UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Google LLC

Petitioner

v.

Ikorongo Technology LLC,

Patent Owner

U.S. Patent No. RE45,543
Filing Date: May 14, 2013
Issue Date: Jun. 2, 2015

Case No. IPR2021-00127

DECLARATION OF DAVID HILLIARD WILLIAMS IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW

TABLE OF CONTENTS

LIST OF EXHIBITS

Exhibit	Description
Ex-1001	U.S. Patent No. RE45,543 (the '543 patent)
Ex-1002	Prosecution File History of U.S. Patent No. RE45,543
Ex-1003	Declaration of David Hilliard Williams
Ex-1004	Curriculum Vitae of David Hilliard Williams
Ex-1005	U.S. Patent Application Publication No. 2003/0055983 to Callegari ("*Callegari*")
Ex-1006	U.S. Provisional Patent Application No. 60/277174
Ex-1007	U.S. Provisional Patent Application No. 60/277187
Ex-1008	U.S. Provisional Patent Application No. 60/277200
Ex-1009	U.S. Patent No. 6,714,791 to Friedman ("*Friedman*")
Ex-1010	U.S. Patent No. 6,373,429 to Eschenbach ("*Eschenbach*")
Ex-1011	U.S. Patent No. 7,080,139
Ex-1012	U.S. Patent No. 6,052,122
Ex-1013	U.S. Patent No. 7,970,390
Ex-1014	U.S. Patent No. 6,466,788
Ex-1015	U.S. Patent App. Pub. No. 2003/0022684A1
Ex-1016	U.S. Patent No. 6,618,593
Ex-1017	U.S. Patent No. 7,739,139
Ex-1018	U.S. Patent No. 8,762,471
Ex-1019	U.S. Patent No. 8,589,247
Ex-1020	U.S. Patent No. 6,240,069
Ex-1021	U.S. Patent No. 7,047,030
Ex-1022	U.S. Patent No. 8,103,729
Ex-1023	U.S. Patent No. 7,953,815
Ex-1024	U.S. Patent No. 6,438,579
Ex-1025	U.S. Patent No. 6,332,127
Ex-1026	U.S. Patent No. 8,295,835
Ex-1027	U.S. Patent No. 6,968,179
Ex-1028	U.S. Patent No. 6,944,447
Ex-1029	U.S. Patent No. 5,493,692
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Ex-1035	U.S. Patent No. 6,799,277
Ex-1036	WO 01/74034
Ex-1037	Microsoft Campus Agreement: How to Get Started (February 9, 2001), available at https://www.uprm.edu/cms/index.php?a=file&fid=126
Ex-1038	*Platform Services*, OPENWAVE, https://web.archive.org/web/20020206231928/http:/www.openwave.com/products/platform_services/.
Ex-1039	U.S. Patent No. 7,376,433
Ex-1040	Jay Farrell & Tony Givargis, *Differential GPS Reference Station Algorithm—Design and Analysis*, 8 IEEE TRANSACTIONS ON CONTROL SYS. TECH. 519 (2000).
Ex-1041	François J.N. Cosquer & Paulo Veríssimo, *The Impact of Group Communication Paradigms on Groupware Support*, *in* PROCEEDINGS OF THE FIFTH IEEE COMPUTER SOC. WORKSHOP ON FUTURE TRENDS OF DISTRIBUTED COMPUTING SYS. 207 (1995).
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Ex-1048	3GPP Location Standards Release 4.1 (March 2001)
Ex-1049	U.S. Patent App. No. 2001/0036224 to Demello ("*Demello*")
Ex-1050	U.S. Patent No. 6,578,072 to Watanabe ("*Watanabe*")
Ex-1051	U.S. Patent No. 6,480,885 to Olivier ("*Olivier*")

Ex-1052	*Inter Partes* Review IPR2020-01379
Ex-1053	U.S. Patent No. 8,099,667

I, David Hilliard Williams, declare as follows:

I. INTRODUCTION

1. I have been retained on behalf of Google LLC ("Google") for the above-captioned *inter partes* review (IPR) proceeding. I am being compensated for my time in connection with this IPR at my standard hourly consulting rate. I understand that this proceeding involves U.S. Patent No. RE45,543 ("the '543 patent") titled "*Method and Apparatus for Selectively Sharing and Passively Tracking Communication Device Experiences*" by Darren P. Briggs, Brady O. Bruce, Michael W. Mitchell, and Emile L. Reed, IV, and that the '543 patent is currently assigned to Ikorongo Technology, LLC.

2. I have reviewed and am familiar with the specification of the '543 patent filed on May 14, 2013. I understand that the '543 patent has been provided as Ex-1001. I will cite to the specification using the following format: Ex-1001, '543 patent, 1:1-10. This example citation points to the '543 patent specification at column 1, lines 1-10.

3. I have reviewed and am familiar with the file history of the '543 patent. I understand that the file history has been provided as Ex-1002.

4. I understand that the ’543 patent has a filing date of May 14, 2013, but claims priority to the filing date of its parent application, U.S. Patent No. 7,080,139, April 24, 2001. I am informed by Google’s counsel that April 24, 2001 is the ’543 patent’s earliest possible priority date.

5. In preparing this Declaration, I have also reviewed and am familiar with the following prior art used in the Petition for *Inter Partes* Review of the ’543 patent and/or in my declaration below:

- **U.S. Patent Application Publication No. 2003/0055983** to Jeff Callegari (Ex-1005), filed on March 19, 2002, issued on March 20, 2003, and entitled to the priority date of March 19, 2001 based on Provisional Application Nos. 60/277,174 (Ex-1006), 60/277,187 (Ex-1007), and 60/277,200 (Ex-1008).
- **U.S. Patent No. 6,714,791** to Jackie Friedman (Ex-1009), filed February 23, 2001 and issued March 30, 2004.
- **U.S. Patent No. 6,373,429** to Ralph F. Eschenbach (Ex-1010), filed February 6, 2001 and issued April 16, 2002.

6. I have been asked to provide my technical review, analysis, insights, and opinions regarding the ’543 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 '543 patent.

II. QUALIFICATIONS

7. 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.

8. I have over 30 years of experience in wireless location services, including experience designing, implementing, and managing numerous location-based service (LBS) applications such as mobile social networking, family tracking, and mobile resource management, as well as working in all fields within the location services ecosystem including all forms of location determination technologies, map data, handset technologies, and associated Information Technology systems including identification, authentication, privacy, security, and other related capabilities such as network engineering and operations.

9. 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 LBS, Global Positioning Satellite (GPS) systems, E911, WiFi-Based and other medium/long-range Real-Time Location Systems (RTLS), Radio Frequency Identification (RFID), Bluetooth, Near Field Communications (NFC), and beacon-based and other short-range communications/location systems, and other location determination and sensing technologies and services.

10. I have extensive expertise in all aspects of LBS 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 an expert in all related aspects of LBS, including data privacy and security management.

11. For example, in the 1995 to 2000 timeframe, as an Associate Partner in the Communications & High Technology Practice of Accenture (one of the world's leading technology companies), I focused on using wireless location technologies to provide services to the public sector and commercial markets. In particular, from 1998 to 2000, I led the development of the LBS product/technology strategy and roadmap for Nextel Communications, Inc. My work with Nextel resulted in some of the earliest LBS applications in the U.S. market and included extensive research into

the potential use of various technologies in providing and enabling a wide array of location-based services, including Mobile Resource Management (MRM) worker tracking and vehicle/fleet management applications. This work also including leading the development of the underlying network and Information Technology architectures that would be required to support the LBS applications product strategy and roadmap.

12. In 2003, I led the development of part of AT&T Wireless's E911 infrastructure, including the development of systems, processes, and reporting infrastructure to manage and track the deployment of time difference of arrival-based location determination technologies. I managed the testing and Federal Communications Commission (FCC) reporting of network location inaccuracies, with a particular focus on detecting and troubleshooting out-of-norm technology deployment and inaccurate location conditions.

13. From 2005 to 2007, I worked with NAVTEQ (now HERE)—the leading provider of map data and services essential to creating LBS applications—to develop the company's web developer website content and tools. Specifically, I designed and managed the site map and overall content, including the development of comprehensive technical and business web content for all NAVTEQ map product

and service lines. Through the developer site, application developers and business managers became intimately familiar with map data, Geographical Information System (GIS) platforms, and location-based services to successfully develop and launch their LBS applications. For example, I developed the content to highlight key types of map data and to provide technical details on how NAVTEQ tools can be used in LBS design for various consumer and business applications.

14. I also have extensive LBS application product design and implementation experience, which includes data privacy and security management. For example, from 2007 to 2010, I managed the design, development, and launch of several consumer and business-oriented LBS applications for AT&T Mobility. These LBS application included mobile social networking, family tracking, local search, 411-with-LBS, mobile resource management, and asset tracking. I also developed corporate-wide location data privacy policies and associated system implementation for all LBS customers. My AT&T work also extensively involved various aspects of worker and vehicle/fleet management tracking. In particular, I was the Product Manager for the several of the joint AT&T-Telenav Mobile Resource Management applications, as well as various fleet management solutions.

15. These roles and work required extensive knowledge of how the various applications worked, and even required design modifications in order for it to "fit into" AT&T's network and IT infrastructure, as well as to implement AT&T's privacy and security policies. The work also included designing/modifying AT&T's network and IT infrastructure to allow/enable the applications to seamless work with AT&T's location infrastructure and various IT systems used for functions including Sales, Customer Care, Fulfillment, Billing/Accounts Receivable, and various network and IT operations. Among associated activities, my efforts included closely working with AT&T Legal to develop and implement AT&T's location privacy policies. These efforts in both data privacy people tracking resulted in a patent: U.S. Patent 8,613,109, titled "Method and Apparatus for Providing Mobile Social Networking Privacy," that issued on December 17, 2013, of which I was the only non-employee inventor.

16. In addition to the Location-Based Services applications, enabling location technologies, wireless communications, and privacy and security experience and expertise described above, I also have many years of Information Technology experience. For example, as a consultant in the Information Technology practices of Deloitte Consulting (originally Touche Ross), Booz Allen & Hamilton,

and Andersen Consulting (now Accenture), I served in key technology development and technology leadership roles in numerous projects designing and implementing mainframe, mini-computer, and client-server based computing systems across a wide variety of industries and a wide variety of functions/applications. I also led the design and development of a number of different communications networks associated with those computing systems, including wide- and local-area networks, utilizing both wired and wireless technologies, involving private and public (e.g. Internet-based) communications backbones. This communications system expertise includes underlying expertise in the electrical characteristics of communications signals, extending back to the early 1980s with my Electrical Engineering degree from Purdue University in 1983 and my work as an EE in the design of the Analog-to-Digital Signal Converter unit for the F-15 fighter jet radar system while with Hughes Aircraft Company Radar Systems Division from 1983-1985.

17. 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).

18. I received a B.S. degree in Electrical Engineering from Purdue University in 1983 with top honors. I received an MBA degree in Information Systems Management from The University of Texas at Austin in 1987, also with top honors.

19. My *curriculum vitae* contains further details on my education, experience, publications, and other qualifications to render an expert option. Ex-1004. My work on this case is being billed at a flat rate of $425 per hour, with reimbursement for actual expenses. My compensation is not contingent upon the outcome of this *inter partes* review proceeding.

III. MATERIALS CONSIDERED

20. In forming my opinions, I have reviewed the following documents, and any other document cited in this declaration:

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Ex-1036	WO 01/74034
Ex-1037	Microsoft Campus Agreement: How to Get Started (February 9, 2001), available at https://www.uprm.edu/cms/index.php?a=file&fid=126
Ex-1038	*Platform Services*, OPENWAVE, https://web.archive.org/web/20020206231928/http:/www.openwave.com/products/platform_services/.
Ex-1039	U.S. Patent No. 7,376,433
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Ex-1053	U.S. Patent No. 8,099,667

21. I have also relied on my education, experience, research, training, and knowledge in the relevant art, and my understanding of any applicable legal principles described in this declaration.

1. All of the opinions contained in this declaration are based on the documents I reviewed and my knowledge and professional judgment. My opinions have also been guided by my understanding of how a person of ordinary skill in the art would have understood the claims of the ’543 patent at the time of the alleged invention. For purposes of this declaration, I have been asked to assume that the date of the alleged invention is the earliest claimed priority date: April 21, 2001.

2. I reserve the right to supplement and amend any of my opinions in this declaration based on documents, testimony, and other information that becomes available to me after the date of this declaration.

IV. LEGAL PRINCIPLES

22. For purposes of this declaration, I have been asked to opine only on issues regarding obviousness under 35 U.S.C. § 103. I have been informed of the following legal standards, which I have applied in forming my opinions.

23. I have been asked to provide my opinions as to whether the cited prior art renders obvious the elements of claims 32, 34, 36, 38, 39, 41, 43-49, 51, 53-62,

72, and 76 of the ’543 patent from the perspective of a person of ordinary skill in the art at the ’543 patent’s priority date in 2001, as described in more detail below.

24. For purposes of this declaration, I have been informed and understand certain aspects of the law as it relates to my opinions.

25. I have been advised and understand that there are two ways in which prior art may render a patent claim unpatentable. First, the prior art can “anticipate” the claim. Second, the prior art can make the claim “obvious” to a person of ordinary skill in the art. I understand that for an invention claimed in a patent to be patentable, it must not be anticipated and must not be obvious based on what was known before the invention was made.

26. I have been advised and understand the information used to evaluate whether an invention was new and not anticipated or obvious when made is generally referred to as “prior art.” I understand that prior art includes patents and printed publications that existed before the earliest filing date of the patent (which I have been informed is called the “effective filing date”). I have been informed and understand that a patent or published patent application is prior art if it was filed before the effective filing date of the claimed invention and that a printed publication is prior art if it was publicly available before the effective filing date.

27. I have been advised and understand that a dependent claim is a patent claim that refers back to another patent claim. I have been informed and understand that a dependent claim includes all of the limitations of the claim to which it refers.

28. I have been advised and understand that a patent claim may be invalid as anticipated under 35 U.S.C. § 102 if a prior art reference discloses each element of the claimed subject matter.

29. I have been advised and understand that a patent claim may be invalid as obvious under 35 U.S.C. § 103 if the differences between the subject matter claimed and the prior art are such that the claimed subject matter as a whole would have been obvious to a person of ordinary skill in the art at the time the invention was made. I have also been advised that several factual inquiries underlie a determination of obviousness. These inquiries include (1) the scope and content of the prior art, (2) the level of ordinary skill in the field of the invention, (3) the differences between the claimed invention and the prior art, and (4) any objective evidence of non-obviousness (which I have been informed may also be called "secondary considerations").

30. I have also been advised and understand that, where a party alleges obviousness based on a combination of references, that party must identify a reason

why a person skilled in the art would have been motivated to combine the asserted references in the manner recited in the claims and to explain why one skilled in the art would have had a reasonable expectation of success in making such combinations.

31. I have been advised and understand that the law permits the application of "common sense" in examining whether a claimed invention would have been obvious to a person skilled in the art. For example, I have been advised that combining familiar elements according to known methods and in a predictable way may suggest obviousness when such a combination would yield nothing more than predictable results. I understand, however, that a claim is not obvious merely because every claim element is disclosed in the prior art and that a party asserting obviousness must still provide a specific motivation to combine the references as recited in the claims and explain why one would have reasonably expected to succeed in doing so.

32. I have been advised and understand that two references are considered to be in the same field of art when the references are either (1) in the same field of endeavor, regardless of the problems they address, or (2) reasonably pertinent to the particular problem being solved by the inventor in his patent.

33. I am not aware of any evidence of secondary considerations that would support a determination of non-obviousness of the claimed subject matter in the ’543 patent.

34. I have been informed that in *inter partes* review proceedings, such as this one, the party challenging the patent bears the burden of proving unpatentability by a preponderance of the evidence. I understand that a preponderance of the evidence means “more likely than not.”

V. LEVEL OF ORDINARY SKILL IN THE ART

35. In rendering the opinions set forth in this declaration, I have been asked to consider the ’543 patent’s claims and the prior art through the eyes of a person of ordinary skill in the art. I considered factors such as the educational level and years of experience of those working in the pertinent art, the types of problems encountered in the art, the teachings of the prior art, patents and publications of other persons or companies, and the sophistication of the technology.

36. I have been instructed to assume a person of ordinary skill in the art is not a specific real individual, but rather a hypothetical individual having the qualities reflected by the factors discussed above.

37. Taking these factors into consideration, it is my opinion that a person of ordinary skill in the art of the ’543 patent as of its earliest priority date, would have been someone knowledgeable in mobile computing systems and location technology. In my opinion, that person would have had either: (1) a Bachelor of Science degree in Electrical Engineering or an equivalent field, with at least three years of academic or industry experience in the wireless mobile location industry or comparable industry experience; or (2) a Master of Science degree in Electrical Engineering or an equivalent field, with at least two years of academic or industry experience in the same field. With more education, for example, postgraduate degrees and/or study, less experience is needed to attain an ordinary level of skill in the art. Similarly, more experience can substitute for formal education.

38. By April 21, 2001, I was at least a person of ordinary skill in the art. I hold a B.S. in Electrical Engineering from Purdue University (1983), and have worked in the mobile location field since the mid-1990s as an Associate Partner in Accenture’s Communications and High Tech Strategy Practice, where I was responsible for monitoring the passage of the 1996 Telecommunications Act and identifying related consulting opportunities. This led in part to LBS-related work including my leading consulting engagements and providing the thought leadership

for a series of projects from 1998 to 2000 for Nextel Communications (later part of Sprint, and now T-Mobile). This work (also described in the earlier qualifications section and my CV) included the development of Nextel's Location-Based Services product strategy and the associated network and IT architecture and technical requirements required to implement those products. Associated work included conducting customer focus groups on various potential products, and interfacing with the engineering group designing GPS chipsets into Nextel (Motorola) phones as well as the group responsible for implementing the 9-1-1 location mandate. In this declaration, and for all of my opinions herein, I have applied the knowledge of a person of ordinary skill in the art as of April 21, 2001.

VI. CLAIM CONSTRUCTION

39. I understand that in *inter partes* review, the U.S. Patent and Trademark Office applies the plain and ordinary meaning of claim terms, in view of the specification, as would have been understood by a person of ordinary skill in the art.

40. Based on my review of these materials and my personal knowledge and experience, I have considered the plain and ordinary meaning of each term of the '543 patent as it would have been understood by one skilled in the art as of April 21,

2001. I apply the plain and ordinary meaning of each claim term throughout this declaration.

VII. BACKGROUND OF LOCATION-DETERMINING AND LOCATION-SHARING TECHNOLOGIES

41. I understand that analyzing the state of wireless/mobile communications technologies and applications with respect to passively tracking and selectively sharing user experiences with communications devices during the years prior to the earliest possible priority date of the ’543 Patent can provide valuable insight into what a person of ordinary skill in the art would have been aware of before the ’543 Patent.

42. Prior to the April 24, 2001 priority date of the ’543 Patent, all the technology at issue in the ’543 Patent was broadly applied and well known by developers in the wireless/mobile communications industry, including in the wireless Location-Based Services field and broader wireless communications industry. In my opinion, no individual elements of the ‘543 Patent claims were novel at the time of the alleged invention, and there was nothing novel or inventive about the manner in which those elements are combined in the claims. Further, there were no technological barriers to combining these elements to form the claimed invention. Indeed, combining these elements would have yielded predictable results.

43. Specifically, the developments related to software registration and associated data collection; capture/determination of a device's location and subsequent use in its tracking; the sharing of/providing access rights to others to such location-based opinions/experiences using various forms of contact lists such as Instant Messaging and email contact lists; the capture of location-aware comments about that location/location-related experience; and the use of client-server architectures to support the above, demonstrate that all the elements described and claimed in the '543 Patent were well known before the earliest priority date of the '543 Patent. The following analysis describes some of the claimed concepts that were known in the art before the '543 Patent.

A. The use of software registration, including for data collection and sharing purposes was well known prior to the '543 patent priority date.

44. The '543 patent describes user and/or software registration. Such registration generally has to do with providing user/device identification-related information, typically from a client to a server. The capabilities regarding and related to software registration in the '543 patent were well known in the industry before the '543 patent's earliest priority date. A history lesson of sorts is needed to understand how and why this was so.

45. From the earliest days of consumer software, registration has been used for a variety of purposes, including:

- Fraud prevention, preventing a single copy of software (either as a download, a factory-loaded CD, or a download copied to a CD) from being fraudulently used multiple times;[1]
- Tailoring/configuring the software to optimize its performance, particularly as it relates to the user's preferences and intended usage; and
- Providing information about the user for software developer and/or third party-oriented services, particularly advertising (especially true for "free" software).

46. There were many reasons to pursue a registration process that involved a central verification/registration mechanism. In practicality, this took the form of a client-server architecture—the client being the computer or wireless device on which

[1] Fraud prevention also includes consumer protection (*e.g.* registering a software download as a form of proof of receipt of purchase). Registration for this purpose is particularly important for consumers who buy a copy of the software that has allows multiple (yet finite) additional downloads/installations, for example if the person has multiple devices. However, multi-device software marketing was rare until about 2010, when consumers started to actually own/operate multiple devices.

the software was to be loaded, and the server being where the centralized product key verification and customer registration management took place.

47. This type of architecture was well known prior to the '543 patent. For example, U.S. Patent No. 8,295,835, *System and method for registration for application program deployment*, has a priority date of February 9, 2000 and describes the following:

> A communication system includes a development sector for registering a plurality of wireless devices, a business sector for controlling utilization of an application program and for receiving application data, a service sector for deploying the application program and for providing the application data to the business sector in accordance with communication with at least one wireless device of the plurality; and a mobile sector comprising the plurality of wireless devices, each device for receiving the application program deployed by the service sector, executing the application program in response to the business sector, and communicating with the service sector to support provision of the application data to the business sector. The business sector or service sector may monitor or limit utilization of the auxiliary device. Deployment of application programs may be controlled by the business

> sector or the development sector by rendering an application program or auxiliary device available for use only after a particular time or after receipt of a message. Distributed processing application programs having components in the business, service, and mobile sectors may thereby be updated in an orderly manner. An application program on a wireless device may assist confirmation of an order made by a buyer via a web site. The wireless device is expected to be operated by the buyer. Fraud reporting is accomplished by comparing data obtained by registration of the wireless device with data provided in the confirmation.

Ex-1026, Abstract.

48. Another, even earlier patent addresses the broader use of client-server registration and authentication and the sharing of user information. U.S. Patent No. 6,799,277, *System and method for monitoring software*, with a priority date of June 4, 1998, and describes the following:

> Systems and methods for monitoring, testing, distribution, and use of computer software with associated methods and systems for repeatedly contacting a software user and exchanging information, such as passwords, authorization information, marketing, advertising, or promotional information include associating a list of passwords with

> each copy or group of copies of computer software which must be entered at predetermined intervals to provide continued use of the software. Software monitoring and network license metering may be providing by storing information relative to software operation on a local computer or server and transferring the information to a remote computer or server at predetermined intervals.

Ex-1035, Abstract.

49. The use of client-server based registration systems was not just IP, but implemented in the marketplace. In 1998 Microsoft starting using a "Registration Wizard," described as follows:

> When you install a single copy of Office 2000 or one of the Office 2000 products (Outlook, Word, Excel, FrontPage, PowerPoint), you will be asked to register. You may register via the Internet, email, phone, fax and postal mail. You may use the product up to 50 times without registering, after which you must register to continue using the product. When registering, you provide the installation ID (located on the back of the CD case) and the name of the country from which you are registering. The Microsoft Registration Center returns to you an 8-character Confirmation code that verifies that installation of the

> product. Registration is simple and quick, and once complete you won't have to think about it again.[2]

Ex-1037, 8.

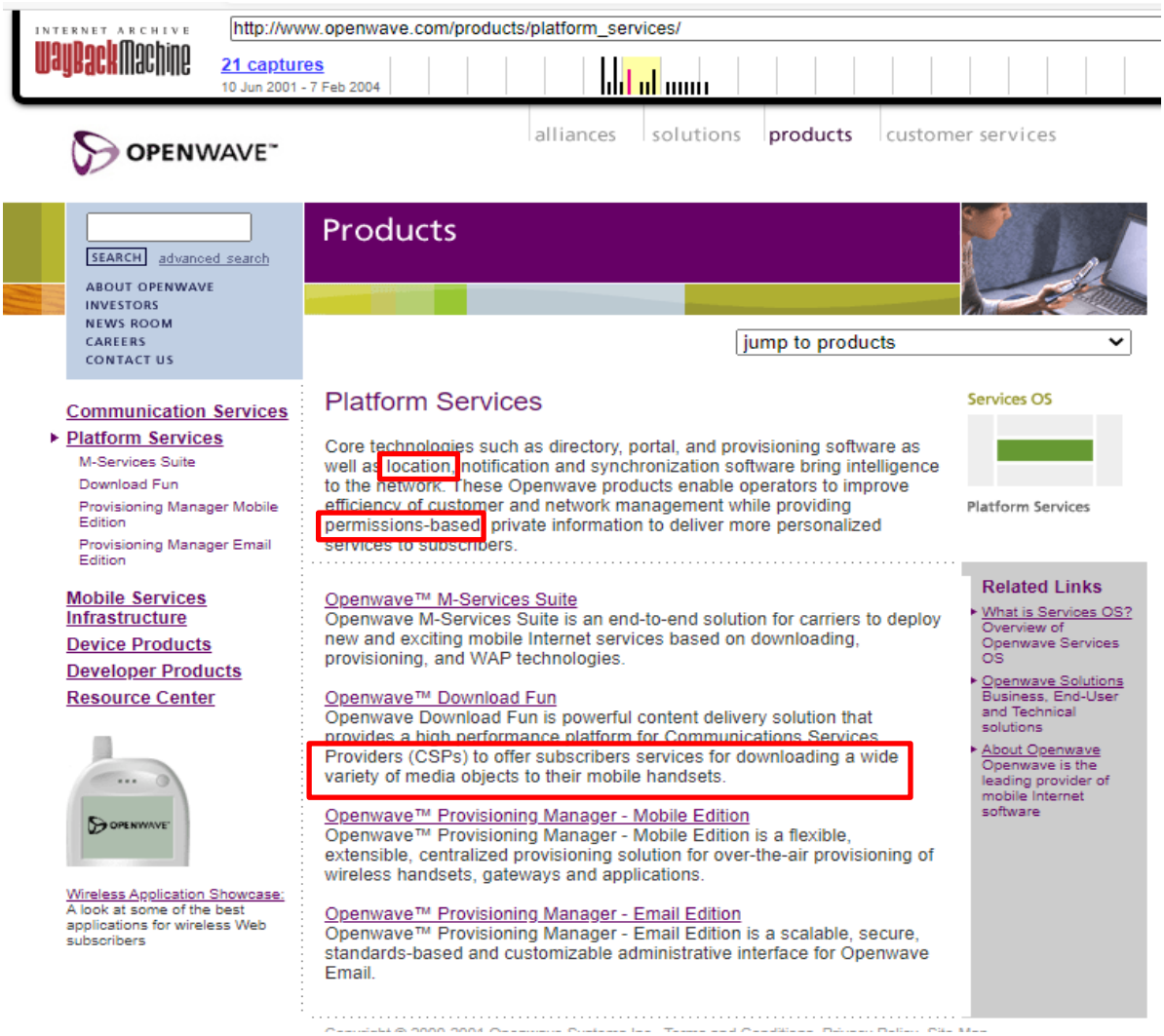
50. Thus, software registration predated the ’543 patent. Moreover, the utility of obtaining user-specific information, including preferences related to location information-sharing, was readily recognized prior to the ‘543 priority date for how it could improve the user experience for certain programs, and in particular the much broader impact it had on marketing and advertising programs.

51. For example, PCT Application No. WO 01/74034, *On demand location function for mobile terminal*, filed March 28, 2000, described a system that “supports affinity groups of like-minded individuals who want to know the location of other members of the affinity group.” Ex-1036, Abstract.

52. One of the first mobile location-enabling software providers was a company called Openwave (inclusive of a variety of companies like Phone.com, Software.com, and SignalSoft, and was founded in 1996). At the time of the ’543

[2] While this reference is described as “Updated February 9, 2001,” the Wizard was announced in a press release (https://news.microsoft.com/1998/12/09/microsoft-extends-anti-piracy-features-in-office-2000/) dated Dec. 1998.

Patent's priority date, Openwave offered a variety of services enabling location usage, as seen below.[3]



Ex-1038 (annotated).

[3] Note, while the Openwave web/marketing material excerpts described here are slightly after the priority date of the '543 patent, the author knows they predated the patent due to his location-based services work on behalf of Nextel in the 1998-2000 timeframe, which included research into Openwave products, services, and platforms.

53. Furthermore, part of Openwave's associated IP demonstrates detailed location access capabilities via subscription/registration confirmation, as seen in U.S. Patent No. 7,376,433, *Subscriber delivered location-based services*, with a priority date July 20, 1997, which described:

> A method and apparatus are disclosed for providing subscriber delivered and personalized location-based services. In one embodiment, the invention is implemented in an intelligent wireless network (100). A subscriber initiates the location-based service process by entering a service request using a wireless telephone (102). The request is transmitted to an intelligent network platform (112) via cell site equipment (108) and MSC (110). An application implementing the process that runs on the platform (112) receives subscriber profile information (114), location finding equipment inputs (116) and service information (118) related to the service request. Based on these inputs, the application selects location-based service data that is transmitted to the telephone (102) via a data server (120), the MSC (110) and the cell site equipment.

Ex-1039, Abstract.

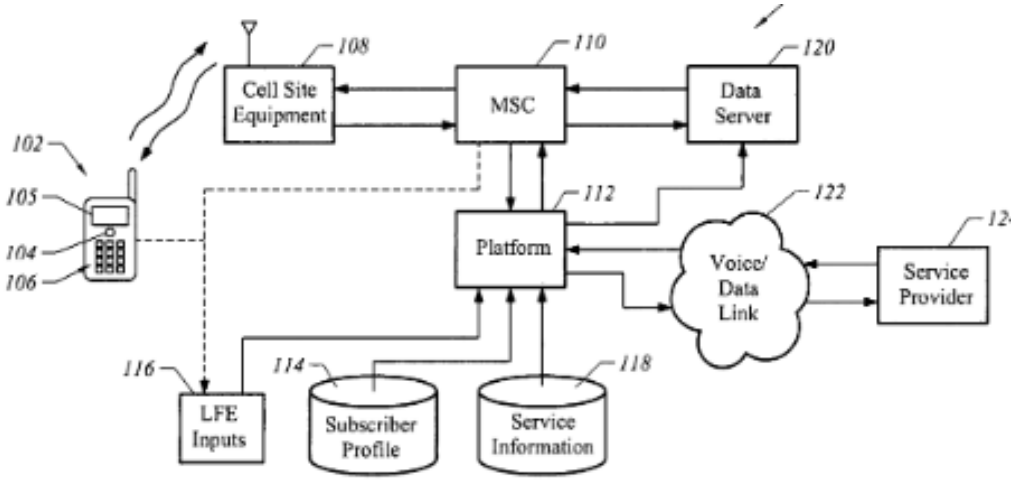


FIG. 1

Ex-1039, Fig. 1.

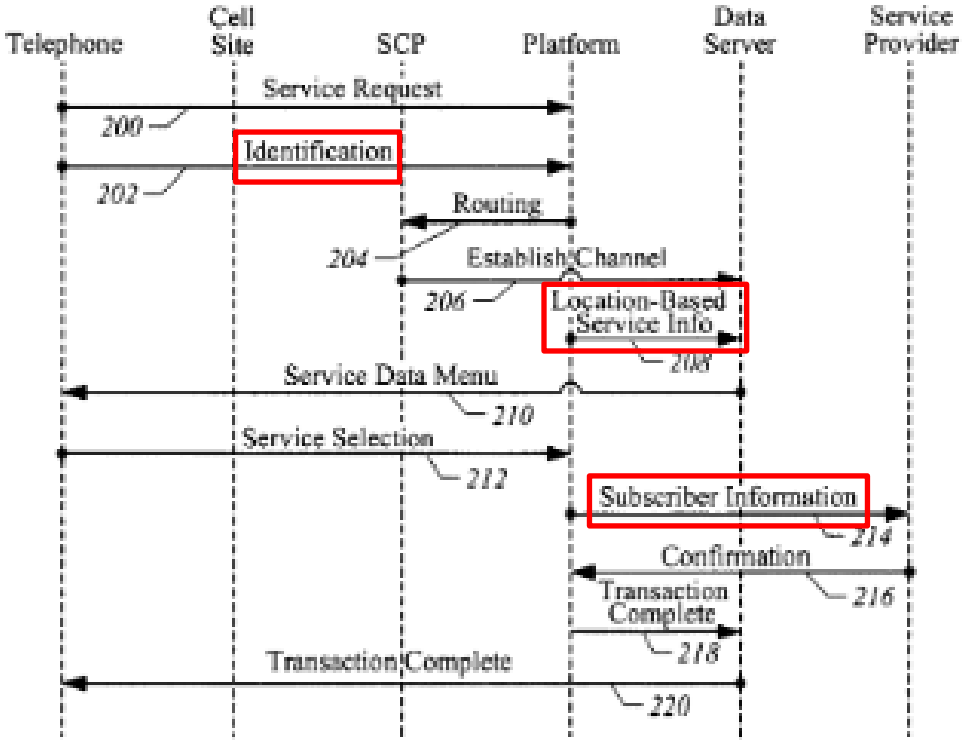


FIG. 2

Ex-1039, Fig. 2.

54. The above diagrams, particularly Figure 2, show the flow of information resulting in location information of a subscriber being shared with a 3rd party service provider.

55. Indeed, Openwave and others prior to the '543 patent were using various already-in-place industry standards to form the enabling core of many of services. For example, 3GPP Specification 3G TS 23.271 v.2.0.0, in December 2000 describes the Location Service Response information flow for a client device with a unique identity/identifier including an "indication when UE enters or leaves the Geographical area" (in reference to geofencing-related location services where "The Location Service Response is sent to the LCS (location services) client (the "UE," or User Equipment) as the result of the Location Service Request by the LCS Server").[4] A POSA would recognize such a standard as greatly facilitating the request—response flow of information between a client device and a 3rd party service provider, utilizing subscriber identifier information and associated location sharing/access permissions.

B. A wide variety of location determination methods and technologies were well known at the time of the '543 patent's

[4] https://portal.3gpp.org/ngppapp/CreateTdoc.aspx?mode=view&contributionUid=SP-000596. Pages 18-19.

earliest priority date, as was the automatic and passive collection and use of such data for tracking purposes.

56. At the time of the ’543 Patent’s earliest priority date, a wide range of terrestrial and satellite-based location technologies had been in use for years. For terrestrial systems, the original LORAN (for LOng RAnge Navigation) system was developed in World War II, with numerous subsequent versions. With respect to Satellite navigation systems, the U.S. Global Positioning Satellite system was fully deployed by 1993. Almost immediately, the use of various Location Service Providers (LSPs) and various associated services were utilized to improve its accuracy due to deliberate distortion in the signals (discussed more shortly). Differential GPS was one such LSP service, described in an IEEE article as follows:

> The global positioning system (GPS) allows properly equipped users to determine their position based on the measured pseudoranges to at least four satellites. Differential GPS operation (DGPS) uses a reference station at a known location to calculate and broadcast pseudorange corrections to local users, resulting in improved user position accuracy.

Ex-1040, 1.

57. It was the development and deployment of a wide variety of consumer-focused starting in the mid-1990s that saw a variety of terrestrial-based systems (and

expanded consumer use of the GPS system) by the time of the '543 patent. Specifically, the 1996 Telecommunications Act (which resulted in a mandate to locate wireless phones when calling 9-1-1) cause the wireless industry to investigate a wide variety of such technologies. At the time of the '543 priority date, these included TDOA (Time Difference of Arrival), E-OTD (Enhanced Observed Time Difference), AOA (Angle of Arrival), A-FLT (Advanced Forward Link Trilateration), Cell ID (Cell Identification), and various forms of Enhanced Cell ID. All of these were in some level of actual use at the time of the '543 patent.

58. For satellite communications, the U.S. GPS (Global Positioning Satellite) system had been fully operational since at least 1993,[5] generally for military applications. However, in May 2000, its deliberate distortion[6] of satellite signals (and thus deliberately distorted accuracy) was discontinued (partly to improve the location accuracy of 911 calls, per the 1996 mandate). This immediate served as a major catalyst for innovation in location services field.

[6] This distortion would introduce timing errors in individual satellite signals timing metadata, and thus distorting the on-the-ground determined location, which was based on the relative time difference of the signals from multiple satellites as measured by a receiver on the ground. The reason for the distortion was for military purposes (e.g., not wanting everyday consumers and/or foreign actors to have accurate location data).

59. A POSA would additionally recognize the widespread prevalence of the automatic and passive collection and reporting of location information at the time of the earliest '543 priority date, for a variety of reasons. First, many, even most location-related applications were recognized to require multiple, frequent locations in order to function, particularly for any apps that involved someone moving (really, most mobile applications). For example, a navigation app by its nature requires continuous/frequent updating to accurately represent where a user is at any given point in time, since it is likely that the user has moved since the last reported location. Second, to do this kind of very frequent updating via a manual user interaction is impractical, even unsafe, not to mention tremendously irritating to the user and user experience. Third, from a systemic standpoint location updates have to be done serially, meaning after (in the case of using GPS) GPS satellite signals are detected, measured, a location is computed, and such location is sent to a server for subsequent use, only the server/recipient system knows when the prior location calculation/transmission has been completed and it is "time" for the next resquest for location to be initiated.[7] Fourth, location determination, such as by GPS, can take

[7] This is true even for fully device self-contained LBS apps, with storing replacing the transmission step.

a tremendous amount of device battery power. For that reason, many LBS applications limit location requests/calculations to a fixed period and/or only under special automatically-detected conditions, versus being done "continuously" or at the whim of the user. Instead, many location apps did (and still do) control such location determination (e.g. request, data collection, location calculation, and transmission), using methods such as polling or periodic generation (controlled by a system programmed for a fixed or otherwise defined period of time); under key conditions (e.g. automatically generate/report a new location when the person has moved; or a combination of both, e.g. accelerating—programmatically, not manually—the frequency of the period of location generation/reporting upon detection of an event of some sort); or otherwise *systemic* detection and triggering of new location determination. Requiring manual, non-passive triggering of location determination is, for the vast majority of applications and use cases, recognized to be a *worst* practice, not a best practice, in LBS application/system design.

60. As such, there is substantial prior art that addresses the systemic, automatic, periodic control (and passive on part of the user) of when/under what conditions a location determination is made. For example, Patent No. 8,862,393, *Systems and Methods of Tracking*, priority date 6-30-2000, describes the utility of

polling the user device to collect location data, and using such location data to generate alerts (to the user or other users) as a result of various comparison criteria involving the location. Another patent, Patent No 8,060,389, *System and method for anonymous location based services*, priority date 6-7-2000, describes "transmission of situation location dependent information to automatically located mobile receiving data processing system." Abstract. Another patent, Patent No 7,848,905, Method, systems and computer program products for locating and tracking objects, priority date 12-26-2000, describes how "The status information can be automatically sent to a central computer system, or when devices are polled," including location information.[8]

61. The use of automatic, periodic location determination was not only well known in applications at the time of the '543 priority date, it made its way into industry standards prior to that date. For example, 3GPP Specification 3GPP TS 23.271 v.4.0.0, in January 2001 describes in its extensive procedures and call/signal

[8] https://patentimages.storage.googleapis.com/4d/91/e2/275612802f3f01/US7848905.pdf, 29:21-22.

flow for a Mobile Terminating Location Request, how for its 13 steps "Steps 9 - 13 may be repeated a number of times in case of periodic location request."[9]

C. The ability to share information related to location/location-related experiences was known in the art at the time of the '543 patent's earliest priority date.

62. The ability to share location-related information, including specifically the location of users as well as their preferences regarding sharing of location information, was well known in the art prior to the '543 patent's earliest priority date. Such location sharing was done across a broad variety of location-based services. Such prior art includes location-based/aware/related:

- User Matching (of various forms)
- Social Networking
- Groups
- Collaboration/Groupware
- Advertising
- Instant Messaging

Location-Related User Matching

[9] https://www.3gpp.org/ftp/Specs/archive/23_series/23.271/23271-400.zip. Pages 37-40.

63. "Matching" when used in online contexts can come in various forms, but in a location-related context generally refers to matching some attribute or characteristic of one user with a place, business entity, or—in particular—another user. Particularly with respect to business entity and user-related matching, this involves specifying for each user of what attribute(s) or characteristic(s) can be shared (with a business entity or another user), as well as often specifying what communications channels to enable contact between the parties involved. Among other characteristics, such (online/mobile) matching involves user registration, capture of user preferences (including sharing of information preferences), and the use of contact lists for facilitating communications, as well as specification of possible/preferred communications channels (e.g. email, IM, etc.). For example, U.S. Patent No. 6,052,122, *Method and apparatus for matching registered profiles*, filed June 13, 1997, describes the following:

> A system of matching a first user with at least one other user of the system by comparing criteria data of the first user with characteristic data of the at least one other user and criteria data of the at least one other user with characteristic data of the first user. The characteristic and criteria data can be obtained via the Internet, and more specifically through a series of web site screens that

> prompt the user for characteristic and preference data. The system performs the comparison of the respective characteristic and criteria data to provide a list of matches to the first user. The first user is furnished with information that allows the first user to contact the other users for which a match has been found.

Ex-1012, Abstract.

64. This patent demonstrates several of the claimed aspects of the '543 patent, including user registration using a client sending registration information (e.g., the patent title *Method and Apparatus for matching registered profiles*) to a server ("Server 18 allows properly authorized users to access matching system 20.") (Ex-1012, 4:56-57) from a client ("a communication device for providing information associated with the at least one other user to the first user.") (*id.*, Claim 10); including designating what information can be shared/accessed by another user ("the user can choose not to provide certain characteristics") (*id.*, *5*:65-66), and how ("a user may choose a particular means to contact another user, such as by e-mail, leaving a voice message, or other means.") (*id.*, 4:7-9). The information that can be shared includes user location information ("The method according to claim 1, wherein at least one of the characteristic data elements of the first user is… geographic location.") (Claim 4). It also demonstrates the use of contact lists as well

as defining/distinguishing one user of the one or more other users ("each user can have a personal journal that includes, for example, a list of other users that the user has selected [e.g. which other users the first user is allowing his/her information to be shared with, including location information as seen above], the last e-mail sent and received for a particular user, and search results as described in conjunction with FIGS. 3A-B."). *Id.*, 4:3-6. And "FIGS. 3A-B are a series of flow diagrams showing the processing performed by matching system 20 (FIG. 1) to generate a match list in response to a user request." *Id.*, 7:38-39.

65. A similar matching-related reference strongly demonstrates the geographical location sharing aspect of the '543 patent is U.S. Patent No. 7,970,390, *Mobile Communications Matching System*, with a priority date of August 27, 1998. Ex-1013.

66. This invention only arranges communications between users if they are connected to the same cell or group of cells, which by definition provides each user with knowledge of the location of the other user. Further, the invention provides a user with the ability to not share location information by not connecting to a user even when they share a cell or cells: "when a match is determined, checking the stored profile information of at least one of the first and second person for additional

information that indicates that a signal should not be sent to at least one of the first person and the second person." Ex-1013, Claim 8.

67. U.S. Patent No. 6,466,788, *Methods and apparatus for transferring position data between terminals in wireless communications systems*, filed on December 21, 1998, also describes a more specific approach to sharing of location information:

> Techniques for ascertaining the geographic position of users and terminals in a wireless communications system are used, for example, by operations personnel in performing system maintenance and by emergency personnel in locating lost or injured individuals. According to an exemplary method of requesting and obtaining user position information, user terminals in a wireless communications system routinely transmit position information to mobile switching centers in the system, and the mobile switching centers maintain up-to-date terminal position information in visiting location registers. Requests for user position information are routed to a home location register which in turn routes terminal position requests to mobile switching centers with which the target users are registered. Terminal position information is retrieved from the appropriate visiting

> location registers and sent back to the requesting parties with a minimum of system traffic.

Ex-1014, Abstract.

68. This patent requires user registration ("determining, at the home location register, which user terminals the remote system user is registered with") (Ex-1014, Claim 1), and provides the capability for the user to control the sharing of his/her location ("According to embodiments of the invention, a system user can (e.g., for purposes of security or privacy) bar position requests by others") (*id.*, 6:33-35).

69. It is also worth noting that this patent is targeted at supporting business operations and emergency personnel. Emergency services-related prior art was one of the earlier such location-related IP (particularly after the passage of the 1996 Telecommunications Act). One such application involving location sharing is U.S. Patent Application Publication No. 2003/0022684A1, *System, method and device for warning notification*, which described as follows:

> A system, method and device for enabling an individual, positioned at a location wherein radio and/or television signals are unavailable and/or unreliable, to be alerted to a potential threat, and/or to enabling an individual positioned in a first location to be advised of a noteworthy

> situation in a second location of interest, such as the area of a child's school or a geographically related industrial or military complex having a chemical, nuclear, biological material and/or any other type of emergency, thereby enabling an individual to take appropriate action to prevent potential loss of property and/or life.

Ex-1015, Abstract.

70. There are numerous similar art "matching" an emergency caller (and his/her location) to the nearest first responder, such as a police officer, EMT team, or firehouse. Further, a key part of 9-1-1 call handling capabilities from its earliest days was the ability to match multiple calls from multiple 9-1-1 callers/users, for the purposes of filtering out redundant calls about the same event and thus avoiding unnecessarily dispatching multiple separate responder teams for what was only one emergency. The best, most accurate way of doing so was by matching the location of each caller to identify if they were at the same location/immediate vicinity.

71. Putting much of the foregoing together, U.S. Patent No. 6,618,593, *Location dependent user matching system*, filed date September 8, 2000, described the following:

> A system and method for matching first and second mobile communications devices are provided. Preference or

> profile information associated with the first and second mobile communications devices is transmitted to a central server for matching the first and second devices. Location information and transmission statuses of the first and second mobile communications device are also transmitted to the central server. Data related to the location of either device is transmitted to the other device depending upon the matched statuses of the mobile communications devices and the location and transmission status information associated with the mobile communications devices.

Ex-1016, Abstract.

Location-Aware/Based Social Networking

72. Related to and even enabled by profile matching and online dating, social networking also demonstrates many of the '543 Patent's capabilities.

73. For example, Patent No. 7,739,139, *Social Networking System*, with a priority date of November 2, 1997, describes the following:

> A networked computer system provides various services for assisting users in locating, and establishing contact relationships with, other users. For example, in one embodiment, users can identify other users based on their affiliations with particular schools or other organizations.

> The system also provides a mechanism for a user to selectively establish contact relationships or connections with other users, and to grant permissions for such other users to view personal information of the user. The system may also include features for enabling users to identify contacts of their respective contacts. In addition, the system may automatically notify users of personal information updates made by their respective contacts.

Ex-1017, Abstract.

74. This multiple-users matching patent includes the sharing of location information via a "Crossing Paths Notification System," for detecting when two or more users' physical paths may cross:

> If a first member is planning a trip, the first member can…add a Travel Event, in which he specifies the location 660-2, 660-4, 660-6, dates 660-8, 660-10, and contact information 660-20 for the intended trip…The first member is informed which of the second members to whom he is linked and who have granted him Crossing Paths Permission will be in the vicinity of the city to which the first user is traveling, during the tie period of the specified Travel Event. The first user can then use the pseudo Crossing Paths List GUI 670 to select which of the

displayed second users the first user would like to inform of the first user's specified Travel Event.

Id., 13:4-16.

75. The following Figure 13 describes the nature of this art's permissions for information sharing (including location). Such permissions are established during the software's registration process, done in typical client-server relationship (*see also* Figure 5 below).

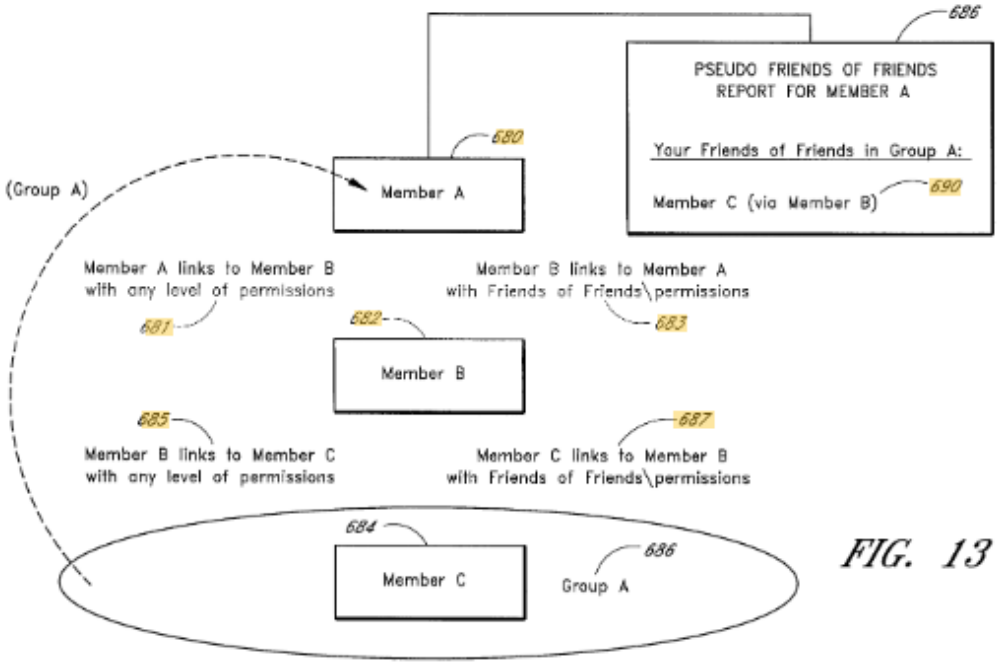


FIG. 13

Id., Fig. 13.

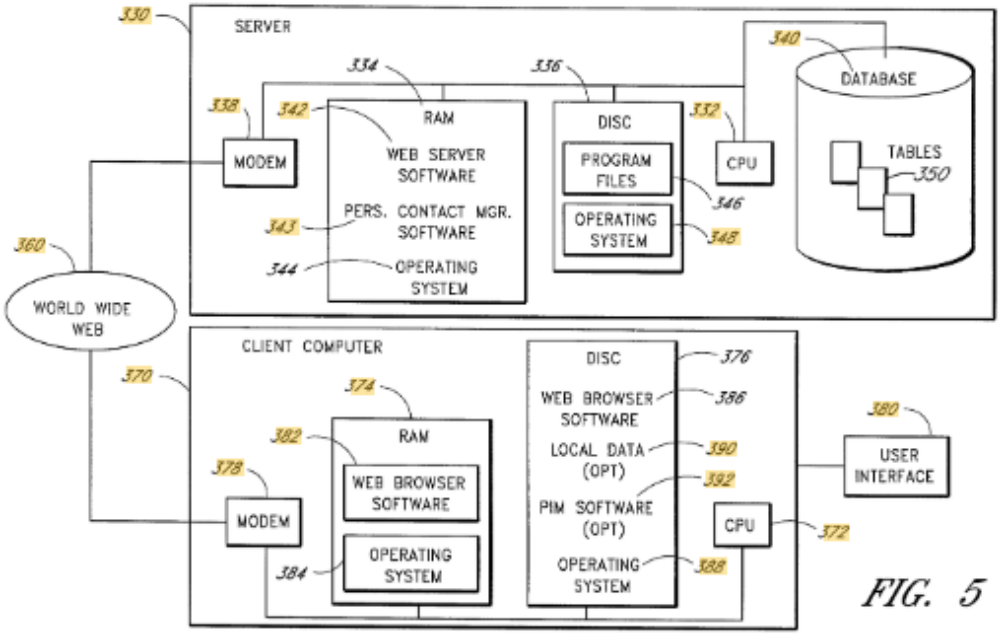


FIG. 5

Id., Fig. 5.

76. U.S. Patent No. 8,762,471, *Social networking system capable of providing location-based notifications*, with a priority date of November 2, 1997), is even more specific and extensive in the use of location-related experience sharing. It describes the following:

> A networked computer system provides various services for assisting users in locating, and establishing contact relationships with, other users. For example, in one embodiment, users can identify other users based on their affiliations with particular schools or other organizations. The system also provides a mechanism for a user to selectively establish contact relationships or connections with other users, and to grant permissions for such other

> users to view personal information of the user. The system may also be capable of detecting, and notifying a user of, an event in which the user and a contact of the user are concurrently in a common location.

Ex-1018, Abstract (emphasis added).

77. This patent also describes the use of email contact lists (*Id.*, Col. 16 (Appendix B)). It explicitly captures location-related sharing preferences during a server-based registration process. *Id/*, Claim 9.

78. Other social networking reference focus on mobile devices. U.S. Patent No. 8,589,247, *Presenting mobile offers to members of a social network*, with a priority date of May 12, 1999, discloses sharing opinions (e.g. "feedback provided") on a location-related experience (e.g. a buying experience of one member to another of a location-specified product or service). Ex-1019, Claim 1. The patent also uses terrestrial and satellite location determination technologies/methods:

> offers can be tied to a particular IP address or to the location of a device, for example determined by way of global positioning satellites (GPS) or other means. In particular, approximate location can be determined by signal triangulation (or trilateration). For example, signal strength measures at various stationary transceivers can be

> measured by well-known means in order to pinpoint the location of the transmitting device. One such example is Wireless Application Protocol (WAP), wherein radio location, triangulation, and/or trilateration can be employed in connection with radio waves or other electromagnetic radiation. Another example can be radio frequency identification (RFID).

Id., 11:34-45.

Location-Based Groups

79. The next location-based category, location-based groups, also demonstrates '543 patent capabilities. In this case, groups often share common characteristics/attributes with matching-type functionality and applications such as dating and social networking, yet are generally for a distinctly different purpose, such as enabling business-related capabilities or even basic communications purposes.

80. For example, U.S. Patent No. 6,240,069, *System and method for location-based group services*, filed on June 16, 1998, describes:

> A telecommunications system and method is disclosed for defining location-based group services, which can be implemented within a Group Call Services (GCS) node associated with a cellular network. When a group call is

> initiated, the GCS can send a positioning request to a Mobile Location Center (MLC) to locate the group members within a specified area. The particular location can be defined by the group number or the location can be prompted by the GCS. For each group member, the position of a mobile terminal associated with that group member is determined and the call is set up only to those members which the meet the specified area criteria. If none can be located within the specified area, the area can be expanded at the callers request.

Ex-1020, Abstract.

81. Another reference, U.S. Patent No. 7,047,030, *Group communication method for a wireless communication device*, with a priority date of May 2, 2001, "defines or references members of a group in a way that enables communication to take place between two or more members of the group." Ex-1021, Abstract. Further, "members of a group defined by a group object might share a common auto-generated physical or logical location—hence, a group might be generated which automatically takes as its members everyone at a particular concert venue (with location) sensing using conventional technology." *Id.*

82. Another reference, U.S. Patent No. 8,103,729, *Shared group rostering system*, with a priority date of March 17, 2000, describes "sharing information

among members of a group." Ex-1022, Abstract. It describes the sharing of a map with location information about the group, where "[t]he shared map may contain information including, but not limited to, home and work locations of members, the current locations of members, a meeting place, an event location, or any other designated area. Driving directions to and from locations also may be provided. *Id.*, 16:17-21.

Location-Aware/Based Collaboration/Groupware

83. A logical extension of location-based groups, and another area where the inclusion of multiple users' location information can play a major part, is in software that facilitates various forms of collaboration between users. This area, particularly for focused applications, is known as "groupware." A key element of collaboration/groupware is information sharing among different environments, which a 1994 IEEE paper describes as "geographically dispersed, mobile and location independent sites." Ex-1042, 1. Controlling/restricting such information sharing, particularly in mobile environments, was well known at this time, for example providing a time restriction. *See generally*, Ex-1043. Location-related sharing was also being researched at this time, as indicated by a 1996 IEEE article

titled *Accessing information on demand at any location—Mobile Information Acces*s. *See generally* Ex-1044.

84. There is ample patent art related to location-related collaborative tools, such as task completion to meeting coordination. U.S. Patent No. 7,953,815, *Cooperative location based tasks*, with a priority date of February 26, 2001, describes the following:

> A method for providing location dependent information to a user for selective colleague assistance. The method on a Client Wireless Component includes the steps of receiving location data from a plurality of Global Positioning System GPS satellites and transmitting the location data to an Active Calendar Component. The method further includes on an Active Calendar Component the steps of receiving Client Wireless Component location data and determining if within a threshold distance a Colleague item list exists for user completion.

Ex-1023, Abstract.

85. Among other capabilities, the above reference utilizes a variety of "location tracking systems including but not limited to cell location or WLAN tracking, Radio Frequency RF badge tracking and other generic location tracking

systems. Note that only one satellite is shown in FIG. 2, although a plurality are needed to accurately compute the location data. Ex-1023, Fig. 2. GPS technology is utilized in the invention for location tracking. The satellites transmit location tracking systems to a Client Wireless Component." *Id.*, 3:61-4:1. The art also describes disseminating location tracking information to multiple users:

> Consider, for example a "To Do List object such as a "Telephone Conference List" which is accessed by a user (602). One can designate that such an object can be public to a select group of other users. This group can be context sensitive."

Id., 8:24-28.

85. In addition to recognizing that a To Do List could have location-related elements to it (e.g. go to the grocery store), a person of ordinary skill in the art would recognize that "context sensitive" would include being "location sensitive."

86. A close "cousin" of collaboration, and a claimed aspect of the '543 Patent, is opinion and comment sharing. In addition to various forms of location-related experience sharing known in the art prior to the '543 patent's earliest priority date, so was the ability for users to share opinions, ratings, comments, recommendations, and the like. One such patent was discussed in the Groups sub-section above.

87. U.S. Patent No. 6,438,579, Automated content and collaboration-based system and methods for determining and providing content recommendations, with a priority date of July 16, 1999, described the following:

> A content and collaborative filtering system for recommending entertainment oriented content items, such as music and video, and other media content items to a user based on similarity in profile between the user and other users and between the content indexed in the user's profile and other content in the database. The system stores implicit and explicit ratings data for such content items provided by the users. Upon request of the user, the system accesses the user's profile and corresponding content interests database. The system uses the relationships between the content items to determine a subset of the content items to be referred to the user. The system also correlates a similarity between the user's ratings of the content items and other users' ratings. Based on the correlations, a subset of users is selected that is then used to provide recommendations to the user.

Ex-1024, Abstract.

88. Adding or including location to such ratings would be obvious to a person of ordinary skill in the art given the system's use of a user's profile, e.g.

including a person's location, and its use of "relationships between the content items," including relative location relationships.

Location-Based Advertising

89. Location-Based Advertising historically has been one of the more "popular" location-based services. This is not surprising given that much of the location services in the U.S. were "jump-started" by a non-revenue producing service, that of providing location information for 911 calls. The investment by wireless carriers alone on meeting the 911 Mandate was ultimately reached many hundreds of millions of dollars and they and others were eager to leverage the coming-available, highly personalized element of a person's location in generating targeted advertising and associated means for such revenue generation.

90. Such advertising can be viewed as coming in at least two kinds: "traditional" mobile online advertising, and "viral" advertising. "Traditional" mobile online advertising generally has to do with the direct use of marketers to specifically target advertising to a mobile user based on, at least to some significant degree, the location of that user. Viral marketing leverages one user's communications/sharing with others to promote—in some fashion—a product or service directly or indirectly through that communications/sharing, leveraging the

potential for one user to influence many others very easily through communications channels such as email, Instant Messaging, etc.

91. "Traditional" online advertising (particularly using mobile devices) based on a user's location by necessity *requires* the sharing of that location from/by the user to the company providing such advertising. Often such sharing would be the enabled through accepting the terms and conditions when downloading and registering a software program; other advertising enabled through overt agreement to specific requests to share with "third parties." Further, such sharing could come with tangible, direct benefits to the user providing their location through the receipt and redemption of electronic coupons; or, in other words, if one user shared their location, another user (e.g. an advertiser) would share in return a coupon.

92. For example, U.S. Patent No. 6,332,127, Systems, methods and computer program products for providing time and location specific advertising via the internet, filed January 28, 1999, describes the patent as follows:

> Systems, methods and computer program products are provided for selecting an advertising object to be displayed within a Web page requested by a user based on the geographic location of the user and/or on the time of day. Systems, methods and computer program products are provided for validating an offer within an advertising

> object of a Web page displayed within a Web client in communication with a Web server. Systems, methods and computer program products are also provided for changing content within an object displayed within a Web page based on changes in geographic location of a user. In addition, systems, methods and computer program products are provided for redeeming an electronic coupon stored within a first computing device, wherein the electronic coupon is valid within a designated geographic region and for a designated period of time.

Ex-1025, Abstract.

93. Early in the internet era general online advertising art morphed into "pull" (requested by the user, e.g. "pulled" from the advertiser to the user/device) and "push" (unsolicited by the user, e.g. "pushed" by the advertiser onto the user/device) internet-advertising interaction between client (a PC or wireless device) and server (a web page, registration and/or advertising server, and the like). Such advertising architectures and methods, location-related or not, depend upon the server having detailed and *specific* knowledge about the user/client device. This knowledge at a minimum requires having a unique identifier of the device for any type of advertising, while "pull" advertising requires the server to have knowledge of the user's preferences. Such knowledge, for wireless devices in particular, is

typically obtained during an app download and setup/configuration process. Even for push advertising, using location typically requires the user agreeing, in some form, to the sharing of his/her location information.

94. Viral advertising, in essence the sharing of product or service-related information (such as comments, opinions, or ratings) from one user to (numerous) others, is another form of online advertising that can use location as part of its information sharing. It is particularly applicable to the '543 patent as it discusses "vectors of influence" as an objective of the patent, specifically:

> an opportunity to introduce a new technology, a method and device which provide a new way of sharing experiences, potentially allowing advertisers and marketers to study channels of communication and vectors of influence at the same time.

Id., 1:55-60.

95. There is significant prior art utilizing the sharing of location in viral advertising, such as U.S. Patent No. 8,572,198, *Systems for targeting advertising based on status or location of mobile internet users and methods thereof* (claiming priority to December 14, 1999) (Ex-1045), and U.S. Patent Application No. 2014/0081753, *Promoting offers through social network influencers* (claiming priority to May 12, 1999) (Ex-1046).

Instant Messaging

96. Instant messaging is another area where location played a key role in art predating the '543 Patent's earliest priority date. For example, U.S. Patent No. 6,968,179, *Place specific buddy list services*, with a priority date of July 27, 2000, describes the following:

> An information service provides search and notifications to inform when certain people (e.g., friends, family, business contacts, etc.) are nearby so as to facilitate communications with those people. Users may define lists of people whose locations may be tracked by positioning equipment based on personal communications/computing devices carried by the people. The information service processes this people and place data to identify those of the listed people that are in the user's vicinity, and provide notifications and user-initiated search results informing the user such as via the user's personal communications/computing device.

Ex-1027, Abstract.

97. Claim 1 of the '179 patent indicates that Buddy Lists are used for sharing information between "buddies":

A computer-implemented method comprising:

storing a first users instant messaging buddy list, the instant messaging buddy list identifying users with whom the first user conducts instant messaging sessions,

specifying a plurality of users identified in said buddy list who are to receive an indication of a position of said first user and, for each individual user of said plurality of users, specifying a level of precision with which to identify said first user's position;

identifying a position of said first user using one or more position identification techniques, and

transmitting Said first user's position to each of said plurality of users at said specified levels of precision identified for each of said plurality of users.

Id., claim 1.

98. In total, the above demonstrates that the claimed ‘543 elements related to software registration and associated data collection; capture/determination of a device’s location and subsequent use in its tracking; the sharing of/providing access rights to others to such location-based opinions/experiences using various forms of contact lists such as Instant Messaging and email contact lists; the capture of location-aware comments about that location/location-related experience; and the use of client-server architectures to support the above, were well known before the earliest priority date of the ’543 Patent.

VIII. OVERVIEW OF PRIOR ART

99. The ’543 patent was filed on May 14, 2013, and claims priority through a chain of continuations to the filing date of its parent application, U.S. Patent No. 7,080,139. April 24, 2001 is thus the ’543 patent’s earliest possible priority date.

A. Overview of *Callegari*

100. U.S. Patent Application Publication No. 2003/0055983 (Ex-1005, “*Callegari*”) was published on March 20, 2003, and filed on March 19, 2002, claiming priority to three provisional applications filed on March 19, 2001: U.S. Provisional Patent Application Nos. 60/277,174 (Ex-1006), 60/277,187 (Ex-1007), and 60/277,200 (Ex-1008).

101. At least claim 1 of *Callegari*, as published, is supported by the provisional applications, as the following chart shows.

Callegari	**Provisional Applications**
1[pre] A method for providing a virtual I [sic] journal, comprising:	“An illustrative aspect of the invention includes a *method for providing a journal*.[10] The method includes creating a *journal entry that is virtually affixed to a location* of interest. The method also includes presenting the journal entry to a selected person when the selected person is within the vicinity of the location of interest.”

[10] All emphasis has been added, unless noted otherwise.

	Ex-1007, 5, 36.
1[a] receiving a journal entry in an electronic medium from a first user, the journal entry including a definition of a geographic point of origin and information content associated with the geographic point of origin;	"The method includes creating a *journal entry that is virtually affixed to a location* of interest. The method also includes presenting the journal entry to a selected person when the selected person is within the vicinity of the location of interest." *Id.*, 5, 36. "Location objects implement the data and behavior of geographical entities. Locations are added to a Realm databases [sic] based on Realm logic and a creation event. When a Real[m] is created, there are no Locations. Locations must be initialized by the creator of the Realm or through the creation event of user/s. Locations may be created that have an area beyond the *origin point* and the resolution of the position determining equipment. All locations contain *content*." *Id.*, 23. "This *content* may be private (only accessible to the user/author) or can be shared with others in "buddy lists" for collaboration. These services may also be public, which is available to the entire user base

	of the system. Virtual content can be multimedia/multiformat. For example, it can include text, voice, graphics etc. Presentation of this content depends on what was created and on the individual personalized settings of people who will access this content. Virtual content creates a private or collaborative location-based messaging community. *These journals or services overlay the physical world*. Users can interact with the services in an ad hoc fashion. The term "content" used here refers to being location sensitive. Discrete messages, newsgroups, bulletin boards, chat rooms, or live instant messaging can all be location sensitive. The term "content" encompasses all of these forms of communication. The term "content" throughout may also include applications and applets. *Id.*, 9.

Figure 2 Example Location Structure

Item	Detail
Latitude	geolocation
Longitude	geolocation
Altitude	geolocation
Radius	Optional definition of how "big" this location is. Describes a circle from the origin points of lat, long.
Rectangle	Optional definition of how "big" this location is. Describes a rectangle from reference of the lat, long.
ServiceList	Reference to a list of Services
OnEnter	Reference to an executable to run when a User enters this location.
OnIn	Reference to an executable that will run when the User stays within the location area for a specified period of time
OnExit	Reference to an executable that will be run when the User exits from this location.
Rating	Accumulates the overall rating of this Location. A summary of all ratings.

Id., 23-24.

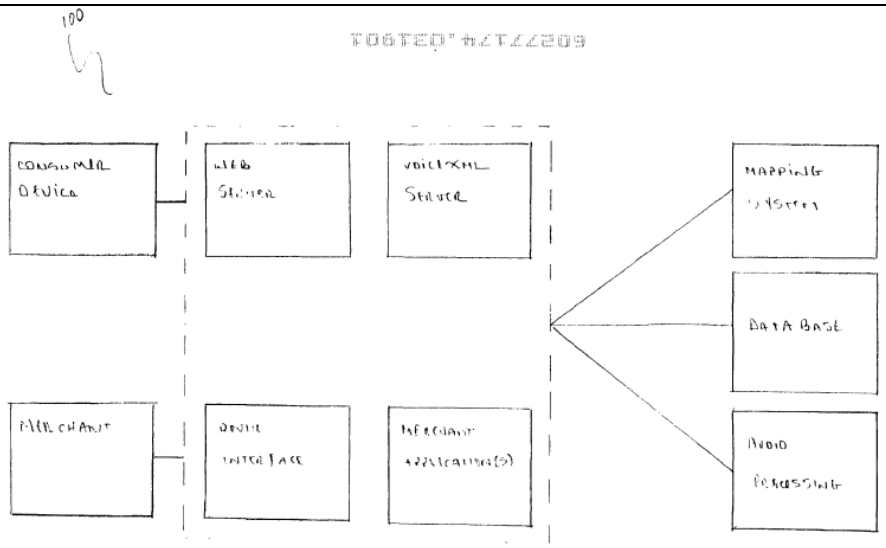
"Origin: the latitude and longitude (perhaps Z) that describes the reference point for the center of the location region."

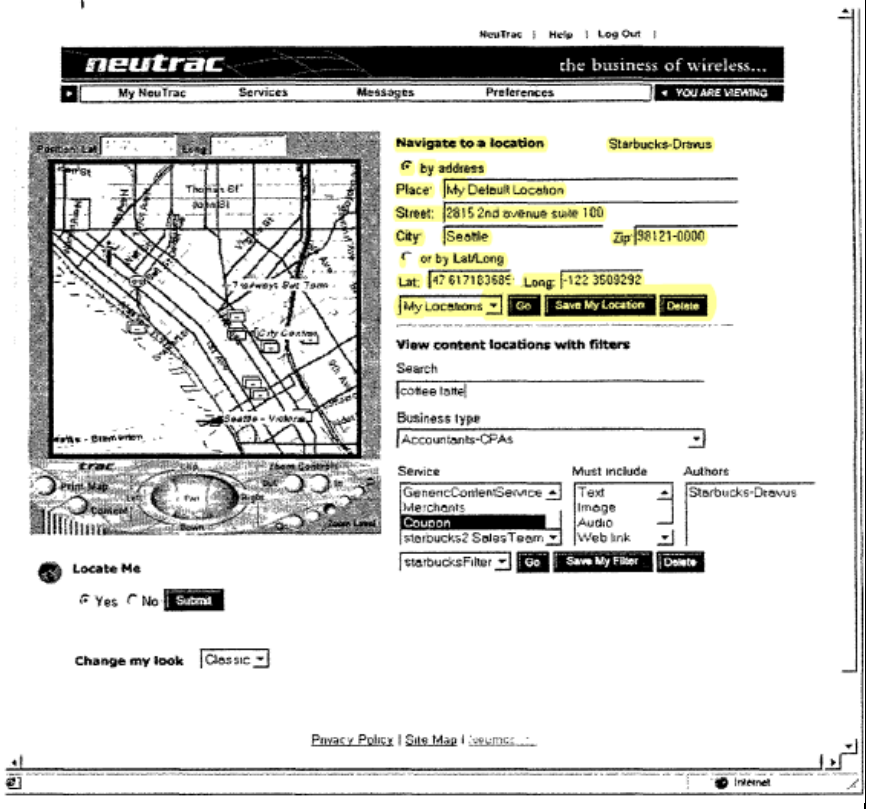
Id., 16.

"A *database* and respective application software are implemented to create the information system of 'locations' and 'content.'"

Id., 17.

	"The system 100 includes a number of applications, such as merchant applications. These merchant applications include applications that allow *the merchant* to interface with the presence server to create the merchant presence. The presence server may use a number of other systems to provide the merchant presence. These other systems include a mapping system. The mapping system provides geographic addresses and routing methods to define the geographic area of the merchant presence. It may also be used by the consumer to search for a desired merchant presence within an area of interest. *The database keeps information that is generated to provide the merchant presence*. In one embodiment, the database is implemented using Oracle, but any suitable database technology can be used, such as Microsoft SQL server." *Id.*, 7. "Acquire and link information and location from Users into an [sic] meaningfully organized *database*." *Id.*, 19, Fig. 1 (reproduced below, depicting the system 100, including the "database").

	 "A restaurant owner has a web site on the world wide web. The owner places a reference (URL) along with location data to this system. When people are in the area and are attempting to sense a restaurant or this restaurant, this page becomes accessible via whatever device the potential customer or interest is using." *Id.*, 33.
1[b] receiving an indication from a consumer device that includes a location	"A restaurant owner has a web site on the world wide web. The owner places a reference (URL) along with location data to this system. When people are in the area and are attempting to sense a restaurant or this restaurant, this page becomes accessible via

defined by a second user; and	whatever device the potential customer or interest is using. . . . Potential patrons *coming into that location* will now have an option to view (WAP) the home page of the restaurant, listen to today's specials, or receive an SMS message *on their device*." *Id*. 9. 33. **4) Supporting or Relevant Aspects** ***My Neutrac – Visualization/Search/Location/Filter Interface*** The following figure illustrates a web based user interface for interacting with various applications/services and content. Note that this also preps many things up to enrich the wireless/device experience. It provides for example an easy to use location bookmarking functional and filter creation tool. Figure My Neutrac Page 

	Id., Fig. 4 (annotated).
1[c] presenting the journal entry in electronic medium to the consumer device if the defined location received from the second user overlaps with the geographic point of origin defined by the first user.	"An illustrative aspect of the invention includes a method for providing a journal. The method includes creating a journal entry that is virtually affixed to a location of interest. The method also includes *presenting the journal entry to a selected person when the selected person is within the vicinity of the location of interest*." *Id.*, 5, 36. "A restaurant owner has a web site on the world wide web. The owner places a reference (URL) along with location data to this system. When people are *in the area* and are attempting to sense a restaurant or this restaurant, this page *becomes accessible via whatever device* the potential customer or interest is using. . . . Potential patrons *coming into that location* will now have an option to view (WAP) the home page of the restaurant, listen to today's specials, or receive an SMS message *on their device*." *Id*., 33, 9. "The consumer interacts with the merchant through a *consumer device*. The consumer device includes any computing device that will

	allow the consumer to interact with the merchant, such as a wired device or a wireless device." *Id.*, 6-7, Fig. 1.

102. *Callegari* is therefore entitled to the filing date of its provisional applications, March 19, 2001, making it prior art to the '543 patent under 35 U.S.C. § 102(e).

103. *Callegari* describes a system for sharing the location of a GPS-enabled mobile consumer device with others. *Callegari*, ¶¶[0006]-[0007], [0009]-[0011]. The consumer device, when in a "sensing mode," *id.,* ¶¶[0042]-[0044], performs the following continuous functions: (1) it tracks user location as a user moves from one place to another; (2) allows users to create, share, and receive virtual content, including "a definition of a geographic location" based on the tracked location (i.e., "journal entr[ies]") (*id.*, ¶[0024]) where the virtual content can be designated "private, public, [or] semi-public" (*id.*, ¶[0011]); and (3) presents virtual content created by other users relevant to the user's location when the user meets the requirement ("Context criteria") to view the virtual content (*id.*, ¶¶[0027], [0033]-[0036]).

104. As shown in Fig. 5B, *Callegari*'s system enables a mobile consumer device 20 to determine its location via a "GPS 74," which "allows the user's location

to be tracked." *Id.*, ¶¶[0044], [0050]. When the consumer device 20 is GPS-enabled, location data is transmitted automatically and periodically to a presence server 30. *Id.*, ¶¶[0044], [0057]-[0058]. The user can choose to share content from the presence server, including location data, with other users in designated "buddy lists" based on "individual personalized settings" defined in the user's account. *Id.*, ¶[0010].

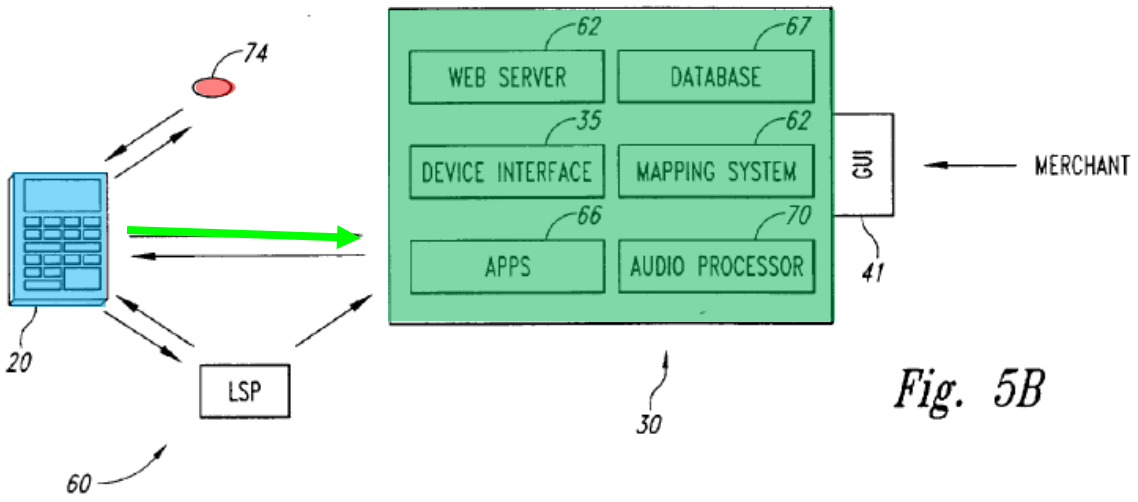


Fig. 5B

Id., Fig. 5B (annotated).

105. *Callegari*'s location-tracking and location-sharing system has numerous implementations. For example, *Callegari*'s system can be used to receive location information of other users with mutual interests (*id.*, ¶¶[0112]-[0113]), to receive "electronic coupon messages" from retailers (*id.*, ¶[0102]), to "archive" visited locations by automatically timestamping journal entries and attaching them

to a location (*id.*, ¶[0104]), to find others with mutual interests (*id.*, ¶¶[0112]-[0113]), and to comment on visited locations (*id.*, ¶[0108]).

B. Overview of *Friedman*

106. U.S. Patent No. 6,714,791 (Ex-1006, "*Friedman*") was filed on February 23, 2001, and issued on March 30, 2004, making it prior art under 35 U.S.C. § 102(e).

107. *Friedman* describes a system for location-based messaging that enables users to transmit positional data to other users. *Friedman*, 12:60-13:9. As an initial step using *Friedman*'s system, shown in Fig. 10, users are prompted to register with a "portal server" via a "portal device." *Id.*, 7:43-58, Fig. 6. To register, a user provides a "user ID and/or password" and information to the portal server to configure the portal server to "gather and manage specific information on behalf of the user" in a user profile. *Id.* Once registered, users may configure their portal device or the portal server "to transmit positional data" on a "periodic basis" or whenever they send a message to other users within a "specif[ied] subset of other users who should receive positional data," such as a "buddy list." *Id.* 12:65-13:3

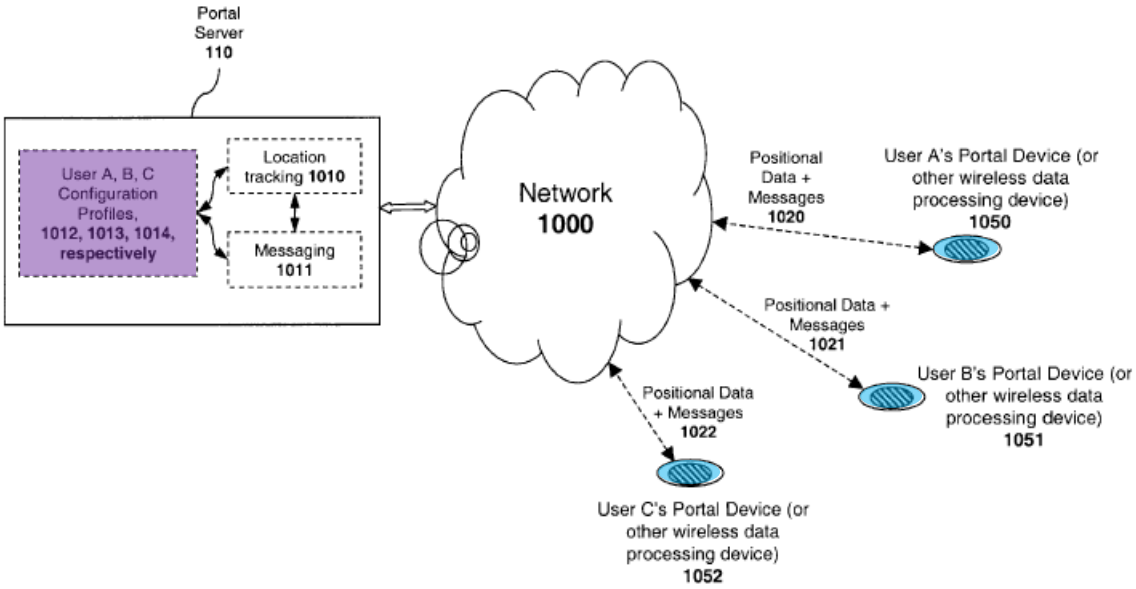


FIG. 10

Friedman, Fig. 10 (annotated).

C. Overview of *Eschenbach*

108. U.S. Patent No. 6,373,429 (Ex-1010, "*Eschenbach*") was filed on February 6, 2001, and issued on April 16, 2002, making it prior art under at least 35 U.S.C. § 102(a).

109. *Eschenbach* teaches a differential global positioning system (DGPS) that uses almanac data, in addition to GPS signals, to determine the location of tracked GPS receivers. *Eschenbach*, Abstract, Fig. 2A. DGPS improves the location

data accuracy for a GPS receiver using almanac data to correct the determined location of the user GPS receiver. *Id.*, 3:4-25; 6:17-7:64.

IX. THE '543 PATENT

A. Overview of the '543 Patent

110. Like *Callegari*, the '543 patent describes "tracking and selectively sharing user experiences," including location data. '543 patent, Abstract, 1:50-52, 17:43-44; *Callegari*, ¶¶[0009]-[0011]. Fig. 23 shows an embodiment of the system directed to wireless consumer devices enabled to determine location via a GPS. *Id.*, 16:53-17:28. The wireless device periodically determines its location and "logs it as an entry in a visited location database" (VLD), along with associated comments or ratings, or adds it "to the buffer for later addition to the VLD." *Id.* 17:2-5; 17:15-27; 19:30-39.

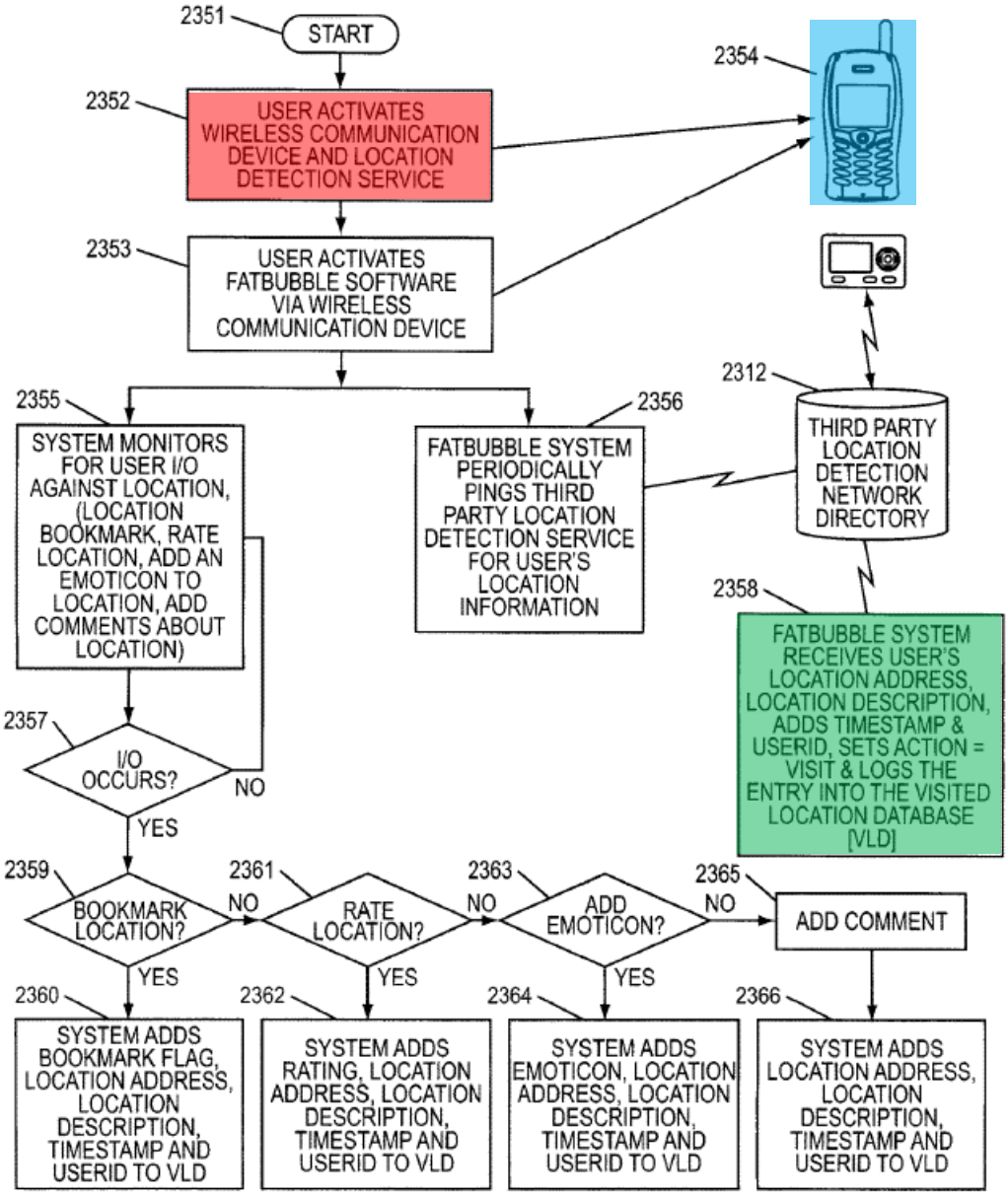


FIG. 23

'543 Patent, Fig. 23 (annotated).

111. To use the system, like *Callegari* and *Friedman*, Fig. 2 shows how a user must register and log in. *Id.*, 5:50-64.

'543 Patent, Fig. 2 (annotated).

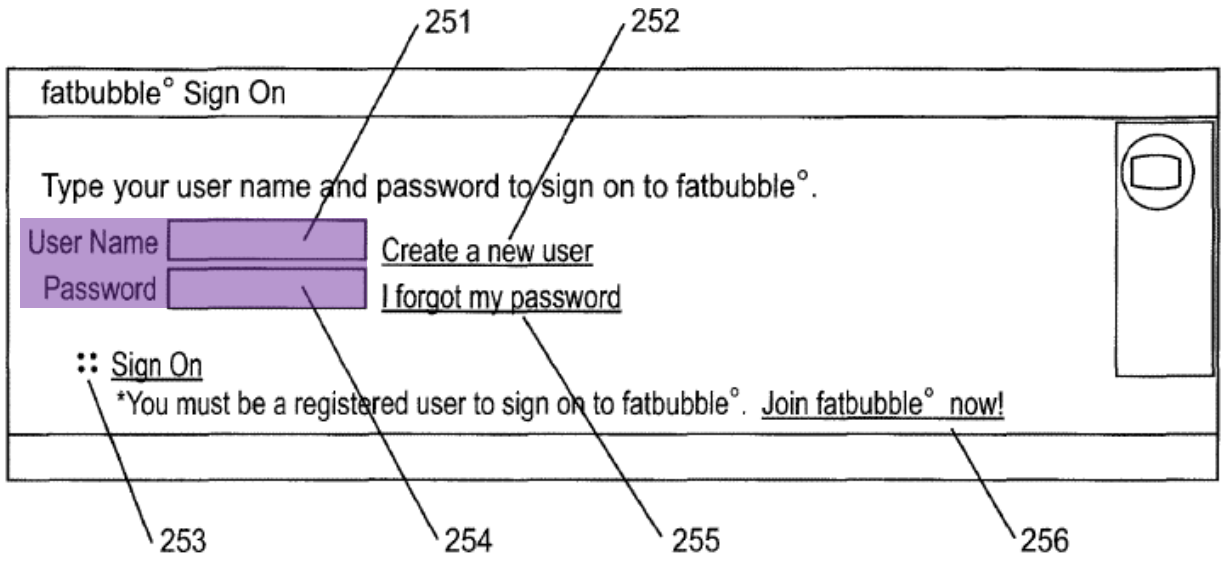


FIG. 2

112. Once registered and logged in, a user configures a buddy list to select categories of information to share with buddies. *Id.*, 8:12-29; 8:56-63.

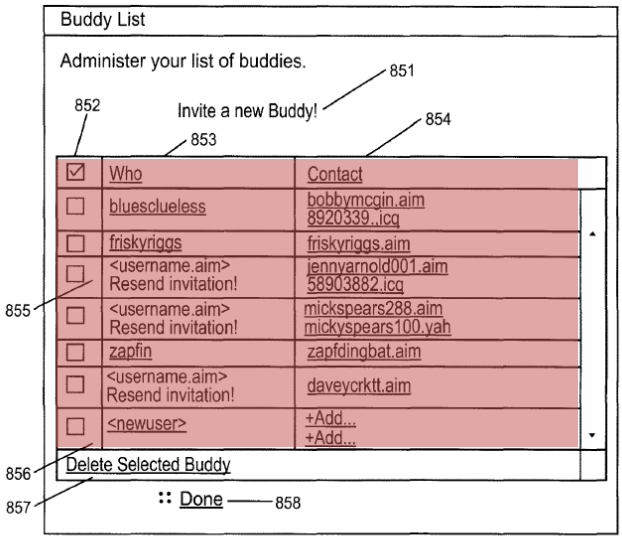


FIG. 8A

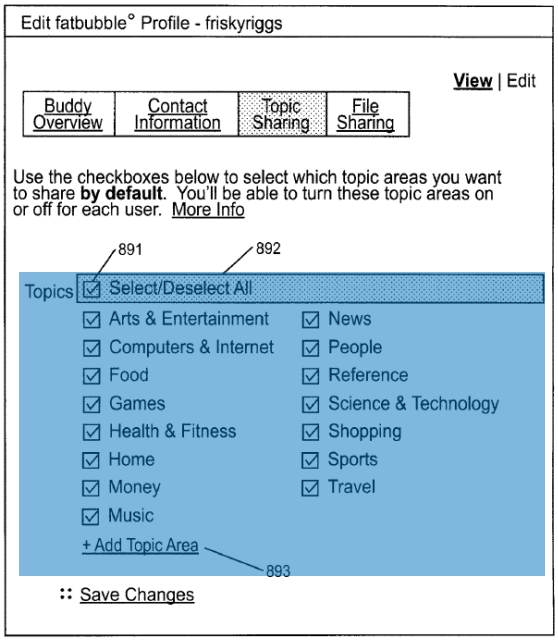


FIG. 8D

'543 Patent, Figs. 8A, 8D (annotated).

113. One of the topics that can be shared is location, including a category of location data. *Id.*, 16:53-17:27; 19:53-67; Fig. 9. Data collected at the VLD, such as location, is shared with appropriate buddies, including the location and category as well as a date and timestamp and any comments the user indicated. *Id.*, 16:53-17:27.

B. The Prosecution History of the '543 Patent

114. The '543 patent is a reissue of U.S. Patent No. 7,080,139 (Ex-1011, '139 patent) that canceled all issued claims of the '139 patent and added 77 new claims. Ex-1002, 30-51. After filing the new claims, Ikorongo amended them to distinguish prior art before the amended claims were allowed. *Id.*, 274-300, 343-360,

and 377-391. The amended claims required, among other things, defining categories of information to be shared, defining different types of lists of users, defining different types of location information like ratings, comments, and emoticons, and including specific types of location fixing protocols. *Id.*, 234, 248-249, and 264-268. The Examiner indicated these amendments necessitated allowance. *Id.*, 470-473.

C. Summary of the Claims

115. The ’543 patent is a reissue of U.S. Patent No. 7,080,139 (Ex-1011) where applicant canceled claims 1-31, amended claim 32, and added claims 33-76. Ex-1002, 30-51. The petition challenges fifteen independent claims that contain common core elements arranged in different ways to create the various permutations claimed. These Core Elements include:

A. registering a device with a server;

B. accessing lists of other users;

C. defining rights for sharing data with the other users;

D. collecting data at a user device;

E. reporting data to a server; and

F. sharing data with the other users.

116. It is my understanding that the Petition uses these Core Elements to simplify the analysis of the claims and prior art, despite the number of independent claims challenged.

X. STATEMENT OF OPINIONS

117. It is my opinion that *Callegari*, *Friedman*, and *Eschenbach* render obvious claims 32, 34, 36, 38, 39, 41, 43-49, 51, 53-62, 72, and 76 of the '543 patent under the following grounds:

Ground	References	Basis	Challenged Claim(s)
1	*Callegari*	§ 103	76
2	*Callegari* in view of *Friedman*	§ 103	32, 34, 36, 39, 41, 43-49, 51, 53-62, and 72
3	*Callegari* in view of *Friedman* and *Eschenbach*	§ 103	38

XI. *CALLEGARI* AND *FRIEDMAN* DISCLOSE THE CORE ELEMENTS OF THE CLAIMS

118. It is my opinion that the challenged independent claims are all generally directed to various combinations of six core elements:

A. registering a device with a server;

B. accessing lists of other users;

C. defining rights for sharing data with the other users;

D. collecting data at a user device;

E. reporting data to a server; and

F. sharing data with the other users.

119. It is my opinion that *Callegari* alone or with *Friedman* discloses each of these elements as claimed.

A. Core Element A: "registering a location-aware device with a server"

120. It is my opinion that *Callegari* alone or with *Friedman* discloses this element.

121. *Callegari* discloses a "location aware device" (consumer device) for tracking and sharing the location of a GPS-enabled mobile consumer device with a presence server and selected individuals. *Callegari*, ¶¶[0006]-[0007], [0009]-[0011]; Ex-1007, 15, 19-20. Fig. 5B shows the architecture of *Callegari*'s system.

As shown in Figure 5B, *Callegari*'s system enables a mobile consumer device to determine its location via position determining equipment ("PDE") including a "GPS." The PDE "allows the user's location to be tracked" and transmitted periodically from the consumer device to a presence server. *Callegari*, ¶¶[0024], [0044], [0050], [0057]-[0058]; Ex-1007, 1, 5, 11, 13-14, 19-20, 25-26, and Fig. 3.

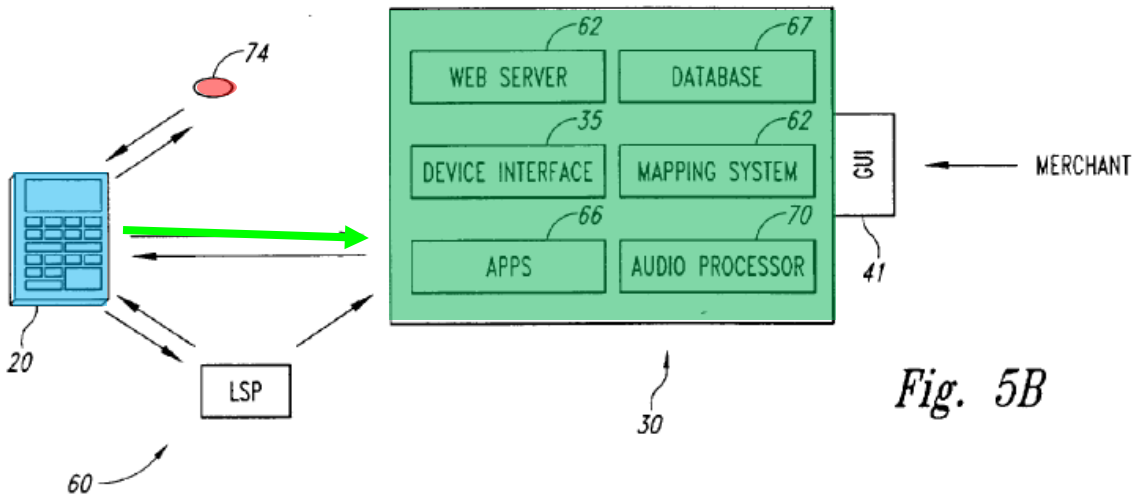
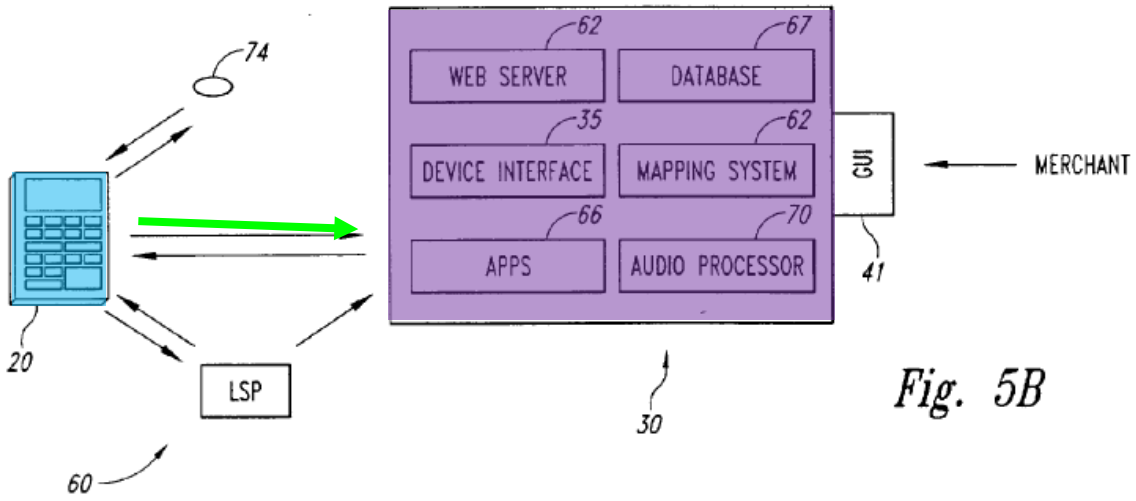


Fig. 5B

Callegari, Fig. 5B (annotated).

122. *Callegari*'s consumer device is a "mobile telephone[]" (*id.*, ¶[0035]) that is "equipped with position detection equipment, such as a GPS" (*id.*, ¶[0044]). *See also* Ex-1007, 2-3, 11, 13-14, and 19. In my opinion, a POSA would have understood that the consumer device of *Callegari* is a location-aware device because it is a mobile telephone equipped with PDE.

123. *Callegari* also discloses that the "location-aware device [ ] is capable of being registered with a registration server." *Callegari* teaches that a consumer device (location-aware device) communicates with a presence server (registration server) during a subscription process. *Callegari*, ¶[0025], [0050]; Ex-1007, 5, 25, 29, Fig. 7.



Callegari, Fig. 5B (annotated).

124. The presence server includes a "storage medium [to] store subscriber information" (registration information). *Id.*, ¶[0053]; Ex-1007, 3. Subscriber information (registration information) includes user "identification, account information for billing, telecommunication details such as type of communication device, telephone number, communication protocol, format, device type or model, and positioning capacity." *Callegari*, ¶[00179]; Ex-1007, 5, Fig. 7.

125. In my opinion, a POSA would have understood that a user would provide the subscriber information stored on the presence server via the consumer device during a subscription (registration) process because the consumer device is configured to allow users to communicate with the presence server. *Callegari*, ¶¶[0050]-[0052]; Ex-1007, 1-5, 11, and Figs. 2-7; *see also* Ex-1029 (explaining that users register with a service by providing information about themselves and their device). And, in my opinion, a POSA would further have understood that user registration with a server was well-known in the art as of the '543 patent. *See also* Ex-1026, Ex-1035 through Ex-1039.

126. The presence server of *Callegari* performs both registering a user and tracking a registered user's visited geographic locations. *Callegari*, ¶¶[0025], [0050]-[0053]; Ex-1007, 1-5, 11, and Figs. 2-7. While the '543 patent does not further describe the claimed registration server, in my opinion, the '543 patent specification, including the originally filed claims during prosecution, provides the evidence claim scope that allows for the registration server to perform additional functions beyond registration, including tracking. Ex-1002, 32 (Original Claim 2: "wherein the registration server and the tracking server are a single server").

127. Should the Board determine that these claims require a distinct registration server and that *Callegari* does not teach a distinct registration server, then *Friedman* does so in my opinion.

128. *Friedman* discloses a user registration and authentication process. *Friedman*, 7:15-57. Using *Friedman*'s system, shown in Fig. 10, the user connects to a "portal server" from a "portal device" which, if registered, "will automatically log the user in." *Friedman*, 7:35-37. If the device is not registered, then "portal server 110 may implement a standard user name/password login procedure and/or may register the user." *Friedman*, 7:43-58, Fig. 6. To register, a user provides a "user ID and/or password" and information to the portal server to configure the portal server to "gather and manage specific information on behalf of the user" in a user profile. *Id.* Once registered, users may configure their portal device or the portal server "to transmit positional data" whenever they send a message to other users within a "specif[ied] subset of other users who should receive positional data," such as a "buddy list." *Id.* 12:65-13:3.

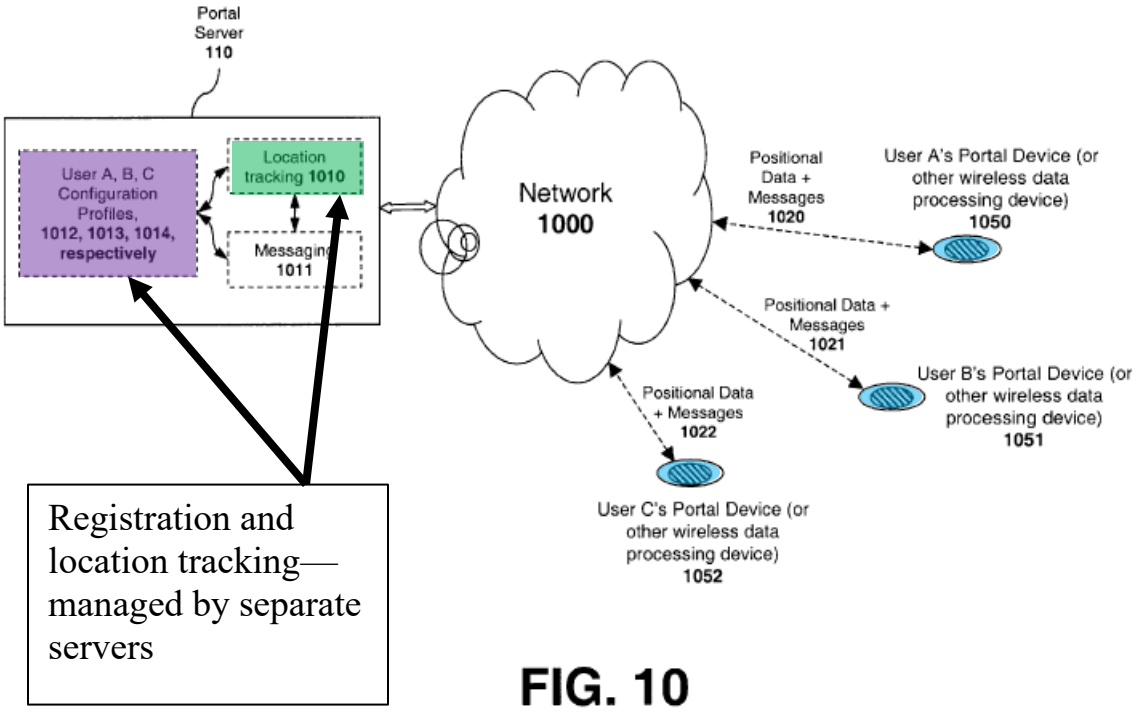


FIG. 10

Friedman, Fig. 10 (annotated).

129. In my opinion, *Friedman* further explains that the portal server may comprise "numerous different servers," divided by function "(e.g., database servers, web servers, etc.)." *Friedman*, 14:40-44. It is my opinion that, a POSA would have understood that the portal server could comprise a separate registration server that performs the function of registering a user with the system and maintaining the user configuration profiles while employing a separate server to perform location tracking and messaging because distributing registration onto a separate server

would provide benefits to efficiency, fault-proofing, and scalability, as discussed in Section XIII.A.

B. Core Element B: "accessing lists of other users"

130. In *Callegari* teaches configuring buddy lists (comprising lists of other users), which it defines as "a user defined list of other Users with whom User defined location specific information is shared." *Callegari*, ¶[0079]; Ex-1007, 5, Figs. 3 and 7. Buddy lists are stored on the presence server. *Id.* A user can access defined buddy lists through the "Buddy List GUI" that "lists names for a variety of buddy lists that may be established" by the user. *Callegari*, ¶[0038]; Ex-1007, 19. Fig. 9 shows how each buddy list can contain different groups of buddies. For example, "one buddy list may include business associates, another may include friends and another may include family." *Callegari*, ¶¶[0038], [0089], Fig. 9; Ex-1007, 19, Fig. 2.

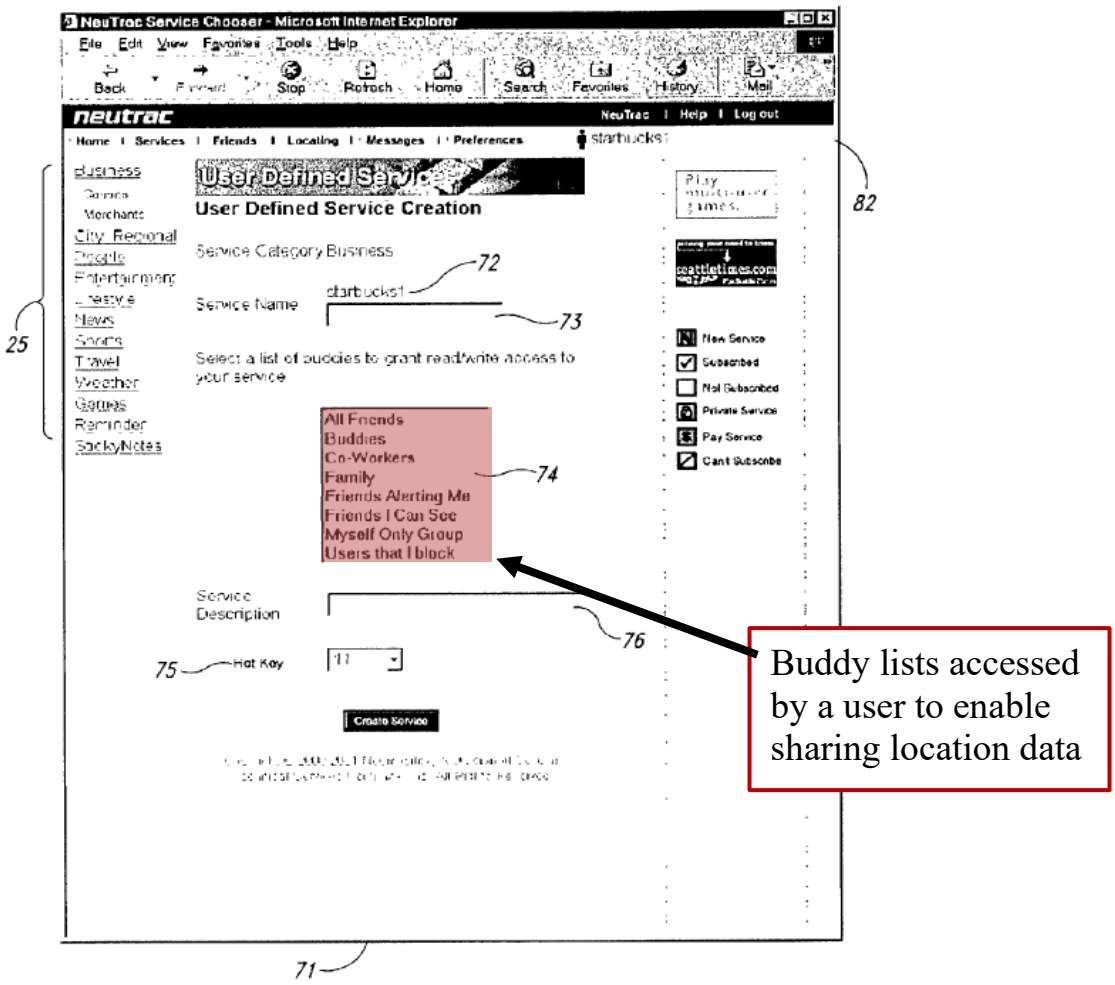


Fig. 9

Callegari, Fig. 9 (annotated).

131. In my opinion, a POSA would have understood that a user would access the buddy lists via the consumer device because the consumer device is the only disclosed means for users to communicate with the presence server. *Callegari*, ¶¶[0038], [0052]; Ex-1007, 19, Fig. 2.

132. I further note that, some challenged claims use the term "enabl[ing] access" instead of just "access." In my opinion, a POSA would have understood that *Callegari* and/or *Friedman* disclose users for accessing, as well as, consumer and portal devices including controllers that, based on software stored therein, enable users access or to grant access to lists of other users. *See* Section XIII.B.1.

C. Core Element C: "defining rights for sharing data with the other users"

133. In addition to configuring buddy lists, *Callegari* teaches defining a "Context criteria" for a particular buddy or buddy list. *Callegari*, ¶¶[0038], [0066]; Ex-1007, 14-16, 19, Fig. 2. A user defines "Context" to "characterize the attributes of access and/or electronic interactions allowed between users and locations" (access rights). *Callegari*, ¶[0066]; Ex-1007, 14-16. *Callegari*'s buddy lists "have different levels of Context for different levels of access, i.e., some maybe [sic] private, others semi-private, and still other public." *Callegari*, ¶[0038]; Ex-1007, 19. Location data is only presented to a second user "if the second user fulfills the Context criteria" assigned to the buddy list. *Callegari*, ¶[0027]; Ex-1007, 19. For example, an individual on a buddy list has access to shared data when the context of the data matches the context assigned to the buddy list. *Callegari*, ¶¶[0038], [0066]; Ex-1007, 14-16.

134. In my opinion, a POSA would have understood that defining access rights was a common way to manage sharing information. Ex-1038 (showing "permissions-based" access to and delivery of private information).

135. I understand that some challenged claims use the term "enabl[ing] definition" instead of just "defining." A POSA would have understood that *Callegari* and/or *Friedman* disclose users defining rights, as well as, consumer and portal devices including controllers that, based on software stored therein, enable users to define the rights. *See also S*ection XIII.B.1

D. Core Element D: "collecting data at the device"[11]

136. *Callegari* discloses that, in sensing mode, the consumer device collects geographic location data using its PDE, including a GPS. *Callegari*, ¶¶[0024], [0044], [0050], [0057]-[0058]; Ex-1007, 1, 5, 11, 13-14, 19, 25-26, and Fig. 3. Location data is collected at the consumer device *before* being reported to the presence server. *See, e.g., Callegari*, ¶¶[0042], [0044] ("In the sensing mode, the

[11] It is my understanding that not all challenged claims require data to be collected automatically. *Callegari* discloses automatic collection, which covers all challenged claims.

consumer device continuously or (periodically) *transmits* changing indications of the user's point of origin as the user moves from location to location."), [0057] ("The presence server 30 may then utilize the positioning coordinates *provided from the PDE 72 directly from the consumer device 20* to automatically detect the consumer's point of origin as it changes.") (emphases added); Ex-1007, 11, 13-14, 19, 20, and 25.

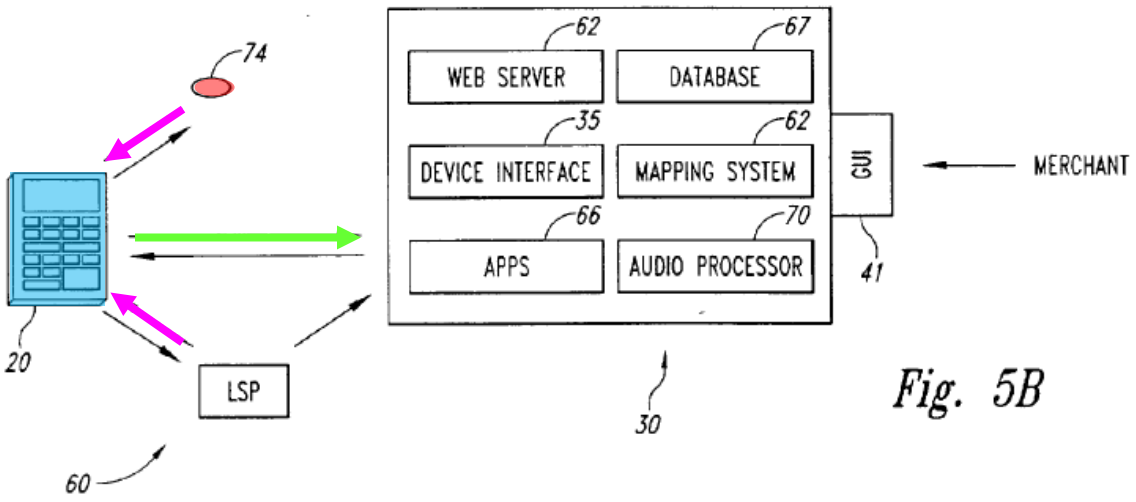


Fig. 5B

Callegari, Fig. 5B (annotated).

137. In my opinion, a POSA would have also understood that continuously receiving location data from PDE and periodically transmitting location information to the presence server requires the consumer device to collect location data between transmissions to the presence server because, when transmission to the server is not continuous in real-time, the data must be stored somewhere to be retained. *See also* Ex-1030.

138. To the extent the claims require collecting geographic location data from multiple geographic locations, in my opinion, *Callegari's* sensing mode also collects data that includes more than one geographic location when a user is moving. *Callegari*, ¶¶[0042]-[0044]; Ex-1007, 15, 17-18, and 23. Fig. 1 shows a route traversed by a user of the *Callegari* system. *Callegari*, ¶[0033]; Ex-1007, 7, 23-24, and 29. The user travels between points A and B, encountering a plurality of geographic locations (e.g., 2 and 4) (yellow) along the way. *Callegari*, ¶[0033]. The consumer device collects location data for these locations as the user's location changes. *See, e.g., Callegari*, ¶¶[0042], [0057]; Ex-1007, 15, 17-18, 23-24, and 29.

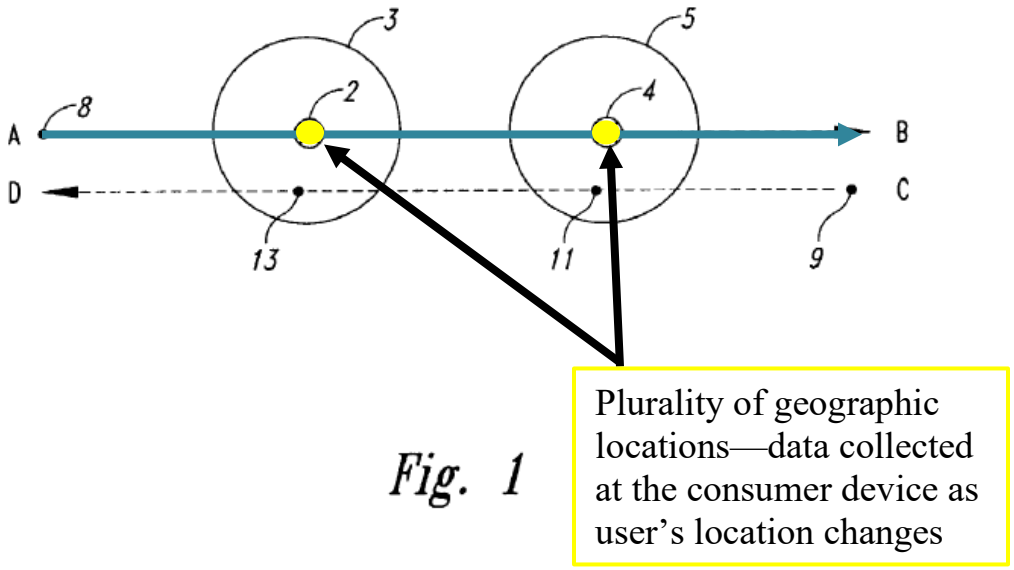


Fig. 1

Callegari, Fig. 1 (annotated).

E. Core Element E: "reporting data to a server"

139. *Callegari* discloses both a site mode and a sensing mode. In site mode, "the consumer [device] transmits a single indication of a particular location" to the presence server. *Callegari*, ¶[0043]; Ex-1007, 11, 13-14, and 19. In sensing mode, "the consumer's location is tracked and the positioning coordinates are transmitted to the presence server 30 automatically." *Callegari*, ¶[0058]; Ex-1007, 11, 13-14, and 19. "[T]he consumer device continuously or (periodically) transmits changing indications of the user's point of origin as the consumer mode moves from location to location" to the presence server. *Callegari*, ¶¶[0044], [0058]; Ex-1007, 11, 13-14, and 19. The periodic transmission would comprise all changed location data between periodic transmissions, or data for multiple locations based on the user's movement between transition periods. *Id.*, ¶¶[0044], [0058]; Ex-1007, 11, 13-14, and 19.

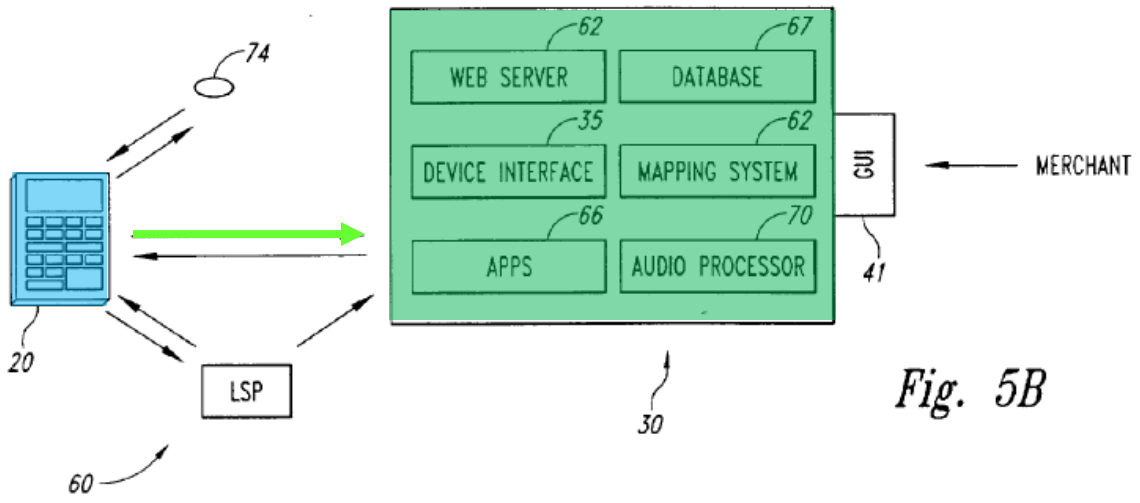


Fig. 5B

Callegari, Fig. 5B (annotated).

140. Some challenged claims use the term "sending" instead of reporting. In my opinion, a POSA would have understood that *Callegari* discloses "sending" data to a server for the same reason it discloses "reporting" data to a server because both terms cover the transmission of data over a wireless network between the consumer device and presence server of *Callegari*.

141. And it is my understanding that the challenged claims do not require reporting data to a server to be automatic, but do not exclude automatic reporting. Nevertheless, in my opinion, *Callegari* discloses both manual and automatic reporting, which covers all challenged claims.

F. Core Element F: "sharing data with the other users"

142. In my opinion, *Callegari* discloses that the presence server shares the geographic location data with the other users (e.g. buddies). For example, "if the second user fulfills the Context criteria" assigned to the buddy list, *Callegari*'s presence server shares stored content with that user by pushing the content to them. *Callegari*, ¶¶[0027], [0038], [0046], [0066]; Ex-1007, 6, 19, 38. *Callegari* discloses that users enable what content may be pushed to them. *Callegari*, ¶[0046], Figs. 5A-B; Ex-1007, 6, 19, 38. If enabled, and if another user meets the designated Context

criteria for particular content, the content is pushed to the other users, and thus shared. *Callegari*, ¶¶[0038], [0066]; Ex-1007, 14-16.

XII. GROUND 1: CLAIM 76 IS UNPATENTABLE OVER *CALLEGARI*

A. Claim 76 (Core Elements A-B-C-D-E-F)

143. In my opinion, *Callegari* renders obvious claim 76.

1. [76p] "A system for collecting and sharing visited geographic location data, comprising:"

144. In my opinion, should the preamble be limiting, *Callegari* teaches it.

145. As shown in Figure 5B, *Callegari* discloses a system that enables a mobile consumer device to collect its location via "GPS and transmits the location data periodically from a presence server. *Callegari*, ¶¶[0024], [0044], [0050], [0057]-[0058]; Ex-1007, 1, 5, 11, 13-14, 19-20, 25-26, and Fig. 3.

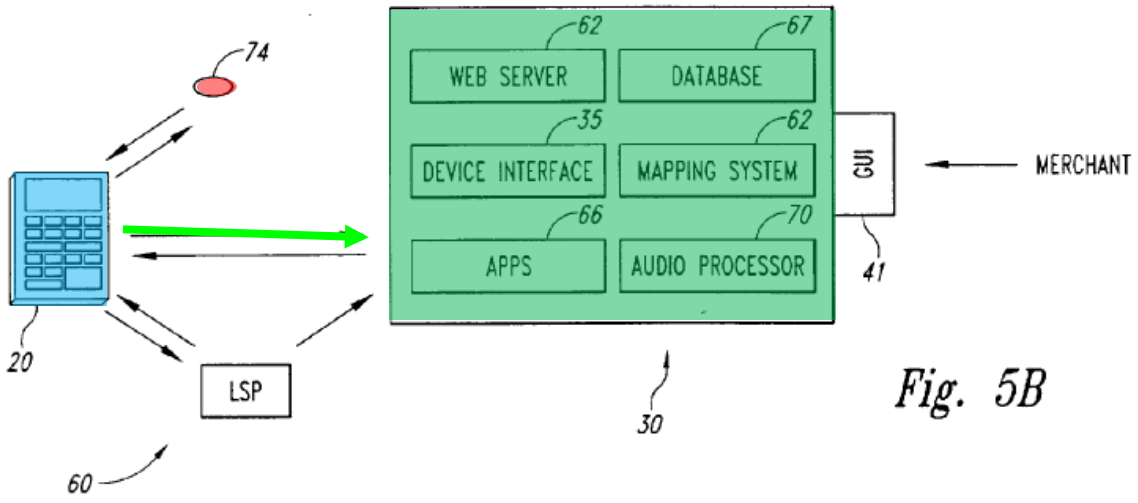


Fig. 5B

Callegari, Fig. 5B (annotated).

2. [76a] "a location-aware device adapted to:" (Core Element A)

146. I further discuss these limitations in Core Element A (registering a location-aware device with a server). *See* Section XI.A.

3. [76b] "record geographic location data while visiting geographic locations using a satellite-based location fixing protocol" (Core Element D)

147. I further discuss this element in Core Element D (collecting data at the device). *See* Section XI.D.

148. In my opinion, *Callegari*'s consumer device "records" the data for the same reason it "collects" it. And, in my opinion, a POSA would have understood that continuously receiving location data from PDE and periodically transmitting location information to the presence server requires the consumer device to record location data between transmissions to the presence server because, when transmission to the server is not continuous in real-time, the data must be stored somewhere to be retained. *See also* Ex-1030.

4. [76c] "enable access to one or more lists of other users to identify one or more other users with whom the geographic location data may be shared;" (Core Element B)

149. My discussion in Core Element B (accessing lists of other users), demonstrates how *Callegari* teaches this element. *See* Section XI.B.

5. [76d] "enable definition of rights of the one or more other users to access the geographic location data, and" (Core Element C)

150. My discussion in Core Element C (defining rights for sharing data with the other users) further discusses these limitations. *See* Section XI.C.

6. [76e] "send at least a portion of the geographic location data to a tracking server; and" (Core Element E)

151. My discussion in Core Element E (reporting data to a server), further discusses these limitations. *See* Section XI.E.

7. [76f] "the tracking server adapted to:" (Core Element E)

152. My discussion in Core Element E (registering a location-aware device with a server), further discusses these limitations. *See* Section XI.E.

153. In my opinion, a POSA would have understood that *Callegari*'s presence server is a tracking server because it tracks the consumer device's location based on periodic transmission of location data.

8. [76g] "receive the at least a portion of the geographic location data from the location-aware device; and" (Core Element E)

154. The discussion in Core Element E (reporting data to a server), further includes these limitations. *See* Section XI.E.

155. In my opinion, because *Callegari*'s consumer device reports data to the presence server, the presence server also receives the data from the consumer device.

9. [76h] "share the at least a portion of the geographic location data with the one or more other users in accordance with the rights of the one or more other users." (Core Element F)

156. The discussion in Core Element F (sharing data with the other users), further discusses these limitations. *See* Section XI.F.

XIII. GROUND 2: CLAIMS 32, 34, 36, 39, 41, 43-49, 51, 53-62, AND 72 ARE UNPATENTABLE OVER *CALLEGARI* IN VIEW OF *FRIEDMAN*

157. In my opinion, *Callegari* and *Friedman* render obvious every element of claims 32, 34, 36, 39, 41, 43-49, 51, 53-62, and 72.

A. A POSA Would Have Combined *Callegari* and *Friedman*

158. *Friedman* discloses a portal device communicating with a portal server, both of which include controllers executing instructions from software stored in memory. *Friedman*, 5:48-67, 11:21-33, 14:11-34.

159. In my opinion, a POSA would have been motivated to combine *Friedman*'s portal server-performing registration functions and the controllers and software of *Friedman*'s portal device and portal server with the system of *Callegari*.

1. A POSA would have understood that *Callegari*'s consumer device and presence server would have processors executing software stored in memory, as disclosed by *Friedman*

160. *Callegari* discloses a consumer device such as cell phones, portable computers, portable digital assistants, 'BLACKBERRIES' and the like." *Callegari*, ¶[0006]; *see also id.*, ¶[0035]; Ex-1007, 2-3. In my opinion, a POSA would have understood that the consumer device of *Callegari* would have included a processor running software, as discussed in *Friedman* because *Friedman* teaches that its processor and software combinations were commonly used in cellphones and PDAs like those of *Callegari*. *Friedman*, 11:26-27, 14:13-15, 14:21-28. From *Friedman*'s express teaching that its processor and software was compatible with the consumer device of *Callegari*, in my opinion, a POSA would have been motivated to combine the processor and software of *Friedman* with the consumer device of *Callegari* and would have had a reasonable expectation of success in doing so.

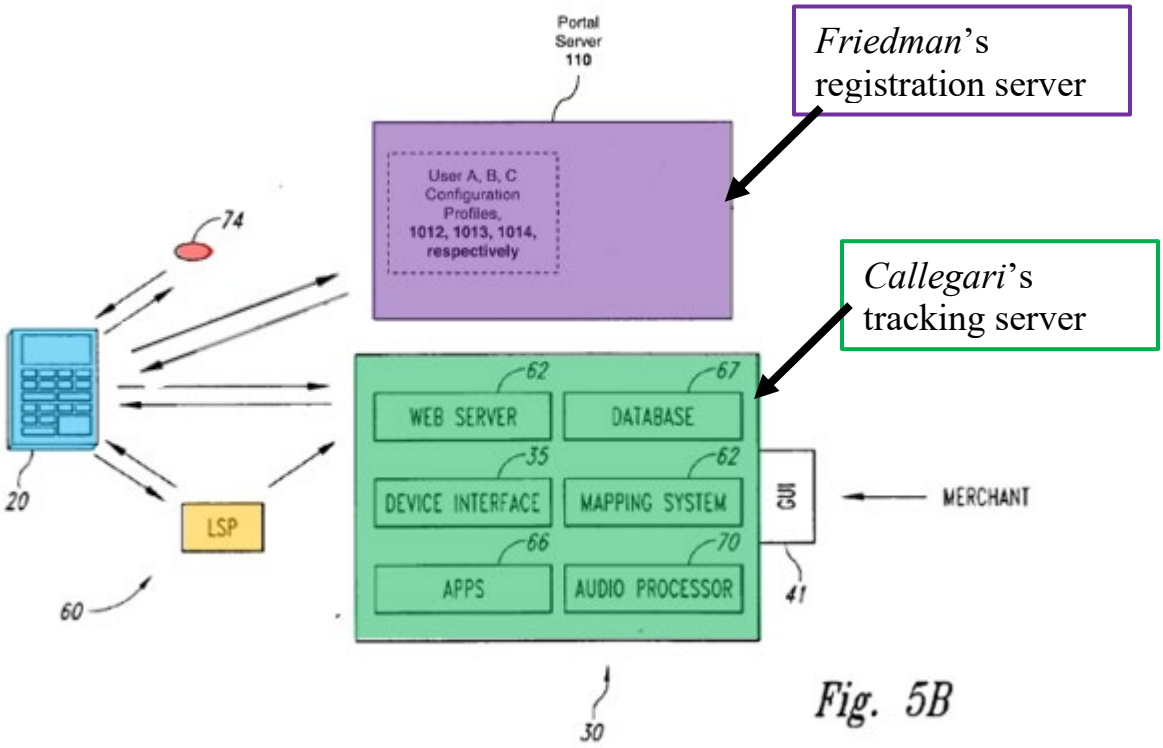
161. Similarly, *Callegari* discloses a system, including a presence server, that "includes various pieces of software and hardware." *Callegari*, ¶[0048]; Ex-

1007, 5, Fig. 2. In my opinion, a POSA would have understood that the presence server of *Callegari* would, therefore, have included a processor running software. *Friedman* further explains that servers, such as its portal server, perform steps embodied in machine-executable instructions that "can be used to cause a general-purpose or special-purpose processor to perform certain steps." *Friedman*, 14:11-19. *Friedman* discloses that the executable instructions are stored in a storage medium. *Id.*, 14:21-34. In my opinion, a POSA would have been motivated to combine *Friedman*'s processor executing software instructions with *Callegari*'s presence server based on *Callegari*'s express teaching that its server includes various pieces of software and hardware.

2. A POSA would have combined *Friedman*'s registration server into *Callegari*'s system to form a distributed system

162. *Callegari* discloses using a single server for registering new system users and tracking the location of the system users. *Callegari*, ¶¶[0024], [0025], [0044], [0050], [0057]-[0058]; Ex-1007, 1, 5, 11, 13-15, 19-20, 25-26, and Fig. 3. *Friedman* discloses a similar system for registering users and tracking the location of system users but further explains that separate servers can be used to perform different functions. *Friedman*, 7:43-58, 14:40-44. The registration server of *Friedman*, in my opinion, could easily be implemented into the system of *Callegari*

by simply distributing the tracking and registration functions across two servers and a POSA would have been motivated to do so. *See also Callegari*, ¶[0077]; Ex-1007, 18. The following figure shows one configuration of the combined *Callegari-Friedman* system that a POSA, in my opinion, would have been motivated to create.



Callegari, Fig. 5B (annotated).

163. Using multiple servers to perform functions of a collective system, as suggested by *Friedman*, was known as distributed computing in my opinion. *Friedman*, 14:40-44; Ex-1031 through Ex-1034. In my opinion, distributed computing systems were well known in the art before the priority date of the '543

patent, and provided several advantages over centralized, single-server systems. Ex-1031 (discussing the "tremendous flexibility" of distributed systems). First, distributed systems allow the flexibility of using hardware and software of different vendors. Ex-1031. Second, distributed systems allow concurrent processing, which enhances the speed and performance of the overall system. Ex-1032 (describing distributed systems as "high performance, [with] availability, and extensively low cost"). Third, distributed systems provide scalability benefits. Ex-1032, 1; Ex-1033, 3 (explaining that distributed systems "allow more flexibility for growth of capability and function"). That is, in my opinion, distributed systems are easily expandable and able to add new resources and meet growing demand. Ex-1032, 1; Ex-1033, 3. Finally, a distributed system provides a level of fault tolerance. Ex-1034, 57 ("To achieve fault tolerance, a distributed system architecture incorporates redundant processing components."). If a single server fails, in my opinion, those functions performed by separate servers are still able to operate. Ex-1034, 57. In my opinion, each of these general benefits of distributed computing would improve the *Callegari* system if implemented in a registration server separate from the presence server, as *Friedman* teaches.

164. *Callegari* discloses a broad system that includes many "various features, services or other aspects of the invention that may be implemented," providing twelve exemplary services in which the system could be used. *Callegari*, ¶[0094], *see also* ¶¶[0095]-[0119]; Ex-1007, 30-35. First, with such a wide range of service offerings, the added flexibility to outsourcing aspects, such as registration, to a vendor would be an added benefit. Second, again because of *Callegari*'s wide selection of services, in my opinion, a POSA would have understood that the *Callegari* system would benefit from concurrent processing, which would allow the system to operate more efficiently by allowing new users to register without occupying resources needed by already registered users sharing journal entries. Third, in my opinion, scalability would allow *Callegari* to easily expand their system to meet the demands of increased users. Finally, in my opinion, fault tolerance also would improve *Callegari*'s system by allowing, for example, the presence server to continue supporting tracking and sharing functionality, even if there is a failure in the registration server.

165. In my opinion, these advantages would have motivated a POSA to improve the *Callegari* system to use multiple servers as suggested by *Friedman*. A POSA looking to improve upon the system of *Callegari* would have been motivated

to implement a distributed system, including using a separate registration server as taught by *Friedman*, to improve the efficiency and robustness of the *Callegari* system. Ex-1031 through Ex-1034.

B. Claims 45-49, and 51 (Core Elements A-B-C-D-E)

166. In my opinion, *Callegari* and *Friedman* render obvious claims 45-49, and 51. In my opinion, claims 45-49, and 51 relate to a location-aware device and are identical aside from the last element of each claim. I address each Core Element collectively, and the final claim elements are addressed separately.

1. [45-49p, 51p] "A non-transitory computer-readable medium storing software for instructing a controller of a location-aware device that is capable of being registered with a registration server to:" (Core Element A)

167. Should the preambles be limiting, *Callegari* and *Freidman* teach them in my opinion.

168. My discussion of Core Element A (registering a location aware device with a server) further includes these limitations. *See* Section XI.A.

169. Additionally, it is my understanding that claims 45-49 and 51 require only that the location-aware device be "capable of registering with a registration server." Because *Callegari* and *Friedman* disclose registering the device with a registration server, then in my opinion, the device is also capable of registration.

170. *Callegari* explains that its system, including the consumer device, "includes various pieces of software and hardware." *Callegari*, ¶[0048]; Ex-1007, 5, Fig. 2. The consumer device comprises "cell phones, portable computers, portable digital assistants, 'BLACKBERRIES' and the like." *Callegari*, ¶[0006]; *see also id.*, ¶[0035]; Ex-1007, 2-3. In my opinion, a POSA would have understood that these types of devices include controllers that operate in conjunction with software. Devices such as computers, cell phones, and portable digital assistants "use a varied assortment of protocols and/or formats" to receive and transmit information, such as "Wireless Application Protocol, HTML, and E-mail" by connecting to the World Wide Web. *Callegari*, ¶[0006]; *see also id.*, ¶[0035]; Ex-1007, 2-3. In my opinion, a POSA would have understood that *Callegari*'s consumer device includes a controller and software that instructs the controller to perform functions, including "transmitting information." *Callegari*, ¶[0006]; Ex-1007, 2-3.

171. Should the Board determine that *Callegari* does not sufficiently disclose a "non-transitory computer-readable medium storing software for instructing a controller of a location-aware cellular phone device," then *Friedman* does in my opinion. *Friedman* discloses a portal device that "employs a 32-bit RISC-based microprocessor such as an ARM processor." *Friedman*, 11:26-27. It explains

that "ARM processors are widely used in PDAs, cell phones and a variety of other wireless devices." *Id.*, 11:27-28. *Friedman* further discloses that the processor performs steps "embodied in machine executable instructions" that are "stored on "a machine-readable medium." *Id.*, 14:13-15, 14:21-28.

2. [45-49a, 51a] "enable access to one or more lists of other users to identify one or more other users with whom visited geographic location data is capable of being shared;" (Core Element B)

172. My discussion in Core Element B (accessing lists of other users) further includes these limitations. *See* Section XI.B.

3. [45-49b, 51b] "enable definition of access rights for the one or more other users to enable access to the visited geographic location data;" (Core Element C)

173. My discussion in Core Element C (defining rights for sharing data with the other users), further includes these limitations. *See* Section XI.C.

4. [45-49c, 51c] "collect the visited geographic location data for geographic locations visited by the location-aware device using a client-side application; and" (Core Element D)

174. My discussion in Core Element D (defining rights for sharing data with the other users), further includes these limitations. *See* Section XI.D.

5. [45-49d, 51d] "report information indicating at least a portion of the visited geographic location data to a tracking server." (Core Element E)

175. My discussion in Core Element E (reporting data to a server), further includes these limitations. *See* Section XI.E.

6. [45e] "wherein…receive, via a user interface of the location-aware device, input that defines at least one user of the one or more other users from the one or more lists of other users that is to have access to the visited geographic location data."

176. It is my opinion, *Callegari* discloses the narrower subset of buddy lists (e.g., at least one user of the one or more other users from the one or more lists of other users). *Callegari*, ¶[0038]; Ex-1007, 19.

177. In my opinion, *Callegari* further discloses a locating GUI that allows a user via the user interface of the consumer device to "select other users, buddy lists, businesses, or other categories of users that will be allowed to locate the identified user." *Callegari*, ¶[0046]; Ex-1007, Figs. 2-7. Fig. 9, and associated disclosure of Paragraph [0089], shows an exemplary GUI that allows users to select other users to share location data from one or more lists. *Callegari*, ¶[0089], Fig. 9; Ex-1007, 23, Fig. 2.

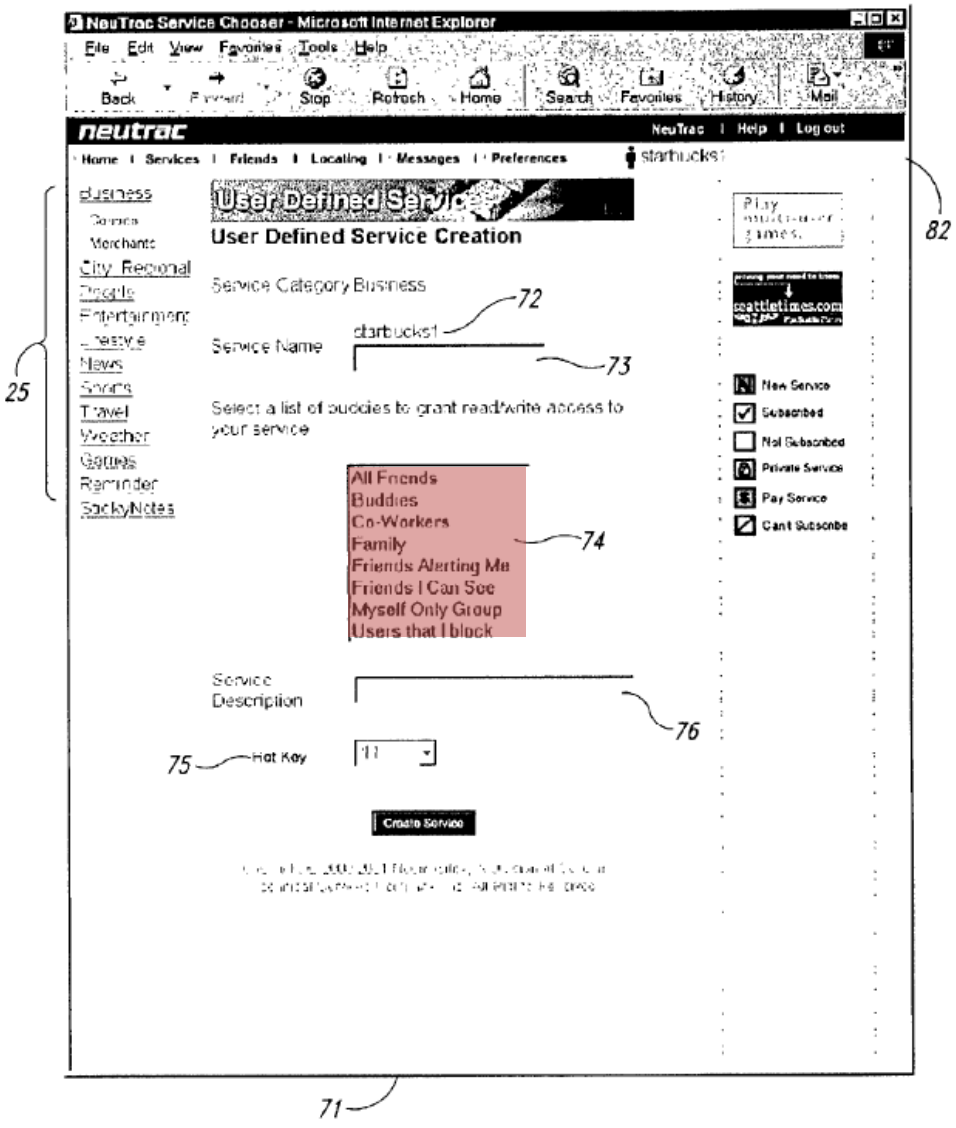


Fig. 9

Callegari, Fig. 9 (annotated).

178. A POSA, in my opinion, would have understood this user interface to have been displayed on the consumer device because *Callegari*'s disclosed

consumer devices—"cell phones, portable computers, portable digital assistants, 'BLACKBERRIES' and the like"—all include user interfaces such as keyboards or touchscreens. *Callegari*, ¶[0006]; *see also id.*, ¶[0035]; Ex-1007, 2-3.

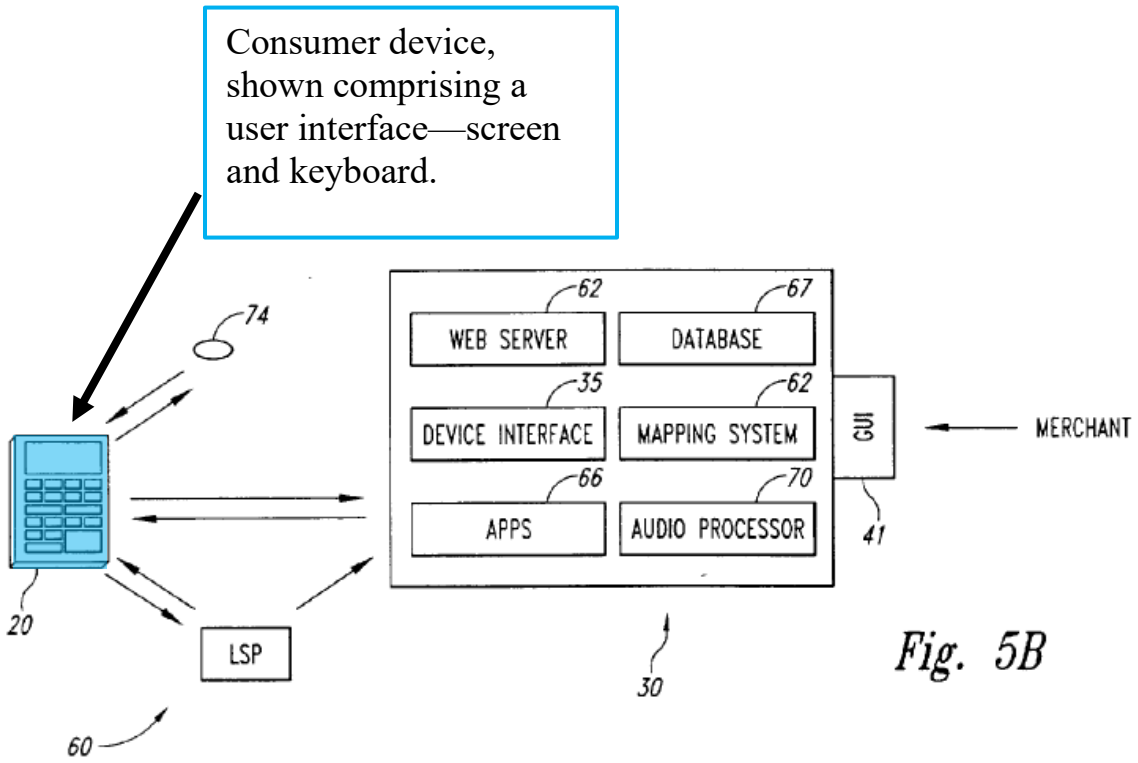


Fig. 5B

Callegari, Fig. 5B (annotated).

179. *Callegari*'s consumer devices with user interfaces are similar to those described in the '543 patent specification. The '543 patent describes the "user interface of the location-aware device" as including a user-facing web browser for capturing and monitoring user visited URLs, and provides that appropriate devices for interfacing with the web browser include "a PC, telephone, PDA, or other

devices." '543 patent, 11:10-16; *see also* Fig. 16A (element 100), and Fig. 23 (element 2353).

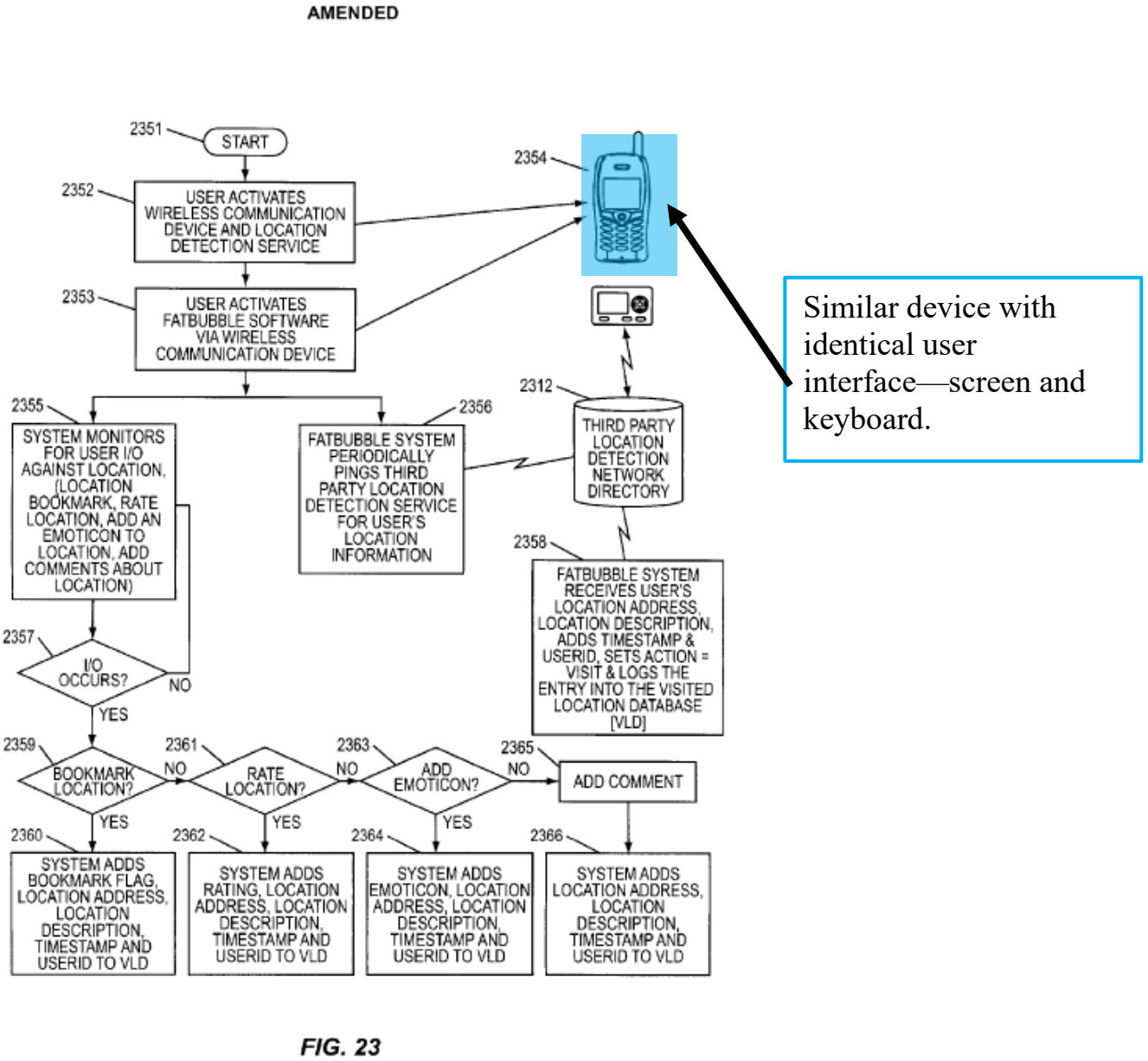


FIG. 23

'543 Patent, Fig. 23 (annotated).

7. [46e] "wherein…receive, via a user interface of the location-aware device, input that defines categories of the visited geographic location data that can be shared with the other user."

180. As discussed in Section XIII.B.6, I explain that *Callegari* discloses a user interface of the location aware device where a user may provide input on what data to share with other users.

181. In my opinion, *Callegari* further discloses that the user interface enables users to select sharable content based on categories. *Callegari*, ¶[0046]; Ex-1007, Figs. 2-7. *Callegari* discloses allowing a user to associate particular shared information, including location information, with a specific "category." *Callegari*, ¶[0024] ("'journal entry' . . . includes a definition of a geographic location"), ¶[0047], claim 5. *See also* Ex-1007, 6, 9, 29-30, and Fig. 3. A "category" association restricts who will receive a user's journal entry, including the location information. *Callegari*, ¶¶[0090]-[0091] ("When Context and Topic are combined, they may function like 'channels' which limit the type of content transmitted to users 134 . . . Context broadly describes the accessibility and control of a Topic. Topic describes the content theme."); Ex-1007, 5, 9, 29-30, and Fig. 3. Categories include "user defined types and subtypes of information related to a location." *Callegari*, ¶[0067], claim 5; Ex-1007, 18-20. In my opinion, only other users wishing to receive a

particular category of journal entry will receive the journal entry and associated location information, assuming these other users also meet all context criteria set by the user. *Callegari*, ¶¶[0027], [0029], [0033]-[0036], [0040], [0047]; Ex-1007, 5, 9, 15-20, 23-24, 29-30, and Fig. 3.

182. *Callegari* explains that, in one example, a user may associate artistic expressions with a particular location and share them with other interested individuals by "creat[ing] such expressions in electronic form and associat[ing] them with a location under a category topic designated as 'graffiti' on the system." *Callegari*, ¶[0116]; *see also id.*, ¶[0029] ("[T]he information content associated with the geographic point of origin may include an indication of a first category of interest so that the journal entry is presented to the consumer device only if the second user indicates a second category of interest that overlaps with the first category of interest."); *id.*, ¶[0040]; Ex-1007, 15-16, 18, 24-25.

183. In another example, shown in Fig. 9, *Callegari* explains that users can "establish a private moderated Context for other users that will have access to the location-specific content." *Callegari*, ¶[0089]; Ex-1007, Fig. 2. A business may "create a private moderated context to enable only certain types of other users, for

example employees, business associate[s], vendors and the like, to access information content concerning the business." *Callegari*, ¶[0089].

184. In my opinion, a POSA would have understood that "content concerning the business" is one or more categories of content selected for sharing only with subsets of users, because it designates a particular topic of content (e.g., business-related content) to be shared with a particular subset of users (e.g., employees).

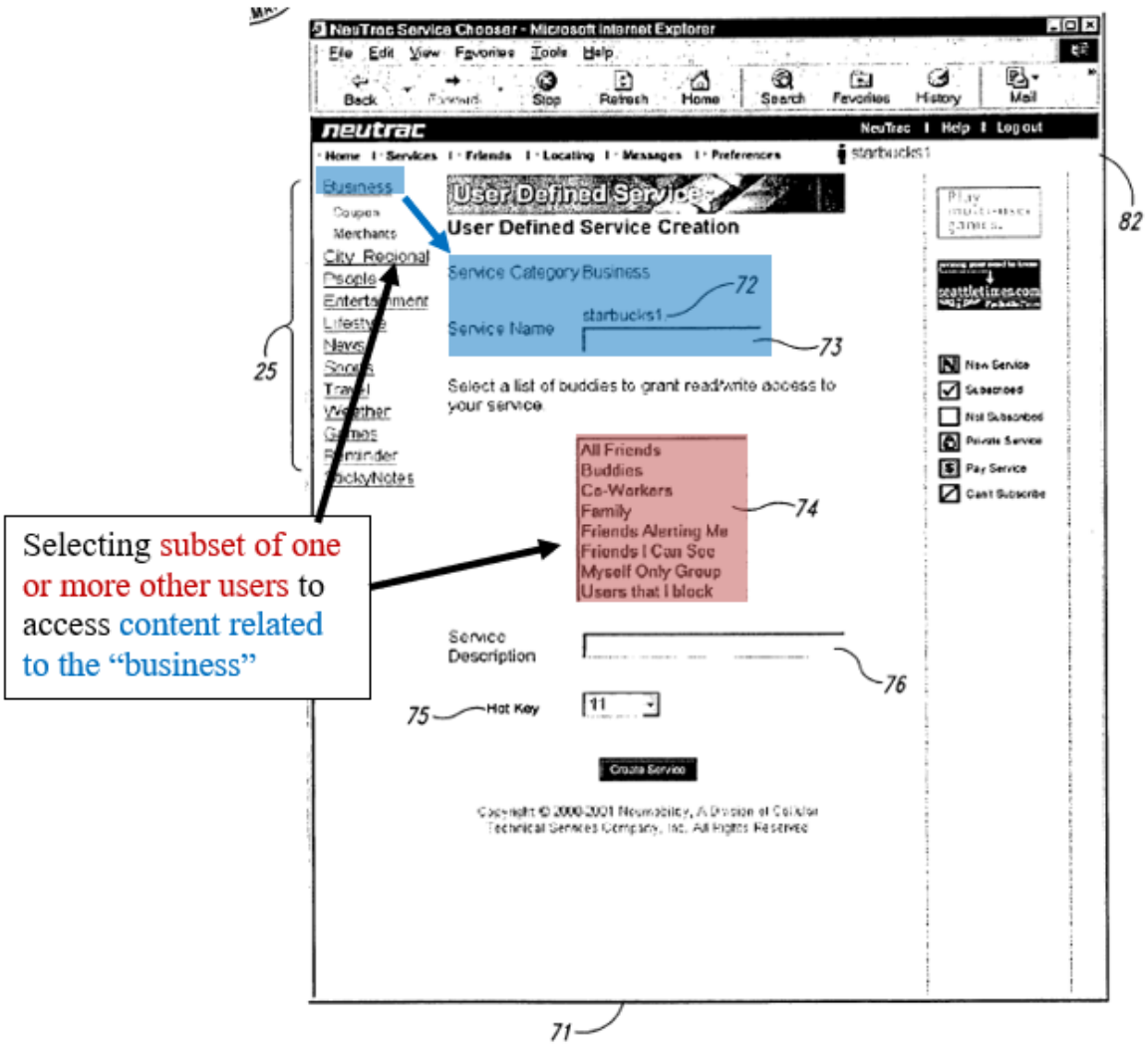


Fig. 9

Callegari, Fig. 9 (annotated).

8. [47e] "wherein the one or more lists of other users comprises an Instant Messaging buddy list of the user…"

185. *Callegari* discloses that its system may be implemented in an "instant messaging" service, in which content "may be shared with others in 'buddy lists.'"

Callegari, ¶¶[0009]-[0010]; Ex-1007, 11-12, 14, 20-21. Journal entries including location information are shared with "second users" including a "buddy list of a plurality of second users." *Callegari*, ¶[0027]; *see also id.*, ¶[0038]; Ex-1007, 5, 19, 36.

186. It is my opinion that a POSA would have understood that "buddy lists" disclosed by *Callegari* could be within a messaging platform because it discloses, in one application, that "instant messaging" is "made location sensitive" and content "may be shared with others in 'buddy lists.'" *Id.*; *Callegari*, ¶[0027]; *see also id.*, ¶[0038]; Ex-1007, 9, 23, 40. In my opinion, "buddy list" was a term commonly used to refer to instant messaging contacts. Ex-1053. Alternatively, in my opinion, a POSA would have been motivated to modify *Callegari* to include instant messaging buddy lists because it discloses both buddy lists and instant messaging applications.

9. [48e] "wherein the one or more lists of other users comprises a contact list…"

187. In my opinion, a POSA would have understood that a buddy list is a type of contact list because it provides contact information and a means to contact for each buddy. And, in my opinion, the '543 patent similarly explains that a buddy list is a type of contact list. '543 patent, 4:50-5:2, 8:8-13, 8:26-30, 18:5-15.

188. Additionally, in my opinion, *Callegari* discloses that the user may maintain the buddy list through the client-side GUI application to "edit an existing buddy list," "create an entirely new buddy list," "remove an existing buddy list," and "manage buddy lists." *Callegari*, ¶[0038]; Ex-1007, 5, 11, Figs. 2-7.

10. [49e] "wherein the one or more lists of other users comprises an e-mail contact list of the user…"

189. In my opinion, a POSA would have further understood that the buddy list of *Callegari* would include email contacts because *Callegari* discloses sharing content with others by email. *Callegari*, ¶¶[0006], [0031], [0053]; Ex-1007, 3, Fig. 2. *Callegari* discloses that its consumer devices are configured to receive and transmit information by email. *Callegari*, ¶¶[0006], [0031]; Ex-1007, 3, Fig. 2. *Callegari*'s journal entries can be presented to other users by email. *Callegari*, ¶[0031] ("the journal entry is presented as an E-mail message to the second user if the consumer device has the ability to receive E-mail"); *see also id.*, ¶[0053]; Ex-1007, 3, Fig. 2. In my opinion, because it discloses presenting journal entries to second users on a buddy list and discloses presenting journal entries to second users via email, a POSA would have understood that the buddy list of *Callegari* includes an email contact list.

190. Alternatively, in my opinion, a POSA would have been motivated to modify *Callegari* to implement its "buddy lists" as email contact lists because of its disclosure of contact lists and disclosure of disseminating information via email. *Callegari*, ¶¶[0006], [0031], [0053]; Ex-1007, 7, Fig. 2.

11. [51e] "wherein the visited geographic location data further defines comments on one or more of the geographic locations visited by the location-aware device."

191. In my opinion, *Callegari* discloses journal entries that "include[] a definition of a geographic location and a message or other note associated with that geographic location." *Callegari*, ¶[0024]; *see also id.*, ¶[0035]; Ex-1007, 1-3, 5, 25-26, and Fig. 3. *Callegari* further discloses that the journal entries may include "comments left" by other users from the buddy list. *Callegari*, ¶[0111]; *see also* Ex-1007, 29-30. *Callegari* also discloses an exemplary implementation for its system that allows a user to "enter a voice message that is stored with an indication of the particular geographic location. *Callegari*, ¶[0104]; Ex-1007, 16, 32. In my opinion, a POSA would have understood that the "message or other note" or the "voice message" comprise comments because they are user-provided remarks related to the geographic location where it was recorded.

192. Like *Callegari*, the specification of the ’543 patent similarly discloses periodic reporting of comment data. It states, “when a user makes a comment on a location [ ], the system adds the comment, location address, location description, a timestamp and the user ID to the VLD or to a buffer for later addition.” ’543 patent, 17:23-26.

C. Claim 56 (Core Elements A-B-C-D-E)

193. It is my understanding that claim 56 requires software instructions performing Core Elements A-E.

1. [56p] “A non-transitory computer-readable medium storing software for instructing a controller of a device to:”

194. Should the preamble be limiting, *Callegari* and *Friedman* teach it in my opinion.

195. I discuss in Section XIII.B.1 that *Callegari*’s consumer device and *Friedman*’s portal device include controllers that operate in conjunction with software.

2. [56a] "communicate with a registration server to register with the registration server to collect visited geographic location data from a client-side application while visiting geographic locations with a location-aware device that records the geographic locations using a satellite-based location-fixing protocol;" (Core Elements A & D)

196. My discussion in Core Elements A (registering a location-aware device with a server) and D (collecting data at the device), further include these limitations. *See* Sections XI.A and XI.D.

197. In my opinion, a POSA would further have recognized that the consumer device of *Callegari* collects the visited geographic location data while visiting the geographic location because it uses GPS to determine the current location of the consumer device.

3. [56b] "enable a user to select one or more other users with whom the visited geographic location data may be shared from one or more lists of other users;" (Core Element B)

198. My discussion for Core Element B (accessing lists of other users) further includes these limitations. *See* Section XI.B.

4. [56c] "enable the user to define rights of the one or more other users to access the visited geographic location data; and" (Core Element C)

199. My discussion for Core Element C (defining rights for sharing data with the other users), further includes these limitations. *See* Section XI.C.

5. [56d] "report information indicating at least a portion of the visited geographic location data for the one or more other users to a tracking server;" (Core Element E)

200. My discussion for Core Element E (reporting data to a server), includes these limitations. *See* Section XI.E.

D. Claim 32, 39, and 54[12] (Core Elements A-B-C-D-E-F)

201. It is my understanding that claims 32, 39, and 54 require a computer-implemented method and application or software on a device covering Core Elements A-F.

1. [32p], [39p], [54p] "A computer-implemented method of sharing computer usage experiences, including:"

202. Should the preambles be limiting, *Callegari* and *Friedman* teach them in my opinion.

203. As I discuss in Section XIII.B.1, *Callegari*'s consumer device and *Friedman*'s portal device include controllers performing methods based on software stored therein.

[12] Only the claim language for claim 32 is listed. It is my understanding that claims 39 and 54 are broader in scope but recite similar limitations. Substantive differences between the claims are addressed within each section.

2. [32a], [39a], [54a] "sending registration information of a user to a registration server to collect and share visited geographic location data using a client-side application while visiting geographic locations with a location-aware device that records the visited geographic locations using a satellite-based location fixing protocol;" (Core Elements A, D, & F)

204. My discussion in Core Elements A (registering a location-aware device with a server), D (collecting data at the device), and F (sharing data with other users), further includes these limitations. *See* Sections XI.A, XI.D, and XI.F.

205. In my opinion, a POSA would further have recognized that the consumer device of *Callegari* collects the visited geographic location data while visiting the geographic location because it uses a GPS to determine the current location of the consumer device.

3. [32b], [39b], [54b] "enabling access to one or more messaging buddy lists of the user to identify one or more buddies with whom the visited geographic location data may be shared;" (Core Element B)

206. My discussion in Core Element B (accessing lists of other users), includes these limitations. *See* Section XI.B.

207. In my opinion, *Callegari* further discloses that the list of other users is a messaging buddy list, as explained in Section XIII.B.2.

4. [32c], [39c], [54c] "enabling definition of access rights for the one or more buddies to access the visited geographic location data; and" (Core Element C)

208. My discussion in Core Element C (defining rights for sharing data with the other users) further includes these limitations. *See* Section XI.C.

5. [32d], [39d], [54d] "sending information indicating at least a portion of the visited geographic location data to a tracking server to enable sharing of the information with the one or more buddies in accordance with the defined rights." (Core Element E)

209. My discussion for Core Element E (reporting data to a server) includes these limitations. *See* Section XI.E.

E. Claims 34 and 41 - "wherein the visited geographic location data comprises the [visited] geographic locations and a comment on the [visited] geographic locations." (Core Elements D & E)

210. In my opinion, claims 34 and 41 are similar. Claim 34 is further limited by requiring "wherein the visited geographic location data comprises the *visited* geographic locations." In my opinion, *Callegari* and *Friedman* teach all elements of claims 34 and 41 for the same reasons because the discussion of Core Elements D and E (Sections XI.D and XI.E) explain that *Callegari* discloses collecting and reporting data on *visited* geographic locations.

211. My discussion in Section XIII.B.5 further explains that the visited geographic location data includes comments on the visited locations.

F. Claims 36 and 43 - ". . . display of advertising information."

212. In my opinion, *Callegari* discloses the receipt and display of advertising information. *Callegari* discloses that the consumer device may be configured to display an electronic coupon. *Callegari*, ¶¶[0102], [0039]; Ex-1007, 5, 13, and Fig. 7. *Callegari* explains, in one example, that "retail locations create an electronic coupon message Content for their location." *Callegari*, ¶[0102]; Ex-1007, 5, Fig. 7. Then, a consumer device "that comes to a location in the vicinity of the business will be sent the coupon message." *Id.* In my opinion, a POSA would have understood that a coupon is a type of advertising information because it is a promotional offer intended to promote a business.

213. In another example, *Callegari* discloses that its system allows a user to "advertise a ticket for sale at a location outside a crowded event and be contacted by people at the event who set up their profile to indicate they are interested in tickets, and/or are also located near the event." *Callegari*, ¶[0113]; Ex-1007, 34.

214. In my opinion, a POSA would have understood that the advertisements, such as the virtual coupon and ticket sale, would be displayed because *Callegari* discloses "presenting" content such as a journal entry. *Callegari*, ¶¶[0026]-[0027], [0031]; Ex-1007, 5, 36, and Fig. 2. It is also my opinion that a POSA would have

understood the presented content is displayed because the consumer devices have display screens to present the content.

G. Claim 44 - ". . . wherein the advertising is capable of moving."

215. In my opinion, *Callegari* discloses means for distributing content to users in various file formats—including advertising, discussed in Section XIII.F. The distributed file format content may "include text, voice, video, graphics, audio files, and the like." *Callegari*, ¶[0010]; Ex-1007, 5. A POSA would have understood that the advertising, as video, and graphic files, may move.

H. Claims 53 and 55[13] (Core Elements A-B-C-D-E-F)

216. Unlike the preceding claims, it is my understanding that claims 53 and 55 are written from the server perspective, but still cover a combination of the same Core Elements A-F. It is my understanding that claims 53 and 55 require a method of operating a server and software, and a controller for performing the method of operating a server.

[13] Only the claim language for claim 53 is listed. In my opinion, claim 55 is broader in scope but recites similar limitations. Substantive differences between the claims are addressed within each section.

1. [53p], [55p] "A method of operation of a server to share computer usage experiences, comprising the following computer implemented steps:"

217. Should the preambles be limiting, *Callegari* and *Friedman* teach them in my opinion.

218. *Callegari*'s presence server and *Friedman*'s portal server include controllers operating in conjunction with software. A POSA would have understood that servers include controllers and software stored in memory for instructing the controllers to perform the intended functions. *Callegari* discloses that the presence server includes "a device interface," "a merchant interface," "a communication port," "a storage medium," "an audio processing application," and "a network of servers." *Callegari*, ¶¶[0049], [0053], [0055], [0077]; Ex-1007, 3, 14, 18. In my opinion, a POSA would have understood that these types of devices include controllers that operate in conjunction with software.

219. Similarly, *Friedman* discloses a portal server and explains that servers, such as its portal server, perform steps embodied in machine-executable instructions that "can be used to cause a general-purpose or special-purpose processor to perform certain steps." *Friedman*, 14:11-19. *Friedman* discloses that the executable instructions are stored in a storage medium. *Id.*, 14:21-34.

220. Additionally, *Callegari* discloses systems and methods for operating the presence server to allow sharing computer usage experiences, such as, "sharing journal entries between users." *Callegari*, Claim 21.

2. [53a], [55a] "receiving, a registration for automatic client side collection and sharing of visited geographic location data from a client-side application while visiting geographic locations with a location-aware device that records the visited geographic locations using a satellite-based location-fixing protocol;" (Core Elements A & D)

221. My discussion in Core Elements A (registering a location aware device with a server) and D (collecting data at the device), further includes these limitations. *See* Sections XI.A and XI.D.

222. In my opinion, a POSA would have understood that the process for registering *Callegari*'s consumer device with the presence server, or *Friedman*'s portal device with the portal server, includes the server receiving the registration information because the devices transmit the registration to the servers.

223. It is my understanding that claim 55 requires that the client-side application collect location data automatically. In my opinion, *Callegari* discloses that the client-side software (implemented on the consumer device) collects its geographic positioning coordinates and shares them with the presence server

automatically "as the location of the consumer device changes" while visiting the locations. *Callegari*, ¶[0030]; Ex-1007, 11, 13-14, and 19.

224. In my opinion, *Callegari*'s sensing mode records geographic locations automatically because it does not require user interaction. For instance, in *Callegari*'s sensing mode, the consumer device's location is both tracked and transmitted to the presence server automatically. *Callegari*, ¶[0058]; Ex-1007, 11, 13-14, and 19. When equipped with PDE (*see* Section XIII.B.1), the consumer device collects location data automatically as location changes, as opposed to "manual" positioning "where the user sets their position" manually. *Callegari*, ¶[0057]; Ex-1007, 19-20, and 25.

225. In my opinion, *Callegari* also discloses automatically reporting collected location data to the presence server. *Callegari*, ¶[0044] ("In the sensing mode, the consumer device *continuously or (periodically)* transmits changing indications of the user's point of origin as the user moves from location to location."); ¶[0057] ("The presence server 30 may then utilize the positioning coordinates provided from the PDE 72 directly from the consumer device 20 to *automatically* detect the consumer's point of origin as it changes.)" (emphases added); Ex-1007, 13-14, 19-20, and 25. To transmit location data to the presence

server automatically periodically, a POSA would have understood that the location data would be continuously recorded automatically as well. Ex-1028 (in a system implementing automatic geo-targeted advertisement delivery, also having a "geographic indicator [that] may be automatically sent to the location-based application server").

226. Further, like *Callegari*, the specification of the '543 patent suggests that automatic activity occurs without user interaction. The term "automatic" appears only twice in the '543 specification, both indicating that the device is performing a function without requiring user interaction. *See, e.g.,* '543 patent, 5:37-42 (discussing "automatic" data reporting), *id.*, 13:47-51 (discussing "automatically" refreshing the user's visual display). In my opinion, a POSA would have understood these limited disclosures to suggest actions taking place on the system or user device without user interaction.

3. [53b], [55b] "enabling access to one or more messaging buddy lists and selection of one or more buddies with whom the visited geographic location data may be shared from the one or more messaging buddy lists;" (Core Element B)

227. My discussion in Core Element B (accessing lists of other users), includes these limitations. *See* Section XI.B.

228. In my opinion, *Callegari* further discloses that the list of other users is a messaging buddy list, as explained in Section XIII.B.2.

4. [53c], [55c] "obtaining defined rights of the one or more buddies to access the visited geographic location data; and" (Core Element B)

229. My discussion in Core Elements B (accessing lists of other users) and C (defining rights for sharing data with the other users), further includes these limitations. *See* Sections XI.B and XI.C.

230. In my opinion, a POSA would have understood that defined rights for sharing data with users on one or more lists would be obtained by *Callegari*'s presence server because *Callegari* explains that its presence server only shares data with other users when it determines that the Context criteria matches. *Callegari*, ¶¶[0027], [0038], [0046], [0066]; Ex-1007, 6, 19, 38. Therefore, in my opinion, a POSA would have understood that the presence server would obtain the defined rights for particular buddies to be able to determine when it matches the Context criteria for particular content.

5. [53d], [55d] "reporting information indicating at least a portion of the visited geographic location data for the one or more buddies to access according to the rights defined for the one or more buddies." (Core Elements E & F)

231. My discussion in Core Elements E (reporting data to a server) and F (sharing data with the other users), further includes these limitations. *See* Sections XI.E and XI.F.

232. It is my understanding that claim 55 requires reporting to a tracking server, which is also a part of Core Element E, Section XI.E.

I. Claim 57 (Core Elements A-B-C-D-E-F)

233. Like claims 53 and 55, it is my understanding that claim 57 is written from the server perspective, and covers a combination of the same Core Elements A-F.

1. [57p] "A method of operation of a server computer comprising:"

234. Should the preamble be limiting, it is my opinion that *Callegari* teaches it, as explained in Section XIII.H.1 (explaining that *Callegari* teaches a method for operating a server).

2. [57a] "receiving registration information from a location-aware device;" (Core Element A)

235. My discussion in Core Element A (registering a location aware device with a server), further includes these limitations. *See* Section XI.A.

236. In my opinion, a POSA would have understood that the process for registering *Callegari*'s consumer device with the presence server, or *Friedman*'s portal device with the portal server, includes the server receiving the registration information because the devices transmit the registration to the servers.

3. [57b] "receiving information indicating visited geographic location data from the location-aware device, the visited geographic location data being data defining geographic locations collected at the location-aware device from a client-side application, wherein the location-aware device records the geographic locations using a satellite-based location-fixing protocol;" (Core Elements D & E)

237. My discussion in Core Elements D and E (collecting data at the device and "reporting data to a server), further includes these limitations. *See* Sections XI.D and XI.E.

238. In my opinion, a POSA would have understood that *Callegari*'s presence server receives the visited geographic location data from the consumer device because, as explained in Sections XI.D and XI.E, the consumer device

collects geographic location data based on a GPS protocol and transmits it periodically to the presence server.

4. [57c] "obtaining access rights for one or more other users to allow for access to the visited geographic location data, the one or more other users being one or more other users from one or more lists of other users with whom the visited geographic location data is to be shared; and" (Core Elements B & C)

239. My discussion in Core Elements B and C (accessing lists of other users and defining rights for sharing data with the other users), further includes these limitations. *See* Sections XI.B and XI.C.

240. My discussion in Section XIII.H.4 further explains that a POSA would have understood that defined rights for sharing data with users on one or more lists would be obtained by *Callegari*'s presence server.

5. [57d] "sharing at least a portion of the visited geographic location data with the one or more other users according to the access rights defined for the one or more other users." (Core Element F)

241. My discussion in Core Element F (sharing data with the other users), includes these limitations. *See* Section XI.F.

J. Claim 58 - "wherein the access rights for the one or more other users to access the visited geographic location data comprises, for each other users of at least a subset of the one or more other

users, information that defines one or more categories of the visited geographic location data to be shared with the other user."

242. My discussions for Sections XIII.I.1-XIII.I.5 explain that *Callegari* and *Friedman* teach a server in communication with client-side software (implemented on a consumer device) for defining a list of user access rights.

243. My discussion in Section XIII.B.6 explains that *Callegari* discloses that the defined access rights may be defined by categories of the shared visited geographic information.

K. Claim 59 ". . . access rights . . . defines at least one other user . . . to have access to the category of the visited geographic location data."

244. My discussions in Sections XIII.I.1-XIII.I.5 explain that *Callegari* discloses a presence server in communication with client-side software (implemented on a consumer device) for defining a list of user access rights.

245. My discussion in Section XIII.B.6 explains that *Callegari* discloses the defined access rights may be defined by a plurality of categories of the shared visited geographic information.

L. Claim 60 - ". . . an Instant Messaging buddy list of the user of the location-aware device."

246. In my opinion, *Callegari* and *Friedman* teach all elements of claims 60 and 62.

247. My discussion in Section XIII.B.2 explains that *Callegari* discloses both IM buddy lists and e-mail contact lists.

248. My discussions in Sections XIII.I.1-XIII.I.5 explain that *Callegari* and *Friedman* teach a server in communication with client-side software (implemented on a consumer device) for defining a list of users.

M. Claim 61 - ". . . a contact list maintained on the location-aware device."

249. My discussions in Sections XIII.I.1-XIII.I.5 explain that *Callegari* and *Friedman* teach a server in communication with client-side software (implemented on a consumer device) for defining a list of users.

250. My discussion in Section XIII.B.2 explains that *Callegari* further discloses a contact list maintained on the location-aware device.

N. Claim 62 - ". . . an e-mail contact list of the user of the location-aware device."

251. In my opinion, *Callegari* and *Friedman* teach all elements of claims 60 and 62.

252. My discussion in Section XIII.B.2 explains that *Callegari* discloses both IM buddy lists and e-mail contact lists.

253. My discussions in Sections XIII.I.1-XIII.I.5 explain that *Callegari* and *Friedman* teach a server in communication with client-side software (implemented on a consumer device) for defining a list of users.

O. Claim 72 (Core Elements A-B-C-D-E)

254. In my opinion, *Callegari* and *Friedman* teach all elements of claim 72.

1. [72p] "A location-aware mobile device having a controller and memory, wherein the controller is configured to:"

255. Should the preamble be limiting, *Callegari* and *Friedman* teach it in my opinion.

256. My discussion in Section XIII.B.1 explains that *Callegari*'s consumer device and *Friedman*'s portal device include controllers that operate in conjunction with software.

2. [72a] "send location information comprising geographic data recorded by the location-aware mobile device using a satellite-based location-fixing protocol;" (Core Elements D & E)

257. My discussion in Core Elements D (collecting data at the device) and E (reporting data to a server), further include these limitations. *See* Sections XI.D and XI.E.

258. In my opinion, a POSA would have understood that *Callegari* discloses "sending" data to a server for the same reason it discloses "reporting" data to a server

because both terms cover the transmission of data over a wireless network between the consumer device and presence server of *Callegari*.

3. [72b] "enable access to one or more lists of other users to identify one or more other users with whom the visited geographic location data may be shared;" (Core Element B)

259. My discussion in Core Element B (accessing lists of other users), further includes these limitations. *See* Section XI.B.

4. [72c] "enable definition of rights of the one or more other users to access the visited geographic location data; and" (Core Element C)

260. My discussion in Core Element C (defining rights for sharing data with the other users), further includes these limitations. *See* Section XI.C.

5. [72d] "send information indicating at least a portion of the visited geographic location data to a server" (Core Element E)

261. My discussion in Core Element E (reporting data to a server), further includes these limitations. *See* Section XI.E.

XIV. GROUND 3: CLAIM 38 IS UNPATENTABLE OVER *CALLEGARI* IN VIEW OF *FRIEDMAN* AND *ESCHENBACH*

262. In my opinion, *Callegari*, *Friedman*, and *Eschenbach* render obvious every element of claim 38.

A. Claim 38 - "wherein the satellite-based location-fixing protocol is selected from a group consisting of a GPS protocol and a DGPS protocol;"

263. As I discussed in Section XIII.B.1 *Callegari* teaches GPS protocol.

264. *Eschenbach* teaches a differential global positioning system (DGPS) that uses almanac data in addition to GPS signals to allow a GPS user receiver to calculate its location. *Eschenbach*, Abstract. Differential GPS makes use of "almanac data" stored in a reference receiver to differentially correct the measured location data. *Id.*, 3:4-25. Almanac data is satellite-location data broadcast by GPS satellites periodically (e.g., every 12 minutes). *Id.*, 1:41-52. *Eschenbach* explains that a GPS reference receiver receives and stores almanac data in memory from a GPS signal source. *Id.*, 6:3-9.

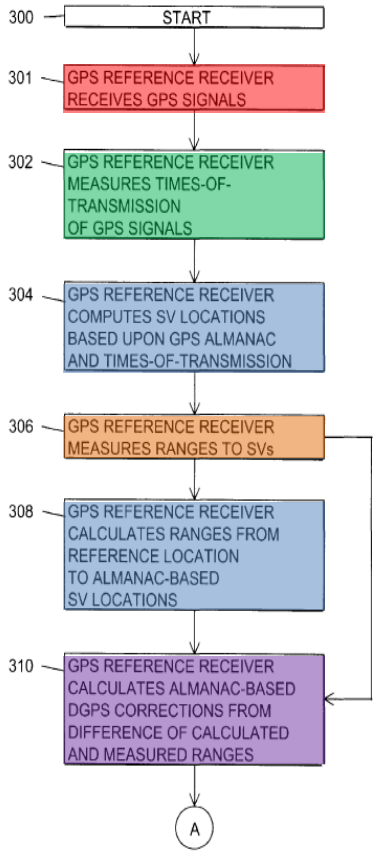


Fig. 3A

Eschenbach, Figs. 2A, 3 (annotated).

265. Along with the stored almanac data, the reference receiver receives GPS signals for its location from GPS signal sources (301). *Id.* The reference receiver measures the time of transmission for the GPS signals (302) and uses it with the almanac data to compute the location of the signal sources and calculate ranges from the known reference receiver location to the almanac-based source signal locations (304, 308). *Id.*, 6:17-33, 6:62-7:2. The GPS reference receiver also measures the ranges from the known reference receiver location to the almanac-

based signal source locations (306). *Id.*, 6:53-61. The GPS reference receiver then uses the difference between the measured and calculated ranges to calculate differential GPS corrections to the detected location (310) and transmits these corrections to the user GPS receiver to correct the calculations of its location. *Id.*, 6:62-7:2, 7:60-64.

B. A POSA Would Have Combined *Callegari*, *Friedman*, and *Eschenbach*

266. My discussion in Section XIII.A explains that a POSA would have been motivated to combine *Callegari* and *Friedman* to improve the efficiency and fault tolerance of *Callegari*'s system.

267. In my opinion, a POSA would have been motivated to combine *Callegari* and *Eschenbach*. *Callegari* describes using a GPS receiver in a consumer device to track the location of the system users. *Callegari*, ¶[0007], [0044], [0057]; Ex-1007, 11, 13-15, and 19-20. But it is my understanding that *Callegari* does not elaborate on the specific functioning of the GPS and the consumer device using it to determine its location.

268. GPS technology was well-known before the '543 patent. For example, *Eschenbach* discloses a particular improvement upon GPS functionality—differential GPS—that allows a user GPS receiver to correct for errors in the GPS location signals received from the satellites by providing an error correction signal based on stored almanac data to the user receiver from a reference GPS receiver located nearby. *Id.*, 6:16-33. The reference receiver of *Eschenbach* could have been easily implemented within the system of *Callegari* to correct the GPS data and improve the consumer device's collected geographic location data. The following figure shows the combined *Callegari-Eschenbach* system.

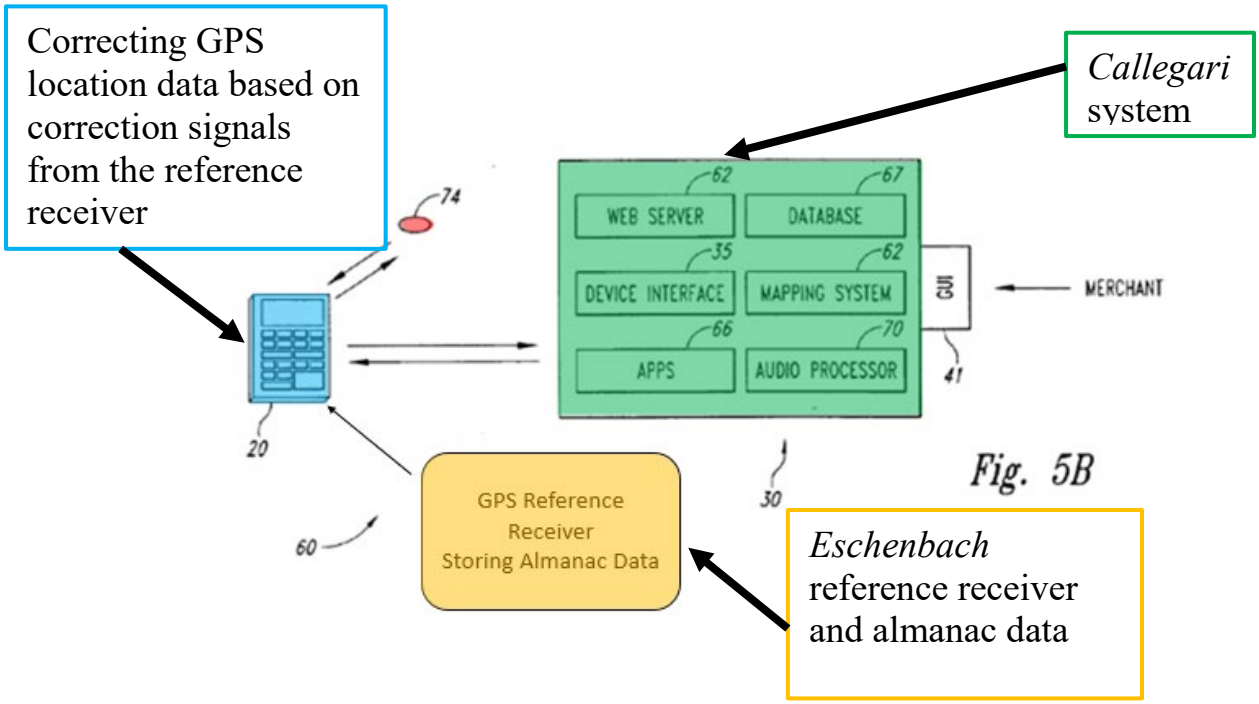


Fig. 5B

Callegari, Fig. 5B (annotated).

1. Based on *Callegari*, a POSA would have been motivated to look for ways to implement a GPS to determine the location of the consumer device

269. *Callegari* discloses using a GPS-enabled consumer device that allows a user's position to be tracked (e.g., *Callegari*, ¶[0044]), listing example technologies known in the art including "GPS systems, assisted GPS systems (A-GPS), time domain of arrival systems (TDA) or triangulation systems" (*id.*, ¶[0007]) but does not detail how these technologies would "allow[] the user's location to be tracked." *Id.*, ¶[0044]; Ex-1007, 11, 13-15, and 19-20. *Callegari*'s teaching of exemplary location determining technologies combined with its silence on how these exemplary technologies work would have motivated a POSA to look to GPS references, such as *Eschenbach*, in my opinion.

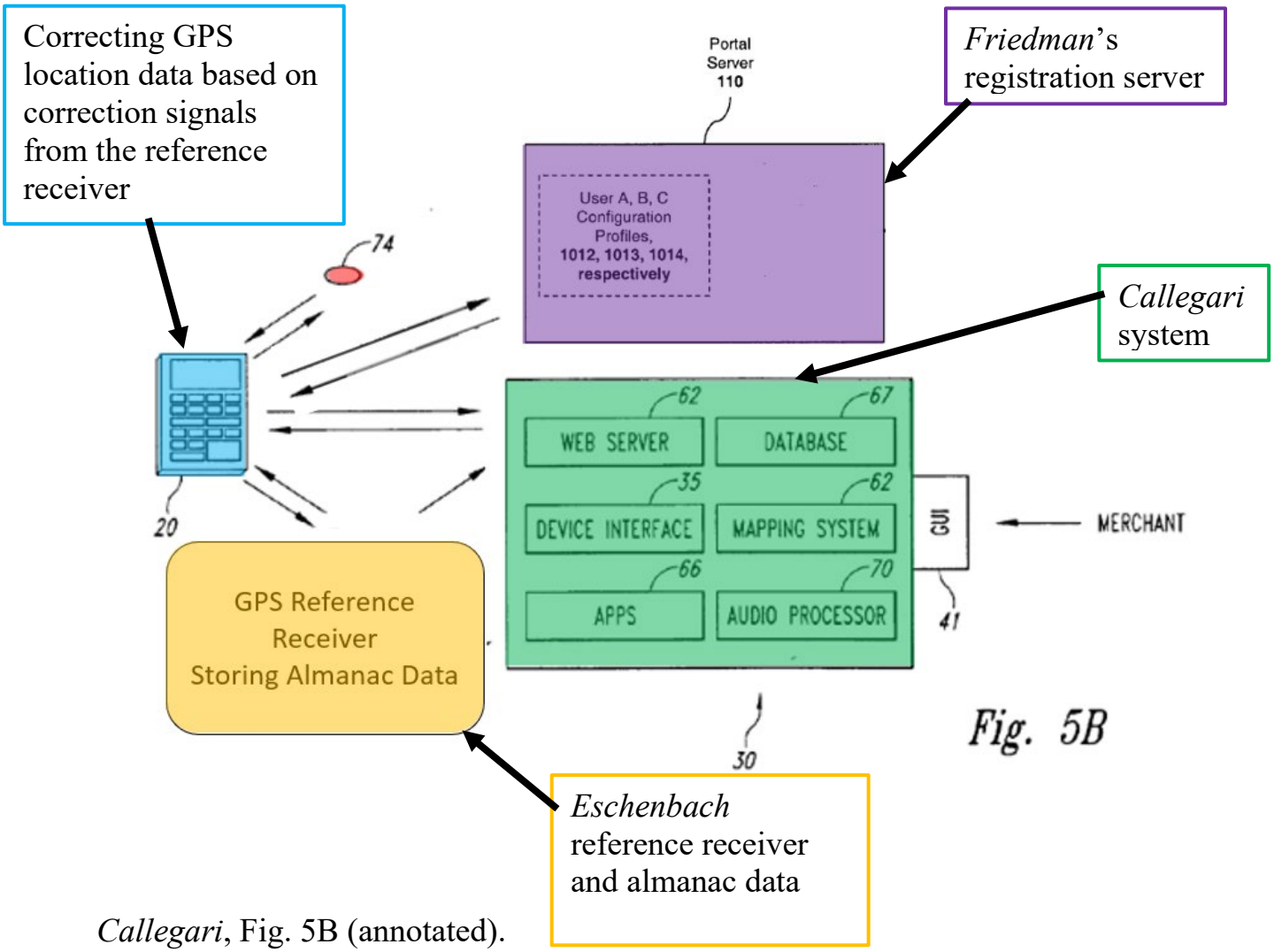
2. Based on *Eschenbach*, a POSA would have recognized that using a reference receiver and almanac data to correct GPS location data improves location data resolution

270. *Eschenbach*'s DGPS system corrects GPS location data provided by satellites. *Eschenbach*, 1:66-19. *Eschenbach* explains that "stand alone accuracy of existing commercial GPS receivers is typically within about twenty meters or within about one hundred meters with selective availability." *Eschenbach*, 1:66-2:1. The disclosed DGPS systems improve upon this standalone accuracy to allow "GPS

receivers [to] obtain a location accuracy within a meter or even better." *Eschenbach*, 2:5-17.

271. *Callegari* also recognizes that the "resolution" (e.g. accuracy) of position determining equipment (PDE) (e.g., GPS) impacts the overall operation of the system. *Callegari* explains that if the PDE "can only provide a resolution of, for example, 300 feet then the user's position will fall somewhere within that 300 foot area," and if a "user were to request information within 200 feet," the PDE's "inability to resolve to 200 feet will result in a default to the highest resolution possible, i.e., 300 feet." *Callegari*, ¶[0081]; Ex-1007, 23. Because *Callegari*'s system's operation is restricted by the resolution of location data the consumer device collects, in my opinion, a POSA would have been motivated to increase the resolution of location data by implementing *Eschenbach*'s DGPS corrections.

272. In my opinion, a POSA would also have been motivated to combine *Callegari* with both *Friedman* and *Eschenbach*. Because each of *Friedman* and *Eschenbach* improves the system of *Callegari* in different ways, it would have been obvious in my opinion to a POSA to combine *Callegari* with both *Friedman* and *Eschenbach* for the reasons in Section XIII.A, and as stated above. The following figure shows the combined *Callegari-Friedman-Eschenbach* system.



Callegari, Fig. 5B (annotated).

XV. CONCLUSION

273. 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; 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 30th day of October 2020, in St. Louis, Missouri.

Respectfully submitted

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David H. Williams