

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner

v.

WIRELESSWERX IP LLC,
Patent Owner.

Case No. IPR2023-00850
U.S. Patent No. 8,315,203

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 8,315,203**

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LIST OF EXHIBITS¹

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Ex-1002	Declaration of Scott Andrews
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Ex-1005	Internal Pub. No. WO2005/106523 to Wrappe (“Wrappe”)
Ex-1006	U.S. Patent No. 7,203,497 to Belcea (“Belcea”)
Ex-1007	U.S. Patent Pub. No. 2008/0042836 to Christopher (“Christopher”)
Ex-1008	U.S. Patent Pub. No. 2004/0246926 to Belcea (“Belcea ’926”)
Ex-1009	U.S. Patent No. 6,813,501 to Kinnunen (“Kinnunen”)
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Ex-1012	INTENTIONALLY LEFT BLANK
Ex-1013	INTENTIONALLY LEFT BLANK
Ex-1014	INTENTIONALLY LEFT BLANK
Ex-1015	INTENTIONALLY LEFT BLANK
Ex-1016	INTENTIONALLY LEFT BLANK

¹ Four-digit pin citations that begin with 0 are to the branded numbers added by Google in the bottom right corner of the exhibits. All other pin citations are to original page, column, paragraph, or line numbers.

Ex-1017	INTENTIONALLY LEFT BLANK
Ex-1018	INTENTIONALLY LEFT BLANK
Ex-1019	INTENTIONALLY LEFT BLANK
Ex-1020	Claim Mapping Table for U.S. Patent No. 8,315,203
Ex-1021	U.S. Patent No. 8,836,580 to Mendelson (“Mendelson”)
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Ex-1023	U.S. Patent No. 8,259,692 to Bajko (“Bajko”)
Ex-1024	U.S. Provisional Patent Application Ser. No. 60/625,467
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Ex-1026	Hitesh Bhasin, History of Advertising: Definition and Complete Timeline, October 12, 2021
Ex-1027	U.S. Patent No. 3,906,166 to Cooper (“Cooper”)
Ex-1028	U.S. Patent No. 6,647,257 to Owensby (“Owensby”)
Ex-1029	U.S. Patent No. 5,592,173 to Lau (“Lau”)
Ex-1030	U.S. Patent No. 6,901,260 to Xin (“Xin”)
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Ex-1032	U.S. Patent No. 6,748,224 to Chen (“Chen”)
Ex-1033	Order Granting Transfer to NDCA
Ex-1034	Order Granting Stipulation to Vacate Case Schedule

Ex-1035	L.A. Times “A Brief History of the Mini-Mall” (Nov. 16, 1997)
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I. Introduction

Google LLC (“Petitioner”) requests *inter partes* review (“IPR”) of Claims 1-30 of U.S. Patent No. 8,315,203 (“’203 Patent”) (Ex-1001), currently assigned to WirelessWerx IP LLC (“Patent Owner”).

The ’203 Patent discloses using distributed nodes in a building to communicate with a user device and map the device’s location. The system also selects the closest node on the same floor as, and closest to, the user device. The system can then send tailored advertisements to the user. The prior art in this Petition demonstrates that the claimed invention would have been obvious to a person of ordinary skill in the art (“POSITA”). None of the references in the Grounds of this Petition were cited or relied on during the prosecution of the ’203 Patent. This Petition thus presents non-cumulative grounds of unpatentability that were not addressed in the prosecution of the ’203 Patent, and which are reasonably likely to prevail.

II. Mandatory Notices Under 37 C.F.R. § 42.8

Real Parties-in-Interest: Petitioner identifies the following real party-in-interest: Google LLC.

Related Matters: Patent Owner has asserted the ’203 Patent in *WirelessWerx IP LLC v. Google LLC f/k/a Google Inc.*, Case No. 6-22-cv-01056 (W.D. Tex. Oct. 7, 2022).

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III. Fee Authorization

The Office is authorized to charge \$52,750 to Deposit Account No. 50-0639 for the fee set forth in 37 C.F.R. § 42.15(b) for this Petition, and any additional fees that might be due in connection with this Petition.

IV. Grounds for Standing

Petitioner certifies that the '203 Patent is available for IPR, this Petition is timely filed, and Petitioner is not barred or estopped from requesting IPR review on the Grounds presented.

V. Precise Relief Requested

Petitioner requests cancellation of Claims 1-30 of the '203 Patent under 35 U.S.C. § 103 on the following grounds:

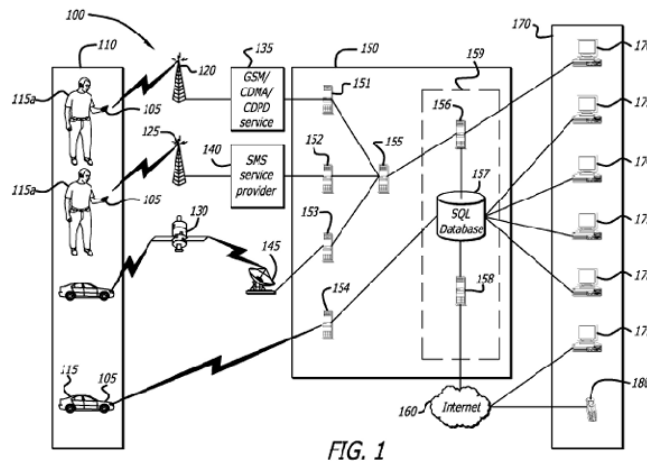
- **Ground 1:** Claims 1-5 are rendered obvious by International Pub. No. WO2005/106523 to Wrappe (“Wrappe,” Ex-1005) and U.S. Patent No. 7,203,497 to Belcea (“Belcea,” Ex-1006).
- **Ground 2:** Claims 6-30 are rendered obvious by Wrappe and Belcea in further view of U.S. Patent Pub. No. 2008/0042836 to Christopher (“Christopher,” Ex-1007).

- **Ground 3:**² Claims 6-30 are rendered obvious by Wrappe and Belcea in further view of U.S. Patent No. 6,813,501 to Kinnunen (“Kinnunen,” Ex-1009).

The Petition explains each ground and is supported by a POSITA’s declaration. Ex-1002.

VI. The Challenged Patent

The ’203 Patent relates to “developing a map of a multi-dimensional space for use by a user.” Ex-1001, 1:58-60, Fig. 1.



The system generates the map of a geographical zone that “includes a plurality of spaced apart nodes ... arranged in a multidimensional sense” on different floors of “a building” that “send[] data communications” using “GPS

² As explained in Section VIII, the proper priority date is no earlier than January 8, 2009. However, Ground 3 renders obvious the challenged claims even if the priority date is November 5, 2004.

and/or ... Bluetooth™ protocols” among the “one or more of the nodes, one or more users.” Ex-1001, 1:60-67, 2:7-12; *see also id.*, 36:8-18, Cls. 1-6, 28-30. The system uses a “specific algorithm to determine the relatively precise location of the user.” *Id.*, 3:63-66; *see also id.*, 26:29-28:33.

“A three-dimensional[] map” is “created using nodes” that communicate and “[d]etailed location information from each location node” is “downloaded to at least one mobile device.” Ex-1001, 31:32-35. The location information is used to “generate and display a two- or three-dimensional map of the mobile device’s [] position.” *Id.*, 33:12-15.

VII. Prosecution History

On January 8, 2009, U.S. Patent App. 12/350,817, the application for the ’203 Patent, was filed with 23 claims. Ex-1001, Cover; Ex-1004, 0074-0077. The application was rejected three times—on October 11, 2011, January 30, 2012, and March 21, 2012. Ex-1004, 0936-0953, 0993-1007, 1016-1036. Applicant responded by amending, canceling, or adding claims on January 10 and June 22, 2012. *Id.*, 0969-0980, 1056-1072. The ’203 Patent issued on August 3, 2012. *Id.*, 1085-1099.

During prosecution, the Examiner rejected the claims for, among other things, an improper priority claim. Ex-1004, 0936-0953. The Examiner found that applicant claimed priority to multiple applications, but none disclosed a “map of

multi-dimensional space.” *Id.*, 0941. The applicant amended the claims and argued that none of the cited references deal with multidimensional nodes that are affixed and installed to a structure attached to the ground. *Id.*, 0970-0980.

After additional rejections and interviews, on August 3, 2012, application Claims 24-53 were allowed to issue as Claims 1-30 of the patent. Ex-1004, 1085-1099.

VIII. Priority Date

The '203 Patent is a Continuation-in-Part of U.S. Patent Application Ser. No. 11/848,178 (“’178 Application”), filed Aug. 30, 2007, and claims the benefit of Nov. 5, 2004 filing date of U.S. Provisional Patent Application Ser. No. 60/625,467 (“’467 Provisional”). The priority chain to the ’467 Provisional is broken because the ’203 Patent fails to identify a continuous chain of applications linking to the ’467 Provisional. Ex-1001 at 1:7-14 (no non-provisional application filed within 1 year of the ’467 Provisional).

The claims are entitled to a priority date no earlier than January 8, 2009, the filing of U.S. Patent App. 12/350,817, because all of the claims recite the new subject matter not in the ’467 Provisional or ’178 Application. As described below: **(A)** all of the claims recite locating a user device within a building; **(B)** Claims 1-5 require identifying to a “most practically near” node on the same floor as the user device; and **(3)** Claims 6-30 recite sending a targeted message that is tailored to the

profile of a recipient user. These elements are not described in the '467 Provisional or '178 Application. Ex-1002 ¶¶88-95.

A. '467 Provisional and '178 Application do not describe mapping in a “structure [that] is a building” (required by all claims)

Claims 1-5 of the '203 Patent require mapping the location of a user based on nodes in a structure where “*the structure is a building*” and the user is at an elevational level in the building, and Claims 6-30 require that the nodes and mapped zone are “*within a building structure*.” Ex-1001 at Cls. 1, 6, 29, 30.

During prosecution, the Examiner rejected the application claims over prior art reference Bathory (US 20050090978), which describes determining the location of vehicles based on communications with satellites, radars, and cameras. Ex-1004 at 943-45, 1023-24. The Applicant amended the claims to recite that the claimed nodes are “affixed and installed to a structure attached to the ground,” added new claims that required the nodes to be within “a building,” and argued that the prior art did not teach mapping in a structure that is a building with different floors. *Id.*, 974, 976-77, 1065. The applicant argued that the specification as-filed (citing paragraphs [0050] and [0107]) supported the amendment, but did not cite any written description support from the '467 Provisional or the '178 Application. *Id.*, 1084. Neither of these paragraphs, or similar discussions, appears in either provisional. Indeed, each of these paragraphs is new matter appearing for the first

time in the continuation-in-part application.

The '467 Provisional and '178 Application do not contain written description support for this limitation. Instead, they describe systems for tracking moving devices like vehicles, and do not mention anything about buildings, much less tracking devices in buildings. Ex-1024 and Ex-1025; Ex-1002 ¶92.

The '467 Provisional and '178 Application describe tracking a “transponder” that is “mounted, attached, manufactured, or otherwise included upon/in various articles” that “may include vehicles, aircraft, cargo, persons, animals, or any other item where tracking its movement and/or location is beneficial.” Ex-1024 ¶8; Ex-1025 ¶46. The location of the transponder is determined via communications with, e.g., satellite, cellular, or Bluetooth nodes. Ex-1024 ¶¶9-10. The preferred embodiments in the '467 Provisional track a transponder attached to a vehicle. *Id.* ¶¶13-15, 17, 19, 46, 49, 50, 61-64, 71, 73, 78-79. Likewise, the preferred embodiments of the '178 Application also track a transponder attached to a vehicle. *Id.* ¶¶52-53, 58, 61-62, 74-77. There are no disclosures of tracking a transponder inside a building, much less a building with multiple floors. Ex-1024 and Ex-1025. The words “building,” “floor,” “wall,” and “interior” are not in the '467 Provisional or '178 Application, and the only mentions of the word “internal” and “inside” refer to internal circuit boards, the inside of a vehicle, being inside a geographical zone, or generally things unrelated to buildings. Ex-1024 ¶¶52, 62,

85-87; Ex-1025 ¶¶65, 10, 14, 75, 95, 101-103.

The '203 Patent claims are thus not entitled to the priority date of the '467 Provisional or '178 Application because those applications have no written description to convey that “inventor had possession of the claimed subject matter” of tracking a user within a building “as of the filing date.” *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010); Ex-1002 ¶¶90-92.

B. '467 Provisional and '178 Application do not describe “narrow[ing] [spaced apart nodes] at a first elevational level to the most practically near node” by “exclud[ing]” “a node at another elevational level” (required by Claims 1-5)

Claims 1-5 recite that the system must narrow to a “most practically near node to the user at a first elevational level” by “exclud[ing]” other nodes “at another elevational level” in the building. Ex-1001, Cls. 1. This limitation was added during prosecution to obtain allowance, but applicant’s specification support for this was new material that was not in the '467 Provisional or '178 Application. Ex-1004 at 1057, 1065, 1068; *contrast id.*, 1084 (citing for specification support *id.*, 13 (¶50), 28 (¶107), which describe considering “elevation”), *with* Ex-1024 and Ex-1025 (no mention of “elevation”).

Neither the '467 Provisional nor the '178 Application considers elevation, much less “narrows” to a “most practically near node” by excluding nodes “at another elevational level” in a building. Ex-1024 and Ex-1025; Ex-1002 ¶93.

Neither describes geolocation in a building, and neither mentions “elevation.” At best, both use the word “altitude” once, in the same manner, to describe that “altitude” is a “configurable event” that can trigger “event message” to the user device. Ex-1024 ¶15; Ex-1025 ¶53. Neither of those descriptions mentions narrowing to a single node, much less excluding nodes at other altitudes. Ex-1002 ¶93.

C. ’467 Provisional and ’178 Application do not describe “tailoring” a “targeted message” to the “profile of the [receiving] user” (required by Claims 6-30)

Claims 6-30 of the ’203 Patent overcame rejections during prosecution based on their recitation of “sending a targeted message to a selected mobile device of a selected user” and “tailoring the targeted message to the profile of the user.” Ex-1004 at 1066-67, 1069. But these limitations were not described in the ’467 Provisional and ’178 Application.

The closest disclosure in the ’467 Provisional and ’178 Application describes a message that is sent *from* a sender user based on the sender’s profile (Ex-1024 ¶¶124-125; and Ex-1025 ¶¶149-150), whereas the claims require sending a message *to* a recipient user based on the recipient’s profile (Ex-1001, Cls. 6, 29, 30). Ex-1002 ¶94.

D. The priority date is January 8, 2009

Because the claims of the ’203 Patent are unsupported by the ’467

Provisional or the '178 Application, the earliest possible priority date is January 8, 2009, the filing date of the application for the '203 Patent. Ex-1002 ¶95.

IX. Level of Ordinary Skill in the Art

One of ordinary skill in the art would have had at least a bachelor's degree in electrical engineering, computer engineering, computer science, or a related field, and at least two years of experience in research, design, development, and/or testing of GPS and/or positioning techniques, with additional education substituting for experience and vice versa. Ex-1002 ¶¶40-87 (level of skill in the art and a POSITA's knowledge at the time).

X. Claim Construction

Pursuant to 37 C.F.R. § 42.104(b)(3) and Rule 42.104, Petitioner does not believe any term requires explicit construction to resolve the issues in this Petition. Petitioner reserves the right to respond to Patent Owner's proposed constructions. Ex-1002 ¶96.

XI. SUMMARY OF THE APPLIED PRIOR ART REFERENCES

A. Wrappe (Ex-1005)

Wrappe, titled "Methods and Apparatuses for Beacon Assisted Position Determination Systems," is application PCT/US2004/010307, which published as WO2005106523 on November 10, 2005. If the priority date is November 5, 2004, Wrappe is § 102(e) prior art because PCT/US2004/010307 was filed in English on

April 2, 2004 and designated the United States. Ex-1005, Cover. If the priority date is January 8, 2009 (*see* Section VIII), Wrappe is § 102(b) prior art as of its publication.

Wrappe relates to “microcell beacon assisted position determination.” Ex-1005 ¶9. Figure 5 of Wrappe shows mobile station 501 (green) “in an environment where the blockage of GPS signals is severe.” *Id.* ¶46. Wrappe explains when “there are a number of stores and shops (e.g., 511-517, 521-529) in a commercial complex” and “a conventional hybrid position determination system is used, the position solution of the mobile station may not be precise enough to accurately determine which store the mobile station is in.” *Id.* Thus, Wrappe’s “microcell beacons [purple] are placed to aid the position determination.” *Id.*

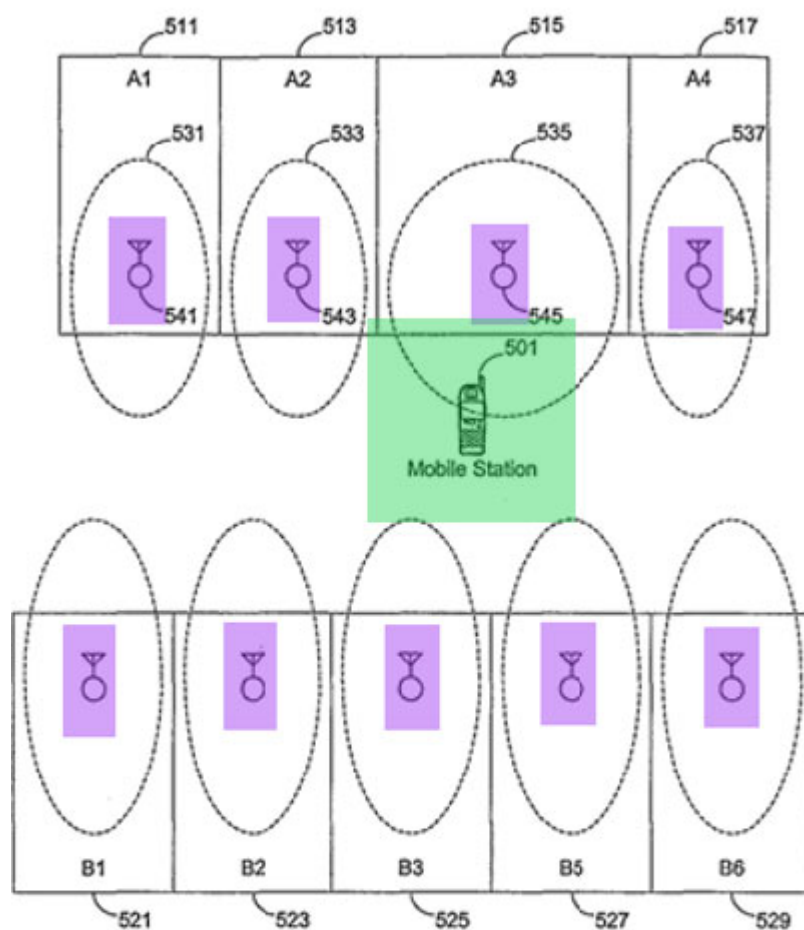


Fig. 5

Id., Fig. 5.

Wrappe also explains identifying the location of a user device in relation to the site of a microcell beacon allows “information related to the store (e.g., electronic coupons, special of the day, a web page of the store, or other information that the user of mobile station 501 may be interested) [to] be transmitted to the

mobile station.” Ex-1005 ¶47.

B. Belcea (Ex-1006)

Belcea, titled “System and Method for Accurately Computing the Position of Wireless Devices inside High-rise Buildings,” is U.S. Patent No. 7,203,497 filed June 4, 2004. If the priority date is November 5, 2004, Belcea is § 102(e) prior art. Belcea is § 102(b) prior art if the priority date is January 8, 2009 (*see* Section VIII).

Belcea discloses a “method for accurately computing the position of wireless devices in a three-dimensional network.” Ex-1006, 4:44-60. Belcea discloses a “network of wireless devices including Mobile Terminals, Wireless Routers and Controllers within a three-dimensional deployment structure such that communication, identification and position calculations can be achieved with high accuracy regardless of the building structure.” *Id.*, 1:24-33. Figure 3 illustrates “a number of Intelligent Access Points (IAP) 122-1 to 122-n [annotated purple], and a system of Vertical Routers (VR) 124-1 to 124-n [annotated purple], dispersed among a number of floors of an example building.” *Id.*, 6:6-11.

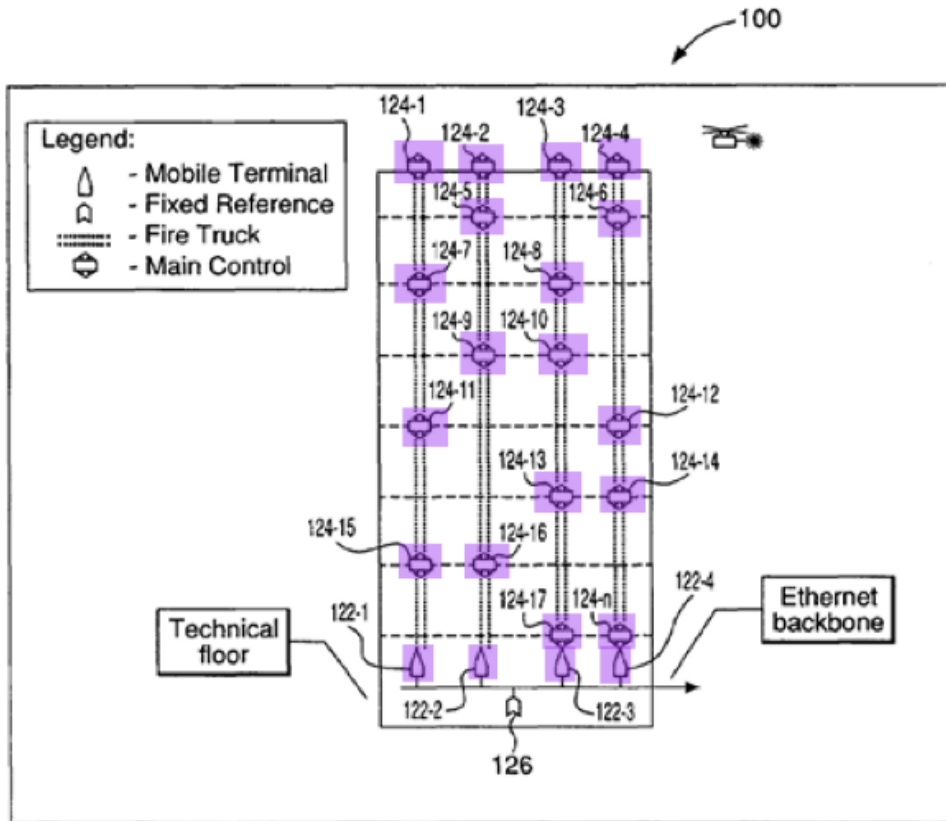


FIGURE 3

Id., Fig. 3 (annotated).

Belcea explains “[t]he Mobile Terminals can determine their respective locations using algorithms” like those described in U.S. Patent Application Ser. No. 10/861,121, published as U.S. Patent Publication No. 2004/0246926 to Belcea (“Belcea ’926”). Ex-1006, 11:26-33 (“the entire content of which is incorporated herein by reference”). Belcea teaches using “Time of Flight (TOF) data and Received Signal Strength Indicator (RSSI) data and a scoring process to identify

the correct floor on which they are located.” *Id.*, 11:35-38. Belcea ’926 discloses using a “wireless floor-indicating router (FIR) 106 [] in the stairwell 102 and by the elevator shaft 104 at each floor.” Ex-1008 ¶43. Belcea ’926 also discloses “all FIRs deployed on the same floor are on the same line of the matrix, regardless the position on the floor.” *Id.* ¶55. Belcea ’926 explains this is because “the signals loose [sic] energy when passing through floors and walls.” *Id.* ¶43.

C. Christopher (Ex-1007)

Christopher, titled “System and Method for Tracking Shopping Behavior,” is U.S. Patent Publication No. 2008/0042836 filed September 11, 2007. Christopher is § 102(e) prior art if the priority date is January 8, 2009 (*see* Section VIII).

Christopher’s system “interface[s] with mobile device 1350 and PDA 1360 to collect device related data such as the device’s present location, identification data and communications capabilities (802.11, Bluetooth, etc.).” Ex-1007 ¶71. Christopher teaches searching for such devices, for instance, “once PDA 1360 is within the communication range of RFID tag 1310, RFID tag 1310 will transmit its location data to PDA 1360.” *Id.* ¶73.

Figure 2 of Christopher illustrates “RFID system 100 of the invention within a six-story structure 150.” Ex-1007 ¶43. “[T]he RFID system 100 comprises a plurality of passive RFID tags 130 [annotated purple] disposed at predetermined intervals within the six-story structure 150.” *Id.*

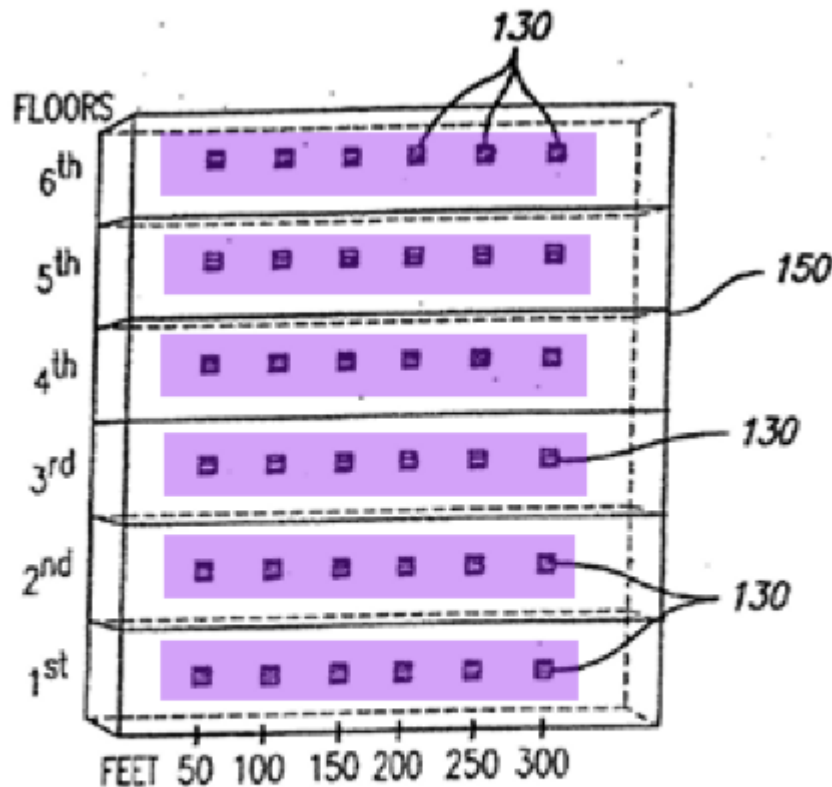


FIG. 2

Christopher teaches “tracking traffic pattern[s] in a store or other venue.”

Ex-1007 ¶2. Christopher explains “[t]argeted advertisement is an effective strategy for selling products.” *Id.* ¶3. Christopher teaches placing “plurality of RFID tags distributed within a structure” to implement a tracking system that can “generate a shopping behavior report that may include statistics such as, for example, ten most frequently purchased items, average spending per transaction, traffic pattern [of] the customer, average time at various locations in the store, average time in the

store, hours and day of week the customer usually visit[s] the store, etc.” *Id.* ¶100.

D. Kinnunen (Ex-1009)

Kinnunen, titled “Location Dependent Services,” is U.S. Patent No. 6,813,501 issued on November 2, 2004. If the priority date is November 5, 2004, Kinnunen is § 102(a) and (e) prior art. If the priority date is January 8, 2009 (*see* Section VIII), Kinnunen is § 102(b) prior art.

Kinnunen “targets services to suitable mobile terminals or users by using profiles.” Ex-1009, 6:10-11, 6:43-44. Kinnunen’s system “comprises a profiling sub-system which keeps and/or compiles profiles related to one or more of a user, a mobile terminal and a service.” *Id.*, 3:28-30. “[T]he profiles may contain information selected from terminal capabilities, such as [] user characteristics, such as the user’s gender, age and the category of user, for example whether a gold or a silver user, and preferences of the user selected list, such as expressed interest in music, clothes or electronics or other matters.” *Id.*, 3:31-37. “The user and mobile terminal profiles can be used to determine targeting of advertisements.” *Id.*, 3:41-43.

XII. UNPATENTABILITY GROUNDS

The ’203 Patent contains 30 claims—four independent and 26 dependent claims. Ground 1 renders Claims 1-5 invalid.

Grounds 2 and 3 render Claims 6-30 invalid. Claims 6, 29, and 30 are

similar, with a few minor variations in some elements. Exhibit 1020 shows correspondence between the elements of the claims. For brevity and efficiency, like elements in Claims 6, 29, and 30 are discussed together in the below element-by-element analysis. Any meaningful differences are identified and discussed.

A. Ground 1: Claims 1-5 are obvious over Wrappe in view of Belcea (“Wrappe-Belcea”)

1. Motivations to combine Wrappe and Belcea

A POSITA would have been motivated to combine the teachings of Wrappe and Belcea and had a reasonable expectation of success in doing so because each addresses similar issues corresponding to the same well-known technologies.

Ex-1002 ¶¶114-125.

Wrappe and Belcea describe similar methods for position determination indoors using communication points that communicate with a device. Ex-1005, Abstract, ¶¶10, 11, 48, 52; Ex-1006, Abstract; Ex-1002 ¶¶115-121. Wrappe teaches using microcell beacons “to broadcast to mobile stations location information and/or identification information [using WiFi or Bluetooth], which can be used to look up [] the location information,” including in a multi-floor building with stores, where the blockage of GPS signals is severe, by using wireless communications with the user’s device. Ex-1005 ¶¶10, 11, 35, 47, 48, 52. Wrappe states “location information may be the coordinates (e.g., longitude, latitude and

altitude)” where “the altitude [is the] floor of a building where the microcell beacon station is installed.” *Id.* ¶¶10, 40. Belcea similarly discloses a “system and method for providing a network of wireless devices including Mobile Terminals, Wireless Routers and Controllers within a high rise building or other three-dimensional deployment structure, such that communication, identification and position calculations can be achieved regardless of environment nature” using algorithms. Ex-1006, Abstract, 3:28-33, 11:26-33.

The Wrappe-Belcea combination would have been based on the Wrappe system, incorporating teachings of Belcea related to generating and displaying maps and identifying nodes on the same floor as, and near to, a user. Ex-1002 ¶¶121-125 (combination, motivations to combine, and expectation of success). A POSITA would have been motivated to combine the teachings of Wrappe and Belcea to achieve the benefits of Belcea’s teachings regarding determining location with accuracy despite interference from a building’s structure to improve the indoor position determination system of Wrappe. *Id.* Belcea teaches techniques to overcome interference from the floors of a building’s structure, e.g., linking nodes on floors via vertical nodes in stairwells. *Id.* A POSITA would have understood the importance of using information from spaced-apart nodes or communication points sending signals to a device to determine the device’s location and would have been motivated to tailor such systems. *Id.* Belcea and Wrappe address similar issues of

determining a user's position in a building and utilize the same well-known technologies. *Id.* ¶121 (citing Ex-1005 ¶46; Ex-1006, 6:17-21).

A POSITA would have also been motivated to combine the teachings of Belcea with Wrappe because both provide compatible solutions to aid position determination through the placement of nodes. Ex-1002 ¶124; Ex-1005 ¶46; Ex-1006, 3:52-55, 11:26-33. A POSITA would have combined the teachings of Belcea and Wrappe with a reasonable expectation of success to achieve the benefits of maintaining and updating a map database in Wrappe, by using an algorithm that aids in position determination as taught by Belcea. Ex-1002 ¶¶123-125; Ex-1005, Abstract; Ex-1006, 3:29.

2. Independent Claim 1

- a. 1[Pre] – A method for developing a map for use by a user, the user being selectively individuals, vehicles, and other entities, comprising:**

Wrappe-Belcea teaches the preamble of Claim 1. Ex-1002 ¶¶126-135.

Wrappe relates to “[m]ethods and apparatuses for microcell beacon [purple] assisted position determination,” including “in an environment where the blockage of GPS signals is severe” as shown in Figure 5. Ex-1005 ¶¶9, 46. Wrappe's beacons “broadcast to mobile stations [green] location information and/or identification information.” *Id.* ¶¶10, 46.

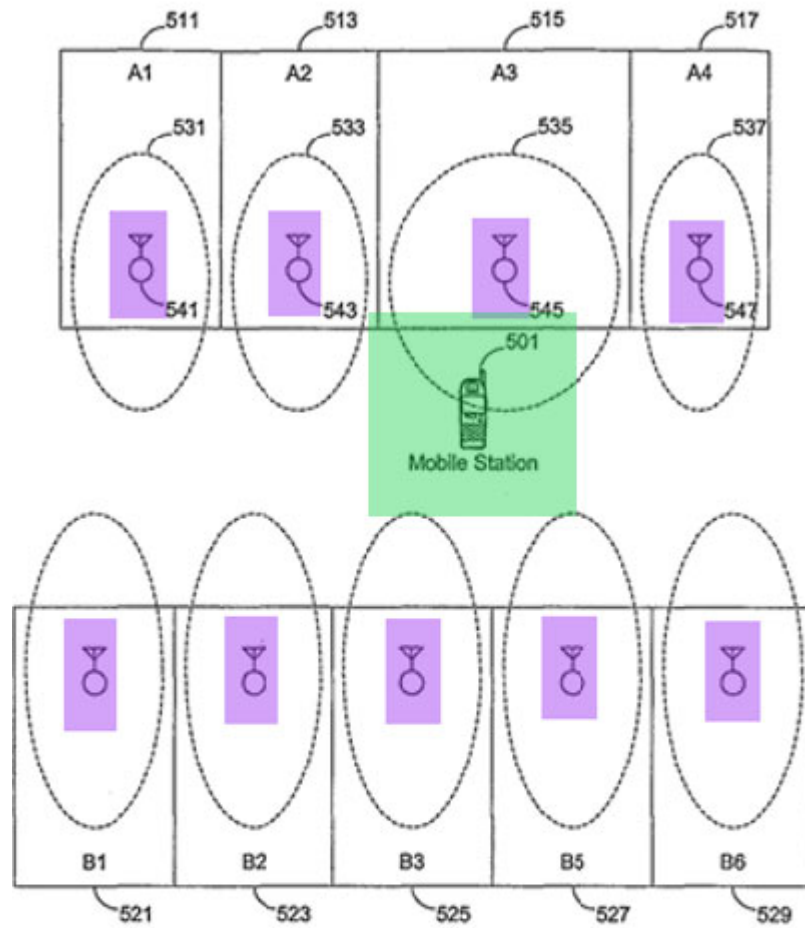


Fig. 5

Id., Fig. 5; *see also* Fig. 8 (placing “[o]ne or more beacon stations” “within a site”).

“The data identifying the site can be received by a mobile station to improve the precision of the position solution of the mobile station” because Wrappe “maintains a database to associate the data identifying the site with position information of the site (e.g., position information of the transmitter, altitude

information.” Ex-1005 ¶52. Wrappe also suggests using a map to determine position information of the mobile station in a store. *Id.* ¶¶46, 52. Indeed, the ’203 Patent states “location data is used to generate a fine resolution map centering on [a] specific location.” Ex-1001, 3:54-55. Thus, a POSITA would have understood the location information and/or identification information broadcasted at the beacon would have been used to generate a map centering on the location of the mobile station because Wrappe has the information required to generate a map, and a POSITA would have understood presenting the data in a map would be a typical way to provide such information to a user. Ex-1002 ¶¶128-130.

To the extent that a POSITA would have desired additional implementation details regarding mapping, Belcea teaches developing a map with correlations between position, site, and device information and rendering this information on a map on a device by downloading, maintaining, and updating a map database of a three-dimensional structure. Ex-1006, 3:52-55, 11:24-26; Ex-1002 ¶¶131-135.

Belcea discloses “deploying a network of wireless devices, including Mobile Terminals,” within a three-dimensional structure. Ex-1006, 3:29-31. Belcea explains “[t]he position of the Mobile Terminal must be observed on a portable computer that shows the right floor map and the correct position of the Mobile Terminal.” *Id.*, 11:6-8. Belcea discloses a “Video Server [that] displays the front, side and top view of the involved Mobile Terminals and maps of specified floors

with Mobile Terminals operating on them.” *Id.*, 11:24-26. Thus, Belcea discloses a Video Server that displays a map for use by a user and a POSITA would have been motivated to implement Wrappe’s use of location information with Belcea’s teachings regarding map databases servers, because doing so would provide “an improved system and method for easily determining and communicating the absolute and/or relative location of a mobile node in a deployed wireless communications network.” Ex-1002 ¶133; Ex-1006, 3:21-25.

b. 1[A] – using a geographical zone, the zone selectively being a preconfigured geographical zone,

Wrappe-Belcea teaches 1[A]. Ex-1002 ¶¶136-140. Shown in Figure 5, Wrappe discloses spaced apart beacons (purple) “which are placed to aid [in] position determination,” “can provide information such as ... *zone identification information*,” and are arranged about the zone. Ex-1005 ¶¶45, 46.³ Wrappe’s Figure 5 “illustrates a situation where each store (e.g., 511-517) has only one microcell beacon station (e.g., 541-547) [purple].” *Id.* ¶47.

³ Emphasis and annotations added, unless otherwise noted.

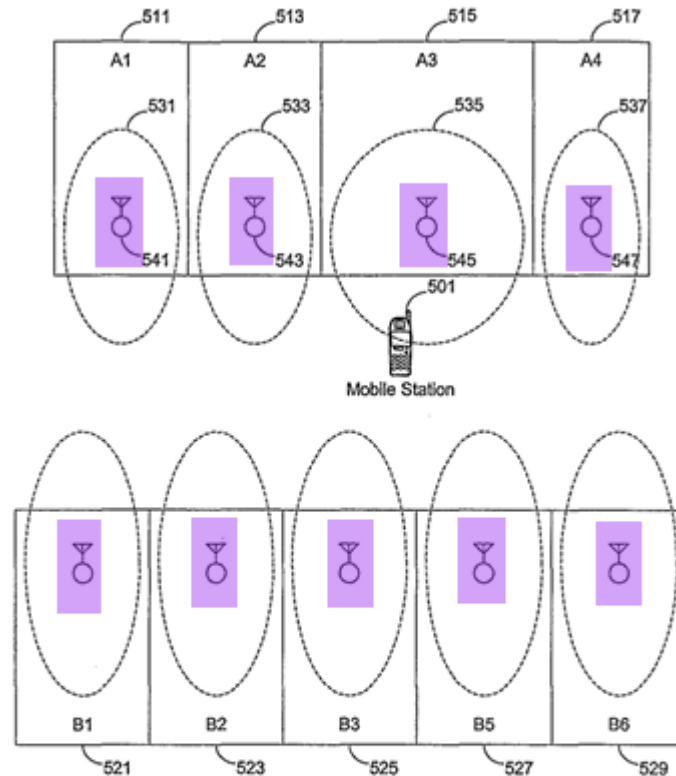


Fig. 5

Id., Fig. 5. The “coverage area of the radio signals may be adjusted to within the boundary of the site so that a neighbor of the site will not be misidentified.” *Id.*

¶52. A POSITA would have understood Wrappe’s beacons are positioned in a “geographical zone” because the beacons provide zone identification information and adjust radio signals within the geographical boundary of a site. Ex-1002

¶¶137-138. This is consistent with the “selectively preconfigured geographical zones” of the ’203 Patent, which explains “nodes [] are located at various locations

within the geographical space, which comprises of at least one zone” and “users have the ability to [] change the boundaries of the zones.” Ex-1001, 31:56-59, 32:12-14, 32:19-21. Wrappe’s zone is “preconfigured” because the beacons are placed in advance, and the positioning is configured before the system is put into use. Ex-1002 ¶138.

- c. **1[B] – the zone including a plurality of spaced apart nodes, wherein the nodes are arranged in a multi-dimensional sense, the location of the plurality of nodes in the multidimensional sense being placed with a structure attached to the ground;**

Wrappe-Belcea teaches 1[B]. Ex-1002 ¶¶141-148. Shown in Figure 5, a POSITA would have understood Wrappe’s beacons are “nodes arranged in a multi-dimensional sense” because they broadcast position information such as the “altitude of a floor of a building where the microcell beacon station is installed,” and “may further broadcast its location coordinates.” Ex-1002 ¶¶142-145. A POSITA would have understood “altitude” in a building as height above ground, a position in the “Z” axis, while positioning on a floor may refer to “X” and “Y” positions. *Id.* ¶144. Wrappe’s Figure 5 shows the node at position B1 is spaced apart from the node at A6 in two spatial dimensions—X (horizontal as looking at the figure) and Y (vertical as looking at the figure) direction—so the positioning of the beacons is multidimensional. An additional dimension is Wrappe’s “altitude,” which corresponds to height, or “Z,” dimension. Wrappe’s Figure 5 also

“illustrates a situation where each store (e.g., 511-517) has only one microcell beacon station (e.g., 541-547).” Ex-1005 ¶47. Additionally, a “store” is within a structure on the ground. Ex-1002 ¶¶147-148.

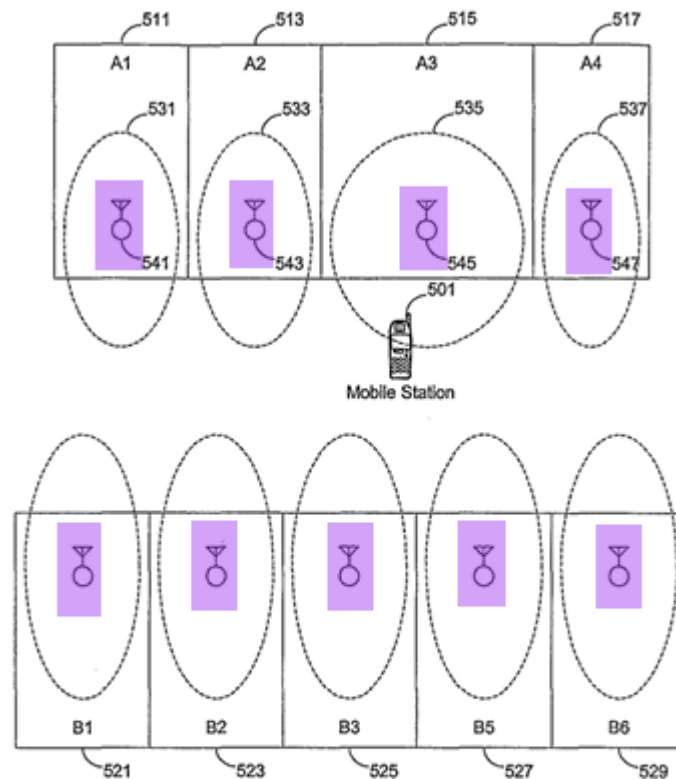


Fig. 5

Ex-1005, Fig. 5.

This is consistent with the '203 Patent, which explains “location nodes transmit the user’s location data,” including being “preferably programmed with one or more ... geographical positions ... installation identifiers, floor numbers.”

Ex-1001, 4:4-5, 6:43-46. A POSITA would have understood Wrappe's beacons (purple) are spaced apart because they are located in different stores that are spaced apart, e.g., adjacent or across from each other in Rows A1-A4 and B1-B6, and/or at different altitudes. Ex-1002 ¶142; Ex-1005, Fig. 5.

d. 1[C] – sending data communications between one or more of the nodes, one or more users, and one or more control stations; and

Wrappe-Belcea teaches 1[C]. Ex-1002 ¶¶149-158. Wrappe discloses sending data communications between its beacons, the mobile station(s), and a location server. *Id.* ¶150.

Wrappe's "microcell beacons use short range data transmitters [] for local area *data communication*, such as Bluetooth or WiFi [to broadcast]" where the "beacon station may receive data from a *mobile station* through a wireless local area data communication link." Ex-1005 ¶¶35, 48. A POSITA would have understood Wrappe teaches sending data communications between the beacons and mobile station, which correspond to the claimed "nodes" and "users" (i.e., the users of the "mobile station"). Ex-1002 ¶¶150-156.

In Figure 6, Wrappe's "mobile station 607 [green] has the capability of communicating with location server 621 [blue] using a cellular communication link between mobile station 607 [green] and cellular phone base station 601." Ex-1005 ¶38 (nearby beacon 605 in purple). Cellular communications are "data

communications.” Ex-1002 ¶¶151, 83-87.

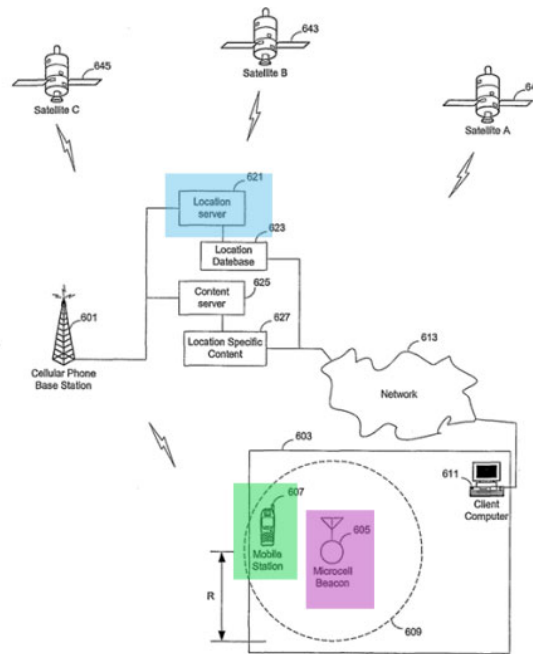


Fig. 6

Ex-1005, Fig. 6. A POSITA would have understood Wrappe’s location servers are “control stations” communicating via “cellular base stations [] typically arranged to cover a geographical area with radio coverage, and these different base stations are coupled to at least one mobile switching center.” Ex-1002 ¶¶151, 83-87. The cellular base station is arranged to cover a geographical area and enable communications between mobile devices (i.e., users) and location servers (i.e., control stations) which provide location services and control operation, acting as the claimed control station. *Id.* To the extent that a POSITA implementing Wrappe would have desired additional implementation details regarding communications

between users, nodes, and/or control stations, such details are in Belcea. Ex-1002

¶¶152-158 (motivations and expectations of success for implementing Belcea teachings into Wrappe). For example, a POSITA would have applied Belcea's teachings to improve positioning in a network of wireless devices accounting or attenuation from walls, such as Wrappe's. *Id.*

- e. **1[Di] – affecting multi-dimensional mapping according to the placement of the nodes and the communications between the nodes and the control stations, wherein the mapping is affected in a three-dimensional sense, selectively being a three-dimensional sense in the x, y, and z axes or coordinates and the structure is a building, the building having different elevational levels**

Wrappe-Belcea teaches 1[Di]. Ex-1002 ¶¶158-162. Wrappe discloses the beacon and cellular base station are capable of communicating with each other as discussed in Section XII.A.2.d. Wrappe discloses “during the installation of the microcell beacons, the placement and the signal transmission strength of the microcell beacons are adjusted so that the coverage of the dominant beacon signals substantially covers the store without substantially intruding into neighboring stores to cause misidentification.” Ex-1005 ¶46. Wrappe also explains “more than one microcell beacon station can be used to create a desirable coverage, depending on the size of the store, GPS signal blockage conditions, radio signal blockage conditions, desirability of coverage, and others.” *Id.* ¶47. Thus, as explained in

Sections XII.A.1 and XII.A.2.a, a POSITA would have understood the placement of the beacons affects multi-dimensional mapping. *See also* Ex-1002 ¶¶159-161.

Wrappe also discloses the beacons may broadcast “location information [that] may be the coordinates (e.g., longitude, latitude and altitude) [] or other location specific information (e.g., an identification number of an area).” Ex-1005 ¶10. Wrappe discloses “the microcell beacon station can broadcast the altitude of a floor of a building where the microcell beacon station is installed” and “may further broadcast its location coordinates.” *Id.* ¶40. Indeed, the ’203 Patent states the “mapping of the geographical space is affected in a three-dimensional sense, selectively being defined by x, y and z axes or coordinates, which in some embodiments may correspond to latitude, longitude, and elevation.” Ex-1001, 32:7-10. Thus a POSITA would have understood Wrappe discloses the mapping is affected in a three-dimensional sense the same way this feature is described by the ’203 Patent. Ex-1002 ¶¶159-161. As explained in Sections XII.A.1 and XII.A.2.a, a POSITA would have been motivated to implement Wrappe using Belcea’s mapping teachings because both Wrappe and Belcea teach the importance of affecting multi-dimensional mapping according to the placement of nodes. Ex-1002 ¶¶159-162; Ex-1005 ¶52; Ex-1006, 3:29-31, 3:52-55, 11:6-8.

f. 1[Dii] – and there are nodes on different elevational levels whereby there are nodes at multiple different elevational levels,

Wrappe-Belcea teaches 1[Dii]. Ex-1002 ¶¶163-165. As discussed in Section XII.A.2.c, Wrappe’s beacon “can store and broadcast [for] altitude aiding” such as “the altitude of a floor of a building where the microcell beacon station is installed.” Ex-1005 ¶¶40, 49. As explained in Sections XII.A.1, XII.A.2.c, and XII.A.2.e, a POSITA would also have considered teachings of Belcea regarding different elevations. Figure 3 of Belcea shows “a number of Intelligent Access Points (IAP) 122-1 to 122-n [purple], and a system of Vertical Routers (VR) 124-1 to 124-n [purple], dispersed among a number of floors of an example building.” Ex-1006, 6:8-11.

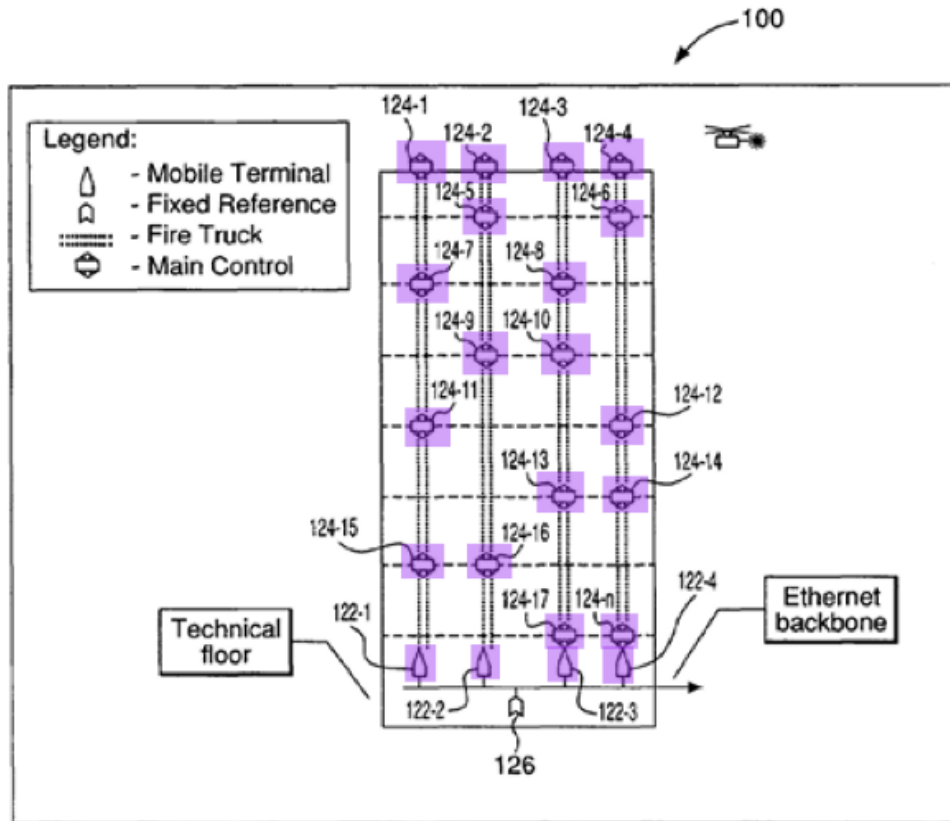


FIGURE 3

Id., Fig. 3.

Thus, Wrappe-Belcea includes beacons on different elevational levels for altitude aiding, using Belcea's Intelligent Access Points and Vertical Routers dispersed among different floors. Ex-1002 ¶165. A POSITA would have applied these teachings to Wrappe in a multi-story commercial context, like a mall, to achieve the benefits discussed by Belcea. *Id.*

- g. **1[Diii] – and wherein the system narrows the plurality of nodes for use by the user at a first elevational level to the most practically near node to the user, such that a node at another elevational level, even though physically closer to the user at the first elevational level is excluded as being a node the most practically near to that user, and a different node at the elevational level of the user is selected as the most practically near to that user.**

Wrappe-Belcea teaches 1[Diii]. Ex-1002 ¶¶166-174. Wrappe explains “the signal transmission strength of the microcell beacons and the distribution of the microcell beacons are adjusted during the installation process such that the beacon signals identifying one of the stores covers substantially the store.” Ex-1005 ¶46. In Figure 5, “beacon signals for store 511-517 have coverage areas 531-537 respectively so when mobile stations 501 [green] receives a signal beacon signal for a store [], the mobile station can identify the store from the beacon signal.” *Id.* Thus, a POSITA would have understood Wrappe discloses the mobile station determining the closest beacon in a store so the mobile station can receive a signal for a store. Ex-1002 ¶¶167-168.

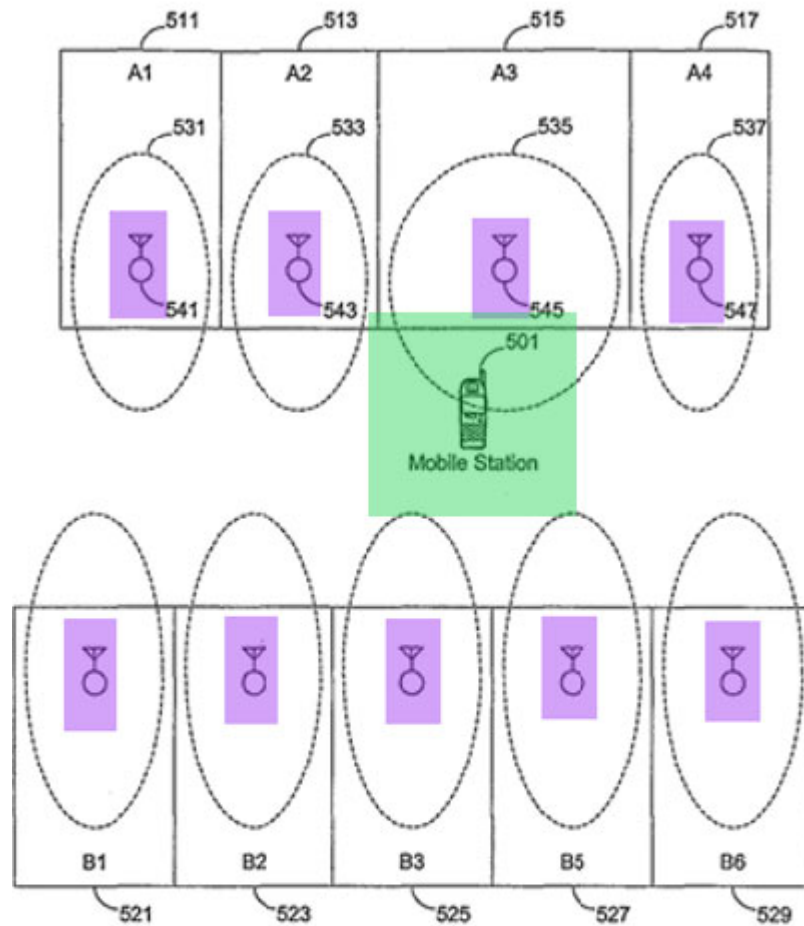


Fig. 5

Ex-1005, Fig. 5.

A POSITA would have been motivated to implement the Wrappe-Belcea teachings so beacons would “narrow[] the plurality of nodes for use by the user at a first elevational level to the most practically near node to the user” because Belcea teaches benefits of this functionality. Ex-1002 ¶¶168-174. Belcea discloses

“deploying a network of wireless devices, including Mobile Terminals” within a three-dimensional structure, such as a building with floors at different elevation levels. Ex-1006, 3:29-31. Belcea explains “Mobile Terminals can determine their respective locations using algorithms” such as those described in U.S. Patent Application Ser. No. 10/861,121, published as U.S. Patent Publication No. 2004/0246926 to Belcea (“Belcea ’926”), which is incorporated by reference in its entirety. *Id.*, 11:26-33. Belcea teaches using “Time of Flight (TOF) data and Received Signal Strength Indicator (RSSI) data and ***a scoring process to identify the correct floor*** on which they are located.” *Id.*, 11:35-38.

Belcea ’926’s Figure 7 “is a flowchart showing an example of the floor scoring operations performed for identifying the locations of mobile terminals.” Ex-1008 ¶23. Belcea ’926 discloses a “function has a loop that identifies the floor on which the criterion (RSSI or TOF) has the best value.” *Id.* ¶65.

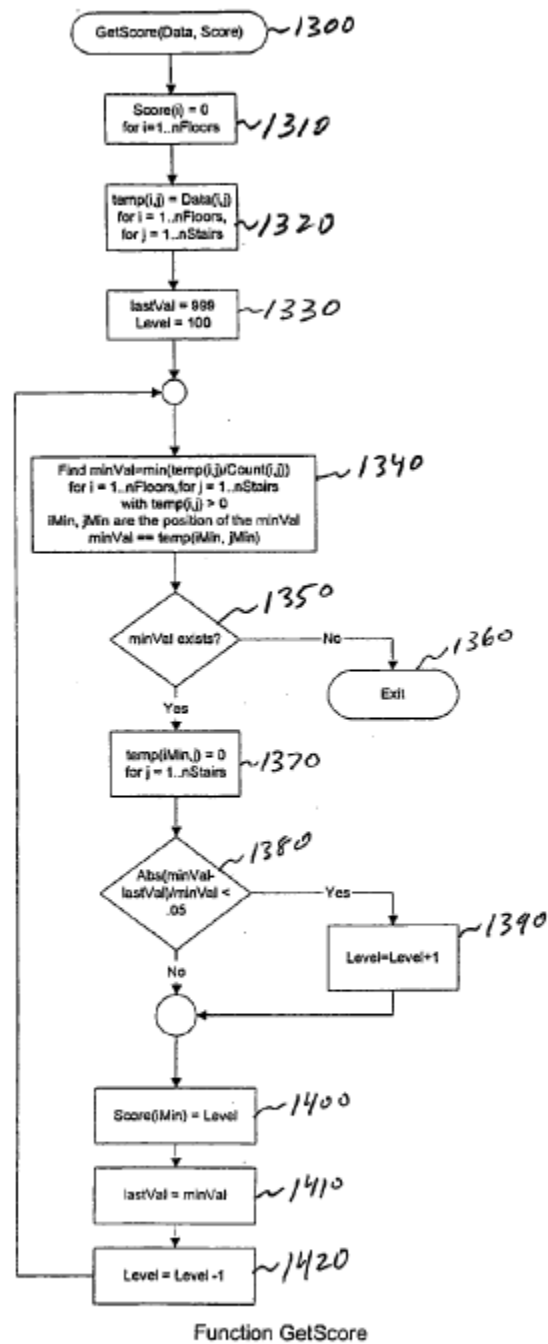


FIGURE 7

Ex-1008, Fig. 7.

Belcea '926 discloses using a “wireless floor-indicating router (FIR) 106 [] in the stairwell 102 and by the elevator shaft 104 at each floor” because signals do not travel well through floors and walls. Ex-1008 ¶43. Belcea '926 discloses “all FIRs deployed on the same floor are on the same line of the matrix, regardless [of] the position on the floor.” *Id.* ¶55. Belcea '926 discloses “filtered data can be compared for finding the floor where is located the FIR that provides to the targeted mobile device the smallest TOF and the best RSSI simultaneously.” *Id.* ¶47. Thus, a POSITA would have understood Belcea teaches to identify the nodes on a floor. Ex-1002 ¶¶169-171. A POSITA would have been motivated to implement these teachings with Wrappe to ensure the user device is connected to the beacon of a store the user is actually in, for example a store on the same floor as the user as opposed to a different store on a different floor. *Id.* ¶172. Thus, the system identifies a beacon “nearby” on the same floor because other stores on the floor above or below are not immediately relevant to the user. *Id.*

Additionally, Belcea '926 teaches each tracked device, MeshTracker™ (MT), “exchanges range messages with all wireless routers (i.e., FIRs 106) with which it can communicate” and the Incident Commander Computer. Ex-1008 ¶¶30, 50. Accordingly, a POSITA would have understood Belcea teaches methods to communicate both with nodes and a control station that monitors the user's positions. Ex-1002 ¶¶173-174. A POSITA would have implemented these

teachings with Wrappe so users of Wrappe’s mobile stations would have the most current relevant information. *Id.* A POSITA would also have been motivated to implement these teachings of Belcea, such as a floor scoring operation, in Wrappe to improve the accuracy of location determination as described above in Section XII.A.1. *Id.* ¶174.

3. Dependent Claims 2-5

Claims 2-5 depend on Claim 1 and all recite “the method of claim 1,” which, as discussed in Section XII.A.2, is rendered obvious by Wrappe-Belcea.

- a. **Claim 2 – The method of claim 1, wherein the mapping is affected in a three-dimensional sense, selectively being a three-dimensional sense in the x, y, and z axes or coordinates and the structure is a building, the building having at least three different floors and there are nodes on the three different floors whereby there are nodes on at least three different levels.**

Wrappe-Belcea teaches the dependent limitation of Claim 2 for the reasons discussed in Section XII.A.2.e (x, y, and z axes). Ex-1002 ¶¶175-182. Belcea teaches nodes “dispersed among a number of floors” in a “high-rise building.” Ex-1006, 6:5-16, Fig. 3.

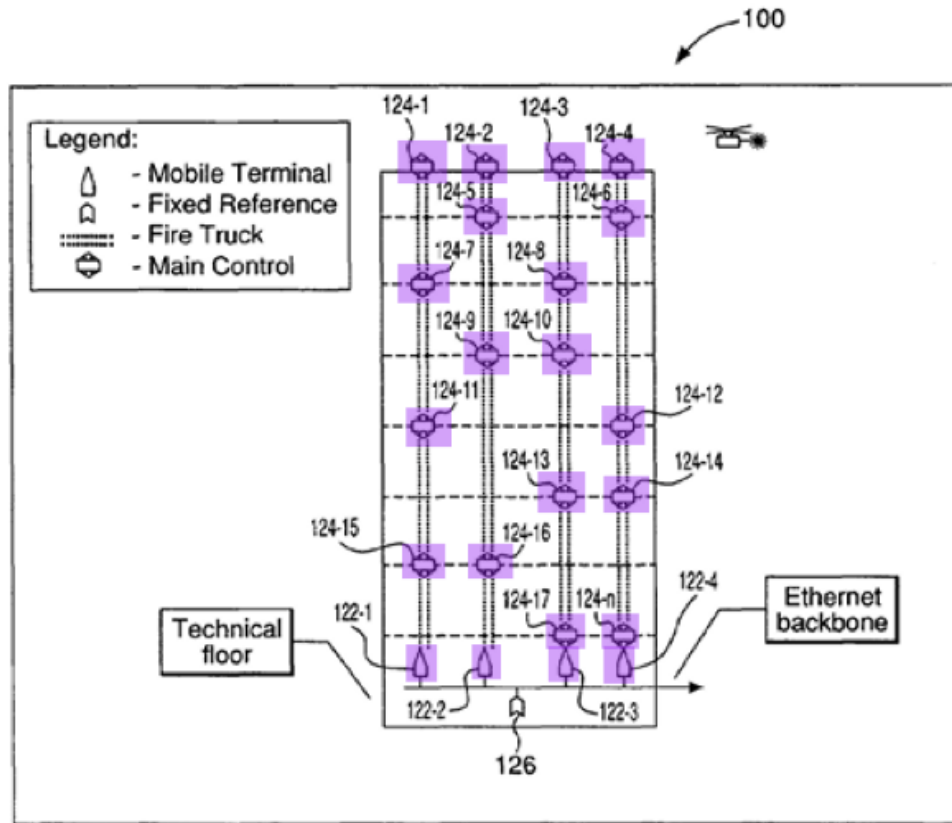


FIGURE 3

Thus, a POSITA would have understood a “high-rise building” has at least three floors having nodes dispersed among a number of floors. Ex-1002 ¶¶176-182.

- b. **Claim 3 – The method of claim 1, wherein the mapping is affected in a three-dimensional sense, selectively being a three-dimensional sense in the x, y, and z axes or coordinates and the structure is a building, the nodes being contained in the building structure at different floors and there are nodes on the different floors whereby there are nodes on at least different levels.**

Wrappe-Belcea teaches the dependent limitation of Claim 3 for the reasons

discussed in Section XII.A.2.e (x, y, and z axes). Ex-1002 ¶¶184-187 (describing Belcea's structure with different floors and nodes on the different floors).

- c. **Claim 4 – The method of claim 1, wherein the mapping is affected in a three-dimensional sense, selectively being a three-dimensional sense in the x, y, and z axes or coordinates and the structure is a building, the nodes are fixed and non-movable relative to the ground and the nodes are on at least two different levels.**

Wrappe-Belcea teaches the dependent limitation of Claim 4 for the reasons discussed in Section XII.A.2.e (x, y, and z axes). Ex-1002 ¶¶188-192. Wrappe further teaches “microcell beacons may be installed *within lightening fixtures or with security devices (e.g., security camera)* in an area where the precision and the location fix yield are reduced due to the blockage of GPS signals.” Ex-1005 ¶34. A POSITA would have understood such fixtures are fixed and non-movable relative to the ground and beacons installed in such fixtures would likewise be fixed. Ex-1002 ¶190. A POSITA would have known the nodes should be fixed for their broadcast information to be effective and reliable. *Id.* As described regarding Claims 1-3, Wrappe teaches the nodes are on at least two levels. *See also id.*

- d. **Claim 5 – The method of claim 1, wherein the mapping is affected in a three-dimensional sense, selectively being a three-dimensional sense in the x, y, and z axes or coordinates and the structure is a building, the building having different floors and there are nodes on different floors whereby there are nodes at multiple different levels, and the multi-dimensional mapping is effected internally in the building.**

Wrappe-Belcea teaches the dependent limitation of Claim 5. Ex-1002 ¶¶192-201. Wrappe teaches “when a mobile station is identified to be entering (or exiting) the site, the commercial information (e.g., electronic coupon, a web page of advertisement) is automatically transmitted to the mobile station for display.” Ex-1005 ¶52. A POSITA would have known Wrappe teaches tracking user devices within a building and transmitting information to the user for display on their device while they are inside the building. Ex-1002 ¶196. A POSITA would have found it obvious to display a map on the Wrappe user device, as taught in Belcea, to provide the user with helpful context and information. *Id.* ¶200.

Belcea discloses the “Vertical and Horizontal Routers” and “Fixed Reference Points” “provide[s] location reference for computing the position of Mobile Terminals, and to relay voice and location data to the Main Control.” Ex-1006, 8:31-38. Belcea explains “Main Control ... performs all mathematical operations for computing the position of all Fixed Routers and Mobile Terminals.” *Id.*, 9:45-49. After computing their position, Main Control “*displays the front, side*

and top view of the involved Mobile Terminals and the maps of specified floors with Mobile Terminals operating on them.” *Id.*, 11:24-26; *see also id.*, Cls. 2, 12, 32. Main Control can use these positions to provide “directions” to the operators. *Id.*, 8:15-17. As shown in Figure 3, the Main Control can be in the building. Ex-1002 ¶¶197-198. High-rise building 100, shown below, includes multiple levels with nodes at the different levels, internal to the building for mapping.

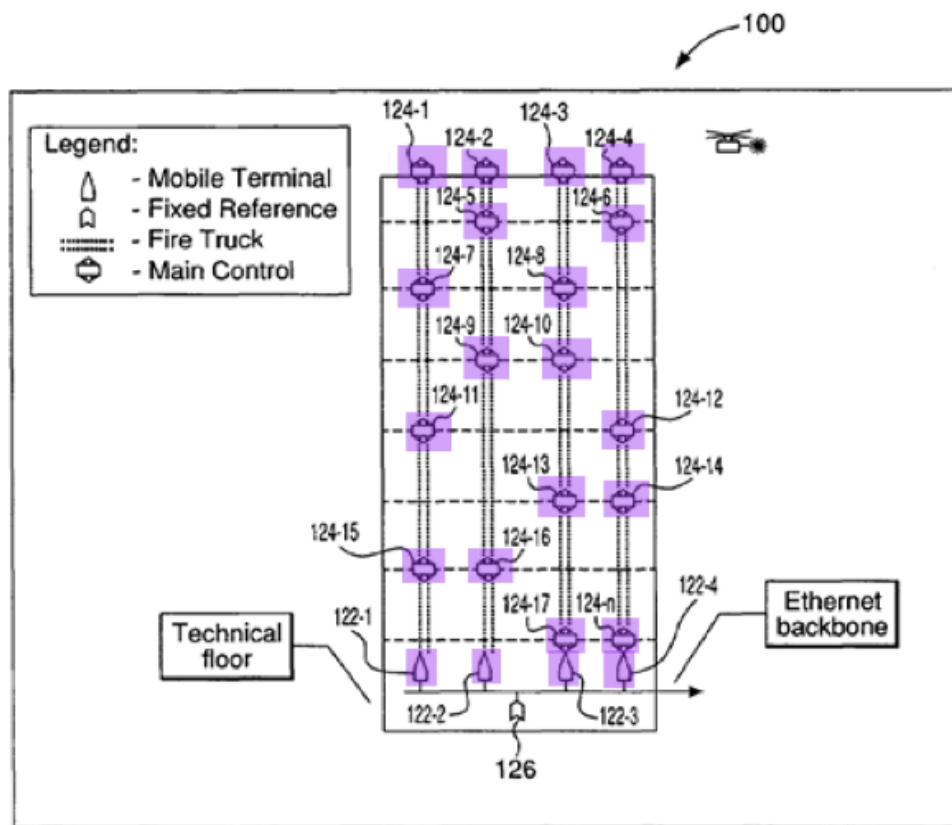


FIGURE 3

Id., Fig. 3.

A POSITA would have found it obvious to apply this teaching to improve the Wrappe system by affecting the multi-dimensional mapping of Wrappe-Belcea on the display of the mobile device in Wrappe to provide the user with helpful context while they are shopping. Ex-1002 ¶¶199-201. Implementing this teaching in Wrappe would have been straightforward and would have a reasonable expectation of success because the Wrappe user mobile device already displays location-specific information. *Id.* ¶201.

B. Ground 2: Claims 6-30 are obvious over Wrappe and Belcea in view of Christopher (“Wrappe-Belcea-Christopher”)

1. Motivations to Combine Wrappe, Belcea, and Christopher

A POSITA would have been motivated to combine the teachings of Wrappe, Belcea, and Christopher and would have had a reasonable expectation of success in doing so because each addresses similar issues corresponding to the same well-known technologies for similar reasons as discussed in Section XII.A.1. Ex-1002 ¶¶202-207.

Christopher, like Wrappe and Belcea, teaches positioning where blockage of GPS signals is severe (e.g., buildings). Ex-1005, Abstract, ¶¶10, 11, 48, 52; Ex-1006, Abstract; Ex-1007, Abstract. Wrappe describes beacons distributed in a building with stores. Ex-1005 ¶46. Belcea discloses “computing the position of wireless devices in a three-dimensional network, such as a network distributed

throughout a high-rise building using *specific nodes*, such as wireless routers.”

Ex-1006, 4:45-48. Christopher similarly teaches an “RFID system 100 compris[ing] a plurality of passive RFID tags [] disposed at predetermined intervals within the six-story structure.” Ex-1007 ¶43.

A POSITA would have recognized the benefit of incorporating Christopher’s teachings of tracking a user’s movement or purchase patterns into the Wrappe system to improve the sending of location-based, targeted commercial communications. Ex-1002 ¶207. For example, Wrappe discloses “commercial information (e.g., electronic coupon, a web page of advertisement) is automatically transmitted to the mobile station for display” when a mobile station is identified entering or exiting a site. Ex-1005 ¶52. Wrappe also teaches sending location-based messages, in particular, to users, such as mobile stations, who are entering or exiting a site. *Id.* Wrappe mentions a desire to target messages to users walking into a site, e.g., based on user “preferences.” *Id.* ¶44. Christopher discloses details of such targeting, explaining “information specific to mobile device 1350 such as purchase records can be used to tailor a promotional message or sales coupons to mobile device.” Ex-1007 ¶80.

Like Ground I, the Wrappe-Belcea-Christopher teachings would be based on Wrappe’s system with implementation of teachings of Belcea related to generating and displaying maps, using mesh networks to narrow down and identify nodes on

the same floor as, and near, a user, and implementation details of Christopher relating to sending targeting advertisements to users. Ex-1002 ¶¶202-207.

Regarding mesh networks, a POSITA would have implemented Wrappe using multiple beacons that intercommunicate with each other to cover a large-area store where a single beacon could not cover the entire store footprint. *Id.* ¶203. In a larger department store for example, Wrappe’s system would have been implemented with Belcea’s meshed nodes, so the entire store could be covered at least because Wrappe teaches “***more than one microcell beacon station can be used to create a desirable coverage.***” *Id.* A POSITA would have also wanted to target users in such commercial setting (e.g., a department store) to ensure a location-based message is effective to the user as they move around the store. *Id.* ¶¶204-207. A POSITA thus would have considered teachings related to sending targeted messages such as those in Christopher. *Id.*

2. Independent Claims 6, 29, and 30

Claims 6-30 refer to the nodes communicating with the mobile device as a “communication transponder[s]” or “transponder[s].” *See, e.g.,* Ex-1001, Cl. 6 (reciting “transponders permit[] communication with a mobile device of a user” and “defin[ing] a zone” using “pluralities of the transponders in a network”).

For clarity, the “communication transponder”/“transponder” in the claims is *not* the same transponder described in the specification and earlier applications.

Ex-1002 ¶209. Instead, the specification and earlier applications use the term transponder to refer to the tracked device (or a hardware unit attached to the tracked device). *See, e.g.*, Ex-1001, 7:25-29, 7:36 (describing a “transponder [or] subscriber device”), 7:36-41 (“transponder can be [in or on] vehicles, aircraft, cargo, persons”); Ex-1024 ¶¶7 (“monitor movement of an entity compris[ing] a transponder”), 8 (“transponder can be [in or on] vehicles, aircraft, cargo, persons”), 52-65 (describing a transponder for attachment in a vehicle); Ex-1025 ¶¶14, 18, 46, 74, 76. In contrast, in Claims 6-30, the “communication transponder” or “transponder” has the same role as the “nodes” in Ground 1. Ex-1002 ¶209.

a. 6/29/30[Pre] – A method of communicating data between at least one selected communication transponder and at least one selected mobile communication device comprising:

Wrappe-Belcea-Christopher teaches the preambles of Claims 6, 29, and 30. Ex-1002 ¶¶209-211.

Wrappe explains “microcell beacon station can have both the transmission capability and the receiving capability for local area wireless data communication so the microcell beacon station can be programmed wirelessly.” Ex-1005 ¶48. The beacon also “can provide information such as street address, identity of the site in which the microcell beacons are installed, zone identification information.” *Id.* ¶45. Thus, Wrappe’s beacon corresponds to the claimed “communication

transponder” because it transmits and receives communications and provides position and other information.

Wrappe teaches the beacon and user device have data communications. Ex-1002 ¶¶210-211. The beacons send data via “local area data communication, such as Bluetooth or WiFi” to the user. Ex-1005 ¶35. The beacon can also receive data from the user device and relay data between the device and internet. *Id.* ¶48.

Wrappe discloses “microcell beacons use short range data transmitters [] for local area data communication, such as Bluetooth or WiFi [to broadcast information].” Ex-1005 ¶35. Wrappe’s mobile station is the claimed communication device and data is communicated between Wrappe’s beacon and mobile station. Ex-1002 ¶211.

- b. 6/29/30[A] – using a [preconfigured] geographical zone, wherein the zone includes a plurality of spaced apart communication transponders; the transponders including a transmitter and receiver and wherein at least one of the transponders permits communication with a mobile device of a user;**

Wrappe-Belcea-Christopher teaches Elements 6[A], 29[A], and 30[A] as discussed in Sections XII.A.2.b-d. Ex-1002 ¶¶212-216.

Wrappe’s Figure 5 “illustrates a situation where each store (e.g., 511-517) has only one microcell beacon station (e.g., 541-547) [purple].” Ex-1005 ¶47.

Wrappe discloses its beacons aid in position determination when mobile stations

are “in an environment where the blockage of GPS signals is severe,” where “there are a number of stores and shops [] in a commercial complex.” *Id.* ¶¶46-47.

Wrappe explains “during the installation of the microcell beacons, the placement and the signal transmission strength of the microcell beacons are adjusted so the coverage of the dominant beacon signals substantially covers the store without substantially intruding into neighboring stores to cause misidentification.” *Id.* ¶46.

“For example, it may be desirable to have the radio coverage extended into the hallway (e.g., area between stores 511-517 and stores 521-529) in front of a store so when mobile station 501 is in front of the store (e.g., store 515) the mobile station can be identified as being within the site of the store.” *Id.* A POSITA would have understood the geographic zone in Wrappe has multiple stores and is pre-configured in multiple ways. The stores are pre-configured within the commercial complex before the Wrappe beacons were installed. Ex-1002 ¶214. Wrappe further teaches pre-configuring the zone by adjusting location and strength of the beacons. Ex-1005 ¶13.

Additionally, a POSITA would have understood Wrappe’s beacons (purple) are spaced apart because they are in different, spaced-apart stores, adjacent or across from each other in Rows A1-A4 and B1-B6. Ex-1005, Fig. 5; Ex-1002 ¶215.

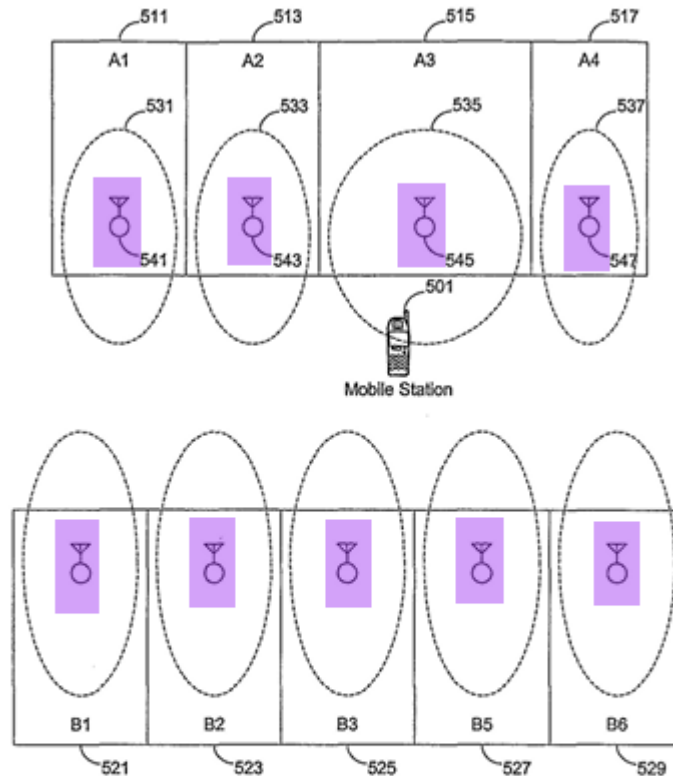


Fig. 5

Wrappe explains “[m]icrocell beacon 410 includes transmitter and modulator 411 for transmission according to wireless local area data communication standards (e.g., WiFi or Bluetooth).” Ex-1005 ¶48. Wrappe discloses “the microcell beacon station may receive data from a mobile station through a wireless local area data communication link (e.g., WiFi or Bluetooth) to relay the data to a remote service station (e.g., through Internet).” *Id.* Also, “[t]he user may then have [] the option of further use the wireless local area data

communication link (e.g., Bluetooth or WiFi) to obtain further information.” *Id.*

¶44. Thus, a POSITA would have understood Wrappe discloses the microcell beacon transmits and receives data and permits communication with the user mobile device using Bluetooth and/or WiFi. Ex-1002 ¶216.

- c. **6/29/30[B] – sending data communication between pluralities of the transponders in a network communication protocol with each other, applying the plurality of transponders in the network with each other to define the zone,**

Wrappe-Belcea-Christopher teaches Elements 6[B], 29[B], and 30[B].

Ex-1002 ¶¶217-221.

As discussed in Section XII.A.2.d, Wrappe’s beacons send data communications. Belcea’s transponders (i.e., Intelligent Access Points, Vertical and Horizontal Routers, and Fixed References) “are capable of communicating with each other directly, or via one or more other devices operating as a router or routers for packets being sent between nodes.” Ex-1006, 5:59-6:1. Belcea also discloses “Vertical Routers are [] used to successfully communicate between levels, or floors.” *Id.*, Abstract. The vertical routers in Belcea “will have very reliable communication with the closest neighbor device.” *Id.*, 6:27-31. By installing a horizontal router close by each vertical router, “[t]his proximity assures that the two radios, or Routers [], can reliably communicate with one another.” *Id.*, 6:57-61. Ex-1002 ¶218.

A POSITA would have been motivated to apply this teaching combined with Wrappe's teachings because, as Belcea describes, close proximity improves reliability of communications. Ex-1002 ¶219. A POSITA would have understood wireless communication signals attenuate over distance such that communications with close communication nodes, e.g., the beacons in Wrappe, are more reliable. *Id.* Thus, a POSITA would have been motivated to send communications between the nodes in Wrappe to relay information to a mobile device, node, or control station that is farther away. *Id.*

Another motivation for enabling communication between the beacons in Wrappe is to set up an interconnected communication network within a particular zone, such as a communication network dedicated to a larger department store. As discussed in Section XII.A.2.b, Wrappe's beacons define a geographical zone. Wrappe's beacons "can provide information such as street address, identity of the site in which the microcell beacons are installed, ***zone identification information***, etc., which can be directly used for the emergency response purpose (e.g., for fire, medical, or police responses)." Ex-1005 ¶45. Wrappe teaches "the signal transmission strength of the microcell beacons and the distribution of the microcell beacons are adjusted during the installation process such that the beacon signals identifying one of the stores covers substantially the store." *Id.* ¶46. Wrappe's "Figure 5 illustrates a situation where each store (e.g., 511-517) has only one

microcell beacon station (e.g., 541-547).” *Id.* ¶47.

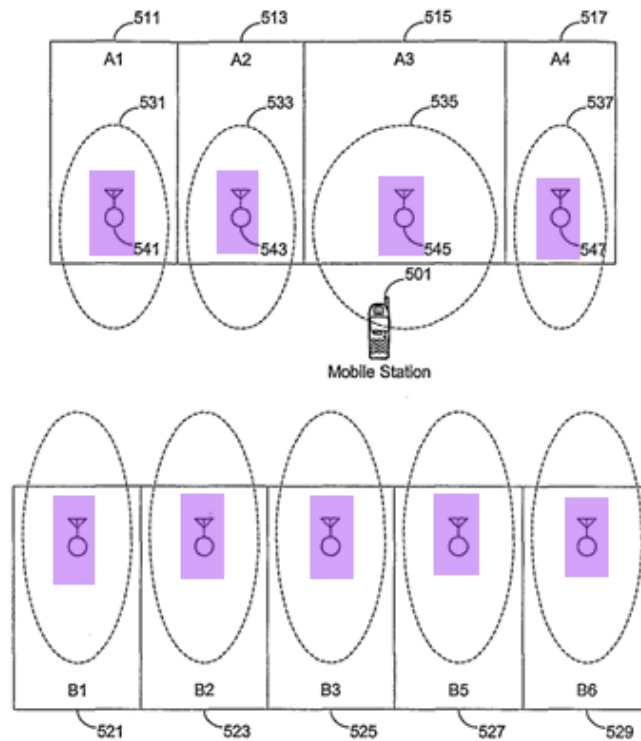


Fig. 5

Wrappe also states, “*It is understood that in general more than one microcell beacon station can be used to create a desirable coverage, depending on the size of the store, GPS signal blockage conditions, radio signal blockage conditions, desirability of coverage, and others.” Ex-1005 ¶46. Wrappe thus teaches a group of multiple beacon stations can be applied with each other to define a zone, e.g., a store, and more than one beacon should be interconnected to*

cover a larger zone, for example a larger departments store in a commercial shopping center, if necessary. Ex-1002 ¶¶219-220.

A POSITA would have implemented the beacons with a communication protocol, so that they are “in a network communication protocol with each other.” Ex-1002 ¶221 (explaining application of well-known communication protocols.) Wrappe’s beacons use the same communications protocols, e.g., WiFi, Bluetooth, cellular. *Id.*; Ex-1005 ¶¶10, 12, 14.

- d. **6/29/30[C] – communicating between at least one transponder to the mobile user and between at least one transponder; the communication between the mobile device of the user and the least one transponder being effected by at least one of bluetooth or a wifi protocol thereby to determine the location of the user in the zone through such communication;**

Wrappe-Belcea-Christopher teaches Elements 6[C], 29[C], and 30[C].
Ex-1002 ¶¶222-224.

As discussed in Section XII.A.2.d, Wrappe’s beacons send data communication between each other.

Wrappe teaches communication between the beacons and mobile device—
“microcell beacons use short range data transmitters [] for local area data communication, such as Bluetooth or WiFi [to broadcast information].” Ex-1005 ¶35. Wrappe’s “microcell beacon station may *receive data from a mobile station*

through a wireless local area data communication link (e.g., WiFi or Bluetooth) to *relay the data to a remote service station* (e.g., through Internet).” *Id.* ¶48. Wrappe explains “microcell beacons can provide information such as street address, identity of the site in which the microcell beacons are installed, zone identification information.” *Id.* ¶45. Thus, Wrappe’s beacon’s Bluetooth or WiFi communications with the mobile station can be used to determine the location of the mobile station. Ex-1002 ¶224.

- e. **6/29/30[D] – arranging the transponders at locations in the zone, and the respective locations of the plurality of transponders in the zone being placed within a building structure;**

Wrappe-Belcea-Christopher teaches Elements 6[D], 29[D], and 30[D] as discussed in Section XII.A.2.c. Ex-1002 ¶225.

- f. **30[Di] – arranging the transponders in a multi-dimensional sense about the zone, the transponders being distributed in separate mesh networks, and the mesh networks being in different specific zones, and wherein different mesh networks of transponders are associated with a dedicated base station;**

Wrappe-Belcea-Christopher teaches 30[Di] as discussed in Section XII.A.2.c. Ex-1002 ¶¶226-232.

Wrappe discloses “microcell beacons use short range data transmitters [] for local area *data communication*, such as Bluetooth or WiFi [to broadcast information].” Ex-1005 ¶35. Wrappe’s Figure 5 “illustrates a situation where each

store (e.g., 511-517) has only one microcell beacon station (e.g., 541-547)

[purple].” *Id.* ¶47. Wrappe discloses its microcell beacons aid in position determination when mobile stations are “in an environment where the blockage of GPS signals is severe.” *Id.* ¶46, Fig. 5. Wrappe also teaches in each store, “more than one microcell beacon station can be used to create a desirable coverage, depending on the size of the store, GPS signal blockage conditions, radio signal blockage conditions, desirability of coverage.” *Id.* ¶47.

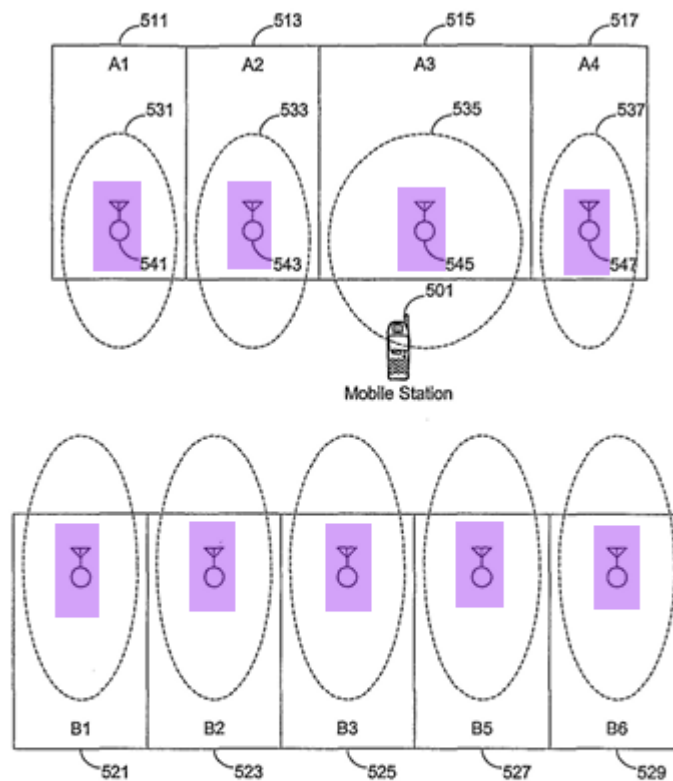


Fig. 5

Id., Fig. 5. Thus, a POSITA would have been motivated to place each of Wrappe's microcell beacons distributed in separate mesh networks because each microcell beacon is placed to create a desirable coverage of a large area and located in different stores. Ex-1002 ¶¶228-229. The stores are separate from each other in Rows A1-A4 and B1-B6, allowing the beacons to be distributed in separate mesh networks such that each store may have a different group of associated beacons. *Id.*

Wrappe discloses the network includes “cellular switching center or multiple cellular switching centers 225, the land based phone system switches 223, cellular base stations (not shown in Figure 2), other GPS receivers 227, or other processors or location servers 221.” Ex-1005 ¶58. Wrappe explains “multiple cellular base stations are *typically arranged to cover a geographical area* with radio coverage, and these different base stations are coupled to at least one mobile switching center.” *Id.* ¶60. A POSITA would have understood that devices communicating within the geographical area of a cellular base station are connected to that dedicated base station. Ex-1002 ¶¶83-87, 230. Thus, multiple base stations are geographically distributed and associated with mesh networks of the microcell beacons. *Id.*

Belcea was assigned to “MeshNetworks, Inc.” that made a product called Mesh TrackerTM and teaches “mesh networks” each having a base station. Ex-1006; Ex-1008; Ex-1002 ¶231. Belcea teaches mesh networks of horizontal routers

on each floor of a building (Ex-1006, 6:47-67), wherein each floor of horizontal routers has a dedicated vertical router (e.g., in a stairwell) (Ex-1006, 6:27-31, 6:47-61), which acts as a base station to communicate information from that floor to Local Control (Ex-1006, 6:15-21). Ex-1002 ¶¶231-232. A POSITA would have applied Belcea's teachings about a mesh networks because the group of vertical and horizontal routers are wireless routers that communicate directly with neighboring nodes and communicate between members of a wireless network. Each floor of Belcea's horizontal routers forms a mesh network and each vertical router is the dedicated base station of that horizontal mesh network that communicates information from that horizontal mesh network to the Local Control. Ex-1002 ¶¶231-232.

- g. 6/29/30[E] – obtaining and analyzing data related to the location of the mobile user according to the placement of the transponders in the zone;**

Wrappe-Belcea-Christopher teaches 6[E], 29[E] and 30[E]. Ex-1002 ¶233.

Wrappe teaches obtaining and analyzing data related to the location of the mobile user as discussed in Sections XII.A.2.d, e, g.

- h. 6/29/30[F] – enabling selected mobile communication devices to be in communication with at least one selected communication transponder when the devices are within range of the selected transponder;**

Wrappe-Belcea-Christopher teaches 6[F], 29[F] and 30[F]. Ex-1002 ¶234.

Wrappe teaches select mobile devices with WiFi or Bluetooth communicate with a select transponder when the devices are within the transponder's range. Wrappe teaches sending communications to and from a store's beacon when a mobile station enters the beacon's range in the store. Ex-1005 ¶¶15, 44, 46, 52, Cl. 31. *See also* Sections XII.A.2.d-e.

- i. **6[G] – the mobile user receiving selection parameter data from multiple transponders, and utilizing the selection parameters, such that the system narrows the plurality of transponders to the most practically near transponder, such most practically near transponder not necessarily being the transponder physically closest to the mobile user;**

Wrappe-Belcea-Christopher teaches 6[G] as discussed in Section XII.A.2.g. Ex-1002 ¶¶235-238. A POSITA would have understood that in Wrappe, the selection parameter data are the strength of the beacon signals that are sent to the mobile station. *Id.* ¶235. Thus, the signal transmission strength of the dominant beacon signal is used to narrow to the most practically near microcell beacon. *Id.*

Belcea teaches this, as discussed in Section XII.A.2.g; *see also* Ex-1002 ¶236. Using Time of Flight and Received Signal Strength Indicator data, which are selection parameters, in the algorithm(s) allows the system to determine the most practically near (but not necessarily physically closest) transponder. A POSITA would have implemented these teachings with Wrappe so mobile station users

could be monitored and sent current information about their experience. Ex-1002

¶¶236-238.

- j. **29[G] – effecting a location transponder selection by a general wireless communication of multiple location transponder located within communication range in the zone, obtaining unique location transponder radio addresses, searching for wireless devices of at least one subclass, the subclasses being selected to include specific types of wireless communication devices, selectively cell phones, pagers, PDAs, and laptop computers, or by searching for at least one specific wireless device operating in a specific mode;**

Wrappe-Belcea-Christopher teaches 29[G] as discussed in Section XII.B.2.i (selecting beacon based on parameters including signal strength in a zone).

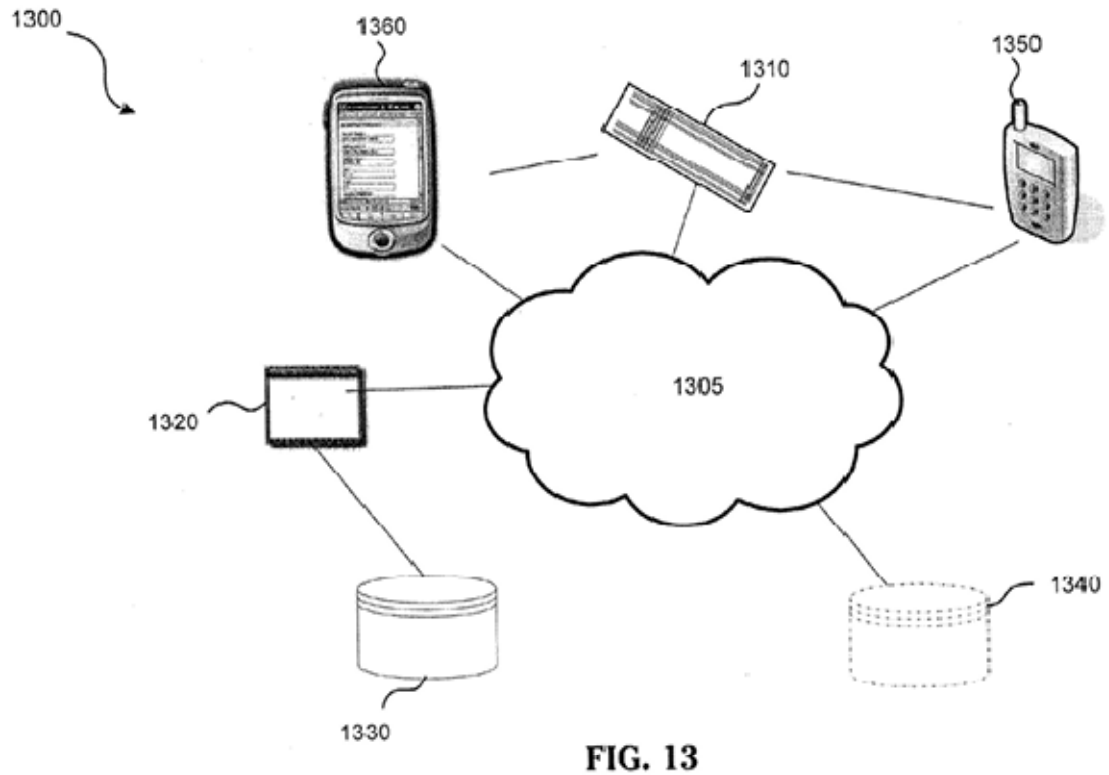
Ex-1002 ¶¶239-243.

Wrappe explains beacons “broadcast[] identification information (e.g., the unique ID of the transmitter).” Ex-1005 ¶33. Wrappe also explains that the beacon’s identification can be used to look up location information of the site or mobile station. *Id.* ¶¶41, 44, 49. The identification is a unique location transponder address because it can be used to find location information about the site and mobile station. Ex-1002 ¶241.

Wrappe teaches searching for a subclass of wireless devices including a cell phone or PDA. A POSITA would have understood that mobile user devices would be in at least the subclasses of a cell phone or PDA because at the time of the

invention those were common mobile user devices that communicated via “cellular communication” and “IEEE 802.11 or WiFi, IEEE 802.15 or Bluetooth” as in Wrappe. Ex-1005 ¶¶15, 44; Ex-1002 ¶242 (citing Ex-1021, 4:26-29, 5:17-19). A POSITA would have understood that the Wrappe system searches for such devices by monitoring such devices and sending communications upon a device entering a site. Ex-1005 ¶¶15, 44, 46, 52, Cl. 31.

Christopher’s Viewpoint system “interface[s] with mobile device 1350 and PDA 1360 to collect device related data such as the device’s present location, identification data and communications capabilities (802.11, Bluetooth).” Ex-1007 ¶71. Christopher teaches searching for such devices—“once PDA 1360 is within the communication range of RFID tag 1310, RFID tag 1310 will transmit its location data to PDA 1360.” *Id.* ¶73. Ex-1002 ¶243.



Ex-1007, Fig. 13.

- k. **6/29/30[H] – associating respective users of respective mobile devices with a respective profile of the respective user of the respective mobile device;**

Wrappe-Belcea-Christopher teaches 6[H], 29[H], and 30[H]. Ex-1002

¶¶244-248.

Wrappe discloses “when the mobile station enters the site, the base station may transmit information (e.g., coupon, special of the day, or a web page) about the site to the mobile station (e.g., *according to the preferences of the user of the mobile station*).” Ex-1005 ¶44. Thus, Wrappe teaches associating users of the

mobile station with a profile of the user's preferences.

Christopher discloses “mobile device 1350 or 1360 transmits its location information along with its identification data to computer system 1320, also referred to as the ViewPoint system 1320.” Ex-1007 ¶69. Christopher explains “ViewPoint system 1320 may keep records of mobile device behavior such as purchase history and past searches.” *Id.* ¶76. ViewPoint “may [] monitor the mobile device's travel pattern, search history, etc., and record the activities into [a] database.” *Id.* ¶87. “This allows the ViewPoint system to learn the behavior of mobile device [], which will enable the ViewPoint system to better serve the user of mobile device [] when he/she returns to the store in the future.” *Id.* A POSITA would have understood the records as a user profile with mobile device behavior. Ex-1002 ¶246.

As discussed in Sections XI.C and XII.B.1, Christopher teaches “tracking traffic pattern in a store or other venue.” Ex-1007 ¶2. Christopher explains “[t]argeted advertisement is an effective strategy for selling products.” *Id.* ¶3. Christopher teaches placing “plurality of RFID tags distributed within a structure” to implement a tracking system that can “generate a shopping behavior report that may include statistics such as, for example, ten most frequently purchased items, average spending per transaction, traffic pattern the customer [], average time at various locations in the store, average time in the store, hours and day of week the

customer usually visit the store.” *Id.* ¶100.

- l. 6/29/30[I] – sending a targeted message to a selected mobile device of a selected user from the selected communication transponder when the selected mobile device is in range; and**

Wrappe-Belcea-Christopher teaches 6[I], 29[I], and 30[I] as discussed in Section XII.B.2.k. Ex-1002 ¶249.

As discussed in Section XII.B.1, a POSITA would have been motivated to apply additional teachings regarding sending targeted commercial messages to the Wrappe mobile device because Wrappe suggests sending commercial messages based on user preferences. Ex-1005 ¶44; Ex-1002 ¶248. A POSITA would have also been motivated to implement the teachings of Christopher, regarding tracking different factors to target users, because a POSITA would have recognized, as Christopher explains, “targeted advertisement is an effective strategy for selling products.” Ex-1007 ¶3; Ex-1002 ¶¶247-248.

- m. 6/29/30[J] – tailoring the targeted message to the profile of the user associated with the mobile device.**

Wrappe-Belcea-Christopher teaches 6[J], 29[J], and 30[J] as discussed in Section XII.B.2.k-l. Ex-1002 ¶250.

3. Dependent Claims 7-28

Claims 7-28 depend on Claim 6. Ex-1001, Cls. 7-28. For Claims 7-28 below, Wrappe-Belcea-Christopher teaches “the method of claim 6.” *See* Section

XII.B.2.

- a. **Claim 7 – wherein the transponders are arranged in a three-dimensional sense, selectively being a three-dimensional sense in the x, y, and z axes or coordinates.**

Wrappe-Belcea-Christopher teaches Claim 7 as discussed in Section

XII.A.2.c. Ex-1002 ¶¶251-252.

- b. **Claim 8 – including employing at least one Bluetooth™ equipped mobile personal device associated with at least one user, the at least one device communicating with Bluetooth™ enabled location transponders in a network.**

Wrappe-Belcea-Christopher teaches Claim 8 as discussed in Section

XII.B.2.b. Ex-1002 ¶¶253-254.

- c. **Claim 9 – wherein the at least one Bluetooth™ equipped mobile personal device contains at least one specific algorithm to determine the relatively precise location of the at least one user within the network.**

Wrappe-Belcea-Christopher teaches Claim 9 because, as discussed in Sections XII.B.2.i and XII.B.3.b, Wrappe's beacons have selection parameter data and Belcea teaches an algorithm to determine the location of the user in the beacon network. A POSITA would have incorporated Belcea's algorithm into Wrappe's mobile station as discussed in Section XII.B.2.i. Ex-1002 ¶¶255-258, 238.

- d. Claim 10 – wherein when the at least one Bluetooth™ equipped mobile personal device is within the range of certain location transponders, specified events are triggered.**

Wrappe-Belcea-Christopher teaches Claim 10 for the reasons in Section XII.B.2.1. Ex-1002 ¶¶259-260. Wrappe discloses Bluetooth-equipped user devices that trigger specified events, e.g., sending of targeted ads, when they enter a store and thereby come within the range of a transponder of the store. *Id.*; Ex-1005 ¶¶11, 15, 44, 46, 51, 52 (sending a coupon when a mobile enters a site).

- e. Claim 11 – including the downloading of at least one message, to the at least one Bluetooth™ equipped mobile personal device.**

Wrappe-Belcea-Christopher teaches Claim 11 for the reasons in Section XII.B.2.1 (transmitting information). Wrappe discloses Bluetooth-equipped user devices triggering specified events, e.g., sending of targeted ads, upon entering a store and thereby coming within the range of a location transponder of a store. *Id.*; Ex-1005 ¶¶11, 15, 44, 46, 51, 52 (sending and displaying a coupon when a mobile enters a site). A POSITA would have understood the message is downloaded to the mobile station so the device can open and display it. Ex-1002 ¶¶261-262.

- f. Claim 12 – including transmitting to selected transponders the location data of the at least one user, the selected transponders transmitting the data to a control center via other transponders within selectively at least one of a network, or intermediate stations.**

Wrappe-Belcea-Christopher teaches Claim 12 for the reasons in Sections XII.B.2.c, d, f, g. Ex-1002 ¶¶263-264. Wrappe in combination with Belcea teaches networks of transponders, e.g., Wrappe’s microcell beacons, that transmit data to and via each other to a central node that collects and processes the data. *Id.* Wrappe discloses its beacons can receive data from the mobile station to be relayed to the remote service station. *Id.*; Ex-1005 ¶48. Positioning information from “microcell beacon signals is transmitted to location server [] for the calculation of the position of the mobile station.” Ex-1005 ¶42; *see also id.* ¶38. Relaying the positioning information from the mobile device through the transponders to the control center is an obvious implementation that ensures the system can maintain control over the transmissions. Ex-1002 ¶264.

- g. Claim 13 – wherein the location data of the at least one user is processed and analyzed at selectively at least one of a control center or an intermediate station.**

Wrappe-Belcea-Christopher teaches Claim 13 for the reasons in Sections XII.A.2.d and XII.B.2.f. Thus, Wrappe’s location server processes location data and is the control center because it controls the system’s operations. Ex-1002

¶¶265-266.

- h. Claim 14 – including using a geographical zone, the zone being multi-dimensional, and messaging a movable entity that has a transponder or subscriber device, the device being selectively a cell phone, PDA, computer, or device which is configured to be in wireless communication with other devices through a suitable network.**

Wrappe-Belcea-Christopher teaches Claim 14 for the reasons in Sections XII.B.2.b, e, j, l. Ex-1002 ¶¶267-268. As described regarding Claims 1-5, Wrappe and Belcea teach mapping a multi-dimensional geographical zone with x, y, and z axes.

- i. Claim 15 – wherein messages are communicated with entities according to the location of the entities as mapped in the multi-dimensional space.**

Wrappe-Belcea-Christopher teaches Claim 15 for the reasons in Section XII.B.2.j, l. Ex-1002 ¶¶269-272. Wrappe discloses “a mobile station at one location may be associated with more than one site entity, each of which may be of interest to a user of the mobile station.” Ex-1005 ¶51. Wrappe explains “[t]he location server then computes the position of the mobile station using at least the information that is transmitted from the mobile station to the location server through the cellular communication link.” *Id.* ¶38. Wrappe also discloses “when the mobile station enters the site, the base station may transmit information (e.g., coupon, special of the day, or a web page) about the site to the mobile station (e.g.,

according to the preferences of the user of the mobile station).” *Id.* ¶44. A POSITA would have understood Wrappe discloses sending messages to the mobile station based on mapping of the geographic zone because Wrappe’s location server knows the mapping and knows the user mobile station is near the site. Ex-1002 ¶270. A POSITA would have understood Wrappe communicates to the mobile station according to the location of the entity associated with the microcell beacon as mapped or located by the location server. *Id.* ¶¶271-272.

Wrappe also teaches the microcell beacon may receive data from a mobile station nearby through the local area data communication link. Ex-1005 ¶48. Thus, Wrappe teaches that the entity associated with or controls the beacon receives a location-based message. A POSITA would have understood because such messages are based on location and proximity to the mobile device, the message is communicated according to the location of the entities within the multi-dimensional space. Ex-1002 ¶271.

If Claim 15 requires rendering a map, Belcea teaches rendering a map as described in Section XII.A.2.a. As described regarding Claims 1-5, Wrappe and Belcea teach mapping a geographical zone having multiple dimensions along the x, y, and z axes.

- j. Claim 16 – including defining a geographical zone, the zone being multi-dimensional, and messaging or regulating a movable entity that has a transponder or subscriber device, the device being selectively a cell phone, PDA, computer or device which is configured to be in wireless communication with other devices through a suitable network.**

Wrappe-Belcea-Christopher teaches Claim 16 for the reasons in Sections XII.B.2.b, e, j, l. Ex-1002 ¶¶273-274. As described regarding Claims 1-5, Wrappe and Belcea teach mapping a multi-dimensional geographical zone with x, y, and z axes.

- k. Claim 17 – including a three-dimensional shape for the geographical zone.**

Wrappe and Belcea in view of Christopher teaches Claim 17 for the reasons in Sections XII.A.2.e and XII.A.3. Ex-1002 ¶¶275-276. As described regarding Claims 1-5, Wrappe and Belcea teach mapping a three-dimensional geographical zone with x, y, and z axes.

- l. Claim 18 – including downloading messages, and wherein the messages are directed to a user when the user is determined to be a particular location in the multidimensional space, and not when the user is outside the particular location.**

Wrappe-Belcea-Christopher teaches Claim 18. Ex-1002 ¶¶277-278. Wrappe discloses “location based service information can be provided to the mobile station depending whether or not the mobile station is within the site through the cellular communication link of the mobile station.” Ex-1005 ¶44. Wrappe explains “when

the mobile station enters the site, the base station may transmit information (e.g., coupon, special of the day, or a web page) about the site to the mobile station.” *Id.* Thus, the location-based message is downloaded to the mobile station when it is determined to be in a particular store and not when it is outside the store.

- m. Claim 19 – wherein the profile of the user includes the behavior of the user, and includes the length of time the user spends in the vicinity of different transponders in the zone.**

Wrappe-Belcea-Christopher teaches Claim 19. Ex-1002 ¶¶279-280.

Christopher’s ViewPoint system may monitor and learn the user’s behavior. For example, Christopher’s ViewPoint system “may [] monitor the mobile device’s travel pattern, search history, etc., and record the activities into [a] database [].” Ex-1007 ¶87. Christopher explains that such tracking includes tracking “average time at various locations in the store” and “average time in the store.” *Id.* ¶100.

- n. Claim 20 – including the downloading of at least one commercial message, selectively an advertisement, to the at least one Bluetooth™ equipped mobile personal device.**

Wrappe-Belcea-Christopher teaches Claim 20 for the reasons in Sections XII.B.2.1 and XII.B.3.e, 1. Ex-1002 ¶¶281-283. Wrappe discloses a coupon, special, or website downloaded to the mobile device. Ex-1005 ¶44. A POSITA would have understood those are commercial messages and advertisements sent to Wrappe’s mobile station from a remote server. Ex-1002 ¶283. As described above, Wrappe

teaches those messages are downloaded by the device. As described in Section XII.B.2.b, Wrappe's mobile station is Bluetooth-equipped.

Christopher's ViewPoint system "sends a customized data package to the new user." Ex-1007 ¶86. Christopher explains "[t]he customized data package may include store hours, upcoming events, *promotional materials*, and/or a welcome message to welcome the new customer." *Id.* Also, ViewPoint "may transmit information such as *advertising materials* related to shoes directly to the mobile device." *Id.* ¶69. Christopher thus discloses sending to and downloading on the user device commercial messages, including an advertisement. As described in Section XII.B.1, a POSITA would have been motivated to implement the targeted commercial message techniques taught in Christopher into Wrappe. Ex-1002 ¶283.

- o. Claim 21 – including the downloading of a commercial message, selectively an advertisement, to the Bluetooth™ equipped mobile personal device.**

Wrappe-Belcea-Christopher teaches Claim 21 for the reasons in Section XII.B.3.n. Ex-1002 ¶¶284-285.

- p. Claim 22 – including transmitting to selected transponders the user's location data, the selected transponders transmitting the data to a control center via other transponders within selectively at least one of a network, relay station, or intermediate supplementing stations.**

Wrappe-Belcea-Christopher teaches Claim 22 for the reasons in Section

XII.B.3.f regarding Claim 12. Ex-1002 ¶¶286-287.

- q. **Claim 23 – wherein the profile of the user includes the behavior of the user includes at least one of the length of time the user spends in the vicinity of different transponders in the zone, the purchasing patterns of the user, the product or service preferences of a user; the commercial enquiries of a user, and the dining or entertainment preferences of the user.**

Wrappe-Belcea-Christopher teaches Claim 23 for the reasons in Sections XII.B.3.m and XII.B.2.k. Ex-1002 ¶¶288-289. Christopher discloses the ViewPoint System “may keep records of mobile device behavior such as purchase history and past searches.” Ex-1007 ¶76.

- r. **Claim 24 – including creating multiple networks, each network communicating with a respective base station, and the respective base stations communicating with each other and a control station, these communications being effected at least in part by at least one of bluetooth or wifi.**

Wrappe-Belcea-Christopher teaches Claim 24 for the reasons in Sections XII.B.2.a, d, f and XII.A.2.d. Ex-1002 ¶¶290-291. The Wrappe devices can communicate via Bluetooth and WiFi, among other protocols. As described in Section XII.B.2.f, Wrappe in combination with Belcea teaches creating networks, each associated with a base station, wherein the base stations communicate to a centralized control station, e.g., Wrappe’s location server or Belcea’s Local Control.

- s. **Claim 25 – The method of claim 6 wherein the multi-dimensional zone is such that there are networks at discreet and separate floors of a building, and there being a physical ceiling/floor barrier between each separate floor, and the network being such that with the multiple transponders utilizing selection parameters, the system narrows the plurality of transponders to the most practically near transponder to a user.**

Wrappe-Belcea-Christopher teaches Claim 25 for the reasons in Sections XII.A.2.e-g and XII.B.2.e, i. Ex-1002 ¶¶292-293.

- t. **Claim 26 – The method of claim 6, wherein the profile of the user includes the purchasing patterns of the user.**

Wrappe-Belcea-Christopher teaches Claim 26 for the reasons in Section XII.B.2.k regarding Claim 23. Ex-1002 ¶¶294-295.

- u. **Claim 27 – The method of claim 6, wherein the profile of the user includes the dining or entertainment preferences of the user.**

Wrappe-Belcea-Christopher teaches Claim 27 for the reasons in Section XII.B.3.g regarding Claim 23. Ex-1002 ¶¶296-297; Ex-1007 ¶100.

- v. **Claim 28 – The method of claim 6, wherein a transponder on one floor of a building, even though physically closer to a user is excluded as being a transponder being the most practically near to that user, and that physically further transponder on a different floor to the user is the most practically near to that user.**

As explained in Sections XII.A.2.e-g and XII.B.2.e, i, Wrappe-Belcea-

Christopher teaches excluding a transponder on one floor of a building that may be physically closer to a user than other transponders. Wrappe-Belcea-Christopher renders obvious that a farther transponder on a different floor to the user may be most “practically near.”

As explained in Section XII.B.2.f, Wrappe-Belcea-Christopher teach using mesh networks to cover buildings with large stores, e.g., department stores. The Wrappe system communicates with a user from a beacon of the store in which the user is located, and if the store is multi-floor (e.g., department store anchoring a mall), then the most practically near beacon of that store may be on a different floor than the user. Ex-1002 ¶¶298-300; Ex-1035 (multi-story malls). A POSITA would find it obvious to select that beacon, even though it is on a different floor, because it is the beacon of the store that the user is in and is thus more relevant than beacons of other stores. Ex-1002 ¶¶298-300.

C. Ground 3: Claims 6-30 are obvious over Wrappe and Belcea in view of Kinnunen (“Wrappe-Belcea-Kinnunen”)

1. Motivations to Combine Wrappe, Belcea, and Kinnunen

A POSITA would have been motivated to combine the teachings of Wrappe, Belcea, and Kinnunen and would have had a reasonable expectation of success as discussed in Section XII.B.1. Ex-1002 ¶¶301-302. Kinnunen, like Christopher, teaches location-dependent services and targeting users based on data collected

regarding location, location history, age, or other user information. Kinnunen provides location-dependent service for mobile terminals “[that] targets services to suitable mobile terminals or users by using profiles.” Ex-1009, 6:10-11, 6:43-44. In Kinnunen, “[p]rofiles are applied to the mobile terminal which is carried by a user, to the user (a personal profile) and also to a service.” *Id.*, 6:44-46. “The user profile enables the network [] to determine if the user of a particular terminal is a suitable target for any of the services provided by the network.” *Id.*, 7:8-10.

A POSITA would have recognized the benefit of incorporating Kinnunen’s teachings of tracking user movement or purchase patterns into Wrappe’s system to improve the location-based, targeted commercial communications. Ex-1002 ¶¶301-302. Kinnunen provides implementation details regarding sending targeted advertisements, as Wrappe suggests. Ex-1009, 6:43-8:2 (details for targeting advertisements); Ex-1005 ¶44 (suggesting sending targeted advertisements).

2. Independent Claims 6, 29, and 30

Ground 3 is similar to Ground 2, but relies on Kinnunen in place of Christopher. If Christopher is found to not qualify as prior art, then Ground 3 (Wrappe-Belcea-Kinnunen) applies Wrappe and Belcea the same way as presented in Ground 2, and Kinnunen’s teachings are applied to the combination in place of Christopher’s teachings, as explained below. The discussion below cross-references Ground 2 where Wrappe-Belcea is applied the same way and only

provides additional explanation for elements where Kinnunen is applied instead of Christopher.

- a. 6/29/30[Pre], 6/29/30[A], 6/29/30[B], 6/29/30[C],
6/29/30[D], 30[Di], 6/29/30[E], 6/29/30[F], 6[G], 29[G],
6/29/30[I], 6/29/30[J]

Wrappe-Belcea-Kinnunen teaches these elements for the reasons in Sections XII.B.2.a-j and XII.B.2.l-m. Ex-1002 ¶¶303-312, 316-317.

- b. 6/29/30[H]

Wrappe-Belcea-Kinnunen teaches 6[H], 29[H], and 30[H] for the reasons in Section XII.B.2.k. Ex-1002 ¶¶313-315.

Kinnunen teaches “providing location dependent services to a plurality of mobile terminals within a coverage area.” Ex-1009, Abstract. Kinnunen’s system “comprises a profiling sub-system which keeps and/or compiles profiles related to one or more of a user, a mobile terminal and a service.” *Id.*, 3:28-30. Kinnunen explains “profiles may contain information selected from terminal capabilities, such as the model, its screen size, its connection speed, user characteristics, such as the user’s gender, age and the category of user, for example whether a gold or a silver user, and preferences of the user selected list, such as expressed interest in music, clothes or electronics or other matters.” *Id.*, 3:31-37. Kinnunen discloses “user and mobile terminal profiles can be used to determine targeting of advertisements.” *Id.*, 3:41-43. Ex-1002 ¶315.

3. Dependent Claims 7-28

a. Claims 7-18 and 20-28

Wrappe-Belcea-Kinnunen teaches these claims for the reasons in Sections XII.B.3.a-1, and XII.B.3.n-v. Ex-1002 ¶¶318-341.

b. Claim 19

Wrappe-Belcea-Kinnunen teaches Claim 19. Ex-1002 ¶¶331-332.

Kinnunen discloses a system that “track[s] the mobile terminal relative to the service locations so that the presence of the mobile terminal at a particular service location of a service can be determined.” Ex-1009, 2:25-28. Kinnunen explains “[w]hen the location information is received by the network [], particularly by the location server [], location meta-information is attached, indicating its source and the time of its receipt.” *Id.*, 8:62-65. “The meta-information is attached so that a service can assess the reliability of the location information.” *Id.*, 9:1-2. Kinnunen also explains “[t]his involves the trustworthiness of a source, its accuracy or precision and its timeliness (older location information might be less reliable).” *Id.*, 9:2-5. A POSITA would have understood for multiple reasons that such considerations include the length of time the user is detected in a location. Ex-1002 ¶332. For instance, a POSITA would have known that if the data shows the user spent a short time in a series of locations on a path to a store where the user spent a longer amount of time, then the user was likely walking through that path, rather

than visiting any stores on that path. *Id.* Or, if the data shows the user, for less than a second, was in a location far away from where all of the other data shows the user is located, then the short-duration and far datapoint is likely inaccurate. *Id.* Thus, a POSITA would have understood determining the location of the mobile terminal includes considering the length of time the user spends in the vicinity. *Id.*

c. Claim 20

Wrappe-Belcea-Kinnunen teaches Claim 20 for the reasons in Sections XII.B.2.1 and XII.B.3.e, l. Ex-1002 ¶333. Kinnunen teaches “advertis[ing] the existence of specific services in specific locations to the user.” Ex-1009, 6:28-29. Kinnunen explains “[a]dvertisements may be sent to users as they are travelling along, for example walking along the street or travelling in a car, or may be sent when a user enters a particular location, for example a building or a particular part of a building.” *Id.*, 6:30-34. As described in Section XII.C.1, a POSITA would have been motivated to implement Kinnunen’s techniques of sending targeted commercial messages into Wrappe’s system. Ex-1002 ¶333.

XIII. THE BOARD SHOULD NOT DENY INSTITUTION UNDER *FINTIV*

The Board should not deny institution under 35 U.S.C. § 314(a). The six *Fintiv* factors strongly weigh against denial. **Factor one** is neutral because Google has not moved to stay. **Factor two** weighs against denial because there is no trial date. Ex-1034. **Factor three** weighs against denial because no substantial activity

has occurred in the district court case. **Factor four** weighs against denial because this Petition challenges all claims of the '203 Patent while Patent Owner has only asserted Claims 1-5 in the district court case. For **factor five**, the Board should give little weight to the fact that Petitioner and Patent Owner are the same parties as in district court. "Other circumstances" under **factor six** weigh against discretionary denial. The merits of the Petition are compelling. Wrappe and Belcea render obvious Claims 1-5. Likewise, Wrappe, Belcea, and Christopher renders Claims 6-30 obvious. Kinnunen also supports an obviousness finding for Claims 6-30. All elements recite nothing more than known mapping techniques.

XIV. CONCLUSION

Claims 1-30 should be canceled as unpatentable over the prior art.

Respectfully Submitted,

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CERTIFICATE OF WORD COUNT

Under 37 C.F.R. § 42.24(d), Petitioner certifies that this petition includes 13,897 words, as measured by Microsoft Word, exclusive of the table of contents, mandatory notices under § 42.8, certificates of service, word count, and exhibits.

CERTIFICATE OF SERVICE (37 C.F.R. § 42.6(e)(1))

The undersigned hereby certifies that the above document was served on May 12, 2023, by filing this document through the Patent Trial and Appeal Board P-TACTS System, as well as delivering a copy via express mail upon the following attorneys of record for the Patent Owner and Petitioner:

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