

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. IPR2026-00103

U.S. Patent No. 8,224,794

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 8,224,794**

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EXHIBIT LIST

Ex.	Description
EX1001	U.S. Patent No. 8,224,794 (“’794 patent”)
EX1002	Declaration of Kevin C. Almeroth
EX1003	Curriculum Vitae of Kevin C. Almeroth
EX1004	Prosecution History for U.S. Pat. No. 8,224,794
EX1005	Patent Owner’s District Court Infringement Chart for ’794 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.

EX1036	A. Sinclair, GSM Goes to Market, GSM Association, March 2007
EX1037	Intentionally Omitted
EX1038	U.S. Patent Publication No. 2004/0002871 A1 (“Geranio”)
EX1039	Kate Pickert, <i>Invisible Wires</i> , New York (Sep. 4, 2004)
EX1040	American Tower Corporation, 2006 Annual Report (Mar. 21, 2007)
EX1041	MapInfo, Marconi announce availability of deciBel Planner 2.5 and UMTS module, June 7, 2001, available at https://www.wirelessnetworksonline.com/doc/mapinfo-marconi-announce-availability-of-deci-0001 .
EX1042	MapInfo, the 2000 MapInfo Annual Report
EX1043	NIST, Information Security, Electronic Authentication Guideline, Special Publication 800-63 (June 2004)
EX1044	Cisco, <i>Cisco Wi-Fi Becomes Available To Tenants As Part Of Their Commercial Lease</i> (Jun 2, 2003)
EX1045	LightReading, <i>Marconi Teams With ComOpt - Software integration to provide complete wireless planning and automatic optimization solution</i> (Dec. 12, 2002)

LIST OF CHALLENGED CLAIMS

Claim	Limitation
1[pre]	A clearinghouse system for communications networks, comprising:
1[a]	one or more computers which interface with a database, said database including
1[a][i]	records for one or more telecommunications carriers which identify infrastructure needs for one or more telecommunications carriers in terms of one or more of (i) types of equipment and performance characteristics for said types of equipment, (ii) location information including one or more of geographical areas, and (iii) desired business terms for said infrastructure needs, and
1[a][ii]	records of a plurality of end users which identify one or more of (i) telecommunications assets owned or controlled by said end users including geographic location and type of available or existing telecommunications assets (ii) property assets owned or controlled by said end users including geographic location, and (iii) desired business terms or preferences for use of said telecommunications assets or said property assets;
1[b]	one or more electronic interfaces to said one or more computers which permit one or more telecommunications carriers and one or more end users to selectively view or catalog information about (a) available telecommunications assets or properties and locations thereof, (b) the owners or tenants of said available telecommunications assets or properties, (c) infrastructure needs of one or more telecommunications carriers, and (d) proposed business terms for fulfilling said infrastructure needs with said telecommunications assets or said property assets,
1[c]	wherein notification is provided to either or both: one or more of the owners or tenants of said available telecommunications assets or properties; and the one or more telecommunications carriers;
1[d]	when suitable available telecommunications assets or properties for said infrastructure needs of said one or more telecommunications carriers at one or more locations are identified.

Claim	Limitation
2	The clearinghouse system of claim 1 wherein said database includes public records which include, for a plurality of geographic locations, one or more of 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.
3	The clearinghouse system of claim 1 wherein said one or more electronic interfaces permits one or more public users, who are not telecommunications carriers or end users, to selectively view or catalog information about said available telecommunications assets or properties and locations thereof, and said infrastructure needs of one or more telecommunications carriers for one or more locations.
4	The clearinghouse system of claim 1 wherein said one or more electronic interfaces includes one or more of an Internet interface, a telephone, a speech, handwriting or fingerprint recognition device, electronic mail interface, a facsimile, voicemail, a webserver, a wireless or portable computing or communications device, VoIP, or a digital recorder.
5	The clearinghouse system of claim 1 wherein at least one of said one or more electronic interfaces is connected to the world wide web, and wherein said records for one or more telecommunications carriers and said records for a plurality of end users can be viewed using a browser and can be retrieved by a web crawler.
6	The clearinghouse system of claim 1 further comprising a security application which protects the identity and infrastructure needs of said one or more telecommunications carriers.
7	The clearinghouse system of claim 1 further comprising a security application and billing application which permits charging said one or more telecommunications carriers or said one or more end users at selectable rates for use of said clearinghouse system.
8	The clearinghouse system of claim 1 further comprising a communications application which permits secure negotiation and acceptance of business and legal terms between one or more

Claim	Limitation
	telecommunications carriers and one or more end users for use of said one or more telecommunications assets or one or more property assets.
9	The clearinghouse system of claim 8 wherein said property assets are selected from a building, a roof top, a billboard, a tower, and a lot or acreage.
10	The clearinghouse system of claim 1 wherein said database includes performance or quality of service information for specific locations.
11	The clearinghouse system of claim 10 wherein one of said one or more electronic interfaces provides automatic or manual updates of said performance or quality of service information from one or more mobile or fixed devices located in said specific locations.
12	The clearinghouse system of claim 10 wherein said one or more electronic interfaces provides performance or quality of service information to one or more mobile or land devices that is located in or will be located in said specific locations.
13	The clearinghouse system of claim 10 wherein said performance or quality of service information includes multiple bands and multiple carriers.
14	The clearinghouse system of claim 1 further comprising one or more local ad servers connected to said one or more electronic interfaces, said local ad servers providing localized content to one or more mobile or fixed devices in a specific location.
15	The clearinghouse system of claim 14 further comprising one or more base stations connected to said one or more electronic interfaces.
16	The clearinghouse system of claim 14 wherein said local ad servers provide web page view and usage statistics to said database through said one or more electronic interfaces.
17	The clearinghouse system of claim 1 further comprising a computation application, which interfaces with at least one of said one or more computers, and which identifies optimum or prioritized locations for said infrastructure needs based on said records of said plurality of end users.

Claim	Limitation
18	The clearinghouse system of claim 2 further comprising a computation application, which interfaces with at least one of said one or more computers, and which identifies optimum or prioritized locations for said infrastructure needs based on both said records of said plurality of end users and said public records.
19	The clearinghouse system of claim 1 further comprising an application program for forming binding agreements between at least one of said one or more telecommunications carriers and at least one of said plurality of end users.
20[pre]	A clearinghouse system for communications networks, comprising:
20[a]	one or more computers which interface with a database, the database including performance or quality of service information for one or more specific locations, and one or more of
20[a][i]	records for one or more telecommunications carriers which identify infrastructure and location information for one or more specific locations,
20[a][ii]	records for one or more end users which identify telecommunications assets or property assets owned or controlled by said one or more end users, and
20[a][iii]	public records which include, for a plurality of geographic locations, one or more of 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;
20[b]	one or more electronic interfaces to said one or more computers which permit performance or quality of service information obtained from one or more mobile or fixed devices that are located in one of said one or more specific locations to be automatically or manually updated into said database, and which permits 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 or sort information in said database; and

Claim	Limitation
20[c]	one or more applications operable with said one or more mobile or fixed devices or said one or more computers for obtaining and providing said performance or quality of service information to said one or more electronic interfaces.
21	The clearinghouse system of claim 20 wherein said one or more electronic interfaces provides performance or quality of service information to one or more mobile or fixed devices that are located in or will be located in said specific locations.
22	The clearinghouse system of claim 20 wherein said performance or quality of service information includes multiple bands and multiple carriers.
23	The clearinghouse system of claim 20 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 a ranking of performance or specific requests of an end user.
24	The clearinghouse system of claim 20 further comprising means for sending a rank ordering of available telecommunications services from one of said one or more electronic interfaces to one or more wireless devices.
25	The clearinghouse system of claim 20 further comprising a monitoring application which permits monitoring of radio operating conditions of one or more wireless devices, wherein monitored radio operating conditions are used to update performance or quality of service information in said database.
26	The clearinghouse system of claim 20 further comprising one or more wireless devices which are configured to provide said performance or quality of service information to one of said one or more of said electronic interfaces.
27[pre]	A content providing system which provides selected content to one or more mobile or fixed devices located in specific locations, comprising:

Claim	Limitation
27[a]	a clearinghouse system for communications networks, said clearinghouse system including
27[a][i]	one or more computers which interfaces with a database, said database including one or more of
27[a][i][1]	performance or quality of service information for one or more specific locations,
27[a][i][2]	records for one or more telecommunications carriers which identify infrastructure and location information for one or more specific locations,
27[a][i][3]	records for one or more end users which identify telecommunications assets or property assets owned or controlled by said one or more end users, and
27[a][i][4]	public records which include, for a plurality of geographic locations, one or more of 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; and
27[a][ii]	one or more electronic interfaces to said one or more computers which permit one or more mobile or fixed devices to be connected to said clearinghouse system, said one or more electronic interfaces permitting one or more of performance or quality of service information obtained from said one or more mobile or fixed devices that are located in one of said one more specific locations to be automatically or manually updated into said database, and
27[a][iii]	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 or sort information in said database;
27[b]	wherein a geographic location of one or more mobile or fixed devices is identified; and
27[c]	one or more local ad servers in communication with said one or more electronic interfaces of said clearinghouse system configured to use

Claim	Limitation
	said geographic location, said local ad servers providing localized content to said one or more mobile or fixed devices.
28	The content providing system of claim 27 further comprising one or more base stations in communication with said one or more electronic interfaces of said clearinghouse system.
29	The content providing system of claim 27 wherein said local ad servers provide web page view and usage statistics to said database of said clearinghouse system through said one or more electronic interfaces.
30	The content providing system of claim 27 wherein said means for identifying a geographic location includes a GPS associated with each of said one or more mobile or fixed devices.
31	The content providing system of claim 27 wherein said means for identifying a geographic location includes a means for determining one more of towers and frequencies being used by said one or more mobile or fixed devices.
32	The content providing system 27 wherein said local ad servers provide content to said one or more mobile or fixed devices tuned to a specific transmitted signal.

I. INTRODUCTION

The '794 Patent is directed prior art techniques related to inventory and device management in wireless networks. As set forth below, each of the challenged claims are unpatentable.

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 '794 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*, U.S. Patent Nos. 8,515,925 (the "'925 patent") and 8,725,700 (the "'700 patent"). Both the '925 and the '700 patents issued from continuations of the '794 patent.

Petitioner filed petition for *inter partes* review of the '925 patent (on October 13, 2025, (IPR2026-00032)) and the '700 patent (on October 24, 2025, (IPR2026-00086)).

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 (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 '794 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. Each of the references relied upon in the Petition qualify as prior art under one or more of pre-AIA 35 U.S.C. §§ 102(a), 102(b), and 102(e).

III. STATEMENT OF RELIEF REQUESTED AND IDENTIFICATION OF CHALLENGE (37 C.F.R. § 42.104(B))

Petitioner respectfully requests *inter partes* review of claims 1-32 ("Challenged Claims") on the following grounds:

Ground	Basis	Reference(s)	Claims
1	§103	Dawson, Geranio	1-10, 12, 17-19
2	§103	Dawson, Geranio, Aaron	11, 13, 20, 22, 25, 26
3	§103	Dawson, Geranio, Aaron, Chmaytelli	14-16, 27-32
4	§103	Daley, Aaron, and Scherzer (and alternatively Dawson)	20-26
5	§103	Daley, Aaron, Scherzer, and Chmaytelli (and alternatively Dawson)	27-32
6	§102	Scherzer (alternatively §103 with Dawson)	20-25

IV. '794 PATENT

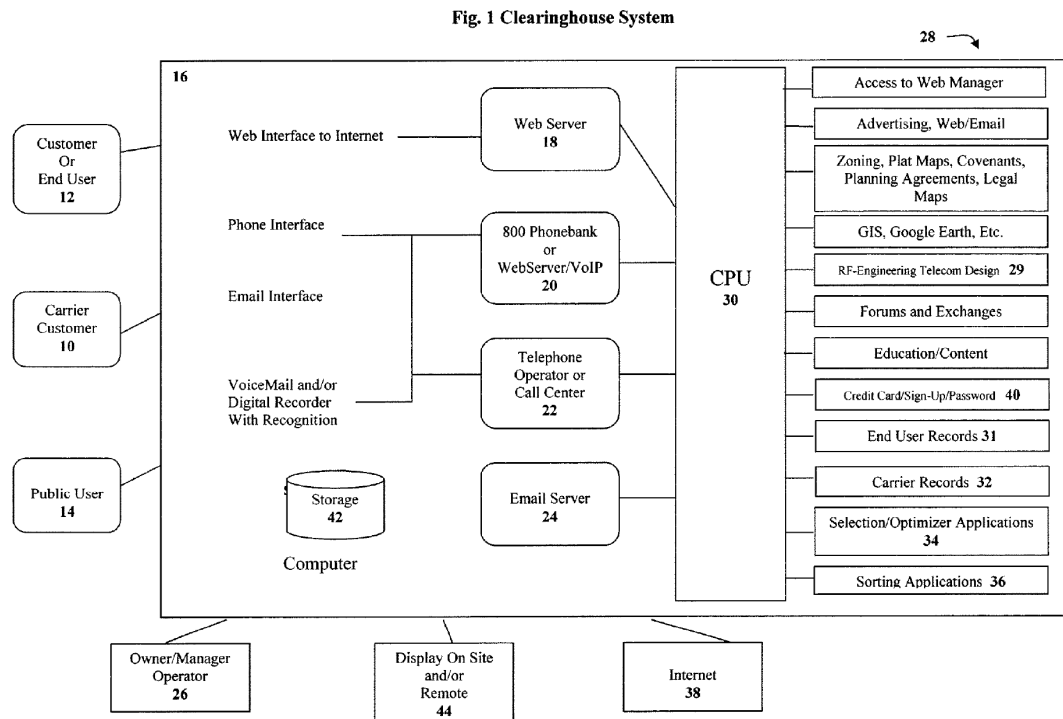
A. '794 Patent Specification

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, 1:22-2:44. 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 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.*, 7:11-43. The patent acknowledges additional prior art systems and sites. *Id.*, 13:64-16:15.

The specification emphasizes that the patent applies to “any carrier-based system” and “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.*, 9:1-28.

Figure 1 depicts the overall system: *Id.* 16:16-46.



B. Prosecution History (EX1004) and Priority Date

The '794 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 '794 patent issued from Application No. 12/208,007, filed Sep. 10, 2008. During prosecution, Applicants overcame Section 103 rejections (based primarily on the combination of U.S. Patent Nos. 6,757,543 ("Moran") and 6,542,588 ("Mashinsky") 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. EX1002, ¶50.

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. 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 disclosure is adequate under Section 112.

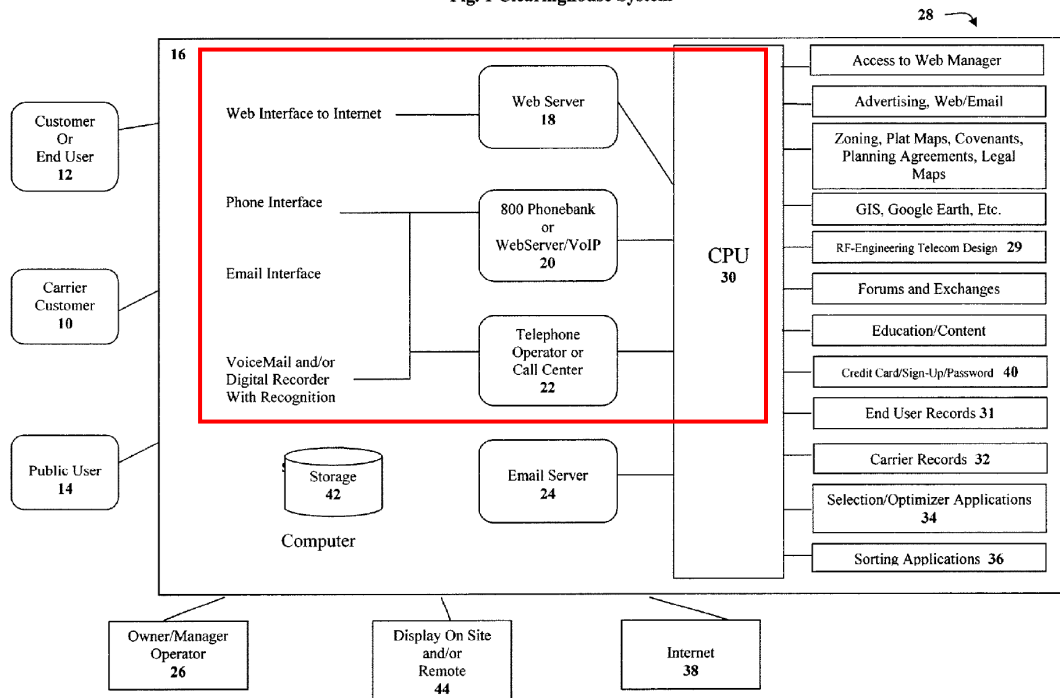
A. Claim 23: “means for sending instructions...”

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 a ranking of performance or specific requests of an end user.”

Structure: a computer configured to send information to a wireless device.

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, 16:19-24; *see also* 13:42-64. It also discloses that there is 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, 13:17-41. The configurations that could implement the claimed functionality are discussed at 14:51-16:15 and illustrated in Fig. 1 (discussion at 16:16-46):

Fig. 1 Clearinghouse System



A POSITA would therefore have understood that the corresponding structure is “a computer configured to send information an end user or an end user’s device.” EX1002, ¶¶54-55; Cf. EX1005 (Patent Owner’s District Court Infringement Contentions) at 50 (“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 24: “means for sending a rank ordering...”

Function: “sending a rank ordering of available telecommunications services 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.

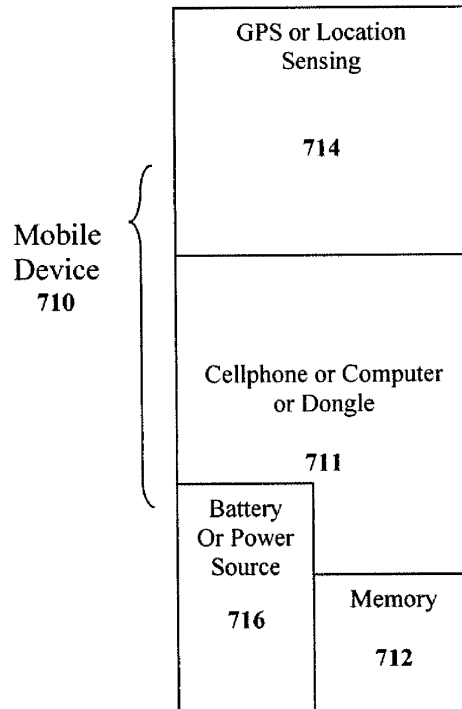
The specification's disclosure of structure for sending information to a wireless device is discussed above, with reference to claim 23. Although different content is sent in the function of claim 24, that has no bearing on the structure that performs the sending. EX1002, ¶59. Therefore, a POSITA would have understood that the corresponding structure is "a computer configured to send information to a wireless device." EX1002, ¶59.

C. Claim 30: "means for identifying..."

Function: identifying a geographic location of a mobile or fixed device.

Structure: processor or circuitry configured to identify the geographic location of a device via communication with a device's GPS or via derivation from other data.

The '794 patent discloses that the device (or the user of the device) may obtain geographic location information using "a GPS or any other location sensing or position estimating techniques 714 that may involve an onboard computer (not shown) in the cellphone or computer 711, or external to the mobile device 710, such as through infrastructure position location methods." EX1001, 26:9-14, Fig. 7.



EX1001, Fig. 7.

As such, the corresponding structure is “processor or circuitry configured to identify the geographic location of a device via communication with a device’s GPS or via derivation from other data.” EX1002, ¶64.

Consistent with this, during prosecution Applicant identified disclosure in Figure 1 of “a CPU 30 connected to GIS, Google Earth, etc.,” disclosure in Figure 7 of “a GPS device in a telephone,” and disclosure in Figures 8 and 9 of “locationing with towers and telephones,” and asserted that “[t]hese and any other structures equivalent to those described in the application or drawings clearly define the claim term.” EX1004, Applicant Argument/Remarks (May 19, 2011) at 10; EX1002, ¶65.

D. Claim 31: “means for determining...”

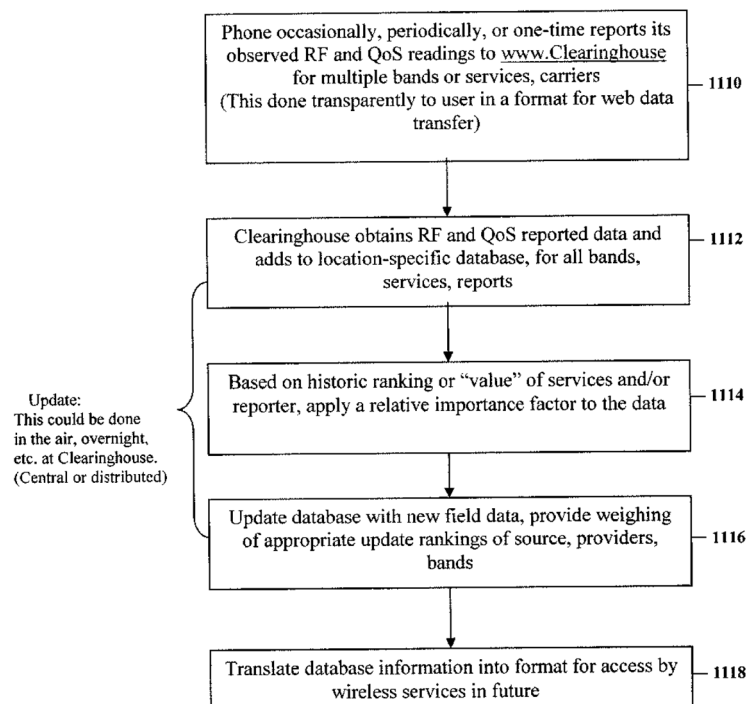
Function: determining one more of towers and frequencies being used by said one or more mobile or fixed devices.

Structure: a computer configured to determine the towers and/or frequencies being used by a mobile device.

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, 28:47-29:52; 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, 7:11-43. 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. EX1001, 32:32-57; EX1002, ¶70.

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.” EX1002, ¶71.

VII. GROUNDS

A. Summary of Primary References

1. Dawson (EX1013)

Dawson relates to “organizing sales activity for a wireless communications system.” EX1013, [0007]. Dawson discloses that deploying infrastructure to provide wireless service to a potential customer includes “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].

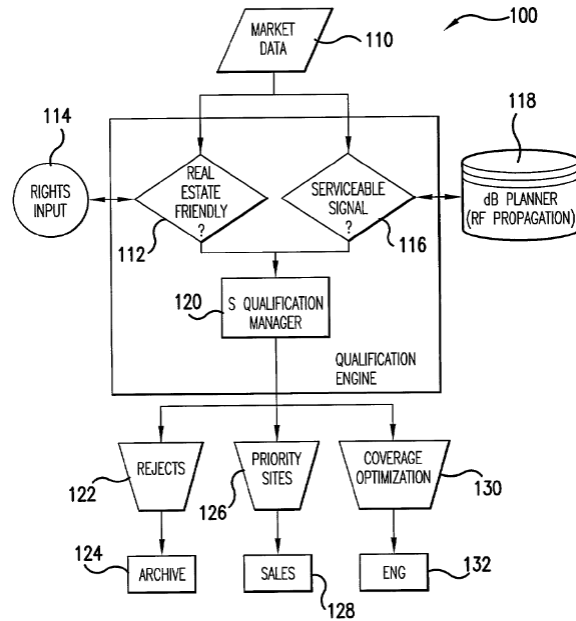


FIG.1

EX1013, Fig. 1.

2. Daley (EX1009)

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].

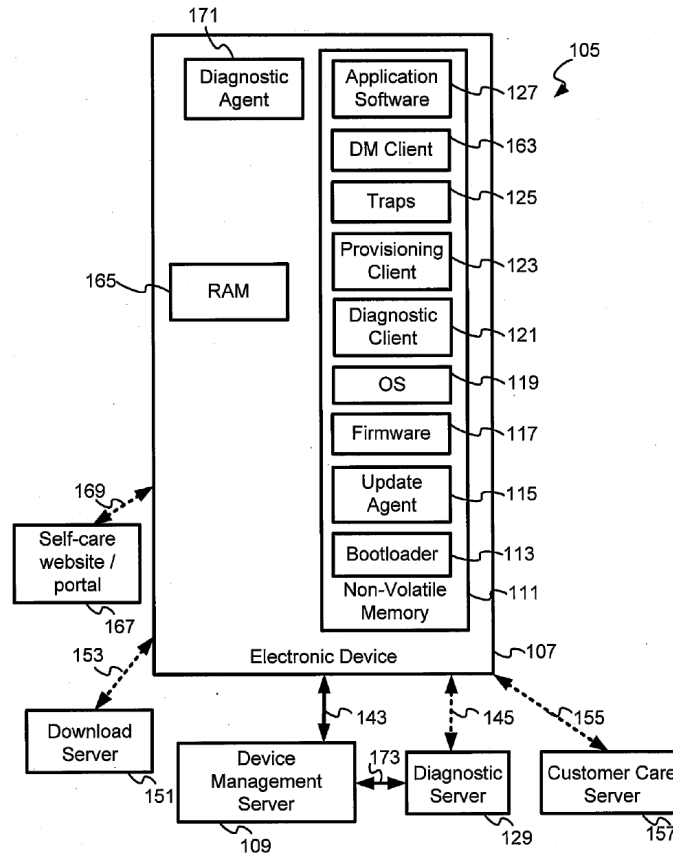


FIG. 1

3. Scherzer (EX1011)

Scherzer discloses a system for collecting service quality information for wireless access points into a database that is shared with devices to facilitate their connections to access points based on the collected measurements. EX1011, Abstract. Client devices 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.

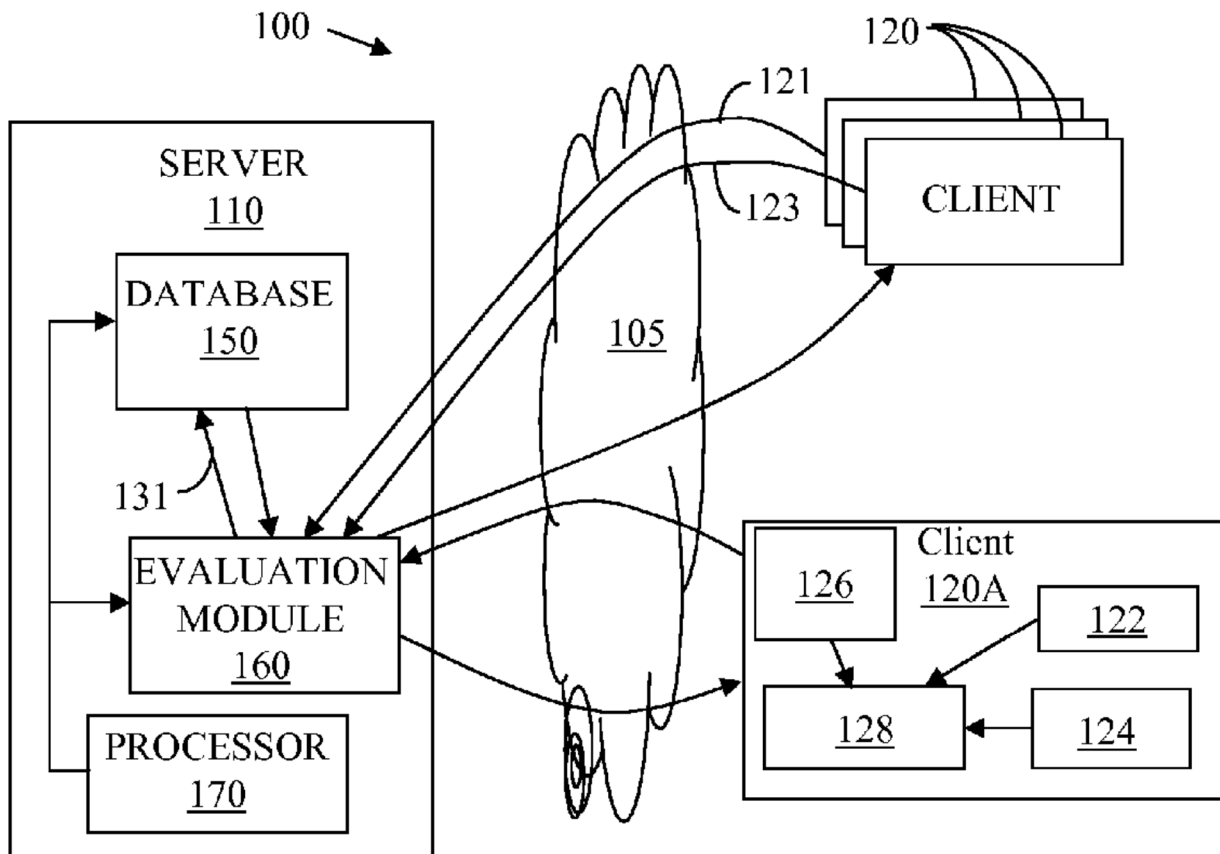


Figure 1

B. Ground 1: Dawson and Geranio (Claims 1-10, 12, 13, 17-19)

1. Combination

Dawson and Geranio are both directed to databases and search engines for real properties (EX1013, [0019]; EX1038, [0013]; EX1002, ¶¶74-75, 79, 105, and they share a common goal: matching properties with buyers and facilitating transactions (EX1013, [0021]-[0023]; EX1038, [0013], [0029]; EX1002, ¶105). In the combination, Dawson's system for organizing information related to telecommunication assets and property is modified to include Geranio's teaching of

a real estate clearinghouse to include transactional features, which includes setting and exchanging business terms and executing contracts. EX1002, ¶104.

2. Motivation to Combine

A POSITA would have been motivated to apply Geranio's teachings of detailed transactional features to Dawson's integrated system for organizing and facilitating sales activities of telecommunications assets. EX1002, ¶106. Dawson's system supports assessing properties as potential sites for infrastructure. EX1013, [0019], [0024], [0032], Fig. 7; EX1002, ¶106. After assessing properties, the logical next step is procuring rights to those properties. EX1002, ¶106. Dawson discloses that property rights can be secured by, e.g., personnel in the real estate group, and a lease record is created afterwards and linked to the site. EX1013, [0025]; EX1002, ¶106. The lease records and other sales activities are stored in the system to support commission tracking. EX1013, [0009], [0025]; EX1002, ¶106.

A POSITA would have understood that the design of Dawson's clearinghouse created opportunities to include more comprehensive and transactional functionalities such as negotiation, document exchange, and contract execution, etc, to generate and track these lease and sales records. EX1002, ¶107. A POSITA would have understood doing so creates a more comprehensive repository that facilitates Dawson's commission tracking capabilities and confers additional

benefits such as streamlining the procurement process, reducing the need for data transfer, and improving transparency and efficiency for all parties. EX1002, ¶107.

Geranio is one example that teaches the kinds of information a POSITA would consider incorporating into Dawson's clearinghouse. EX1002, ¶¶108-110. For example, Geranio's system can "generate a purchase opportunity letter 90, a sale opportunity letter, and an investment opportunity letter 94." EX1038, [0043]. The purchase opportunity letter 90 "describes the property, the sales price 28, the terms of the sale, and any other information of interest" and "is transmitted to the buyer 12." *Id.* Similarly, the sale opportunity letter and the investment opportunity letter include proposed business terms and are transmitted to the seller and the investor, respectively. *Id.* Geranio teaches that "the buyer 12, seller 14, and/or investor 16 may transmit an acceptance 96 indicating that they would like to proceed with the deal" through the system. EX1038, [0044]. The acceptance may be accompanied by or conditioned upon "other terms to be negotiated." *Id.*

Geranio also teaches facilitation of negotiation and contract formation. EX1038, [0045], Fig. 5. "[T]he buyer 12, seller 14, and/or investor 16 may transmit an acceptance 96 indicating that they would like to proceed with the deal." *Id.* The parties "may meet and form a legally binding agreement using an escrow arrangement known in the art" or terms may be "negotiated by the appropriate professionals" and "an agreement could be executed." *Id.* Geranio's system "could

be used to form a legally binding agreement using electronic signatures and form papers or electronic forms to complete all of the legally required terms of the deal.”

Id.

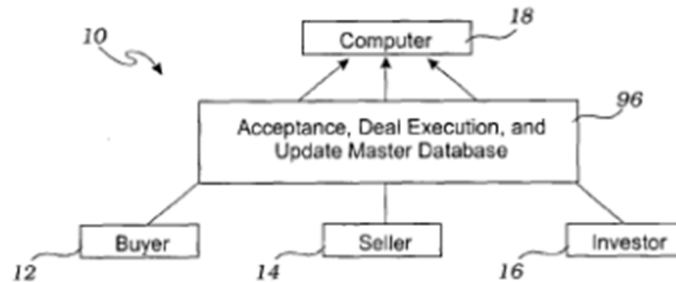


Fig. 5

EX1038, Fig. 5.

3. Reasonable Expectation of Success

A POSITA would have had a reasonable expectation of success in modifying Dawson to include the transactional features taught by Geranio. EX1002, ¶111. Dawson’s system is already integrated with search, updating, and communication protocols and interfaces. EX1013, [0019]-[0022], [0029]-[0030], [0034]; EX1002, ¶111. Dawson opens access to transactional supporting personnel such as real estate agents and implements functionalities such as linking lease records and tracking commissions. EX1013, [0023]-[0025], [0030]; EX1002, ¶111. Adding additional transactional support such as business terms, negotiations, financing options, contract formation from Geranio to Dawson would only involve standard database extensions, interface modifications, and programs bridging these functional modules, all of which were well established techniques. EX1002, ¶111.

4. Analysis

(a) Claim 1

(i) 1[pre]¹

Assuming the preamble is limiting, the combination renders it obvious. EX1002, ¶¶112-114.

Dawson discloses “methods and systems for managing information relating to a fixed wireless service provider” (*a clearinghouse for communication networks*). EX1013, [0018]; EX1002, ¶¶113-114. In particular, it provides information on properties, including legal and technical details, that may be used by wireless service providers to ascertain whether rights to a property can be obtained and network infrastructure deployed thereon. EX1013, [0023]-[0024]; EX1002, ¶¶113-114.

(ii) 1[a]

Dawson discloses a *database* server 820 for organizing sales activities and a webserver 830 (*computer*) that *interfaces with the database* server 820. EX1013, [0033]; EX1002, ¶115.

¹ The full text of the claims is set forth in the table of claims.

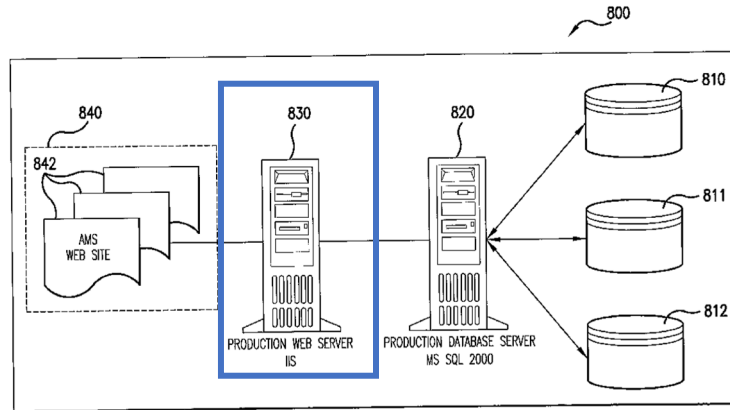


FIG. 8

EX1013, Fig. 8 (annotated).

(iii) 1[a][i]

Dawson teaches an integrated database that organizes “the information necessary for an enterprise offering wireless services” including “information pertaining to portfolios of roof rights” that “can be obtained by the wireless service provider...” EX1013, [0019]; EX1002, ¶¶116-118. “Roof rights” refers to “a legal right to install a wireless infrastructure, which is typically, but not necessarily, installed on the roof a building.” *Id.* The information regarding roof rights that can be obtained are *records for one or more telecommunications carriers which identify infrastructure needs for one or more telecommunications carriers*, where the *infrastructure need* is for installation of a wireless infrastructure such as an antenna at a particular location. EX1002, ¶¶117.

Dawson discloses or renders obvious identifying those infrastructure needs *in terms of one or more of* elements (ii) *location information including one or more*

of geographical areas: Dawson’s database includes “roof rights that can be obtained by the wireless service provider” (EX1013, [0019]) and the “address” of the location at issue (EX1013, [0024]). EX1002, ¶118.

(iv) 1[a][iii]

Dawson teaches that a (potential) wireless customer may perform actions to initiate or facilitate the property procurement process such as entering its site on the Market List or granting legal rights. EX1013, [0034]; EX1002, ¶120. A POSITA would have understood that Dawson’s database includes *records of a plurality of end users* (e.g., site records associated with properties owned or controlled by a wireless customer). EX1002, ¶¶119-124.

The combination renders obvious that these *records... identify one or more of* recited characteristics [i]-[iii]. EX1002, ¶¶121-124.

With respect to this limitation’s element (i), Dawson’s database includes “roof rights that can be obtained by the wireless service provider, commissions, inventories and locations of wireless infrastructure equipment, engineering data, leases, contacts, and other types of information.” EX1013, [0019]. A POSITA would understand that this includes *geographic location* (“locations”) *and type of available or existing telecommunications assets* (“inventories”). EX1002, ¶122.

With respect to elements (ii) and (iii), Dawson’s records include “a site address field 20” (*geographic location of the property assets*) and “permit

requirements for the site, and/or, if known, the cost of obtaining roof rights” (*desired business terms or preferences*). EX1013, [0023]-[0024]; EX1002, ¶123. Dawson details that its records undergo an evaluation on “real estate friendliness,” which is performed on “whether legal rights have or can be obtained for a site at a reasonable cost, and under reasonable terms and conditions” (*desired business terms*). EX1013, [0023], Fig. 1; EX1002, ¶123. The “real estate friendliness” can be determined by means of “input 114 from users in a real estate group, who are responsible for carrying out negotiations with the landlord of the site.” *Id.* A POSITA would have understood that such negotiations would involve *desired business terms* of the property owners (*end users*), which are reflected in Dawson’s records. EX1002, ¶123.

Geranio’s property for sale database 22 further supplements element (iii) with “terms of the sale 32” (*desired business terms*). EX1038, [0029]; EX1002, ¶124. In the combination, the database would include this information. EX1002, ¶124.

(v) 1[b]

Dawson discloses a webserver 830 that is connected to computer 18 and provides HTTP and TCP/IP based interfaces “for providing various web pages 780” to the users, including both wireless service providers (*telecommunications carriers*) and customers (*end users*), so that they can view and interact with the system and its content (*electronic interfaces to said one or more computers which*

permit one or more telecommunications carriers and one or more end users to selectively view or catalog information). EX1013, [0024], [0031]-[0033], Figs. 2, 5, 7, 8; EX1002, ¶¶125-132. For example, a wireless service provider (*telecommunications carrier*) can *selectively view* list of sites for “real estate friendliness” and the possibility to “provide a serviceable signal.” EX1013, [0028]; EX1002, ¶126. The sites may be *catalog[ed]* as “On Net,” “Target,” “Coverage Optimization,” or “Reject.” EX1013, [0031]; EX1002, ¶126. Further, Dawson specifically contemplates that some of these steps may be performed by the customers (*end users*). EX1013, [0034]; EX1002, ¶126.

The information includes *information about* this limitation’s elements (a)-(d). EX1002, ¶¶127-132.

With respect to element (a), Dawson discloses that the web page allows users to see a list of *properties* with site address (*locations*) and status (e.g., “Target”). EX1013, [0031], Fig. 5; EX1002, ¶128. At least those *properties* classified as “Target” are *available* from the perspective of a telecommunications carrier. *Id.*

500

Site Id	Market Site Name	Address	City	State	Base Station	Tenants	Promo	AE	RSM	Status	Customers
246	101 E Renner Rd	101 E Renner Rd	Richardson	TX	US DATA	26		cleonard	jmaynard	Target	Customers
485	10501 N Central Expy	10501 N Central Expy	Dallas	TX	KTVI	24		cleonard	jmaynard	Target	Customers
961	Summit Square Bus. Cntr	1100 Summit Ave	Piano	TX	US DATA	8	SNIPER	cleonard	jmaynard	Target	Customers
974	1101 E Plano Pkwy	1101 E Plano Pkwy	Piano	TX	US DATA	5		cleonard	jmaynard	Target	Customers
1415	11441 N Stemmons Fwy	11441 N Stemmons Fwy	Dallas	TX	GREYSTONE	16		cleonard	jmaynard	Target	Customers
2441	1350 E Arapaho Rd	1350 E Arapaho Rd	Richardson	TX	US DATA	9		cleonard	jmaynard	Target	Customers
3136	One Signature Place	14755 Preston Rd	Dallas	TX	SW BELL	33	SNIPER	cleonard	jmaynard	Target	Customers
3142	Two Signature Place	14785 Preston Rd	Dallas	TX	SW BELL	56		cleonard	jmaynard	Target	Customers
3184	14902 Preston Rd	14902 Preston Rd	Dallas	TX	SW BELL	52		cleonard	jmaynard	Target	Customers
4108	1771 International Pkwy	1771 International Pkwy	Richardson	TX	US DATA	13	SNIPER	cleonard	jmaynard	Target	Customers
25958	2611 Westgrove Dr	2611 Westgrove Dr	Carrollton	TX	SW BELL	5		cleonard	jmaynard	Target	Customers
6709	Citiplace	2711 N Haskell Ave	Dallas	TX	CITIPACE	59		cleonard	jmaynard	Target	Customers
6896	2775 Villa Creek Dr	2775 Villa Creek Dr	Dallas	TX	GREYSTONE	9		cleonard	jmaynard	Target	Customers
18561	3068 Forest Ln	3068 Forest Ln	Dallas	TX	GREYSTONE	21		cleonard	jmaynard	Target	Customers
8340	3410 Midcourt Rd	3410 Midcourt Rd	Carrollton	TX	SW BELL	11		cleonard	jmaynard	Target	Customers
14934	4004 Belt Line Rd	4004 Belt Line Rd	Addison	TX	SW BELL	22		cleonard	jmaynard	Target	Customers
10428	4801 Keller Springs Rd	4801 Keller Springs Rd	Addison	TX	SW BELL	17		cleonard	jmaynard	Target	Customers
32721	Liberty Plaza I	5055 Keller Springs Rd	Addison	TX	SW BELL	7		cleonard	jmaynard	Target	Customers
27717	5310 Harvest Hill Rd	5310 Harvest Hill Rd	Dallas	TX	OXY	47		cleonard	jmaynard	Target	Customers
12212	6330 LBJ Fwy	6330 LBJ Fwy	Dallas	TX	OXY	10		cleonard	jmaynard	Target	Customers
13449	801 E Plano Pkwy	801 E Plano Pkwy	Piano	TX	US DATA	10		cleonard	jmaynard	Target	Customers
28946	9603 White Rock Trl	9603 White Rock Trl	Dallas	TX	KTVI	4		cleonard	jmaynard	Target	Customers
Total						464					

FIG.5

EX1013, Fig. 5.

With respect to element (b), Dawson teaches property information including “a field 208 indicating the number of *tenants*, and a sales volume field 210” or other “[n]otes pertaining to real estate aspects of the site, such as the name of the landlord (*owner*) and/or management company for the site.” EX1013, [0024], Fig. 2; EX1002, ¶129.

With respect to this limitation’s element (c), Dawson’s database discloses “roof rights” a wireless service provider may acquire for service provision or expansion. EX1013, [0019], [0024]-[0031]; EX1002, ¶130. The wireless service provider can review information such as “inventories and locations of wireless infrastructure equipment” (including, e.g., base stations at or near the site), EX1013,

[0031]-[0032]) and use signal coverage and mapping/terrain tools to determine whether wireless infrastructure at particular locations can provide the needed service coverage. EX1013, [0026]-[0027], Figs. 1, 3, 5; EX1002, ¶130. A POSITA would also have understood that such roof rights and associated records are information about *infrastructure needs of one or more telecommunications carriers*. EX1002, ¶130.

Lastly, with respect to element (d), Dawson discloses property information including “[n]otes pertaining to real estate aspects of the site, such as the name of the landlord and/or management company for the site, permit requirements for the site, and/or, if known, the cost of obtaining roof right” (*proposed business terms for fulfilling said infrastructure needs*). EX1013, [0024], Fig. 2; EX1002, ¶131.

Also, as discussed in limitations 1[a][i] and 1[a][ii], *supra*, Geranio’s discloses *proposed business terms* associated with a property that can be selectively viewed or cataloged. EX1002, ¶132.

(vi) 1[c]

Geranio teaches that, when a buyer inquires the system on properties with desired characteristics, “[t]he search means 86 will immediately: locate a buyer 12 for the property; find a property for the seller 14 to buy; and/or match financing with a potential deal.” EX1038, [0079]; EX1002, ¶¶133-134. Further, “[t]he information will be immediately dispatched (*notification is provided*) to the buyer 12 (*one or*

more telecommunications carriers)/seller 14 (one or more of the owners ... of said available telecommunications assets or properties)/investor 16 via mail, fax, email, and/or by phone (or other suitable means) to arrange signatures on a listing agreement, a sales agreement, and an investment agreement.” Id.

(vii) 1[d]

As discussed above, Geranio provides notifications to the buyer 12 and the seller 14 when the system “locate[s] a buyer 12 for the property; find[s] a property for the seller 14 to buy; and/or match[es] financing with a potential deal” (*when suitable available telecommunications assets or properties for said infrastructure needs of said one or more telecommunications carriers at one or more locations are identified*). EX1038, [0079]; EX1002, ¶¶135-136.

(b) Claim 2

Dawson’s property records include “a site identification field 204, a site address field 206” (*public records which include, for a plurality of geographic locations*). EX1013, [0024]; EX1002, ¶¶137-138. Dawson further incorporates maps or mapping information from “a MapInfo spatially-enabled terrain database” including “photographs and terrain information for the desired area” (*maps, ..., or mapping information for said geographic locations*). EX1013, [0026], Fig. 3; EX1002, ¶138. Dawson’s “screen output 300 includes color coded representations of a coverage area 312” that signifies whether a location “is serviceable by the

wireless service provider's network" (*information about carriers serving said geographic locations*). *Id.*

(c) **Claim 3**

A POSITA would have understood that the combination renders obvious third party (*one or more public users, who are not telecommunications carriers or end users*) access to its system in multiple ways. EX1002, ¶¶139-145.

A POSITA would have known that it is common in the telecommunications industry for independent property owners to install and maintain telecommunications infrastructure such as base stations and antenna systems on their properties and lease access to multiple carriers. EX1002, ¶141; EX1039. Further, specialized management firms, such as American Tower, aggregated portfolios of such infrastructure and manage the search/negotiation/lease processes between the property owners and the carriers. EX1002, ¶142; EX1040, 10-15. This business model reduced redundant equipment on rooftops, simplified maintenance, and made economic sense for both property owners and carriers. EX1002, ¶142; EX1040, 10-12. A POSITA would have thus been motivated to allow these independent property owners and brokerage firms (*one or more public users*) access to Dawson's system to facilitate the procurement process. EX1002, ¶143. A POSITA would have also understood that because Dawson is designed to allow a wireless service provider to enter an address and search for properties and infrastructure deployment and a

customer to enter a property location and search for wireless services, the system is ready to be configured to allow these third parties to search and identify (*selectively view or catalog*) property and infrastructure needs. EX1002, ¶143.

In addition, management firms like American Tower also invested in infrastructure and property. EX1002, ¶144; EX1040, 10-15. Accordingly, they would also be interested in searching and identifying properties in Dawson's system as investors and a POSITA would be motivated to accommodate them with investor specific functionalities. EX1002, ¶144. Geranio teaches that such investors can access the clearinghouse system and facilitate the transactions by, e.g., *view[ing] or catalog[ing] information about the properties* and financing the purchases. EX1002, ¶¶144-145, [0028], [0043], [0082], Figs. 1, 4, 5; EX1002, ¶¶144-145.

(d) Claim 4

The combination renders obvious claim 4. *See* limitation 1[b] *supra*, Dawson discloses a web interface, which can serve as an *Internet interface* and is supported by a *webserver*. EX1002, ¶146.

(e) Claim 5

The combination renders obvious claim 5. *See* claim 4 *supra*, Dawson discloses a web interface that is connected to the *world wide web* and the records can be viewed using a *browser*. EX1002, ¶147.

(f) Claim 6

Dawson's database requires "users to log on to the system and provide a password" (*security application*) such that the system "can track input to the system by user." EX1013, [0023]; EX1002, ¶¶148-149. Dawson further teaches that "the home page requires the sales group user to log in, both to protect the confidentiality of the sales data and to allow the system to track actions performed by each user." EX1013, [0030]; EX1002, ¶149. A POSITA would have understood that the use of log-on/password protects user data including the *identity and infrastructure needs of said one or more telecommunications carriers*. EX1002, ¶¶148-149.

(g) Claim 7

Dawson discloses that a user, such as real estate agent, can log on with a password and the user's activities are tracked for sales transactions and billing and crediting commissions (*security application and billing application*). EX1013, [0025]; EX1002, ¶¶150-151. A POSITA would have understood it is standard practice to require a similar security application for all Dawson's users including *telecommunication carriers* and *end users*. EX1002, ¶151. A POSITA would have understood it is also standard practice for a commercial system like Dawson's to charge its users subscription or usage fees (*selectable rates for use of said clearinghouse system*). EX1002, ¶151. For example, Dawson teaches the use of commercial software deciBel Planner and MapInfo (EX1013, [0026]-[0027]), which

were known by a POSITA to charge subscription or service fees. EX1002, ¶151; *see also*, EX1041; EX1042, 19, 22. A POSITA would have known that such user fees would be passed to Dawson’s users in some form. EX1002, ¶151.

(h) Claim 8

The combination includes Geranio’s *communications application*. EX1002, ¶¶152-154. Geranio’s clearinghouse can “generate a purchase opportunity letter 90, a sale opportunity letter, and an investment opportunity letter 94” and supports the transmission of the same. EX1038, [0043]-[0045], Fig. 5; EX1002, ¶153. It also facilitates the negotiation process, during which “the buyer 12, seller 14, and/or investor 16 may transmit an acceptance 96 indicating that they would like to proceed with the deal.” *Id.* Additionally, the clearinghouse “could be used to form a legally binding agreement using electronic signatures and form papers or electronic forms to complete all of the legally required terms of the deal.” *Id.*

As to the system being *secure*, see claim 6 *supra*, Dawson teaches user accounts and passwords. EX1002, ¶154. A POSITA would also have known that password protections and other electronic authentication and security measures were standard practices in online systems like Dawson and Geranio. EX1002, ¶154; *see also, e.g.*, EX1043, 10-15.

(i) Claim 9

Dawson discloses *property assets are selected from a building, a roof top, a billboard, a tower, and a lot or acreage*. EX1013, [0019] (“roof rights”), [0026]-[0027] (“building”), Fig. 3; EX1002, ¶¶155-156.

(j) Claim 10

Dawson discloses its database including metrics such as radio coverage and signal strength of a specific site (*performance or quality of service information for specific locations*) for determining whether a serviceable signal can be supplied to the site. EX1013, [0026]-[0027], Fig. 3; EX1002, ¶¶157-158.

(k) Claim 12

Dawson is directed to facilitating wireless service providers’ deployment of wireless infrastructure and expansion of wireless network services to customers. EX1013, [0028], [0031]. Dawson teaches prioritizing expansion to “most promising potential customers,” which may be ascertained by “mass-mailed advertisements from potential customers, sales leads, the fact that a site not currently being served by the wireless service provider is owned and/or operated by the same owner as another site to which services are provided.” EX1013, [0020]-[0021]. Dawson inquires about real-estate and engineering feasibilities in determining whether to obtain roof rights and/or deploy network infrastructure, e.g., an antenna. EX1013, [0023]-[0026]. Customers may “initiate the process” and “take other actions” during the process. EX1013, [0034]. Dawson further teaches that the evaluation is a

dynamic process and that “potential sites” may be added “as new information becomes available and as the wireless service provider’s network continues to change.” EX1013, [0029].

A POSITA would thus have understood that Dawson’s customers would be interested in receiving service updates. EX1002, ¶¶159-161. As such, a POSITA would have configured Dawson’s clearinghouse to **provide performance or quality of service information to the customer’s device (one or more mobile or land devices) at the site (located in or will be located in said specific locations).** EX1002, ¶161. For example, if a customer’s site is classified as “Coverage Optimization,” the site is considered low priority for the wireless service provider because the coverage is not optimal. EX1013, [0031]; EX1002, ¶161. However, the customer located there may still want the service and it may be mutually beneficial for both the customer and the wireless service provider to update the service coverage once the site becomes serviceable. EX1002, ¶161. For the customer, this would allow new service to be installed. EX1002, ¶161. For the wireless service provider, this would secure the prospective customer from its competitors. EX1002, ¶161. In many circumstances, the customers are commercial entities, e.g., a landlord of commercial buildings or shopping centers with numerous tenants, and wireless service provision is not only desirable (for the landlord and its tenants) but also profitable (for the wireless service provider and the landlord), and both the customer

and the wireless service provider would be incentivized to receive service updates. EX1002, ¶161; *see also, e.g.*, EX1044. Indeed, Dawson specifically contemplates service expansion for commercial landlords who are existing customers at one location but not another. EX1013, [0021] (identifying a site based on “the fact that a site not currently being served by the wireless service provider is owned and/or operated by the same owner as another site to which services are provided”); EX1002, ¶161.

(l) Claim 13

Dawson discloses estimation of radio coverage and signal strength (*performance or quality of service information*) using the deciBel Planner with MapInfo software. EX1013, [0026]. A POSITA would have known that the deciBel Planner supported *multiple bands and multiple carriers*, such as CDMA, UMTS, fixed wireless and paging technologies. EX1041; EX1002, ¶¶162-163.

(m) Claim 17

Dawson discloses making “a determination as to whether a serviceable signal can be provided to the site is made.” EX1013, [0026], Figs. 1, 3; EX1002, ¶¶164-166. Dawson also teaches that sites in its database that have serviceable signals may be “classified as priority sites” (*optimum or prioritized locations for said infrastructure needs based on said records of said plurality of end users*). EX1013, [0023]-[0030], Figs. 1-3; EX1002, ¶¶164-165.

A POSITA would have known that the coverage estimation application communicates with Dawson's webserver 830 (*computation application, which interfaces with at least one of said one or more computers*), because application output 300 is presented as a webpage that can be viewed from a web browser. EX1013, Fig. 3; EX1002, ¶166.

(n) Claim 18

The combination renders obvious claim 18. *See* claims 2 and 17, *supra*. EX1002, ¶167.

(o) Claim 19

The combination renders obvious claim 19. *See* claim 8 *supra*, Geranio teaches *forming binding agreements*. EX1002, ¶168.

C. Ground 2: Dawson, Geranio, and Aaron (11, 20, 22, 25, 26)

1. Combination

Dawson's clearinghouse is modified to include Aaron's teachings on geographic location tracking and quality of service maps using mobile devices to: 1) expand wireless services to include mobile wireless services; 2) modify Dawson's use of GPS to record location coordinates to include Aaron's location calculation methods using GPS and base stations; and 3) modify Dawson's software estimation of radio coverage to include Aaron's quality of service maps and updates based on information collected from mobile devices at particular geographic locations. EX1002, ¶169.

2. Motivation to Combine

Although Dawson observes that fixed and mobile wireless networks have different requirements (EX1013, [0005]), Dawson's disclosures are not limited to one or the other. EX1002, ¶170. A POSITA would have understood that many of the issues and solutions presented in Dawson are applicable to both mobile and fixed wireless services. EX1013, [0019] (covering in "broadest sense" the organization of "information necessary for an enterprise offering wireless services"), [0024] (use of base station which implies providing mobile wireless services), [0026]-[0027] (use of deciBel Planner to predict coverage which is common for mobile carriers to design cellular networks), [0031]-[0032] (identification of "base station, or hub, through which the site is connected to the wireless service provider's network"); EX1002, ¶170. A POSITA would thus have been motivated to apply Dawson's clearinghouse to mobile wireless services. EX1002, ¶170. For example, a POSITA would have known that the same entities, e.g., T-Mobile, often provided both fixed and mobile wireless services and used tools like deciBel to plan their networks, and would have leveraged Dawson's clearinghouse for both services. EX1002, ¶170; *see also, e.g.*, EX1026; EX1041; EX1045.

Further, a POSITA would have been motivated to modify Dawson's clearinghouse to include aspects of Aaron so as to more accurately characterize network coverage and performance for a wireless service provider. EX1002, ¶171.

For example, Dawson uses software-based estimation of signal strength. EX1013, [0026]-[0027], [0034], Fig. 3; EX1002, ¶171. Aaron teaches recording the location and signal strength of mobile devices, using that to create a quality of service map, and continuously monitoring and updating of the quality of service map. EX1010, [0021], [0031]; EX1002, ¶171. A POSITA would have known that such user-reported signal strength data provides real-world and real-time measurements across various environments. EX1002, ¶171. Supplementing Dawson's database with such data fills in gaps, reduces uncertainties, validates and refines Dawson's predictive model, and provides up-to-date coverage map, and a POSITA would have been motivated to do so to enhance the Dawson system. EX1002, ¶171.

3. Reasonable Expectation of Success

A POSITA would have had a reasonable expectation of success in adding location and signal strength collection capabilities disclosed by Aaron to Dawson. EX1002, ¶¶172-174.

Enhancement to Dawson's database to collect location and signal strength measurements as disclosed in Aaron and use that to supplement Dawson's software-estimated coverage map would have been straightforward and well within the abilities of a POSITA. EX1002, ¶173. Doing so would have involved only adding additional tables, attributes, relationships, and query routines to the existing

databases, and reconfiguring webpages to display signal coverage with the updated data. EX1002, ¶173.

On the server side, Aaron's system is compatible Dawson's and relevant functionalities can be integrated using known techniques. EX1002, ¶174. Aaron discloses a central processor 204 collecting and storing received location and quality of service information, which may be implemented "by one or more devices within the wireless network" or "distributed to some degree." EX1010, [0036], [0037], [0043], Fig. 2. A POSITA would have thus known that the functionalities of the central processor 204 can be incorporated into Dawson's system as a single server or in a distributed fashion. EX1002, ¶174.

4. Analysis

(a) Claim 11

As discussed in Ground 1 *supra*, the combination of Dawson and Geranio renders obvious claim 10. EX1002, ¶¶175-177. The combination with Aaron further renders claim 11 obvious. EX1002, ¶¶175-177.

Aaron describes mobile devices measuring *quality of service performance* parameters and combining those with the devices' geographic location information. EX1010, Abstract, [0004]-[0005], [0041]. The mobile device monitors such information "periodically or continuously." EX1010, [0004]-[0005]. Transmission of the information to the central database "may occur according to a predetermined

schedule (e.g., hourly, daily, etc.) and/or at times when traffic on the wireless communications system is low and/or at times when transmission is otherwise convenient ... [or] based upon an interval since a previous transmission.” EX1010, [0008]. Aaron thus discloses updating *quality of service* in the database *automatically* through the *mobile devices*. EX1002, ¶176.

Also, Aaron’s mobile device monitors the quality of service performance and geographic location information “when a user accesses a particular application or service.” EX1010, [0004]-[0005]. A POSITA would understand that the user accessing a “particular application or service” is a *manual[]* step. EX1002, ¶177.

(b) Claim 20

(i) 20[pre]

See Ground 1, limitation 1[pre]. EX1002, ¶178.

(ii) 20[a]

See Ground 1, limitation 1[a] and claim 10. EX1002, ¶179.

(iii) 20[a][i]

See Ground 1, limitation 1[a][i]. The records identifying infrastructure needs for one or more telecommunications carriers in 1[a][i] (e.g., roof rights) also *identify infrastructure and location information for one or more specific locations*. EX1002, ¶180.

(iv) 20[a][ii]

See Ground 1, limitation 1[a][ii]. EX1002, ¶181.

(v) 20[a][iii]

See Ground 1, claim 2. EX1002, ¶182.

(vi) 20[b]

See Ground 1, limitation 1[b] and claims 3, 11. EX1002, ¶183.

(vii) 20[c]

Aaron details in Fig. 3 that the steps of monitoring and updating quality-of-service performance include measuring service quality (*obtaining said performance or quality of service information*) at Block 310 and transmitting the information (*providing said performance or quality of service information*) to the central processor (*to said one or more electronic interfaces*) at Block 360. EX1010, [0040]-[0041], [0049], Fig. 3; EX1002, ¶¶184-185. Aaron further teaches that operations of Fig. 3 can be “implemented via software (including firmware, resident software, micro-code, etc.) executing on a wireless terminal 100” (*one or more applications operable with said one or more mobile ... devices*). EX1010, [0038], Fig. 3; EX1002, ¶185.

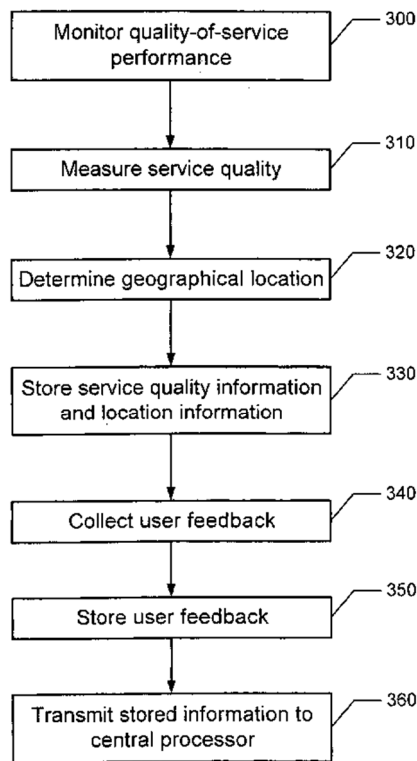


Fig. 3

EX1010, Fig. 3.

(c) Claim 22

The combination renders obvious claim 22. *See* Ground 1, claim 13, *supra*.

EX1002, ¶186.

(d) Claim 25

See limitation 20[c], *supra*. Aaron discloses implementing the functionalities of monitoring and updating *performance or quality of service information* “via software (including firmware, resident software, micro-code, etc.) executing on a wireless terminal 100 (*monitoring application*).” EX1010, [0038], Fig. 3;

EX1002, ¶¶187-189. As discussed in claim 26, *infra*, the mobile device may be part of the clearinghouse system. EX1002, ¶188.

Alternatively, Aaron discloses that the central processor “receives information about quality of service and location information from one or more wireless terminals 100” and “*updates* one or more coverage maps and/or one or more *quality-of-service* maps for a wireless communications system (Block 420).” EX1010, [0052]. A POSITA would have known that the server has counterpart software for receiving and updating *performance or quality of service information* in the database which would also be a *monitoring application*. EX1002, ¶189.

(e) Claim 26

See claim 20, *supra*, the combination renders obvious claim 26 by including the mobile devices taught by Aaron in the clearinghouse system. EX1002, ¶¶190-191.

D. Ground 3: Dawson, Geranio, Aaron, and Chmaytelli (14-16, 27-32)

1. Combination, Motivation, and Reasonable Expectation of Success

This is the combination of Ground 2, modified to include certain ad-related features as taught by Chmaytelli. EX1002, ¶¶192-194.

A POSITA would have been motivated to combine Chmaytelli with the combination of Dawson, Geranio, and Aaron. EX1002, ¶193. For example, a POSITA would have known, from Chmaytelli and from other references, of industry

interest in location-based content, including advertising. EX1002, ¶193; EX1028; EX1029; EX1030; EX1031. Advertising was widely recognized as an attractive additional revenue stream or a way to offer services at lower cost. EX1002, ¶193. As discussed in Ground 1, claims 3 and 7, *supra*, commercial viability of Dawson’s clearinghouse would demand a subscription or use fee and advertising revenue can help subsidize or eliminate subscription fees and promote adoption. EX1002, ¶193. Further, location-specific advertising was understood to be more likely be viewed and to result in conversions. EX1002, ¶193. A POSITA would therefore have recognized the potential value of adding localized ad serving capabilities to the combination of Ground 2, which already collected location information from devices. EX1002, ¶193.

A POSITA would have had a reasonable expectation of success because Chmaytelli discloses this type of functional integration. EX1012, [0043] (“ad dispatch server 130 can be integrated into server 120, or can be a plurality of separate servers that perform functionally as described”); EX1002, ¶194. Combining or supplementing the server in Dawson to include such a local ad server would be a straightforward add-on using known techniques. EX1002, ¶194.

2. Analysis

(a) Claim 14

As discussed in Grounds 1 and 2 *supra*, the combination of Dawson and Geranio renders obvious claim 1, and Aaron teaches collecting location of mobile devices.

Chmaytelli discloses a “wireless advertisement (ad) system” configured to serve ads “based on a location of the client device and the geographic area defined in the ad.” EX1012, [0010], [0032], [0041], Fig. 3; EX1002, ¶¶195-196. Chmatytelli specifically teaches that ads can be delivered to client devices and viewed as web pages. EX1012, [0042] (client device API triggering the device to download “an associated HTML page/document (e.g., advertisement) 334” or ads delivered to the client device as a URL); EX1002, ¶196. Thus, in the combination, with known location of a mobile device, the local ad server would be *connected to* the web interface (*said one or more electronic interfaces*) of the Dawson clearinghouse and *provides localized content to one or more mobile or fixed devices in a specific location*. EX1012, [0043]; EX1002, ¶196.

(b) Claim 15

Aaron discloses its mobile device establishing a radio link with a base station and sending the measures of the signal strength to the central processor over the link. EX1010, [0041]-[0042], Fig. 2; EX1002, ¶¶197-198. A POSITA would thus understand that the mobile device communicates with the central processor via *one*

or more base stations connected to said one or more electronic interfaces of the central processor. EX1002, ¶198.

(c) Claim 16

Chmaytelli discloses *local ad servers provide web page view and usage statistics to said database through said one or more electronic interfaces*. It discloses that the “ad dispatch server 130” collects the responses to an ad, and collates them so that “information regarding whether all pages of an ad were viewed, whether some links were followed, and the like” can be tracked and reported. EX1012, [0043]; EX1002, ¶¶199-200.

(d) Claim 27

(i) 27[pre]

See claim 14 regarding the addition of local ad servers taught by Chmaytelli to Dawson’s clearinghouse with location tracking features of mobile users from Aaron. The combination would provide a *content providing system which provides selected content to mobile devices*. EX1002, ¶201.

(ii) 27[a]

See Ground 2, limitation 20[pre]. EX1002, ¶202.

(iii) 27[a][i]

See Ground 2, limitation 20[a]. EX1002, ¶203.

(iv) 27[a][i][1]

See Ground 2, limitation 20[a]. EX1002, ¶204.

(v) 27[a][i][2]

See Ground 2, limitation 20[a][i]. EX1002, ¶205.

(vi) 27[a][i][3]

See Ground 2, limitation 20[a][ii]. EX1002, ¶206.

(vii) 27[a][i][4]

See Ground 2, limitation 20[a][iii]. EX1002, ¶207.

(viii) 27[a][ii]

See Ground 2, limitation 20[b]. EX1002, ¶208.

(ix) 27[a][iii]

See Ground 2, limitation 20[b]. EX1002, ¶209.

(x) 27[b]

Aaron teaches *identifying a geographic location* of a *mobile device* by multiple methods such as “via a Global Positioning System (GPS) receiver in the wireless terminal, via triangulation methods using measurements from multiple base stations, or by determining a geographical location of a base station with which the wireless terminal has a radio link.” EX1010, [0042]; EX1002, ¶210.

(xi) 27[c]

See claim 14, *supra*. EX1002, ¶211.

(e) Claim 28

See claims 15, 27, *supra*. EX1002, ¶212.

(f) Claim 29

See claims 16, 27, *supra*. EX1002, ¶213.

(g) Claim 30

As for the performance of the claimed function, *see* above limitation 27[b] regarding the use of a GPS for identifying a geographic location of the mobile device. EX1002, ¶¶214-215. The corresponding structure is, e.g., the processor or circuitry including the “Global Positioning System (GPS) receiver in the wireless terminal.” EX1010, [0006], [0028], [0042], Fig. 1; EX1002, ¶215.

(h) Claim 31

Regarding performance of the claimed function, 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]; EX1002, ¶217.

As explained above, a POSITA would have found it obvious to modify Dawson to include location-determining aspects of Aaron. EX1002, ¶¶216-218. In this combination, the corresponding structure is Dawson’s server modified to include the location determination functionalities as disclosed in Aaron. EX1002, ¶¶217.

(i) Claim 32

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, ¶¶219-220. 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, ¶220.

E. Ground 4: Daley, Aaron, Scherzer and optionally Dawson (Claims 20-26)

1. Combination

Daley’s mobile device monitoring and diagnostic system is modified to leverage the mobile device geographic location capabilities and access point quality measurement collection and use, as disclosed by Aaron and Scherzer. EX1002, ¶¶221-222. If necessitated by the term *clearinghouse*, it would have been obvious to further modify the system to provide support for telecommunications infrastructure procurement as, e.g., disclosed by Dawson. EX1002, ¶221.

Daley, Aaron, and Scherzer are each directed to systems and methods for tracking and improving the wireless network experience: each describes collecting data, including quality of service information, from wireless devices and storing and analyzing it on a central sever to support issue remediation and/or service improvement. EX1002, ¶222. 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 improve or expand the wireless network. EX1002, ¶222.

2. Motivation to Combine

(a) 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, which allows end-users of the system (including device users) to remotely diagnose and resolve problems, including network performance problems. EX1009, [0033]-[0034], [0038]-[0042], [0215]-[0216], Figs. 1, 4, 6-18. A POSITA would have known that to do this, it is advantageous 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, ¶¶223-226.

Aaron is also directed to collecting and measuring service quality information from wireless devices, and Aaron discloses collecting information about the geographic location of the wireless device when service quality information is collected. EX1010, [0006], [0042]; EX1002, ¶¶225-226. 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, and Scherzer's database includes the geographic location of wireless access points and both real-time and

historical data about their performance. EX1011, [0067]-[0069], Fig. 1; EX1002, ¶¶225-226.

That both Aaron and Scherzer disclose collecting location information would further motivate a POSITA to similarly modify Daley, and a POSITA would have looked to the teachings of Scherzer and Aaron when considering how to do so. EX1002, ¶¶225-226.

**(b) 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 to a different base station was a common exercise. EX1002, ¶¶227-231. Information about handovers, including transitions from a home network to a roaming network, could be a useful diagnostic tool (*e.g.*, to determine whether an issue is rooted in the device or in the network infrastructure). EX1002, ¶227. Connecting to another base station is also a potential remedy (*e.g.*, if it would be more performant or less expensive). EX1002, ¶227; EX1015, at 117-120, 142-156; EX1016, at 336-39; EX1032 at 4-7, 15-30, 31-38, Table 11.4; EX1035; EX1036 at 1:18-4:36. 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) and might be 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, ¶¶227-228; EX1015, at 117-120; EX1016, at 338-39; EX1032 at 19-30, 275-302, 327; EX1036 at 1:18-4:36.

Daley explicitly discloses monitoring base station transitions. EX1009, [0145]; EX1002, ¶227. A POSITA would have been motivated to modify Daley to include 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, ¶227; EX1032 at 19-30, 251-273; EX1033 at 1:10-2:67. And a POSITA would have known that Daley as modified with location-related collection and processing (e.g., per Aaron or Scherzer) could further leverage base station information for providing location-related functionality such as base station recommendations or rankings. EX1002, ¶228.

A POSITA would have known that both real-time and historical location data would help Daley improve user experiences with mobile devices. EX1002, ¶229; EX1015, at 117-120; EX1032 at 19-30. For example, real-time location data facilitates providing configuration information (like relevant towers and their connection settings), to resolve immediate problems or mitigate ongoing risks. EX1002, ¶229; EX1015, at 117-120; EX1032 at 19-30. 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]), and a POSITA would know that historical location data facilitates that by, e.g., enabling identification of locations in which customers frequently encounter issues or of common configurations in devices that do not experience problems in a given location. EX1002, ¶229. Moreover, a POSITA would have been aware of related art, such as Scherzer, that discloses such systems and their advantages. EX1002, ¶¶229-231.

A POSITA considering Daley would therefore have looked to art (like Aaron and Scherzer) that describes collecting, providing, and using information about base stations and access points. EX1002, ¶¶227-231.

(c) 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., storm, power outage, or localized interference), base station-specific (e.g., excessive demand, misconfiguration, or malfunction), or device/user-specific. EX1002, ¶¶232-236; EX1015, at 35-41, 117-120; EX1032 at 19-30, 275-302; EX1035 at 245-247.

A POSITA therefore would have understood that modifying Daley’s system with location and base station information would enable it to address a wider range

of remedial actions: e.g., configuring a device to avoid interference, avoiding excessive power use, and connecting to alternative base stations. EX1002, ¶233; EX1032 at 19-30, 251-274, 275-302. The latter remedy, in particular, was known to possibly have financial implications for a device user (e.g., because of carrier fees), and a POSITA would have recognized the advantages of empowering the end user to make the final decision, such as by providing a list of available base stations (ideally ranked according to various metrics such as availability, performance, or cost) and allowing the device user to make the final decision. EX1002, ¶234.

**(d) Network Expansion is a Natural Complement to
Performance Tracking and Problem Identification**

A POSITA would have known that some performance issues 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 that, e.g., deploy more base stations (towers). EX1002, ¶¶237-243; EX1032 at 19-30. A POSITA would have recognized that network capacity data and the location of users and their devices are key inputs into longer-term capacity planning. EX1002, ¶237. Moreover, for business and competitive reasons, carriers would have been motivated to expand their networks to alleviate systemic issues and to improve capacity and performance to meet customer demand. EX1002, ¶237. A POSITA considering a system like Daley, especially as modified per Aaron and Scherzer, would therefore

have looked to the teachings of references like Dawson regarding procuring network infrastructure and expanding wireless services. EX1002, ¶¶238-243.

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, ¶¶244-256.

Modifications to Daley's mobile devices to collect geographic location and access point information would have been straightforward and well within the abilities of a POSITA because they are directed to the same type of problem, with the same type of solution, as those disclosed by Daley. EX1002, ¶244. Similarly, a POSITA would have known that transmitting this additional data can be accomplished by, e.g., adding additional header and content fields to the transmission protocol disclosed by Daley, with minimal impact on consumed bandwidth. EX1002, ¶245.

On the server side, a POSITA would have known how to extend the databases disclosed by Daley. EX1002, ¶246. For example, a POSITA would know to add additional columns or tables for records containing signal strength and the location of a device. EX1002, ¶246. Adding user interface pages to support this additional content and functionality would have been similar to creating the pages disclosed in Daley. EX1002, ¶247.

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, ¶248; EX1018, at 330-33; EX1019, at 341-43. For example, it was known that a device could determine its location by using GPS, measuring the signal delay to an emitter of known location, triangulating with multiple emitters, comparing observed network performance to devices known to be in roughly similar locations, etc. EX1002, ¶249. A POSITA would have understood that methods including advanced forward link trilateration (AFLT), round trip delay (RTD), and cell/sector centroids were well known in the art and embodied in commercial solutions such as Qualcomm's gpsOne®. EX1018, at 330-33; EX1019, at 341-43; EX1020, [0005]-[0007], [0068]-[0095], Figs. 5-9; EX1002, ¶249.

A POSITA would have known that the location of a base station could be determined from commercial databases, such as Qualcomm's Base Station Almanac. (EX1020, [0008]-[0016]) and that there were publicly accessible registries and other 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, ¶250. 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, ¶250.

A POSITA would also have had a reasonable expectation of success in modifying Daley (as extended per Aaron and Scherzer) to include certain aspects of Dawson. EX1002, ¶¶255-256. 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. EX1002, ¶255. It would have been similarly straightforward to add support for Dawson's procurement-enabling reports and queries. EX1002, ¶256.

4. Analysis

(a) Claim 20

(i) 20[pre]

Assuming the preamble is limiting, the combination renders obvious *a clearinghouse for communications networks*. EX1002, ¶¶257-262. Daley discloses methods and systems that enables intermediaries to manage and perform remote diagnostics of mobile devices on mobile networks (*communications networks*). EX1009, Abstract. The system is a *clearinghouse* for such networks: it includes a diagnostic server that receives and stores a variety of information provided by client software on each mobile device (EX1009, [0039]-[0040], [0215]-[0216]) and provides access to the collected data to users of the system, including

the wireless network provider and the customer (EX1009, Figs. 15-18); EX1002,

¶¶257-259. Daley's Figure 1 illustrates the server components:

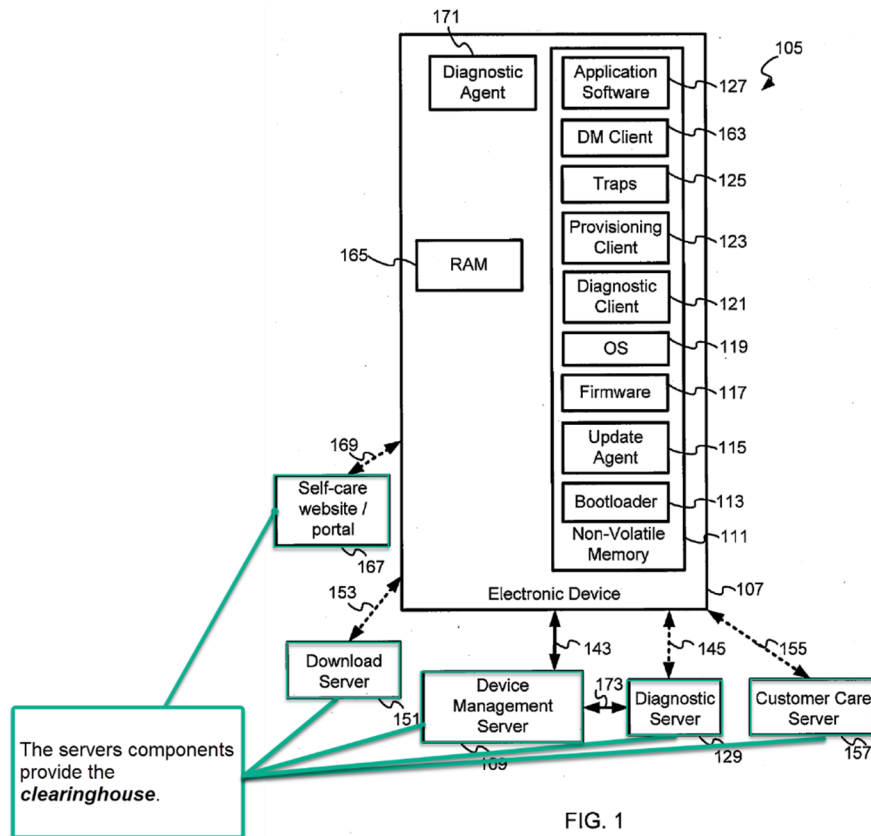
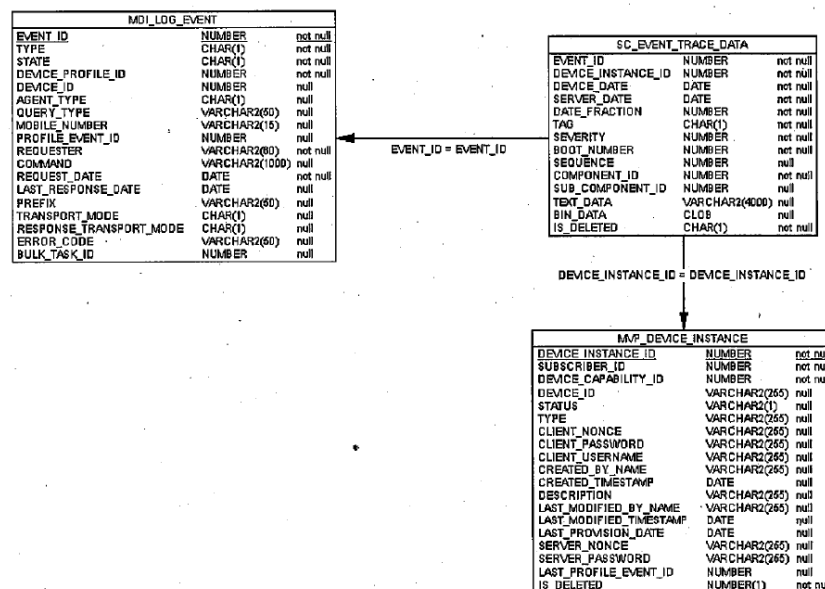


FIG. 1

If *clearinghouse* refers to a system that facilitates the procurement of property and infrastructure for a telecommunications system, then it is rendered obvious by the combination with Dawson. Dawson's integrated database system 800 organizes information related to property rights that telecommunications service providers may want to acquire for the deployment of infrastructure. EX1013, [0002], Figs. 1, 8; EX1002, ¶¶260-262.

(ii) 20[a]

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, ¶¶263-272. Daley Figure 14 illustrates database tables containing the data. *See also* EX1009, [0249], [0252]; EX1002, ¶265.



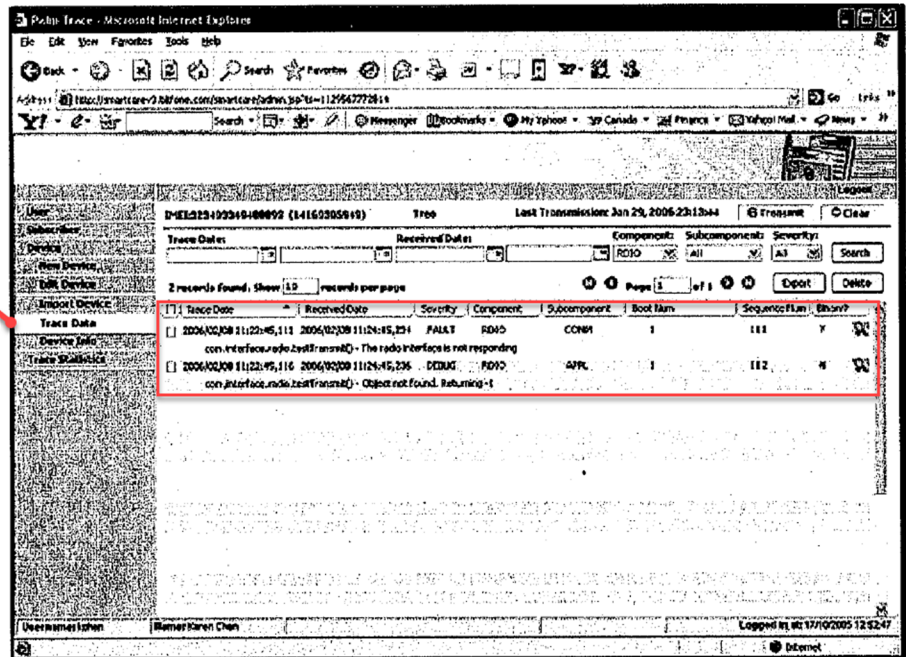
The diagnostic server *interface[s] with a database*: e.g., it writes the diagnostic tracing and log data to the database. EX1009, [0215]; EX1002, ¶266.

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]; EX1002, ¶267. The web pages are part of 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, ¶267. Daley discloses a variety of ways to implement its servers: the network server elements (e.g., diagnostic server, customer care server, and self-care website/portal) may be separate or co-resident in any combination (EX1009, [0033]-[0034]), the diagnostic/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, ¶¶265-267. A POSITA would have understood that the functionality of each server 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 a hybrid mode may be adopted). EX1002, ¶267. The collective functionalities and components satisfy the *one or more computers* limitation. EX1002, ¶267.

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



The screenshot shows a web application interface for viewing trace data. A red box highlights a table of trace data. The table has the following columns: Trace Date, Received Date, Severity, Component, Subcomponent, Boot Num, Sequence Num, and Binav?.

Trace Date	Received Date	Severity	Component	Subcomponent	Boot Num	Sequence Num	Binav?
2006/02/08 11:22:45.111	2006/02/08 11:24:45.234	FATAL	RDIO	CONN	1	111	Y
com.interface.radio.zsrf:rsnd() - The radio interface is not responding							
2006/02/08 11:22:45.116	2006/02/08 11:24:45.236	DEBUG	RDIO	APPL	1	112	N
com.interface.radio.testTransmit() - Object not found. Returning -1							

The data Daley collects from mobile devices through the diagnostic client includes “network *performance* data.” EX1009, [0041]; EX1002, ¶269. Daley’s diagnostic client also collects log data that includes *quality of service* information: “discrete events such as low/high signal or roaming transitions” of the mobile device. EX1009, [0145]; EX1002, ¶269; *see also e.g.* EX1009, [0270] (an exemplary log entry: “2006/01/23 11:23:33 2006/01/23 11:26:121 12 22 DEBUG RADI SGNL Signal ‘extremely low’, problem”). Signal strength is a *quality of service* measurement.

Additionally, Aaron’s database contains network *performance* and *quality of service* information *for one or more specific locations*. Aaron discloses supplementing *performance* and *quality of service* measurements collected from a wireless device with the geographic *location* of the device at the time of

measurement. EX1010, [0004]; EX1002, ¶270. Aaron further discloses storing both information in a database. EX1010, [0031], [0036], [0037], [0043]; EX1002, ¶271.

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

(iii) 20[a][i]

Daley discloses capturing and storing information about transitions from 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 as well as relevant location information including serving MSC and VLR registered to the location area. EX1002, ¶¶273-278; EX1032 at 4-7, 31-38, 336. Daley therefore discloses a database containing *records for one or more telecommunications carriers which identify infrastructure and location information for one or more specific locations* (e.g., the type of a carrier's cellular network, the bands it supports, whether a tower is affiliated with a carrier providing the phone's native network, MSC, HLR, VLR), to correlate with the roaming events. EX1002, ¶¶273-277.

Aaron 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, ¶278. 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 for one or more telecommunications carriers which identify infrastructure and location information*). EX1002, ¶278.

(iv) 20[a][ii]

Daley’s database includes records (e.g., names and contact information) for subscribers to the wireless carrier network (*records for one or more end users*). EX1009, [0217], [0221]-[0227]; EX1002, ¶¶279-284. It also includes records *identify[ing]* an association between a subscriber and “one or more electronic devices,” *i.e. telecommunication assets ... owned or controlled by said ... end user[]*. EX1009, [0217], [223]; EX1002, ¶281; *see also*, EX1005, 9-10 (where patent owner identifies “[a] fleet of mobile devices owned or controlled by end users” for this limitation). Figure 9 (“an exemplary web page user interface 900 for editing entries in a database of Subscribers”) includes an association of the subscriber to a mobile device. EX1002, ¶282.

The screenshot shows a web browser window with the address bar displaying a URL. The page title is "Edit Subscriber". The form contains the following fields:

- First Name: Karen
- Last Name: Chan
- Mobile Number: +1416239682
- Home Number: [empty]
- Address 1: [empty]
- Address 2: [empty]
- City: [empty]
- Province: [empty]
- Country: [empty]
- Postal Code: [empty]
- Email: [empty]
- Subscriber Class: Mobile

The "Devices" section contains a table with the following data:

Last Known Source	Device ID (IMEI/ESN)	Device Type
☐	IMEI:004400010040420	Treo Camera
☐	IMEI:00440000036725	Treo Camera

A red box highlights the "Devices" table, and a callout points to it with the text "Records of devices ... owned or controlled by the subscriber".

Daley's database records also include "the Device IMEI/ESN, Manufacturer, [and] Model" (EX1009, [0291]), which *identify telecommunication assets*. EX1002, ¶¶283-284.

(v) 20[a][iii]

Aaron discloses creating and updating "quality of service maps" (which include "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 maps included contextual *public records*, such as *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, ¶¶285-292.

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 Aaron’s 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, ¶¶289-290.

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 carriers serving said geographic locations*), from public records such as the FCC’s Antenna Structure Registration (ASR) system. EX1002, ¶288.

For each of the above, a POSITA would have found it obvious to store this information in the system’s database as local storage (typically with off-site backups) improves performance (e.g., reduces latency) and control (e.g., mitigates outage at the original source), especially when the information is frequently used. EX1010, [0037]; EX1002, ¶¶287, 290.

Moreover, Scherzer discloses the database maintaining location information for access points that include ***public records*** via “wireless regions” defined by “cities, parks, groups of cities, states and other geographical areas of interest” (***mapping information for said geographic locations***). EX1011, [0131]; EX1002, ¶291.

As set forth above, a POSITA would have found it obvious to combine these aspects of Aaron and Scherzer with Daley to render this limitation obvious. EX1002, ¶292.

(vi) 20[b]

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, ¶¶293-301. It may also be done ***manually*** 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 (EX1009, [275], [0297]). EX1002, ¶296.

The data is sent over the air via the cellular network and using HTTP (*one or more electronic interfaces*) to the database servers and associated systems (*one or more computers*). EX1009, [0205], [0242]; EX1002, ¶297.

Daley discloses *permitting* customer service representatives and engineers (*one or more telecommunications carriers*) to review “tracing data transferred by the electronic device 107 to the diagnostic server 129” (*to review, catalog, or sort information in said database*) to diagnose problems “for subsequent corrective steps.” EX1009, [0038], [0060]; EX1002, ¶¶298-301.

(vii) 20[c]

Daley’s diagnostic client (*application[] operable with said ... mobile ... device[]*) collects diagnostic and trace data (*obtaining said performance or quality of service information*). EX1009, Abstract, [0039]; EX1002, ¶¶302-308. As discussed regarding limitation 20[a], the collected data includes “network performance data” (*performance or quality of service information*). EX1009, [0041]; EX1002, ¶304.

Daley further discloses the mobile device uploading the data to the diagnostic/trace server over the air using TCP/IP or HTTP (*providing said performance or quality of service information to said one or more electronic interfaces*). EX1009, [0039], [0127], [0180]-[0181], [0201]-[0205]; EX1002, ¶¶306-308.

(b) Claim 21

Daley discloses the use of a “self-care website/portal 167” (*one or more electronic interfaces*) for *providing* the recited *performance or quality of service information*. EX1009, [0033], Figs 15-18. A POSITA would have understood that a user of Daley’s system may be “a mobile account owner in a wireless carrier network” who may use his/her own *mobile or fixed device* to access the website. EX1009, [0217]; EX1002, ¶¶309-314. Moreover, such devices *are located in or will be located in said specific 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, ¶312.

Moreover, Scherzer discloses sending collected information to mobile devices, including sending “data relating to AP’s in the client’s general neighborhood (*devices that are located in said specific locations*).” EX1011, [0072]; EX1002, ¶313. Scherzer also discloses allowing the user to request “an update of available AP’s” for a future destination’s geographical area (*devices that... will be located in said specific locations*) if the user intends to take a trip to that destination. EX1011, [0072]; EX1002, ¶314.

(c) Claim 22

As set forth above, Daley’s diagnostic and trace data (*said performance or quality of service information*) includes information from multiple mobile devices.

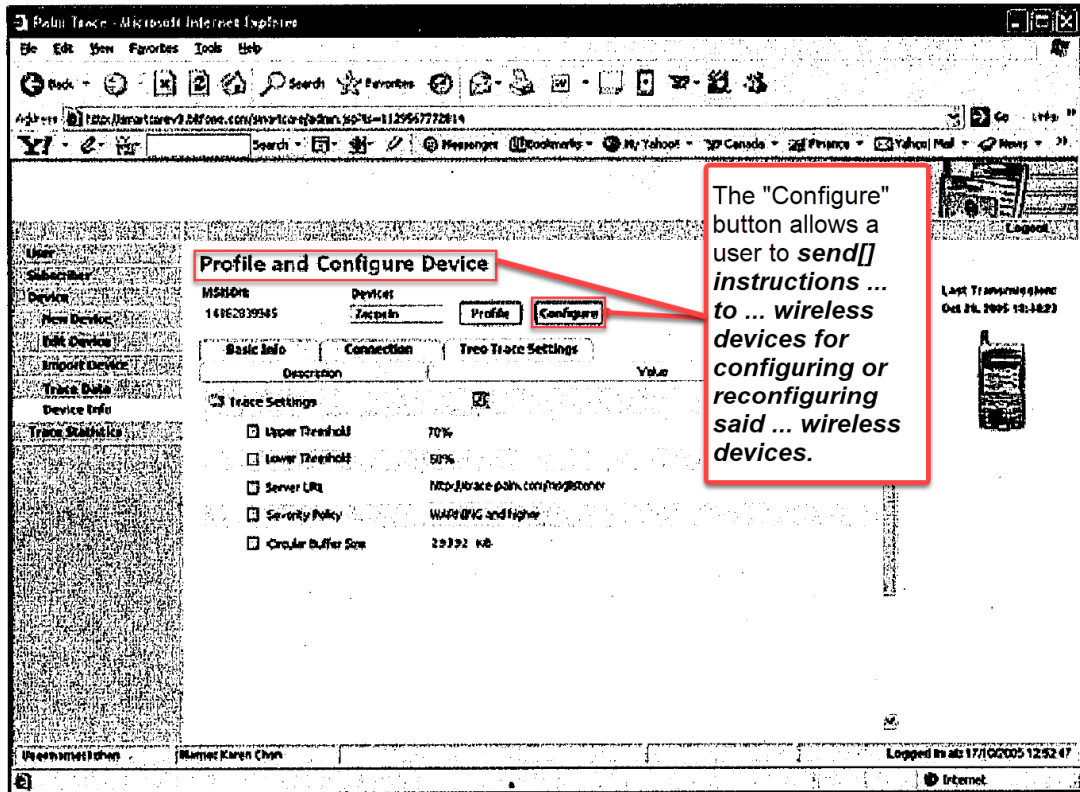
EX1009, [0286]-[0290], Fig. 17; EX1002, ¶¶315-318. The information may be tied to a carrier's cellular network type, for example, "characterized by an IMEI/ESN." EX1009, [0217]; EX1002, ¶316. Further, the data includes "signal strength" (*performance or quality of service information*) collected across multiple devices which includes *multiple bands* because individual devices may use multiple bands and different devices may use different bands. EX1002, ¶317.

(d) Claim 23

Regarding the claimed function, 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].

Daley describes a customer using the customer's mobile device to "request customer care service via a customer care server 157." EX1009, [0038]. In response, the customer care server may send the provisioning information to the mobile device. EX1002, ¶¶319-325. For example, Daley discloses a web interface (*said one or more electronic interfaces*) by which a support technician (also a user of the system) may "click on 'Configure Device' to send the configuration changes to the device." EX1009, [0298], [301], Fig. 18; EX1002, ¶323. A POSITA would

have understood that the resulting *sending instructions* is *based on* the subscriber service request (*specific requests of an end user*). EX1002, ¶324.



The structure performing the function is Daley's customer care server. EX1002 ¶325. 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, ¶325. Either way, the customer care server satisfies the *one or more*

computers limitation previously discussed with respect to the diagnostic server.

EX1002, ¶325.

(e) Claim 24

Regarding the claimed function, Scherzer discloses providing a geographical map of locations that have access points and an indication of the quality ranking of each access point (*rank ordering of available 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.” EX1011, [0150]; EX1002, ¶¶326-330. As set forth above, a POSITA would have found it obvious to implement this aspect of Scherzer in the system of Daley. EX1002, ¶329.

The corresponding structure for performing the function is Daley’s server (see claim 23, *supra*) modified to send the rank ordering. EX1011, [0149]-[0151]; EX1002, ¶330.

(f) Claim 25

Daley’s diagnostic client “executes specific diagnostic tasks such as... collecting network performance data” (*monitoring radio operating conditions of one or more wireless 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 limitation 20[b]. EX1002, ¶¶331-335.

Either the diagnostic client on the mobile device (*see* claim 26, *infra.*, when the mobile device is part of the clearinghouse) or the counterpart software on the server (for receiving and processing the data from the diagnostic client) or both satisfy the *monitoring application* limitation. EX1002, ¶335.

(g) Claim 26

See claim 20, the combination renders obvious claim 26 by including the mobile devices taught by Daley in the clearinghouse system. EX1002, ¶336.

F. Ground 5: Daley, Aaron, Scherzer, Chmaytelli, and optionally Dawson (Claims 27-32)

1. Combination, Motivation, and Reasonable Expectation of Success

This is the combination, optionally including Dawson, of Ground 4, modified to include ad-related features as taught by Chmaytelli. EX1002, ¶337.

A POSITA would have been motivated to combine Chmaytelli with the combination. EX1002, ¶¶338-340. For example, a POSITA would have known, from Chmaytelli and from other references, of industry interest in location-based content, including advertising. EX1002, ¶338; EX1028, Abstract, 2:36-3:36, 6:43-7:52. Figs. 2-6; EX1029, 1:31-2:15, 2:38-4:37, Figs. 2-4; EX1030, [0017]-[0018], [0036], [0063]-[0064], [0108]-[0130], Figs. 6-9; EX1031, 3:23-4:16, 5:50-6:3, 6:52-7:28, 16:27-18:30, 21:5-22:12, Figs. 4-7. Advertising was widely recognized as an

attractive additional revenue stream to augment or replace customer payments. EX1002, ¶339. And location-specific advertising was understood to be more likely be viewed and to result in more conversions. EX1002, ¶339. A POSITA would therefore have recognized the value of adding localized ad serving capabilities to the combination of Ground 4, which already collected location information from devices and already transmitted customized data (e.g., configuration instructions) to them. EX1002, ¶340.

A POSITA would have had a reasonable expectation of success in implementing the combination. EX1002, ¶341. The underlying combination of Ground 4 already disclosed providing location-specific information to mobile devices, including AP information at the 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, ¶341.

2. Analysis

(a) Claim 27

(i) 27[pre]

To the extent the preamble is limiting, the combination renders it obvious. EX1002, ¶342. The Daley+Aaron+Scherzer combination discloses mobile device location tracking capabilities and Chmaytelli further teaches localized ad delivery. EX1002, ¶342.

(ii) 27[a]

See Ground 4, limitation 20[pre]. EX1002, ¶343.

(iii) 27[a][i]

See Ground 4, limitation 20[a][i]. EX1002, ¶344.

(iv) 27[a][i][1]

See Ground 4, limitation 20[a]. EX1002, ¶345.

(v) 27[a][i][2]

See Ground 4, limitation 20[a][i]. EX1002, ¶346.

(vi) 27[a][i][3]

See Ground 4, limitation 20[a][ii]. EX1002, ¶347.

(vii) 27[a][i][4]

See Ground 4, limitation 20[a][iii]. EX1002, ¶348.

(viii) 27[a][ii]

See Ground 4, limitation 20[b]. EX1002, ¶349.

(ix) 27[a][iii]

See Ground 4, limitation 20[b]. EX1002, ¶350.

(x) 27[b]

Aaron teaches *identifying a geographic location* of a *mobile device* by multiple methods such as “via a Global Positioning System (GPS) receiver in the wireless terminal, via triangulation methods using measurements from multiple base

stations, or by determining a geographical location of a base station with which the wireless terminal has a radio link.” EX1010, [0042]; EX1002, ¶¶351-352.

(xi) 27[c]

In this combination, Chmaytelli teaches this limitation, as discussed in Ground 3, claim 14, *supra*, regarding the same claimed features. EX1002, ¶353.

(b) Claim 28

In this combination, Aaron teaches the additional limitation of claim 28, as discussed in Ground 3, claim 15, *supra*, regarding the same claimed features. EX1002, ¶354.

(c) Claim 29

In this combination, Chmaytelli teaches the additional limitation of claim 29, as discussed in Ground 3, claim 16, *supra*, regarding the same claimed features. EX1002, ¶355.

(d) Claim 30

In this combination, Aaron teaches the additional limitation of claim 30, as discussed in Ground 3, claim 30, *supra*, regarding the same claimed features. EX1002, ¶356.

(e) Claim 31

In this combination, Aaron teaches the additional limitation of claim 31, as discussed in Ground 3, claim 31, *supra*, regarding the same claimed features. EX1002, ¶357.

(f) Claim 32

In this combination, Chmaytelli teaches the additional limitation of claim 32, as discussed in Ground 3, claim 32, *supra*, regarding the same claimed features. EX1002, ¶358.

G. Ground 6: Scherzer (and optionally Dawson) (Claims 20-25)

1. Claim 20

(a) 20[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]; EX1002, ¶¶359-364. 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 are 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, ¶¶362.

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 of Scherzer and Dawson. *See* Ground 5, *supra.*; EX1002, ¶363. 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, ¶363. 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, ¶364. The motivations to add such functionality to systems like those disclosed in Scherzer are the same as those presented with respect to

Ground 4, as are the bases for a POSITA's reasonable expectation of success. *See* Sections VII.E.2, E.3; EX1002, ¶¶363-364.

(b) 20[a]

Scherzer discloses a server (*one or more computers*) that receives “radio access point” connection quality measurements (*performance or quality of service information*) from mobile devices and stores it in a “radio resource database” (*database*), thereby *interface[ing] with the database*. EX1011, [0057]-[0059], [0073], [0106], [0109]; EX1002, ¶¶365-373. 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, ¶¶367-369.

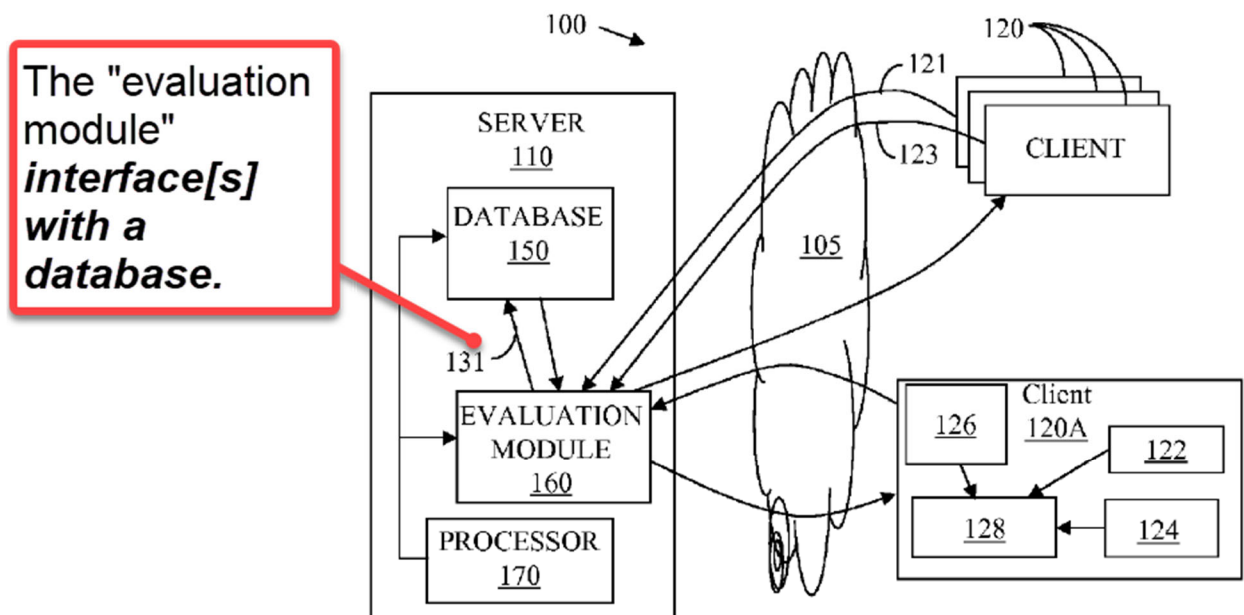


Figure 1

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, ¶¶370-371.

Further, these quality measurements are associated with access points at *specific locations* and the measurements are gathered by mobile devices within range of that location. EX1002, ¶372. Scherzer's mobile devices determine their own *location* which is included in the data sent to the database. EX1011, [0082]-[0087], [0131]; EX1002, ¶372.

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

(c) 20[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, ¶¶374-377. 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, ¶375. 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, ¶376. As such, the access point *records* in Scherzer’s database *identify infrastructure and location information for one or more specific locations*. EX1002, ¶¶376-377.

(d) 20[a][ii]

Scherzer discloses owners of access points registering their access point (*one or more of telecommunications assets ... owned or controlled 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, ¶¶378-380.

(e) 20[a][iii]

Scherzer’s database maintains geographic location information for wireless access points. EX1002, ¶¶381-383. The access points are organized by “wireless regions” such as “cities, parks, groups of cities, states and other geographical areas of interest” (*mapping information for said geographic locations*), which are *public records for a plurality of geographic locations*. EX1011, [0131], [0149].

(f) 20[b]

Scherzer discloses the server continuously receiving access point connection quality data from mobile devices via *one or more electronic interfaces*. 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, ¶¶384-388.

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, ¶386.

Scherzer further 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, ¶387. This map *permit[s]* the mobile device’s user (*one or more end users*) to *review, catalog, or sort* the ranking of those nearby access points based on the connection quality data in the database. EX1011, [0149], [0150]; EX1002, ¶388.

(g) 20[c]

Scherzer discloses a client program (*one or more applications operable 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,

¶¶389-392. 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]; EX1002, ¶390. The mobile device communicates with the server and reports the measurements using the mobile device’s Internet connection (*providing ... to said one or more electronic interfaces*). EX1011, [0067]; EX1002, ¶392.

2. Claim 21

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, ¶¶393-396.

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 specific locations*). EX1011, [0078]; EX1002, ¶395. 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, ¶396.

3. Claim 22

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, ¶¶397-401. A POSITA would have recognized that the WiFi configuration information collected in Scherzer would include the *bands* used by 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, ¶¶399-400.

Further, as discussed above in limitation 20[a][i], Scherzer’s records include *multiple carriers*. EX1002, ¶401.

4. Claim 23

Regarding the claimed function, 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, ¶¶402-406. 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 shared with each

mobile device for connecting to the access point. EX1011, [0119]. As such, the server *send[s] instructions to the wireless device for configuring or reconfiguring* it to an access point. EX1002, ¶403. The server communicates such information to the mobile device via the Internet (*from one of said one or more electronic interfaces*). EX1011, [0068]; EX1002, ¶403.

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" (*ranking of performance*), allowing the device to connect to an access point using that information. EX1011, [0149]-[0150]; EX1002, ¶404.

As discussed above in claim 21, Scherzer discloses providing the geographic map of access points at a geographic location on *specific request[] of an end user*. EX1002, ¶405.

The corresponding structure of the asserted combination is, e.g., Scherzer's server 110. EX1011, [0068], Fig. 1; EX1002 ¶406. Scherzer's server sends "radio resource information," including "cache information of AP's" to "user terminals" EX1011, [0120]-[0121]; EX1002, ¶406.

5. Claim 24

See claim 23, *supra* regarding the function and structure for providing the ranking of access points (*rank ordering of available telecommunications services*) to the mobile devices. EX1002, ¶407.

6. Claim 25

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 received at the counterpart software (*monitoring application*) at the server and used to *update* the *database*. EX1011, [0080]; EX1002, ¶¶408-410.

VIII. SECONDARY CONSIDERATIONS

Petitioner is not aware of any secondary considerations that overcome the evidence of obviousness as set forth above. To the contrary, any secondary considerations further weigh in favor of obviousness, and do not overcome the strong showing of obviousness. EX1002, ¶¶411-415.

IX. CONCLUSION

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

Date: October 31, 2025

Respectfully submitted,

By: /s/ James Glass

James M. Glass

Counsel for Petitioner

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 13,778 words, which is within the word limit allowed under 37 C.F.R. § 42.24(a)(i).

Date: October 31, 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 '794 patent as shown in USPTO PAIR via FedEx:

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