

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner

IPR2025-01260
U.S. Patent No. 8,934,922

**PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. § 312 AND 37 C.F.R. § 42.104**

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PETITIONER’S EXHIBIT LIST

Ex.1001	U.S. Patent No. 8,934,922 (“the ’922 patent”)
Ex.1002	Prosecution History of the ’922 patent
Ex.1003	Declaration of Dr. R. Michael Buehrer under 37 C.F.R. § 1.68
Ex.1004	<i>Curriculum Vitae</i> of Dr. R. Michael Buehrer
Ex.1005	U.S. Patent No. 8,615,256 (“Putkiranta”)
Ex.1006	U.S. Pub. No. 2006/0135174 (“Kraufvelin”)
Ex.1007 to Ex.1010	Reserved
Ex.1011	U.S. Patent No. 6,628,938 (“Rachabathuni”)
Ex.1012 to Ex.1015	Reserved
Ex.1016	U.S. Pub. No. 2004/0203863 (“Huomo”)
Ex.1017	Reserved
Ex.1018	3GPP TS 23.171, version 3.10.0 (Jun. 2003)
Ex.1019	3GPP TS 23.171, version 1.0.0 (Oct. 1999)
Ex.1020	Reserved
Ex.1021	3GPP TS 23.032, version 3.0.0 (May 1999)
Ex.1022	Reserved
Ex.1023	PCT Pub. No. WO2005/006798 (“Stephens”)
Ex.1024	U.S. Patent No. 8,326,296 (“O’Neil”)
Ex.1025 to Ex.1036	Reserved
Ex.1037	U.S. Patent No. 6,122,510 (“Granberg”)

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Ex.1038	Reserved
Ex.1039	U.S. Patent No. 6,345,294 (“O’Toole”)
Ex.1040	U.S. Pub. No. 2003/0105822 (“Gusler”)
Ex.1041	U.S. Pub. No. 2003/0167172 (“Johnson”)

CLAIM LISTING

Claim 1	
[1.0a]	A method associated with one or more providers of presence related services
[1.0b]	in connection with the use of a mobile station and at least a first radio communication defining device that transmits a first distinctive defining signal and a second radio communication defining device that transmits a second distinctive defining signal, the first distinctive defining signal at least partly defines a first special area by its coverage, the second distinctive defining signal at least partly defining a second special area by its coverage, the method comprising:
[1.1]	electronically storing in one or more memories data capable of linking the mobile station to the first and second special areas, the data including a first checking data of the first radio communication defining device, a second checking data of the second radio communication defining device, and a first identifier related to the mobile station,
[1.2]	transmitting via a mobile telephone network to the mobile station at least a portion of the first checking data, and transmitting via the mobile telephone network to the mobile station at least a portion of the second checking data
[1.3a]	receiving from the mobile station via the mobile telephone network a first updating signal uncorrelated to any mobile station phone call establishment that identifies the mobile station's presence in at least the first special area, and receiving from the mobile station via the mobile telephone network a second updating signal uncorrelated to any mobile station phone call establishment that identifies the mobile station's presence in at least the second special area
[1.3b]	the first updating signal including a second identifier related to the mobile station, the second updating signal including a third identifier related to the mobile station
[1.4]	deriving from the first updating signal by one or more processing devices having access to at least a portion of the data whether or not the mobile station is present in the first special area, and deriving from the second updating signal by the one or more processing devices

	whether or not the mobile station is present in the second special area; and
[1.5]	enabling or disabling by use of the one or more processing devices a presence related service based upon the mobile station's presence or non-presence in the first special area, and enabling or disabling by use of the one or more processing devices a presence related service based upon the mobile station's presence or non-presence in the second special area.
Claim 2	
[2.0]	The method according to claim 1, wherein the data stored in the one or more memories related to the first special area is stored in a first memory or set of memories of a first provider of presence related services and the data stored in the one or more memories related to the second special area is stored in a second memory or set of memories of a second provider of presence related services.
Claim 3	
[3.0]	The method according to claim 1, wherein the mobile telephone network transmits to the mobile station the at least portion of the first checking data and the at least portion of the second checking data at different times.
Claim 4	
[4.0]	The method according to claim 1, wherein the one or more processing devices has access to at least a portion of the data and updates at least one operating parameter in a database of the one or more providers of presence related services depending on the presence of the mobile station in the first special area and/or second special area.
Claim 5	
[5.0]	The method according to claim 4, wherein the operating parameter is a tariff flag or a service flag that enables or disables a special tariff or a service for the mobile station.
Claim 6	
[6.0]	The method according to claim 1, wherein the one or more processing devices include a first processing device associated with a first provider of presence related services and a second processing device associated with a second provider of presence related services.

Claim 7	
[7.0]	The method according to claim 6, wherein the first processing device has access to at least a portion of the data and updates at least one operating parameter in a database of the first provider of presence related services depending on the presence of the mobile station in the first special area, and the second processing device has access to at least a portion of the data and updates at least one operating parameter in a database of the second provider of presence related services depending on the presence of the mobile station in the second special area.
Claim 8	
[8.0]	The method according to claim 7, wherein the operating parameter is a tariff flag or a service flag that enables or disables a special tariff or a service for the mobile station.
Claim 9	
[9.0]	The method according to claim 1, wherein the first, second and third identifiers related to the mobile station are the same.
Claim 10	
[10.0]	The method according to claim 1, wherein the enabling or disabling of the first and/or second presence related service includes transmitting via the mobile telephone network a signal to the mobile station that is capable of being used to enable or disable one or more related functions in the mobile station.
Claim 11	
[11.0]	The method according to claim 1, wherein the one or more memories and the one or more processing devices reside in one or more servers of the one or more providers of presence related services and/or in one or more servers of the mobile telephone network.
Claim 12	
[12.0]	The method according to claim 1, wherein the storing of the first and second checking data in the one or more memories comprises electronically receiving from the mobile station the first and second checking data.
Claim 13	

[13.0]	The method according to claim 1, wherein the mobile telephone network is cellular.
Claim 14	
[14.0]	The method according to claim 1, wherein at least one of the first and second updating signals comprises the result of a previous determination performed by the mobile station about the mobile station's presence in the first and second special areas, respectively.
Claim 15	
[15.0]	The method according to claim 1, wherein at least one of the first and second updating signals is received via the mobile telephone network from the mobile station at least one of (i) periodically, (ii) at times recent to when the mobile station respectively enters into or exists from the first special area and/or second special area, (iii) when the mobile station respectively remains in the first special area and/or the second special area, and (iv) when the mobile station respectively remains outside the first special area and/or second special area.
Claim 16	
[16.0]	The method according to claim 1, wherein at least one of the first and second updating signals comprises a request to access to a service or to a multimedia content and the one or more providers of presence related services enable or disable the provision of the service or multimedia content depending on the presence of the mobile station into the first and second special area, respectively.

I. INTRODUCTION

U.S. Patent 8,934,922 (the “’922 patent,” Ex.1001) relates to monitoring the presence of mobile devices (*e.g.*, cellular phones) in particular areas. But functionality to monitor the location of mobile devices in cellular networks, and thus their presence in particular areas, was well known and even standardized—under the umbrella term “location services”—prior to the ’922 patent. Similarly, systems for determining device presence based on wireless beacons utilizing short-range wireless communications (*e.g.*, Bluetooth) were also well known prior to the ’922 patent. There is nothing new or novel about the ’922 patent.

Accordingly, pursuant to 35 U.S.C. §§311, 314(a), and 37 C.F.R. §42.100, Apple Inc. (“Petitioner”) respectfully requests that the Board review and cancel as unpatentable under 35 U.S.C. §103 claims 1-16 (the “Challenged Claims”) of the ’922 patent.

II. GROUNDS FOR STANDING

Petitioner certifies the ’922 patent is eligible for IPR and Petitioner is not barred or estopped from requesting IPR challenging the patent claims. 37 C.F.R. §42.104(a).

III. NOTE

Petitioner cites to exhibits’ original page numbers. **Emphasis** in quoted material has been added. Claim terms are presented in *italics*.

IV. TECHNICAL BACKGROUND

See Ex.1003 ¶¶29-30 (citing Ex.1018, Ex.1019, Ex.1021).

V. SUMMARY OF THE '922 PATENT

The '922 patent is generally directed to techniques for “monitoring the presence of a mobile station in at least one special area,” which the patent describes simply as a particular physical area in which the mobile station’s presence is configured to be monitored. Ex.1001, Abstract.

VI. PROSECUTION HISTORY

The '922 patent issued following a first action allowance. Ex.1002, 17-24. The Examiner listed the entirety of claim 1 as the reasons for allowance. Ex.1002, 22-23.

VII. EFFECTIVE PRIORITY DATE OF THE '922 PATENT

The '922 patent claims foreign priority, through a chain of continuations, to a European patent application filed March 28, 2006. All references relied on in the Grounds of this Petition qualify as prior art as of this earliest possible priority date, and thus the present Petition does not challenge the propriety of this priority claim. Petitioner does not concede that the '922 patent is entitled to its claimed priority, and reserves the right to challenge its priority claim in this and all other proceedings.

VIII. LEVEL OF ORDINARY SKILL IN THE ART

A person of ordinary skill in the art (“POSITA”) as of the earliest possible priority date of the ’922 patent (March 28, 2006) would have been knowledgeable and familiar with the use of location determination in the provision of location-based services in a wireless communications network (*e.g.*, a cellular telephone network or Wi-Fi network). Such a POSITA would have had a bachelor’s degree in electrical engineering, computer science, computer engineering, or a related field, and two years of experience relating to research, design, and development of wireless communications networks. Lack of professional experience may be remedied by additional education, and vice versa. Ex.1003 ¶24.

IX. CLAIM CONSTRUCTION

Claim terms in IPRs are construed according to their “ordinary and customary meaning” to those of skill in the art. 37 C.F.R. §42.100(b). For purposes of this proceeding, Petitioner submits that no claim term requires express construction. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017).

X. RELIEF REQUESTED AND THE REASONS FOR THE REQUESTED RELIEF

Petitioner asks that the Board institute a trial for *inter partes* review and cancel the Challenged Claims in view of the analysis below.

XI. IDENTIFICATION OF HOW THE CLAIMS ARE UNPATENTABLE

A. Challenged claims

Petitioner challenges all claims of the '922 patent (1-16), of which claims 1, 3-5, 9-10, 12-13, and 15-16 are asserted in the co-pending litigation.

B. Statutory grounds for challenges

Grounds	Claims	Basis (pre-AIA §103)
1	1-3, 6, 9-16	Putkiranta and Kraufvelin
2	4-5, 7-8	Putkiranta, Kraufvelin, and Granberg
3	1-3, 6, 9-16	Rachabathuni and Huomo
4	4-5, 7-8	Rachabathuni, Huomo, and Granberg

All references qualify as prior art to the '922 patent.

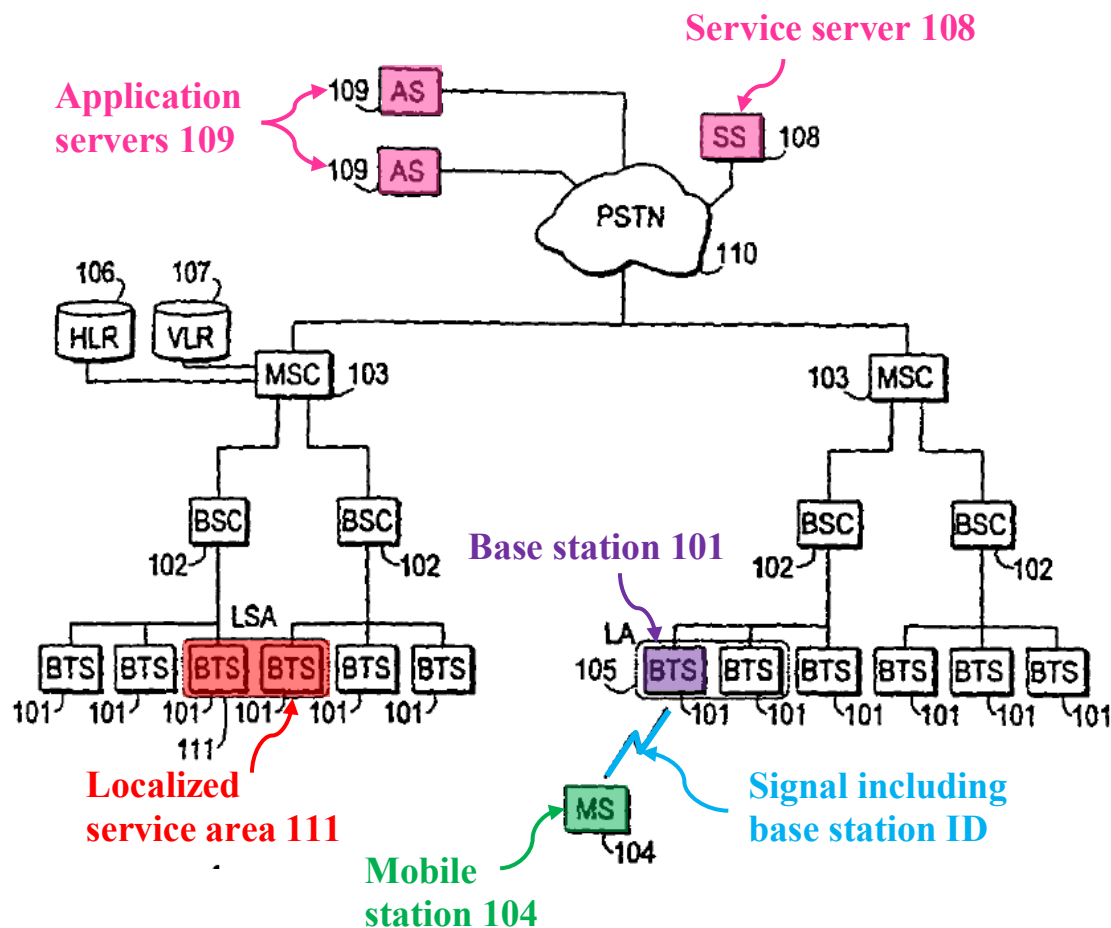
Reference	Date(s)	Prior art under 35 U.S.C. 102
Putkiranta	Oct. 17, 2000 (filed)	§102(e)
Kraufvelin	Oct. 3, 2003 (PCT ¹ filed)	§102(e)
Granberg	Nov. 4, 1997 (filed) Sept. 19, 2000 (issued)	§§102(a), (b), (e)
Rachabathuni	Aug. 14, 2000 (filed) Sept. 30, 2003 (issued)	§§102(a), (b), (e)
Huomo	Jun. 28, 2002 (filed) Oct. 14, 2004 (published)	§§102(a), (b), (e)

¹ PCT Application PCT/EP2007/052939 filed October 3, 2003, in the English language, designating the U.S.

C. Ground 1: Claims 1-3, 6, and 9-16 are obvious over Putkiranta and Kraufvelin

1. Putkiranta

Putkiranta describes “a method and system for making services provided by a network available to the user in various ways depending on the location of the user[.]” Ex.1005, 2:9-12. Putkiranta’s FIG. 1 below shows a “cellular radio system” used to practice the method:



Ex.1005, Detail of FIG. 1 (annotated)

Putkiranta describes a “localized service area” (e.g., 111) as a geographic

area in which certain services may be provided to mobile stations (MS) 104

currently located in that area. Ex.1005, 3:8-15. The localized service area may be defined as the geographic area covered by a set of base stations (BTS) 101 (*e.g.*, a set of “cells”). Ex.1005, 4:35-51. When a mobile station enters a particular localized service area, it sends a message to the service server (108 in FIG. 1 above) indicating that it has “arrived in a certain localized service area.” Ex.1005, 6:3-12, FIG. 2. The service server 108, in coordination with one or more application servers 109, enables or disables services for the mobile station based on the configuration associated with the particular localized service area. Ex.1005, 6:27-30.

2. Kraufvelin

Kraufvelin describes a method and system similar to Putkiranta’s, in which a mobile station notifies the network when it is within the coverage area of a base station (*e.g.*, when the mobile station receives a signal including the base station’s identifier) included within an “area of interest” (similar to Putkiranta’s “localized service area”). Ex.1006, Abstract, ¶60. Kraufvelin further describes the network performing a “verification” or “sanity check” of the notification from the mobile station to verify that the “cell-ID” (identifier of the base station) in the notification is still configured to be within the “area of interest.” Ex.1006 ¶¶107-109.

3. Reasons to combine Putkiranta and Kraufvelin

A POSITA would have found it obvious to combine the teachings of Putkiranta and Kraufvelin. Ex.1003 ¶41. In the combination, Putkiranta's service server 108 implements functionality based on Kraufvelin's location "sanity check" feature, and derives from the location notification received from the mobile station whether or not the mobile station is present in the localized service area by "comparing the current cell-IDs of the" localized service area "stored in the network with the cell-ID returned" by the mobile station in the location notification. Ex.1006 ¶109; Ex.1005, 6:26-29, 9:2-8; Ex.1003 ¶40.

Putkiranta and Kraufvelin are analogous art to the '922 patent because both references are in the same field of endeavor as the '922 patent. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004); Ex.1001, Abstract; Ex.1005, Abstract, 4:35-38, 6:22-25; Ex.1006, Abstract. Putkiranta and Kraufvelin are also reasonably pertinent to a problem the '922 patent attempted to solve: the lack of a way to "associate[e] new special areas" with a mobile device "without modifying any radio transmitting device." Ex.1001, 1:65-2:12; Ex.1005, 2:54-65; Ex.1006 ¶113; Ex.1003 ¶¶42-44.

A POSITA would have been motivated to combine the teachings of Putkiranta and Kraufvelin to implement functionality based on the location "sanity check" feature of Kraufvelin in the service server of Putkiranta in the manner

described above in order to, for example, ensure that the mobile station's reported location is accurate, and that the system delivers the appropriate presence related services to the mobile station. Ex.1003 ¶45.

Kraufvelin teaches—and Putkiranta confirms—that “operators tune” (*e.g.*, reconfigure) “their networks on a daily basis,” such as by changing the particular cells that makeup a localized service area. Ex.1006 ¶108; Ex.1005, 5:15-19 (“establishing a new base station in the area”); Ex.1003 ¶46. When each localized service area is defined by a list of cells (*i.e.*, base stations), as it is in Putkiranta and Kraufvelin's systems, the definition of each localized service area must be synchronized between the network and each mobile station. Ex.1006 ¶108; Ex.1005, 5:1-8; Ex.1003 ¶46. Kraufvelin teaches that, due to this need for synchronization, “a cell-ID” reported by a mobile station “may no longer correspond with the” localized service area “due to operator changes to the radio network[.]” Ex.1006 ¶108. To mitigate this issue, Kraufvelin provides its “sanity check” procedure for the network to confirm that the mobile station “is actually in the” localized service area it reported by checking the reported cell-ID against its stored definition of that localized service area. Ex.1006 ¶¶108-109; Ex.1003 ¶46.

A POSITA thus would have been motivated to combine the teachings of Putkiranta and Kraufvelin to implement functionality based on the location “sanity check” feature of Kraufvelin in the service server of Putkiranta to ensure that the

mobile station's reported location is accurate (*i.e.*, to confirm that the mobile station "is actually in the" localized service area). Ex.1006 ¶¶108-109; Ex.1003 ¶47. A POSITA would have recognized that this verification would improve the performance of Putkiranta's system by ensuring that the system delivers the appropriate presence related services to the mobile station based on its true location, rather than delivering services configured for a particular localized service area to a mobile station located outside that area. Ex.1006 ¶¶107-109. A POSITA would have been motivated to combine Putkiranta and Kraufvelin in the proposed manner to achieve at least this benefit. Ex.1003 ¶¶47-48.

Further, a POSITA would have been motivated to implement functionality based on the location "sanity check" feature of Kraufvelin in Putkiranta's service server to achieve the same benefits and improve Putkiranta's system "in the same way" as the similar system of Kraufvelin. *KSR Int'l v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). The combination also represents a simple combination of prior art elements, according to known methods to yield predictable results. *KSR*, 550 U.S. at 416; Ex.1003 ¶49.

A POSITA would have had a reasonable expectation of success in making such a combination because Kraufvelin teaches a system operating in the proposed manner. Ex.1006 ¶¶107-109; Ex.1003 ¶¶50-51. Indeed, the combination is nothing more than "the predictable use of prior art elements according to their established

functions.” *KSR*, 550 U.S. at 417.

4. Claim 1

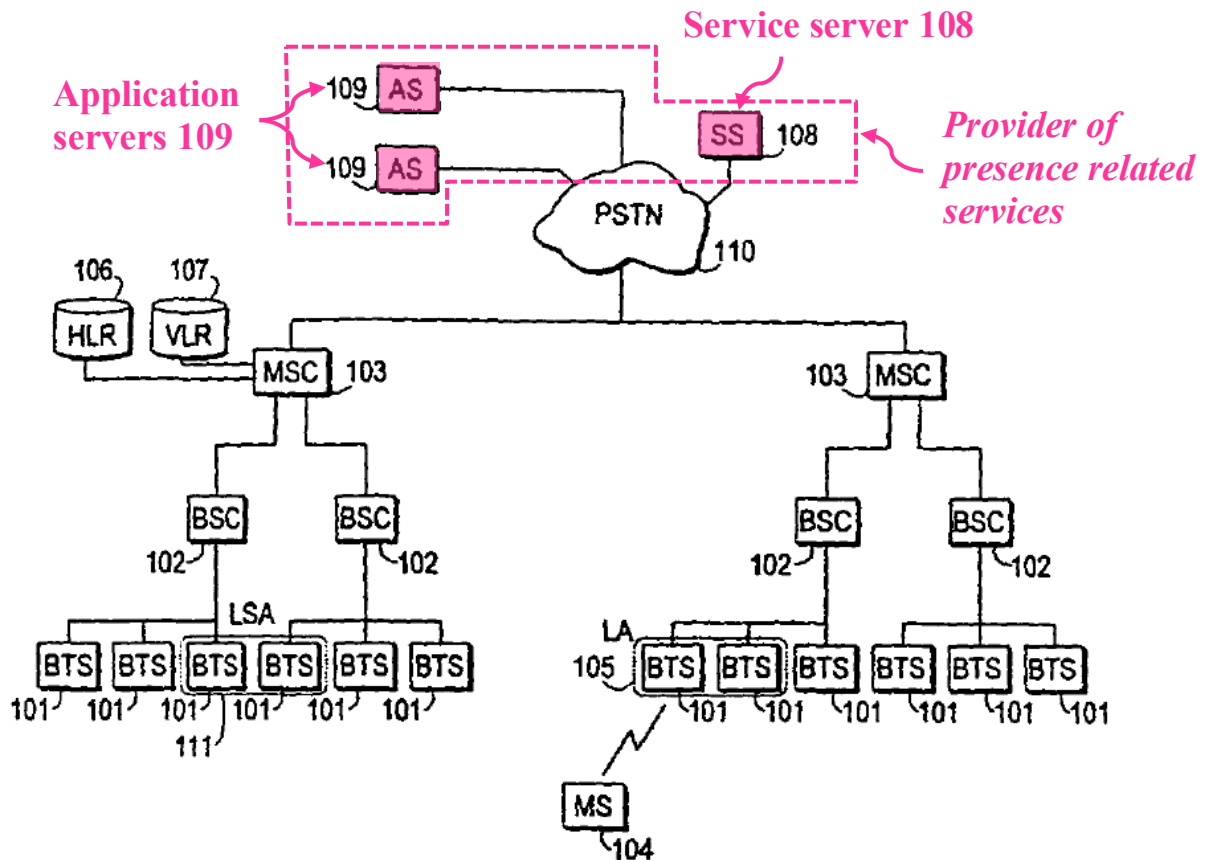
Limitation [1.0a]

To the extent the preamble of claim 1 ([1.0a] – [1.0b]) is limiting, it is rendered obvious by Putkiranta-Kraufvelin. Ex.1003 ¶¶52-62.

Putkiranta describes “**a method and system for making services provided by a network available** to the user in various ways **depending on the location of the user[.]**” Ex.1005, 2:9-12. Putkiranta teaches that the method and system include “**a service server (SS) 108 and application servers (AS) 109**” (collectively *one or more providers of presence related services*) that are “connected to the cellular radio network through wire links” (*[a] method associated with one or more providers of presence related services*). Ex.1005, 4:25-27; Ex.1003 ¶53. Putkiranta describes that “[t]he role of the service server...is to **maintain information about which mobile stations are in which localized service areas and which services should be offered to them** accordingly,” while the “actual service is provided by the application server.” Ex.1005, 6:22-26. Putkiranta’s service server 108 and application servers 109 thus collectively teach the *one or more providers of presence related services*, because the service server 108 and application servers 109 provide services to the mobile device in the localized service area in which the mobile device is located. Ex.1005, 6:22-26;

Ex.1003 ¶53.

Putkiranta's FIG. 1 shows the service server 108 and application servers 109 (collectively the *one or more providers of presence related services*) connected to the cellular network via the public switched telephone network (PSTN). Ex.1005, FIG. 1, 4:13-34; Ex.1003 ¶54.



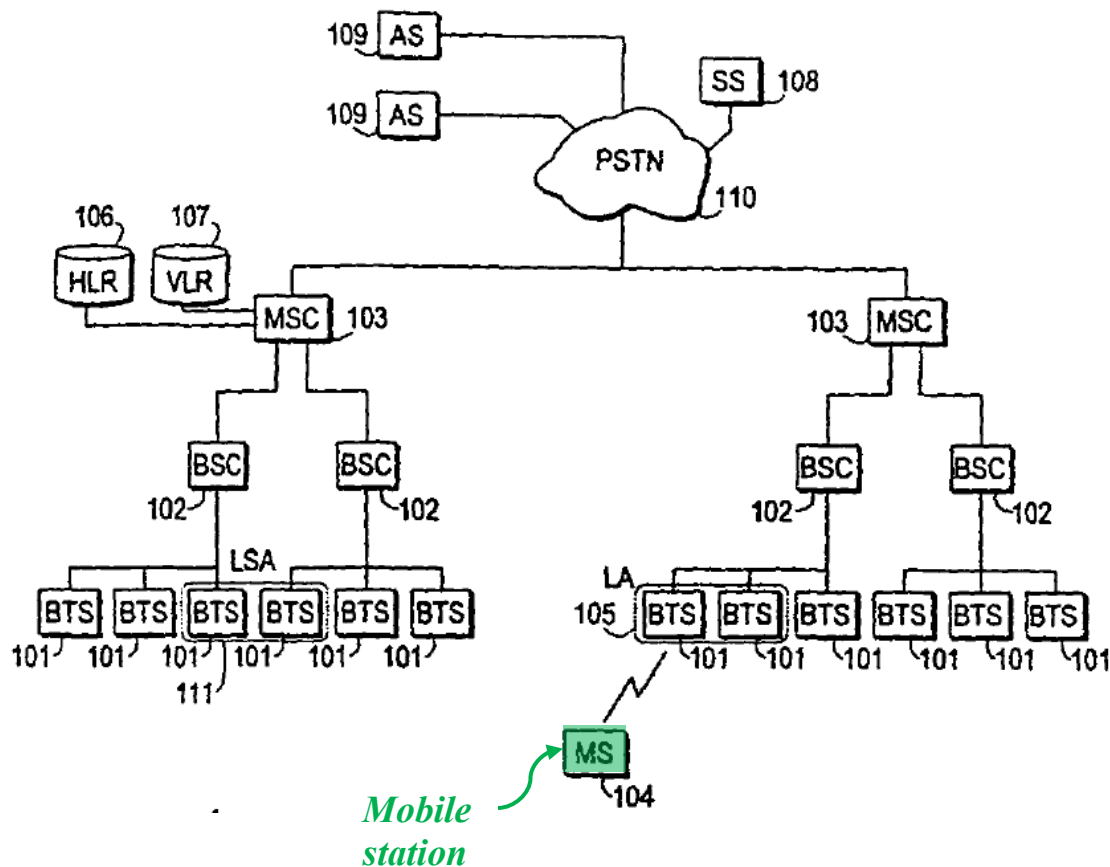
Ex.1005, Detail of FIG. 1 (annotated)

Limitation [1.0b]

Putkiranta-Kraufvelin renders this limitation obvious. The recited components are addressed in turn in the sections below.

a mobile station

Putkiranta's FIG. 1 shows the mobile station 104 in the "cellular radio system." Ex.1003 ¶¶55-56.



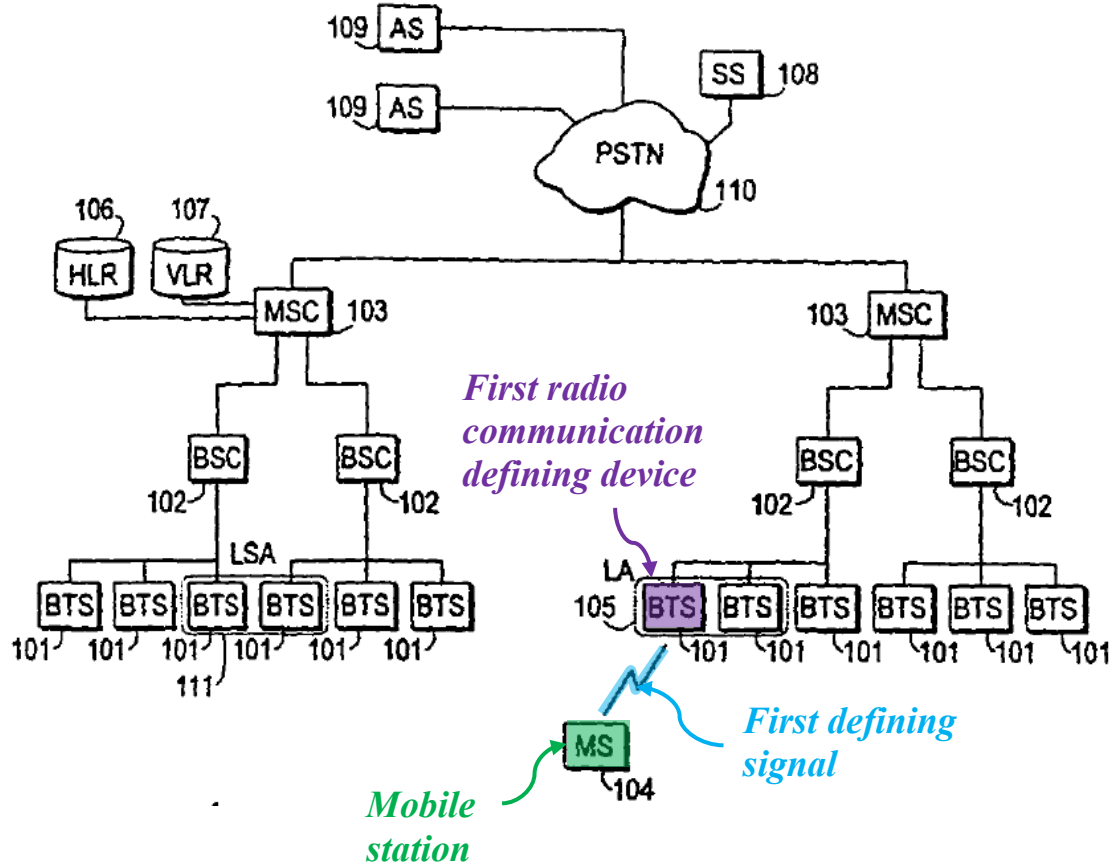
Ex.1005, Detail of FIG. 1 (annotated)

a first radio communication defining device, a first distinctive defining signal, and a first special area

Putkiranta describes that "FIG. 1 shows a cellular radio system 100...compris[ing] **base transceiver stations (BTS) 101**" (*at least a first radio communication defining device*). Ex.1005, 4:13-14. Putkiranta further teaches that "**every base transceiver station** in known cellular radio systems **sends general**

control information that can be received in the whole cell area” (*a first ...defining signal*) “and which e.g. **comprises the unequivocal identifier of the base transceiver station** or some other information characteristic of the base transceiver station.” Ex.1005, 4:62-5:1. Putkiranta further describes that mobile station (MS) 104 is “connected via radio to at least one base transceiver station 101.” Ex.1005, 4:16-20; Ex.1003 ¶57.

Putkiranta’s FIG. 1 shows the BTS 101 (*first radio communication defining device*) transmitting the general control information (*first ... defining signal*) to the *mobile station* 104. Ex.1005, FIG. 1, 4:63-5:1; Ex.1003 ¶58:



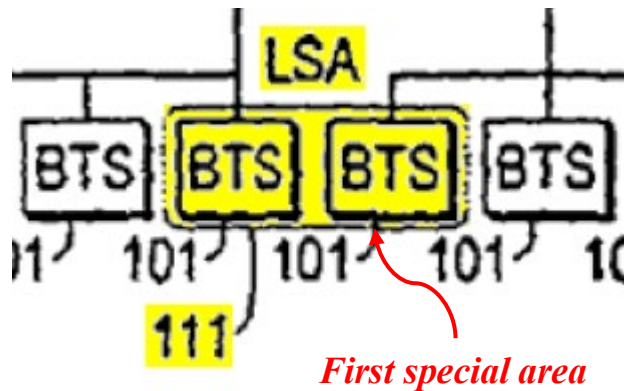
Ex.1005, Detail of FIG. 1 (annotated)

Putkiranta further teaches that the “system considers the mobile station to be located in that **location area (LA) 105** to which the coverage area, or cell, of **that particular base transceiver station belongs.**” Ex.1005, 4:16-20. “A location area may comprise one or more cells.” Ex.1005, 4:20-21.

With respect to a *special area* defined by a *distinctive defining signal*, Putkiranta further describes a “**localized service area**” or “LSA” (*a first special area*) as an area in which “a mobile station receives a certain service.” Ex.1005, 4:35-39. A localized service area may be defined by “a base station cell, several

cells, a location area (LA), ...certain cell identifiers, or an area in which base stations send to mobile stations some other identifier.” Ex.1005, 2:54-64. In Putkiranta, the transmission of general control information from a base station is distinctive (*a first distinctive defining signal*) when its “coverage area” defines an area that makes up at least part of a localized service area (*a first special area at least partly define[d] by the first distinctive defining signal*). Ex.1005, 4:35-51, 2:54-56; Ex.1003 ¶59.

The following detail from Putkiranta FIG. 1 shows an LSA 111 (*first special area*) that is defined by the “coverage area” of two base transceiver stations 101. Ex.1005, 4:35-51; Ex.1003 ¶60.



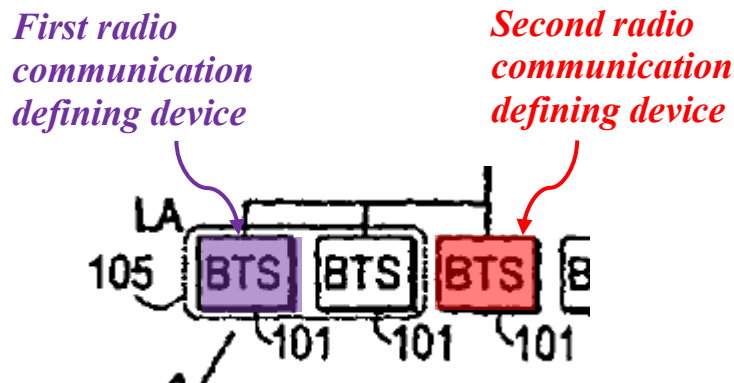
Ex.1005, Detail of FIG. 1 (annotated)

a second radio communication defining device, a second distinctive defining signal, and a second special area

Putkiranta describes that “FIG. 1 shows a cellular radio system 100” that includes multiple “**base transceiver stations (BTS) 101.**” Ex.1005, 4:13-14.

Putkiranta thus teaches a *first radio communication defining device*—a base

transceiver station 101, as described above—and a *second radio communication defining device*—a different base transceiver station 101, as shown in Putkiranta’s FIG. 1 below. Ex.1005, 4:13-14; Ex.1003 ¶61:



Ex.1005, Detail of FIG. 1 (annotated)

As described above, Putkiranta teaches that the first “BTS 101” (*the first radio communication defining device*) transmits “general control information” that defines a cell by its coverage that makes up at least part of a “localized service area” (*a first distinctive defining signal that at least partly defines a first special area by its coverage*). Ex.1005, 4:16-39; Ex.1003 ¶62. Putkiranta further teaches that this “general control information” is transmitted by “**every base transceiver station** in known cellular radio systems,” such as the cellular radio system 100 described in Putkiranta. Ex.1005, 4:63-5:1; Ex.1003 ¶62. Putkiranta thus teaches that the second “BTS 101” (*the second radio communication defining device*), like the first “BTS 101,” also transmits “general control information” (*a second distinctive defining signal*) that defines a cell by its coverage that makes up at least

part of a “localized service area” (*the second distinctive defining signal at least partly defining a second special area by its coverage*). Ex.1005, 4:16-39; Ex.1003 ¶62.

Limitation [1.1]

Putkiranta teaches that the service server stores the claimed *data capable of linking the mobile station to the first and second special areas*. Putkiranta describes that “role of the service server...is to **maintain information about which mobile stations are in which localized service areas**” (*data capable of linking the mobile station to the first and second special areas*). Ex.1005, 6:22-25; Ex.1003 ¶¶63-64. Putkiranta explains that in the context of its invention, a “localized service area may be defined” by “a **base station cell**” and “**cell identifiers**” (*the data including a first/second checking data of the first/second radio communication defining device*). Ex.1005, 2:54-64. Putkiranta further explains that mobile stations are identified with “an **identifier characteristic of the mobile station**” such as “an IMSI (International Mobile Subscriber Identifier) code or MS-ISDN (Mobile Subscriber Integrated Services Digital Network) number[.]” (*first identifier related to the mobile station*). Ex.1005, 6:6-12. Putkiranta describes that the service server “**store[s]**” this data in “its **memory**” (*electronically storing in one or more memories*). Ex.1005, 6:26-30, 2:22-32, 6:59-63; Ex.1003 ¶63. This allows the service server to “read[] from its memory which

services should be offered to the mobile station in that localized service area.”

Ex.1005, 6:26-30.

Thus, the service server stores “information about which mobile stations are in which localized service areas,” where the mobile station is identified by an IMSI or MS-ISDN and the localized service area is defined by a base station cell identifier, rendering obvious *data capable of linking the mobile station to the first and second special areas, the data including a [first/second] checking data of the [first/second] radio communication defining device and a first identifier related to the mobile station.* Ex.1003 ¶63.

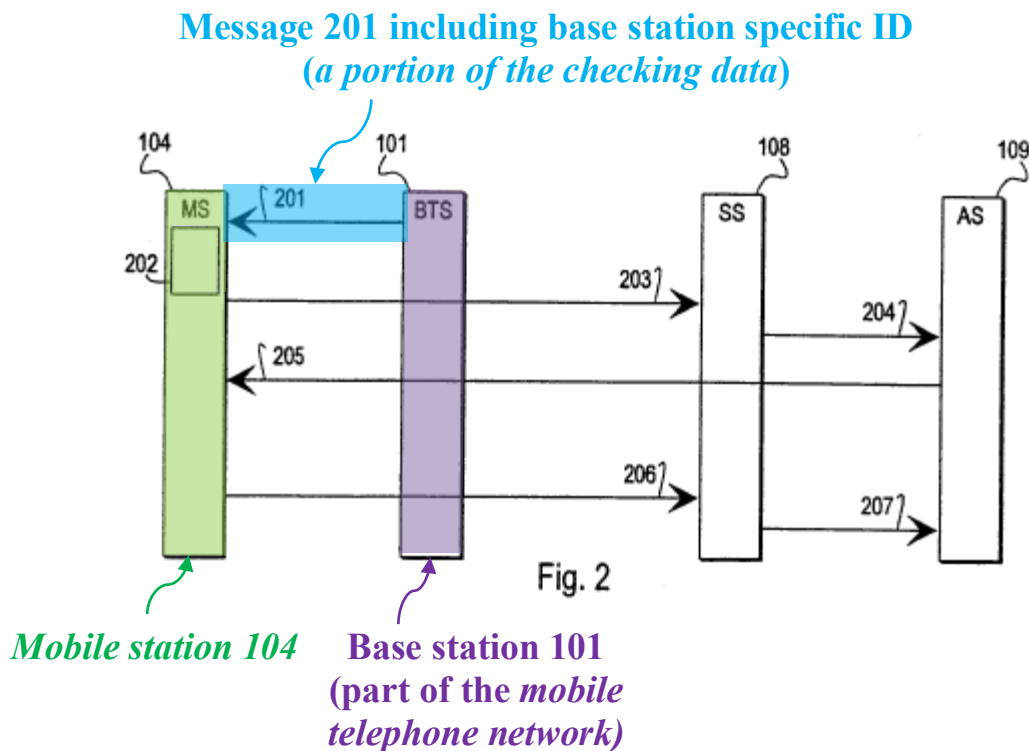
Additionally and alternatively, Putkiranta’s mobile station stores in its memory both *checking data* and its own *identifier*. Putkiranta explains that “the **memory** of the mobile station stores a list of the **identifiers of the base transceiver stations the cells** of which make a particular localized service area” (*checking data*). Putkiranta, 5:3-6, 2:67-3:8. The mobile station also stores an “**identifier characteristic of the mobile station**, say an IMSI...in the SIM card of the mobile station.” Putkiranta, 6:6-12. Ex.1003 ¶64.

Limitation [1.2]

Putkiranta teaches that the base station transmits “a known general **control information message**” (201) “**to the mobile station**” that includes “**a base station specific identifier**” (*at least a portion of the checking data*). Ex.1005, 5:65-6:1;

Ex.1003 ¶65. Putkiranta further teaches that the message 201 is “sent by base stations on the broadcast control channel (BCCH) in the GSM system” (*via a mobile telephone network*). Ex.1005, 6:1-3; Ex.1003 ¶65.

Putkiranta’s FIG. 2 below shows the base station (BTS) 101 (part of a *mobile telephone network*) sending the message 201 including the base station specific identifier (*at least a portion of the checking data*) to the mobile station 104. Ex.1003 ¶66.



Ex.1005, Fig. 2 (annotated)

As described above in [1.0b], Putkiranta teaches that its cellular radio system includes first and second base stations 101 (both part of the *mobile telephone network*) that each transmit the “general control information message to the mobile

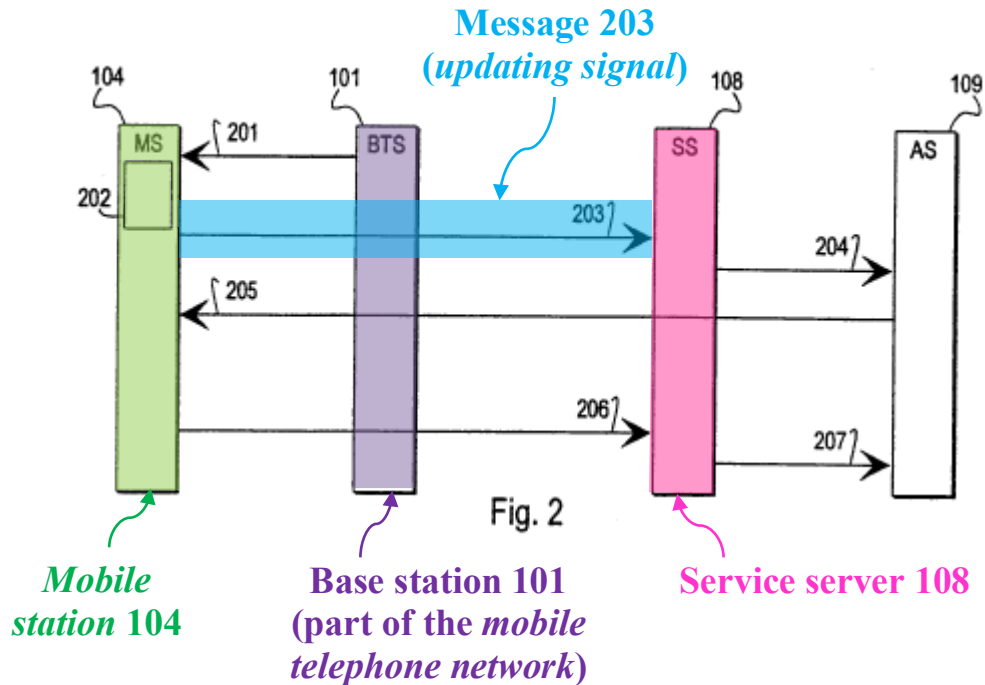
station” that includes their respective “base station specific identifier” (*at least a portion of the first and second checking data, respectively*) in the manner described above. Ex.1005, 4:16-39, 5:65-6:1; Ex.1003 ¶67.

Limitation [1.3a]

Putkiranta describes that “the mobile station is arranged so as to **send**—in response to the recognition of a localized service area—a **notification of its arrival in the localized service area**” (*an updating signal...that identifies the mobile station's presence in at least the first special area*). Ex.1005, 2:37-39. Specifically, Putkiranta teaches that when “the mobile station **detects that it has arrived in a certain localized service area**” (*a first special area*), the mobile station “**sends to the service server a message 203**” as shown in Putkiranta’s FIG. 2 below. Ex.1005, 6:3-12. Message 203 “includes an identifier characteristic of the mobile station” and “the location of the mobile station[] in relation to localized service areas.” Ex.1005, 6:3-12, 2:22-32, 9:53-54 (“the message specif[ies] that the apparatus is in the localized service area”); Ex.1003 ¶79. Accordingly, Putkiranta’s message 203 serves to *identif[y] the mobile station’s presence* in at least the first special area because it notifies the service server upon arrival within the localized service area, and includes a unique identifier of the mobile station (*e.g., an “IMSI” code or “MS-ISDN” number*) in the notification. Ex.1005, 6:6-12, 8:61-9:1, FIG. 5; Ex.1003 ¶68.

Putkiranta further teaches that the mobile station may send message 203 (*the updating signal*), for example, using an “SMS message” or a GSM “USSD message” (*via the mobile telephone network and uncorrelated to any mobile station phone call establishment*) by contrasting the “free-form data message” and “SMS message” options with a third option that “establish[es] a call connection to the service server.” Ex.1005, 6:13-21; Ex.1001, 16:25-29 (describing that the updating signal can be sent “using the USSD (‘Unstructured Supplementary Service Data’, GSM standards) channel”); Ex.1003 ¶69. Putkiranta contrasts these two non-phone call establishing options with a third option that “establish[es] a call connection to the service server.” Ex.1005, 6:13-21.

Putkiranta’s FIG. 2 below shows the service server 108 receiving the message 203 (*the updating signal*) from the mobile station 104 via the base station 101, which is part of *the mobile telephone network (receiving from the mobile station via the mobile telephone network an updating signal)*. Ex.1005, 6:13-21, FIG. 2; Ex.1003 ¶70:



Ex.1005, Fig. 2 (annotated)

As described above in [1.0b], Putkiranta teaches that the cellular radio system includes first and second base stations 101 that each transmit “general control information” that defines a cell by its coverage that makes up at least part of a “localized service area” (*a first and second special area, respectively*).

Ex.1005, 4:16-39; Ex.1003 ¶71. Putkiranta teaches that each time “the mobile station detects that it has arrived in **a certain localized service area**” (*the first special area or the second special area*), the mobile station transmits a notification (e.g., message 203) to the service server 108 (*an updating signal*) as described above that indicates which localized service area (*the first special area or the second special area*) the mobile station has arrived in. Ex.1005, 6:3-8, 2:19-24;

Ex.1003 ¶71. Putkiranta thus teaches that the service server receives a first notification from the mobile station when the mobile station arrives in the localized service area associated with the first base station (*a first updating signal uncorrelated to any mobile station phone call establishment that identifies the mobile station's presence in at least the first special area*), and a second notification from the mobile station when the mobile station arrives in the localized service area associated with the second base station (*a second updating signal uncorrelated to any mobile station phone call establishment that identifies the mobile station's presence in at least the second special area*). Ex.1005, 4:16-39, 6:3-8; Ex.1003 ¶71.

Limitation [1.3b]

Putkiranta teaches that each “message 203” (*the first and second updating signal, see [1.3a]*) includes “**an identifier characteristic of the mobile station**” (*a second and third identifier related to the mobile station*) such as “an IMSI (International Mobile Subscriber Identifier) code or MS-ISDN (Mobile Subscriber Integrated Services Digital Network)[.]” Ex.1005, 6:8-12; Ex.1003 ¶72. Petitioner notes that claim 9, which depends from claim 1, recites that “*the first, second and third identifiers related to the mobile station are the same,*” confirming that the “identifier characteristic of the mobile station” in Putkiranta, which is stored by the service server and sent in each message 203 (*the first and second updating signal*),

meets this limitation. Ex.1001, claim 9; Ex.1005, 6:8-12; Ex.1003 ¶72.

Limitation [1.4]

As previously discussed in [1.3a], Putkiranta teaches that the service server 108 receives the message 203 (*the updating signal*) from the mobile station. As explained below, the service server is a *processing device* because it “examines” the message and “recogniz[es]” whether the mobile station is in a localized service area. Ex.1005, 6:26-30, 8:66-9:8; Ex.1003 ¶67 (citing Ex.1040 ¶¶26, 66; Ex.1041 ¶31).

In more detail, Putkiranta teaches that “[h]aving received message 203” (*the updating signal, see [1.3a]*) “**the service server reads from its memory which services should be offered to the mobile station in that localized service area**” (*deriv[es] from the updating signal whether or not the mobile station is present in the first special area*). Ex.1005, 6:26-29; Ex.1003 ¶74. Putkiranta further teaches that “the service server...maintain[s] information about which mobile stations are in which localized service areas and which services should be offered to them accordingly,” and thus *ha[s] access to at least a portion of the data* capable of linking the mobile station to the first special area. Ex.1005, 6:22-25; Ex.1003 ¶74.

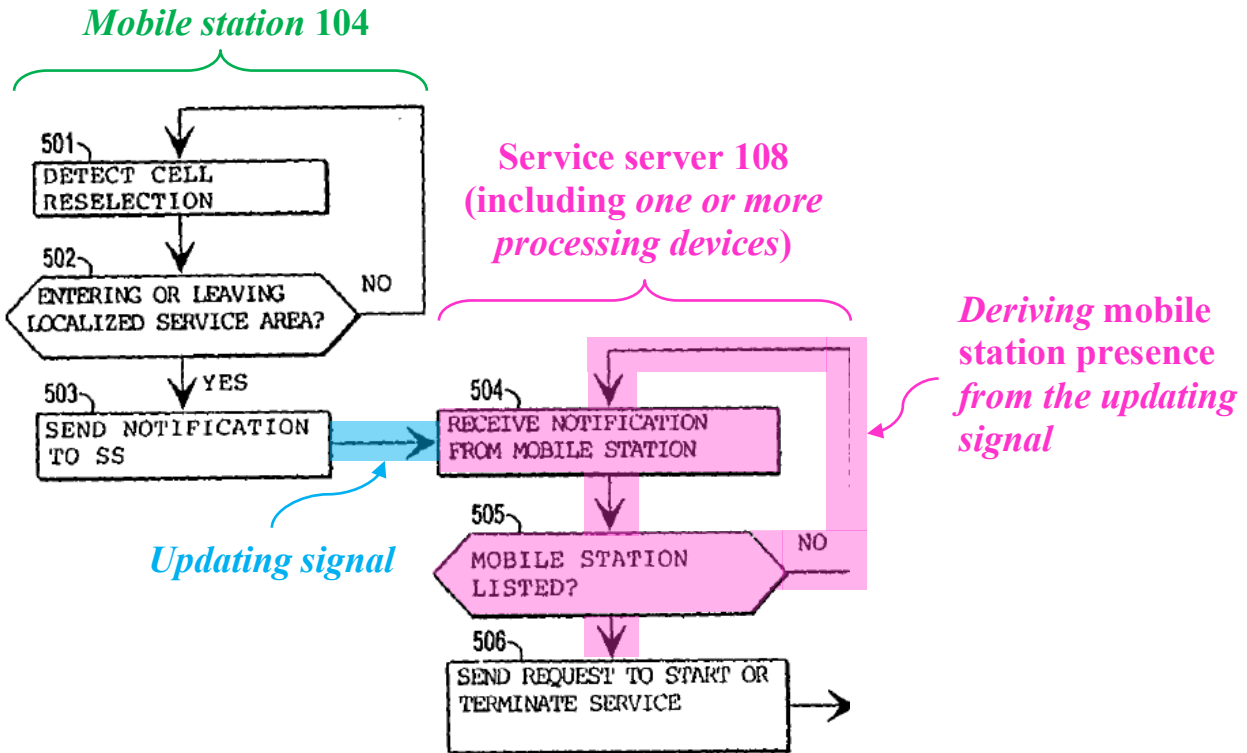
Putkiranta elaborates on this functionality in its description of FIG. 5 (annotated below). Putkiranta states that upon “reception of the message” from the mobile station at block 504 indicating it has entered or left a localized service area

(*the updating signal*):

[T]he service server examines whether the mobile station in question **is on the list of those to be served**. If the mobile station is arriving in a localized service area, **it is in block 505 recognized as a mobile station which is to be served**. If, on the other hand, the mobile station is leaving a localized service area, **it is recognized in block 505 as a mobile station the services to which have to be terminated**.

Ex.1005, 9:2-8; Ex.1003 ¶75.

Putkiranta thus teaches the service server “recognizing” (*deriving*), from the *updating signal* and the stored list of mobile stations (*at least a portion of the data*), the mobile station “as a mobile station which is to be served” or “as a mobile station the services to which have to be terminated” (*whether or not the mobile station is present in the first special area*). Ex.1005, 9:2-8, FIG. 5, 2:45-53 (“information is generated” by the service server “about the arrival of a mobile station in a localized service area” in response to receiving the message 203 (*updating signal*)); Ex.1003 ¶76. The following annotated detail from Putkiranta’s FIG. 5 shows this process:



Ex.1005, Detail of FIG. 5 (annotated)

Additionally or alternatively, Kraufvelin teaches that a component of the mobile telephone network performs “a verification—or sanity check—of the” notification (*e.g., an updating signal*) from a mobile station that it has entered a particular geographical area (*e.g., a first special area*). Ex.1006 ¶107. Kraufvelin teaches that the “cell-ID returned” by the mobile station in the updating signal “is verified” by a component of the mobile telephone network (*e.g., Putkiranta’s service server*) “to ensure that the cell is still within the intended geographical area.” Ex.1006 ¶109. “This may be achieved by comparing the current cell-IDs of the intended geographical area stored in the network with the cell-ID returned response from the terminal.” Ex.1006 ¶109. In the combination, the service server

of Putkiranta implements Kraufvelin's "sanity check" functionality, and *derives* from the notification from the mobile station (*the updating signal*) *whether or not the mobile station is present in the first special area* by "comparing the current cell-IDs of the" localized service area (*first special area*) "stored in the network with the cell-ID returned" from the mobile station (*the updating signal*). Ex.1006 ¶109; Ex.1005, 6:26-29, 9:2-8; Ex.1003 ¶77.

As described above (*see* §XI.C.3), a POSITA would have been motivated to implement functionality based on Kraufvelin's "sanity check" feature in Putkiranta's service server. Ex.1003 ¶78.

As described above in [1.3a], Putkiranta teaches that the service server *receives*, from the *mobile station*, *first and second updating signals* when the mobile station arrives in the *first and second special areas*, respectively. In the combination, as described above, the service server (of either Putkiranta alone or modified by Kraufvelin as described above) *deriv[es] the presence of the mobile station* in the localized service area (*special area*) specified in the received *updating signal*. Ex.1005, 6:26-29, 9:2-8; Ex.1006 ¶109; Ex.1003 ¶79. Thus, when receiving *the first updating signal*, the service server *deriv[es] the presence of the mobile station in the first special area*, and when receiving *the first updating signal*, the service server *deriv[es] the presence of the mobile station in the first special area*, in the manner described above. Ex.1005, 6:26-29, 9:2-8; Ex.1006

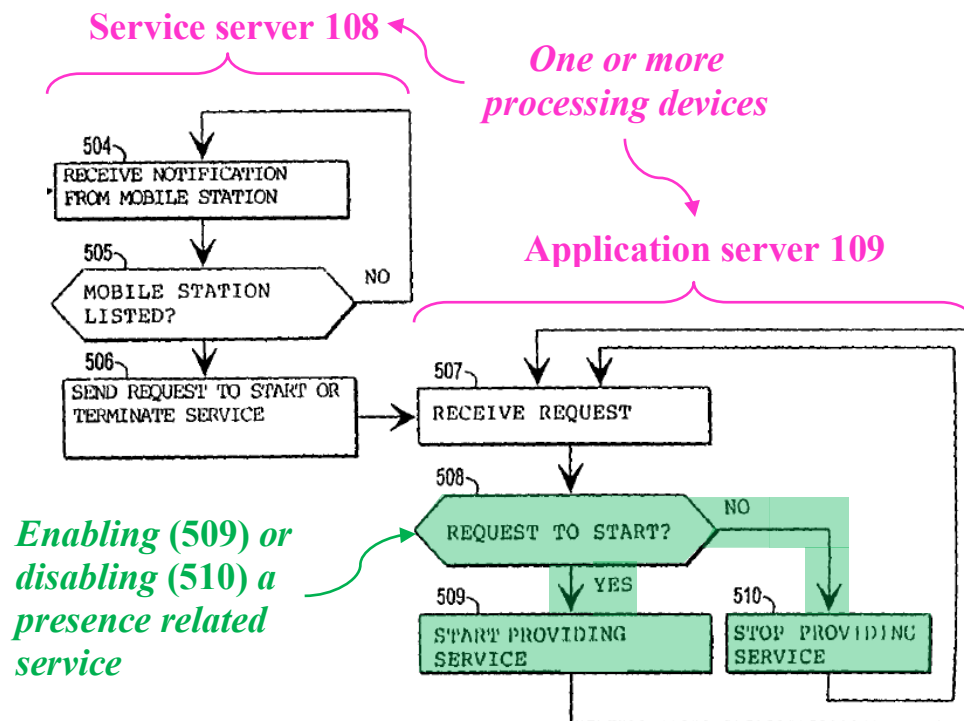
¶109; Ex.1003 ¶79.

Limitation [1.5]

Putkiranta's service server determines whether the mobile station is in a localized service area (*see* [1.4]), and, if it is, the service server "reads from its memory which services should be offered to the mobile station **in that localized service area.**" Ex.1005, 6:27-30, 9:1-4. The service server then sends "[a] corresponding message" to "**an application server**" (which includes *one or processing devices, see* [1.4]) instructing the application server to "start" or "terminate" a service configured for mobile stations in that localized service area (*based upon the mobile station's presence or non-presence in the special area*). Ex.1005, 8:66-9:14, 2:22-32. Referring again to Putkiranta's FIG. 5 below, "the application server which receives the message in block 507 and determines in block 508 whether the message calls for the **starting or termination of a service**" (*enabling or disabling by use of the one or more processing devices a presence related service*). Ex.1005, 9:8-12. "The service is then either **started 509**" (*enable[ed]*) "**or terminated 510**" (*disable[ed]*) "for the mobile station, whichever the case may be." Ex.1005, 9:12-14, 7:24-27; Ex.1003 ¶80. Because Putkiranta's service server instructs the application server to start or terminate services *based upon the mobile station's presence or non-presence in the special area* (as discussed above), the application server starting or terminating a service (*enabling*

or disabling...a presence related service) is performed based upon the mobile station's presence or non-presence in the first special area. Ex.1005, 8:66-9:14; Ex.1003 ¶80.

The following annotated detail from Putkiranta's FIG. 5 shows this process. Ex.1003 ¶81.



Ex.1005, Detail of FIG. 5 (annotated)

In addition, as discussed above in [1.3a], Putkiranta's service server *receives first and second updating signals that identify the mobile station's presence in the first and second special areas, respectively*. Putkiranta's service server, upon receipt of the *first and second updating signals*, "reads from its memory which services should be offered to the mobile station **in that localized service area**" (either the *first or second special area* specified in the updating signal). Ex.1005,

6:27-30. Thus, Putkiranta teaches that the service server instructs the application server to start or terminate services *based upon the mobile station's presence or non-presence in the first special area* after receiving the *first updating signal*, and instructs the application server to start or terminate services *based upon the mobile station's presence or non-presence in the second special area* after receiving the *second updating signal*. Ex.1005, 8:66-9:14; Ex.1003 ¶82.

5. Claim 2

Putkiranta teaches that the “**service server** which the mobile station informs about its arrival in a localized service area **may be** always the same or **different in some localized service areas.**” Ex.1005, 7:29-31. The use of multiple providers would have been obvious because doing so would provide a greater range of services to the user. Ex.1003 ¶83; Ex.1005, 1:50-55, 8:7-21; Ex.1006 ¶46. Putkiranta thus contemplates different service servers for different localized service areas, including a first service server (*a first provider of presence related services*, along with its associated application servers) associated with a first localized service area (*a first special area*), and a second service server (*a second provider of presence related services*, along with its associated application servers) associated with a second localized service area (*a second special area*). Ex.1005, 7:56-8:21, FIG. 3; Ex.1003 ¶¶83-84. In such a configuration, as discussed in [1.1], the first service server stores data related to the first localized service area (*the data*

stored in the one or more memories related to the first special area is stored in a first memory or set of memories of a first provider of presence related services), and the second service server stores data related to the second localized service area (the data stored in the one or more memories related to the second special area is stored in a second memory or set of memories of a second provider of presence related services). Ex.1005, 7:29-31, 7:56-8:21; Ex.1003 ¶84.

6. Claim 3

As discussed in [1.2], Putkiranta teaches that the first and second base stations (both part of the *mobile telephone network*) transmit “a known general **control information message**” (201) “**to the mobile station**” that includes “a **base station specific identifier**” (*at least a portion of the first or second checking data, respectively*). Ex.1005, 5:65-6:1; Ex.1003 ¶85. Putkiranta teaches that these messages from each base station “can be received in the whole cell area” of the base station, and thus are “transmitted to” (and received by) the mobile station when it is located within the coverage area (cell area) of a particular base station. Ex.1005, 4:62-66; Ex.1003 ¶85. Thus, Putkiranta teaches that the “base station specific identifier” of the first base station (*at least a portion of the first checking data*) is transmitted to the mobile station at a first time when it is within the coverage area of the first base station, and the “base station specific identifier” of the second base station (*at least a portion of the second checking data*) is

transmitted to the mobile station at a second time when it is within the coverage area of the second base station (*at different times*). Ex.1005, 4:62-66; 5:65-6:1; Ex.1003 ¶85.

7. Claim 6

As discussed in claim 2, Putkiranta teaches *a first provider of presence related services* including a first service server and *a second provider of presence related services* including a second service server. As discussed in [1.4], at the time of the '922 patent, it was well known, and thus a POSITA would have understood, that conventional servers, such as Putkiranta's first and second service server, were computing devices that each included *one or more processing devices*—specifically *a first processing device* in the first service server, and *a second processing device* in the second service server. Ex.1003 ¶86 (citing Ex.1040 ¶¶26, 66; Ex.1041 ¶31).

8. Claim 9

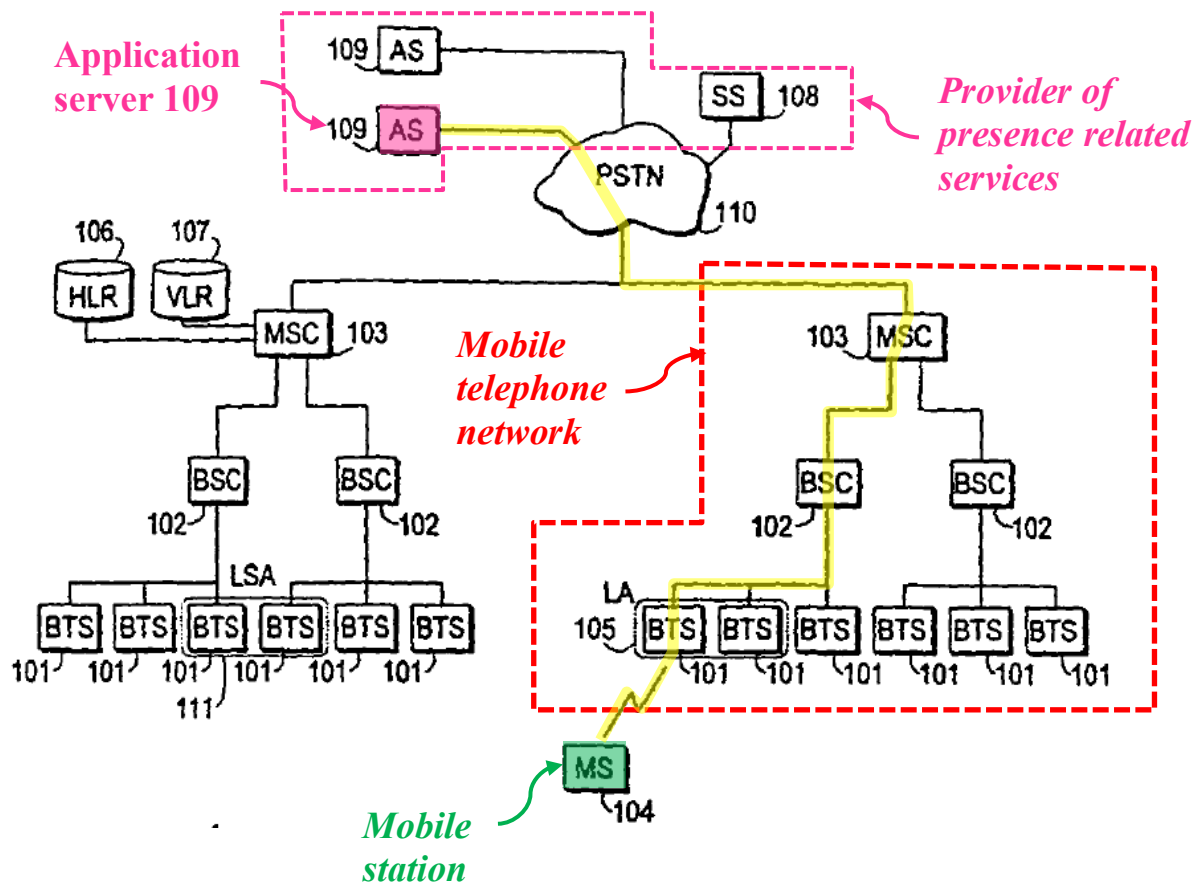
As discussed in [1.1] and [1.3b], the same “identifier characteristic of the mobile station” in Putkiranta (*the first, second, and third identifiers*) is stored by the service server (and mobile station) and also sent in the messages 203 (*the first and second updating signals*), thereby meeting this limitation. Ex.1005, 6:8-12, 5:3-6; Ex.1003 ¶87.

9. Claim 10

As discussed in [1.5], Putkiranta's application server "determines in block 508 whether the message calls for the **starting or termination of a service**" (*the enabling or disabling of the first and/or second presence related service*). Ex.1005, 9:8-12. The application server then "**provides the mobile station with a service**, indicated in FIG. 2 simply by an arrow 205." Ex.1005, 6:38-40; Ex.1003 ¶88. Putkiranta teaches that this operation may involve the application server *transmitting* "a simple **message**" (*e.g., 205 in FIG. 2*) (*a signal*) *to the mobile station to start or terminate (that is capable of being used to enable or disable) a service at the mobile station (one or more related functions in the mobile station)*. Ex.1005, 6:40-42; Ex.1003 ¶88. For example, Putkiranta describes that the message 205 can cause "activation or inactivation of automatic call transfer and/or voice mail service" at the mobile station. Ex.1005, 6:51-52; Ex.1003 ¶88.

As shown in FIG. 1, Putkiranta teaches that the application server 109 transmits messages (*e.g., message 205*) to the mobile station 104 via "the cellular radio network" (*the mobile telephone network*) including "base transceiver station (BTS) 101." Ex.1005, 4:13-27, FIG. 1. Putkiranta describes that the application server 109 is "connected to the cellular radio network through wire links," indicating that transmitted messages between the application server 109 and the mobile station 104 pass through the "cellular radio network." Ex.1005, 4:13-27,

FIG. 1; Ex.1003 ¶89. Putkiranta's FIG. 1, as annotated below, shows that the path of message 205 (annotated in yellow) from the application server 109 to the mobile station 104 passes through the cellular radio network (the mobile telephone network, outlined in red):



Ex.1005, Detail of FIG. 1 (annotated)

10. Claim 11

As discussed in [1.1], Putkiranta teaches that at least a portion of the *one or more memories* reside in the service server, which includes *one or more processing devices* as discussed in [1.4], and which is a server of *the one or more providers of*

presence related services as discussed in [1.0b]. Ex.1003 ¶90.

11. Claim 12

As discussed in [1.1], Putkiranta's service server "maintain[s] information about which mobile stations are in which localized service areas" (*data including first and second checking data*). Ex.1005, 6:22-25; Ex.1003 ¶91. Putkiranta describes that the service server "store[s]" this data in "its memory" (*the storing of the first and second checking data in the one or more memories, see [1.1]*). Ex.1005, 6:26-30, 2:22-32, 6:59-63; Ex.1003 ¶91. Putkiranta further teaches that the service server "receive[s]" (*electronically receives*) "Message 203" *from the mobile station* when "the mobile station detects that it has arrived in a certain localized service area." Ex.1005, 6:5-8. Message 203 "includes an identifier characteristic of the mobile station" and "specif[ies] that the apparatus is in the localized service area," where the localized service area is defined by base station "cell identifiers" (*the first and second checking data*). Ex.1005, 6:5-8, 9:53-54, 2:54-64, 2:22-32; Ex.1003 ¶91. The service server "maintain[s]" its "information about which mobile stations are in which localized service areas" by storing, from the message 203 received from the mobile station, the particular localized service area (*first and second checking data*) in association with the identifier characteristic of the mobile station. Ex.1005, 6:22-30, 2:22-32, 6:59-63; Ex.1003 ¶91.

12. Claim 13

As discussed in [1.2], Putkiranta teaches a “**cellular** radio system 100” (*mobile telephone network*) that includes multiple base transceiver stations (BTS) 101 to which the mobile station 104 may be connected. Ex.1005, 4:13-20, FIG. 1; Ex.1003 ¶92.

13. Claim 14

As previously discussed in [1.3a], Putkiranta teaches that when “the mobile station **detects that it has arrived in a certain localized service area**” (*a previous determination performed by the mobile station about the mobile station's presence in the first and second special areas*), the mobile station “sends to the service server a message 203” (*the first/second updating signal*) that “specif[ies] that the apparatus is in the localized service area” (*a result of the previous determination*). Ex.1005, 9:53-54, 6:3-12; Ex.1003 ¶93.

14. Claim 15

As discussed in [1.3a], Putkiranta teaches that the mobile station “sends to the service server a message 203” (*the first/second updating signal ...received via the mobile telephone network from the mobile station*) indicating its presence in a localized service area. Ex.1005, 6:6-12. Putkiranta describes that message 203 (*the first/second updating signal*) may be sent when the mobile station “**is arriving in**” or “**leaving a localized service area**” (*at times recent to when the mobile station*

enters into or exits from the first special area). Ex.1005, 8:61-65, FIG. 5; Ex.1003 ¶94. Putkiranta further teaches that message 203 (*the first/second updating signal*) may be sent after the mobile station remains in a localized service area for “a certain period of time” to “**renew its message of arrival in the localized service area**” (*when the mobile station remains in the first special area*). Ex.1005, 3:25-36; Ex.1003 ¶94. Putkiranta further describes that the mobile station may send message 203 (*the first/second updating signal*) “**periodically**” as a “periodic location update (PLU) message.” Ex.1005, 3:28-30; Ex.1003 ¶94. Such “periodic” are sent even when the mobile station is outside of any localized service area (*when the mobile station respectively remains outside the first special area and/or second special area*). Ex.1005, 3:28-30; Ex.1003 ¶94.

15. Claim 16

As discussed in [1.5], Putkiranta teaches that the application server (part of the *provider of presence related services*) *enables or disables the provision of the service depending on the presence of the mobile station in the first special area*. Putkiranta further teaches that “message 203” (*the first or second updating signal*) is “intended to function as an impulse for changing the service selection offered to the mobile station” (*comprises a request to access to a service*). Ex.1005, 2:38-41; Ex.1003 ¶95. Putkiranta further teaches that “message 203” (*the updating signal*) is “intended to function as an impulse for changing the service selection offered to

the mobile station” (*comprises a request to access to a multimedia content*).

Ex.1005, 2:34-41, 6:3-12, 6:22-34, 6:53-56; Ex.1003 ¶95. Putkiranta’s service selections include both more traditional services and *multimedia content* such as “routing of incoming email messages to a mobile station[.]” Ex.1005, 6:42-52; Ex.1003 ¶95. And Putkiranta contemplates implementations of the service it provides for uses including “to send the day's menu at a cafeteria of a company to the mobile stations of all those employees who are within the premises of the company as lunchtime is approaching.” Ex.1005, 1:50-55, claim 13 (providing localized services in “an airport or a cafeteria”); Ex.1003 ¶83.

D. Ground 2: Claims 4-5 and 7-8 are obvious over Putkiranta, Kraufvelin, and Granberg

1. Granberg

Granberg describes a “mobile communications network 10” that includes a “home location register (HLR) 16[.]” Ex.1037, 5:38-40, 6:3-4, FIG. 1. Granberg teaches that the “home location register (HLR) 16 is a database that stores and manages subscriptions” for a number of subscriber devices (*e.g.*, cell phones). Ex.1037, 6:3-4. Granberg describes that the HLR “stores a number of subscriber records,” each including “individual subscriber data such as MSISDN, IMSI, current VLR location, and supplementary services data.” Ex.1037, 7:40-44.

2. Reasons to combine Putkiranta, Kraufvelin, and Granberg

A POSITA would have found it obvious to implement the functionality described above in the Putkiranta-Kraufvelin service server based on the teachings of Granberg. Ex.1003 ¶98. In the combination, the Putkiranta-Kraufvelin service server 108 (as previously modified based on Kraufvelin, *see* §§XI.C.3) maintains information in the HLR database 106 (shown in FIG. 1), including activating or deactivating the “network-specific indicator” associated with a “network-based service” depending on the presence of the mobile station in a network that supports that particular “network-based service,” based on the teachings of Granberg. Ex.1005, 4:21-25, 6:22-25, FIG. 1; Ex.1037, 7:45-54; Ex.1003 ¶97.

Granberg is analogous art because it is in the same field of endeavor as the ’922 patent. Ex.1001, Abstract; Ex.1037, Abstract. Granberg is also reasonably pertinent to a problem the ’922 patent attempted to solve: the lack of a way to “associate[e] new special areas” with a mobile device “without modifying any radio transmitting device.” Ex.1001, 1:65-2:12; Ex.1037, 3:57-63, 4:10-29; Ex.1003 ¶99.

A POSITA would have been motivated to implement functionality in the Putkiranta-Kraufvelin service server to maintain location and service configuration information in a database, based on the teachings of Granberg. Ex.1003 ¶100. Further, a POSITA would have been motivated to activate or deactivate a

“network-specific indicator” associated with a “network-based service” for a particular mobile station in the database depending on the presence of the mobile station in a location where the particular service is configured to be provided to the particular mobile station, also based on the teachings of Granberg. Ex.1005, 4:21-25, 6:22-25, FIG. 1; Ex.1037, 7:45-54; §§XI.C.3; Ex.1003 ¶100. A POSITA would have recognized that maintaining a database of “network-specific indicators,” like those taught in Granberg, in the Putkiranta-Kraufvelin system would provide an easily comprehensible summary of the status of particular services for a particular mobile station based on its location in the form of a list of flags (one for each service) indicating whether each service is currently enabled or disabled. Ex.1037, 7:45-54; Ex.1003 ¶100. A POSITA would have recognized that such a status summary would benefit administrators of the Putkiranta-Kraufvelin system by enabling them to easily determine which services were currently being provided to the mobile station in a particular location, thereby facilitating verification and troubleshooting of service configurations in the Putkiranta-Kraufvelin system. Ex.1037, 7:45-54; Ex.1039, 16:38-42 (describing the utility of a “status table” for “troubleshooting” network services); Ex.1003 ¶100.

In addition, this modification to Putkiranta-Kraufvelin represents a simple combination of prior art elements (the Putkiranta-Kraufvelin service server with Granberg’s service configuration functionality), according to known methods to

yield predictable results (the Putkiranta-Kraufvelin service server activating and deactivating services in the database based on the current network of the mobile station, as taught by Granberg). *KSR*, 550 U.S. at 417; Ex.1003 ¶101.

Further, a POSITA would have been motivated to implement functionality based on the Granberg’s service configuration feature in the Putkiranta-Kraufvelin service server to achieve the same benefits and improve the Putkiranta-Kraufvelin system “in the same way” as the similar system of Granberg. *KSR*, 550 U.S. at 416; Ex.1003 ¶102.

A POSITA would have had a reasonable expectation of success in making such a combination because Granberg teaches a system operating in the proposed manner. Ex.1037, 6:3-15, 7:34-54. Indeed, the combination is nothing more than “the predictable use of prior art elements according to their established functions.” *KSR*, 550 U.S. at 417; Ex.1003 ¶102.

3. Claim 4

Putkiranta teaches that the “role of the **service server**” (which includes *one or more processing devices*, see [1.4]) “is to **maintain information about which mobile stations are in which localized service areas**” (*at least a portion of the data capable of linking the mobile station to the first special area*, previously discussed in [1.4]) “and which services should be offered to them accordingly.” Ex.1005, 6:22-25. Because the service server “maintains” this information, it also

has access to it. Ex.1005, 6:22-25; Ex.1003 ¶103.

And Granberg teaches a “**database**” (*a database of the provider of presence related services*) “that stores and manages subscriptions.” Ex.1037, 6:3-4.

Granberg describes that the database “stores a number of subscriber” (*mobile station*) “records,” each including “individual subscriber data such as **MSISDN, IMSI, current VLR location**, and supplementary services data.” Ex.1037, 7:40-44. Granberg further describes that “each subscriber record may include **one or more network-specific indicators**” (*operating parameters*) “e.g., one or more flags, **corresponding to one or more network-specific services**.” Ex.1037, 7:45-48. “**Each network-specific indicator is then set or activated**” (*updat[ing] at least one operating parameter in a database of the provider of presence*) “**when that subscriber is** to receive a corresponding network-based service **in a network that supports that network-based service**” (*depending on the presence of the mobile station in the first and/or second special area*). Ex.1037, 7:49-53. Or, “[i]f that subscriber is not to receive the service” in the particular network to which it is presently registered, “the flag is reset or otherwise deactivated.” Ex.1037, 7:53-54; Ex.1003 ¶107. In other words, Granberg teaches that a “**network-specific indicator**” (*operating parameter*) in the database (*database of the provider of presence related services*) is either “**set**”/“**activated**” or “**reset**”/“**deactivated**” (*update[d]*) based on the network to which the subscriber (*mobile station*) is

currently connected—specifically whether that particular network supports the particular “network-based service” associated with the “network-specific indicator” (*depending on the presence of the mobile station in the first and/or second special area*). Ex.1037, 7:45-54, 5:61-64; Ex.1003 ¶107.

In the combination, Putkiranta’s service server 108 maintains information in the database, including activating or deactivating (*updating*) the “network-specific indicator” (*operating parameters*) associated with a “network-based service” *depending on the presence of the mobile station* in a network that supports that particular “network-based service” (*a first and/or second special area*), based on the teachings of Granberg. Ex.1005, 4:21-25, 6:22-25, FIG. 1; Ex.1037, 7:45-54; §§XI.D.2-3; Ex.1003 ¶105. As discussed in §§XI.D.2-3, it would have been obvious to a POSITA to implement such functionality in Putkiranta’s service server based on the teachings of Granberg. Ex.1003 ¶105.

4. Claim 5

As described above for claim 4, in the combination, Putkiranta’s service server 108 activates or deactivates a “network-specific indicator” (*operating parameter*) associated with a “network-based service,” based on the teachings of Granberg. Granberg teaches that the “network-specific indicators” (*operating parameters*) “corresponding to one or more network-specific services” may be “**one or more flags**” (*a service flag*). Ex.1037, 7:45-48. Granberg further teaches

that activating or deactivating the flag activates or deactivates (*enables or disables*) a corresponding *service for the mobile station*. Ex.1037, 7:49-54 (describing that the flag is “activated when that subscriber is to receive a corresponding network-based service,” and “deactivated” when “that subscriber is not to receive the service”); Ex.1003 ¶106.

5. Claim 7

See claims 4, 6. Ex.1003 ¶107.

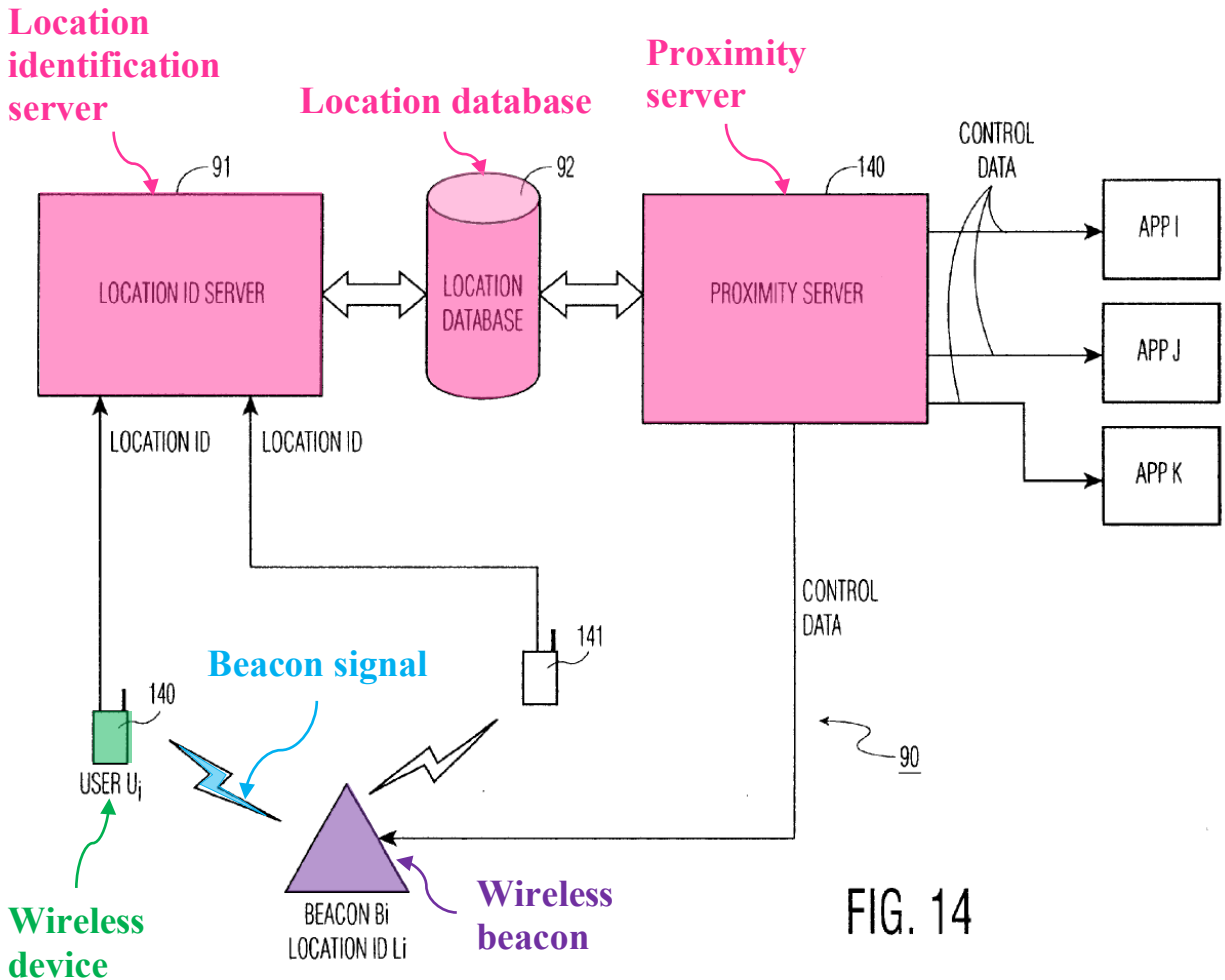
6. Claim 8

See claim 5. Ex.1003 ¶108.

E. Ground 3: Claims 1-3, 6, and 9-16 are obvious over Rachabathuni and Huomo

1. Rachabathuni

Rachabathuni describes a “method of selecting an application in a wireless device and a user location method[.]” Ex.1011, Abstract. Rachabathuni’s method involves a “wireless device” (mobile station such as a “cell phone”) receiving “beacon signal[s]” from “wireless beacons” including a “location identifier” associated with the particular beacon that transmitted the signal. Ex.1011, 4:28-60, 7:63-65. Rachabathuni’s FIG. 14 shows a “wireless system 90” used to perform the method described above:



Ex.1011, FIG. 14 (annotated)

2. Huomo

Huomo teaches a system for “facilitating location based triggering of actions, applications, services, and the like on wireless devices.” Ex.1016, Abstract. Huomo teaches that the system includes one or more network components (*i.e.*, beacons) that wirelessly transmit “beacon signals” including “beacon IDs” using various wireless technologies—including “cellular” (*e.g.*, “GSM,” “CDMA,” etc.) and “Bluetooth”—which are received by mobile stations

and used to determine their proximity to the known locations of the beacons.

Ex.1016 ¶¶53-54, 72.

3. Reasons to combine Rachabathuni and Huomo

It would have been obvious to a POSITA to modify Rachabathuni based on the teachings of Huomo in the manner described above. Ex.1003 ¶114. In the combination, cellular technology is utilized to transmit beacon signals from the wireless beacons of Rachabathuni based on the teachings of Huomo. Ex.1011, 4:37-41, 4:60-62, 7:10-15; Ex.1016 ¶¶45, 53-54; Ex.1003 ¶113.

Rachabathuni and Huomo are analogous art because all are in the same field of endeavor as the '922 patent. Ex.1001, Abstract; Ex.1011, Abstract, 4:28-60, 6:45-57, 7:63-65, 8:8-12; Ex.1016, Abstract. Rachabathuni and Huomo are also reasonably pertinent to a problem the '922 patent attempted to solve: the lack of a way to “associate[e] new special areas” with a mobile device “without modifying any radio transmitting device.” Ex.1001, 1:65-2:12; Ex.1011, Abstract, 6:18-57; Ex.1016, Abstract, ¶¶52-55; Ex.1003 ¶115.

Rachabathuni explains that “suitable packet transmission systems[] may be applied” to its beacon system. Ex.1011, 4:60-61. For the reasons below, a POSITA would have been motivated to utilize cellular technologies in the context of Rachabathuni’s wireless beacons to transmit beacon signals to wireless devices based on the teachings of Huomo. Ex.1003 ¶102. A POSITA would have

recognized that the wireless beacons transmitting beacon signals to the wireless devices using cellular technologies would have allowed mobile stations (*e.g.*, cellular telephones) to receive the beacon signals using conventional cellular technologies. Ex.1011, 4:37-45, 7:10-15; Ex.1016 ¶¶45, 54; Ex.1003 ¶116. Since cellular telephones generally supported communication over cellular networks, this would have allowed beacon signals to be received by a wider range of devices, thereby allowing Rachabathuni's presence-related services to be used on more devices, rather than just those that supported cellular technology and an additional wireless technology such as Bluetooth. Ex.1011, 4:37-45 ("wireless device 7 may be a cell phone that uses a cellular network communication protocol and that is further capable of communicating with the wireless beacons 5 and 6 using another communication protocol"); Ex.1003 ¶116. Further, such a modification would lead to one type of wireless communication (*i.e.*, cellular) being used in Rachabathuni's system, which Rachabathuni teaches would lead to a "simple[r]" system, which would be easier to maintain and manage. Ex.1011, 7:10-15; Ex.1003 ¶116. A POSITA would have been motivated to combine Rachabathuni and Huomo in the manner described above to achieve at least these benefits. Ex.1003 ¶116.

In addition, a POSITA would have been motivated to combine Rachabathuni and Huomo because doing so would have been no more than the combination of prior art elements (Rachabathuni's wireless beacons implementing Huomo's

technique for transmitting beacon signals using cellular technology) according to known methods to yield predictable results (a wireless beacon that transmits beacon signals using cellular technology, a result taught by Huomo). *KSR*, 550 at 416; Ex.1011, 4:37-41, 4:60-62, 7:10-15; Ex.1016 ¶¶45, 53-54; Ex.1003 ¶117. Further, a POSITA would have been motivated to perform the combination because doing so would have been no more than the use of a known technique to improve similar devices in the same way to yield predictable results. *KSR*, 550 U.S. at 417; Ex.1003 ¶118.

A POSITA would have had a reasonable expectation of success in performing the combination at least because Huomo describes a device operating in the manner proposed. Ex.1016 ¶¶41, 45, 53-54; Ex.1003 ¶119.

4. Claim 1

Limitation [1.0a]

Rachabathuni describes a “**method** of selecting an application in a wireless device and a user location **method**[.]” Ex.1011, Abstract. As explained in greater detail below, Rachabathuni’s method generally involves a “wireless device” (such as a “cell phone”) receiving “beacon signal[s]” from “wireless beacons” including a “location identifier” associated with the particular beacon that transmitted the signal, and the wireless device notifying a “location identification server” that tracks the location of the wireless device relative to the wireless beacons. Ex.1011,

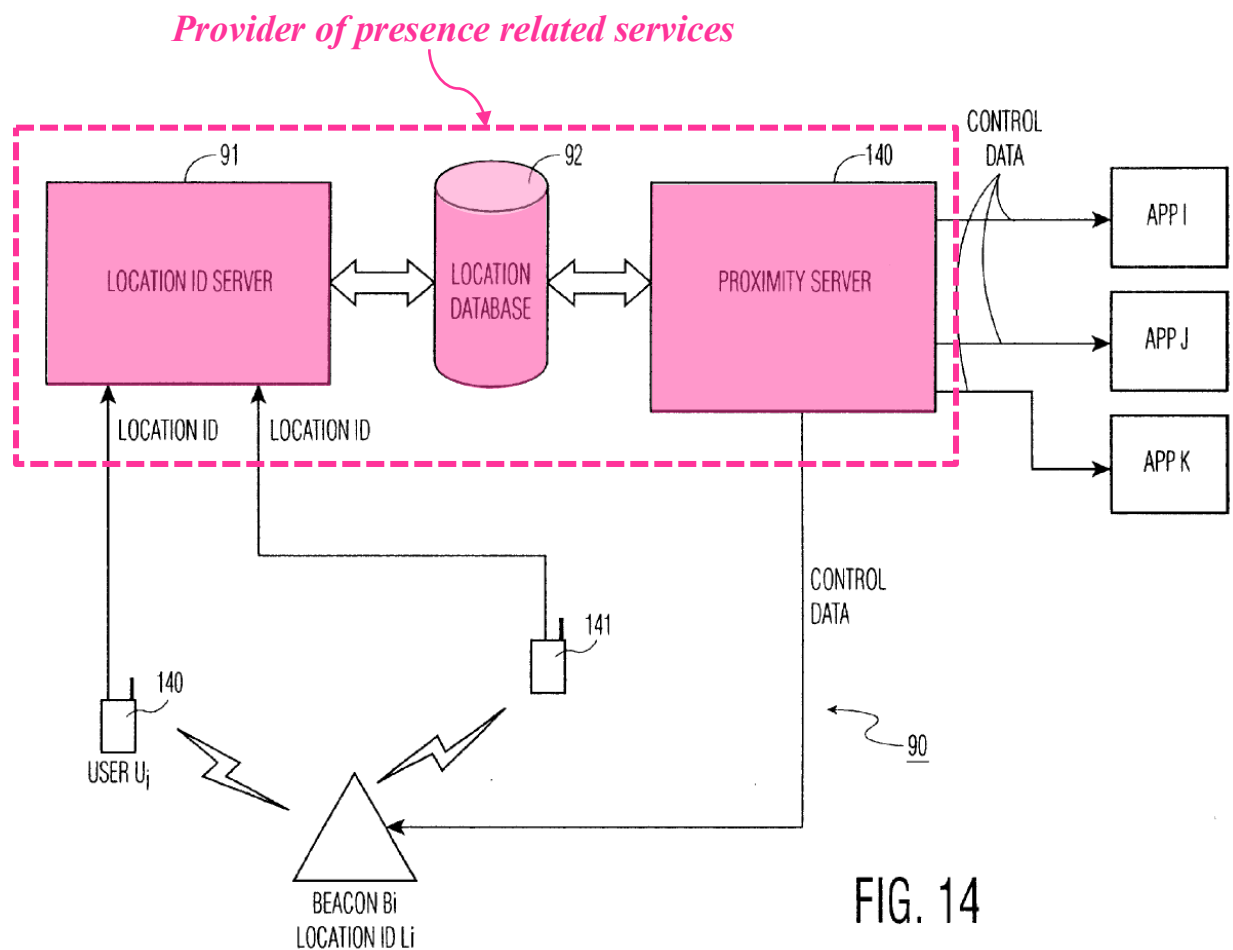
4:28-60, 6:45-57, 7:63-65, 8:8-12; Ex.1003 ¶120.

Rachabathuni further teaches that its *method* is *associated with one or more providers of presence related services*. As shown in FIG. 14 below, Rachabathuni describes that the “**location identification server 91**...is coupled to a **location database 92**.” Ex.1011, 6:45-47. The “location identification server 91 registers locations and user identities of users of wireless devices” based on the notifications received from the wireless devices, and stores this location information in the location database. Ex.1011, 6:55-65. Rachabathuni further describes a “**proximity server 140**” that “uses the location information collected by the location identification server 91 and processes it to **determine the proximity of...users to locations**.” Ex.1011, 8:61-63. “Based on [this] information,” the proximity server “**modifies parts of the system** it controls accordingly,” such as the “[s]election of applications” (services) on the wireless device. Ex.1011, 8:64-67.² The location identification server, location database, and proximity server of Rachabathuni are thus configured to modify the services provided to a wireless device based on the device’s proximity to a location (*i.e., presence*), and therefore, collectively, comprise *one more providers of presence related services*. Ex.1011, 6:45-65, 7:5-8

² The operation of Rachabathuni’s “proximity server” is explained in greater detail in [1.5].

(“Services may be provided that use relative location information, describing the proximity of users and wireless devices to a known location or other users and wireless devices”), 8:61-67; Ex.1003 ¶121.

Rachabathuni’s FIG. 14 below shows the *one or more providers of presence related services*. Ex.1003 ¶122.



Ex.1011, FIG. 14 (annotated)

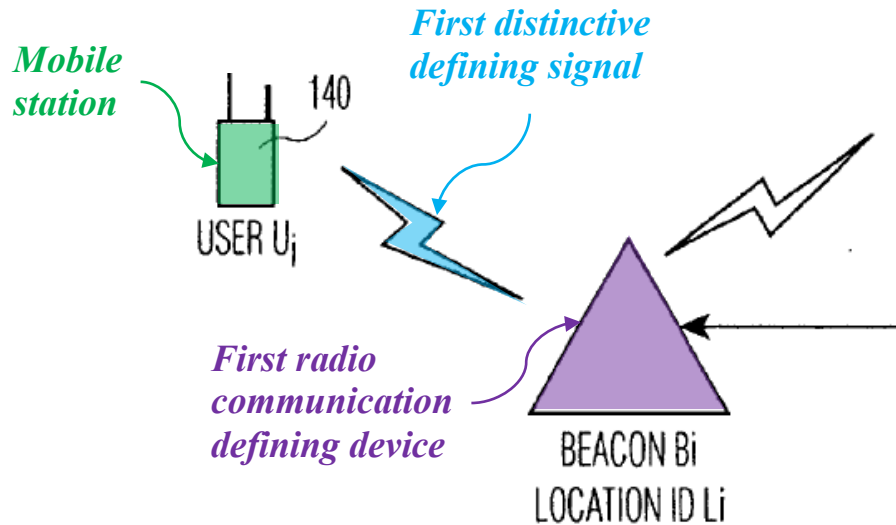
Rachabathuni’s FIG. 14 above shows a “wireless system 90” used to perform the method described above, including the *provider of presence related*

services (collectively the location identification server 91, the location database 92, and the proximity server 140). Ex.1011, 8:51-57, Ex.1003 ¶123.

Limitation [1.0b]

Rachabathuni teaches a “**wireless device**” (*in connection with the use of a mobile station*) that receives “beacon signal[s]” from a “**wireless beacon[]**” (*in connection with the use of...a first radio communication defining device*). Ex.1011, 4:28-60, 6:45-57, 7:63-65. Rachabathuni describes that the “wireless beacon” is configured to “**continuously broadcast**” (*transmit*) a “**beacon signal**” including a “location identifier” associated with the beacon. Ex.1011, 5:63-65, 6:47-50, 7:63-65 (“wireless device 93 transmits a location identifier it acquired from the wireless beacon 95 to the location identification server 91”), 8:56-57, 9:35-37, FIG. 9 (showing beacon signal from beacon 96 including a “LOCATION ID”), FIG. 14. The beacon signal with the location identifier is *a first distinctive defining signal* because the location identifier is unique and differentiates the beacon signal from signals transmitted by other beacons. Rachabathuni, 7:46-47 (“location identifiers...**uniquely identify** a global location”), 7:63-65, 9:35-37.

Rachabathuni’s FIG. 14 below shows the *first radio communication defining device that transmits a first distinctive defining signal*, which is received by the *mobile station*. Ex.1003 ¶124.

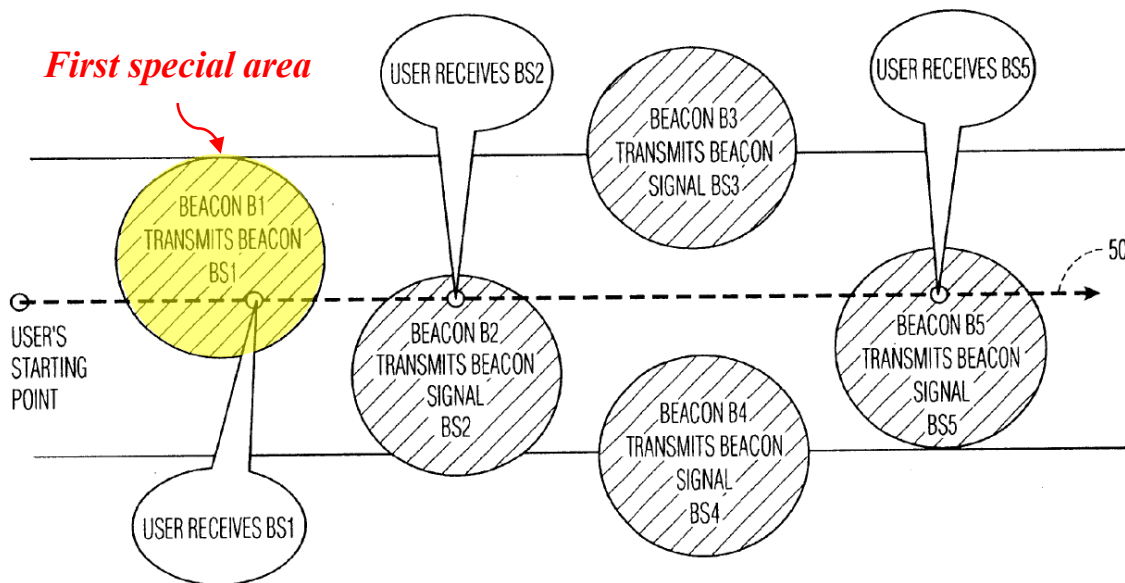


Ex.1011, Detail of FIG. 14 (annotated)

Rachabathuni further describes that “[w]hile roaming[,] the wireless device 7 enters into **a range of a wireless beacon**” (an area at least partly defined by the coverage of the first distinctive defining signal). Ex.1011, 5:56-58, 7:32-34, 8:8-14, FIG. 5, FIG. 13. As shown in FIG. 5 below, when the wireless device “enter[s] [the] **transmission ranges** of the beacons B1, B2 and B5,” it receives beacon signals BS1, BS2 and BS5 “from respective wireless beacons B1, B2 and B5[.]” Ex.1011, 5:58-61, FIG. 5. Rachabathuni describes that the system is configured to provide “location dependent services” to mobile stations located in the transmission range of a wireless beacon, such as within the transmission range of wireless beacon B1, and thus receiving its beacon signal BS1 (*distinctive defining signal*), in FIG. 5 below. Ex.1011, 3:16-22. The transmission range of a wireless beacon in Rachabathuni (e.g., B1 in FIG. 5) *at least partly defines a first special*

area when the system is configured to provide “location dependent services” to mobile stations located within its transmission range. Ex.1011, 3:16-22, 5:58-61, FIG. 5; Ex.1003 ¶125.

Rachabathuni’s FIG. 5 shows the wireless device in the transmission range of the beacon B1 (*the first special area*):



Ex.1011, Detail of FIG. 5 (annotated)

Rachabathuni further teaches that the network includes multiple “wireless beacons” (e.g., 5 and 6 in FIG. 1) that each operate in the manner described above, thereby teaching *a second radio communication defining device that transmits a second distinctive defining signal...at least partly defining a second special area by its coverage*. Ex.1011, 4:37-40, 5:54-62, FIG. 1, FIG. 5; Ex.1003 ¶¶126-127.

Limitation [1.1]

Rachabathuni describes “a location identification server 91 that is coupled to a **location database 92**” (*one or more memories*). Ex.1011, 6:45-47. The “location identification server 91 registers locations and user identities of users of wireless devices” (*data capable of linking the mobile station to the first and second special areas*) based on the notifications received from the devices, and *electronically stor[es]* this location information in the location database (*one or more memories*). Ex.1011, 6:55-65, 7:20-29. Rachabathuni teaches that the location database stores records including “a **user identity or identification field 102**” (*the data including...a first identifier related to the mobile station*), “a **location identification field 103**” (*the data including a first/second checking data of the first/second radio communication defining device*), “and a date and time field 104 registering when the user was last encountered at a given location such as at a location of a wireless beacon.” Ex.1011, 6:58-64. Rachabathuni’s FIG. 10 shows an example table from the location database for storing such records with “user ID” (*first identifier*) and “location ID” (*first/second checking data*) fields annotated. Ex.1003 ¶128.

100

	S.NO.	FIELD NAME	TYPE	EMPTY OK
101 ~	1	RECORD NUMBER	NUMBER	NO
102 ~	2	USER ID	NUMBER	NO
103 ~	3	LOCATION ID	NUMBER	NO
104 ~	4	LAST ENCOUNTERED	DATE	NO

FIG. 10

Ex.1011, FIG. 10 (annotated)

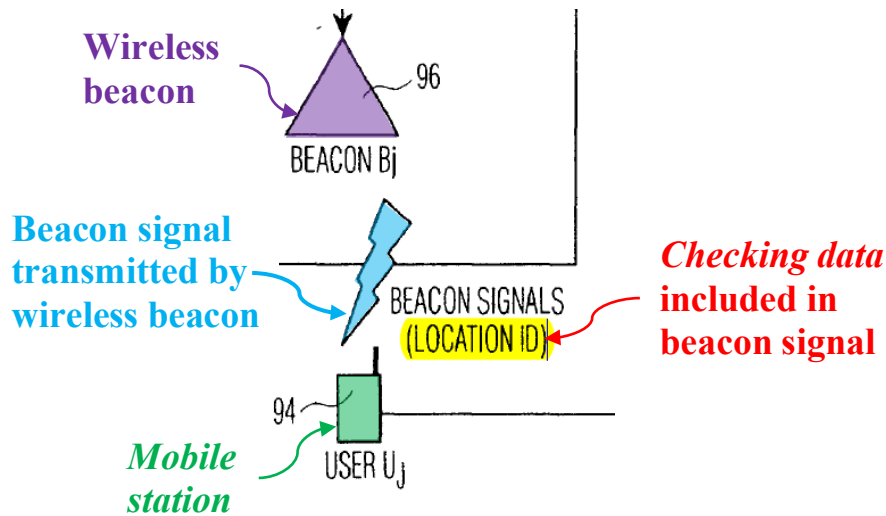
The location ID stored in Rachabathuni's database identifies a particular beacon and is received by a wireless device when it enters the range of that beacon. Ex.1011, 7:63-65, FIG. 9 (showing "location ID" in the beacon signal sent by beacon 96). The '922 patent describes one example of the "*checking data*" recited in claim 1 as a "base station identification code." Ex.1001, 3:64-66; 18:6-7. Rachabathuni's location ID corresponds to the '922 patent's "base station identification code" (and thus to the claimed *first and second checking data*) because both are (i) identifiers of network components (of a "wireless beacon" and a "base station," respectively), (ii) included in signals broadcast by those network components over a coverage area, and (iii) used in their respective systems to indicate the presence of a mobile station in that coverage area. Ex.1011, 6:58-64, 7:63-65, FIGS. 9-10; Ex.1001, Abstract, 2:34-37, 3:64-66; 18:6-7; Ex.1003 ¶129.

In addition, Rachabathuni renders obvious that the mobile station compares

the location identifier received in the beacon signal against a stored identifier (*checking data*) in order to filter repetitive location updates (e.g., repeat updates including the same location identifier) from being sent to the location identification server. Ex.1011, 9:63-10:2 (“the wireless device is in a position to determine[e] which data is redundant to the location identification server”); Ex.1003 ¶136.

Limitation [1.2]

As described in [1.0b] above, Rachabathuni describes that each “wireless beacon” is configured to “**continuously broadcast**” (*transmitting*) a “beacon signal” including a “**location identifier**” (*at least a portion of the first/second checking data*) associated with that beacon. Ex.1011, 5:63-65, 6:47-50, 7:63-65, 8:3-6, 56-57, 9:35-37, FIGS. 9, 14. As also previously discussed in [1.0b] and [1.1], the “wireless device” (*mobile station*) receives these broadcast signals including the “location identifier” (*first/second checking data*) and notifies the location identification server. Ex.1011, 4:28-60, 6:45-57, 7:63-65; Ex.1003. ¶130.



Rachabathuni, Detail of FIG. 9 (annotated)

Rachabathuni further teaches that the “wireless beacons” which transmit a “beacon signal” may operate as part of “**a cellular network**” (*transmitting via a mobile telephone network*), such as, for example by providing short-range “cellular...pico-networks” (or “pico-cells”) with a relatively small coverage area. Ex.1011, 7:9-15, 4:37-41; Ex.1003 ¶131 (citing Ex.1023, 2:21-29; Ex.1024, 2:43-45). Further, the wireless device that receives the beacon signals “may be a **cell phone** that uses a **cellular network** communication protocol.” Ex.1011, 4:37-39. Thus, Rachabathuni renders obvious that a wireless beacon *transmit[s]* signals including its location identifier (*first/second checking data*) via its cellular pico-network included in the larger cellular network (*a mobile telephone network*) to the wireless device (*mobile station*). Ex.1011, 5:63-65, 6:45-57, 7:9-15, 8:56-57, FIGS. 9, 14; Ex.1003 ¶131.

Additionally or alternatively, to the extent Rachabathuni’s wireless beacons are found not to transmit location identifiers over a cellular network (*via a mobile telephone network*), Huomo teaches a system for “facilitating location based triggering of actions, applications, services, and the like on wireless devices.” Ex.1016, Abstract. Huomo teaches that the system includes one or more network components (*i.e.*, beacons) that wirelessly transmit “beacon signals” including “beacon IDs,” which are received by mobile stations and used to determine their proximity to the known locations of the beacons. Ex.1016 ¶¶53-54. Huomo teaches that the beacons may send these “beacon signals” using various wireless technologies, including “cellular” (*e.g.*, “GSM,” “CDMA,” etc.) and “Bluetooth[.]” Ex.1016 ¶¶54, 72. In the cellular context, Huomo teaches that the beacons may represent “picocells” having a small coverage area, thereby allowing the location of the mobile station to be estimated with greater accuracy. Ex.1016 ¶45; Ex.1003 ¶132.

As described above in §§XI.E.3, a POSITA would have been motivated and found it obvious to modify the wireless beacons of Rachabathuni—to the extent they do not already include such functionality—to transmit beacon signals using “cellular” technology (*e.g.*, “GSM,” “CDMA,” etc.) based on the techniques described in Huomo. Ex.1003 ¶133.

Limitation [1.3a]

Rachabathuni describes that “when roaming, the users” of its system “encounter a succession of [wireless] beacons” by receiving the beacon signals broadcast by the wireless beacons. Ex.1011, 7:22-23. Rachabathuni describes that, upon receiving a beacon signal (including the location identifier of the beacon, *see* [1.2]), “[t]he wireless device 7” (*the mobile station*) “then acts as a bridge or relay to **pass beacon information**” (*a first/second updating signal* when it encounters different beacons) “**to the location identification server 91.**” Ex.1011, 7:23-25. “Upon reception of passed beacon information, the server 91 updates the location database 92 so that the database 92 **reflects which wireless beacons wireless device have or had proximity to.**” Ex.1011, 7:25-29, 9:35-37 (the “wireless device transmits location identification to the location identification server whenever it receives a new location identification from a wireless beacon”). The mechanisms Rachabathuni describes for the wireless device passing the beacon information to the location identification server (*e.g.*, acting as a “bridge or relay to pass beacon information,” calling a “CGI (Common Gateway Interface) script that resides on the web server 121 that can be reached through the Internet,” etc.) are all *uncorrelated to any mobile station phone call establishment* because they relate to data transmission between network components (between the wireless device and the location identification server) and not to setting up a phone call. Ex.1011, 7:21-

25, 7:60-8:6; Ex.1003 ¶134

The passed beacon information (*the first/second updating signal*) identifies *the mobile station's presence in at least the first/second special area* because it includes the “location identifier” of the wireless beacon that sent the beacon signal, which indicates the wireless device’s (*mobile station’s*) presence in the coverage area of that wireless beacon (*the first/second special area, see [1.0b]*). Ex.1011, 5:63-65, 6:47-50, 8:56-57, FIGS. 9, 14; *see* [1.2]; Ex.1003 ¶135.

Rachabathuni further teaches that the wireless device (*mobile station*) transmits the beacon information to the location identification server “through [a] wide area network or carrier network 97, that may **be a cellular network**” (*receiving from the mobile station via the mobile telephone network*). Ex.1011, 6:50-53, FIG. 9; Ex.1003 ¶136.

Limitation [1.3b]

As discussed in [1.3a] above, Rachabathuni describes that “upon reception of passed beacon information” (*the first/second updating signal, see [1.3a]*), “the server 91 updates the location database 92 so that the database 92 reflects which wireless beacons wireless device have or had proximity to.” Ex.1011, 7:25-29.

Rachabathuni describes that the beacon information (*first/second updating signal*) received by the location server from the wireless device includes “location and **user identity information**” (*e.g., the “user ID” shown in the database record in*

FIG. 10) “for inclusion into the database 92.” Ex.1011, 7:58-60; Ex.1003 ¶137.

Petitioner notes that claim 9, which depends from claim 1, recites that “the first, second, and third identifiers related to the mobile station are the same,” confirming that the “user ID” in Rachabathuni, which is stored in the location database (*the first identifier*) and sent by the wireless device in the beacon information (*the second/third identifier*), meets this limitation. Ex.1001, claim 9; 6:58-64, 7:25-29, FIG. 10; Ex.1003 ¶138.

Limitation [1.4]

The location identification server and the proximity server are *processing devices* because they each “process[]” the received location information, as discussed in more detail below. Ex.1011, 9:37-40 (“The location identification server **processes** all location identifications it receives and stores them in the location database for use by other applications.”), 8:60-63 (proximity server “**processes** [location information] to determine the proximity of users”); Ex.1040 ¶¶26, 66; Ex.1041 ¶31; Ex.1003 ¶139.

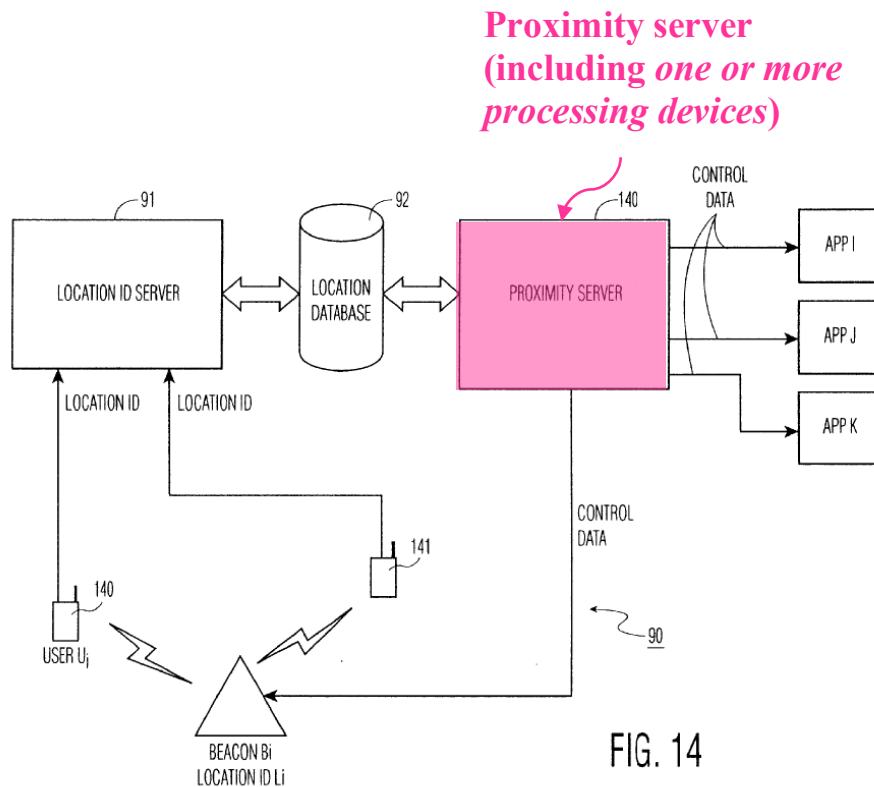
As discussed in [1.3a], Rachabathuni teaches that “[u]pon reception of passed beacon information” (*the first/second updating signal*), “the server 91 updates the location database 92 **so that the database 92 reflects which wireless beacons wireless device have or had proximity to.**” Ex.1011, 7:25-29.

Rachabathuni describes that the “proximity server” (including *one or more*

processing devices) “uses the location information collected by the location identification server 91” (provided by *the first/second updating signal*) “and **processes it to determine**” (*derive*) “the proximity of users to...locations” such as the wireless beacon (*whether or not the mobile station is present in the first/second special area*). Ex.1011, 8:60-63; Ex.1003 ¶140.

Further, Rachabathuni teaches that the proximity server (including *one or more processing devices*) “processes,” and thus *has access to*, the “the location information collected by the location identification server 91” (*the data capable of linking the mobile station to the first/second special area, see [1.1]*). Ex.1011, 8:60-63; Ex.1003 ¶141.

Rachabathuni’s FIG. 14 shows the proximity server (including *one or more processing devices*). Ex.1003 ¶142.



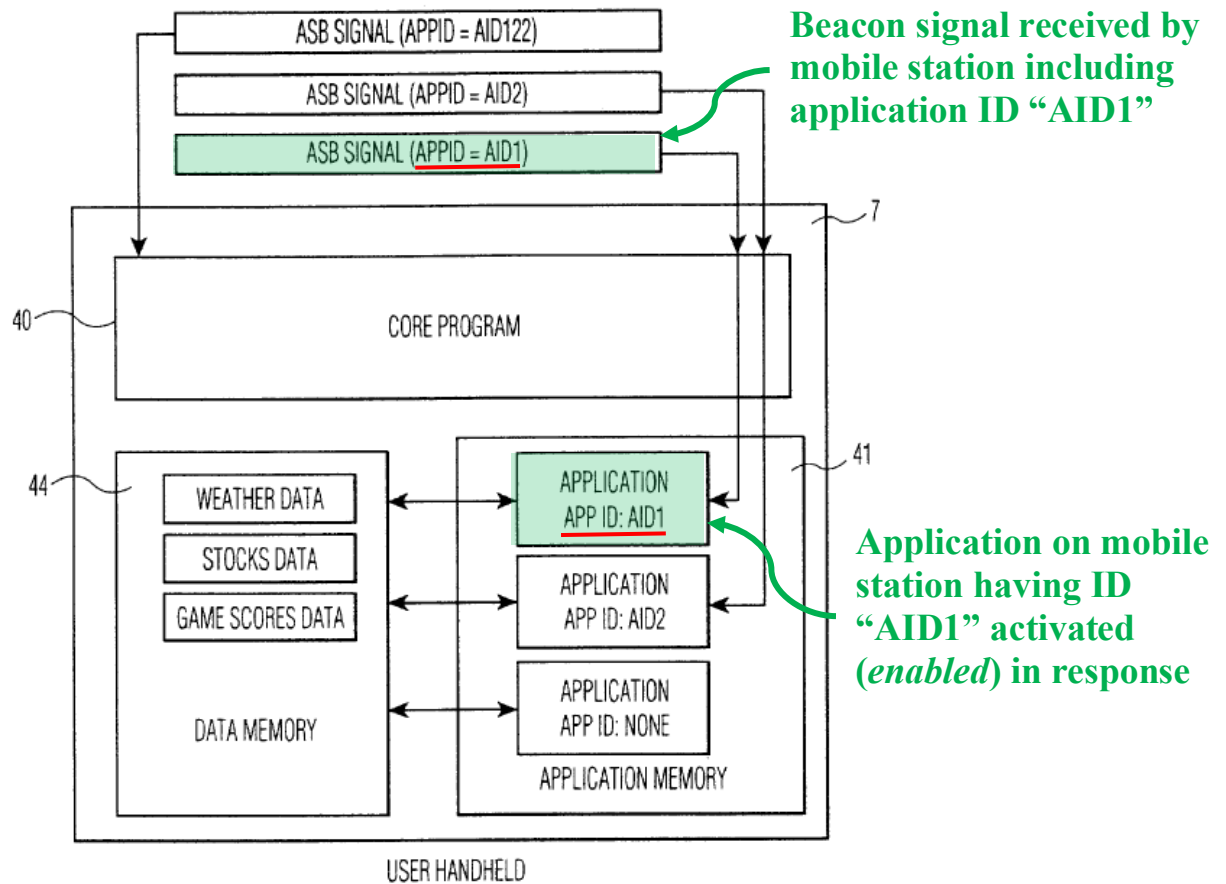
Ex.1011, FIG. 14 (annotated)

Limitation [1.5]

First, Rachabathuni teaches that the wireless beacons include “application specific identifier[s]” in beacon signals that, when received by the mobile station, cause applications on the mobile station (*presence related services*) associated with those identifiers to be “activated” (*enabl[ed]*) and application not associated with those identifiers to not be activated (*disabl[ed]*). Ex.1011, 6:8-37; FIG. 7.

Rachabathuni teaches that, upon receiving the beacon signal including an application specific identifier, the mobile station “activate[s]” an application (*enable[es] a service*) associated with that application specific identifier. Ex.1011,

6:24-37; Ex.1003 ¶129. If the beacon signal does not include the application specific identifier for a particular application, the application is not activated (*disabl[ed]*). Ex.1011, 6:8-17; Ex.1003 ¶¶129-130. Rachabathuni’s FIG. 7 shows this configuration:

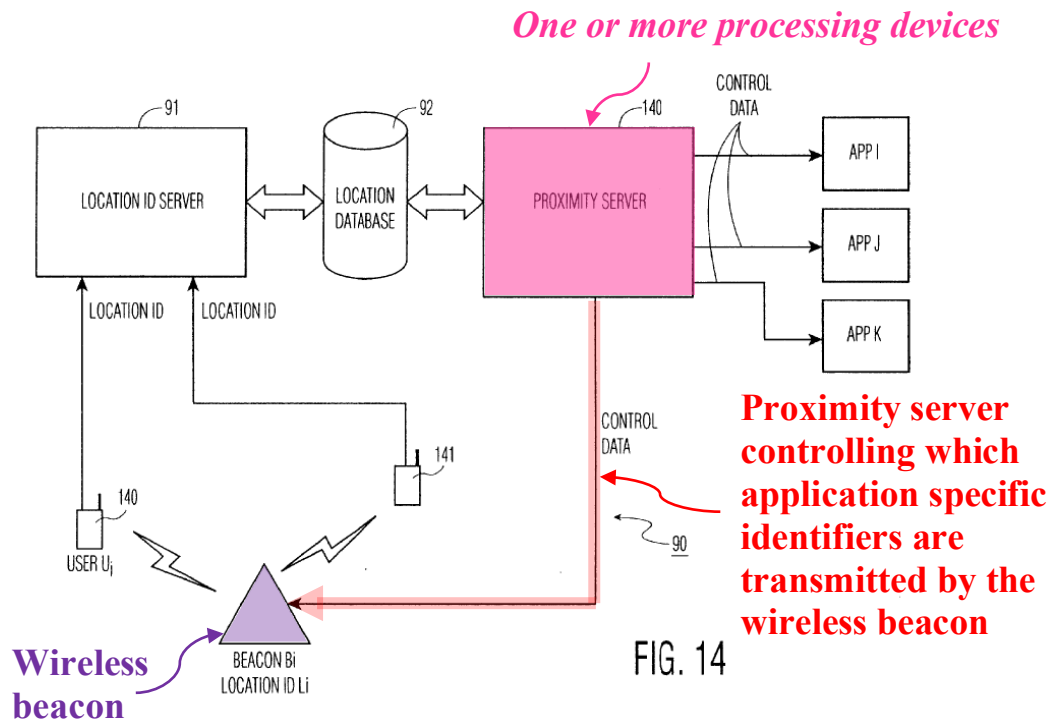


Ex.1011, Detail of FIG. 7 (annotated)

Second, Rachabathuni teaches that the proximity server (including *one or more processing devices, see* [1.4]) controls the wireless beacons to set which “application specific identifier[s]” are included in the transmitted beacon signals, and does so based on the mobile station’s presence in the transmission range of a

particular wireless beacon (*the first/second special area*). Ex.1011, Abstract, 3:15-20, 8:51-67, FIG. 14. Using this mechanism, the proximity server controls the **“selection of applications”** or **“services”** (*enabl[es] or disabl[es] presence related services*) based on the presence or non-presence of the wireless device (*mobile station*) in range of a particular wireless beacon (*in the first/second special area*). Ex.1011, Abstract, 8:51-67, 3:15-20 (the system “provid[es] a mechanism to relate services to users, such as location dependent services to a single user”).

Rachabathuni teaches that the proximity server **“modif[ies] the behavior of the system or parts of system based on the proximity of...users to locations”** (*e.g., particular wireless beacons*). Ex.1011, 8:58-63. In the example shown in Rachabathuni FIG. 14 below, **“the proximity server 140 controls the wireless beacon 142 and selection of applications I, J, and K”** based on the presence of the wireless device. Ex.1011, 8:58-67; Ex.1003 ¶128:



Ex.1011, FIG. 14 (annotated)

5. Claim 2

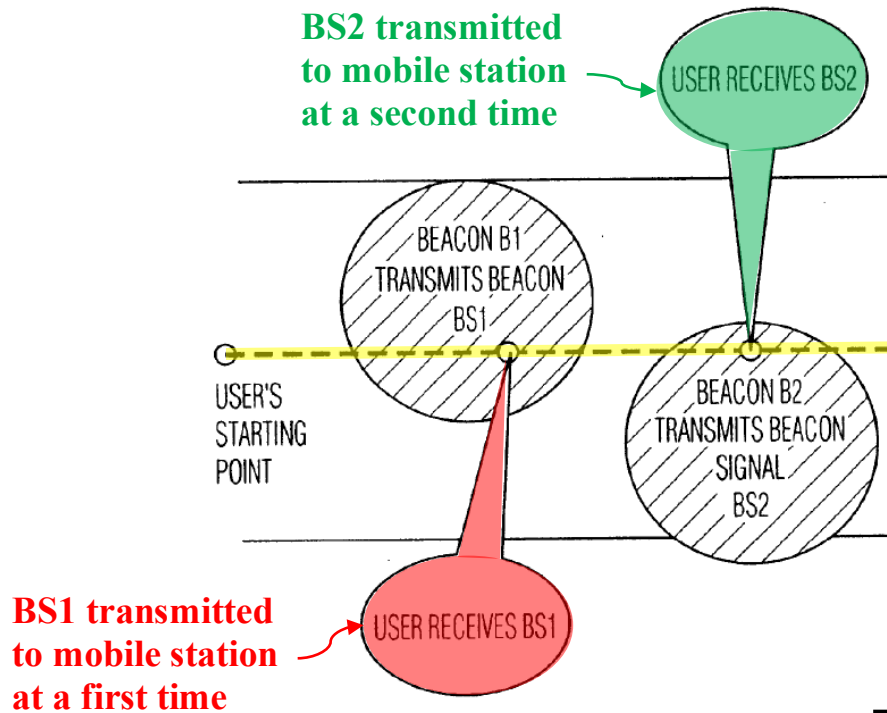
As discussed in [1.1], Rachabathuni describes “a location identification server 91 that is coupled to a **location database 92**” (*one or more memories of a provider of presence related services*). Ex.1011, 6:45-47. The use of multiple providers would have been obvious because doing so would provide tailored services to the user. Ex.1003 ¶83; Ex.1011, 5:5-16. The “location identification server 91 registers locations and user identities of users of wireless devices” (*data capable of linking the mobile station to the first and second special areas*) based on the notifications received from the devices, and *electronically stores* this location information in the location database (*one or more memories*). Ex.1011,

6:55-65, 7:20-29; Ex.1003 ¶146.

Rachabathuni further teaches that its system can include additional “**servers and databases**” that are “located at and **dedicated to**” particular “**wireless beacons**,” and that “**only serve areas covered by the respective wireless beacons**.” Ex.1011, 5:5-16; Ex.1003 ¶147. Rachabathuni thus teaches multiple location identification servers (*first/second providers of presence related services*) and associated location databases (*first/second memory or set of memories of the first/second provider of presence related services*) that store data related to the coverage area of the associated wireless beacons (*data stored in the one or more memories related to the first/second special area*). Ex.1011, 5:5-16; Ex.1003 ¶147.

6. Claim 3

As previously discussed in [1.2], Rachabathuni-Huomo teaches that the first and second wireless beacons (both part of the *mobile telephone network*) “**continuously broadcast**” (*transmit*) a “beacon signal” including a “**location identifier**” (*at least a portion of the first/second checking data*) associated with that beacon. Ex.1011, 5:63-65, 6:47-50, 8:56-57, FIGS. 9, 14. As shown in Rachabathuni’s FIG. 5, as the mobile station moves through the network (denoted by the yellow line), different beacon signals (*e.g.*, BS1, BS2) are transmitted to it at *different times* (*i.e.*, when it is located within the coverage area of different wireless beacons). Ex.1003 ¶148:



Ex.1011, FIG. 5 (annotated)

Thus, Putkiranta teaches that the “location identifier” of the first wireless beacon (*at least a portion of the first checking data*) is transmitted to the mobile station at a first time when it is within the coverage area of the first wireless beacon, and the “location identifier” of the second wireless (*at least a portion of the second checking data*) is transmitted to the mobile station at a second time when it is within the coverage area of the second wireless beacon (*at different times*). Ex.1011, 5:54-62, FIG. 5; Ex.1003 ¶149.

7. Claim 6

As discussed in claim 2, Rachabathuni teaches *a first provider of presence related services* and *a second provider of presence related services*, each including a location identification server. As discussed in [1.4], at the time of the '922 patent,

it was well known, and thus a POSITA would have understood, that conventional servers, such as the first and location identification server of Rachabathuni, were computing devices that each included *one or more processing devices*—specifically *a first processing device* in the first location identification server, and *a second processing device* in the second location identification server. Ex.1003 ¶150; Ex.1040 ¶¶26, 66; Ex.1041 ¶31.

8. Claim 9

As discussed in [1.3b], the same “user ID” in Rachabathuni is stored in the location database (*the first identifier*) and sent by the wireless device in the beacon information (*the second/third identifier*), thereby meeting this limitation. Ex.1011, 7:25-29, 7:58-60; Ex.1003 ¶151.

9. Claim 10

As discussed above in [1.2], Rachabathuni teaches that the wireless beacons transmit beacon signals *via the mobile telephone network*. In addition, as discussed above in [1.5], Rachabathuni describes that the proximity server controls the selection of services provided to the mobile device by causing the wireless beacon to include or not include “application specific identifier[s]” in its transmitted beacon signal (*a signal to the mobile station that is capable of being used to enable or disable one or more related functions in the mobile station*). Ex.1011, Abstract, 8:58-67. Rachabathuni teaches that, upon receiving the beacon

signal, the mobile station “activate[s]” an application (*enable[es] the first and/or second presence related service*) associated with the application specific identifier in the beacon signal. Ex.1011, 6:24-36; Ex.1003 ¶152. If the beacon signal does not include the application specific identifier for a particular application, the application is not activated (*the first and/or second presence related service is disabl[ed]*). Ex.1011, 6:8-17; Ex.1003 ¶152.

10. Claim 11

As discussed in [1.1], Rachabathuni describes that the “**location identification server 91**” and the “**proximity server 140**” (each including *one or more processing devices residing in one or more servers*) are “coupled to [the] **location database 92**” (*the one or more memories*). Ex.1011, 6:45-47, 8:61-63.

And as discussed in [1.0b], the location identification server, location database, and proximity server of Rachabathuni comprise *the provider of presence related services*. Ex.1003 ¶153.

11. Claim 12

As discussed in [1.1], Rachabathuni describes “a location identification server 91 that is coupled to a location database 92” (*one or more memories*). This location database stores records including “a location identification field 103” (*checking data*). Ex.1011, 6:58-64. Specifically, “**the wireless device 93 passes location and user identity information** to the location identification server 91 **for**

inclusion into the database 92.” Ex.1011, 7:56-60. Thus, Rachabathuni teaches that the location identification server receives location information (*first and second checking data*) transmitted from the wireless device via the cellular network for inclusion in the database (*electronically receiv[es] from the mobile station the first and second checking data*). Ex.1011, 7:56-60; Ex.1003 ¶154.

12. Claim 13

As discussed in [1.3], Rachabathuni teaches that the wireless device transmits the beacon information to the location identification server “through [a] wide area network or carrier network 97, that may be **a cellular network**” (*the mobile telephone network is cellular*). Ex.1011, 6:50-53, FIG. 9; Ex.1003 ¶155.

13. Claim 14

As discussed in [1.3a], Rachabathuni teaches that the wireless device passes beacon information to the location identification server via the cellular network. Ex.1011, 7:23-25; Ex.1003 ¶156. Rachabathuni further teaches that the wireless device (*mobile station*) may “filter” “the number [of] location identifications that are transmitted to the location identification server” if, for example, the mobile station stays in the same location. Ex.1011, 9:63-10:2. Thus, Rachabathuni teaches that the mobile station “determin[es]” its presence in the first special area (*e.g.*, whether it remains in an area about which it has already notified the location identification server) prior to sending the updating signal in order to “filter” out

“redundant” signals. Ex.1011, 9:67-10:12; Ex.1003 ¶156. If the updating signal is not redundant and thus not filtered, it includes an indication of the new area the mobile station determines it has entered (*the result of a previous determination performed by the mobile station about the mobile station's presence in the first and second special areas, respectively*). Ex.1011, 9:67-10:12; Ex.1003 ¶156.

14. Claim 15

As discussed in [1.3a], Rachabathuni teaches that the wireless device passes beacon information to the location identification server via the cellular network. Ex.1011, 7:23-25; Ex.1003 ¶157. This occurs when the wireless device enters the range of the beacon (*at times recent to when the mobile station enters into or exits from the first special area and/or second special area*). Ex.1003 ¶157.

Further, Rachabathuni explains that “[i]n several situations the wireless device is in a position to determining which data is redundant to the location identification server” for purposes of limiting redundant beacon information passed to the server. Ex.1011, 9:67-10:2; Ex.1003 ¶158. “For instance, a user's wireless device may implement a simple filter that follows the rule ‘**transmit only once a minute**’” (*periodically*) such that transmissions do not occur too quickly as a device passes through wireless beacon ranges quickly. Ex.1011, 10:3-13; Ex.1003 ¶158. This “transmit only once a minute” rule described in Rachabathuni is also applied when the mobile station remains in the same location, meaning that beacon

information is passed *when the mobile station respectively remains in the first special area and/or second special area* for a time (*i.e.*, one minute), and *when the mobile station respectively remains outside the first special area and/or second special area* for a time (*i.e.*, one minute). Ex.1011, 10:3-13; Ex.1003 ¶158.

15. Claim 16

As discussed in [1.5], Rachabathuni describes the proximity server (part of *the provider of presence related services, see [1.0b]*) reconfiguring wireless beacons to *enabl[e] or disabl[e]...service[s] depending on the presence of the mobile station in the first special area*. Ex.1003 ¶159. In addition, as described in Rachabathuni, the message sent by the mobile station when it is in range of a beacon (*the first/second updating signal, see [1.3a]*), acts as *a request to access a service*, because the proximity server responds by configuring the wireless beacon to enable the appropriate services for the mobile station in that particular location, as previously discussed at [1.5]. Ex.1011, 8:58-67, FIG. 14; Ex.1003 ¶159. Further, Rachabathuni's teachings are not limited to services, but further relate to applications which would include *multimedia content*. Ex.1003 ¶139. For instance, Rachabathuni contemplates an implementation of applications where an HTML page is accessible based on proximity to wireless beacons, or specific maps or other information is provided to a mobile phone based on location. Ex.1011, 1:24-2:5; Ex.1003 ¶139.

F. Ground 4: Claim 4-5 and 7-8 is obvious over Rachabathuni, Huomo, and Granberg

1. Reasons to combine Rachabathuni, Huomo, and Granberg

A POSITA would have found it obvious to modify the Rachabathuni-Huomo proximity server and location database based on the teachings of Granberg. Ex.1003 ¶161. In the combination, the Rachabathuni-Huomo proximity server maintains information in the location database 91, including activating or deactivating a “network-specific indicator” associated with a particular service for a particular mobile station depending on the presence of the mobile station in a location where the particular service is configured to be provided to the particular mobile station, based on the teachings of Granberg. Ex.1011, 8:58-67, FIGS. 10, 14; Ex.1037, 7:45-54; §XI.E.3; Ex.1003 ¶160.

A POSITA would have been motivated to implement functionality in the Rachabathuni-Huomo proximity server and location database to activate or deactivate a “network-specific indicator” associated with a “network-based service” for a particular mobile station in the location database depending on the presence of the mobile station in a location where the particular service is configured to be provided to the particular mobile station, based on the teachings of Granberg. Ex.1011, 8:58-67, FIGS. 10, 14; Ex.1037, 7:45-54; §§XI.E.3-4; Ex.1003 ¶163. A POSITA would have recognized that maintaining “network-specific indicators,” like those taught in Granberg, in the Rachabathuni-Huomo

location database would provide an easily comprehensible summary of the status of particular services for a particular mobile station based on its location in the form of a list of flags (one for each service) indicating whether each service is currently “on” (enabled) or “off” (disabled). Ex.1011, 8:58-67, FIGS. 10, 14; Ex.1037, 7:45-54; Ex.1003 ¶163. A POSITA would have recognized that such a status summary would benefit administrators of the Rachabathuni-Huomo system by enabling the administrators to easily determine which services were currently being provided to the mobile station in a particular location, thereby facilitating verification and troubleshooting of service configurations in the Rachabathuni-Huomo system. Ex.1011, 8:58-67, FIGS. 10, 14; Ex.1037, 7:45-54; Ex.1039, 16:38-42 (describing the utility of a “status table” for “troubleshooting” network services); Ex.1003 ¶163.

In addition, this modification to Rachabathuni-Huomo represents a simple combination of prior art elements (the Rachabathuni-Huomo service server with Granberg’s service configuration functionality), according to known methods to yield predictable results (the Rachabathuni-Huomo service server activating and deactivating services and updating “network specific indicators” in the database). *KSR*, 550 U.S. at 416; Ex.1003 ¶164.

Further, a POSITA would have been motivated to implement functionality based on the Granberg’s service configuration feature in the Rachabathuni-Huomo

service server to achieve the same benefits and improve the Rachabathuni-Huomo system “in the same way” as the similar system of Granberg. *KSR*, 550 U.S. at 417. In addition, the combination represents a simple combination of prior art elements according to known methods to yield predictable results. *KSR*, 550 U.S. at 416; Ex.1003 ¶165.

A POSITA would have had a reasonable expectation of success in making such a combination because Granberg teaches a system operating in the proposed manner. Ex.1037, 6:3-15, 7:34-54. Indeed, the combination is nothing more than “the predictable use of prior art elements according to their established functions.” *KSR*, 550 U.S. at 417; Ex.1003 ¶166.

2. Claim 4

As previously discussed in [1.3a], Rachabathuni teaches that “[u]pon reception of passed beacon information” (*the first/second updating signal*), the location identification server 91 (including *one or more processing devices*) “**updates the location database 92**” (*a database of the provider of presence related services*) “so that the database 92 **reflects which wireless beacons wireless device have or had proximity to**” (*updat[es] the database depending on the presence of the mobile station in the first/second special area*). Ex.1011, 7:25-29; Ex.1003 ¶167.

And Granberg teaches a database including “one or more **network-specific**

indicators” (*operating parameters*) “e.g., one or more flags, corresponding to one or more network-specific services.” Ex.1037, 7:45-48. “Each network-specific indicator is then **set or activated when that subscriber**” (e.g., the mobile station) **“is to receive a corresponding network-based service,”** such as when the mobile station is the first special area as taught by Rachabathuni. Ex.1037, 7:49-53; Ex.1011, 6:58-64, FIG. 10. “If that subscriber” (the mobile station) **“is not to receive the service”** at the particular location, **“the flag is reset or otherwise deactivated.”** Ex.1037, 7:53-54; Ex.1011, 6:58-64, FIG. 10; Ex.1003 ¶168.

Accordingly, in the combination, the location database of Rachabathuni includes an *operating parameter* in the form a flag corresponding to a service (*a service flag*) that is either “set”/“activated” or “reset”/“deactivated” (*update[d]*), as taught by Granberg, based on the location of the mobile station. Ex.1037, 7:53-54; Ex.1011, 6:58-64, FIG. 10; Ex.1003 ¶169.

3. Claim 5

As previously discussed in claim 4, in the combination, the location database of Rachabathuni includes an *operating parameter* in the form a flag corresponding to a service (*a service flag*) that is either “set”/“activated” or “reset”/“deactivated” (*update[d]*), as taught by Granberg, based on the location of the mobile station. Ex.1037, 7:53-54; Ex.1011, 6:58-64, FIG. 10; Ex.1003 ¶¶170-172.

4. Claim 7

See claims 4, 6. Ex.1003 ¶173.

5. Claim 8

See claim 5. Ex.1003 ¶174.

XII. CONCLUSION

For at least the reasons described in the present Petition, the Challenged Claims are unpatentable.

Respectfully submitted,

Dated: September 11, 2025
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XIII. MANDATORY NOTICES

A. Real party-in-interest

Pursuant to 37 C.F.R. §42.8(b)(1), Petitioner certifies that the real party-in-interest is Apple Inc.

B. Related matters

Pursuant to 37 C.F.R. §42.8(b)(2), to the best knowledge of the Petitioner, the '033 patent is or was involved in the following cases:

Case Heading	Number	Court	Filed
<i>Avant Location Technologies LLC v. Apple Inc.</i>	2-24-cv-00757	EDTX	Sept. 13, 2024
<i>Avant Location Technologies LLC v. Fibar Group SA et al.</i>	2-24-cv-00165	EDTX	March 8, 2024
<i>Avant Location Technologies LLC v. Samsung Electronics Co., Ltd. Et al.</i>	2-24-cv-00133	EDTX	Feb. 23, 2024
<i>Avant Location Technologies LLC v. Ecobee Technologies ULC d/b/a Ecobee</i>	2-23-cv-00354	EDTX	July 31, 2023

C. Lead and back-up counsel and service information

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Please address all correspondence in this proceeding to lead and back-up counsel. Petitioner consents to service in this proceeding by email at the addresses above.

CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), Petitioner hereby certifies, in accordance with and reliance on the word count provided by the word-processing system used to prepare this Petition, that the number of words in this paper is 13,985. Pursuant to 37 C.F.R. § 42.24(d), this word count excludes the table of contents, table of authorities, mandatory notices under § 42.8, certificate of service, certificate of word count, appendix of exhibits, and any claim listing.

Dated: September 11, 2025

/Scott T. Jarratt/
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CERTIFICATE OF SERVICE

The undersigned certifies that, in accordance with 37 C.F.R. § 42.6(e) and 37 C.F.R. § 42.105, service was made on Patent Owner as detailed below.

Date of service September 11, 2025

Manner of service Priority Mail Express

Documents served Petition for *Inter Partes* Review Under 35 U.S.C. § 312 and 37 C.F.R. § 42.104 of U.S. 8,934,922;
Petitioner's Power of Attorney;
Petitioner's Exhibit List;
Exhibits 1001-1006, 1011, 1016, 1018-1019, 1021, 1023-1024, 1037, 1039-1041.

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