

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO. LTD., and SAMSUNG ELECTRONICS
AMERICA, INC.,

Petitioner,

v.

MASSIVELY BROADBAND LLC,

Patent Owner.

Case No. IPR2026-00032

U.S. Patent No. 8,515,925

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 8,515,925**

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EXHIBIT LIST

Ex.	Description
EX1001	U.S. Patent No. 8,515,925 (“’925 Patent”)
EX1002	Declaration of Kevin C. Almeroth
EX1003	Curriculum Vitae of Kevin C. Almeroth
EX1004	Prosecution History for U.S. Pat. No. 8,515,925
EX1005	Patent Owner’s District Court Infringement Contentions for ’925 Patent
EX1006	U.S. Provisional Patent Application 60/971,175 filed Sep. 10, 2007
EX1007	U.S. Provisional Patent Application 60/977,582 filed Oct. 4, 2007
EX1008	U.S. Provisional Patent Application 61/028,261 filed Feb. 13, 2008
EX1009	U.S. Patent Publication No. 2007/0207800 A1 (“Daley”)
EX1010	U.S. Patent Publication No. 2008/0305747 A1 (“Aaron”)
EX1011	U.S. Patent Publication No. 2008/0186882 A1 (“Scherzer”)
EX1012	U.S. Patent Publication No. 2006/0253453 A1 (“Chmaytelli”)
EX1013	U.S. Patent Publication No. 2003/0216953 A1 (“Dawson”)
EX1014	Intentionally Omitted
EX1015	J. Schiller, <i>Mobile Communications</i> , Addison-Wesley, 2 nd Ed., 2003
EX1016	M. Stemm and R. Katz, “Vertical handoffs in wireless overlay networks,” <i>Mobile Networks and Applications</i> , vol. 3, pp. 335-50, 1998
EX1017	R. Chalmers, G. Krishnamurthi, and K. Almeroth, "Enabling Intelligent Handovers in Heterogeneous Wireless Networks," <i>ACM Journal on Mobile Networks and Applications (MONET)</i> , vol. 11, num. 2, pp. 215-227, April 2006

EX1018	S. Soliman, P. Agashe, et al., “gpsOne™: A hybrid position location system.” IEEE, 0-7803-6560-7, pp. 330-35, 2000
EX1019	K. Wang, L. Yan, H. Wen, and K. He, “GpsOne: a New Solution to Vehicle Navigation,” IEEE, 0-7803-8416-4, pps. 341-46, 2004
EX1020	U.S. Patent Publication No. 2003/0125044 A1 (“Deloach”)
EX1021	<i>Fryer’s TowerSource Acquired by Biby Publishing</i> (Dec. 29, 2005)
EX1022	FCC ASR Registration Form 854 (January, 2006)
EX1023	Sample FCC ASR Record
EX1024	FCC ASR Search Screenshot
EX1025	3GPP TX 23.003 Technical Specification, v7.1.0 (September, 2006)
EX1026	Richard Shim, <i>Boingo, T-Mobile Team On Wireless Roaming</i> , CNET (Mar. 18, 2003)
EX1027	M. Gast, 802.11 Wireless Networks – The Definitive Guide, O’Reilly, 1 st Ed., 2002
EX1028	U.S. Patent No. 6,332,127 (“Bandera”)
EX1029	U.S. Patent No. 6,545,596 (“Moon”)
EX1030	U.S. Patent Publication No. 2002/0046084 A1 (“Steele”)
EX1031	U.S. Patent No. 7,110,749 (“Zellner”)
EX1032	G. Heine, GSM Networks: Protocols, Terminology, and Implementation, Artech House, 1999.
EX1033	U.S. Patent No. 6,978,138 (“Japenga”)
EX1034	Digital cellular telecommunications system (Phase 2+); Numbering, addressing and identification (3GPP TS 03.03 version 7.8.0 Release 1998, ETSI, 2003
EX1035	Telcom Network Planning for evolving Network Architectures, Reference Manual, Draft Version 4.1, ITU, 28 February 2007.

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EX1036	A. Sinclair, GSM Goes to Market, GSM Association, March 2007
EX1037	U.S. Patent No. 7,529,208 (“Choi”)
EX1038	Vanghi, Damnjanovic, Vojcic, The cdma2000 System for Mobile Communications, Pearson, 2004

LIST OF CHALLENGED CLAIMS

Claim	Limitation
1[pre]	A method for providing a clearinghouse for communications networks, comprising:
1[a]	providing one or more computers which interface with a database, the database including performance, quality of service, or perceived communications service quality or value information, experienced or desired, for one or more mobile or fixed devices or end users, for one or more geographic locations of said one or more mobile or fixed devices, or end users, and one or more of
1[a][i]	records pertaining to one or more telecommunications carriers which identify infrastructure type and/or location information for one or more locations, and
1[a][ii]	public records which include, for a plurality of geographic locations, one or more of: addresses, maps, location coordinates, or mapping information for said geographic locations, zoning information for said geographic locations, local ordinances for said geographic locations, contact information for government officials for said geographic locations, and information about one or more carriers serving said geographic locations;
1[b]	updating in said database either automatically or manually, using one or more electronic interfaces to said one or more computers, performance, quality of service, or perceived communications service quality or value information, experienced or desired, obtained for one or more mobile or fixed devices that are located in one of said one or more geographic locations;
1[c]	permitting at least one of said one or more telecommunications carriers or one or more end users of said one or more telecommunications carriers, or one or more parties which are not telecommunications carriers or end users to review, catalog, store, view, use, or sort said performance, quality of service, or perceived communications service quality or value information, experienced or desired, in said database;

Claim	Limitation
1[d]	obtaining said performance or quality of service or perceived communications service quality or value information, experienced or desired, using one or more applications operable with said one or more mobile or fixed devices or said one or more computers; and
1[e]	providing said performance or quality of service or perceived communications service quality or value information, experienced or desired, to said one or more electronic interfaces using one or more applications operable with said one or more mobile or fixed devices or said one or more computers,
1[f]	wherein said performance or quality of service information or perceived communications service quality or value information includes information from one or more bands, one or more carriers, one or more mobile or fixed devices, or one or more end users from one or more bands or carriers.
2	The method of claim 1 wherein said database includes one or more of records for said one or more end users which identify one or more of equipment, devices, telecommunications assets, and property assets owned, controlled or used by said one or more end users.
3	The method of claim 1 wherein said one or more electronic interfaces provides performance or quality of service information to one or more mobile or fixed devices or one or more end user devices that are located in or will be located in said locations.
4[a]	The method of claim 1 further comprising the step of sending instructions from one of said one or more electronic interfaces to one or more wireless devices for configuring or reconfiguring said one or more wireless devices
4[b]	based on one or more of: ranking of performance, enhanced spectrum usage, control of interference, or requests of an end user.
5	The method of claim 1 further comprising the step of sending a rank ordering of available telecommunications services or frequencies from one of said one or more electronic interfaces to one or more wireless devices.

Claim	Limitation
6	The method of claim 1 further comprising the step of monitoring radio operating conditions for one or more mobile or fixed devices, and using monitored radio operating conditions to update performance or quality of service information or perceived communications service quality or value information in said database.
7	The method of claim 1 further comprising the step of using one or more mobile or fixed wireless devices to provide said performance or quality of service information or perceived quality or value information to one of said one or more of said electronic interfaces.
8[pre]	A method of providing selected content to one or more mobile or fixed devices located in specific locations, comprising the steps of:
8[a]	providing a clearinghouse system for communications networks, said clearinghouse system including one or more computers which interface with a database, said database including one or more of
8[a][i]	performance, quality of service, or perceived telecommunications service quality or value information, experienced or desired, for one or more mobile or fixed devices or end users, for one or more geographic locations of said one or more mobile or fixed devices or end users,
8[a][ii]	records for one or more telecommunications carriers which identify infrastructure information for one or more locations,
8[a][iii]	records for one or more end users which identify equipment, devices, telecommunications assets or property assets owned, used, or controlled by said one or more end users, and
8[a][iv]	public records which include, for a plurality of geographic locations, one or more of: addresses, maps, location coordinates, or mapping information for said geographic locations, zoning information for said geographic locations, local ordinances for said geographic locations, contact information for government officials for said geographic locations, and information about carriers serving said geographic locations;
8[b][i]	permitting at least one of (a) one or more mobile or fixed devices to be in communication with said clearinghouse system using one or

Claim	Limitation
	more electronic interfaces to said one or more computers to perform one or more of updating, either automatically or manually, performance, quality of service, or perceived telecommunications service quality or value information, experienced or desired, obtained from said one or more mobile or fixed devices that are located in one of said one or more geographic locations into said database,
8[b][ii]	and (b) at least one of said one or more telecommunications carriers or said one or more end users or one or more parties which are not telecommunications carriers or end users to review, catalog, view, store, use, or sort said performance, quality of service, or perceived telecommunications service quality or value information, experienced or desired, in said database;
8[c]	identifying a geographic location of one or more mobile or fixed devices using one or more of: GPS, location sensing, position estimating techniques, or determining one or more of towers or frequencies being used, wherein said GPS, location sensing, position estimating techniques, or determining of one or more towers or frequencies being used are associated with one or more of said one or more mobile or fixed devices or end users; and
8[d]	providing localized content to said one or more mobile or fixed devices or end users using said geographic location and one or more local ad servers in communication with said one or more electronic interfaces of said clearinghouse system.
9	The method of claim 8 wherein one or more base stations are in communication with said one or more electronic interfaces of said clearinghouse system.
10	The method of claim 8 further comprising the step of said local ad servers providing web page view and usage statistics to said database of said clearinghouse system through said one or more electronic interfaces.
11	The method of claim 8 wherein said local ad servers provide content to said one or more mobile or fixed devices tuned to a specific transmitted signal, channel, or service provider.
12[pre]	A clearinghouse system for communications networks, comprising:

Claim	Limitation
12[a]	one or more computers which interface with a database, said database including performance, quality of service, or perceived telecommunications service quality or value information, experienced or desired, for one or more mobile or fixed devices or end users for one or more geographic locations of said one or more mobile or fixed devices or end users, and one or more of
12[a][i]	records pertaining to one or more telecommunications carriers which identify one or more of infrastructure, type, and/or location information for one or more locations,
12[a][ii]	records for one or more end users which identify one or more of equipment, devices, telecommunications assets, and property assets owned, controlled or used by said one or more end users, and
12[a][iii]	public records which include, for a plurality of geographic locations, one or more of: addresses, maps, location coordinates, or mapping information for said geographic locations, zoning information for said geographic locations, local ordinances for said geographic locations, contact information for government officials for said geographic locations, and information about one or more carriers serving said geographic locations; and
12[b][i]	one or more electronic interfaces to said one or more computers which permit performance, quality of service, or perceived communications service quality or value information, experienced or desired, obtained for one or more mobile or fixed devices that are located in one of said one or more geographic locations to be automatically or manually updated into said database,
12[b][ii]	and which permit at least one of said one or more telecommunications carriers or one or more of said end users or one or more parties which are not telecommunications carriers or end users to review, catalog, store, view, sort, or use said performance, quality of service, or perceived communications service quality or value information, experienced or desired, in said database; and
12[c]	a monitoring application which permits monitoring of radio operating conditions for one or more mobile or fixed wireless devices, wherein monitored radio operating conditions are used to update performance

Claim	Limitation
	or quality of service information or perceived communications quality or service value in said database,
12[d]	wherein said performance or quality of service information or perceived communications quality or service value includes information from one or more bands, one or more carriers, one or more mobile or fixed devices, or one or more end users from one or more bands or carriers.
13	The clearinghouse system of claim 12 wherein said one or more electronic interfaces provides performance or quality of service information or perceived communications quality or service value to one or more mobile or fixed devices that are located in or will be located in said locations.
14	The clearinghouse system of claim 12 further comprising means for sending instructions from one of said one or more electronic interfaces to one or more wireless devices for configuring or reconfiguring said one or more wireless devices based on one or more of: a ranking of performance, enhanced spectrum usage, control of interference, or requests of an end user.
15	The clearinghouse system of claim 12 further comprising means for sending a rank ordering of available telecommunications services or frequencies from one of said one or more electronic interfaces to one or more wireless devices.
16	The clearinghouse system of claim 12 further comprising one or more wireless devices which are configured to provide said performance or quality of service information or perceived communications quality or service value to one of said one or more of said electronic interfaces.
17	The clearinghouse system of claim 12 wherein said one or more electronic interfaces to said one or more computers further permit one or more mobile or fixed devices or one or more end users to communicate said performance, quality of service, or perceived communications service quality or value information, experienced or desired, to said one or more computers.
18	The clearinghouse system of claim 17 wherein said one or more electronic interfaces are configured to receive geographic location

Claim	Limitation
	information from said one or more mobile or fixed devices or one or more end users.
19	The clearinghouse system of claim 12 further comprising one or more local ad servers in communication with said one or more electronic interfaces of said clearinghouse system, said one or more local ad servers being configured to use information pertaining to geographic locations of said one or more mobile or fixed devices or end users to provide localized content to one or more of said one or more mobile or fixed devices.
20	The clearinghouse system of claim 19 wherein said local ad servers are configured to provide web page view and usage statistics to said database through said one or more electronic interfaces.
21	The clearinghouse system of claim 19 wherein said one or more local ad servers are configured to provide content to at least one mobile or fixed device tuned to a specific transmitted signal or channel.
22	The clearinghouse system of claim 12 further comprising a means for determining one or more of towers or frequencies being used by one or more of said one or more mobile or fixed devices or end users.
23[a]	The clearinghouse system of claim 12 further comprising one or more applications operable with said one or more mobile or fixed devices or said one or more computers for obtaining and providing data pertaining to one or more of
23[a][i]	end user location;
23[a][ii]	end user viewing/usage statistics of the Internet;
23[a][iii]	end user history or record of browsing or viewing data of on-line advertisements;
23[a][iv]	end user Internet or traffic usage profiles; and
23[a][v]	said performance, quality of service, or perceived communications service quality or value information, experienced or desired,
23[b]	to said one or more electronic interfaces.

Claim	Limitation
24	The clearinghouse system of claim 23 wherein said one or more applications are configured to receive manually obtained or provided data.
25	The clearinghouse system of claim 23 wherein said one or more applications are configured to receive automatically obtained or provided data.

I. INTRODUCTION

The '925 Patent is directed to “creating an inventory and marketplace for available properties for use in telecommunication networks,” “providing quality and/or performance monitoring and control for wireless communication systems,” and “providing localized content over wireless networks.” EX1001, Abstract. The '925 Patent claims priority to three provisional applications, each describing one of these concepts. EX1001, 1:13-21; EX1006-1008; EX1002, ¶36.

However, the '925 Patent does not claim any new or non-obvious technology. The challenged claims recite little more than collecting information about the performance of wireless devices and the communications systems to which they might connect and, optionally, sending those devices configuration instructions after evaluating the collected data—indeed, little more than that is disclosed. EX1001, 25:12-26:55, 27:17-28:27. Those claims that are also directed to serving ads recite little more than doing so in response to collected location information. EX1001, claims 8-11 and 19-21. But device monitoring and management systems and location-specific advertising existed in the prior art well before the alleged¹ September 10, 2007, priority date. As demonstrated herein, the challenged claims are unpatentable under 35 U.S.C. §102 and §103. EX1002, ¶66.

¹ Petitioner does not concede that the priority claims are proper.

II. MANDATORY NOTICES AND FEES

A. Real Party-In-Interest

The real parties-in-interest are Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (collectively, “Petitioner”).

B. Related Matters

The ’925 Patent was asserted against Petitioner in *Massively Broadband LLC v. Samsung Electronics Co. LTD.*, and *Samsung Electronics America, Inc.*, Case No. 2:25-CV-00608-JRG (E.D. Tex., filed June 6, 2025). Also asserted in that case are, *inter alia*, related patents 8,725,700 and 8,224,794. Both the ’925 Patent and 8,725,700 issued from continuations of the application that issued as 8,224,794.

C. Counsel and Service Information

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D. Payment of Fees

The Office is authorized to charge the fee required for this Petition (and any additional fees) to Deposit Account No. 50-5708. Any additional fees that might be due are also authorized.

E. Requirements for Inter Partes Review

Petitioner certifies that the '925 Patent is available for *inter partes* review, that Petitioner is not barred or estopped, and that 35 U.S.C. §§315(a)-(b) is inapplicable.

III. GROUNDS

Ground	Basis	Reference(s)	Claims
1	§103	Daley, Aaron, and Scherzer (and alternatively Dawson)	1-7, 12-18, 22-25
2	§102	Scherzer (alternatively §103 with Dawson)	1-7, 12-18, 22-25
3	§103	Daley, Aaron, Scherzer, and Chmaytelli (and alternatively Dawson)	8-11, 19-21

IV. '925 PATENT

A. '925 Patent Specification

The specification discloses that before the alleged invention, intermediaries would help make a market between real property owners and telecommunications

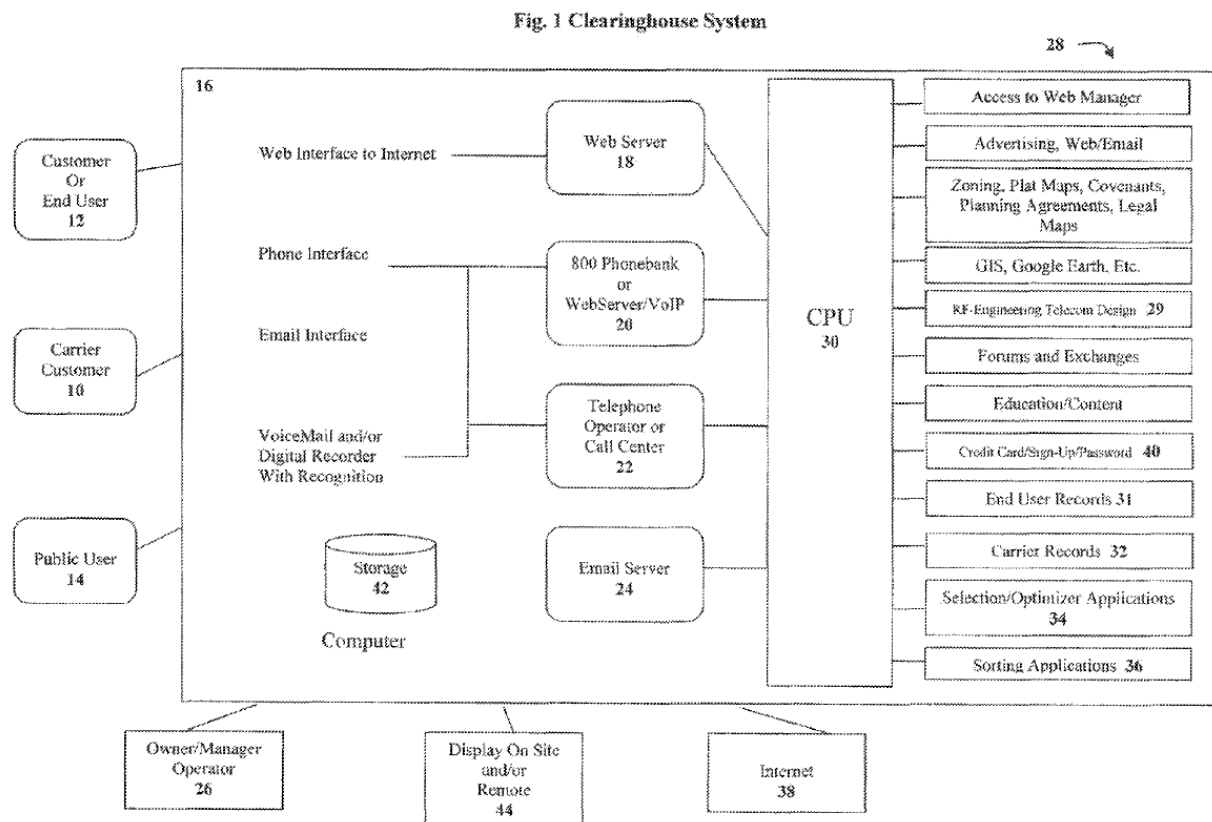
carriers desirous of placing infrastructure on that property. EX1001, 1:25-2:47. It describes that a variety of information and analytics were used when identifying opportunities and negotiating a deal. *Id.* It also describes the existence of online marketplaces and software tools to facilitate such transactions. *Id.*, 2:35-63. After asserting there was no “public clearinghouse” where carriers could explore information about “tower sites or available real estate or land available to their business needs” (3:24-28, 2:64-3:35), the ’925 Patent asserts that business and technical trends, including developments in wireless connectivity (3:37-4:30), will contribute to the demand for an online marketplace specific to telecommunications infrastructure, replacing the existing manual markets (4:31-5:62).

The patent identifies both (1) firms and websites that use public information to map or plot wireless signal strength/quality and that allow users to comment on the same wireless signal strength in a particular area and (2) websites that push advertising to users and similarly allow for user reviews of wireless devices and networks. *Id.*, 7:14-47. In the Detailed Description, the patent acknowledges additional prior art and specific systems and sites of relevance. *Id.*, 13:65-16:19.

The specification emphasizes the breadth of the invention: “This invention applies to any carrier-based system ... no matter ... whether it is wired or wireless ... or what the technology, modulation, access method, etc. may be. That is, this patent is not limited to wireless, optical, cellular, WiMax, Mesh, WiFi, RFID,

LMDS, cable, or satellite, and not limited to fixed, mobile, or portable operation by users...” *Id.*, 9:4-31.

The patent’s Figure 1 depicts “clearinghouse 16” including “the Clearinghouse computer 30” accessible “via a wide range of interfaces, including web 18, phone 20 or 22..., email 24,...,” and having a database and access to applications and various records and information. *Id.* 16:19-49.



Further aspects of a “clearinghouse” are disclosed at 16:19-25:31. The specification discloses augmenting that clearinghouse with information about network performance gathered from user devices and providing additional information about or based on the collected information. *Id.* 25:32-31:9. It also

discloses adding advertising features to the clearinghouse, and it identifies prior art related to the same. *Id.*, 31:10-35:59.

B. Prosecution History (EX1004) and Priority Date

The '925 Patent is a pre-AIA patent whose earliest possible priority date is September 10, 2007, via Provisional Application No. 60/971,175. It also claims priority to Provisional Applications No. 60/977,582 (filed Oct. 4, 2007) and No. 61/028,261 (filed Feb. 13, 2008).

The '925 Patent issued from Application No. 13/490,133, filed June 6, 2012, as a continuation of Application No. 12/208,007, filed September 10, 2008. Applicants filed terminal disclaimers over, *inter alia*, 8,224,794, and overcame the one rejection through a combination of amendment and argument. None of the references argued in this petition were made of record during prosecution.

V. PERSON OF ORDINARY SKILL

A POSITA at the time of alleged invention would have had at least a bachelor's degree in computer science, electrical engineering, or a related field, and at least two years (cumulative) of work or research experience in the fields of database design or administration, online marketplaces or e-commerce, and wireless network or mobile device management, or equivalents. Additional work or research experience could substitute for education, and further education could substitute for work or research experience. EX1002, ¶47.

Petitioner’s expert, Dr. Almeroth, exceeded this level by the priority date.

EX1003.

VI. CLAIM CONSTRUCTION

The Board construes claims per *Phillips v. AWH Corp.* 415 F.3d 1303 (Fed. Cir. 2005) and “only to the extent necessary to resolve a controversy.” *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017). Except for the terms below, or unless otherwise indicated, and for the purposes of this proceeding only, the claim terms should carry their “ordinary and customary” (*i.e.*, plain and ordinary) meaning: “the meaning that the term would have to a person of ordinary skill in the art in question” at the time of the invention. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007) (citation omitted); EX1002, ¶49.

The following terms are necessary for construction only if they are subject to pre-AIA 35 U.S.C. §112, ¶6 as means-plus-function limitations (*i.e.*, if they use the term “means for” without reciting sufficient structure for performing the claimed function). *See Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348-49 (Fed. Cir. 2015) (*en banc*). If the Board finds that any of these terms are not means-plus-function limitations, construction of such terms is not necessary.

For each, Petitioner identifies the only structure disclosed in the specification, but does not concede that it is adequate structure under Section 112.

A. Claim 14: “means for sending instructions...”

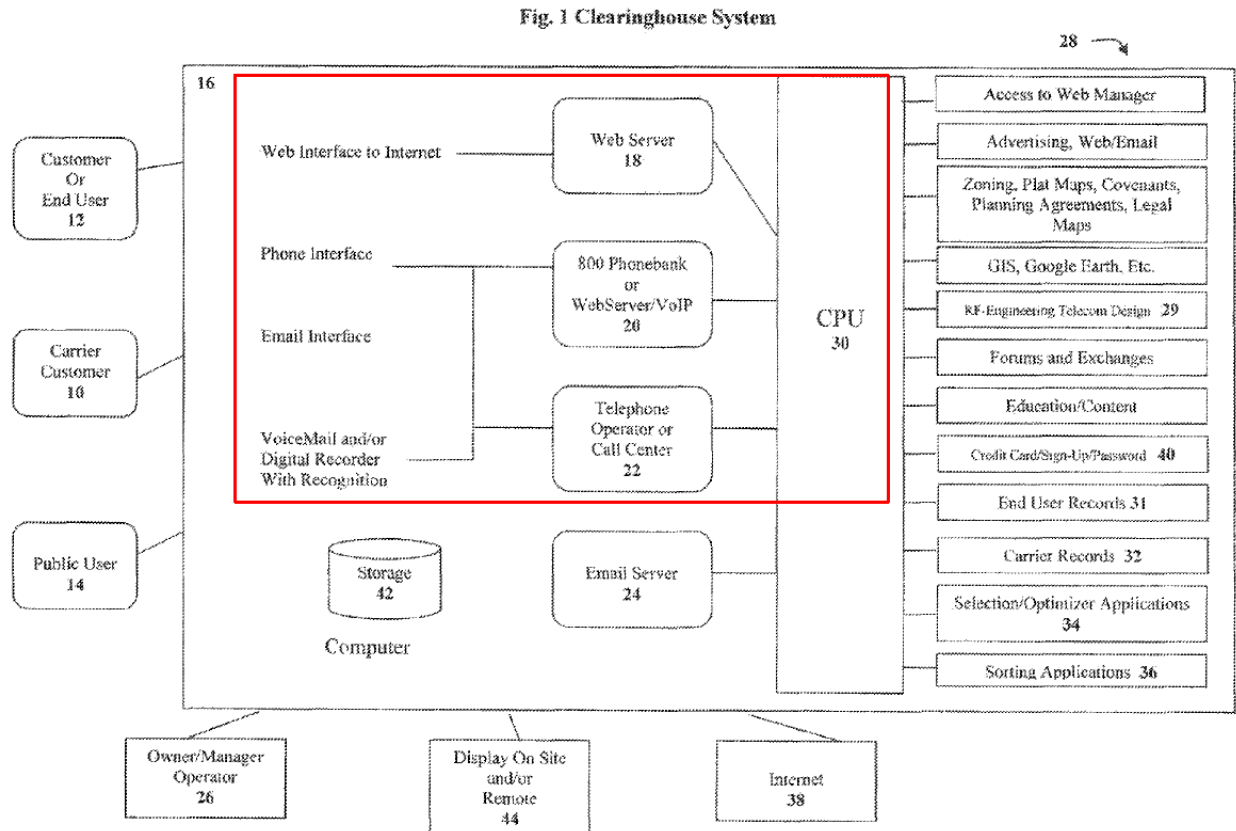
Function: “sending instructions from one of said one or more electronic interfaces to one or more wireless devices for configuring or reconfiguring said one or more wireless devices based on one or more of a ranking of performance, enhanced spectrum usage, control of interference, or requests of an end user.”

Structure: a computer configured to send information to a wireless device, and equivalents thereof.

Claim 14 depends from claim 12, “further comprising means for sending instructions from one of said one or more electronic interfaces to one or more wireless devices for configuring or reconfiguring said one or more wireless devices based on one or more of: a ranking of performance, enhanced spectrum usage, control of interference, or requests of an end user.”

The specification discloses that users “may have access to the clearinghouse 16 via a wide range of interfaces, including web 18, phone 20 or 22 (using cell phone or wired phone or VoIP phone), email 24, or through automated voice recognition or digital recorders (that may recognize speech, handwriting, fingerprinting, etc).” EX1001, 16:22-28. *See also* 13:44-66. It also discloses processing and computing hardware to “dictate the proper operation of the website, the response to various inputs from users via the worldwide web, telephone, or other various interfaces, and the programs needed to interpret inputs, store and process the received information,

and to properly format and display the information...” EX1001, 13:19-43. The breadth of configurations that could implement the claimed functionality is reinforced at 14:53-16:18 and is illustrated in Fig. 1, discussed at 16:19-49:



A POSITA would therefore have understood that the corresponding structure is “a computer configured to send information to wireless device, and equivalents thereof.” EX1002, ¶¶54-55. Cf. EX1005 (Patent Owner’s District Court Infringement Contentions) at 109 (“one or more processors executing [accused software], in combination with the network communication interface (including APIs and/or wireless/cellular network modules) that transmit data, device

management commands, and configuration instructions to managed mobile devices.”).

B. Claim 15: “means for sending a rank ordering...”

Function: “sending a rank ordering of available telecommunications services or frequencies from one of said one or more electronic interfaces to one or more wireless devices.”

Structure: a computer configured to send information to a wireless device, and equivalents thereof.

Claim 15 also depends from claim 12, “further comprising means for sending a rank ordering of available telecommunications services or frequencies from one of said one or more electronic interfaces to one or more wireless devices.”

The specification’s disclosure of structure for sending information to a wireless device is discussed above, with reference to claim 14. Although different content is sent in the function of claim 15, that has no bearing on the structure that performs the sending. EX1002, ¶59. Therefore, a POSITA would have understood that the corresponding structure is “a computer configured to send information to a wireless device, and equivalents thereof.” EX1002, ¶59.

C. Claim 22: “means for determining...”

Function: determining one or more of towers or frequencies being used by one or more of said one or more mobile or fixed devices or end users.

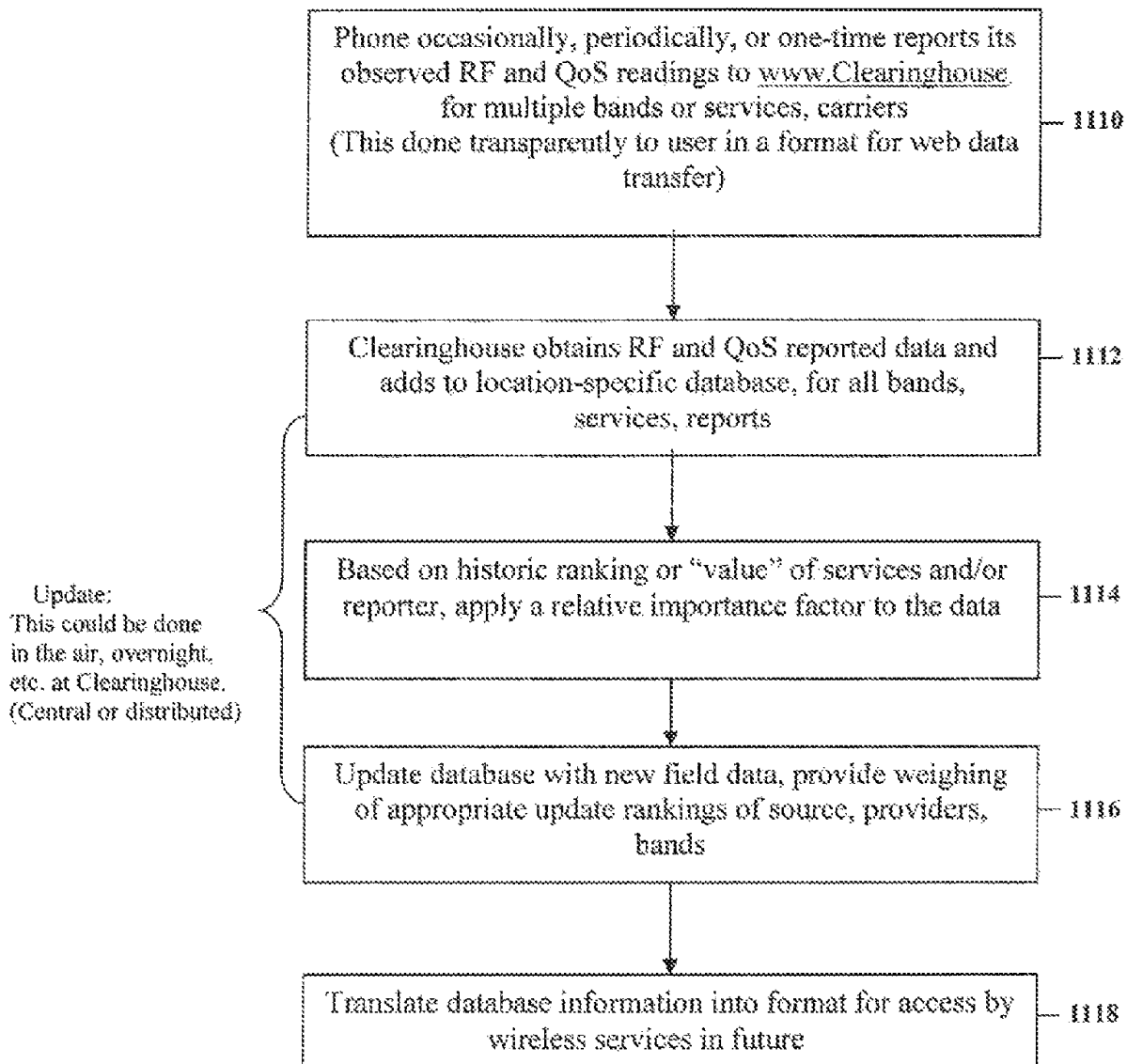
Structure: “a computer configured to analyze received and stored information to determine the frequency or tower being used by a device, and equivalents thereof.”

Claim 22 also depends from claim 12, “further comprising a means for determining one or more of towers or frequencies being used by one or more of said one or more mobile or fixed devices or end users.”

At step 1110 of the flow illustrated in Fig. 11, a wireless device sends the server information about the tower or frequency the device is using and about the location of the device, and at step 1112, the information is stored in a database.

EX1001, 28:50-29:55; Fig. 11:

Fig. 11



The patent also discloses the server maintaining or having access to a database of tower locations, including the frequencies used by those towers. EX1001, 7:14-47, 24:60-64. A POSITA would have understood that because the specification discloses that the clearinghouse has access to the location of the device, even if a

device does not report information about the tower or frequency it is using, the server can determine that information by comparing tower data (such as the tower's location) with information about the device, including its location. EX1002, ¶64; EX1001, 32:36-61.

Thus, the corresponding structure is “a computer configured to analyze received and stored information to determine the frequency or tower being used by a device, and equivalents thereof.” EX1002, ¶65. Cf. EX1005, 120 (“at least the [accused software] installed on each mobile device of an enterprise personnel end user, in combination with one or more cloud-based computers... configured to function as an analytics engine and the network insights dashboard, which collects MCC/MNC codes, determines carriers and frequency band usage, and presents such determinations on the network insight user interface...”).

VII. GROUNDS

A. Prior Art

1. Daley

U.S. Patent Application Publication 2007/0207800 (“Daley”) is prior art under at least pre-AIA 35 U.S.C. §§ 102(a) and 102(e), having been filed February 20, 2007, and published September 6, 2007, before the earliest possible effective filing date of the '925 Patent (September 10, 2007).

Daley describes a system for managing and monitoring mobile devices and the mobile networks to which they connect. EX1009, Abstract, [0031], [0032],

[0038], [0047]-[0056]. Daley Figure 1 illustrates the mobile device 107, its client-side software components, and the network operator's server-side components.

EX1009, Fig. 1, [0033], [0035].

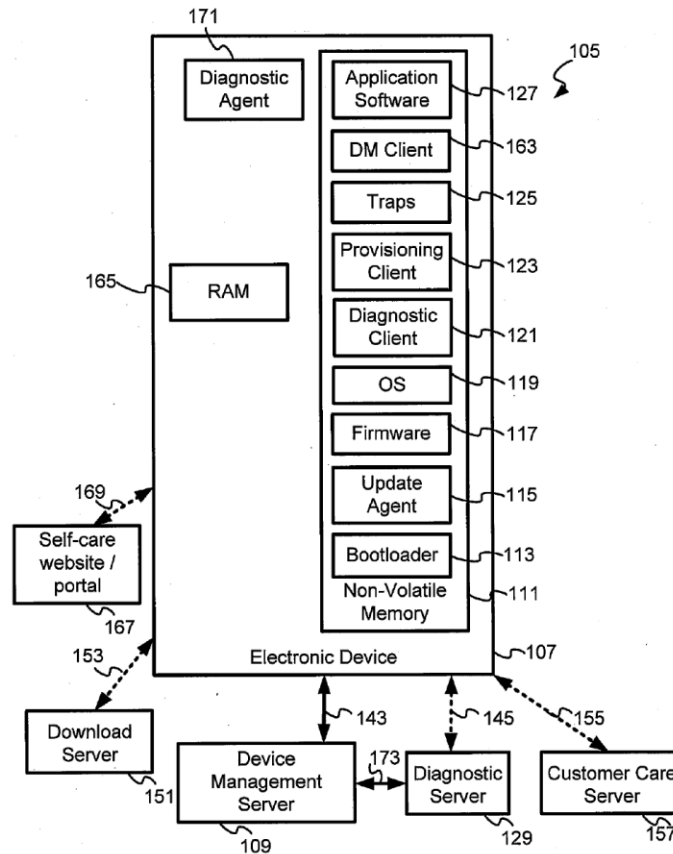
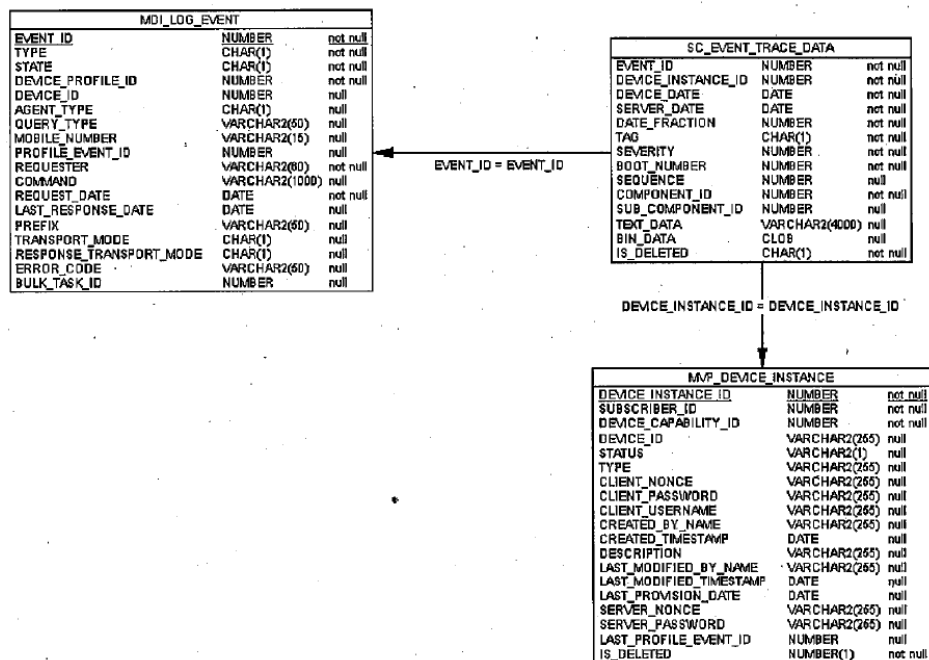


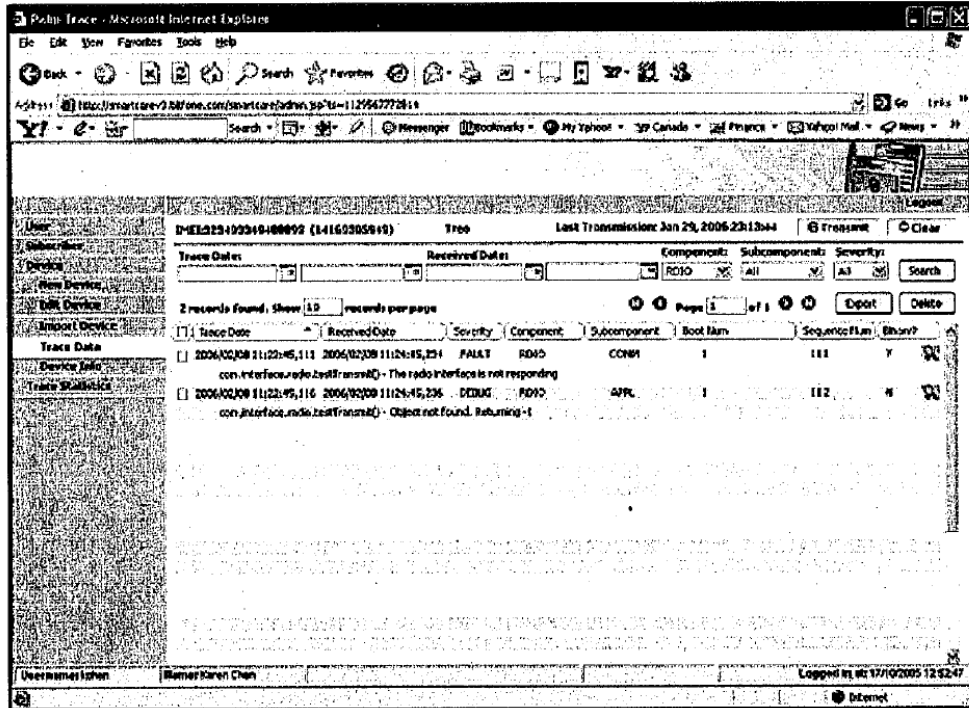
FIG. 1

The client software components include the device management client, diagnostic client, provisioning client, update agent, and traps client. EX1009, [0035]. These components configure, update, and monitor the mobile device. EX1009, [0035]-[0041]. Server components include the download server, device management server, diagnostic server, customer care server, and self-care website/portal. EX1009, [0033]. The client components communicate with the

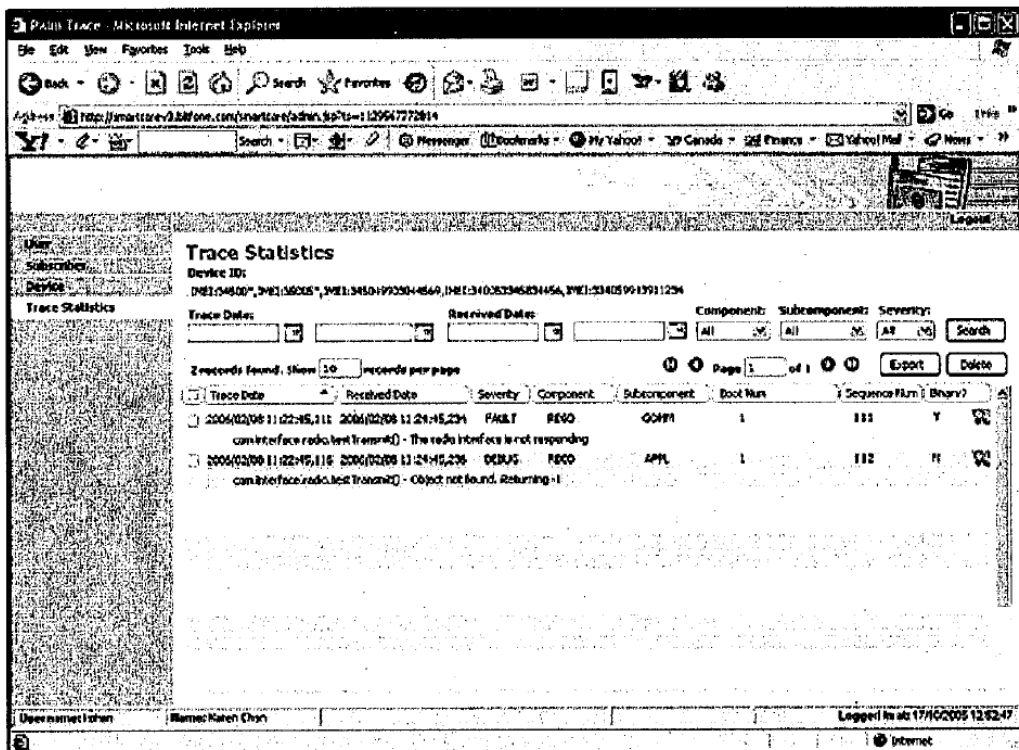
server components, allowing the network operator to remotely diagnose and resolve problems faced by the customer/subscriber. EX1009, [0034], [0038].

The client software generates and collects diagnostics, tracing, debugging, and network performance information. EX1009, [0039]-[0042]. This information is uploaded to the server components, where it is stored in a database and made available (e.g., through a web page) to a network operator or mobile device user. EX1009, [0044], [0059], [0072], [0202], [0215], [0242], [249], [252], [0273]-[0274], Fig. 14-18.





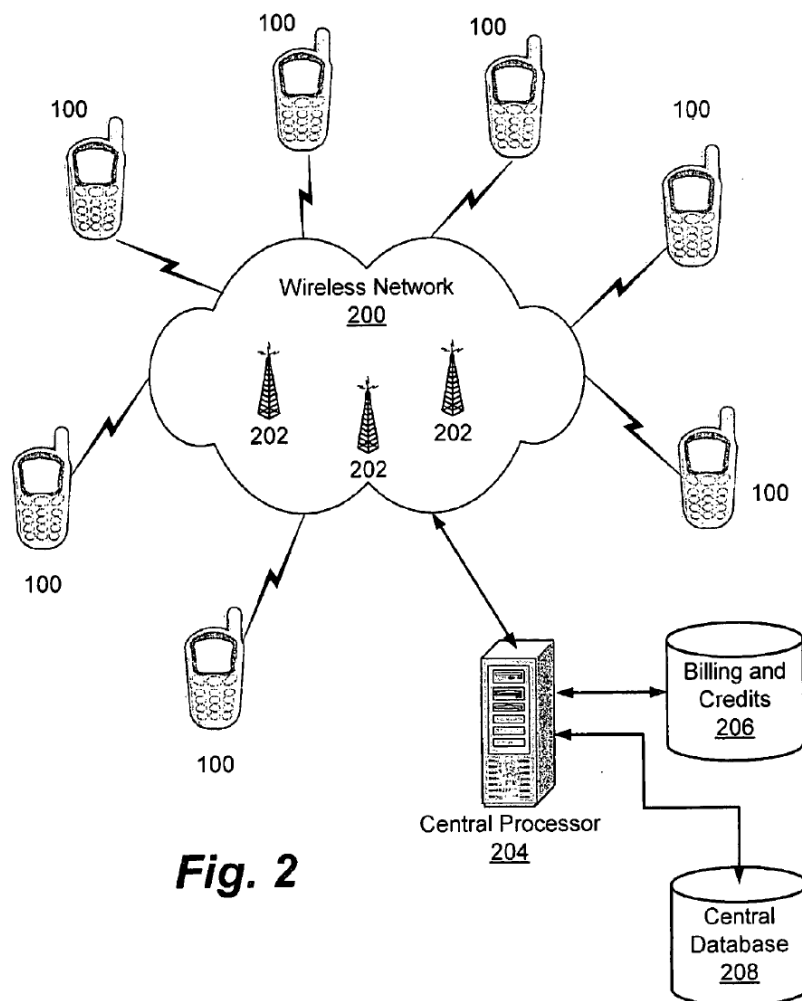
The network operator may analyze the collected information in aggregate to gather statistics across multiple mobile devices. EX1009, [0286]-[0290], Fig. 17.



2. Aaron

U.S. Patent Application Publication 2008/0305747 (“Aaron”) is prior art under at least pre-AIA 35 U.S.C. § 102(e), having been filed June 7, 2007 (before the earliest effective filing date of the ’925 Patent) and published December 11, 2008.

Aaron describes methods and systems for measuring the service quality of wireless telecommunications systems through collecting and measuring information from wireless devices. EX1010, Abstract, [0004]-[0005].



The wireless devices collect service quality information such as “the signal strength of a radio link between the wireless terminal 100 and a base station 202, the signal quality of a radio link between the wireless terminal 100 and a base station 202, and the occurrence of a dropped call. SNR (signal-to-noise ratio) may also be used.” EX1010, [0040]. The wireless devices determine their geographic location using GPS or based on the base stations they use. EX1010, [0006], [0042].

The information, including the location information, is sent to a server system that stores it in a central database. EX1010, [0036], [0037], [0043]. The wireless service provider may use the quality of service and location information to identify problems within the wireless communications system. EX1010, [0009], [0031], [0052], [0054].

3. Scherzer

U.S. Patent Application Publication 2008/0186882 (“Scherzer”) is prior art under at least pre-AIA 35 U.S.C. §§ 102(a) and (e), having been filed May 3, 2007 and published August 7, 2008, both before the earliest effective filing date of the ’925 Patent.

Scherzer discloses a system for collecting service quality information for wireless access points into a database that is then shared with devices to facilitate those devices connecting to access points based on the collected measurements. EX1011, Abstract. Client devices such as cellphones communicate with a server to

update and query a database containing measurements of quality and the geographic location of wireless access points. EX1011, [0068], Fig. 1.

Scherzer's database "stores historical data about radio broadband access resources" including "WiFi hot-spots locations and quality." EX1011, [0067]-[0068]. The server populates the database based on "connectivity reports" received from client devices. EX1011, [0069], [0071]. Client devices conduct radio surveys of the radio resources available at the client's geographic area, and for each radio resource, perform a "measurement trip" to collect "radio resource parameters." EX1011, [0080]-[0082].

Scherzer's client devices also receive quality and connection information from the server's database and may use the information when selecting and connecting to a wireless access point. EX1011, [0070]-[0071].

The server uses the information in the database to provide geographic maps of access points near a client device. EX1011, [0149]. The server may also provide a ranking of those access points based on the database's measurements of the their quality. EX1011, [0149]-[0151].

4. Chmaytelli

U.S. Patent Application Publication 2006/0253453 ("Chmaytelli") was filed on May 31, 2005 and published on November 9, 2006, and is prior art under at least pre-AIA 35 U.S.C. §§ 102(a) and (e).

Chmaytelli describes methods and systems for delivering ads to a mobile device with content tailored to the device's geographic location. EX1012, Abstract, [0010]-[0016]. Chmaytelli discloses an ad server for distributing ads that are associated with geographic areas of interest. EX1012, [0011]-[0016], [0075], [0080]. The location of the mobile device is determined (via, e.g., GPS or a recently-used tower). EX1012, [0070], [0078]-[0079], [0082]. When the mobile device is within an ad's targeted geographic area, the server triggers delivery of the ad to the device. EX1012, [0080]-[0084]. Ad views and usage are monitored to enhance targeted content generation and delivery, conversion rates, and user experiences. EX1012, [0043], [0049], [0051].

5. Dawson

Each proposed ground is alternatively, and without any other changes, presented in further combination with U.S. Patent Application Publication 2003/0216953 ("Dawson") to account for an alternative interpretation of *clearinghouse*.

Dawson was filed on May 15, 2002, and published on November 20, 2003. It is prior art under at least pre-AIA 35 U.S.C. §§ 102(a) and (e).

Dawson relates to "organizing sales activity for a wireless communications system." EX1013, [0007]. It discloses that providing wireless service to a potential customer involves: "securing the legal rights to install the requisite wireless

infrastructure” and being able to “provide an acceptable signal to the wireless infrastructure.” EX1013, [0005]-[0006]. Dawson discloses a database system and method for “organizing information relating to” fixed wireless communications service providers. EX1013, [0009]. The database focuses on “site centric” data management for deploying wireless infrastructure and provisioning wireless network services. EX1013, [0009], [0022]. The database captures information relating to “all aspects of the [wireless services] business,” including “portfolios of roof rights held by” or “that can be obtained by the wireless service provider,” “commissions,” “engineering data,” “leases,” “contacts,” etc. EX1013, [0019]. The system also integrates with signal coverage tools and mapping/terrain tools, tying signal strength evaluations to geographic data. EX1013, [0026]-[0027], Figs. 1, 3. Potential installation sites (*e.g.*, buildings or rooftop locations) are identified and classified based on “real estate friendliness and the ability of the wireless server’s network to provide an acceptable signal.” EX1013, [0009]. Wireless service providers can view and select sites for service provision or expansion. EX1013, [0028], [0031]. Sales managers can track all sales activities and sales data based on sites. EX1013, [0030]. Customers can determine coverage and request wireless service at their sites and exchange legal rights and terms. EX1013, [0034].

**B. Ground 1: Daley, Aaron, and Scherzer (and Optionally Dawson)
(1-7, 12-18, 22-25)**

1. Combination

Daley's mobile device monitoring and diagnostic system is augmented to leverage the mobile device geographic location capabilities and access point quality measurement collection and use, as disclosed by Aaron and Scherzer. EX1002, ¶96. If necessitated by the term *clearinghouse*, it would have been obvious to further modify the system to provide support for telecommunications infrastructure procurement, as disclosed by Dawson. EX1002, ¶96.

Daley, Aaron, and Scherzer are all analogous art because they all incorporate the collection of data, including quality of service information, from mobile devices to a central server for review, analysis, and issue remediation and/or service improvement. EX1002, ¶97. Dawson is also analogous art, at least because it is directed to the collection and presentation of information suitable for a telecommunications infrastructure procurement clearinghouse that is similarly designed to improve and expand wireless services and thereby remediate quality of service issues with the wireless network. EX1002, ¶97.

2. Motivations to Combine

Adding Device Location Information Improves Problem Assessment and Remediation: Daley is directed to collecting information about a mobile device and transmitting that to a server, allowing end-users of the server system to remotely

diagnose and resolve problems faced by subscribers and allowing subscribers to engage in self-help. EX1009, [0033]-[0034], [0038]-[0042], [0215]-[0216], Figs. 1, 4, 6-18. A POSITA would have known that when assessing (and remediating) issues associated with a wireless device, especially issues with the network performance of the device, it can be helpful to know (1) the device's location at the time of the monitored performance and (2) information about the infrastructure (*e.g.*, base stations or towers) with which the device was or could have been in communication. EX1002, ¶99.

Confirming this common sense, Aaron and Scherzer demonstrate that a POSITA would have known about the benefits of having such information in a device monitoring and management system. EX1002, ¶¶99-100. A POSITA would therefore have looked to art, including Aaron and Scherzer, that describes collecting and leveraging device location information in a system like Daley's. EX1002, ¶¶99-100.

Aaron, like Daley, is directed to collecting and measuring service quality information from wireless devices. EX1002, ¶100. Aaron discloses more detail about the type of network performance data disclosed in Daley, specifically reciting additional infrastructure-related parameters such as "signal strength," "signal quality," "dropped call[s]," and signal-to-noise ratios. EX1010, [0040]. Aaron also discloses collecting information about the geographic location of the wireless device

when service quality information is collected. EX1010, [0006], [0042]. Scherzer is similarly directed to improving the performance of a wireless device based in part on collecting data from that device into a server-side database. EX1002, ¶100. The database includes the geographic location of wireless access points and both real-time and historical data about their performance. EX1011, [0067]-[0069], Fig. 1. A POSITA would have looked to the teachings of Scherzer and Aaron when considering how to add location related features to Daley. EX1002, ¶¶99-101.

Collecting Base Station Information Improves Problem Assessment and Remediation: A POSITA also would have been aware that because mobile devices were oftentimes within range of multiple cell towers or access points (base stations), connecting a mobile device to a different base station (*e.g.*, switching to a new base station to maintain service quality as the mobile device moves or if performance on the current base station degrades) was a common exercise. EX1002, ¶102. Information about handovers (or handoffs), including transitions from a home network to a roaming network, could be both a useful diagnostic tool (*e.g.*, to determine whether an issue is rooted in the device or in the network infrastructure). EX1002, ¶102. Allowing or encouraging a connection to another base station or tower is also a potential remedy (*e.g.*, if another base station would be more performant or less expensive). EX1002, ¶102. Handovers might occur based on factors including service quality measurements, cell load and capacity, and mobility

patterns (e.g., speed of the mobile device movement). EX1002, ¶102. They were also influenced by the location of the cell tower, including relative to the device, and the properties of the tower (e.g., transmission bands, load, carrier affiliation). EX1002, ¶102.

Daley explicitly discloses monitoring “roaming transitions” (EX1009, [0145]), which involve base station transitions. EX1002, ¶102. A POSITA would have been motivated to augment Daley with additional base-station specific monitoring and configuration capabilities, because, for example, having such information can help determine if a device is optimally configured for use with its current base station, if its configuration settings should be changed, or whether to connect to a different base station. EX1002, ¶¶102-103. Daley as augmented with location-related collection and processing (e.g., as disclosed in Aaron or Scherzer) would have invited these additional capabilities with additional vigor, because customers and carriers would expect such a system to leverage its access to location information by providing location-related functionality such as base station recommendations or rankings. EX1002, ¶103.

Both collecting real-time location data and retaining that data for analysis further a goal of Daley—improving user experiences with mobile devices as they are on the move. EX1002, ¶104. For example, real-time location data facilitates providing configuration information, including lists of relevant towers and how best

to connect to them, to resolve immediate problems or mitigate ongoing risks. EX1002, ¶104. Historical location data can facilitate more systemic analysis by identifying locations in which customers frequently encounter issues or by identifying common configurations in devices that do not experience problems in a given location. EX1002, ¶104. Indeed, Daley specifically contemplates “anticipatory tracing” or collection of data “for a problem that is expected to occur at some time in the future.” EX1009, [0060]. Moreover, a POSITA would have been aware of related art, such as Scherzer, that discloses such systems and their advantages. EX1002, ¶¶104-106.

A POSITA would therefore have looked to art that describes collecting, providing, and using information about base stations and access points in the context of a system like Daley or Daley as augmented per Aaron. EX1002, ¶¶105-106.

Scherzer discloses such a system, and a POSITA would have looked to its teachings when considering how to add base-station related features to Daley (or Daley as augmented per Aaron). EX1002, ¶¶105-106.

Collecting **Both** Base Station Information and Location Information Further Improves Problem Assessment and Remediation: A POSITA would have known that having both location and base station information can help determine whether an issue is location-specific (*e.g.*, dues to a storm, power outage, or some source of

interference), base station specific (*e.g.*, excessive demand, a misconfiguration, or a malfunction), or a device or user specific issue. EX1002, ¶107.

A POSITA would also have understood that it was in the best interests of customers and carriers to expeditiously and accurately remedy, and not just diagnose, a wide range of issues. EX1002, ¶108. A POSITA would have understood that by augmenting Daley's system with location and base station information, the system would have been enabled to address a wider range of remedial actions, including configuring a device to avoid interference and optimize connectivity, avoiding excessive power use if there appears to be a regional power outage, or connecting to alternative base stations if a base station appears overloaded or unavailable. EX1002, ¶108. The latter remedy, in particular, was known to possibly have financial implications for a device user (*e.g.*, because of roaming or off-network fees). EX1002, ¶109. A POSITA would have understood that in some circumstances it would be appropriate (or even required) to empower the end user to make the final decision as to what base stations to connect to because connecting to certain base stations might have incurred additional end user cost (such as by triggering roaming charges). EX1002, ¶109. Therefore, a POSITA would have known that it would be advantageous to be able to provide a list of available base stations (ideally ranked according to various metrics such as availability,

performance, or cost) and allow the device user to make the final decision. EX1002, ¶109.

A POSITA would also have been motivated by the knowledge that enhancing Daley to provide these features would likely provide a competitive advantage (e.g., by improving customer satisfaction and retention) or at least be necessary to avoid competitive disadvantage as these features became “table stakes.” EX1002, ¶110.

Scherzer would have provided a POSITA with additional motivations to implement this functionality in a wireless device monitoring and management system. EX1002, ¶¶109-111.

Knowing that these features and functions were desirable to have in a system like Daley’s, a POSITA would have recognized that Aaron and Scherzer disclose implementing them in systems that are technically similar to that of Daley. EX1002, ¶111.

Network Expansion is a Natural Complement to Performance Tracking and Problem Identification: A POSITA would have known that some of the performance issues that would have been identified by a system like Daley would be associated with overall network capacity and infrastructure deployment, and that a solution to such issues might be to expand the network’s infrastructure, e.g., by deploying more base stations or towers. EX1002, ¶112. Indeed, a POSITA would have recognized that data encompassing network capacity and the location of users and their devices

is a key input into longer-term capacity planning. EX1002, ¶112. Moreover, for business and competitive reasons, carriers would have been motivated to expand the network to alleviate systemic issues and strategically improve capacity and performance by deploying infrastructure to meet observed customer demand. EX1002, ¶112.

Daley discloses generating diagnostic statistics for groups of devices. EX1009, [0277], Fig. 17. Aaron recognizes that quality-of-service maps allow technicians to identify problems and determine whether changes are needed to the communication network or its components. EX1010, [0036]. A POSITA would have been motivated to incorporate the diagnostic statistics and quality-of-service maps to improve the information available to technicians regarding the status of the wireless communication network, its components, and the network services because the combination would allow technicians to analyze the network's behavior and identify patterns related to the timing and location of service degradation, facilitating both issue remediation and issue prevention. EX1009, [0060]; EX1002, ¶¶113. A POSITA would have recognized that it is commercially advantageous to manage the wireless communication network based on comprehensive quality-of-service data from mobile devices. EX1002, ¶113.

A PHOSITA would have recognized the complementary nature of (1) monitoring, diagnostic, and management systems like Daley (including as

augmented with location and access point capabilities) and (2) systems supporting network expansion and been motivated to combine the two because the same information that is reported or monitored regarding subscriber's experience of network performance (*e.g.*, a system like Daley) is highly relevant to future network planning. EX1002 ¶114. For example, the performance of wireless devices at a particular location, the demand from wireless devices on the network at a particular location, and the presence of user devices in locations with no adequate carrier infrastructure all inform whether and to what extent a carrier should pursue deployment of additional network infrastructure supporting that location. EX1002, ¶114.

Further, a POSITA would have recognized the technical efficiency of consolidating data repositories and processing infrastructure to serve multiple operational needs, such as network expansion planning and infrastructure procurement. EX1002, ¶115. The use of a unified data platform would reduce duplicated storage, decrease system complexity, lower costs from redundant data acquisitions, minimize data synchronization challenges, and enable consistent analytics across operational and strategic functions. EX1002, ¶115.

So motivated, a POSITA would have looked to the teachings of references like Dawson. EX1002, ¶116. Dawson discusses integrating signal information from systems such as deciBel Planner and MapInfo with a property and infrastructure

clearinghouse (EX1013, [0026])). Further, a POSITA would have recognized that Dawson and Aaron, for example, both address accurate characterization of network coverage and performance for a wireless service provider. EX1002, ¶116. Dawson discloses that properties under consideration as expansion points may undergo two different evaluations: is procurement feasible (*e.g.*, can rights to the property be secured and exercised) and is it helpful (*e.g.*, can a serviceable signal can be supplied to the site). EX1013, [0023]-[0027]; EX1002, ¶117. Dawson uses software-based estimation of signal strength and overlays that with map and terrain data to provide an intuitive view. EX1013, [0026]-[0027], [0034], Fig 3; EX1002, ¶117. Aaron teaches recording the location and signal strength of mobile devices and using that to create a quality of service map. EX1010, [0036]; EX1002, ¶117. Incorporating Dawson's database into the database of the underlying combination, including the predictive network strength data disclosed by Dawson, allows for a system that would have been enhanced by having both predictive performance information and actual data that can validate and refine that predictive data. EX1002, ¶118. Also, supplementing actual data about network quality collected from devices with software estimation of network quality can improve the data available to users and carriers. EX1002, ¶118.

3. Reasonable Expectation of Success

A POSITA would have had a reasonable expectation of success in adding location and access point capabilities to Daley, including as disclosed by Aaron and Scherzer. EX1002, ¶119.

Modifications to Daley's mobile devices to collect geographic location, as disclosed in Aaron, and access point information, as disclosed in Scherzer, would have been straightforward and well within the abilities of a POSITA because this is the same type of problem, with the same type of solution, as the data collection already disclosed by Daley. EX1002, ¶119. Similarly, a POSITA would have known that transmitting this additional data would have been accomplished by simply adding additional header and content fields to the transmission protocol disclosed by Daley, with a minimal impact on consumed bandwidth. EX1002, ¶120.

On the server side, a POSITA would have known how to extend the databases disclosed by Daley. EX1002, ¶121. For example, if a relational database is used a POSITA would know to add additional columns or tables for the additional datatypes and relationships, such as a table for access points or a column to record the location of a device at the time of collection. EX1002, ¶121. Adding user interface pages to support this additional content and functionality would have been well within the skillset of a POSITA, requiring the same type of work that would have been necessary to create the pages disclosed in Daley. EX1002, ¶122.

A POSITA would also have understood that information about the location of a wireless device and information about the location and properties of wireless infrastructure could have been sourced or determined in multiple ways from multiple sources, and a POSITA would have known how to implement each of the various options. EX1002, ¶123. For example, it was known that a device could determine its location, with varying degrees of accuracy and precision, by using GPS (integrated into the device or otherwise), measuring the signal delay to an emitter of known location, triangulation with multiple emitters, comparison of observed network performance to devices known to be in roughly similar locations, etc. EX1002, ¶123. A POSITA would have understood that methods including advanced forward link trilateration (AFLT), round trip delay (RTD), cell/sector centroids, etc., were well known in the art and embodied in commercial solutions such as Qualcomm's gpsOne®. EX1018, 330-33; EX1019, 341-43; EX1020, [0005]-[0007], [0068]-[0095]; EX1002, ¶124. The location of a base station could be determined from commercial databases, such as Qualcomm's Base Station Almanac. EX1020, [0008]-[0016]; EX1002, ¶124.

A POSITA would have known that there were publicly accessible registries and commercial databases of wireless infrastructure like cell towers and base stations such as the FCC's Antenna Structure Registration (ASR) and the TowerSource online site-location tool. EX1021, 13; EX1022; EX1023; EX1024;

EX1002, ¶125. Such registries combined the infrastructure's location with wireless communication properties and the identity of the associated carrier. *Id.* A POSITA would have found it straightforward to include tower and base station information in a management system like Daley. EX1002, ¶125.

It was also well known at the time that the information stored on a wireless device included the device's home network (for GSM devices, the home PLMN was stored as part of the IMSI) and the identifier of the carrier to which the device is currently connected (stored as a serving or registered PLMN). EX1002 ¶¶126-127; EX1025, 10-15, 29; EX1015, 102-104, 113-114; EX1032; EX1034; EX1036. For CDMA devices, the ESN, MEID, and SID number served similar purposes. EX1002, ¶¶126-128. A POSITA would also have known that cell towers broadcast identifiers that identified, *inter alia*, the tower's carrier and that mobile phones could evaluate those identifiers to determine if the tower is part of the home network or roaming network. EX1002, ¶¶126-128; EX1038, 224-227. A POSITA would have understood that having access to a tower's network identity and knowing a device's home network identity (*e.g.*, by collecting this information from devices or third-party databases) advanced the device monitoring and management goals of Daley and Aaron and would have provided additional avenues to add value to a system like that of Daley. EX1002, ¶129. A POSITA would also have understood that the well-

known use of these identifiers facilitated implementation of this functionality by establishing standard datapoints to collect and to set. EX1002, ¶129.

A POSITA would also have had a reasonable expectation of success in augmenting Daley (as extended per Aaron and Scherzer) with certain aspects of Dawson. EX1002, ¶130. Integrating Dawson's procurement-supporting data into the underlying database would have been a straightforward matter of adding additional tables, columns, and relationship to that database, and populating it the same as the already-disclosed data. It would have been similarly straightforward to add support for Dawson's procurement-enabling reports and queries. EX1002, ¶¶130-131.

In sum, the above-discussed concepts were well-established and compatible, and integrating them into the system of Daley would have been straightforward and predictable. EX1002, ¶131.

4. Analysis

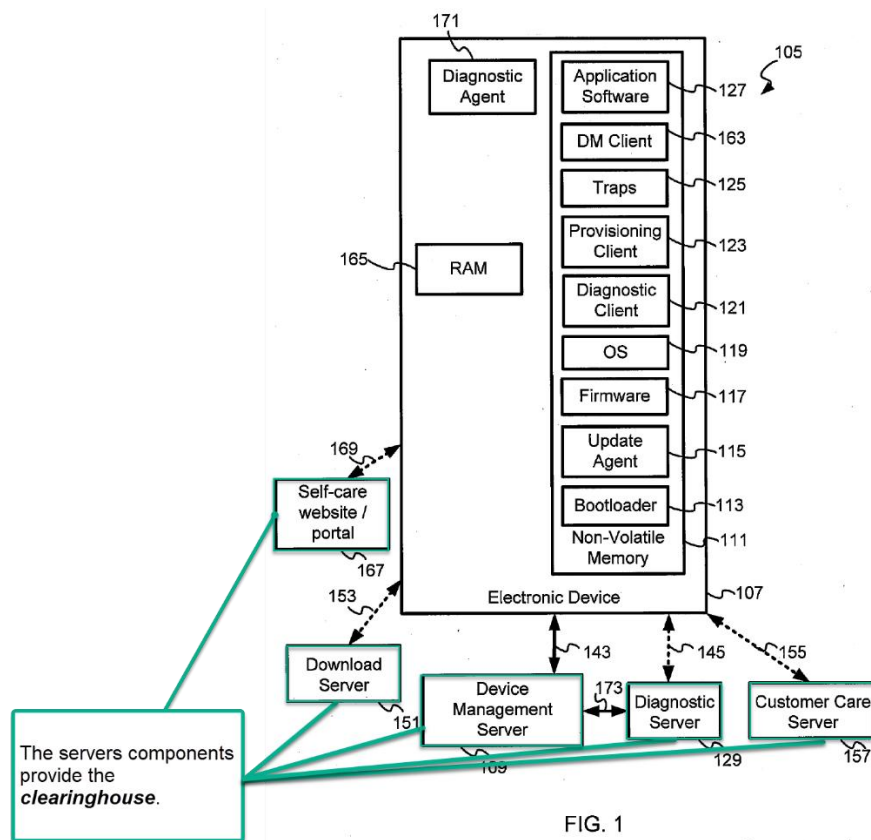
(a) Claim 1

(i) 1[pre]²

Assuming the preamble is limiting, the combination renders obvious *a clearinghouse for communications networks* and *a method for providing* the same.

² The full text of the claims is set forth in the table of claims.

Daley discloses methods and systems that enables intermediaries such as a system operator to manage and perform remote diagnostics of mobile devices on mobile networks, *i.e.*, **communications networks**. EX1009, Abstract. The system is a **clearinghouse** for such networks: it includes a diagnostic server that receives and stores monitoring, tracing, configuration, and diagnostic data from diagnostic client software running on each mobile device (EX1009, [0039]-[0040], [0215]-[0216]) and web pages that provide Internet-based interfaces into the collected data to users of the system, including the wireless network provider and the customer (EX1009, Figs. 15-18); EX1002, ¶¶133-134. Daley's Figure 1 illustrates the server components of the system:

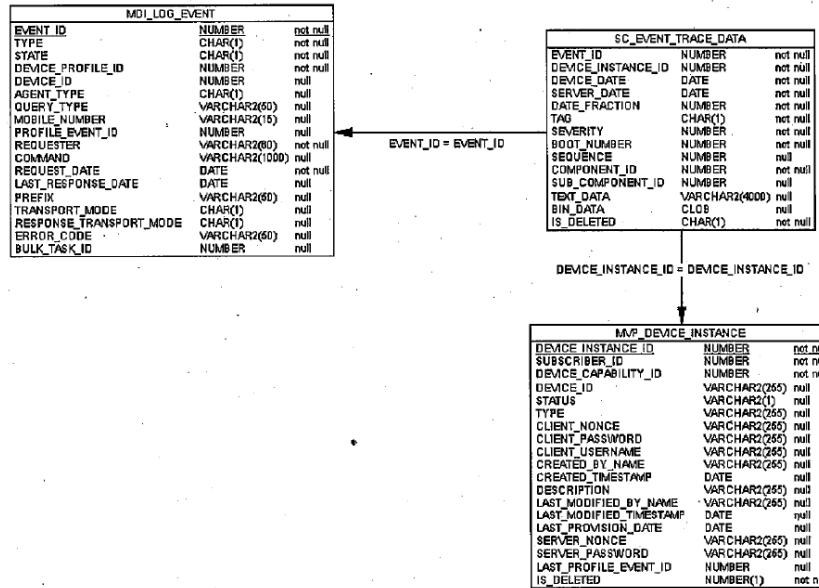


In the alternative, if ***clearinghouse*** refers to a system that facilitates the procurement of property and infrastructure for a telecommunications system, then it is rendered obvious by the combination with Dawson. Dawson's integrated database system 800 organizes sales activities for telecommunication assets including properties where wireless telecommunication infrastructure can be deployed, such as buildings or roof rights. EX1013, [0002], Figs. 1, 8; EX1002, ¶135. Users such as real estate agents, property owners, fixed wireless communications service providers, or wireless service users can access, search, and update the contents of the database. EX1013, [0023]-[0025]; EX1002, ¶¶135-137.

(ii) 1[a]

The combination renders obvious this limitation. EX1002, ¶¶138-148.

providing one or more computers which interface with a database: Daley discloses a “diagnostic server” (***one or more computers***) that receives diagnostic tracing and log data from mobile devices and stores it in a database (***which interface with a database***). EX1009, [0071], [0215], [0216]; EX1002, ¶139. Daley Figure 14 provides a representation of the database tables containing the diagnostic tracing and log data. *See also* EX1009, [0249], [0252]; EX1002, ¶140.

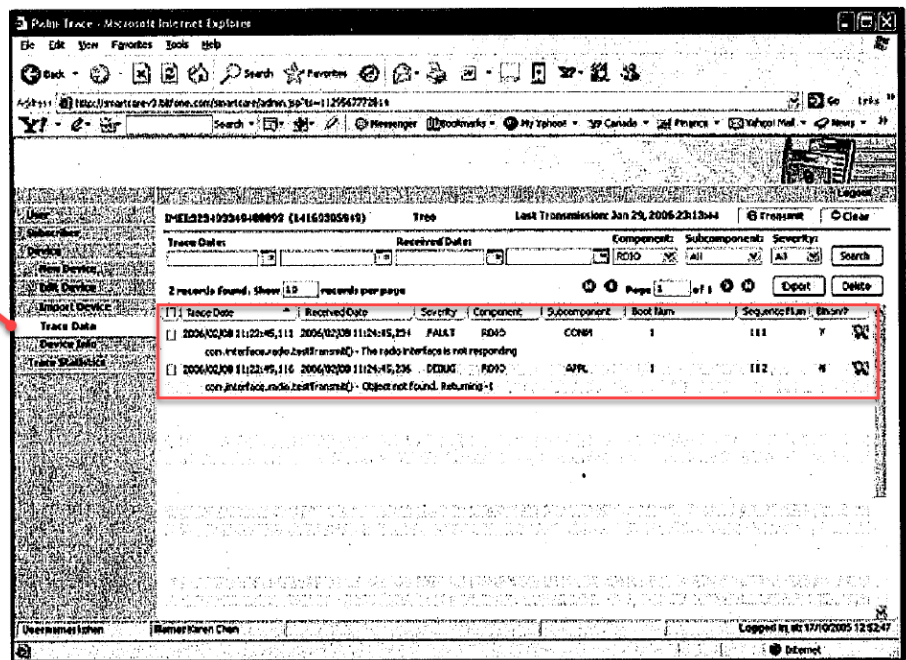


The diagnostic server *interface[s] with a database*, e.g., when it writes the diagnostic tracing and log data to the database after it receives the data from the mobile device. EX1009, [0215]; EX1002, ¶141.

Additionally, Daley discloses web pages that *interface with [the] database* by “displaying diagnostic/trace data from ... an electronic device” as seen in Figures 15 and 16. EX1009, [0273]-[0274]. The web pages are part of, e.g., Daley’s “self-care website/portal 167.” EX1009, [0033]-[0034]. A POSITA would have understood that this functionality requires a webserver that interfaces with the database and processes the query results into a web page suitable for a web browser. EX1002, ¶142. Daley discloses a variety of ways to implement its servers: the network server elements illustrated in Fig. 1 including the diagnostic server, the customer care server, the self-care website/portal, etc., may be separate or co-resident in any combination (EX1009, [0033]-[0034]), the diagnostic server/trace

server may be implemented on separate servers or sets of servers (EX1009, [0071]), and the diagnostic/trace server may be implemented with a web-based user interface (EX1009, [0216]). EX1002, ¶142. A POSITA would have understood that the functionality of the diagnostics server, trace server, and webserver could have been implemented in a variety of ways (*e.g.*, the diagnostic server may be fully integrated with the trace server and the webserver, the three may be separately deployed on different servers, or some hybrid mode may be adopted). EX1002, ¶142. The collective functionalities and components satisfy the *one or more computers* limitation. EX1002, ¶142.

Trace data from the **database** is displayed in the web page.



the database including performance, quality of service, or perceived communications service quality or value information, experienced or desired, for one or more mobile or fixed devices or end users, for one or more geographic

locations of said one or more mobile or fixed devices, or end users: Daley’s diagnostic server collects diagnostic tracing and log data from mobile devices (*one or more mobile ... devices*, which are also tied to *end users*) through the diagnostic client, and that diagnostic data includes “network *performance* data.” EX1009, [0041]; EX1002, ¶144. Daley’s diagnostic client also collects log data that includes *quality of service* information by logging “discrete events such as low/high signal or roaming transitions” that reflect the *experience[]* of the mobile device. EX1009, [0145]; EX1002, ¶145; *see also e.g.* EX1009, [0270] (an exemplary log entry: “2006/01/23 11:23:33 2006/01/23 11:26:12 12 22 DEBUG RADI SGNL Signal ‘extremely low’, problem”). Signal strength is a *quality of service* measurement because it measures the wireless service’s level of availability and quality of radio frequency coverage. The diagnostic server receives this information and stores it in a database. EX1009, [0215]-[0216]; EX1002, ¶146. Daley provides web pages that display device information including: “the Device IMEI/ESN, Manufacturer, Model, Platform, Revision, Processor, OS Version, Free Memory, **Signal Strength**, and Data Connection Settings, for example.” EX1009, [0291]; EX1002, ¶146.

Additionally, Aaron discloses a database containing network *performance* and *quality of service* information *for one or more geographic locations of said one or more mobile or fixed devices*. Aaron discloses supplementing *performance* and *quality of service* measurements collected on mobile devices with the *geographic*

location[] of the mobile device at the time of measurement. EX1010, [0004]; EX1002, ¶147. Aaron further discloses storing the quality of service information alongside the **geographic location[]** of the mobile device in a database where information from **one or more** mobile devices is aggregated into quality-of-service maps. EX1010, [0031], [0036], [0037], [0043]; EX1002, ¶148.

As set forth in the next two subsections, the combination also renders obvious the database **including... one or more of the records** of the next two limitations.

(iii) 1[a][i]

The combination renders obvious this limitation. EX1002, ¶¶150-157.

Daley discloses capturing and storing information about transitions from being connected to a native network to a roaming network. EX1009 [145], [270]-[271], [291]. A POSITA would have understood that this information includes the identity of the old tower and the identity of the new tower. EX1002, ¶151. Daley therefore discloses a database containing **records pertaining to one or more telecommunications carriers which identify infrastructure type** (*e.g.*, the type of a carrier's cellular network, the bands it supports, and whether a tower is affiliated with a carrier providing the phone's native network), to correlate with the roaming events. EX1002, ¶¶152-155.

Also, Daley discloses that it collects and stores a phone's identity: its IMEI/ESN. EX1009, [0217], [0226]-[0236]. A POSITA would have known that

the IMEI (GSM Networks) and ESN (CDMA networks) correlate a device with a mobile carrier. EX1002, ¶¶126-128. A POSITA implementing a system like Daley, including as augmented by Aaron, would have been motivated to also capture, e.g., the IMSI number from a GSM device. *See id.* Daley discloses using the captured IMEI as part of identifying a device with a subscriber to a carrier's network (EX1009, [0227]-[0241]), but a POSITA would have known that while the IMEI uniquely identifies a phone, it is the IMSI (associated with a phone's SIM card) that uniquely identified the subscriber and the user's subscription and is used, for example, for authentication and billing. EX1002, ¶127; EX1015 at 102-103, 113-114. Aaron discloses integration with billing systems to provide credits to subscribers who contribute to the system. EX1010, [0037]. A POSITA would have understood that this crediting would be facilitated or enabled by collecting the IMSI at the time of contribution. EX1002 ¶127.

Included in the IMSI is the HNI (home network identifier) and the MSIN (mobile subscription identification number). EX1002 ¶¶126-127; EX1025, 10-11. The HNI includes a mobile country code (MCC) and a mobile network code (MNC) that together identify the home network (carrier) of the device while the MSIN uniquely identifies a subscriber on that carrier's network. EX1025, 10-11; EX1002, ¶¶126-128. EX1025, 10-11; EX1002, ¶¶126-128. The IMSI is therefore also ***records pertaining to one or more telecommunications carriers which identify***

infrastructure type. EX1002 ¶156. *See also* EX1005, 10-11, where Patent Owner identifies collection of the MCC/MNC codes for this element.

Aaron also describes “quality of service maps” that help the wireless service provider analyze, identify, and rectify problems, “in real time during use,” and can be used by technicians to “determine if problems or changes warrant any adjustment to the wireless communications network or its components.” EX1010, [0003], [0009], [0021], [0031], [0035]-[0037], [0052], [0054]; EX1002, ¶156. A POSITA would have understood that to facilitate the work of the technicians, it would have been natural to store information about the identity and location of network infrastructure components that might need further assessment or remediation (*records pertaining to one or more telecommunications carriers which identify infrastructure... location information*). EX1002, ¶156.

(iv) 1[a][iii]

Because the combination renders obvious 1[a][i], and because 1[a] requires **one or more of** 1[a][i] and 1[a][ii], the combination does not need to render obvious this limitation. EX1002, ¶149. Nonetheless, it does. EX1002, ¶¶157-163.

For example, Aaron discloses creating and updating “quality of service maps,” which it defines as “including all types of maps and similar depictions relating to a wireless communications system” (EX1010, [0021]) and using such maps to, *inter alia*, assess network infrastructure (EX1010, [0036]). A POSITA

would have understood that Aaron’s quality of service maps included contextual **public records**, such as **addresses**, **maps**, or **mapping information** for the geographic locations within the quality of service map, because without that information a technician could not reasonably correlate the mapped quality of service with a location or infrastructure. EX1002, ¶158. To the extent not disclosed by Aaron, a POSITA’s common sense would have motivated the inclusion of such information in the quality-of-service maps for the same reason. *Id.*

Relatedly, Aaron contemplates the impact of “environmental changes (e.g., new building construction, new metallic objects such as fences, etc.)” on quality of service at particular locations. EX1010, [0002]. A POSITA would have recognized the benefit of supplementing quality of service maps with **addresses** to identify potential buildings or other environmental factors and to use public **mapping** and **zoning information** to maintain current information about environment changes. EX1002, ¶160-161.

Also, if needed (such as when Aaron’s system is maintained outside of a particular carrier), a POSITA would have found it straightforward to source base station information including location and associated carrier (**information about one or more carriers serving said geographic locations**), from public records such as the FCC’s Antenna Structure Registration (ASR) system. EX1002, ¶159.

For each of the above, a POSITA would have found it obvious to store this information in the system's database (which Aaron discloses is used to draw the maps), as opposed to, e.g., retrieving the data as needed from the source, at least because after the data is stored locally, access would be faster than if had to be retrieved remotely and because local storage improves availability due to network issues or the availability of the original source. EX1010, [0037]; EX1002, ¶¶158-159, 161.

Moreover, Scherzer discloses the database maintaining location information for access points that includes **public records** via “wireless regions” defined by “cities, parks, groups of cities, states and other geographical areas of interest” (**maps, location coordinates, or mapping information for said geographic locations**). EX1011, [0131]; EX1002, ¶162.

As set forth above, a POSITA would have found it obvious to combine these aspects of Aaron and Scherzer with Daley. EX1002, ¶163.

(v) 1[b]

The combination renders obvious this limitation. EX1002, ¶¶164-168.

Daley discloses continuously collecting diagnostic and tracing log data from mobile devices to **updat[e]** the database. EX1009, [0039]. **Updating** the collected data **in said database** may be triggered by: “[l]og data reaching a pre-specified log message threshold,” “[a] message matching specific filter criteria,” or “[p]eriodic

triggers, based on a configured time interval” (***automatically***). EX1009, [0084]-[0088], [0151]-[0156]; EX1002, ¶¶165-166. It may also be done ***manually***, e.g., at the request of a customer service representative (EX1009, [0038]) or through a web page that allows a user to trigger the upload of collected data from the mobile device to the diagnostic server database (EX1009, [275], [0297]). EX1002, ¶167.

The data is sent to the diagnostic server over the air via the cellular network and using HTTP, that is, a web interface (***one or more electronic interfaces***), to provide data to the database servers and associated systems (i.e. ***using one or more electronic interfaces to said one or more computers***). EX1009, [0205], [0242]; EX1002, ¶168.

(vi) 1[c]

The combination renders obvious this limitation. EX1002, ¶¶169-173.

Daley discloses ***permitting*** customer service representatives and engineers (***one or more telecommunications carriers***) to diagnose problems with a mobile device encountered by a customer (***to review, catalog, store, view, use, or sort said... information... in said database***). EX1009, [0038], [0060] (“tracing data transferred by the electronic device 107 to the diagnostic server 129 may be processed and provided as viewable data by the diagnostic server 129, for analysis by a human engineer for subsequent corrective steps”); EX1002, ¶170. Daley also discloses that such a user may view and search diagnostic and trace data. EX1009, [0119], [0254];

EX1002, ¶171. And Daley’s system includes web page interfaces that allow a user to *review, catalog, store, view, use, or sort said performance, quality of service ... information*. EX1009, [0273]-[0274], [0290]-[0291], Figs. 15-17; EX1002, ¶¶172-173.

(vii) 1[d]

The combination renders obvious this limitation. EX1002, ¶¶174-177.

Daley discloses a diagnostic client (*application[] operable with said ... mobile ... device[]*) that collects diagnostic and trace data on the mobile device (*obtaining said performance or quality of service ... information*). EX1009, Abstract, [0039]; EX1002, ¶175. As discussed above regarding limitation 1[a][i], the data collected by the diagnostic client includes “network performance data” (*performance or quality of service ... information*). EX1009, [0041]; EX1002, ¶¶176-177.

(viii) 1[e]

The combination renders obvious this limitation. EX1002, ¶¶178-181.

Daley discloses the mobile device uploading, *i.e. providing*, the *performance or quality of service ... information* to the diagnostic server and its database. EX1009, [0039]; EX1002, ¶179. Daley describes a “Log Transfer Module” or “Uploader” of the diagnostic client for “moving log messages from internal log memory to one or more external recipients.” EX1009, [0127]; EX1002, ¶179. For

example, the transfer module may “transfer[] the data to the diagnostic/trace server OTA using TCP/IP” or “HTTP” (*to said one or more electronic interfaces*). EX1009, [0180]-[0181], [0201]-[0205]; EX1002, ¶¶180-181.

(ix) 1[f]

The combination renders obvious this limitation. EX1002, ¶¶182-186.

As set forth above, Daley’s diagnostic and trace data (*said performance or quality of service information...*) *includes information from ... one or more mobile or fixed devices*. EX1009, [0286]-[0290], Fig. 17; EX1002, ¶183. The quality of service information may be tied to a carrier’s cellular network type, for example, “characterized by an IMEI/ESN.” EX1009, [0217]; EX1002, ¶184. Further, the data includes “signal strength” collected across multiple devices, which is *information from one or more bands* because individual devices may use multiple bands and different devices may use different bands. EX1002, ¶¶185-186.

(b) Claim 2

The combination renders obvious this claim. EX1002, ¶¶187-192.

Daley’s database includes records for subscribers to the wireless carrier network (*said database includes... records for said one or more end users...*). EX1009, [0217], [0221]-[0227] (the database includes subscriber properties such as name and contact information); EX1002, ¶188. The database also includes records identifying an association between a subscriber and “one or more electronic devices”

i.e. devices ... owned, controlled or used by said ... end user[]. EX1009, [0217], [223]; EX1002, ¶189. Figure 9 displays “an exemplary web page user interface 900 for editing entries in a database of Subscribers,” and includes an association of the subscriber to a mobile device. EX1002, ¶190.

Edit Subscriber

First Name: Karen
Last Name: Chan
Mobile Number: +14169255682
Address 1:
City:
Province:
Country:
Postal Code:
Email:
Subscriber Class: Mobile

Devices:

Last Known Device	Device ID (IMEI/ESN)	Device Type
	IMEI1004400010940420	Prep Camera
	IMEI1004400008399725	Prep Camera

Records of *devices ... owned, controlled, or used by the subscriber.*

Buttons: Delete, Save

Footer: Logged in as: 17/10/2005 12:52:47

Daley’s database records also include “the Device IMEI/ESN, Manufacturer, [and] Model” (EX1009, [0291]), which *identify... devices*. EX1002, ¶¶191-192.

(c) Claim 3

The combination renders obvious this claim. EX1002, ¶¶193-198.

Daley discloses that the client software running on the user's mobile device supports protocols that are bidirectional and therefore allow for the receipt of information from the server. EX1009, [0205] (discussing TCP/IP, HTTP, and SMS support). It also discloses configuring the device-resident software in response to, e.g. messages from the server. EX1009, [0209], [0213]-[0214]; EX1002, ¶194.

Daley also discloses that the recited ***performance or quality of service information*** is made available via, e.g., a “self-care website/portal 167 (***one or more electronic interfaces provides***).” EX1009, [0033], Figs 15-18. A POSITA would have understood that a user of Daley's system might also be a subscriber, e.g., “a mobile account owner in a wireless carrier network,” and that the user might use their own ***mobile or fixed device***, which would also be an ***end user device***, to access the website. EX1009, [0217]; EX1002, ¶195. Moreover, such devices ***are located in or will be located in said locations*** because the devices, when connecting to the network to access the website, would also be providing the information that would be displayed on that website. EX1002, ¶196. A POSITA would thus have understood that Daley renders obvious the limitations of claim 3. EX1002, ¶196.

Moreover, Scherzer discloses sending collected information to mobile devices (EX1011, [0072]), including sending “only data relating to AP's in the client's general neighborhood” (***devices that are located in ... said locations***) (EX1011, [0072]). EX1002, ¶197. Scherzer also discloses allowing the user to request data for

a future destination's geographical area (*devices that... will be located in said locations*). EX1011, [0072] (“if the user intends to take a trip to a different location, the client can request an update of available AP's at the destination location beforehand.”). EX1002, ¶198.

(d) Claim 4

(i) 4[a]

The combination renders obvious this limitation. EX1002, ¶¶199-201.

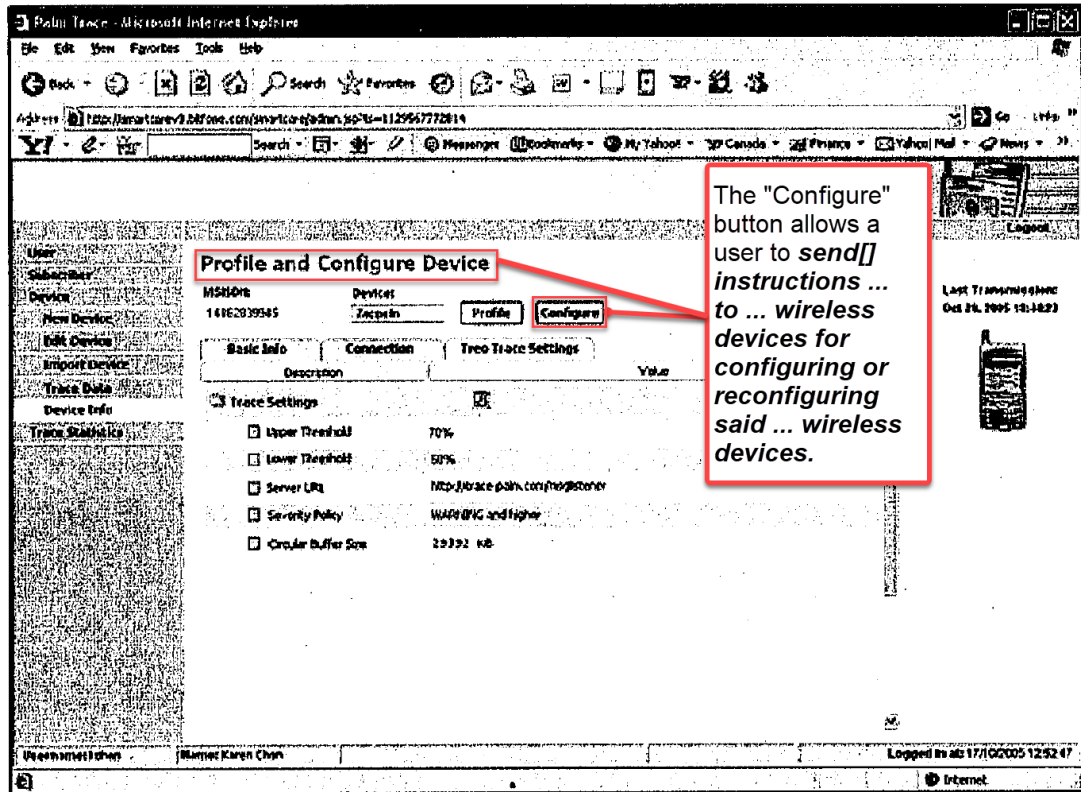
Daley describes sending “provisioning information” to a mobile device to “correct configuration problems or to reconfigure software and hardware of the electronic device 107” (*sending instructions ... for configuring or reconfiguring said ... wireless device[]*). EX1009, [0037]. *See also* EX1009, [0050], [0082].

(ii) 4[b]

The combination renders obvious this limitation. EX1002, ¶¶202-205.

Daley describes a customer using the customer's mobile device to “request customer care service via a customer care server 157.” EX1009, [0038]. As a result, the customer care server may send the provisioning information to the mobile device. EX1009, [0037]. For example, Daley discloses a web interface (*said one or more electronic interfaces*) by which a support technician (who a POSITA would have understood could also be a subscriber using a device on the carrier's network) may “click on ‘Configure Device’ to send the configuration changes to the device.” EX1009, [0298], [301], Fig. 18; EX1002, ¶204. A POSITA would have understood

that the resulting *sending instructions* is based on the subscriber service request (*based on... requests of an end user*). EX1002, ¶105.



(e) Claim 5

The combination renders obvious this claim. EX1002, ¶¶206-209.

Scherzer discloses providing a geographical map of locations that have access points and an indication of the quality ranking of each access point (*telecommunications services*) on the map. EX1011, [0149]-[0150]. This *rank ordering* is provided *to one or more wireless devices*: “when the server determines the location of the mobile device of the user, the server may present a ranking of the access point with respect to the specific location of the mobile device.” EX1011,

[0150]; EX1002, ¶208. As set forth above, a POSITA would have found it obvious to implement this aspect of Scherzer in the system of Daley. EX1002, ¶209.

(f) Claim 6

The combination renders obvious this claim. EX1002, ¶¶210-213.

Daley’s diagnostic client “executes specific diagnostic tasks such as... collecting network performance data” (***monitoring radio operating conditions for one or more mobile or fixed devices***). EX1009 [0041]. For example, signal strength is monitored and reported. EX1009, [0270], [0291].

The data is then used ***to update*** the above-describe ***performance or quality of service information*** stored ***in the database***, as discussed above regarding limitations 1[a][i] and 1[b].

(g) Claim 7

The combination renders obvious this claim. As discussed re limitation 1[e], Daley discloses using ***one or more mobile devices*** to ***provide performance or quality of service information*** to the diagnostic server’s database using OTA, HTTP (i.e., a web interface), or TCP/IP (***to one of said one or more of said electronic interfaces***). EX1009, [0039], [0059], [0064], [0180]-[0181], [0201]-[0205], [0242]; EX1002, ¶¶214-216.

(h) Claim 12

(i) 12[pre]

See limitation 1[pre], *supra*; EX1002, ¶217.

(ii) 12[a]

See limitation 1[a], *supra*; EX1002, ¶218.

(iii) 12[a][i]

See limitation 1[a][i], *supra*; EX1002, ¶219.

(iv) 12[a][ii]

See claim 2, *supra*; EX1002, ¶220.

(v) 12[a][iii]

See limitation 1[a][ii], *supra*; EX1002, ¶221.

(vi) 12[b][i]

See limitation 1[b], *supra*; EX1002, ¶222.

(vii) 12[b][ii]

See limitation 1[c], *supra*; EX1002, ¶223.

(viii) 12[c]

See claim 6, *supra*; EX1002, ¶224.

(ix) 12[d]

See limitation 1[f], *supra*; EX1002, ¶225.

(i) Claim 13

See claim 3, *supra*; EX1002, ¶226.

(j) Claim 14

Regarding performance of the claimed function, *see* claim 4, *supra*. EX1002 ¶227. The corresponding structure of the asserted combination is, *e.g.*, Daley's

customer care server. EX1002 ¶227. Daley’s “provisioning information” is sent from a “customer care server 157” or “a provisioning server.” EX1009, [0037], [0308]. Daley’s customer care server and diagnostic server “may be co-resident.” EX1009, [0033], Fig. 1. A POSITA would have understood the functionalities of the customer care server could be integrated into the diagnostic server or implemented as a standalone server. EX1002, ¶227. Either way, the customer care server satisfies the *one or more computers* limitation previously discussed with respect to the diagnostic server. EX1002, ¶227.

(k) Claim 15

Regarding performance of the claimed function, *see* claim 5, *supra*. EX1002, ¶228. The corresponding structure of the asserted combination is, *e.g.*, Daley’s server (see claim 14, *supra*) augmented to send the rank ordering as set forth in claim 5, *supra*. EX1011, [0149]-[0151]; EX1002, ¶228.

(l) Claim 16

The combination renders obvious this limitation. *See* claim 7, *supra*; EX1002, ¶229.

(m) Claim 17

The combination renders obvious this claim. *See* limitations 1[d] and 1[e], *supra*; EX1002, ¶230.

(n) Claim 18

The combination renders obvious this limitation. EX1002, ¶¶231-234.

Aaron discloses that its central processor receives, “using the wireless communications network itself” (***said one or more electronic interfaces are configured to receive***), from the wireless terminals 100 (***from said one or more mobile or fixed devices or one or more end users***), “location information” (***geographic location information***). EX1010, [0035]; Fig. 2, [0043], [0052].

As discussed above, a POSITA would have found it obvious to add this functionality of Aaron to the systems and methods of Daley. EX1002, ¶¶233-234.

(o) Claim 22

Regarding performance of the claimed function, Daley discloses “collecting data related to radio frequency (RF) parameters” (***determining... frequencies being used by one or more of said... mobile or fixed devices or end users***). EX1009, [0050]. Alternatively, Aaron discloses that one way the system can determine a wireless device’s location involves “determining the geographical location of the base station 202 with which the wireless terminal 101 has a radio link” (***determining... towers... being used by one or more of said... mobile or fixed devices or end users***). EX1010, [0042].

As explained above, a POSITA would have found it obvious to augment Daley with the location-determining aspects of Aaron. EX1002, ¶¶235-237. In this combination, the corresponding structure is Daley’s server augmented (in the alternative) as disclosed in Aaron, as a POSITA would have understood that Aaron’s

server is the entity with access to the data necessary to perform the location determination. EX1002, ¶237.

(p) Claim 23

The combination renders obvious this claim. See claim 12, *supra*; limitation 1[d], *supra*, re ***one or more applications... obtaining and providing performance, quality of service, or perceived communications service quality or value information, experienced or desired***; claim 18, *supra*, re ***one or more applications... obtaining and providing data pertaining to... end user location***; EX1002, ¶238.

(q) Claim 24

The combination renders obvious this limitation. EX1002, ¶239.

See limitation 1[b], *supra*. To the extent 1[b] does not explicitly disclose ***said one or more applications*** (operable with said one or more mobile or fixed devices or said one or more computers), limitation 1[d] expressly does so.

(r) Claim 25

The combination renders obvious this limitation. EX1002, ¶240.

See limitation 1[b], *supra*. To the extent 1[b] does not explicitly disclose ***said one or more applications*** (operable with said one or more mobile or fixed devices or said one or more computers), limitation 1[d] expressly does so.

C. Ground 2: Scherzer and Optionally Dawson (1-7, 12-18, 22-25)

1. The Optional Combination, Motivation, and Reasonable Expectation of Success

Scherzer discloses each element of the challenged claims, and it therefore invalidates under 35 U.S.C. Section 102. EX1002, ¶241.

As set forth above re Ground 1, if ***clearinghouse*** refers to a system that facilitates the procurement of property and infrastructure for a telecommunications system, then it is rendered obvious by Scherzer in combination with Dawson. The motivations to add such functionality to systems like those disclosed in Scherzer are the same as those presented with respect to Ground 1, as are the bases for a POSITA's reasonable expectation of success. See Sections B.2, B.3; EX1002, ¶242.

2. Analysis

(a) Claim 1

(i) 1[pre]

To the extent the preamble is limiting, Scherzer discloses a server and database for, *e.g.*, intermediaries such as IT administrators of the network server, to evaluate the quality of connections of mobile devices to radio access points for wirelessly connecting to a broadband network for access to Internet-based services, *i.e.*, a ***clearinghouse for communications networks***. EX1011, Abstract, [0027], [0066]. Specifically, Scherzer's system includes a server that receives, stores, and updates "access point connection cache data from the network access point" and the

access point connection quality data from mobile device for access points across geographic locations. EX1011, [0058], [0059]. The system uses the database records pertaining to access points to provide a geographic map of access points to mobile devices to assist the user in selecting a nearby access point. EX1011, [0149].

Owners of access points register their access point with the system to allow other third-party users to connect to their access point for wireless Internet access. EX1011, [0147].

Scherzer's server and database serve as a ***clearinghouse*** that meets claim 1's limitation as disclosed above. The technical architecture aggregates distributed information, processes quality metrics, and disseminates connection guidance to multiple parties, embodying the essential characteristics of a telecommunications clearinghouse. EX1002, ¶¶243-246.

In the alternative, if ***clearinghouse*** refers to a system that facilitates the procurement of property and infrastructure for a telecommunications system, then it is rendered obvious by the combination including Dawson. For example, Dawson's integrated database system 800 organizes sales activities for telecommunication assets including properties where wireless telecommunication infrastructure can be deployed, such as buildings or roof rights. EX1013, [0002], Figs. 1, 8; EX1002, ¶247. Users such as real estate agents, property owners, fixed wireless

communications service providers, or wireless service users can access, search, and update the contents of the database. EX1013, [0023]-[0025]; EX1002, ¶248.

(ii) 1[a]

Scherzer discloses a server that ***interface[s]*** with a ***database*** that contains ***performance*** and ***quality of service*** information from mobile devices connecting to wireless access points. EX1002, ¶¶249-258.

“providing one or more computers which interface with a database”:

Scherzer discloses a server that receives “radio access point” connection quality measurements from mobile devices and stores it in a “radio resource database,” *i.e.* ***interface with a database***. EX1011, [0057]-[0059], [0073], [0106], [0109]. Scherzer’s server includes an “evaluation module” “which evaluates accessibility and bandwidth of various AP’s, and store[s] the information as an update in database 110, as shown by arrow 131.” EX1011, [0068], Fig. 1. EX1002, ¶¶250-253.

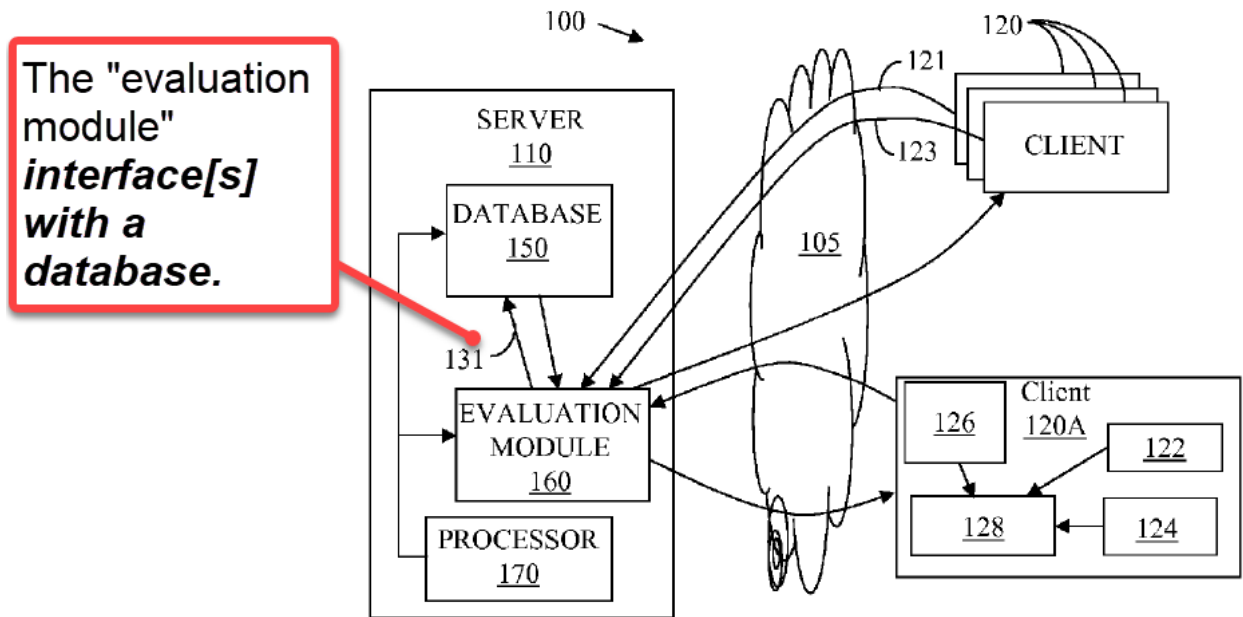


Figure 1

“the database including performance, quality of service, or perceived communications service quality or value information, experienced or desired,”:

Scherzer’s radio resource database includes **performance** and **quality of service** information related to a mobile device’s wireless connection to an access point, *e.g.*, “[b]ackhaul quality (estimated bandwidth connection to Internet)”, “success rate,” “average execution periods,” [p]ercentage allowable shared bandwidth.” EX1011, [0109]-[0117], [0148]. Scherzer encodes access point connection quality data, into quality and accessibility vectors, which include connection quality, ease of accessibility, and location coordinates, in the database. EX1011, [0131]-[0140]. EX1002, ¶¶254-256.

“for one or more mobile or fixed devices or end users, for one or more geographic locations of said one or more mobile or fixed devices, or end users”:

Scherzer’s mobile devices include “laptops, handheld devices (PDA’s), cell phones, or any other devices that incorporate radio facility.” EX1011, [0080]. Each wireless mobile device executes a client program “that besides connecting to the radio network, executes radio measurements and report to the network server that shares this information with other user’s clients.” EX1011, [0067], [0071], [0073], [0082]-[0087], [0149]. The mobile devices communicate with the server and populate the database with access point connection quality data associated with these ***one or more mobile or fixed devices or end users*** by sending “connectivity reports” and results from radio surveys and “measurements trips” performed by the devices. EX1011, [0080]. EX1002, ¶257.

Scherzer further discloses that access point connection quality measurements are associated with access points at particular geographic locations and the measurements are gathered by mobile devices within range of that geographic location, *i.e. for one or more geographic locations of said one or more mobile or fixed devices*. Scherzer’s mobile devices determine their own ***geographic location[]*** which is included in the data sent to the database. EX1011, [0082]-[0087], [0131]; EX1002, ¶258.

As set forth in the next two subsections, Scherzer discloses the database *including one or more of* the recited records.

(iii) 1[a][i]

Scherzer's database stores records include "AP Quality and accessibility (Q&A) vector" "based on **location** coordinates sorted to 'wireless regions'." EX1011, [0131]; EX1002, ¶260. Scherzer's records include "name and MAC address of the network access point," which can be used to identify the service provider. EX1011, [29]-[0030], [0057]; EX1002, ¶261. Such providers include commercial service providers such as "Cloud, Google, and Metrofi." EX1011, [0013]. A POSITA would have understood that **telecommunication carriers** such as T-Mobile also offered broadband wireless services at the time and their access points would have been included in Scherzer's database. EX1026; EX1002, ¶262. As such, the access point **records** in Scherzer's database **pertain[] to one or more telecommunication carriers which identify infrastructure type and/or location**. EX1002, ¶¶260-263.

(iv) 1[a][ii]

Scherzer's database maintains geographic location information for wireless access points. EX1002, ¶¶264-266. The access points are organized by "wireless regions" such as "cities, parks, groups of cities, states and other geographical areas of interest" (**maps, location coordinates, or mapping information for said**

geographic locations), which are *public records for a plurality of geographic locations*. EX1011, [0131], [0149].

(v) 1[b]

Scherzer discloses the server continuously receiving access point connection quality data from mobile devices. EX1011, [0072], [0080]. The server uses these incoming measurements to *updat[e]* the database *automatically* such that “the database 150 is enhanced and continuously updated to include up to date data.” EX1011, [0072], [0080]; EX1002, ¶¶267-268.

Additionally, Scherzer discloses collecting access point connection quality data from mobile devices to *updat[e]* the database when the user *manually* connects to an access point through “an application control window.” EX1011, [0079]; EX1002, ¶269.

(vi) 1[c]

Scherzer discloses that the client program on mobile devices may “[p]rovide an updated radio resources geographical map with connection likelihood ... displayed on a laptop, PDA, cell-phone, etc., upon request.” EX1011, [0078]; EX1002, ¶270. This map *permit[s]* the mobile device’s user (*one or more end users of said telecommunications carriers*) to *review, catalog, view, use, or sort* the ranking of those nearby access points based on the connection quality data, *i.e.*

performance, quality of service ... information, in the database. EX1011, [0149], [0150]; EX1002, ¶¶271-72.

(vii) 1[d]

Scherzer discloses a client program (*one or more applications operate with said one or more mobile ... devices*) executing on each mobile device that “executes radio measurements and report[s] to the network server.” EX1011, [0067]; EX1002, ¶¶273-275. The client program “conduct[s] data acquisition” by periodically performing radio surveys and “measurement trips” that test the mobile device’s connection quality to nearby access points (*obtain[s] said performance or quality of service ... information*). EX1011, [0080], [0082]-[0087], [0149].

(viii) 1[e]

Scherzer discloses that the client program (*one or more applications operable with said one or more mobile ... devices*) on the mobile device “executes radio measurements” and obtains *performance or quality of service ... information* and “report[s] to the network server that shares this information with other user’s clients.” EX1011, [0067]; EX1002, ¶276. The mobile device communicates with the server using the mobile device’s Internet connection (*providing ... to said one or more electronic interfaces*). EX1011, [0067]; EX1002, ¶277.

(ix) 1[f]

Scherzer discloses collecting access point connection quality data from mobile devices which includes “[r]eceived signal strength” and “[a]vailable

bandwidth.” EX1011, [0028]-[0049]. The “signal strength” is ***information from one or more bands*** because it is indicative of the measured signal strength on a frequency band. EX1002, ¶278. Further, the access point connection quality data is ***information from ... one or more mobile ... devices*** because it is collected on mobile devices, and the data from multiple devices may be aggregated into “[q]uality and accessibility (Q&A) vector[s].” EX1011, [0131]; EX1002, ¶279.

(b) Claim 2

Scherzer discloses owners of access points registering their access point (***one or more of equipment, devices, telecommunications assets, and property assets owned, controlled or used by said one or more end users***) for inclusion in the database of wireless access points. EX1011, [0147]. The information is stored in the ***database*** as ***records for*** the owner (***said one or more end users***) and the wireless access points. EX1011, [0147]; EX1002, ¶¶280-282.

(c) Claim 3

Scherzer discloses a database of ***performance or quality of service information*** for wireless access points assembled from measurements of wireless performance parameters received from mobile devices. EX1011, [0072]. This ***performance or quality of service information*** is ***provide[d]*** to mobile devices as part of each mobile device’s “local database” that is used when the device is selecting which access point to connect to. EX1011, [0072]; EX1002, ¶¶283-284.

Additionally, Scherzer discloses the ***provid[ing]*** the mobile devices with access point maps that include rankings of the access points nearby the mobile device's geographic location (***performance or quality of service information to one or more mobile ... devices that are located in or will be located in said locations***). EX1011, [0078]; EX1002, ¶285. The server communicates such information to the mobile device via the Internet (***to one of said one or more said electronic interfaces***). EX1011, [0068]; EX1002, ¶286.

(d) Claim 4

(i) 4[a]

Scherzer discloses a server sending access point connection cache information, including the name and MAC address of an access point, to the mobile device. EX1011, [0120]; EX1002, ¶287. The mobile device “can use the information in the cache to easily connect to AP's in the destination location.” EX1011, [0120]. Additionally, Scherzer discloses the database containing other access point configuration information that is shared with each mobile device for connecting to the access point. EX1011, [0119]. As such, the server ***send[s] instructions to the mobile device for configuring or reconfiguring the device*** to an access point. EX1002, ¶288. The server communicates such information to the mobile device via the Internet (***to one of said one or more said electronic interfaces***). EX1011, [0068]; EX1002, ¶289.

(ii) 4[b]

As discussed above in claim 3, Scherzer discloses providing the geographic map of access points at a geographic location on *request[] of an end user*. EX1002, ¶¶290-292.

Additionally, Scherzer's server provides the mobile device a geographical map indicating locations of access point with the "ranking of the access point with respect to the specific location," allowing the device to connect to an access point using that information. EX1011, [0149]-[0150]. The ranking reflects "quality of the access point (*ranking of performance*).” EX1011, [0150]; EX1002, ¶292.

(e) Claim 5

Scherzer's server provides the ranking of access points to the mobile devices. See claim 4, *supra*; EX1002, ¶293.

(f) Claim 6

Scherzer discloses a client program executing on the mobile device that *monitor[s] radio operation* conditions during "radio surveys" and "measurement trips" and "conduct[s] data acquisition." EX1011, [0067], [0080]. The access point connection quality information so acquired, *i.e. performance or quality of service information*, is uploaded to the server and stored in the database (*update performance or quality of service information or perceived communications service quality or value information in said database*). EX1011, [0080]; EX1002, ¶¶294-296.

(g) Claim 7

As discussed above regarding limitation 1[b], Scherzer discloses continuously collecting access point connection quality data from mobile devices to ***provide*** the ***performance or quality of service information*** to the server's database. The mobile device communicates with the server over the Internet (***to one of said one or more said electronic interfaces***) to upload the data. EX1011, [0068]; EX1002, ¶¶297-298.

(h) Claim 12

(i) 12[pre]

See limitation 1[pre], *supra*. As discussed for limitation 1[pre], to the extent Scherzer does not disclose a ***clearinghouse system*** and the preamble is limiting, Dawson discloses a ***clearinghouse system*** such that the combination of Scherzer and Dawson renders the preamble obvious. EX1002, ¶299.

(ii) 12[a]

See limitation 1[a][i], *supra*; EX1002, ¶300.

(iii) 12[a][i]

See limitation 1[a][ii], *supra*; EX1002, ¶301.

(iv) 12[a][ii]

See claim 2, *supra*; EX1002, ¶302.

(v) 12[a][iii]

See limitation 1[a][iii], *supra*; EX1002, ¶303.

(vi) 12[b][i]

See limitation 1[b], *supra*; EX1002, ¶304.

(vii) 12[b][ii]

See limitation 1[c], *supra*; EX1002, ¶305.

(viii) 12[c]

See claim 6, *supra*; EX1002, ¶306.

(ix) 12[d]

See limitation 1[f], *supra*; EX1002, ¶307.

(i) Claim 13

See claim 3, *supra*; EX1002, ¶308.

(j) Claim 14

Regarding performance of the claimed function, *see* claim 4, *supra*. EX1002 ¶309. The corresponding structure of the asserted combination is, e.g., Scherzer's server 110. EX1011, [0068], Fig. 1; EX1002 ¶309. Scherzer's server sends "radio resource information," including "cache information of AP's" to "user terminals" EX1011 [0120]-[0121]; EX1002, ¶309.

(k) Claim 15

Regarding performance of the claimed function, *see* claim 5, *supra*. EX1002 ¶310. The corresponding structure is, e.g., Scherzer's server 310. EX1011, [0147], [0149]-[0151], Fig. 3; EX1002 ¶310.

(l) Claim 16

See claim 7, *supra*; EX1002, ¶311.

(m) Claim 17

See limitations 1[d] and 1[e], *supra*; EX1002, ¶312.

(n) Claim 18

Scherzer discloses that, in a “measurement trip,” the mobile device provides “[e]stimated location (i.e., when the client determined its own location)” to the server. EX1011, [0082]-[0090]. Scherzer further teaches that the location can be determined using “few alternate methods, most notably IP location services.” EX1011, [0121], [0131]; EX1002, ¶¶313-315.

(o) Claim 22

Regarding performance of the claimed function, Scherzer discloses the collection of access point information by performing an “802.11 scan” that “produces a list of access points in reach; for each intercepted access point radio signal strength indication (RSSI) is provided along with type of security status.”. EX1011, [0122]; EX1002, ¶317. A POSITA would have recognized that the WiFi configuration information collected in Scherzer would include the *frequencies* used by under WiFi protocols and standards such as IEEE 802.11, such as specific radio channels within a frequency band (*e.g.*, 2.4 GHz, 5 GHz). EX1011, [0018], [0122]; EX1002, ¶318. That information is stored in the server. When the mobile device is connected to a particular access point, the server would be able to associate that

access point with the records stored in its database and identify the ***frequencies*** used by the mobile device. EX1002, ¶319.

The structure performing the claimed function is thus the server. EX1002, ¶320.

(p) Claim 23

See claim 12, *supra*; limitation 1[d], *supra*, re ***one or more applications... obtaining and providing performance, quality of service, or perceived communications service quality or value information, experienced or desired***; claim 18, *supra*, re ***one or more applications... obtaining and providing data pertaining to... end user location***; EX1002, ¶321.

(q) Claim 24

See limitation 1[b], *supra*. To the extent 1[b] does not explicitly disclose ***said one or more applications*** (operable with said one or more mobile or fixed devices or said one or more computers), limitation 1[d] does. EX1002, ¶322.

(r) Claim 25

See limitation 1[b], *supra*. To the extent 1[b] does not explicitly disclose ***said one or more applications*** (operable with said one or more mobile or fixed devices or said one or more computers), limitation 1[d] does. EX1002, ¶323.

D. Ground 3: Daley, Aaron, Scherzer, and Chmaytelli (and Optionally Dawson) (8-11, 19-21)

1. The Combination, Motivation, and Reasonable Expectation of Success

This is the combination, optionally including Dawson, of Ground 1, augmented with certain ad-related features as taught by Chmaytelli. EX1002, ¶324.

A POSITA would have been motivated to combine Chmaytelli with the combination. EX1002, ¶¶325-327. For example, a POSITA would have known, from Chmaytelli and from other references, of industry interest in location-based content, including advertising. EX1028; EX1029; EX1030; EX1031; EX1002, ¶325. Advertising was widely recognized as an attractive additional revenue stream or a way to offer network services at less cost. EX1002, ¶326. And location-specific advertising was understood to be more likely to be viewed and to result in conversions. EX1002, ¶326. A POSITA would therefore have recognized the potential value of adding localized ad serving capabilities to the combination of Ground 1, which already collected location information from devices and already transmitted data (e.g., configuration instructions) to them. EX1002, ¶327.

A POSITA would have had a reasonable expectation of success in implementing the combination. EX1002, ¶328. Especially because the underlying combination of Ground 1 already disclosed providing location-specific information to mobile devices, including by querying a database to find information keyed to a

device's location (EX1011, [0061], [0070]), it would have been straightforward to serve another type of content (ads) in the same fashion, as disclosed in Chmaytelli. EX1002, ¶328.

2. Analysis

(a) Claim 8

(i) 8[pre]

To the extent limiting, the combination renders obvious this limitation. EX1002, ¶¶329-330.

Scherzer discloses a server sending client devices quality and connection information regarding access point nearby the geographic location of the client device. EX1011, [0072]. The access point quality and connection information is ***selected content*** that may be limited to access points “in the client’s general neighborhood” (***mobile ... devices located in specific locations***) or a “geographic area [that] the user wishes to obtain updates.” EX1011, [0072]; EX1002, ¶329.

Chmaytelli discloses a “wireless advertisement (ad) system” that provides location-specific ad (***selected content***) to client devices (***one or more mobile ... devices located in specific locations***). EX1012, [0010]; EX1002, ¶330.

(ii) 8[a]

The combination renders obvious this limitation. EX1002, ¶¶331-332.

See Ground 1, 1[pre], *supra*, regarding ***providing a clearinghouse system for communications networks*** and Ground 1, 1[a][i], *supra*, regarding ***one or more computers which interface with a database***.

As set forth in the next subsection regarding 8[a][i]-[iv], the combination renders obvious the ***database including one or more of*** the recited records. EX1002, ¶332.

(iii) 8[a][i]-[iv]

See Ground 1's limitation 1[a][i], 1[a][ii], 1[a][iii], and 2[a]. EX1002, ¶333.

(iv) 8[b][i]

The combination renders obvious this limitation. See Ground 1's limitations 1[b] and 1[d], *supra*. EX1002, ¶334.

(v) 8[b][ii]

The combination renders obvious this limitation. See Ground 1's limitation 1[c], *supra*. EX1002, ¶335.

(vi) 8[c]

The combination renders obvious this limitation. EX1002, ¶¶336-337.

Aaron discloses ***using GPS... associated with one or more of said one or more mobile or fixed devices or end users for identifying a geographic location of one or more mobile or fixed devices***. EX1010, [0006] ("Geographical location of a wireless terminal may be determined, for example, via a Global Positioning System (GPS) receiver in the wireless terminal"), [0042] ("For wireless terminals 100

having a Global Positioning System (GPS) receiver, geographical location is determined via the GPS receiver.”). The geographic location as determined by the mobile device using the GPS receiver is sent to the central server along with the measurements of quality of service as a record of the quality at that particular geographic location, i.e. *associated with one ... mobile ... device*]]. EX1010, [0009], [0031]; EX1002, ¶336.

Aaron also discloses the mobile device’s geographic location being “approximated by determining the geographical location of the base station 202 with which the wireless terminal 101 has a radio link.” EX1010, [0042]; EX1002, ¶336.

Chmaytelli discloses this as well. EX1012, [0070]-[0071], [0078]-[0079], [0085]-[0086]; EX1002, ¶337.

(vii) 8[d]

The combination renders obvious this limitation. EX1002, ¶¶338-339.

Chmaytelli discloses a “wireless advertisement (ad) system” that comprises “a server configured to generate and transmit an ad containing location data that defines a geographic area” (*local ad server*) and provides ads to a client device (*one or more mobile devices*) “based on a location of the client device and the geographic area defined in the ad” (*localized content to said one or more mobile ... devices ... using said geographic location and one or more local ad servers*). EX1012, [0010]; EX1002, ¶338. A specific example of a “client device” is a “cellular telephone 102”

(*one or more mobile devices*). EX1012, [0032]; EX1002, ¶338. Chmaytelli's system includes a "server 120" which may also act as an "ad dispatch server 130" (*local ad server*). EX1012, [0041]; FIG. 3; EX1002, ¶338. Chmaytelli further details that "the server 120 can send an API-directed message 330" to the client device, which can in turn "call an appropriate API (e.g., a browser) to initiate the connection 332 to the server 120 and download an associated HTML page/document (e.g., advertisement) 334 to client device 300." EX1012, [0042]; EX1002, ¶338. Alternatively, the ad delivered to the client device may be "a URL pointing to an ad located on the server 120 (e.g., contained in the ad dispatch server)." *Id.* The "ad dispatch server 130 can be integrated into server 120, or can be a plurality of separate servers that perform functionally as described" and thus is *in communication with* the *electronic interfaces* of the server 120 which is part of the *clearinghouse system*). EX1012, [0043]; EX1002, ¶339. As discussed above regarding limitation 1[pre], the system of the combination is a *clearinghouse*.

(b) Claim 9

The combination renders obvious this limitation. EX1002, ¶340.

Chmaytelli teaches that the client devices may "download an associated HTML page/document (e.g., advertisement) 334 to client device 300" and that the ad delivered to the client device may be "a URL pointing to an ad located on the server 120 (e.g., contained in the ad dispatch server)," which the client device

downloads and displays. EX1012, [0042]; EX1002, ¶340. Either action triggers interaction with the server 120 via an ***electronic interface*** of the system. EX1002, ¶340. Further, because the client device may be a cellular telephone that connects to the server 120 via the cellular network including ***one or more base stations***, these base stations are ***in communication with said one or more electronic interfaces of said clearinghouse system*** by way of receiving and transmitting these HTML-formatted ads from the server 120. EX1012, Fig. 2; EX1002, ¶340.

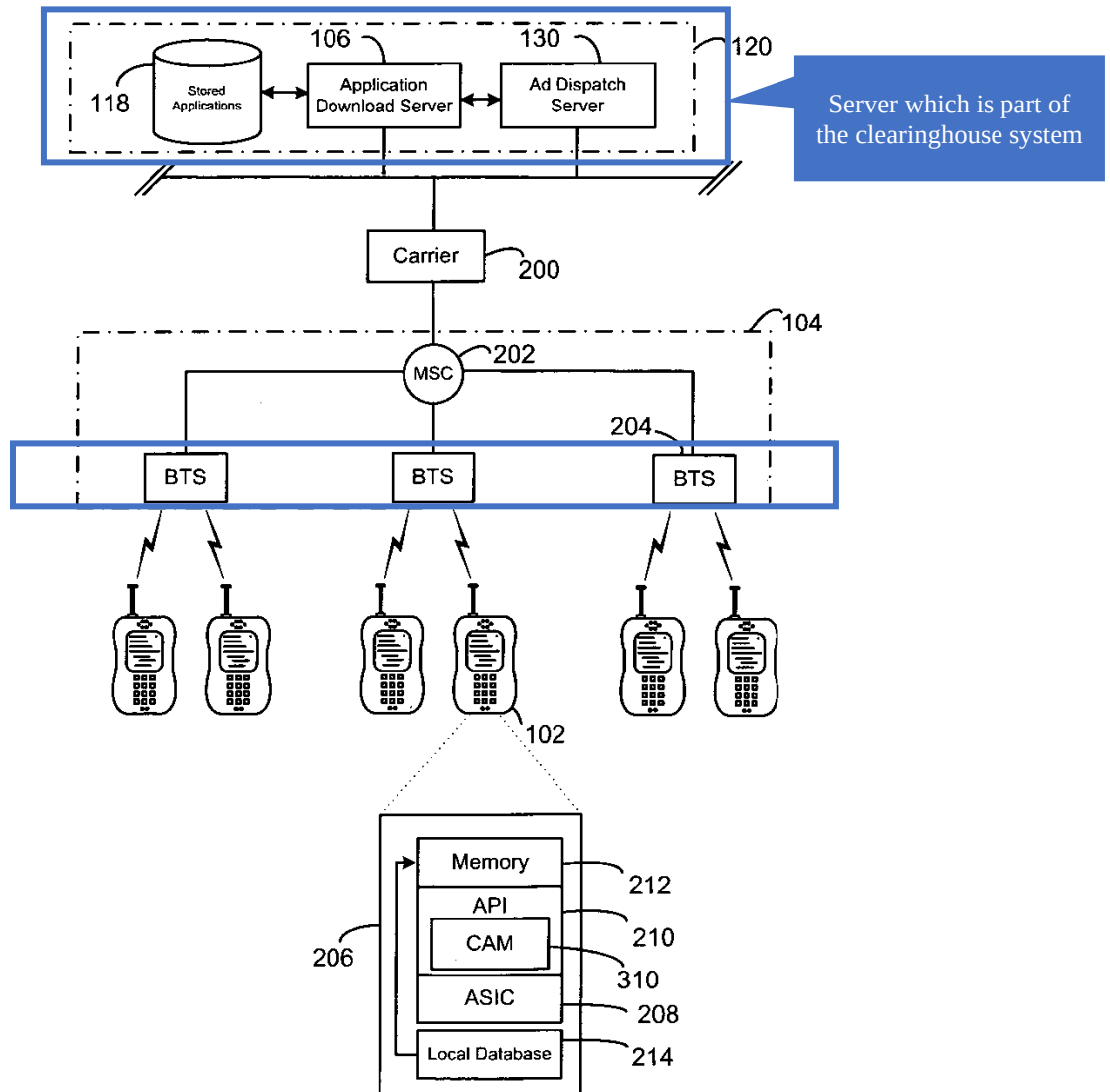


Fig. 2

EX1012, Fig. 2 (annotated).

(c) **Claim 10**

The combination renders obvious this limitation. EX1002, ¶341.

Chmaytelli discloses that the “ad dispatch server 130” collects the response to the ad and “collate[s] the reported responses (*e.g.*, from one or more client devices)

and send the collaged responses 342 (*e.g.*, using an XML feed) back to the sever 120.” EX1012, [0043]; EX1002, ¶341. Chmaytelli details that “ad viewing data can be tracked and reported in the ad response data, such as, information regarding whether all pages of an ad were viewed, whether some links were followed, and the like” (*web page view and usage statistics*). *Id.*

(d) Claim 11

The combination renders obvious this limitation. EX1002, ¶¶342-343.

Chmaytelli discloses that “carriers can offer both opt-in and opt-out options to end-users” and that “[o]pt-out indicates that the end-user has the ability to refuse to receive ads.” EX1012, [0050]; EX1002, ¶342. As such, Chmaytelli’s *local ad servers* would only *provide content to [one or more] mobile devices* that have selected the opt-in option (*a specific transmitted signal*). EX1002, ¶342.

Chmaytelli also teaches that the local ad server (at a central carrier announcement manage or CAM console 740) may be coupled to “different carrier networks 750, 760.” EX1012, [0077]; Fig. 7B; EX1002, ¶343. The local ad server (in the form of a central CAM console 740) can “generate a targeted ad at CAM console 740 and sending it to the first carrier network 750 and the second carrier network 760.” EX1012, [0077]; EX1002, ¶343. Further, Chmaytelli teaches that the “carrier networks 750, 760 can be connected to CAM console 740 by a secure links 754, 764, to limit the potential for unauthorized access to the ad dispatch

servers and client devices.” *Id.* As such, mobile devices 752 and 762 can only receive content on their respective carrier networks (*tuned to a specific ... service provider*) but not on the other. *Id.* Accordingly, Chmaytelli’s local ad server *provide[s] content to said one or more mobile ... devices tuned to a specific ... service provider. Id.*

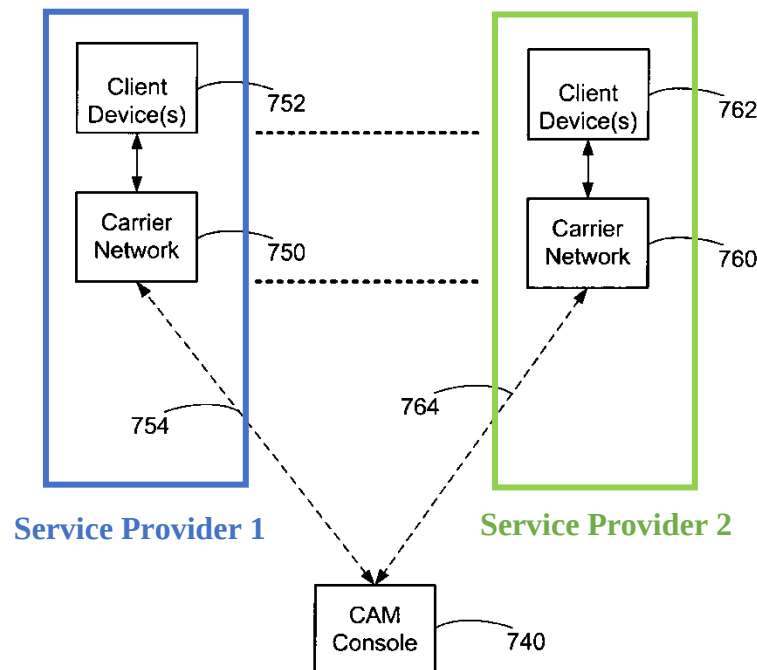


Fig. 7B

EX1012, Fig. 7B (annotated).

(e) Claim 19

The combination renders obvious this limitation. See Ground 1’s claim 12 and this Ground’s 8[e]. EX1002, ¶344.

(f) Claim 20

The combination renders obvious this limitation. See claim 10, *supra*.
EX1002, ¶345.

(g) Claim 21

The combination renders obvious this claim. See claim 11, *supra*. EX1002,
¶346.

E. Secondary Considerations

Any secondary considerations further weigh in favor of obviousness, and
certainly do not overcome the strong showing of obviousness. EX1002, ¶¶347-351.

VIII. CONCLUSION

For the reasons above, *inter partes* review is requested.

Date: October 12, 2025

Respectfully submitted,

By: /s/ James Glass

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CERTIFICATION UNDER 37 C.F.R. § 42.24

Under the provisions of 37 C.F.R. § 42.24, the undersigned hereby certifies that the word count for the foregoing Petition for *inter partes* review (excluding the table of contents, table of authorities, mandatory notices, certificate of service or word count, and appendix of exhibits or claim listing) totals 13,992 words, which is within the word limit allowed under 37 C.F.R. § 42.24(a)(i).

Date: October 12, 2025

/s/ James Glass

James Glass (Reg. No. 46729)

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 42.6(e), 42.105(a), the undersigned hereby certifies service on the PO of a copy of this Petition and its respective exhibits at the official correspondence address for the attorneys of record for the '925 Patent as shown in USPTO PAIR via FedEx:

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