and who is napping (both Mother and Baby or Baby only)." (EX 1001, 16:32-37.) The second level of social hierarchy receives a different amount of information: "the social template only indicates that the Baby is sleeping." (*Id.*, 16:45-49.) "Mother and baby sleeping for

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1 hour at home” is more information than “baby sleeping” because it tells the Father the additional information of location and time. This example of different amounts of information is consistent with Jolliff’s teaching of sharing the “busy” avatar with “family” and the “golfing” avatar with “friends” because “baby sleeping” is a subset of the status of “baby and mother sleeping in a particular location for a particular amount of time” the same way “golfing” is a subset of “busy.”

**e) “a processor which receives from the communication device sensor data received from a sensor set of the communication device”**

80. Jolliff discloses a server comprising a processor which receives sensor data from a sensor set of the communication device. The “mobile computing device 301 may transmit the *sensor*, calendar, and settings data to another computing device, such as *server 109* ..., so that the avatar determination, step 404, can be performed by the *processor* of the [server].” (EX 1005, ¶ [0074].)

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**f) “which detects sensor data including [i] a first detected sensor value comprising optical information detected by an optical sensor of the sensor set which detects an amount of light of an environment of the communication device and [ii] a second detected sensor value comprising acoustic information detected by an acoustic sensor of the sensor set which detects a sound level of the environment of the communication device”**

81. Each mobile device in Jolliff includes a variety of sensors for measuring the environment data: “Each of the mobile devices 101-104 may include *a variety of sensors* which can provide information used to determine the respective users’ status.” (EX 1005, ¶ [0057].) Further, “mobile devices can be ideal platforms for housing sensors that can *measure the environment and activities* of user.” (*Id.*, ¶ [0049].) Data sensed by Jolliff’s sensors include [i] an optical sensor which detects an amount of light of an environment of the communication device: the “variety of sensors may include ... *a camera or light sensor for sensing ambient light.*” (*Id.*, ¶ [0006].) Data sensed by Jolliff’s sensors also includes [ii] an acoustic sensor which detects a sound level of the environment of the communication device: the “variety of sensors may include ... *a microphone for sensing ambient noise.*” (*Id.*, ¶ [0006].)

**g) “creates a detected social signature from the received sensor data”**

82. Jolliff discloses creating “a detected social signature” by storing received [*sic*] sensor data in a parameter value table. For example, FIG. 19a is a

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parameter value table that stores sensor values: “The processor 391 stores all of the sensor, calendar, and settings data in a parameter value table.” (*Id.*, ¶ [0077]; *see also* FIG. 19a.) The parameter data table is created at the server: “mobile device 301 may transmit sensor parameter values sequentially to the server 109, which then can populate the parameter value table 600 as the data is received in step 417.” (*Id.*, ¶ [0103].)

83. In FIG. 19a, the sensors indicate that the sensed noise is “<30dB” and the sensed light level is “Bright.” (*Id.*, FIG. 19a.) Server 109 can perform the parameter value table creation task: “mobile device 301 may transmit sensor parameter values sequentially to the *server 109*, which then can populate the parameter value table 600 as the data is received in step 417.” (*Id.*, [0103].) Further, the parameter value table can store the sensor in either raw values or in processed form (*i.e.*, interpreted sensor information). (*See id.*, ¶ [0083].) In an example given in the specification, “raw data from an ambient noise sensor 350 has been processed and the recognized characteristic of less than 30 dB has been stored in the parameter value table 600.” (*Id.*, ¶ [0083].)



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**h) “determines which of the social signatures of the social templates has a greatest correspondence with the created social signature through comparison of the first and second detected sensor values and the first and second sensor value ranges of each stored social template”**

84. Once server 109 creates the parameter value table, “the values [in the parameter value table] may be compared to avatar selection criteria in the avatar selection logic table 601... The process of comparing parameter values to the avatar selection criteria may be accomplished in the server 109.” (EX 1005, ¶ [0103].) Further, Jolliff teaches finding the greatest correspondence by selecting an avatar with the greatest number of matching selection criteria, which includes the noise and light values (*i.e.*, the social signature of the template): “the processor of the server 109 may select the avatar for which the greatest number of selection criteria are satisfied by the parameters stored in the parameter data table.” (*Id.*, ¶ [0138].) Because the “processor...can compare *each value* to corresponding criteria in the avatar selection logic table 601” and the avatar selection logic table includes light level range and noise level range (*Id.*, ¶ [0096]; *see also* FIG. 19b), a POSA would have recognized that the comparison in Jolliff involves comparison of the light and noise level values stored in the avatar selection logic table (*i.e.*, the signature of the social template). For example, Jolliff discloses that “selection criteria for both data records 650 and 651 include ... low ambient noise; [and] ‘bright’ ambient light conditions...” (*Id.*, ¶ [0129].) “If the sensor and setting data

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stored in the parameter value table 602 match the criteria in data records 650 and 651, a different avatar will be selected and displayed depending on the authorization level of the requestor.” (*Id.*) Jolliff thus discloses comparing the received light and noise sensor data (first and second detected sensor values) with the light and noise values stored in the avatar selection logic table (the first and second sensor value ranges of each stored social template) to determine the greatest correspondence.

85. Jolliff further discloses comparing a subset of parameters, such as the light and noise sensor data (*i.e.*, first and second detected sensor values), to determine the greatest correspondence. According to Jolliff, “[i]n using a variety of sensors and information sources to infer a user’s status, certain sensors or parameters may be given higher priority, particularly with respect to each other.” (*Id.*, ¶ [0064].) In some cases, “fewer parameters may be needed to accurately reflect a user’s current status.” (*Id.*, ¶ [0148].) In other words, Jolliff also discloses matching a subset of the retrieved sensor data with the sensor parameters stored in the avatar selection logic table. A POSA would have understood that in the case where the light and noise level values are stored as ranges in the avatar selection logic table, which as explained above would have been obvious to a POSA, then the match would have been determined by comparing the ranges stored in the

avatar selection logic table (*i.e.*, first and second sensor value ranges of each stored social template) with the detected sensor data to determine the greatest match.

i) **“retrieves from the memory the determined one social template having the greatest correspondence and having the detected amount of light within the first sensor value range and the detected sound level within the second sensor value range”**

86. As discussed above, to select the appropriate avatar, the server first needs to determine the records in the avatar selection logic table with the same selection criteria that has the greatest number of criteria match. The “process of comparing parameter values” may be “accomplished in the server 109.” (EX 1005, ¶ [0103].) “[T]he avatar selection logic table 603 shown in FIG. 19b,” which contains the social templates, “may be stored in memory of the computing device.” (*Id.*, ¶ [0127].) A POSA would recognize that in order for the “process of comparing” to take place on the server, the server would need to retrieve the avatar selection table from memory. Therefore, a POSA would also have recognized that the processor on Server 109 needs to retrieve the determined group of records in order to compare the authorization level of the requesting user to those stored in the records for avatar selection.

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**j) “provides to at least one member of the predetermined social hierarchy only as much information as allowed based on the retrieved social template”**

87. Once Server 109 selects the appropriate avatar, Server 109 provides the avatar by transmitting the selected avatar to the requester’s computing device. The “server 109 transmits the avatar, step 432, for display on the requester’s computing device.” (EX 1005, ¶ [0103].) As discussed above, the avatar taught by Jolliff is the claimed “information.”

88. Further, as discussed above, because different avatars provide different amounts of information and the authorization levels in Jolliff can correspond to social hierarchy levels, the selected avatar only conveys as much information as allowed based on the authorization level specified in the records in the avatar selection table. (*See, e.g., id.*, ¶ [0132].) For example, if the requestor is the “spouse” in the social hierarchy, the selected avatar only conveys “busy” information even if the sensor data indicates that the user is “golfing.” (*See, e.g., id.*, ¶ [0132].)

**k) “a transceiver which receives the sensor data from the sensor set in the communication device, and”**

89. Jolliff discloses that server 109 receives the sensor data from the mobile computing device. The “mobile computing device 301 may transmit the sensor, calendar, and settings data to another computing device, such as server

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109.” (EX 1005, ¶ [0074].) Further, server 109 is connected to the mobile computing device “via a wireless or cellular network, and the Internet 108.” (*Id.*, ¶ [0080].) Although, Jolliff only refers to server 109 receiving sensor data, a POSA would have recognized that server receives the data via a transceiver (*i.e.*, a transmitter/receiver) because wireless, cellular networks, or the Internet all require at least the transmission of acknowledgements when data is received.

90. A POSA would understand a transceiver to include any type of network interface that both transmits and receives data. Due to the bidirectional nature of the most common internet transport mechanisms such as TCP/IP, a POSA would recognize that nearly all computer network interfaces are transceivers because they both transmit and receive data. Examples of such transceivers include 802.11 wireless networks, common cellular networks including but not limited to GSM and GPRS, and wireless data networks commonly referred to as LTE or 4G. A POSA would also recognize that all of the above network interfaces were commonplace for mobile computing devices long before the earliest filing date of the '523 patent. Therefore, as discussed above in the state of the art section, a POSA would have recognized that the server would include a transceiver in order to receive sensor data from a wireless or cellular network, or the Internet.

**l) “provides under the control of the processor to at least one of the members of the predetermined social**

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**hierarchy only as much information as allowed based on the retrieved social template.”**

91. Once Server 109 selects the appropriate avatar, Server 109 provides the avatar by transmitting the selected avatar to the requester’s computing device. The “server 109 transmits the avatar, step 432, for display on the requester’s computing device.” (EX 1005, ¶ [0103].) As discussed above, the avatar taught by Jolliff is the claimed “*information.*”

92. Further, as discussed above, because different avatars provide different amount of information and the authorization levels in Jolliff can correspond to social hierarchy levels, the selected avatar only conveys as much information as allowed based on the authorization level specified in the records in the avatar selection table. (*See, e.g., id.*, ¶ [0132].) For example, if the requestor is the “spouse” in the social hierarchy, the selected avatar only conveys “busy” information even if the sensor data indicates that the user is “golfing.” (*Id.*)

93. As such, Jolliff in view Jager render obvious all of the elements of claim 1.

**4. Jolliff in view of Jager under 35 U.S.C. § 103 renders independent method claim 19 obvious.**

94. Claim 19 contains limitations substantially similar to, and obvious variations of, claim 1, except that claim 19 only includes the step of “constructing

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a social signature” instead of “creat[ing] a detected social signature” like claim 1.

As used in the claims, “constructing” is the same as “creating,” and the art applies in the same way as described with respect to claim 1 above because a POSA would understand in “creating” a “social signature” one is also “constructing” a social signature. Thus, for the same reasons that Jolliff in view of Jager teaches the limitations of claim 1, the combination of Jolliff in view of Jager teaches the limitations of claim 19. A detailed comparison of claim 1 and claim 19 is below:

Claim 1	Claim 19
A server in communication with a communication device via a network and which automatically provides differing levels of information according to a predetermined social hierarchy, the server comprising:	19.P. A method of automatically providing differing levels of information according to a predetermined social hierarchy within a server, the method comprising:
a memory which stores social templates, each social template corresponding to a unique social signature	19.B.2. each social template corresponding to a unique social signature
[the] unique social signature comprising a first sensor value range and a second	19.B.3. [the] unique social signature comprising corresponding first and

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sensor value range other than the first  sensor value range	second sensor value ranges
each social template being selectable to  provide, for each level of the  predetermined social hierarchy, a  corresponding differing amount of  information to each member of the  predetermined social hierarchy	19.B.4. each social template being  selectable to provide, for each level of  the predetermined social hierarchy, a  corresponding differing amount of  information to each member of the  predetermined social hierarchy
a processor which receives from the  communication device sensor data  received from a sensor set of the  communication device	
which detects sensor data including [i] a  first detected sensor value comprising  optical information detected by an  optical sensor of the sensor set which  detects an amount of light of an  environment of the communication  device and [ii] a second detected sensor  value comprising acoustic information	19.A.2. the sensor data including [i] a  first detected sensor value comprising  optical information from an optical  sensor of the sensor set which detects an  amount of light of an environment of the  communication device and [ii] a second  detected sensor value comprising  acoustic information from an acoustic



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detected by an acoustic sensor of the sensor set which detects a sound level of the environment of the communication device	sensor of the sensor set which detects a sound level of the environment of the communication device
creates a detected social signature from the received sensor data	19.A.1. constructing a social signature within the server using sensor data sensed by a sensor set in a communication device external to the server
determines which of the social signatures of the social templates has a greatest correspondence with the created social signature through comparison of the first and second detected sensor values and the first and second sensor value ranges of each stored social template	19.B.1. determining within the server which one of a plurality of social templates has a social signature with a greatest correspondence with the constructed social signature through comparison of the first and second detected sensor values and first and second sensor value ranges of each social template
retrieves from the memory the determined one social template having	19.C.1. retrieving from a memory of the server the determined one social

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the greatest correspondence and having the detected amount of light within the first sensor value range and the detected sound level within the second sensor value range	template having the greatest correspondence and having the detected amount of light within the first sensor value range and the detected sound level within the second sensor value range
provides to at least one member of the predetermined social hierarchy only as much information as allowed based on the retrieved social template	19.C.2. wherein only as much information as allowed based on the retrieved social template will be provided to at least one member of the predetermined social hierarchy.
a transceiver which receives the sensor data from the sensor set in the communication device, and	
provides under the control of the processor to at least one of the members of the predetermined social hierarchy only as much information as allowed based on the retrieved social template	

**5. Jolliff in view of Jager renders dependent claim 3 obvious.**

95. Claim 3 recites, “the levels of the social hierarchy of the retrieved social template include: a first social hierarchy level,” “a second social hierarchy level,” and “a third social hierarchy level.” As explained above, Jolliff discloses a social template with three different levels of a social hierarchy, specifically a “Family” level, a “Buddy List” level, and a “Boss” level. (*See, e.g.*, EX 1005, ¶ [0132] and FIG. 19b, rows 654-656.)

96. Claim 3 further recites, “the processor detects to which of the first social hierarchy level, the second social hierarchy level, and the third social hierarchy level each member belongs, and provides only as much information as allowed by the detected social hierarchy level.” As explained above, Jolliff discloses providing different avatars (*i.e.*, information) to different groups of people depending on their relationship to the user, which Jolliff calls the “authorization level” (*i.e.*, the level in the social hierarchy). Specifically, “[o]nce relevant data regarding the user’s current activity is collected, the authorization level of the requestor is determined.” (*Id.*, ¶ [0122].) Afterwards, a different avatar is provided based on the determined authorization level. For example, “a requester whose authorization level indicates that the requestor is on the user’s buddy list will be sent the ‘golfing’ avatar (see data record 655). However, the user’s spouse may have an authorization level of ‘family’ which causes the ‘busy’ avatar to be

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selected for display. Additionally, the user's boss may have an authorization level which would cause a 'work' avatar to be selected for display.” (*Id.*, ¶ [0132].)

97. As such, Jolliff in view of Jager render obvious all of the elements of claim 3.

**6. Jolliff in view of Jager renders dependent claims 4 and 21 obvious.**

**a) “The server of claim 1, wherein the processor further detects an error between the detected social signature and the social signature of the determined one social template having the greatest correspondence”**

98. As described above, Jolliff discloses a calibration process for determining the ranges and values used in the “avatar selection logic table” (which is a plurality of “social templates”), but does not disclose how one can ensure that the avatar selection logic table stays properly calibrated all the time. However, it was well understood long before the earliest priority date of the '523 patent that context awareness applications depend on properly calibrated data to ensure that context represented by received sensor data properly matches the detected context. For example, context may need to be “gradually updated and adjusted to take into account changes in the environment.” (EX 1006, ¶ [0036].) Thus, a POSA would have been motivated to seek out methods for ensuring such calibration, such as those disclosed in Jager.

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99. Jager discloses environmental sensor modules that are “configured to sense a value of one or more aspects or features of the environment at a particular time or in a particular time window.” (*Id.*, ¶ [0032].) The attributes are then collected to form an “observed profile.” (*Id.*, ¶ [0034].) “The classification module 106 compares the attributes of the forwarded observed profile with profiles stored in profiles database 114.” If there is a match, an “associated task or state for the data processing apparatus associated with the stored profile” may be initiated. (*Id.*, ¶¶ [0034] - [0035].) Jager further discloses that “stored profiles may be automatically adapted and adjusted based on differences between observed profiles and stored profiles.” (*Id.*, ¶ [0036].)

100. Jager’s determination of the difference between the observed profile and the stored profile is the claimed “detect[ing] an error,” with the error being the “differences.” As discussed above, Jager discloses determining a score, which represents the similarity between the observed profile and the closest matching stored profile. (*See id.*, ¶¶ [0046]-[0051].) Jager then discloses establishing a “similarity threshold,” which may be “pre-set and/or modifiable by a user of the smartphone incorporating the environment classification application.” (*Id.*, ¶ [0051].) “If the highest score is less than the similarity threshold then...the observed profile is treated as a newly created profile.” (*Id.*, ¶ [0052].) Otherwise, if the score is equal to or greater than the similarity threshold, then the profile is

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either updated with observed profile data, or in the case that there is a perfect match, then the profile is not updated. (*See id.*)

101. It would have been obvious to a POSA to incorporate the automatically updating profiles of Jager with Jolliff in order to make Jolliff's "avatar selection table" more closely represent the sensed context. For example, it may be necessary to "take into account changes in the environment." (*Id.*, ¶ [0036].) These kind of changes may occur when the "environment may change over time, but the physical location that the smartphone resides in may stay the same." (*Id.*, ¶ [0074].) A POSA would recognize that Jager's learning techniques "provide profile drift immunity since the environment classification application may keep track of a profile, while its constituent attributes change over time" in such situations. (*Id.*)

102. In such a case, a POSA would have understood that one could use Jager's automatically updating profiles to "detect an error" between Jolliff's "parameter table" (i.e., *the detected social signature*) and Jolliff's, and the entry in "avatar selection logic table" that most closely matches the parameter table (i.e., *the social template having the greatest correspondence*). This would have improved Jolliff's "avatar selection table" so that it is more closely calibrated to the sensed data to "address the issue of profile or environment drift." (*Id.*, internal

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quotes omitted.) Moreover, both Jager and Jolliff relate to sensing user context information by analyzing sensor data and comparing that against previously stored sensor data to determine a state. Thus, using Jager's automatically adapting profiles with Jolliff's calibration process is merely using Jager's known technique of automatically adapting profiles to improve the similar processes described in Jolliff.

**b) “updates the social signature of the determined one social template to include the detected error in the first and/or second sensor value ranges such that the social signature of the determined one social template incorporates the detected social signature where it is determined that the determined one social template is accurate”**

103. As discussed above, Jager discloses updating the social signature of the determined one social template to include the detected error where it is determined that social template is accurate: “[i]f the observed profile is different from any of the stored profiles but sufficiently closely matching, the learning module 110 uses the differences to adapt and adjust a stored profile.” (*Id.*, ¶ [0036].) In other words, if Jager's stored profile is “closely matching” (i.e., accurate), Jager discloses updating the stored profile to account for any differences (i.e., error) between the stored profile and the observed profile. (*See also id.*, FIGs. 5(a) and 5(b).)

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104. Jolliff uses different terminology to describe what is an equivalent to Jager's profiles. Jolliff stores the same kind of sensory data in the avatar selection logic table as illustrated in FIG.19b. (EX 1005, FIG. 19b.) Both Jager's profiles and Jolliff's avatar selection logic table store sensor data that is then matched up to detected sensor values. When applying Jager's teachings of automatically adjusting profiles to Jolliff's avatar selection logic table, a POSA would have understood that the values in the avatar selection logic table would be updated in the same way that Jager teaches updating attributes in a profile. Thus, a POSA would have understood that when adopting Jager's automatically adjusting profiles to Jolliff's "avatar selection logic table," that updating Jolliff's "avatar selection logic table" would include adjusting the acoustic sensor and light sensor values to include the differences (i.e., the error) between the detected sensor values and the values in the avatar selection logic table because that is how Jolliff's matches are determined.

105. Jager teaches an "emulated ranged variable" embodiment utilizing the learning procedure describe above. Jager's "emulated ranged variable" represent a range as a series of smaller ranges, allowing prediction factors to be assigned to sub-ranges independently. For example, "[t]o emulate a ranged variable, i.e. multiple levels of the same attribute, (varying light levels is another example) continuums may be used. For example, on a scale from 0 to 1, the range 0 to 0.33 would represent a low 'power level' or 'low light level present', 0.33 to 0.67 as a



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‘medium power level’ or ‘medium light level present’ and 0.67 to 1 as ‘high power level’ or ‘high light level present.’” (EX 1006, ¶ [0065].) A POSA would recognize that while example is given of a simple three level range, Jager’s system is flexible and robust enough to accommodate many more levels. For example, a designer could implement Jager’s system to include hundreds of sub-ranges, representing an entire spectrum of light levels. In such an implementation, ranges could be updated smoothly by adjusting prediction factors for each very small sub-range.

106. A POSA would consider Jolliff’s teachings of ranges in the avatar selection logic table and see how Jager’s error correction system could be used in such a way as to make Jolliff’s ranged variables highly adjustable to any degree of accuracy as desired. Thus, a POSA would have understood that one could affect the accuracy of matches by adjusting the acoustic and light sensor values to include the differences. Such a technique would apply to any variable, especially because Jager demonstrates the technique with an example as applied to light levels. (*See id.*) Thus, in the case where such acoustic and light sensor values are ranges, which as explained above would have been an obvious way to store such values, a POSA would have understood that the accuracy is affected by adjusting the ranges.

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**c) “and creates a new social template using the detected social signature where it is determined that the determined one social template is not accurate.”**

107. Jager discloses creating a new social template when the determined social template is not accurate: “[i]f no sufficiently closely matching stored profile is found then the learning module 106 may initiate storing of the observed profile in the profiles database, as a new profile.” (*Id.*, ¶ [0036].) As discussed above, Jager teaches a “similarity threshold” to distinguish accurate matches from inaccurate matches. (*Id.*, ¶ [0051].) When a best match, or found profile with the highest score, is less than the similarity threshold, the currently sensed profile is probably indicative of a different environment than is found in the database. In these situations, Jager teaches creating a new profile with the sensed data. (*See, e.g., id.*, ¶ [0052].) A POSA would recognize that when combining the Jager and Jolliff teachings, this newly created profile would be like a new row in the avatar selection logic table. Both the newly created profile in Jager and a row in Jolliff store sensory data, such as sound and light sensor data. Thus, a POSA would have understood that such a “new profile” would include the detected social signature (i.e., the detected acoustic and light values).

108. As discussed above, Jolliff discloses that its “avatar selection logic table” is stored in memory, thus a POSA would have understood that when adopting Jager’s automatically adjusting profiles to Jolliff’s “avatar selection logic

table,” the new profiles would take the form of additional entries in Jolliff’s table, and thus also be stored in memory.

109. As such, Jolliff in view of Jager render obvious all of the elements of claim 4. Dependent claim 21 is substantially similar to claim 4. Accordingly, claim 21 is unpatentable for the same reasons described above with respect to claim 4.

**7. Jolliff in view of Jager renders dependent claims 8 and 23 obvious.**

110. Claim 8 recites: “The server of claim 1, wherein, for at least one of the social templates, there is a single level of social hierarchy for a social networking service, and the processor automatically provides an update to the social networking service.”

111. As discussed, Jolliff discloses automatic update of a user’s avatar and that the user’s avatar can be displayed on one or more social networking sites. (See EX 1005, ¶¶ [0006], [0054].) For example, a user may want to automatically update their virtual world avatar because “some users may wish to inform their friends and family of their current status and activities as part of their social networking lifestyle.” (*Id.*, ¶ [0053].) As part of the users “social networking lifestyle, “an avatar may be maintained and displayed, for example, on the user’s social networking webpage (*e.g.*, myspace.com, facebook.com, *etc.*) or any other webpage maintained on an Internet accessible server.” (*Id.*, ¶ [0054].)

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112. When updating the avatar to one social networking site, Jolliff further discloses a single level of social hierarchy by setting the authorization level to “any.” (*See e.g., id.*, record 657 of FIG. 19b.) Thus, a POSA would understand Jolliff to teach an entry in the avatar selection logic table with a single level of social hierarchy, and updating a social networking service based on that entry.

113. As such, Jolliff and Jager render obvious all of the elements of claim 8. Dependent claim 23 is substantially similar to claim 8. Claim 23 recites: “The method of claim 19, wherein the information to be provided comprises an update to a social networking service as allowed based on the retrieved social template.” Thus claim 23 recites providing an update to a social networking service similar to claim 8. Also, claim 8’s recitation of a single level of social network also teaches claim 23’s recitation of “based on the retrieved social template” because social hierarchies are stored in social templates, thus the teachings as described above also render obvious claim 23.

**8. Jolliff in view of Jager renders dependent claims 9 and 25 obvious.**

114. Claim 9 is substantially similar to claim 8. The only difference is that claim 9 recites updating a “microblogging service” instead of a “social networking service.” As described above, Jolliff discloses updating an avatar on, *inter alia*, “facebook.com.” (*Id.*, ¶ [0054].) As discussed in the background section,

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microblogging is nothing more than the practice of posting small piece of information (*e.g.*, brief text or image updates) on the Internet. Examples of social networking services that provide microblogging functionalities include Twitter, Jaiku, and Facebook. A POSA would have recognized that Facebook is a microblogging service because Facebook provides functionalities for posting small pieces of digital content (*e.g.*, text, pictures, links, short videos, or other media) on the Internet.

115. As such, Jolliff in view of Jager renders obvious all of the elements of claim 9. Dependent claim 25 is substantially similar to claim 9 except that it is written in method form and depends from claim 19. Claim 25 recites: “The method of claim 19, wherein the information to be provided comprises an update to a microblogging service as allowed based on the retrieved social template.” Thus, both claim 25 and claim 9 are directed to updating a microblogging service. Accordingly, claim 25 is unpatentable for the same reasons described above with respect to claim 9.

**9. Jolliff in view of Jager renders dependent claims 10 and 26 obvious.**

116. Claim 10 recites: “The server of claim 1, wherein, at least one of the social templates corresponds to an emergency, and when the processor detects an emergency situation from the detected social signature, the processor automatically

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provides information related to the emergency to predetermined emergency services, friends and/or family members according to the detected emergency situation.”

117. As discussed above, Jolliff discloses that “some users may wish to inform their friends and family of their current status and activities as part of their social networking lifestyle.” (EX 1005, ¶ [0053].) Jolliff further discloses that some current status and activities may correspond to an emergency. For example, Jolliff discloses using the disclosed invention “[in] a medical setting ... such as an emergency room or hospital.” (*Id.*, ¶ [0156].) In these settings, “[t]he use of such an avatar can more efficiently communicate *critical information* than text (*e.g.*, the patient’s name and the medical data) presented on the screen.” (*Id.*) Jolliff further discloses an example where “a pacemaker may be configured to transmit information regarding the condition of the device or the patient’s heart” to a doctor to “*efficiently communicate the patient’s status to the doctor.*” (*Id.*) Therefore, Jolliff teaches providing information related to an emergency (*e.g.*, pacemaker data) to predetermined emergency services (*e.g.*, a doctor).

118. As such, Jolliff in view of Jager render obvious all of the elements of claim 10. Dependent claim 26 is substantially similar to claim 10, except that it is in method form and depends from claim 19. Claim 26 recites: “The method of

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claim 19, further comprising detecting an emergency from the constructed social signature, wherein the information to be provided comprises information related to the emergency which is to be selectively provided to predetermined emergency services, friends and/or family members according to the detected emergency situation using one of the social templates.” Both claim 10 and claim 26 are directed to providing emergency information to predetermined emergency services, friends and/or family members. Accordingly, claim 26 is unpatentable for the same reasons described above with respect to claim 10.

**B. Ground 2: Claim 6 is obvious over Jolliff in view of Jager in further view of Luo**

**1. Overview of the Combination of Jolliff, and Jager, and Luo**

119. Jolliff discloses displaying a user’s avatar on one or more social networks such as Facebook or Myspace. (*Id.*, ¶ [0054].) But, as the avatars depict private user status information, the Jolliff-Jager combination does not explicitly describe how to protect the privacy of the user status information on different social networks. Thus, a POSA would have been motivated to seek out a teaching of how to protect a user’s private information as avatars were displayed on different social networks.

120. It was well known that people use different social networks for different purposes and different groups of contacts. For example, people use

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LinkedIn for professional purposes and “build profiles with educational background and employment history.” (EX 1017, § I, p. 1.) Other types of social networks include “leisure communit[ies]” or “medical networks for health issues.” (*Id.*, § I, p. 2.) Social networks may be even more niche, such as “an online social network for IT professionals” (*Id.*, § I, p. 1.) Users participate on each type of social network for different reasons, and users “assum[e] that community is trusted at some level.” (*Id.*)

121. Further, users of multiple social networks “may not want information from different contexts to mix up with each other.” (*Id.*) “For instance, people in a professional network may not talk about their hobbies; or people do not want to reveal their education background in a leisure community.” (*Id.*) To prevent such mix-up, Luo describes a private information model in which a different social network corresponds to a different privacy disclosure set. (*Id.*, § III, p. 2.)

122. It would have been obvious for a POSA to modify the Jolliff-Jager system such that each authorization level in a profile in the Jolliff-Jager system would correspond to a different social network, as taught by Luo. A POSA would have been motivated to seek out a per-social-network based privacy protection model because Jolliff teaches each authorization level corresponding to a different group (*e.g.*, boss, buddy, or family), and it was well known that a user often uses



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different social networks for different groups of contacts as taught by Luo. incorporating Luo's privacy disclosure set into the profile of the Jolliff-Jager system is nothing more than a simple substitution of one known element (Jolliff-Jager's profile with each authorization level corresponding to a different recipient group) for another (Luo's private information model with each privacy disclosure set corresponding to a different social network) to obtain predictable results (a profile with each authorization level corresponding to a different social network).

123. Accordingly, as demonstrated below, the combination of Jolliff in view of Jager further in view of Luo teaches all elements of claims 6 of the '523 patent.

**2. Jolliff in view of Jager in further view of Luo renders dependent claim 6 obvious.**

124. Claim 6 recites, "The server of claim 1, wherein, for at least one of the social templates, each level of the social hierarchy corresponds to a corresponding different social networking service, and the processor automatically provides different updates to each of the social networking services as allowed based on the one social template."

125. The Jolliff system "*automatically update[s]* a user's virtual world avatar to provide a more accurate representation of the user's current real world status or activity." (EX 1005, ¶ [0006].) Also, as discussed, different avatars in

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Jolliff provide different amounts of information to different groups based on the authorization levels of the recipients. (*e.g.*, “family,” “buddy list,” and “boss” in records 654-656 on FIG. 19b).

126. Jolliff further discloses that a user’s avatar can be displayed on one or more social networks such as Facebook or Myspace: “[s]uch an avatar may be maintained and displayed, for example, on the user’s social networking webpage (*e.g.*, myspace.com, facebook.com, *etc.*) or any other webpage maintained on an Internet accessible server.” (*Id.*, ¶ [0054].) But, as the avatars depict private user status information, the Jolliff-Jager combination does not explicitly describe how to protect the privacy of the user status information on different social networks. Thus, a POSA would have been motivated to seek out a teaching of how to protect a user’s private information as avatars were displayed on different social networks. Such teaching is well known in the art. As discussed above, it was well known before the earliest benefit date of the ‘523 patent that people uses different social networks for different purposes and different group of contacts. For example, Luo states that “people trust LinkedIn as a professional/business network.” (EX 1017, § I, p. 1.) Luo further explains that “users of multiple social networks may not want information from different contexts to mix up with each other. For instance, people in a professional network may not talk about their hobbies; or people do not want to reveal their education background in a leisure community.” (*Id.*) To prevent

such mix-up, Luo describes a private information model in which a different social network  $N$  corresponds to a different privacy disclosure set,  $D(N)$ : “[i]n discretionary privacy model,  $D(N)$  represents the collection of private information objects that had been given or would be given to a social network  $N$ .” (*Id.*, § III, p. 2.) For example, Fig. 3 of Luo (reproduced below) shows four different privacy disclosure sets for four different social networks. The private information under the discretionary privacy model can be user profile information (as shown in Fig. 3) or “[u]ser generated content such as blogs, messages posted to forums, etc.” (*Id.*)

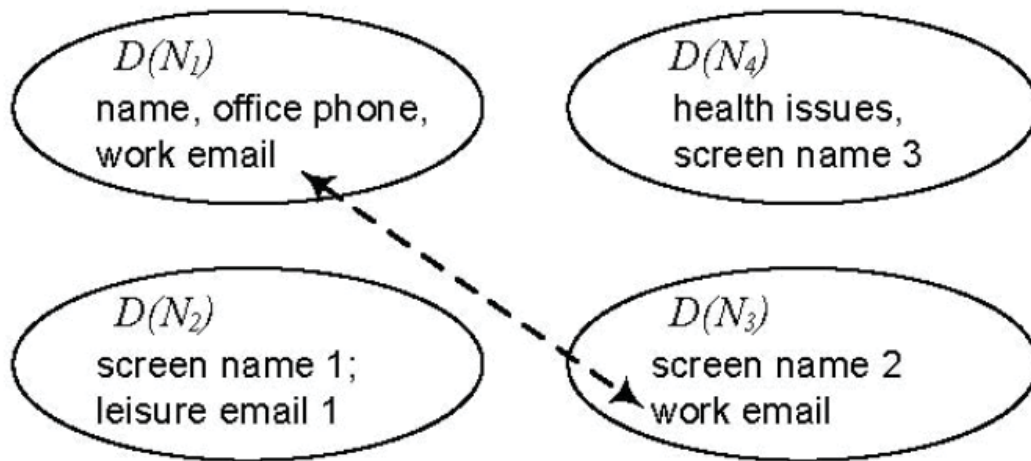


Fig. 3. Discretionary privacy model.

127. As discussed, Jolliff and Jager render obvious that a profile, with a unique sensor matching criteria (i.e., a social signature), includes one or more authorization levels corresponding to different recipient groups receiving different avatars. It would have been obvious for a POSA to modify the Jolliff-Jager system such that each authorization level in a profile in the Jolliff-Jager system would

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correspond to a different social network, as taught by Luo. The Jolliff-Jager combination does not explicitly disclose how to protect private user status information on different social networks. A POSA would have been motivated to seek out a per-social-network based privacy protection model because Jolliff teaches each authorization level corresponding to a different group (*e.g.*, boss, buddy, or family) and it was well known that a user often uses different social networks for different groups of contacts as taught by Luo. (*See id.*, § I, p. 1.) A POSA would also have been motivated to incorporate Luo's per-social-network based privacy disclosure set (*i.e.*, D(N)) because people would not want to mix up information from different social networks as explained in Luo. (*See id.*) Further, incorporating Luo's privacy disclosure set into the profile of the Jolliff-Jager system is nothing more than a simple substitution of one known element (Jolliff-Jager's profile with each authorization level corresponding to a different recipient group) for another (Luo's private information model with each privacy disclosure set corresponding to a different social network) to obtain predictable results (a profile with each authorization level corresponding to a different online social network).

128. As such, Jolliff in view of Jager render obvious all of the elements of claim 6.

**C. Ground 3: Claims 1, 3, 4, 8-10, 19, 21, 23, 25, and 26 are obvious over Miluzzo in view of Robarts**

**1. Overview of Miluzzo**

129. Miluzzo teaches that a method for “injecting sensed presence into social networking applications includes receiving sensor data associated with a user, inferring a presence status of the user based upon analysis of the sensor data, storing the sensor data and presence status within a database, and sending the presence status to a social networking server to update the user’s presence information for the social networking applications based upon the user’s preferences.” (EX 1007, Abstract.) Presence, as used in Miluzzo, is the same concept as context or contextual awareness used by others. For example, Miluzzo describes presence as “characteristics and life patterns” derived from “information related to a user” that may be “sent to a social networking server.” (EX 1007, ¶ [0021].) Miluzzo uses “microphones” and “cameras” in smartphones to detect a “noise index” and a “brightness index” used to infer a presence status of a user. (*Id.*, ¶ [0081].) The user’s presence status allows the system to “infer information about a person’s surroundings”, i.e., to detect the current context the user is experiencing. (*Id.*)

130. Miluzzo teaches sharing this sensed presence, or context, with others “according to group membership policies.” (*Id.*, ¶ [0052].) The level of detail sent to a particular group can vary as well, for example “users are also given the ability

to further apply per-buddy policies to determine the level of data disclosure on per-user, per-group, or global level.” (*Id.*, ¶ [0053].) Miluzzo further teaches “the Virtual Walls model which provides different levels of disclosure based on context, enabling access to the complete sensed/inferred data set, a subset of it, or no access at all.” (*Id.*) Therefore Miluzzo teaches sensing a user’s context, and then providing varying levels of information to others based on the sensed context.

## **2. Overview of the Combination of Miluzzo and Robarts**

131. Miluzzo teaches sensing a user’s context and then providing varying levels of information to others based on the sensed context, but a POSA would recognize that there are a number of ways of implementing these features. For example, the teachings of Miluzzo are compatible with a number of ways to infer status from sensor data and organize and store user’s status and privacy settings. Thus, a POSA would have been motivated to seek out a teaching of storage implementation, such as disclosed in Robarts.

132. Similar to Miluzzo, Robarts teaches a system to “provide appropriate computer actions based on a current context.” (EX 1008, Abstract.) Robarts describes using “themes” which include “attributes that reflect the context of the user” such as the user’s “setting, situation, or physical environment” to determine the user’s current context. (*Id.*, ¶ [0040].) Robarts’ themes are like the claimed social templates because they store sensor data indicative of the environment. The

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themes can include light and sound level sensor data. (See e.g., *id.*, FIG. 8 (showing “Ambient\_noise\_level” and “Ambient\_light\_level”).) For example, sound sensor data may be used to “recognize ambient noise as engine sounds, and thus recognize that the user is driving a car.” (*Id.*, ¶ [0044].)

133. To determine the user’s current context, Robarts describes creating a “current modeled context,” which includes the current sensor data, and comparing the modeled context to each of the themes. (*Id.*, ¶ [0157].) This current modeled context is reflective of the current context around a user and their mobile computer. The modeled context is then compared to a set of stored themes. A stored theme, which includes “multiple attributes” with “one or more possible values” is a match to the current modeled context “only if all the specified attributes have current values in the modeled context that are one of their possible values.” (*Id.*)

134. Robarts’ themes also contain privacy settings: “theme data structure... includes Privacy, Security, and Permission information.” (EX 1008, ¶ [0203].) Like Miluzzo, privacy levels in Robarts can be based on social hierarchies. “Examples of different privacy values/schemes include the following: Private, Public, Work, Family, Friends, Acquaintances, People in immediate vicinity, and Everyone in my contact list.” (*Id.*, ¶ [0203].) The privacy information can affect

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“who has access to [the data].” (EX 1008, ¶ [0203].) For example, “work-related themes can ensure that data generated while that theme is current will be stored in an accessible work location, and non-work themes can ensure that generated data will remain private.” (*Id.*)

135. Thus, it would have been obvious for a POSA to modify Miluzzo’s system such that Miluzzo’s privacy settings (*e.g.*, group membership policies) can be stored together with sensor attributes in data structures such as the theme data structures as taught by Robarts. Miluzzo does not explicitly disclose how to organize and retrieve users’ “group membership policies.” But, Miluzzo teaches that the Miluzzo system “provides different levels of disclosure based on context.” (EX 1007, ¶ [0053]). A POSA would have been motivated to incorporate Robarts’ context-based themes into Miluzzo to organize and retrieve the user’s “group membership policies” because Robarts teaches that “the themes each include related sets of attributes that reflect the context of the user.” (EX 1008, ¶ [0040].) Further, the data structure of Robarts’ themes includes privacy settings. (*See id.*, ¶ [0203].) This is nothing more than substituting Robarts’ known themes and user context recognition for Miluzzo’s inference engine, which would predictably still achieve Miluzzo’s goal of recognizing a user’s context from sensors because both Robarts and Miluzzo have the same goals recognizing a user’s context from sensors.



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136. As demonstrated below, the combination of Miluzzo and Robarts teaches all elements of claims 1, 3, 4, 8, 10, 19, 21, 23, and 26 of the '523 patent.

**3. Miluzzo in view of Robarts under 35 U.S.C. § 103 renders independent claim 1 obvious.**

**a) “A server in communication with a communication device via a network and which automatically provides differing levels of information according to a predetermined social hierarchy, the server comprising”**

137. Miluzzo discloses a system and a method “for injecting sensed presence into social networking applications includes receiving sensor data associated with a user [(102)], inferring a presence status of the user based upon analysis of the sensor data, storing the sensor data and presence status within a database, and sending the presence status to a social networking server [(126)] to *update the user’s presence information* for the social networking applications based upon the user’s preferences.” (EX 1007, Abstract.) The “shared presence status of user 102 is *automatically updated* by presence server 116 via social networking server 126.” (*Id.*, ¶ [0021].)

138. The sensor data is sent by a communication device such as a cell phone: “In one example of step 302, a client (*e.g.*, a thin client) within cell phone 106 samples sensors within cell phone 106 and sends this sensor data to presence server 116.” (*Id.*, ¶ [0069].)

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139. Miluzzo also discloses providing different levels of information according to a predetermined social hierarchy using virtual walls that include per-group disclosure policies: “[the system provides] the ability to further apply per-buddy policies to determine the level of data disclosure on per-user, per-group, or global level. Certain embodiments of system 100 follow the Virtual Walls model *which provides different levels of disclosure based on context.*” (*Id.*, ¶ [0053].)

**b) “a memory which stores social templates, each social template corresponding to a unique social signature comprising a first sensor value range and a second sensor value range other than the first sensor value range”**

140. As discussed above, Miluzzo discloses capturing light and acoustic data through sensors. Miluzzo further discloses using an “inference engine” to “determine the presence status of the user” based on “inferences derived from combinations of current data...” (i.e., the light and acoustic data). (*Id.*, ¶ [0043].) Miluzzo also discloses a social hierarchy (i.e., virtual walls) that provides different information to different levels of the hierarchy: the system gives users “[c]ertain embodiments of system 100 [that] follow the Virtual Walls model which provides *different levels of disclosure based on context.*” (*Id.*, ¶ [0053].) Miluzzo, however, does not explicitly disclose how these inferences are derived other than stating that “[h]uman activity-inferring algorithms are incorporated within inference engine 212 to log and predict a users’ behavior.” (*Id.*, ¶ [0045].) Thus, a POSA would

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have been motivated to seek out information for how to implement such an inference engine or “human activity-inferring algorithms,” such as described in Robarts.

141. Robarts discloses a system to “provide appropriate computer actions based on a current context.” (EX 1008, Abstract.) Specifically, Robarts’ “themes” (i.e., social templates) include “attributes” (i.e., unique social signatures) that reflect the context of the user such as the user’s “setting, situation, or physical environment.” (*Id.*, ¶ [0040].) The attributes include optical and acoustic data sensed from light and sound sensors. (*See e.g., id.*, FIG. 8 (showing “Ambient\_noise\_level” and “Ambient\_light\_level”).) Robarts’ attributes can also be specified as a range: “such attribute includes ... value or quantity of the attribute; an uncertainty value that represents a *range of values* around the attribute value that the attribute is likely to have.” (*Id.*, ¶ [0092].) Thus, as the Robarts’ attributes can be specified as ranges, Robarts discloses a social template (i.e., a theme) that includes an ambient light level attribute (i.e., first sensor value range) and an ambient noise level attribute (i.e., second sensor value range).

142. Robarts’ themes are stored in memory: “a Theme Server computing device 1400 is illustrated that includes a CPU 1405, a storage 1420, memory 1430, and various I/O devices.... *The storage includes various themes and theme-related*

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information for distribution to user computing devices, including multiple themes 1421.” (*Id.*, ¶ [0212].) And, “these items or portions of them can be *transferred between memory and other storage devices* for purposes of memory management and data integrity.” (*Id.*, ¶ [0224].) A POSA would have understood that Robarts’ attributes in each theme have to be unique because Robarts’ system uses comparison of attributes to select one single appropriate theme. (*See Id.*, ¶ [0157].) If the attributes are not unique, comparison of attributes could result in more than one selected themes.

143. Robarts themes also include a privacy setting that “can affect capabilities such as where data generated while the theme is active is stored and *who has access to it.*” (*Id.*, ¶ [0203].) “Examples of different privacy values/schemes include the following: Private, Public, Work, Family, Friends, Acquaintances.” (*Id.*)

144. It would have been obvious for a POSA to modify Miluzzo’s inference engine to incorporate Robarts’ themes and user context recognition because both Miluzzo’s inference engine and Robarts’ themes accomplish the same thing—recognizing a user’s context based on sensor data. Furthermore, a POSA would recognize that both teach using similar sensory input such as sound and light sensors, and similar hardware such as the wearable computer taught by

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Robarts and the smartphone taught by Miluzzo. Miluzzo and Robarts are also compatible in that Miluzzo teaches a method of injecting sensed presence into social networking applications, but allows for some flexibility in the implementation of that method. A POSA, desiring to implement Miluzzo's method, would seek out other teachings, such as Robarts, when deciding how to infer context from sensory data and store the sensory data along with the information to be shared.

145. Robarts' themes already include privacy setting, but Robarts' does not explicitly disclose that this privacy setting is a "social hierarchy," but a POSA would have understood that when adapting Robarts' themes for use in Miluzzo's inference engine, the privacy setting would correspond with Miluzzo's "group member policy" (*i.e.*, a social hierarchy) to ensure that Robarts' themes worked with the other processes described in Miluzzo. Thus, using Robarts' themes with Miluzzo is nothing more than substituting Robarts' themes and user context recognition for Miluzzo's inference engine. The results would be predictable because both Robarts and Miluzzo have the same goals of recognizing a user's context from sensors.

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**c) “each social template being selectable to provide, for each level of the predetermined social hierarchy, a corresponding differing amount of information to each member of the predetermined social hierarchy”**

146. Robarts teaches that themes are selectable: the “*selection* of a current theme from multiple matching themes in the current theme set can be performed in a variety of ways.” (*Id.*, ¶ [0162].) As discussed above, the combination of Miluzzo and Robarts’ teaches a social template that includes a privacy setting, such as Miluzzo’s group member policy.

147. Miluzzo teaches that a group membership policy can specify that different information is given to different groups of people based on a user’s presence status. Specifically, Miluzzo explains that, “[u]sers’ raw sensor feeds and inferred information (collectively considered as the user’s sensed presence) ... may be shared by the owning user according to *group membership policies*.” (EX 1007, ¶ [0052].) These group membership policies allow a user to specify different levels of disclosure based on the relationship of the user to the person requesting access to the data (*i.e.*, a social hierarchy): “[i]n certain embodiments, users are also given the ability to further apply per-buddy policies to determine the level of data disclosure on per-user, *per-group*, or global level. Certain embodiments of system 100 follow the Virtual Walls model *which provides different levels of disclosure*

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*based on context*, enabling access to the complete sensed/inferred data set, a subset of it, or no access at all.” (*Id.*, ¶ [0053].)

148. The example given in the '523 patent of a mother and a baby sleeping provides the first level of social hierarchy, the father, with “the location, for how long, and who is napping (both Mother and Baby or Baby only).” (EX 1001, 16:36-38.) The second level of social hierarchy, the neighbor, receives a different amount of information: “the social template only indicates that the Baby is sleeping.” (EX 1001, 16:45-46.) “Mother and baby sleeping for 1 hour at home” is more information than “baby sleeping” because it tells the Father the additional information of location and time. The type of differing levels of information taught by Miluzzo is congruent with this example given in the '523 patent. The first level (i.e., the father) is one group, and the second level (i.e., the neighbor) is another group, and each group is “provide[d] different levels of disclosure.” (EX 1007, ¶ [0053].)

149. A POSA would have understood that, because Miluzzo explains that a user can create “group membership policies” that result in certain group members only seeing a certain “subset” of the data, Miluzzo discloses providing “a corresponding differing amount of information to each member of the predetermined social hierarchy.”

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**d) “a processor which receives from the communication device sensor data received from a sensor set of the communication device”**

150. Miluzzo discloses “a presence server [(116)] for receiving and storing the sensor data.” (EX 1007, Abstract.) The sensor data is sent by a communication device such as a cell phone: “[i]n one example of step 302, a client (*e.g.*, a thin client) within cell phone 106 samples sensors within cell phone 106 and sends this sensor data to presence server 116.” (*Id.*, ¶ [0069].) A POSA would have understood that the “server” disclosed by Miluzzo was a computer server, and would include a processor. A POSA would also recognize that processors may also be referred to as a Central Processing Unit, or CPU. Computer servers such as this were well known in the art. For example, in Robarts “a Theme Server computing device 1400 [that] includes a CPU 1405.” (EX 1008, ¶ [0212].)

**e) “which detects sensor data including [i] a first detected sensor value comprising optical information detected by an optical sensor of the sensor set which detects an amount of light of an environment of the communication device and [ii] a second detected sensor value comprising acoustic information detected by an acoustic sensor of the sensor set which detects a sound level of the environment of the communication device”**

151. Miluzzo teaches sensors that can sense the device user’s environment, including the sound and light levels of the environment: “certain embodiments of system 100 automatically sense and store ... [a] history of sensed environment (*e.g.*, [ii] *sound and* [i] *light levels*).” (EX 1007, ¶ [0056].) Miluzzo further



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discloses that a [i] cellphone's camera (i.e., an optical sensor) and [ii] microphone (i.e., an acoustic sensor) can capture sensor values: "a *noise index* ... is generated from audio samples captured from the Nokia N80's and N95's microphones. Similarly, a *brightness index* (ranging from 0 to 1) is generated on presence server 116 using Matlab from images captured from the Nokia N80 and N95's cameras. The sounds and brightness indices help presence server 116 infer information about a person's surroundings." (*Id.*, ¶ [0081].) Thus, Miluzzo discloses [i] "a first detected sensor value" (i.e., brightness index) and [ii] a "second detected sensor value" (i.e., noise index) that are captured from [i] an optical sensor (i.e., camera) and [ii] an acoustic sensor (i.e., microphone).

**f) "creates a detected social signature from the received sensor data"**

152. As explained above, Miluzzo teaches inferring a user's presence information based on sensor data: "method 300 infers presence information of the user based upon the sensor data." (*Id.*, ¶ [0069].)

153. But, Miluzzo does not explicitly disclose how this presence information is inferred or how the sensor data is stored or analyzed to generate the presence information. Robarts discloses this.

154. Robarts teaches creating "a current user context model" of the user context based on collected sensor data. (EX 1008, ¶ [0056].) Robarts' current user

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context model is similar to the claimed “*detected social signature*” because both represent current sensor readings indicative of the current environment around a user and their computing device. “After the characterization system 100 receives one or more of these types of information, it processes the information and creates a current model of the user context based on multiple attributes (with current values for some or all of the variables).” (*Id.*, ¶ [0063].) The current model includes environmental information received from sensor data: “the characterization system 100 receives a variety of types of information, and can use this information to determine the user’s current context in a variety of ways. These types of information [include] ... sensed user information (via user sensors 126, etc.), and sensed enviro[n]ment information (via environment sensors 128, etc.).” (*Id.*, ¶ [0056].) Thus, the current user context model taught by Robarts is like the claimed “*detected social signature*.”

**g) “determines which of the social signatures of the social templates has a greatest correspondence with the created social signature through comparison of the first and second detected sensor values and the first and second sensor value ranges of each stored social template”**

155. Robarts teaches identifying a theme (*i.e.*, the social template) based on matching the attributes (*i.e.*, the social signature) in the theme with collected sensor data. The collected sensor data is stored in the modeled context (*i.e.*, the created social signature): “each theme specifies a set of multiple attributes, and includes

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for each of the specified attributes one or more possible values for the attribute. Such a theme will match the current modeled context only if all the specified attributes have current values in the modeled context that are one of their possible values.” (*Id.*, ¶ [0157].) In other words, Robarts discloses determining the greatest correspondence between the “social signatures of the stored social templates (i.e. the attributes in the theme) and the “created social signatures” (the modeled context) because a theme is only considered a match with a modeled context if every attribute in the modeled context matches the attributes specified in the theme.

156. As discussed above, an attribute includes “an uncertainty value that represents *a range of values* around the attribute value that the attribute is likely to have.” (*Id.*, ¶ [0092].) Because Robarts teaches ranges a POSA would have recognized that matching attributes involves comparing the sensed value to the stored range. Thus, Robarts further discloses that the “greatest correspondence” is determined “through a comparison of the first and second detected sensor values and the first and second sensor value ranges of each stored social template.”

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h) “retrieves from the memory the determined one social template having the greatest correspondence and having the detected amount of light within the first sensor value range and the detected sound level within the second sensor value range”

157. As discussed above, Robarts teaches identifying a theme “only if all the specified attributes have current values in the modeled context that are one of their possible values.” (*See id.*, ¶ [0157].)

158. Robarts discloses an embodiment to select a theme with the greatest correspondence, where “the theme can still match the current context even if the current values for *non-required attributes* do not match the specified possible values.” (*Id.*, ¶ [0157].) Then, in case of multiple candidate themes, Robarts teaches selecting the theme with the *highest degree of match* by using the presence or absence of non-required attributes for the theme: “[t]he selection of a current theme from multiple matching themes in the current theme set can be performed in a variety of ways... . In some situations the various themes may contain information to facilitate the selection, such as a priority. If so, *the highest priority theme* in the current theme set could be selected as the current theme... . Alternately, in some embodiments the themes in the current theme set could have an associated degree of match (e.g., by using the presence or absence of *non-required attributes for the theme*), and the theme with *the highest degree of match* could be selected.” (*Id.*, ¶ [0162].) Thus, Robarts discloses a method of evaluating

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several potential matches and choosing the best match, with the highest degree of matching from them.

159. As discussed above, Robarts teaches that the user context includes light and sound level values from sensor data and that attributes in a theme can include light and sound level attributes. (See e.g., EX 1008, FIG. 8 (showing “Ambient\_noise\_level” and “Ambient\_light\_level”).) Robarts also teaches each attribute having “an uncertainty value that represents *a range of values* around the attribute value that *the attribute is likely to have*.” (*Id.*, ¶ [0092].) Themes are selected if “all of the specified attributes have current values in the modeled context that are one of their *possible values*,” such as within the ranges also described by Robarts. (*Id.*, ¶ [0157].) A possible value of a range is a value within the range. Therefore Robarts teaches selecting a theme (i.e., social template) with a highest degree of match (i.e., greatest correspondence) and having light and sound sensor values within stored ranges.

160. As described above, the combination of Miluzzo and Robarts teaches storing themes in memory. (See, e.g., *Id.*, ¶¶ [0212], [0224].) Miluzzo further discloses a “presence server” which “hold[s] a database,” “implement[s] a web portal,” and “contain[s] algorithms.” (EX 1007, ¶ [0022].) A POSA would recognize that Miluzzo describes a computing platform containing at least a

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processor and memory. A POSA would have further recognized that, once a theme is selected, the theme needs to be retrieved from the memory for further processing. For example, Miluzzo further discloses “send[ing] the presence status to a social networking server” based on the retrieved theme. (*Id.*, ¶ [0069].) To perform this and other processing, the theme would need to be retrieved from memory.

**i) “provides to at least one member of the predetermined social hierarchy only as much information as allowed based on the retrieved social template”**

161. Miluzzo teaches automatically providing a user status update based on the user’s preferences (such as group member policies). “In step 308, method 300 sends the presence status to a social networking server based upon the user’s preferences. In one example of step 308, user 102 defines preferences within presence server 116 to send presence status 102 to social networking server 126, thereby automatically updating presence for user 102 within Facebook.” (*Id.*) For example, “[u]sers’ raw sensor feeds and inferred information (collectively considered as the user’s sensed presence) ... may be shared by the owning user according to group membership policies.” (*Id.*, ¶ [0052].) And, the group membership policy specifies different levels of disclosure as a per-group policy: “users are also given the ability to further apply per-buddy policies to determine the level of data disclosure on per-user, *per-group*, or global level. Certain

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embodiments of system 100 follow the Virtual Walls model *which provides different levels of disclosure based on context.*” (*Id.*, ¶ [0053].)

162. Robarts also teaches that privacy settings can be based on social hierarchy groups such as “Family, Friends, Acquaintances.” (*See* EX 1008, ¶ [0203].) In another example, Robarts gives an example with two themes for “Talking To Another Person” and “Talking to Spouse.” (*Id.*, ¶ [0162].) A POSA would recognize the social hierarchical significance between “another person” and “spouse” – the spouse is a different relationship than just another person. A POSA would “appreciate that the types of information of interest may differ based on the people ... that are of current relevance” such as the spouse or other person. (*Id.*, ¶ [0162].) Thus, a POSA would have recognized that groups in Miluzzo’s group membership policy would be based on social hierarchy groups and those groups are provided only as much information as allowed based on the retrieved theme (i.e., social template).

**j) “a transceiver which receives the sensor data from the sensor set in the communication device, and”**

163. Miluzzo teaches that “sensor data [are] sent to a presence server 116 via network 120.” (EX 1007, ¶ [0014].) Miluzzo also describes the communication method between the user devices and the presence server: “Communication between consumer devices and presence server 116 takes place according to the

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availability of the 802.11 and cellular data channels, which can be impacted both by the device feature set and by radio coverage. For devices that support multiple communication modes, communication can be attempted first using a TCP/IP connection over open 802.11 channels, second using GPRS/EDGE-enabled bulk or stream transfer, and finally SMS/MMS is used as a fallback, in certain embodiments of system 100.” (*Id.*, ¶ [0026].) Radio communication protocols such as 802.11 and cellular technologies are implemented with transceivers for transmitting and receiving data. A computer or server that interfaces with these communication channels would necessarily have a transceiver to receive data over the 802.11 and cellular data channels.

**k) “provides under the control of the processor to at least one of the members of the predetermined social hierarchy only as much information as allowed based on the retrieved social template”**

164. Miluzzo teaches automatically providing user status updates based on the user’s preferences (such as group member policies). “In step 308, method 300 sends the presence status to a social networking server based upon the user’s preferences. In one example of step 308, user 102 defines preferences within presence server 116 to send presence status 102 to social networking server 126, thereby automatically updating presence for user 102 within Facebook.” (*Id.*, ¶ [0069].) For example, “Users’ raw sensor feeds and inferred information



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(collectively considered as the user's sensed presence) ... may be shared by the owning user according to group membership policies.” (*Id.*, ¶ [0052].) And, the group membership policy specifies different levels of disclosure as a per-group policy: “users are also given the ability to further apply per-buddy policies to determine the level of data disclosure on per-user, *per-group*, or global level. Certain embodiments of system 100 follow the Virtual Walls model which *provides different levels of disclosure based on context.*” (*Id.*, ¶ [0053].)

165. Robarts also teaches that privacy settings can be based on social hierarchy groups such as “Family, Friends, Acquaintances.” (*See id.*, ¶ [0203].) A POSA would have recognized that groups in Miluzzo's group membership policy could be based on social hierarchy groups.

166. As such, Miluzzo in view of Robarts renders obvious all of the elements of claim 1.

**4. Miluzzo in view of Robarts under 35 U.S.C. § 103 renders independent claim 19 obvious.**

167. Claim 19 contains limitations substantially similar to, and obvious variations of, claim 1, except that claim 19 only includes the step of “constructing a social signature” instead of “creat[ing] a detected social signature” like claim 1. As used in the claims, “constructing” is the same as “creating,” and the art applies in the same way as described with respect to claim 1 above because a POSA would

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understand in “creating” a social template” one is also “constructing” a social template. Thus, for the same reasons that Miluzzo in view of Robarts teaches the limitations of claim 1, Miluzzo in view of Robarts teaches the limitations of claim 19. A detailed comparison of claim 1 and claim 19 is below:

Claim 1	Claim 19
A server in communication with a communication device via a network and which automatically provides differing levels of information according to a predetermined social hierarchy, the server comprising:	19.P. A method of automatically providing differing levels of information according to a predetermined social hierarchy within a server, the method comprising:
a memory which stores social templates, each social template corresponding to a unique social signature	19.B.2. each social template corresponding to a unique social signature
[the] unique social signature comprising a first sensor value range and a second sensor value range other than the first sensor value range	19.B.3. [the] unique social signature comprising corresponding first and second sensor value ranges
each social template being selectable to provide, for each level of the predetermined social hierarchy, a corresponding differing amount of information to each member of the predetermined social hierarchy	19.B.4. each social template being selectable to provide, for each level of the predetermined social hierarchy, a corresponding differing amount of information to each member of the predetermined social hierarchy

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a processor which receives from the communication device sensor data received from a sensor set of the communication device	
which detects sensor data including [i] a first detected sensor value comprising optical information detected by an optical sensor of the sensor set which detects an amount of light of an environment of the communication device and [ii] a second detected sensor value comprising acoustic information detected by an acoustic sensor of the sensor set which detects a sound level of the environment of the communication device	19.A.2. the sensor data including [i] a first detected sensor value comprising optical information from an optical sensor of the sensor set which detects an amount of light of an environment of the communication device and [ii] a second detected sensor value comprising acoustic information from an acoustic sensor of the sensor set which detects a sound level of the environment of the communication device
creates a detected social signature from the received sensor data	19.A.1. constructing a social signature within the server using sensor data sensed by a sensor set in a communication device external to the server
determines which of the social signatures of the social templates has a greatest correspondence with the created social signature through comparison of the first and second detected sensor	19.B.1. determining within the server which one of a plurality of social templates has a social signature with a greatest correspondence with the constructed social signature through

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values and the first and second sensor value ranges of each stored social template	comparison of the first and second detected sensor values and first and second sensor value ranges of each social template
retrieves from the memory the determined one social template having the greatest correspondence and having the detected amount of light within the first sensor value range and the detected sound level within the second sensor value range	19.C.1. retrieving from a memory of the server the determined one social template having the greatest correspondence and having the detected amount of light within the first sensor value range and the detected sound level within the second sensor value range
provides to at least one member of the predetermined social hierarchy only as much information as allowed based on the retrieved social template	19.C.2. wherein only as much information as allowed based on the retrieved social template will be provided to at least one member of the predetermined social hierarchy.
a transceiver which receives the sensor data from the sensor set in the communication device, and	
provides under the control of the processor to at least one of the members of the predetermined social hierarchy only as much information as allowed based on the retrieved social template	

**5. Miluzzo in view of Robarts renders dependent claim 3 obvious.**

168. Claim 3 recites “the levels of the social hierarchy of the retrieved social template include: a first social hierarchy level,” “a second social hierarchy level,” and “a third social hierarchy level.” Robarts discloses at least three levels of social hierarchies in the privacy setting of a theme: “Work, Family, Friends, Acquaintances.” (EX 1008, ¶ [0203].) Miluzzo also discloses three levels of group disclosure: “embodiments of system 100 follow the Virtual Walls model which *provides different levels of disclosure* based on context, enabling access to the *complete* sensed/inferred data set, a *subset* of it, or *no access* at all.” (EX 1007, ¶ [0053].) A POSA would have recognized that, because more than one subset of the sensed/inferred data can be created, a group member policy can specify even more levels of disclosure.

169. Claim 3 further recites “the processor detects to which of the first social hierarchy level, the second social hierarchy level, and the third social hierarchy level each member belongs, and provides only as much information as allowed by the detected social hierarchy level.” Miluzzo states “embodiments of system 100 follow the Virtual Walls model which provides different levels of disclosure based on context.” (EX 1007, ¶ [0053].) Because Miluzzo’s group member policy can be per-group based, a POSA would have recognized that

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providing different levels of disclosure involves determining to which group a receiving user belongs, then providing the amount of information as specified in the group membership policy.

170. As such, Miluzzo in view of Robarts renders obvious all of the elements of claim 3.

**6. Miluzzo in view of Robarts renders dependent claims 4 and 21 obvious.**

**a) “The server of claim 1, wherein the processor further detects an error between the detected social signature and the social signature of the determined one social template having the greatest correspondence”**

171. As explained above, Miluzzo teaches inferring a user’s presence information based on sensor data: “method 300 infers presence information of the user based upon the sensor data.” (EX 1007, ¶ [0069].) Miluzzo infers the presence information by using an “inference engine” that “analyzes sensor data received from cell phone 106 ... and generates presence status 122.” (*Id.*) But, Miluzzo does not disclose how the inference engine actually determines the presence status other than stating that the inference engine may use “[h]uman activity inferring algorithms,” which may classify activity “from several different data inputs, alone or in combination.” (*Id.*, ¶ [0045].) As explained above, this would motivate a POSA to seek out methods for inferring presence status, such as those disclosed in Robarts.

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172. A POSA would have further understood that, long before the '523 patent's earliest priority date, such "human activity inferring algorithms" required training because they can often make incorrect inferences based on sensed environmental conditions. For example, consider an algorithm that infers that a person is outside based on bright light, when in reality the person has only just had their picture taken with a camera flash. Robarts provides another example based on a body temperature sensor where the system infers that the user is becoming ill based on a high body temperature, when in fact that conclusion is incorrect because the high temperature is caused by external temperatures. (See EX 1008, ¶¶ [0278]-[0285].) Thus, a POSA would have also been motivated to seek out methods to minimize incorrect inferences, such as also described in Robarts.

173. As explained above, Robarts teaches a system to "provide appropriate computer actions based on a current context." (*Id.*, Abstract.) Specifically, Robarts teaches "themes" including "attributes that reflect the context of the user" such as the user's "setting, situation, or physical environment." (*Id.*, ¶ [0040].) Robarts also teaches that sometimes manual feedback is necessary to "provid[e] critical feedback necessary for machine learning." Using the manual feedback, which Robarts refers to as "appropriateness verification," Robarts explicitly discloses that an "error" can sometimes be detected between the user context information in the theme (i.e., the signature of the determined one social template) and the current

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model (i.e., the detected social signature), which causes the wrong suggestion/action to be made. (*Id.*, ¶ [0273].) In such a case, Robarts discloses that the system “presents a suggested rule to the user for verification,” and a user can tell the system: “No, do not perform the suggestion. In the future, the system should ask the user for confirmation (because the suggestion was good, just not entirely appropriate). In this case, the user could specify more information to the system to improve the appropriateness of the request.” (*Id.*, ¶¶ [0273]-[0276].)

174. It would have been obvious to a POSA to incorporate Robarts “appropriateness verification” with Miluzzo’s inference engine to improve the inference engine’s ability to make better inferences regarding the sensed context. Moreover, both Miluzzo and Robarts relate to sensing user context information by analyzing sensor data and comparing that against previously stored sensor data to determine a state. Thus, using Robarts’ “appropriateness verification” with Miluzzo’s inference engine is merely using Robarts’ known technique of verifying the appropriateness of sensed user context to improve the similar process described in Miluzzo.

**b) “updates the social signature of the determined one social template to include the detected error in the first and/or second sensor value ranges such that the social signature of the determined one social template incorporates the detected social signature where it is**



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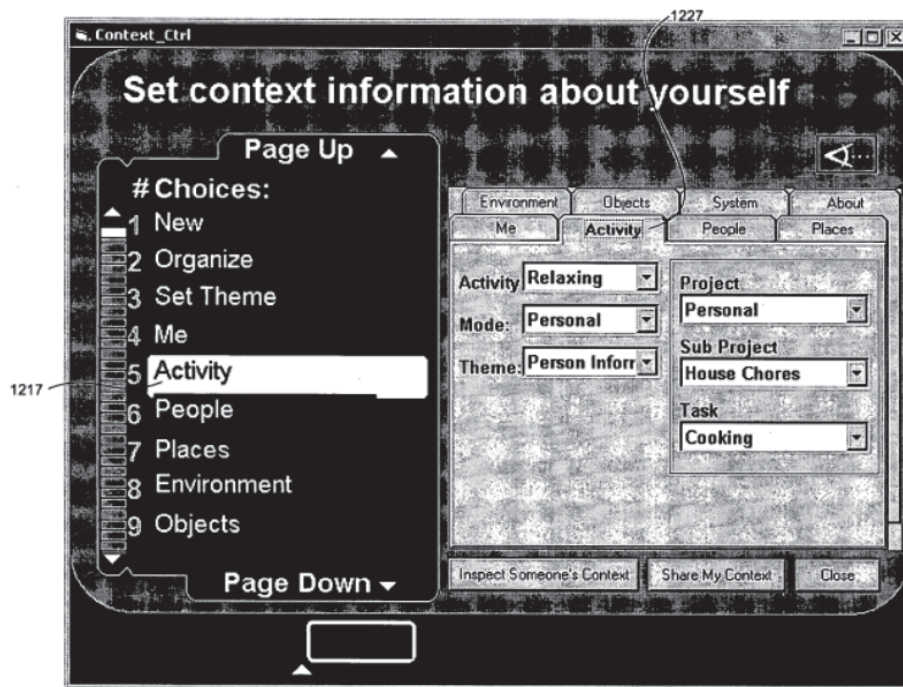
**determined that the determined one social template is accurate”**

175. As explained above, Robarts discloses a manual “appropriateness verification” to determine “the appropriateness of the computer generated suggestions for computer action.” (EX 1008, ¶ [0272].) For example, “if the system presents a suggested rule to the user for verification, different responses are possible.” (*Id.*, ¶ [0273].) The “responses” for the “appropriateness verification” can be based on the “user’s answer ... of appropriateness” (i.e., received confirmation information). In other words, the answer is “feed back [sic] to the inference engine, providing critical feedback necessary for machine learning.” (*Id.*, ¶ [0273].) Robarts discloses that one type of “appropriateness feedback” is an answer such as, “No, do not perform the suggestion” because “the suggestion was good” (i.e., accurate), “just not entirely appropriate.” (i.e., detected error).” (*Id.*, ¶ [0276].) In this case, “the user could specify more information to the system to improve the appropriateness of the request.” (*Id.*) Although Robarts only provides limited examples as to what this “more information” is, it would have been obvious to a POSA that it would involve adjusting the “uncertainty value” (i.e., the range) for at least one attribute to incorporate the detected error. This would affect whether or not a particular theme matched or did not match a given user context, and because the “uncertainty value” is part of the theme data, it is modifiable by Roberts’ GUI. (*See id.*, ¶ [0214].)

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**c) “and creates a new social template using the detected social signature where it is determined that the determined one social template is not accurate.”**

176. Robarts discloses that one can create new themes (i.e., social templates) using its GUI: “Theme Creator/Modifier component 1436 is executing in memory so that a user can use the component to create or modify themes and/or theme-related information” and “the component may provide a Graphical User Interface (“GUI”) with which the user can visually create theme-related data structures.” (*Id.*) This is further illustrated in FIG. 17 of Robarts, which states that a user can “create [an] empty theme” (step 1720) and then “modify [a] theme attribute, theme CS, or theme CC...” (step 1760). This is also illustrated in FIGs. 12A-12H, which depict an example user interface for creating themes. (*Id.*, ¶¶ [0020], [0194].) Specifically, a user can specify the current activity based on the current context:



**Fig. 12B**

177. And the current context includes the detected social signature (i.e., the light and sound sensor data), as shown in FIG. 12E, which “displays environment-related contextual information, such as information about the temperature, light, and sound.” (*Id.*, ¶ [0199].) A POSA would have found it obvious to create a new theme based on current context information if the wrong theme is presented (i.e., when the “social template is not accurate”). Robarts already explains that incorrect themes or suggestions based on themes can be incorrect if the user’s answer (*i.e.*, received confirmation information) is “No, do not perform the suggestion... the suggestion was totally inappropriate” (*i.e.*, not accurate) . (EX 1008, ¶ [0277].) But, Robarts also discloses that one can use a GUI to establish a new theme based on current context information. So, creating such a new theme when the wrong

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theme is presented would have been merely an obvious alternative to “do not perform the suggestion” because Robarts suggests that a user’s answer would provide the user “an opportunity to improve the Implicit Model.” (EX 1008, ¶ [0278].)

178. Accordingly, creating such a new theme when the wrong theme is presented would have been merely an obvious alternative to updating the inaccurate theme to be correct. A user when presented with a situation that prompts them to enter the feedback to not perform the suggestion because it was totally inappropriate, may want to capture that situation in another theme. In that case, the user would simply use the disclosed new profile creation features after entering the appropriate feedback. Moreover, because Robarts provides a GUI that can create new themes based on the current sensed context, it would have been obvious to a POSA under Robarts’ system to create a new theme (*i.e.*, a new social template) based on the current sensed context (constructed social signature) when an existing theme does not match the correct sensed context.

179. Thus, Miluzzo in view of Robarts renders obvious all elements of claim 4. Dependent claim 21 is substantially similar to claim 4. A comparison of claim 4 and claim 21 demonstrates this similarity:

Claim 4	Claim 21
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<p>The server of claim 1, wherein the processor further detects an error between the detected social signature and the social signature of the determined one social template having the greatest correspondence,</p>	<p>The method of claim 19, further comprising: detecting an error between the constructed social signature and the social signature of the determined one social template having the greatest correspondence;</p>
<p>updates the social signature of the determined one social template to include the detected error in the first and/or second sensor value ranges such that the social signature of the determined one social template incorporates the detected social signature where it is determined that the determined one social template is accurate,</p>	<p>updating the social signature of the determined one social template <b>to</b> include the detected error in the first and/or second sensor value ranges such that the social signature of the determined one social template incorporates the detected social signature where it is determined that the determined one social template is accurate; and</p>
<p>and creates a new social template using the detected social signature where it is determined that the determined one social template is not accurate.</p>	<p>creating a new social template using the detected social signature where it is determined that the determined one social template is not accurate.</p>

180. Accordingly, claim 21 is unpatentable for the same reasons described above with respect to claim 4.

**7. Miluzzo in view of Robarts renders dependent claims 8 and 23 obvious.**

181. Claim 8 recites “The server of claim 1, wherein, for at least one of the social templates, there is a single level of social hierarchy for a social networking service, and the processor automatically provides an update to the social networking service.”

182. As discussed, Miluzzo teaches automatically updating the user’s presence to one or more social networking services. (See EX 1007, ¶¶ [0021], [0069].) For example, Miluzzo teaches “injecting sensed presence into social networking applications ... and sending the presence status to a social networking server to update the users presence information for the social networking applications based upon the user’s preferences.” (*Id.*, ¶ [0005].)

183. When updating the user’s presence to one social networking site, Miluzzo teaches a single level of authorization by including a single buddy list. “For example, the recorded sensor data and presence is available only to users that are already part of *the user’s buddy list*.” (*Id.*, ¶ [0052].) Thus, any person on the user’s buddy list would be in the same, single level of social hierarchy: a buddy. It

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would have been obvious to a POSA that this single social hierarchy level in Miluzzo corresponds to one social networking service because buddy lists are commonly associated with a single social networking service. Further, Miluzzo teaches that “presence status of user 102 is *automatically updated* by presence server 116 via social networking server 126.” (*Id.*, ¶ [0021].) Thus Miluzzo in view of Robarts teaches automatically updating a social networking service based on a social template.

184. As such, Miluzzo in view of Robarts renders obvious all of the elements of claim 8. Dependent claim 23 is substantially similar to claim 8. Claim 23 recites: “The method of claim 19, wherein the information to be provided comprises an update to a social networking service as allowed based on the retrieved social template.” Thus claim 23 recites providing an update to a social networking service similar to claim 8. Also, claim 8’s recitation of a single level of social network also teaches claim 23’s recitation of “based on the retrieved social template” because social hierarchies are stored in social templates, thus the teachings as described above also render obvious claim 23. Accordingly, claim 23 is unpatentable for the same reasons described above with respect to claim 8.

**8. Miluzzo in view of Robarts renders dependent claims 9 and 25 obvious.**

185. Claim 9 is substantially similar to claim 8. The only difference is that claim 9 recites updating a “microblogging service” instead of a “social networking service.” As described above, Miluzzo discloses updating user’s presence on, *inter alia*, “Facebook.” (EX 1007, ¶ [0052], [0069], [0088].) As discussed in the background section, microblogging is nothing more than the practice of posting small piece of information (e.g., brief text or image updates) on the Internet. Examples of social networking services that provide microblogging functionalities include Twitter, Jaiku, and Facebook. A POSA would have recognized that Facebook is a microblogging service because Facebook provides functionalities for posting small pieces of digital content (e.g., text, pictures, links, short videos, or other media) on the Internet.

186. As such, Miluzzo in view of Robarts renders obvious all of the elements of claim 9. Dependent claim 25 is substantially similar to claim 9 except that it is written in method form and depends from claim 19. Claim 25 recites: “The method of claim 19, wherein the information to be provided comprises an update to a microblogging service as allowed based on the retrieved social template.” Thus, both claim 25 and claim 9 are directed to updating a



microblogging service. Accordingly, claim 25 is unpatentable for the same reasons described above with respect to claim 9.

**9. Miluzzo in view of Robarts renders dependent claims 10 and 26 obvious.**

187. Claim 10 recites “The server of claim 1, wherein, at least one of the social templates corresponds to an emergency, and when the processor detects an emergency situation from the detected social signature, the processor automatically provides information related to the emergency to predetermined emergency services, friends and/or family members according to the detected emergency situation.”

188. Robarts teaches specialized themes with attributes of emergency services: “examples of specialized themes for modeling characteristics of a user’s current state [include]... . Health — such as the cardiac condition attribute set above; attributes may also include *emergency services* and reflect ways in which a user’s wearable PC may help the user *provide or receive emergency services*.” (EX 1008, ¶¶ [0114], [0118].) For example, Robarts teaches a health theme for recording health crises and alerting emergency personnel and family. “A Safety theme could begin recording all sensors and attributes at high data rates if the system infers that I am having a *health crises* [sic] (e.g., car is skidding at high speed or my pulse is erratic). The system could then indicate to the user that a

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safety issue has been determined, and *alert emergency personnel and family* if attempts to get acknowledgement or correction from the user is not received.” (*Id.*, ¶ [0210].)

189. Thus, Miluzzo in view of Robarts renders obvious all of the elements of claim 10. Dependent claim 26 is substantially similar to claim 10, except that it is in method form and depends from claim 19. Claim 26 recites: “The method of claim 19, further comprising detecting an emergency from the constructed social signature, wherein the information to be provided comprises information related to the emergency which is to be selectively provided to predetermined emergency services, friends and/or family members according to the detected emergency situation using one of the social templates.” Both claim 10 and claim 26 are directed to providing emergency information to predetermined emergency services, friends and/or family members. Accordingly, claim 26 is unpatentable for the same reasons described above with respect to claim 10.

**D. Ground 4: Claim 6 is obvious over Miluzzo in view of Robarts in further view of Luo.**

**1. Overview of the combination of Miluzzo, Robarts, and Luo**

190. Miluzzo teaches creating buddy sub-lists by importing buddy lists from different social network services in defining access policies. (EX 1007, ¶¶ [0052], [0088].) But, the Miluzzo-Robarts system does not explicitly disclose how

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to define access policies for each imported buddy sub-list from each social networking service. A POSA would have been motivated to seek out a teaching of how to define the access policies while protecting the private user presence information.

191. It was well known that people use different social networks for different purposes and different group of contacts. For example, people use LinkedIn for professional purposes and “build profiles with educational background and employment history.” (EX 1017, § I, p. 1.) Other types of social networks include “leisure communit[ies]” or “medical network[s] for health issues.” (EX 1017, § I, p. 2.) Social networks may be even more niche, such as “an online social network for IT professionals” (*Id.*, § I, p. 1.) Users participate on each type of social network for different reasons, and users “assum[e] that community is trusted at some level.” (*Id.*)

192. Further, users of multiple social networks “may not want information from different contexts to mix up with each other.” (*Id.*) “For instance, people in a professional network may not talk about their hobbies; or people do not want to reveal their education background in a leisure community.” (*Id.*) To prevent such mix-ups, Luo describes a private information model in which a different social network corresponds to a different privacy disclosure set. (*Id.*, § III, p. 2.)

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193. It would have been obvious for a POSA to modify the Miluzzo-Robarts system such that each disclosure level in a theme in the Miluzzo-Robarts system would correspond to a different social network, as taught by Luo. A POSA would have been motivated to seek out a per-social-network based privacy protection setting because Miluzzo already teaches creating buddy sub-lists in defining access policies and that the sub-lists are imported from different social networks. A POSA would also have been motivated to incorporate Luo's per-social-network based privacy disclosure set into the Miluzzo-Robarts system because people would not want to mix up information from different social networks. (*See id.*, § I, p. 1.) Further, incorporating Luo's per-social-network-based privacy disclosure set into the theme of the Miluzzo-Robarts system is nothing more than a simple substitution of one known element (Miluzzo-Robarts' theme with each disclosure level corresponding to a different group) for another (Luo's private information model with each privacy disclosure set corresponding to a different social network) to obtain predictable results (a theme with each disclosure level corresponding to a different social network).

**2. Miluzzo in view of Robarts in further view of Luo renders dependent claim 6 obvious.**

194. Claim 6 recites: "The server of claim 1, wherein, for at least one of the social templates, each level of the social hierarchy corresponds to a corresponding

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different social networking service, and the processor automatically provides different updates to each of the social networking services as allowed based on the one social template.”

195. Miluzzo teaches sending a user’s presence status to one or more social networking services, such as Facebook or Myspace. “These characteristics (e.g., presence status **122**, **124**) may also be sent to a social networking server **126** that supports one or more social network applications **119**, such as Facebook and Myspace, and instant messaging.” (EX 1007, ¶ [0021].) For example, Miluzzo teaches automatically updating the user’s presence within Facebook. “In step **308**, method **300** sends the presence status to a social networking server based upon the user’s preferences ... thereby *automatically updating* presence for user **102** within Facebook.” (EX 1007, ¶ [0069].)

196. Miluzzo further teaches creating buddy sub-lists by importing buddy lists from different social network services. “Buddies are determined from the combination of buddy lists *imported* by registered services (Pidgin, Facebook, etc.), and buddies may be added based on profile matching.” (EX 1007, ¶ [0052].) “[S]ystem 100 inherit[s] and leverage[s] the work already undertaken by a user when creating his buddy lists and *sub-lists* (e.g. in Pidgin, Skype, Facebook) in *defining access policies* to the user’s presence data.” (*Id.*) But, the Miluzzo-

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Robarts system does not explicitly disclose how to define access policies for each imported buddy sub-list from each social networking service. Thus, a POSA would have been motivated to seek out a teaching of how to define the access policies while protecting the private user presence information.

197. It was well known before the earliest benefit date of the '523 patent that people uses different social networks for different purposes and different group of contacts. For example, Luo states that “people trust LinkedIn as a professional/business network.” (EX 1017, § I, p. 1.) Luo further explains that “users of multiple social networks may not want information from different contexts to mix up with each other. For instance, people in a professional network may not talk about their hobbies; or people do not want to reveal their education background in a leisure community.” (*Id.*) To prevent such mix-ups, Luo describes a private information model in which a different social network N corresponds to a different privacy disclosure set, D(N): “[i]n discretionary privacy model, D(N) represents the collection of private information objects that had been given or would be given to a social network N.” (*Id.*, § III, p. 2.) For example, Fig. 3 of Luo (reproduced below) shows four different privacy disclosure sets for four different social networks. The private information under the discretionary privacy model can be user profile information shown in Fig. 3 or “[u]ser generated content such as blogs, messages posted to forums, etc.” (EX 1017, § III, p. 2.)

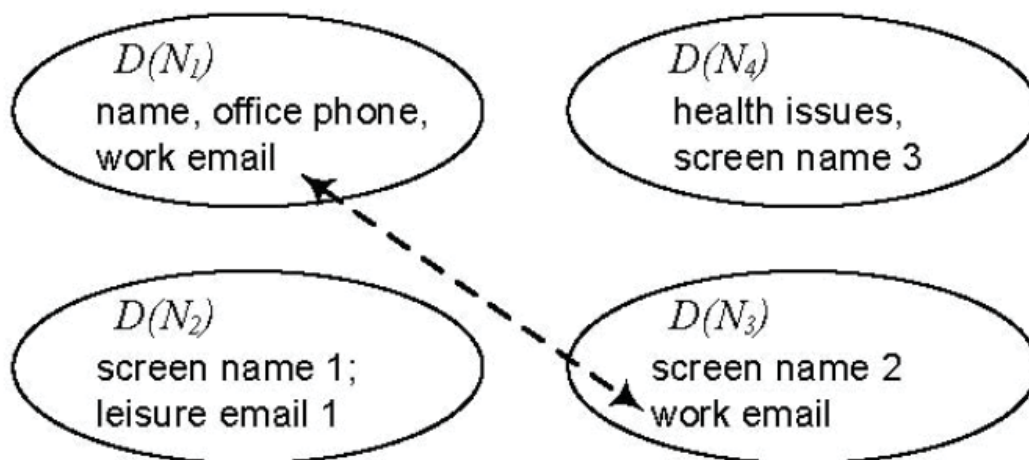


Fig. 3. Discretionary privacy model.

198. As discussed above, Miluzzo and Robarts render obvious that a theme data structure includes a group membership policy can have a per-group level of data disclosure. It would have been obvious for a POSA to modify the Miluzzo-Robarts system such that each disclosure level in a theme in the Miluzzo-Robarts system would correspond to a different social network, as taught by Luo. The Miluzzo-Robarts combination does not explicitly disclose how to protect private user presence information on different social networks. A POSA would have been motivated to seek out a per-social-network based privacy protection model because Miluzzo already teaches creating buddy sub-lists in defining access policies and that the sub-lists are imported from different social network services. A POSA would also have been motivated to incorporate Luo's per-social-network based privacy disclosure set ( $D(N)$ ) into the Miluzzo-Robarts system because people would not want to mix up information from different social networks. (*See id.*, § I,

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p. 1.) Further, incorporating Luo's per-social-network-based privacy disclosure set into the theme of the Miluzzo-Robarts system is nothing more than a simple substitution of one known element (Miluzzo-Robarts' theme with each disclosure level corresponding to a different group) for another (Luo's private information model with each privacy disclosure set corresponding to a different social network) to obtain predictable results (a theme with each disclosure level corresponding to a different social network).

199. As such, Miluzzo in view of Robarts renders obvious all of the elements of claim 6.

**IX. Conclusion**

200. 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.

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;




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and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed this 24 day of June 2015 in St. Louis, Missouri

Respectfully submitted

  
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David H. Williams