

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

UBER TECHNOLOGIES, INC.
Petitioner

v.

ENOVSY LLC
Patent Owner.

Case No. IPR2024-00826
U.S. Patent No. 6,441,752

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 6,441,752**

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
II. MANDATORY NOTICES UNDER 37 C.F.R. §42.8.....	2
III. FEE AUTHORIZATION	3
IV. GROUNDS FOR STANDING.....	4
V. PRECISE RELIEF REQUESTED	4
VI. THE CHALLENGED PATENT	5
A. Proximity Alert Claims	5
B. Geographic Boundary Claims	6
VII. PROSECUTION HISTORY OF THE '752 PATENT.....	7
VIII. LEVEL OF ORDINARY SKILL IN THE ART.....	8
IX. PRIORITY DATE	8
X. CLAIM CONSTRUCTION	8
A. Proposed Constructions for Proximity Alert Claims	9
1. “means to obtain the location of the portable mobile remote unit” (Claim 14).....	9
2. “means to obtain geographic boundary information in order to disclose a global location at the network” (Claim 14)	9
3. “means to provide the location of the portable mobile remote unit to the network upon determination that the portable mobile remote unit is within the geographic boundary obtained at the network” (Claim 14)	10
4. “means to determine and report to the system upon request that, another mobile remote unit of the network has tracked the portable mobile remote over a period of time” (Claim 14)	10
5. “means to further determine if location disclosure for the remote unit is prohibited at a specific geographic boundary before sending its location to the network” (Claim 15).....	11
XI. BRIEF DESCRIPTION OF THE APPLIED PRIOR ART	12

TABLE OF CONTENTS

(continued)

	Page
A. Prior Art Applied to the Proximity Alert Claims	12
1. Layson’757 (Ex-1007)	12
2. Layson’213 (Ex-1008)	13
3. Wang (Ex-1009)	15
4. IllinoisLaw (Ex-1010)	16
B. Prior Art Applied to the Geographic Boundary Claims	18
1. Suarez (Ex-1013)	18
2. Mintz (Ex-1014)	21
XII. DETAILED EXPLANATION OF THE UNPATENTABILITY GROUNDS	23
A. Proximity Alert Claims	23
1. Ground 1: Claim 1 is rendered obvious over Layson’757 in view of Layson’213	23
a. A POSITA would have been motivated to combine Layson’757-Layson’213 with a reasonable expectation of success	23
b. Independent Claim 1	27
2. Ground 2: Claim 4 is rendered obvious by Layson’757- Layson’213 in view of Wang	46
a. A POSITA would have been motivated to combine Layson’757-Layson’213 with Wang with a reasonable expectation of success	46
b. Claim 4	49
3. Ground 3: Claims 9 and 14 are rendered obvious by Layson’757-Layson’213 in view of IllinoisLaw	53
a. A POSITA would have been motivated to combine Layson’757-Layson’213 with IllinoisLaw with a reasonable expectation of success	53
b. Claim 9	57

TABLE OF CONTENTS
(continued)

	Page
c. Independent Claim 14.....	61
4. Ground 4 Claim 15 is rendered obvious by Layson’757- Layson’213-IllinoisLaw-Wang.....	72
a. Claim 15: The portable mobile remote according to claim 14, having means to further determine if location disclosure for the remote unit is prohibited at a specific geographic boundary before sending its location to the network.	72
B. Geographic Boundary Claims	75
1. Ground 6: Claim 6 is rendered obvious by Suarez in view of Mintz.....	75
a. A POSITA would have been motivated to combine Suarez-Mintz and had a reasonable expectation of success	75
a. Independent Claim 6.....	78
XIII. THE BOARD SHOULD NOT DENY INSTITUTION UNDER <i>FINTIV</i>	96
XIV. CONCLUSION.....	96

LIST OF EXHIBITS¹

Ex-1001	U.S. Patent No. 6,441,752
Ex-1002	Declaration of Mr. Scott Andrews
Ex-1003	Curriculum Vitae of Mr. Scott Andrews
Ex-1004	File History of U.S. Patent No. 6,441,752
Ex-1005	File History of U.S. Patent No. 6,756,918
Ex-1006	File History of U.S. Patent No. 7,199,726
Ex-1007	U.S. Patent No. 5,731,757 (“Layson ’757”)
Ex-1008	U.S. Patent No. 6,405,213 (“Layson ’213”)
Ex-1009	U.S. Patent No. 5,365,451 (“Wang”)
Ex-1010	720 Ill. Comp. Stat. Ann. 5/12-7.3, as amended by 1995 Ill. Legis. Serv. P.A. 89-377 (H.B. 1792), eff. Aug. 18, 1995 (“IllinoisLaw”)
Ex-1011	U.S. Patent No. 6,160,481 (“Taylor”)
Ex-1012	U.S. Patent No. 5,497,149 (“Fast”)
Ex-1013	U.S. Patent No. 6,212,393 (“Suarez”)
Ex-1014	U.S. Patent No. 5,532,702 (“Mintz”)
Ex-1015	U.S. Patent No. 5,493,694 (“Vlcek”)
Ex-1016	U.S. Patent No. 3,663,762 (“Joel”)
Ex-1017	Australian Patent App. No. 200037767 (“Mezhvinsky”)
Ex-1018	Certified Translation of German Patent Application Publication DE 19751741A1 (“Heedfeld”)

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

Ex-1019	German Patent Application Publication DE 19751741A1
Ex-1020	Claim Mapping Table
Ex-1021	U.S. Patent No. 4,242,538 (“Ito”)
Ex-1022	U.S. Patent No. 5,736,962 (“Tendler”)
Ex-1023	U.S. Patent No. 6,133,853 (“Obradovich”)
Ex-1024	U.S. Patent Application Publication No. 2002/0034292 (“Tuoriniemi”)
Ex-1025	U.S. Patent No. 6,968,179 (“De Vries”)
Ex-1026	U.S. Patent No. 5,904,727 (“Prabhakaran”)
Ex-1027	Enovsys Infringement Contentions
Ex-1028	INTENTIONALLY LEFT BLANK
Ex-1029	Yilin Zhao, <i>Vehicle Location and Navigation Systems</i> , Artech House Publishers (1st ed. 1997)
Ex-1030	U.S. Patent No. 6,901,260 (“Xin”)
Ex-1031	U.S. Patent No. 5,592,173 (“Lau”).
Ex-1032	U.S. Patent No. 6,748,224 (“Chen”)
Ex-1033	U.S. Patent No. 5,208,756 (“Song”)
Ex-1034	Joseph Hoshen, et al., <i>Wide Area Continuous Offender Monitoring</i> , Lucent Technologies, New Mexico Corrections Dept., Sandia National Laboratories (1996)
Ex-1035	U.S. Patent No. 5,461,390 (“Hoshen”)
Ex-1036	Soumia Ichoua, et al., <i>Diversion Issues in Real-Time Vehicle Dispatching</i> , <i>Transportation Science</i> , INFORMS (2000)
Ex-1037	Rebecca K. Lee, <i>Romantic and Electronic Stalking in a College Context</i> , 4 Wm. & Mary J. Women & L. 373-466 (1998) (“Lee”)
Ex-1038	U.S. Patent No. 5,982,281 (“Layson’281”)

Ex-1039	J. Hoshen and G. Drake, <i>Offender Wide Area Continuous Electronic Monitoring Systems: Project Summary</i> , National Institute of Justice, report NCJ 187102 (2000)
Ex-1040	<i>Project To Develop a Model Anti-Stalking Code for States</i> , National Criminal Justice Association, National Institute of Justice, report NCJ 144477 (Oct. 1993)
Ex-1041	U.S. Patent No. 5,266,944 (“Carroll”)
Ex-1042	International Patent Pub. No. WO 96/20464 (“Green”)
Ex-1043	U.S. Patent No. 6,072,396 (“Gaukel”)
Ex-1044	J. Travis, <i>Stalking: Lessons from Recent Research</i> , National Center for Women and Policing Conference (Apr. 14, 1999)
Ex-1045	<i>Domestic Violence, Stalking, and Antistalking Legislation – An Annual Report to Congress under the Violence Against Women Act</i> , National Institute of Justice Research Report (Apr. 1996)
Ex-1046	Emily Spence-Diehl, <i>Stalking – A Handbook for Victims</i> , Learning Publications, Inc. (1999)
Ex-1047	<i>The Crime of Stalking: How Big Is the Problem?</i> , National Institute of Justice Research Preview (Nov. 1997)
Ex-1048	Brian E. McGuire & Anita E. Wraith, <i>Legal and Psychological Aspects of Stalking: A Review</i> , The Journal of Forensic Psychiatry, Vol. 11, No. 2 (Sept. 2000)
Ex-1049	David D. Clark, Kenneth T. Pogran, and David P. Reed, <i>An Introduction to Local Area Networks</i> , Proceedings of the IEEE, Vol. 66, No. 11 (Nov. 1978)
Ex-1050	Ivan Pepelnjak and Jim Guichard, <i>MPLS and VPN Architectures – A practical guide to understanding, designing and deploying MPLS and MPLS-enabled VPNs</i> , Cisco Press (2001)
Ex-1051	Excerpts from C. J. Date, <i>An Introduction to Database Systems</i> , The Systems Programming Series, Addison-Wesley Publishing Co., (6th ed. 1995)

Ex-1052	Excerpts from Elmasri Navathe, <i>Fundamentals of Database Systems</i> , Addison-Wesley (3rd ed. 2000)
Ex-1053	John J. Moslow, <i>False Alarms: Cause for Alarm</i> , 63 FBI Law Enforcement Bulletin 63, No. 11 (Nov. 1994)
Ex-1054	J. Reid Meloy, <i>Stalking (Obsessional Following): A Review of Some Preliminary Studies</i> , Aggression and Violent Behavior, Vol. 1, No. 2, pp. 147-162 (1996)
Ex-1055	Paul E. Mullen et al., <i>Study of Stalkers</i> , Am. J. Psychiatry 156:8 (Aug. 1999)

I. INTRODUCTION

Uber Technologies, Inc. (“Petitioner”) requests *inter partes* review (“IPR”) of Claims 1, 4, 6, 9, and 14-15 of U.S. Patent No. 6,441,752 (“the ’752 Patent”) (Ex-1001), currently assigned to Enovsys LLC (“PO”).

The ’752 Patent discloses a communication system consisting of remotely locatable mobile units, and claims two embodiments with different uses and applications.

Claims 1, 4, 9, and 14-15 (the “Proximity Alert Claims”) are directed to the first embodiment—a “tracking mode” where a wireless consumer is alerted to the presence of one or more mobile units maintaining close/relative proximity to the consumer. Claim 1, for example, involves requesting that mobile devices in proximity to a wireless consumer disclose their location. Those disclosed locations are used to identify devices that maintained proximity to the wireless consumer over time. The prior art teaches comparable victim-offender tracking systems that use disclosed locations to report when an offender’s device is in a buffer zone around the victim for a proscribed “loiter time,” and renders the challenged Proximity Alert Claims unpatentable.

Claim 6 (the “Geographic Boundary Claim”) is directed to the second embodiment relating to specifying a geographic boundary, splitting the boundary into subregions and verifying the location of remote units within the subregions. The

prior art teaches vehicle dispatch systems that contain these features, rendering Claim 6 unpatentable.

This Petition presents prior art that was not considered during prosecution. These grounds are more than reasonably likely to prevail, and this Petition should be granted.

II. MANDATORY NOTICES UNDER 37 C.F.R. §42.8

Real Parties-in-Interest: Petitioner identifies the following real parties-in-interest: Uber Technologies, Inc.

Related Matters: A decision in this proceeding could affect or be affected by the following: (1) *Enovsys LLC v. Uber Technologies, Inc. d/b/a Uber*, 5:23-cv-04549 (N.D. Cal.); and (2) *Enovsys LLC v. Lyft, Inc.*, 5:23-cv-05157 (N.D. Cal.).

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III. FEE AUTHORIZATION

Pursuant to 37 C.F.R. §42.15(a) and §42.103(a), the PTO is authorized to
charge any and all fees to Deposit Account No. LA500639.

IV. GROUNDS FOR STANDING

Petitioner certifies that the '752 Patent is available for review, this Petition is timely filed, and Petitioner is not barred or estopped from requesting review.

V. PRECISE RELIEF REQUESTED

Petitioner requests cancellation of Claims 1, 4, 6, 9, and 14-15 as unpatentable on the following grounds, supported by a declaration from Mr. Scott Andrews. Ex-1002 ¶¶4-16, 116-117.

Ground	Summary
Grounds for the Proximity Alert Claims	
1	Claim 1 is obvious over U.S. Patent No. 5,731,757 ("Layson'757," Ex-1007) in view of U.S. Patent No. 6,405,213 ("Layson'213," Ex-1008)
2	Claim 4 is obvious over Layson'757 in view of Layson'213 in further view of U.S. Patent No. 5,365,451 ("Wang," Ex-1009)
3	Claims 9 and 14 are obvious over Layson'757 in view of Layson'213 in further view of 720 Ill. Comp. Stat. Ann. 5/12-7.3, as amended by 1995 Ill. Legis. Serv. P.A. 89-377 (H.B. 1792), eff. Aug. 18, 1995 ("IllinoisLaw," Ex-1010)
4	Claim 15 is obvious over Layson'757 in view of Layson'213 and IllinoisLaw, in further view of Wang
Ground for the Geographic Boundary Claim	
5	Claim 6 is obvious over U.S. Patent No. 6,212,393 ("Suarez," Ex-1013) in view of U.S. Patent No. 5,532,702 ("Mintz," Ex-1014)

For the Board’s convenience, Petitioner notes the following close relationship between the two claim types and the grounds of unpatentability across Patent Owner’s three patents, including the ’752 Patent challenged here:

Claim Types	'752 Patent	'918 Patent	'726 Patent	Grounds
Proximity Alert Claims (8 claims) ²	1	15		Layson’757-Layson’213
	4			Layson’757-Layson’213-Wang
	9, 14	1, 22	1	Layson’757-Layson’213-IllinoisLaw
	15	2	2	Layson’757-Layson’213-IllinoisLaw-Wang
		15		Taylor-Fast
		1, 2, 22		Taylor-Fast-IllinoisLaw
Geographic Boundary Claims (4 claims)			12, 13	Suarez
			8	Suarez-Mezhvinsky
	6			Suarez-Mintz
			8, 12, 13	Heedfeld

VI. THE CHALLENGED PATENT

A. Proximity Alert Claims

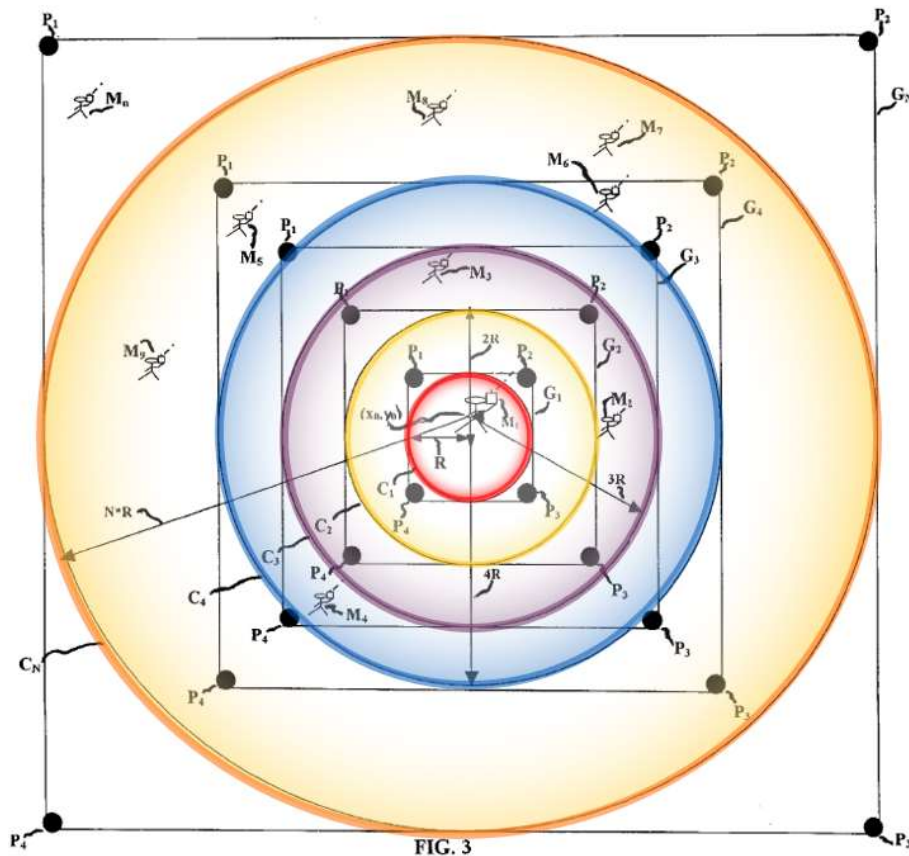
Claims 1, 4, 9, and 14-15 of the ’752 Patent are directed to a “tracking mode” (Ex-1001, 5:12-17) for determining if a user is being tracked by any other mobile unit (*id.*, 3:16-18 (same)). As the user’s mobile unit moves, either that unit itself or

² Claim 14 of the ’752 Patent recites the exact same limitations as Claim 1 of the U.S. Patent No. 6,756,918 (“’918”). Claim 15 of the ’752 Patent recites the same limitations as Claim 2 of the ’918 Patent and U.S. Patent No. 7,199,726 (“’726”). Claim 1 of the ’918 and the ’726 Patents use slightly different language to describe substantially the same invention.

a centralized control station (on behalf of the unit), requests that other mobile units in proximity to the user's unit disclose their location. Ex-1001, 5:34-38. In one example, a list of the mobile units that disclosed their locations is maintained, and “[a]t the end of the tracking period, if there are any units in the tracking list and [a] minimum tracking distance was covered, such communication units are deemed to be tracking [the user] and are reported to the [user].” Ex-1001, 5:44-53.

B. Geographic Boundary Claims

The '752 Patent also describes portable remote units (PRUs) dispersed in a geographic area. Ex-1001, 3:67-4:2. The network sends a page to nearby PRUs to determine if PRUs fall within a specified geographic boundary. *Id.*, 6:61-64. As shown in Figure 3 below, a “wide geographic area” is divided into cells defined by latitude, longitude, and radii information. *Id.*, 7:8-18. For better efficiency, the network “split[s]” the wide area into sub regions and recursively queries the PRU's location in the closest sub region (C1) before “incrementing the radii information” to farther regions until a PRU responds. *Id.*, 6:64-7:4, 7:42-53 (requests to $C_1 \dots C_N$).



VII. PROSECUTION HISTORY OF THE '752 PATENT

The '752 Patent's file history (Ex-1004) is unremarkable. The application leading to the '752 Patent was filed on December 30, 2000. The examiner issued a non-final rejection on October 23, 2001. Ex-1004, 0107-0116. The applicant submitted an amendment and response on January 23, 2002. Ex-1004, 0264-0289. On April 2, 2002, the examiner issued a final rejection, objecting to certain informalities, but otherwise finding the pending claims allowable over the prior art. Ex-1004, 0310-0313. The examiner issued a notice of allowance on May 16, 2002. Ex-1004, 0356-0357. The '752 Patent issued on August 27, 2002.

None of the art relied upon in this petition was submitted or considered during prosecution of the '752 Patent.

VIII. LEVEL OF ORDINARY SKILL IN THE ART

A person of ordinary skill in the art at the relevant time (“POSITA”) would have had a bachelor’s degree in electrical engineering, computer engineering, computer science, or a related field, and at least two years of experience in the research, design, development, and/or testing of GPS and related location tracking techniques, or the equivalent, with additional education substituting for experience and vice versa. Ex-1002 ¶¶25-26. Mr. Andrews meets or exceeds this level of skill, and provides additional discussion of relevant technical background knowledge that a POSITA would have had at the time of invention. Ex-1002 ¶¶48-108.

IX. PRIORITY DATE

The earliest possible priority for the '752 Patent is December 30, 2000. Petitioner takes no position on the proper priority date for each claim of the '752 Patent. Assuming this earliest date, all prior art references asserted herein are prior art.

X. CLAIM CONSTRUCTION

Petitioner interprets the claims of the '752 Patent according to the *Phillips* standard. 37 C.F.R. §42.100(b). Claims 14 and 15 recite elements that use the word “means,” creating a rebuttable presumption that they are means-plus-function

elements under 35 U.S.C. §112, ¶6. For the purposes of this Petition and pursuant to 37 C.F.R. §42.104(b)(3), Petitioner’s proposed constructions for these terms are below.³ Ex-1002 ¶¶28-44. Petitioner does not currently believe that any other terms require express construction. Consolidated Trial Practice Guide (“CTPG”) 44.

A. Proposed Constructions for Proximity Alert Claims

1. “means to obtain the location of the portable mobile remote unit” (Claim 14)

Function: “to obtain the location of the portable mobile remote unit”

Structure: “an antenna 20 and a transceiver circuitry 21” (Ex-1001, 4:37-40) configured to receive signals (*id.*, 4:30-33), together with a “control unit” (*id.*, 4:40-44) programmed to use such signals to determine location (*id.*, 4:53-58), and equivalents thereof.

2. “means to obtain geographic boundary information in order to disclose a global location at the network” (Claim 14)

Function: “to obtain geographic boundary information in order to disclose a global location at the network.”

³ For each means-plus-function term below, Petitioner has identified structure in the ’752 Patent that corresponds to the recited function, including as Patent Owner appears to apply those terms in its infringement contentions. But by doing so, Petitioner does not intend to, and does not, waive any argument about the sufficiency of the identified structure in performing the claimed function.

Structure: “an antenna 20 and a transceiver circuitry 21” (Ex-1001, 4:37-40) configured to receive signals that include geographic boundary information (*id.*, 5:26-30) and to transmit location information (*id.*, 4:54-58), and equivalents thereof.

- 3. “means to provide the location of the portable mobile remote unit to the network upon determination that the portable mobile remote unit is within the geographic boundary obtained at the network” (Claim 14)**

Function: “to provide the location of the portable mobile remote unit to the network upon determination that the portable mobile remote unit is within the geographic boundary obtained at the network.”

Structure: “an antenna 20 and a transceiver circuitry 21” (Ex-1001, 4:37-40) configured to transmit location information (*id.*, 4:53-58), together with a “control unit” (*id.*, 4:43-46) programmed to determine that the unit is within the geographic boundary (*id.*, 5:38-39), and equivalents thereof.

- 4. “means to determine and report to the system upon request that, another mobile remote unit of the network has tracked the portable mobile remote over a period of time” (Claim 14)**

Function: “to determine and report to the system upon request that, another mobile remote unit of the network has tracked the portable mobile remote over a period of time.”

Structure: a control unit (*id.*, 4:13-15) programmed to: (1) receive, at intervals, the location of the “tracked” mobile unit (*id.*, 5:23-26, 5:34-38, 5:43-44, Fig. 5-step 3), (2) receive the locations of “other” mobile units, during such intervals (*id.*, 5:26-

30, 5:34-39, Fig. 5-step 4), (3) maintain a list of such “other” units within a predefined geographic boundary of the “tracked” unit for a period of time as the tracked unit and such “other” units have moved a minimum distance⁴ (*id.*, 5:12-17, 6:33-39, Fig.5-step 7, Fig. 5-step 10), together with a transmitter (*id.*, 4:15-18) configured to transmit a message identifying such “other” unit(s) (*id.*, 5:12-17, Fig. 5-step 11), and equivalents thereof. The control unit may be within the tracked mobile unit or a network control center. Ex-1001, 5:19-23, 6:23-31 (similar).

5. “means to further determine if location disclosure for the remote unit is prohibited at a specific geographic boundary before sending its location to the network” (Claim 15)

Function: “to further determine if location disclosure for the remote unit is prohibited at a specific geographic boundary before sending its location to the network.”

Structure: a control unit (*id.*, 4:43-46) programmed to (1) compare its current location to an exclusion zone (*id.*, Fig. 6-step 4); (2) if its current location is within

⁴ This construction is consistent with Patent Owner’s apparent construction from its Infringement Contentions. Ex-1027. Petitioner adopts and applies this construction for purposes of this petition, as the parties have not yet submitted claim construction contentions in district court. To the extent that the parties or Court addresses this term or others, Petitioner will submit such information for the record. 37 C.F.R. §42.100(b). Additionally, to the extent that Patent Owner or the Board adopts a construction that does not require a “minimum distance” as part of the algorithm that performs the recited function, then Claims 14 and 15 are rendered obvious by the Layson’757-Layson’213 combination without the need to rely on IllinoisLaw, as explained in further detail in the grounds below.

the exclusion zone, abort (*id.*, Fig. 6-step 5); (3) otherwise, proceed to provide its current location to the network (*id.*, Fig. 6-step 7), and equivalents thereof.

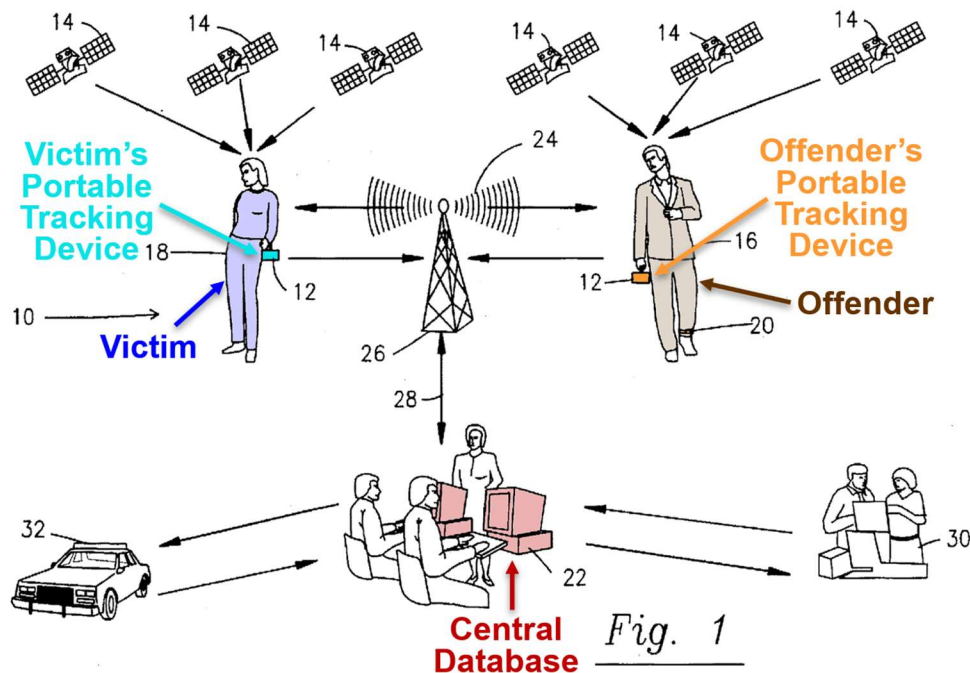
XI. BRIEF DESCRIPTION OF THE APPLIED PRIOR ART

A. Prior Art Applied to the Proximity Alert Claims

1. Layson'757 (Ex-1007)

Layson'757, titled "Portable Tracking Apparatus For Continuous Position Determination of Criminal Offenders and Victims," is U.S. Patent No. 5,731,757, issued on March 24, 1998. Ex-1002 ¶¶118-122. Layson'757 is prior art under at least pre-AIA 35 U.S.C. §102(b), based on its issue date.

Layson'757 teaches dynamic tracking of offenders and victims ("subjects"), by assigning a portable tracking device to each, as illustrated in annotated Figure 1, below. Ex-1007, 2:46-58.

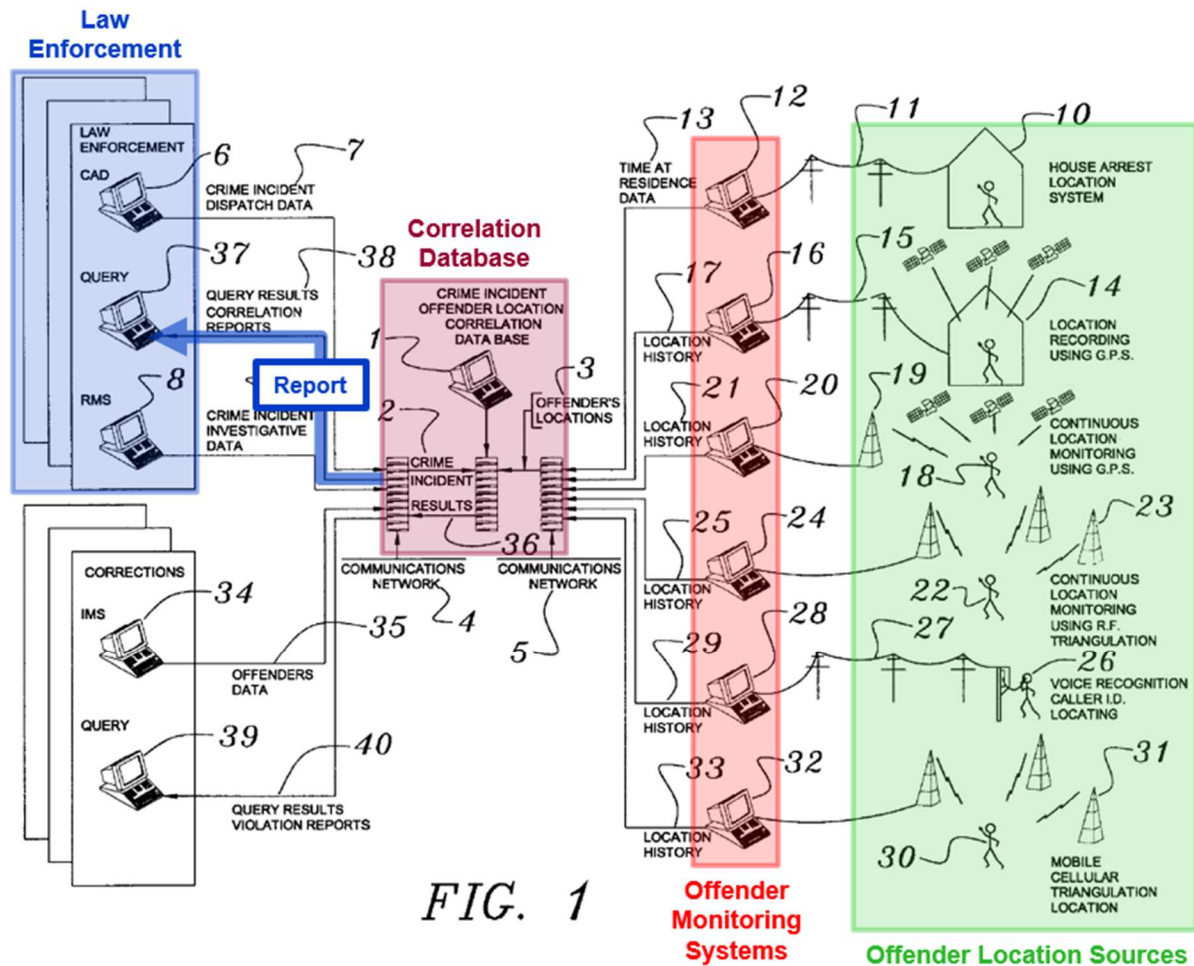


Layson’757 uses “location constraints” to define “buffer zones” around locations meant to exclude a subject (Ex-1007, 8:36-43), sent from a central database to the subjects’ tracking devices for continual processing. Ex-1007, 9:41-50. Using these location constraints, an offender tracking device can determine locally when it is in violation of a victim’s buffer zone, and notify the central database immediately of such violation. *Id.*, 9:48-50. When the central database learns of a potential “stalker-victim encounter[,]” Layson’757 also discloses querying the offender and victim portable tracking devices for their locations, as part of “data fusion processing.” *Id.*, 7:42-55.

2. Layson’213 (Ex-1008)

Layson’213, titled “System to Correlate Crime Incidents With a Subject’s Location Using Crime Incident Data and a Subject Location Recording Device,” is U.S. Patent No. 6,405,213, filed June 11, 1999, and issued June 11, 2002. Ex-1002 ¶¶123-129. Layson’213 is prior art under at least pre-AIA 35 U.S.C. §102(e), based on its filing date.

Layson’213 teaches a “crime incident/offender location correlation system,” as illustrated in annotated Figure 1, below. Ex-1008, 8:28-32.



Layson'213's system receives offender location data from one or more monitoring systems (Ex-1008, 8:28-32), and generates reports for law enforcement (*id.*, 10:12-23). For instance, Layson'213's system will generate reports of "exclusion zone violations," corresponding to instances in which an offender is located in a prohibited area. *Id.*, 23:9-38. Layson'213 explains that such exclusion zone violations are reported when the offender remains in the exclusion zone for a "loiter time," "since passing through an exclusion zone is permitted but loitering is not (i.e., pedophile driving by a school on the way to work)." *Id.*, 23:33-38.

3. Wang (Ex-1009)

Wang, titled “Mobile Unit Tracking System,” is U.S. Patent No. 5,365,451, issued November 15, 1994. Ex-1002 ¶¶130-132. Wang is prior art under at least per-AIA 35 U.S.C. §102(b), based on its issue date.

Wang teaches a tracking system in which mobile units obtain their locations using GPS, and communicate those locations to a network. Ex-1009, 3:50-53. In order to conserve “communication resources” and prevent “excessive use” of battery power (Ex-1009, 1:38-52), Wang provides the mobile units with “borders” (Ex-1009, 3:50-56), each sized according to the network’s desired location accuracy for that mobile unit (Ex-1009, 6:20-24), as illustrated in annotated Figure 1, below. *See also* Ex-1009, 3:20-21 (border 22a), 3:25-27 (border 22b).

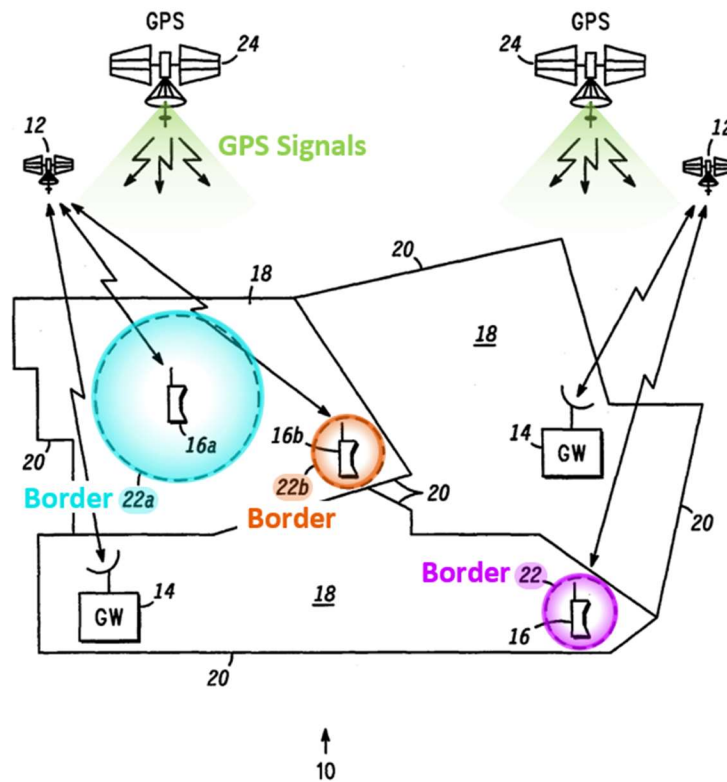


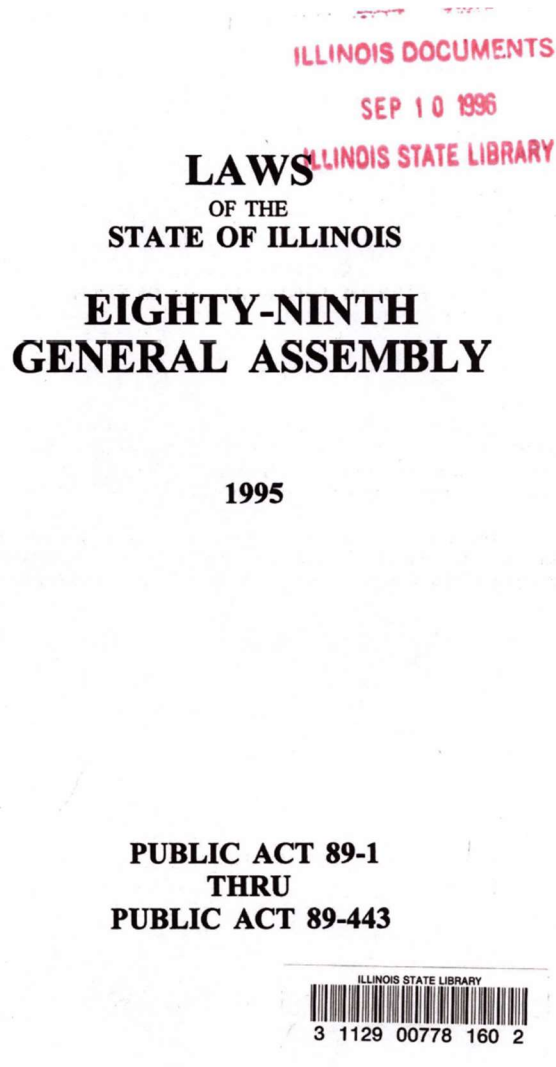
FIG. 1

When a mobile unit is located within its border, it does not need to transmit its location to the network. Ex-1009, 3:56-58. “However, when the mobile unit 16 goes outside the border 22, it sends a new location communication to network 10 and receives a new border definition in response.” Ex-1009, 3:58-61.

4. IllinoisLaw (Ex-1010)

IllinoisLaw, 720 Ill. Comp. Stat. 5/12-7.3, as amended by P.A. 89-377 (H.B. 1792), was passed in the Illinois General Assembly on May 26, 1995, and became effective on August 18, 1995. Ex-1010, 0009-0023. Ex-1002 ¶¶133-135. IllinoisLaw was publicly available at least as of September 10, 1996. For example, Public Act

89-337 appears as pages 39020-3938 of the Laws of the State of Illinois, Eighty-Ninth General Assembly (1995), Public Act 89-1 Thru Public Act 89-443, which was received and shelved in the Illinois State Library in Springfield, Illinois, on September 10, 1996, as indicated by the stamp on the front cover of the publication:



IllinoisLaw is thus prior art under at least pre-AIA 35 U.S.C. §102(b), based on when it published.

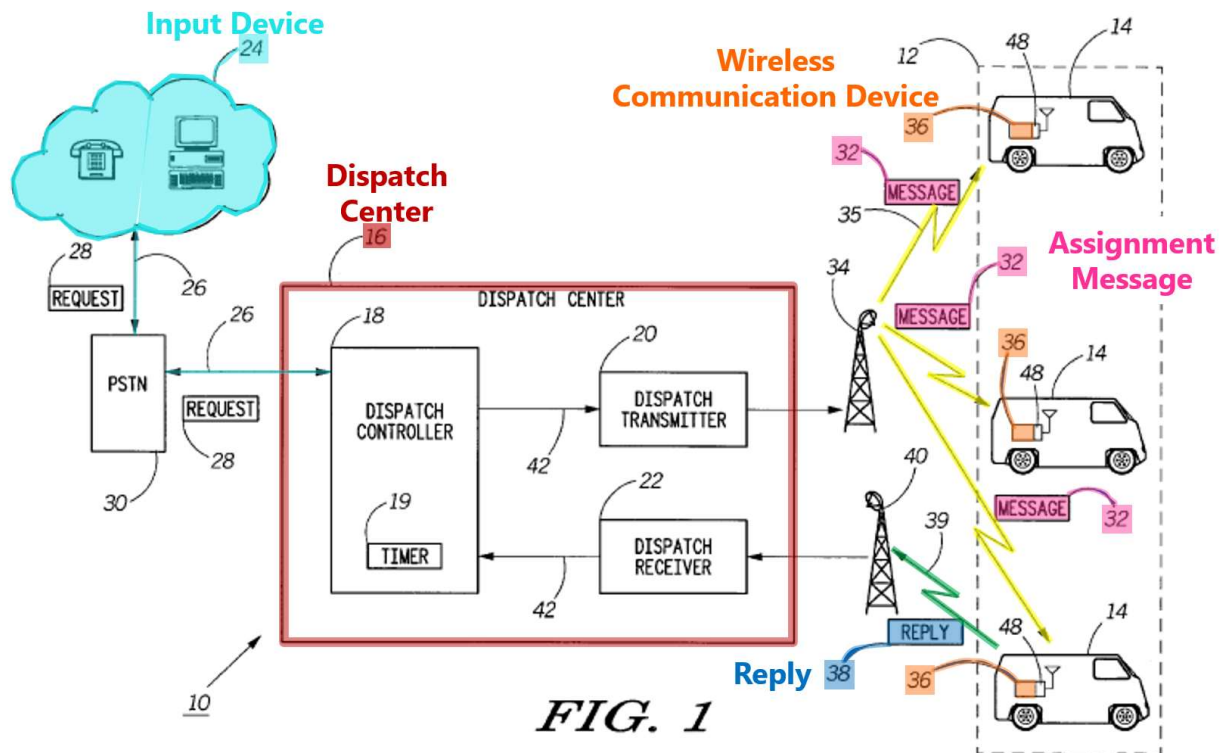
IllinoisLaw states that “[a] person commits stalking when he or she, knowingly and without lawful justification ... follows another person,” where “‘follows another person’ means (i) to move in relative proximity to a person as that person moves from place to place.” Ex-1010, 0009-0010.

B. Prior Art Applied to the Geographic Boundary Claims

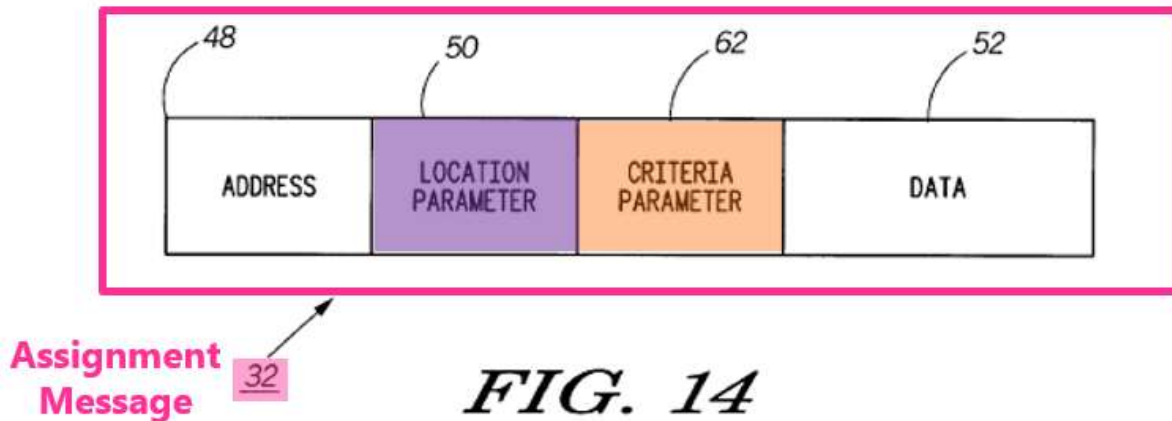
1. Suarez (Ex-1013)

Suarez, titled “Method and Apparatus for Communication Within a Vehicle Dispatch System,” is U.S. Patent No. 6,212,393, filed August 2, 1999, and issued April 3, 2001. Ex-1002 ¶¶136-140. Suarez is prior art under at least pre-AIA 35 U.S.C. §102(e), based on its filing date.

Suarez discloses a vehicle dispatch system that manages a vehicle fleet via dispatch center 16. Ex-1013, 2:66-3:10. As shown in annotated Figure 1 below, Suarez’s dispatch center 16 receives a “request for dispatch” (Ex-1013, Abstract, 3:20-25), from “message input device 24,” such as “a telephone or computer terminal” (teal). *Id.*, 3:1-10.



Dispatch center 16 encodes the request into an outbound assignment message 32 (pink). As shown in annotated Figure 14 below, the assignment message includes “location parameter 50 identifying the assignment location 66 of the request” (purple, Ex-1013, 9:57-58) and “a criteria parameter” (orange) indicating the perimeter or radius surrounding the assignment location. *Id.*, 9:65-10:1, 5:39-47.



The vehicle's wireless communication device 36 receives and processes assignment message 32. Ex-1013, 3:31-33. As shown in Figure 11 below, upon receiving assignment message 32 in step 94 (pink, *id.*, 8:60-64), the wireless communication device checks location parameter 50 in step 96 (purple, *id.*, 8:56-64) and compares location parameter 50 to the vehicle's current location 56 using the criteria parameter 62 in step 102 (green). *Id.*, 9:1-6. Criteria parameter 62 is a radius around the assignment location (included in location parameter 50). Ex-1013, 5:39-41. In one example, the criteria parameter is used for "filtering the assignment message 32" so that the assignment message will be "seen only by the vehicles... that meet the specified criteria." *Id.*, 5:14-19. If the wireless communication device's current location matches the location parameter using the criteria parameter (e.g., radius establishing a perimeter around the assignment location), then the wireless communication device will activate an alert (blue, *id.*, 9:9-13) and "transmit[] a

reply” of the affirmative match to the dispatch center. *Id.*, Abstract, 13:9-10 (Claim 1).

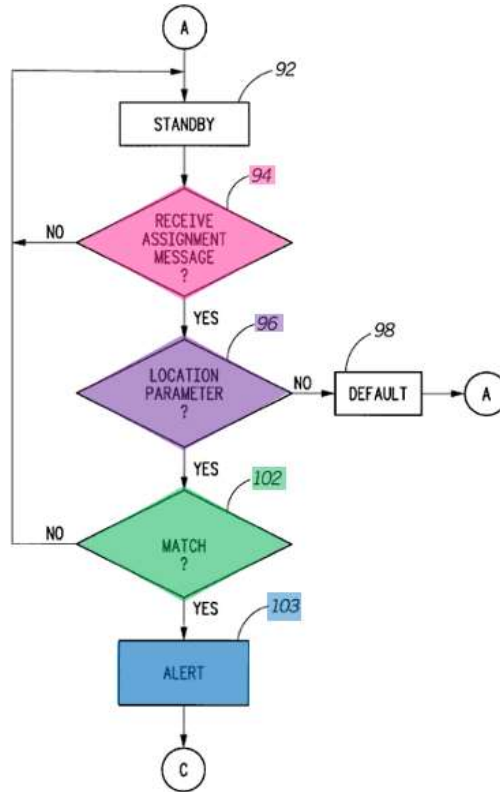


FIG. 11

2. Mintz (Ex-1014)

Mintz, titled “Method and System for Obtaining Information From a Plurality of Remote Stations,” is U.S. Patent No. 5,532,702, issued July 2, 1996. Ex-1002 ¶¶141-144. Mintz is prior art under at least pre-AIA 35 U.S.C. §102(b), based on its filing date.

Mintz discloses a system “for obtaining information from a plurality of remote stations,” such as taxis. Ex-1014, Title, 7:1-4. Mintz allows a customer to submit a

request for service to the control center that is then broadcasted as a message to all taxis in an area. *Id.*, 7:11-17. As shown in annotated Figure 3 below, Mintz's circular target area bound by boundary 35 (yellow) is "split into a plurality of concentric sectors... each having a width ΔR and being radially disposed with respect to the customer." *Id.*, 10:59-11:10. For example, if the range of interest for a taxi is 0-10 km from the customer, Mintz requests a response from taxis ranging 0-5 km from the customer before requesting responses from taxis ranging 5-10 km, such that the maximum radius (10 km) is divided into ranges. *Id.*, 9:50-59.

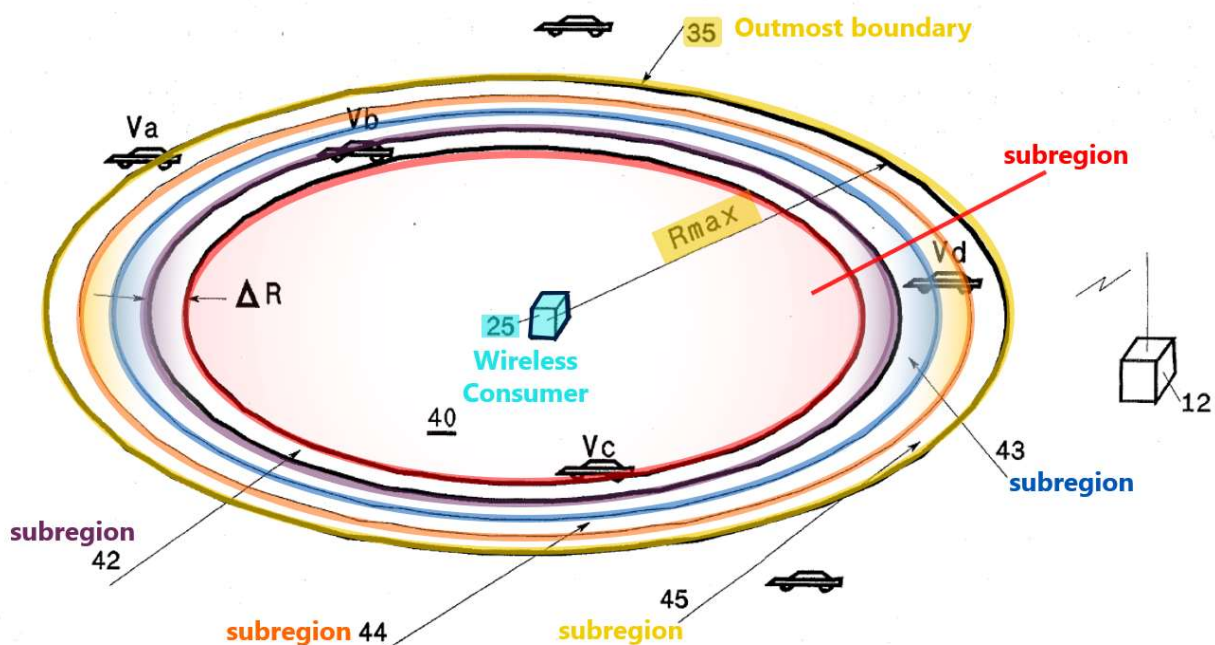


Fig 3

Upon receiving the message, each of Mintz's participating taxis determines its priority within a plurality of concentric "sectors" up to a maximum radius (R_{max} , yellow) from the customer (teal). Ex-1014, 11:4-8, 11:37-42. Taxis beyond R_{max}

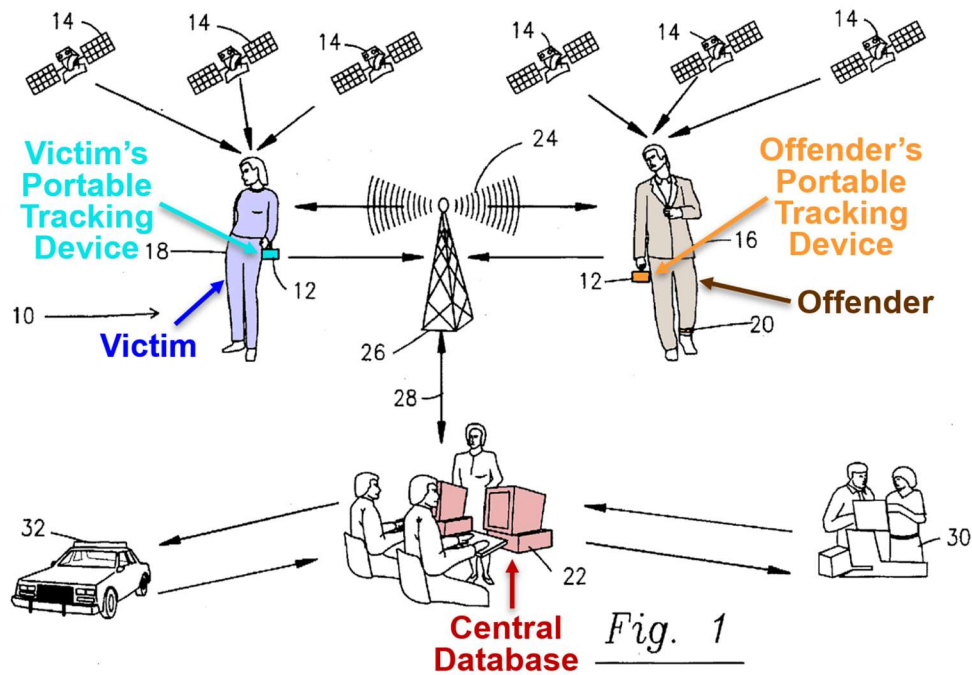
would be considered out of range. *Id.*, 10:61-62. Each taxi “transmit[s] an indication signal in the appropriate time or time/frequency slot in accordance with his respective priority.” *Id.*, 8:39-44. The control center arranges this prioritized list of indication signals in a “descending order.” *Id.*, 9:5-8.

XII. DETAILED EXPLANATION OF THE UNPATENTABILITY GROUNDS

A. Proximity Alert Claims

- 1. Ground 1: Claim 1 is rendered obvious over Layson’757 in view of Layson’213**
 - a. A POSITA would have been motivated to combine Layson’757-Layson’213 with a reasonable expectation of success**

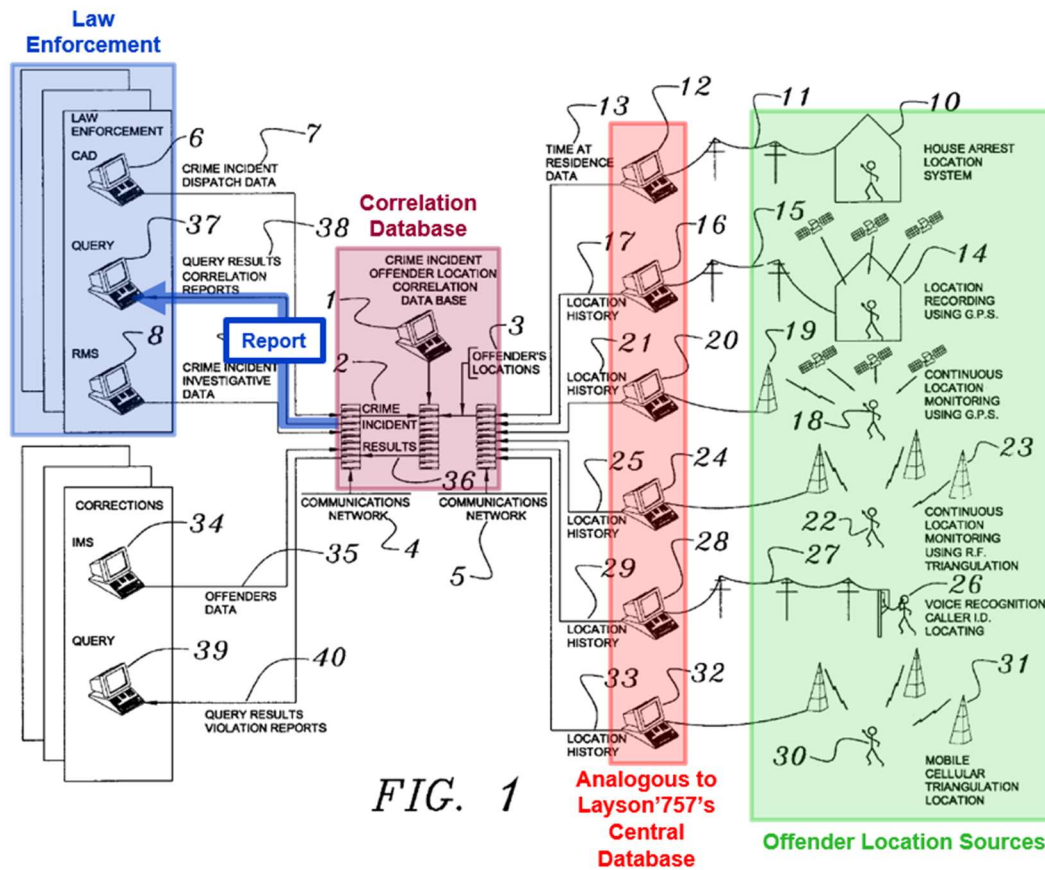
Layson’757 discloses “a portable locator or tracking apparatus ... for continuous location determination of subjects.” Ex-1007, Abstract; *see also* Ex-1002 ¶¶146-154. Specifically, Layson’757 teaches tracking offenders 16 and corresponding victims 18, by assigning a portable tracking device 12 to each, as illustrated in annotated Figure 1, below. Ex-1007, 2:46-49. These devices communicate with other networked devices, such as “central data-base system 22” (*id.*, 3:9-12), “to provide advance offender violation warning for victims beyond the confines of the victim’s home.” Ex-1007, 1:13-15.



As Layson'757 explains, each portable tracking device receives, from the central database 22, “schedule rules and location constraints,” against which it compares its location. Ex-1007, 3:9-13, 7:3-5 (same). If the location is in violation of those rules/constraints (e.g., if offender 16 is located within a “buffer area” around victim 18), the device notifies the central database of the violation. *Id.*, 9:41-50. Otherwise, the device stores its current location for upload to the central database at the next scheduled time. *Id.*, 7:5-10.

Layson'213 describes how a “correlation database” receives offender location data (Ex-1008, 8:28-32), such as provided by Layson'757, and generates “either electronic or hardcopy reports” (Ex-1008, 19:40) for “law enforcement and/or corrections/community supervision agency(s),” either automatically (Ex-1008,

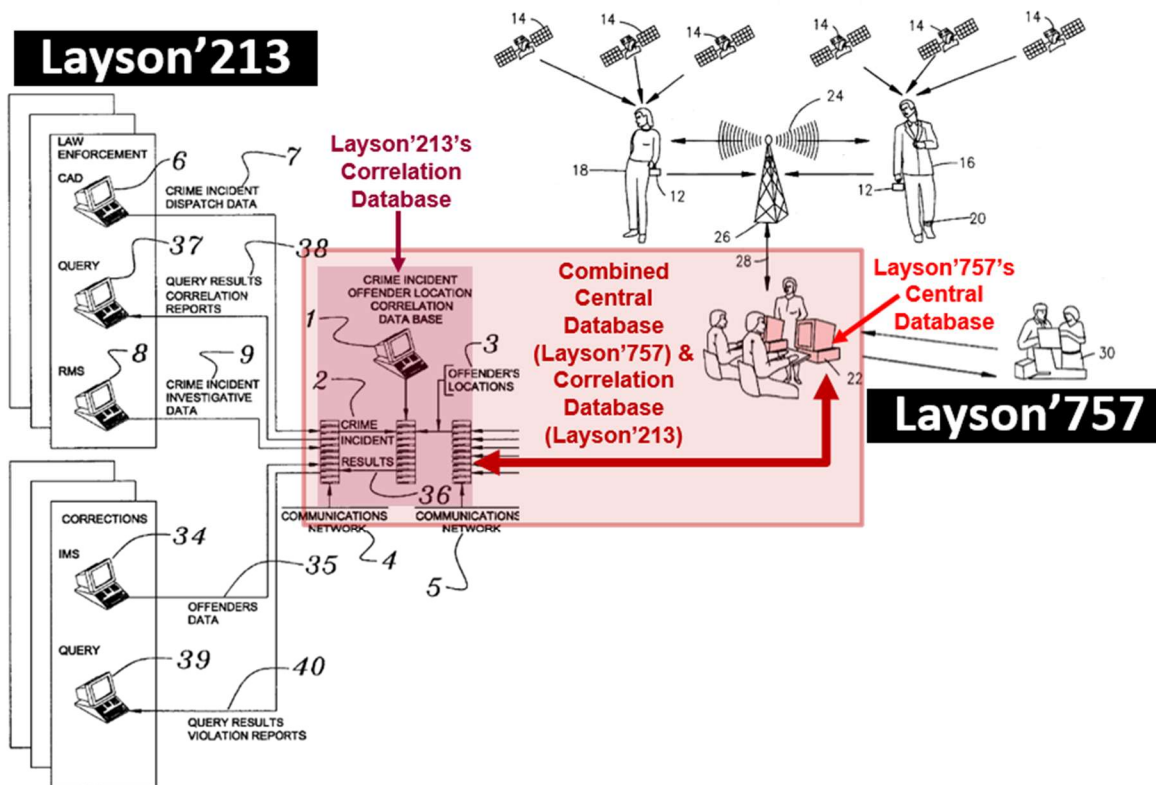
19:41-60), or in response to “structured queries” (Ex-1008, 20:28-30), as illustrated below in annotated Figure 1.



Notably, Layson’213 relates to the same subject matter—offender tracking—as Layson’757, and lists the same inventor—Hoyt M. Layson, Jr.—as Layson’757. Ex-1007, [75], 1:7-13. Ex-1002 ¶¶145-151. A POSITA seeking to implement Layson’757’s system would thus have been motivated to incorporate the teachings of Layson’213’s complementary system for implementation details on Layson’757’s system’s capability to “build reports.” Ex-1002 ¶152. In particular, a POSITA would have been motivated to implement Layson’757’s central database to work with

Layson'213's corresponding teachings of its correlation database and real-time reporting of violations to law enforcement, as illustrated below. Ex-1002 ¶153. A POSITA would have recognized that such a combination of familiar elements would have predictable results. Ex-1002 ¶154.

In the combined system, the locations of portable tracking device holders would have been generated and provided by the infrastructure depicted in Layson'757 Figure 1. The reporting and correlating actions would have been performed by the infrastructure depicted in Layson'213 Figure 1.



A POSITA would have had a reasonable expectation of success in implementing this combined system ("Layson'757-Layson'213") because both

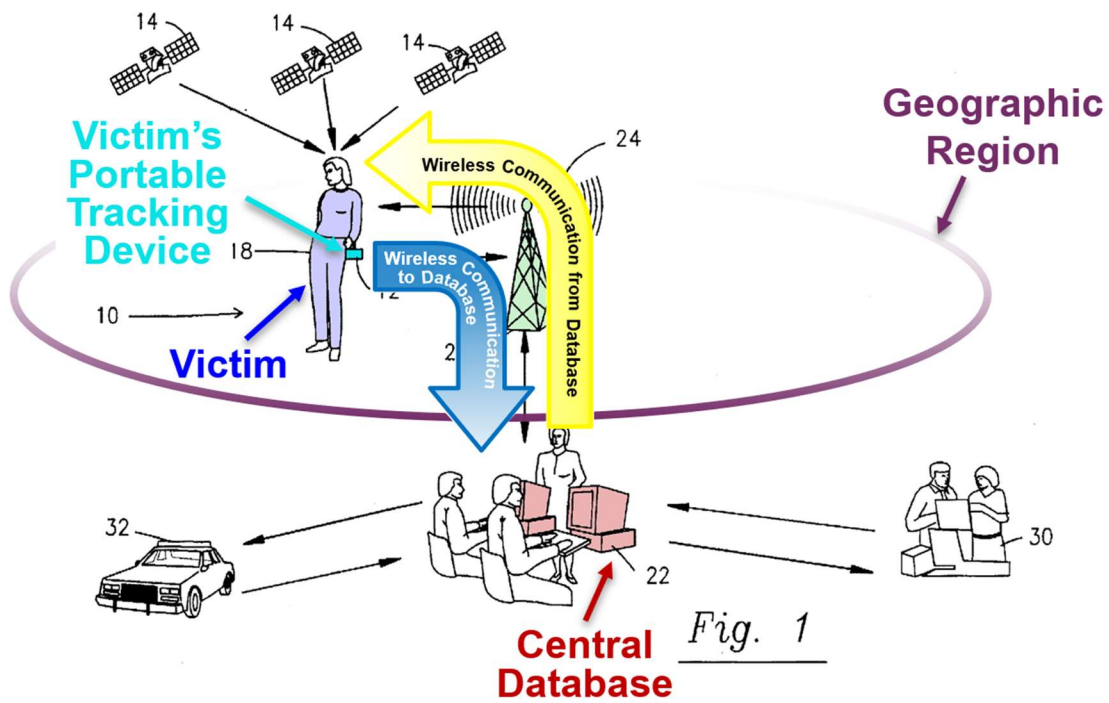
Layson'213's correlation database and Layson'757's central database are configured to operate on the same type of offender location data. Ex-1002 ¶154. Indeed, Layson'213 explicitly identifies Layson'757 for “determining the location of a person or subject, such as an offender ... outside the confines of their respective residence,” and incorporates Layson'757's disclosure by reference. Ex-1008, 2:26-30. Thus, the references themselves teach and suggest this combination.

b. Independent Claim 1

- (1) Element 1[pre]: A method for providing the location of a portable mobile remote unit in a geographic region of a wireless network to a wireless consumer requesting the location of portable mobile remote units that are maintaining close proximity to the wireless consumer in the geographic region comprising:**

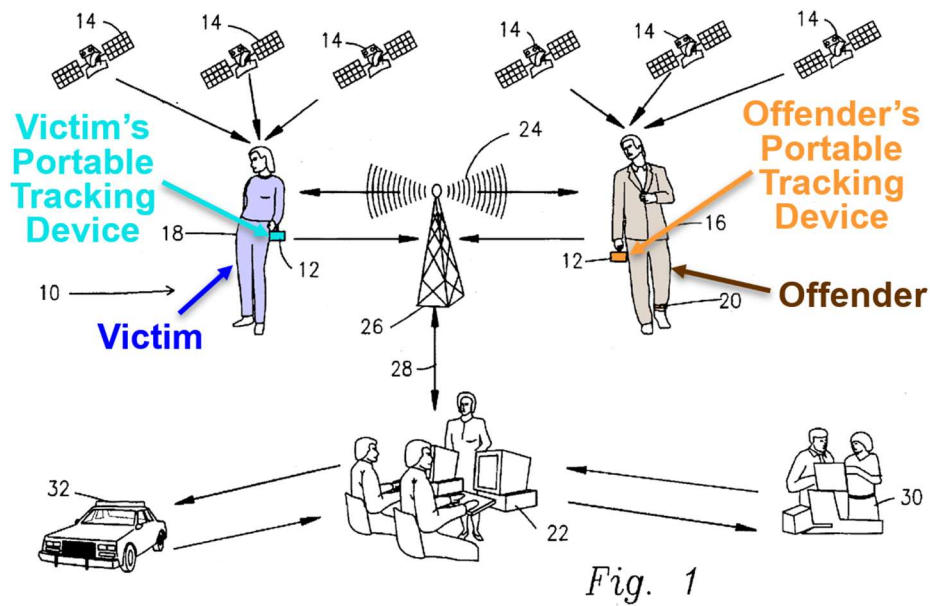
Layson'757-Layson'213 teaches the preamble of Claim 1, to the extent it is limiting. Ex-1002 ¶¶155-164.

Layson'757 teaches a victim, to which a portable tracking device is assigned, corresponding to the claimed “wireless consumer” in “a geographic region of a wireless network.” Ex-1007, 2:46-49. As illustrated in annotated/excerpted Figure 1 below, victim 18's portable tracking device 12 communicates wirelessly with “central data-base system 22” (Ex-1007, 3:9-12) via “network cell site 26” (Ex-1007, 2:65-3:2). Victim 18 is thus located in a geographic region served by network cell site 26—“a geographic region of a wireless network.” Ex-1002 ¶¶155-157.



Because the victim's portable tracking device performs wireless communications, the victim consumes wireless resources when using its device, and is thus a "wireless consumer." Ex-1002 ¶158.

Layson'757 also teaches that offender(s) 16 have portable tracking devices secured to them, as illustrated in annotated Figure 1, below. Ex-1007, 2:46-49.



Each of Layson'757's portable tracking devices is configured for wireless communication (Ex-1007, 2:65-3:13), and obtains and transmits information about its current position to the central database as the offender moves about (*id.*, 1:62-66, 7:66-8:5 (similar)). Accordingly, each of Layson'757's portable tracking devices is a "portable mobile remote unit." Ex-1002 ¶¶159-162.

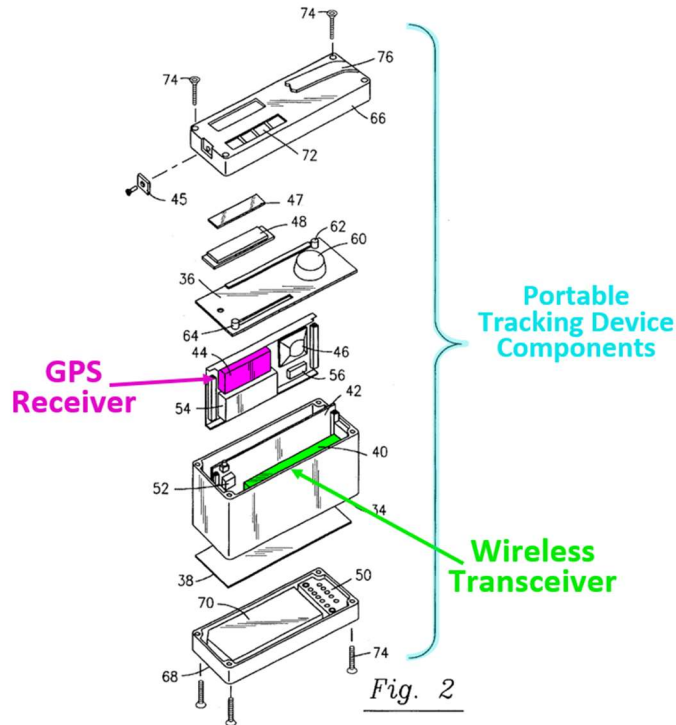
As will be discussed in subsequent limitations of Claim 1, Layson'757-Layson'213 teaches a method in which a victim (wireless consumer) receives location information from the central database about one or more offenders (all carrying portable mobile remote units), when the offender is maintaining close proximity to the victim in a geographic region of a wireless network. The central database tracks such proximately-located offenders and provides such location information to the victim at the victim's request, based on the victim's voluntary

enrollment in the monitoring system (Ex-1007, 6:19-25) and transmission of their location coordinates to the central database. Ex-1002 ¶¶163-164.

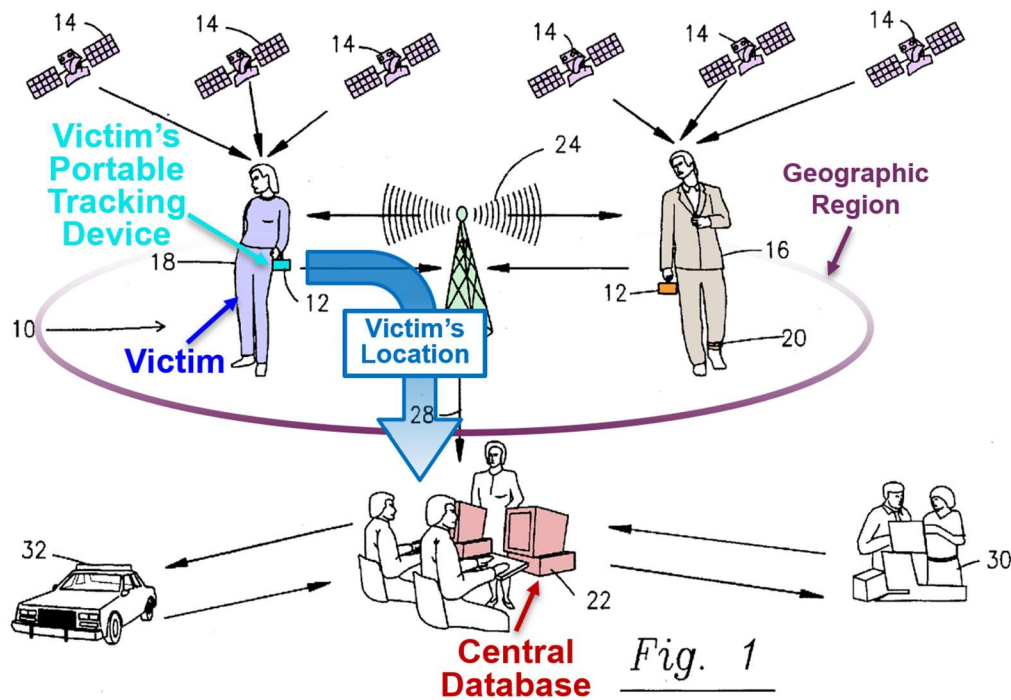
(2) Element 1[A]: i) obtaining the location of the wireless consumer at intervals over a period of time;

Layson’757-Layson’213 teaches Element 1[A] through Layson’757’s victim portable tracking device obtaining and providing its location, at intervals, to the central database. Ex-1002 ¶¶165-170.

Layson’757’s victim corresponds to the claimed wireless consumer. Layson’757 teaches obtaining the location of the victim (wireless consumer) using the portable monitoring device they carry. Ex-1002 ¶¶166-167. As Layson’757 explains, each portable tracking device includes “GPS receiver 44,” shown in annotated Figure 2, below, that “receives communication signals from a global position satellite (GPS) 14 to determine the location of the subject (offender 16 or victim 18).” Ex-1007, 2:46-49.



Each of Layson’757’s portable tracking devices provides its location to the network by transmitting the location to the central database, as annotated in Figure 1, below, either at “deterministic reporting intervals” (Ex-1007, 7:40-42) or on demand. *See, e.g.*, Ex-1007, 3:18-23 (“At any time the central data-base system 22 may ... query the portable tracking device 12 to ascertain ... the location of the offender 16 or victim 18.”); 7:18-20 (similar). These reporting intervals correspond to the claimed “intervals over a period of time.” Ex-1002 ¶¶168-170. As explained below in limitation 1[D], “a period of time” in the context of Layson’757-Layson’213 would correspond to at least two or more intervals necessary to constitute the offender loitering as opposed to passing through (i.e., “a period of time” is the “loiter time” for the offender).



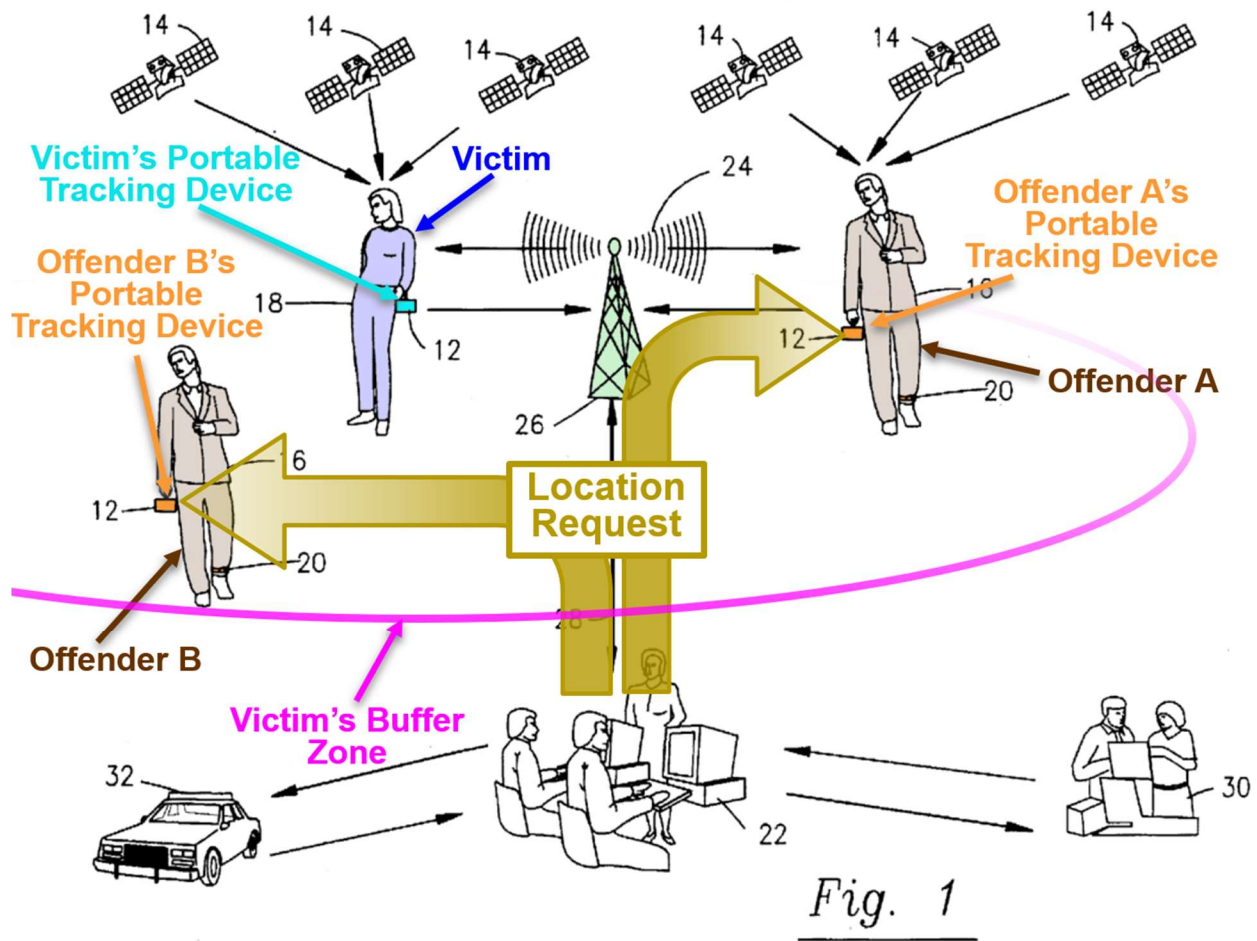
- (3) **Element 1[B]: ii) requesting at each interval, at the network, that all mobile remote units within close proximity of the wireless consumer disclose their location to the network;**

Layson'757-Layson'213 teaches Element 1[B]. Layson'757's central database performs the claimed "requesting at each interval," by transmitting updated location constraints to the offender portable devices, reflecting the victim's received location at each interval. Ex-1002 ¶¶172-188. Such requests are sent on behalf of the victim, because the victim seeks to be notified of nearby offenders. *See* Element 1[pre].

Each of Layson'757's offender portable tracking devices corresponds to a claimed "mobile remote unit." *See* Element 1[Pre]. Layson'757-Layson'213's system may include multiple offenders, and each offender may be associated with

multiple corresponding victims. Ex-1007, 1:45-48; *see also id.*, 3:3-6, 3:25-28; Ex-1008, FIG. 9A (“1 to N offenders”). A victim similarly could be associated with more than one offender (e.g., a celebrity victim with multiple stalker offenders), with Layson’757’s system tracking all of those offenders using their offender portable tracking devices (“all mobile remote units”). Ex-1002 ¶¶172-173. (citing Ex-1011, 20:1-4).

Layson’757 teaches that at each time interval, in response to receiving the victim’s location, the central location requests that all offender portable tracking devices associated with the victim and located inside the victim’s buffer zone (“within close proximity”) send their location to the database. Ex-1002 ¶174. Where the associated offender devices are the only mobile units in close proximity to the victim device, they correspond to “all mobile units.” *Id.* For example, as illustrated in modified/annotated Figure 1 below, where the victim is associated with two offenders, the central location will request that both disclose their location.



Ex-1007, Fig. 1 (modified to include two offenders)

Transmitting such requests is performed by sending updated “location constraints” (the claimed “request[s]”) to each offender’s portable tracking device. Ex-1007, 8:36-39 (“[T]he central data-base system ... download[s] schedule rules and location constraints to the portable tracking device.”). These location constraints identify “locations that are meant to ... exclude a subject [e.g., the offender]”—such as the victim’s current location—together with “buffer zones” around those locations. Ex-1007, 8:36-43, 9:41-43. “[I]n the case of a moving victim, [the]

location constraints can be dynamic”—i.e., the buffer zones are updated based on the current location of the victim, as reported to the central database by the victim’s portable tracking device. *Id.*, 9:42-44; Ex-1002 ¶175.

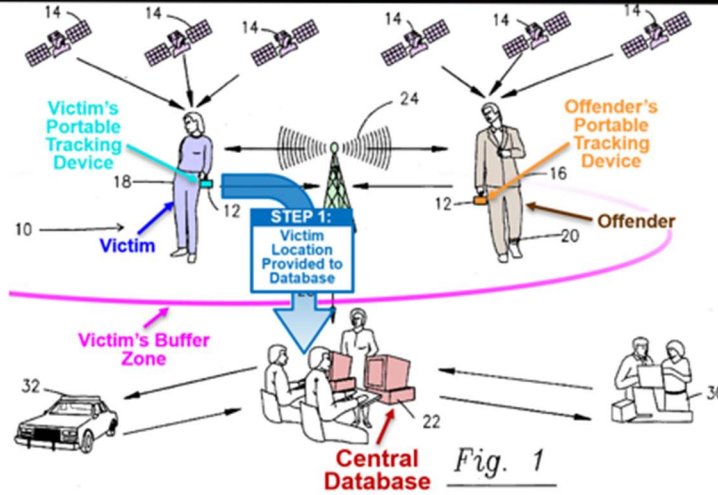
These dynamically-updated location constraints “are sent from the central data-base system to the [offender] portable tracking apparatus where they are continuously processed,” enabling the offender device to notify the central database “immediately when a violation occurs.” Ex-1007, 9:45-50. To accurately identify such buffer zone violations, the central database would provide updated location constraints to the offender device each time it received an updated location from the victim’s portable tracking device (“at each interval”). Ex-1002 ¶176. Doing so would achieve Layson’757’s goal of enabling “real-time event processing....” Ex-1007, 1:38-61; Ex-1002 ¶177.

The central database’s transmission of the buffer zone location constraints to offender devices corresponds to a “request[]” for the offender devices “to disclose their location” to the central database if they are within the victim’s buffer zone (i.e., within close proximity of the wireless consumer). Ex-1002 ¶178. In particular, as explained above, Layson’757’s offender portable tracking device “continuously processe[s]” these dynamically-updated location constraints and provides immediate notifications when the offender tracking device (portable mobile remote unit) enters within the “buffer zone” around the victim’s portable device (“within close

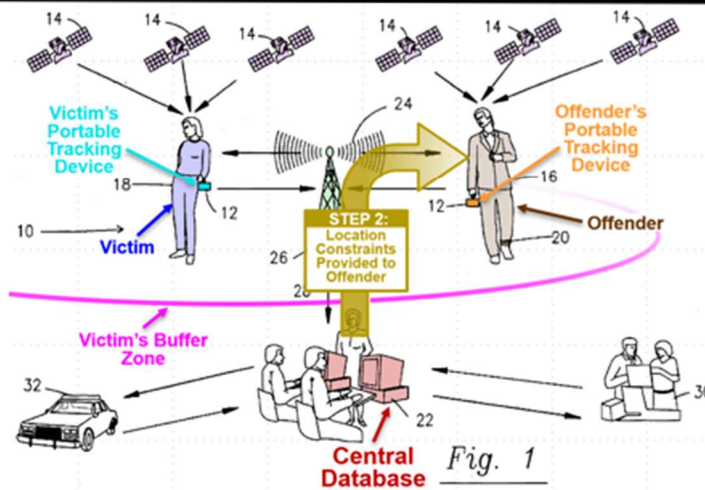
proximity to the wireless consumer”). Ex-1007, 9:45-50, Cl. 16. This is illustrated using annotated Figure 1, below. In step 1, the central database receives the victim’s current location; in step 2, the central database uses this location to update the offender’s location constraints (which include a buffer region around the victim’s location) and transmits these updated location constraints to the offender; and in step 3, the offender device compares its location to the updated location constraints, determines it is in violation of the victim’s buffer, and reports this violation to the central database. Ex-1002 ¶¶180-181.

Offender Inside Victim's Buffer Zone

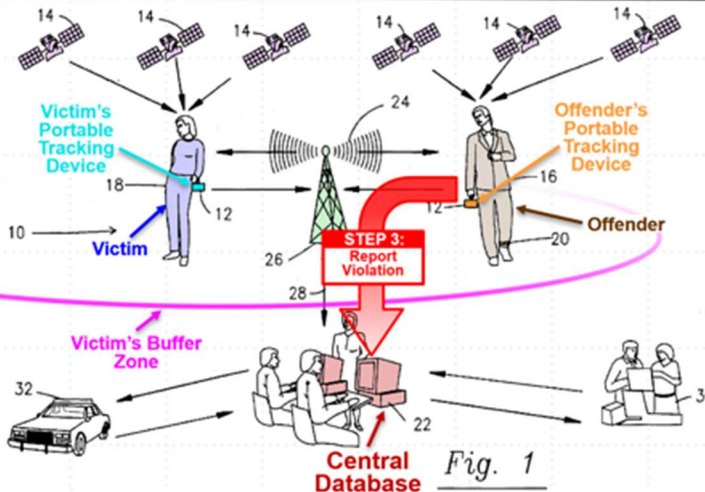
STEP 1: Victim Location
Provided to Database



STEP 2: Location Constraints
Provided to Offender

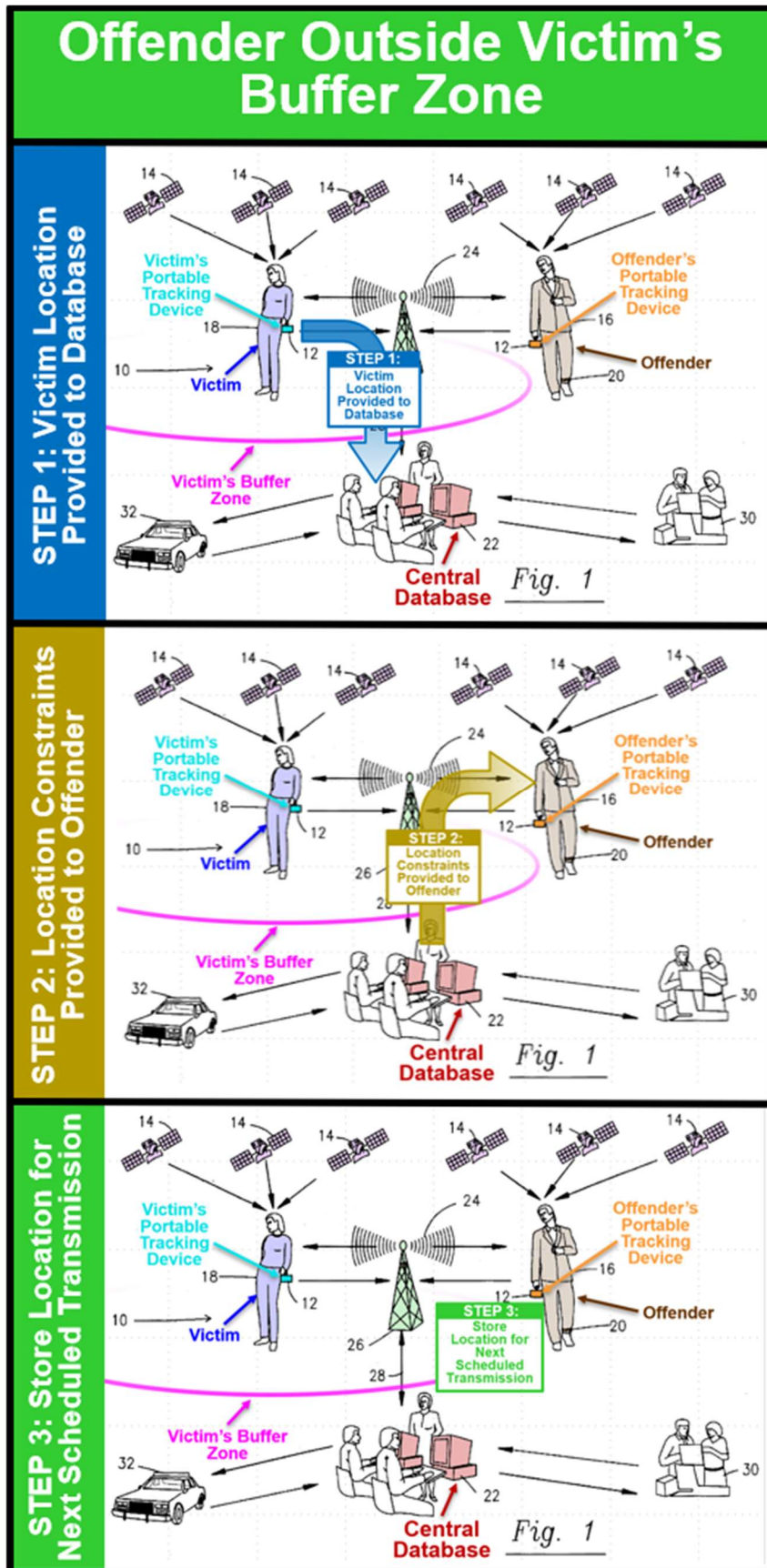


STEP 3: Report Violation



Notifying the central database of the violation would have entailed the offender's portable tracking device providing its current location to the central database (Ex-1007, 7:66-8:1), for potential inclusion in a "notification response to corrections, law enforcement and victims" (Ex-1007, 9:50-54). Ex-1002 ¶¶179-183.

On the other hand, if the offender's "current location complies with the ... location constraints" it is stored by the offender device for upload to the central database at "the next scheduled time," as illustrated with annotated Figure 1, below. Ex-1007, 7:14-19. The below images are similar to the ones above, except that, in response to determining that its location is not in violation of the victim's buffer, the offender's device does not report its location to the central database. Ex-1002 ¶¶184-185.



Thus, in Layson’757’s system, the central database’s transmission of updated location constraints causes an offender’s portable tracking device either to transmit its location to the central database in response to identifying a violation, or store its location for later batch transmission. Where the only mobile units in close proximity to the victim device are corresponding offender devices, each transmission of updated location constraints by the central database thus corresponds to a request, at the network (central database), that all mobile remote units (offender portable tracking devices) within close proximity (in violation of the victim’s buffer zone) disclose their location to the network. Ex-1002 ¶186.

Layson’757 also discloses querying the portable tracking devices for their locations as part of “data fusion processing” (Ex-1007, 7:42-55), when the database “analyzes developing situations such as a stalker-victim encounters” (*id.*, 8:50-56)—i.e., when a stalker is located within a victim’s buffer zone. Ex-1002 ¶187. Thus, when the central database has been alerted to one or more violations (i.e., when one or more stalkers are “within close proximity” to the victim), the central database would query the victim and offender devices for their locations at the same time intervals (“request[] at each time interval” that the devices “disclose their location”), in order to accurately analyze the offenders’ locations relative to the victim. *Id.*

(4) Element 1[C]: iii) maintaining a list of mobile remote units that provided their location at each interval after the request of (ii);

Layson'757 teaches maintaining a list of offender devices at the central database. Ex-1002 ¶¶188-190. As illustrated in annotated Figure 7A, below, Layson'757 teaches both a “list of subjects” and storing (i.e., maintaining) the locations received from the portable tracking devices of those subjects. Ex-1007, Fig. 7A, 7:66-8:1 (similar).

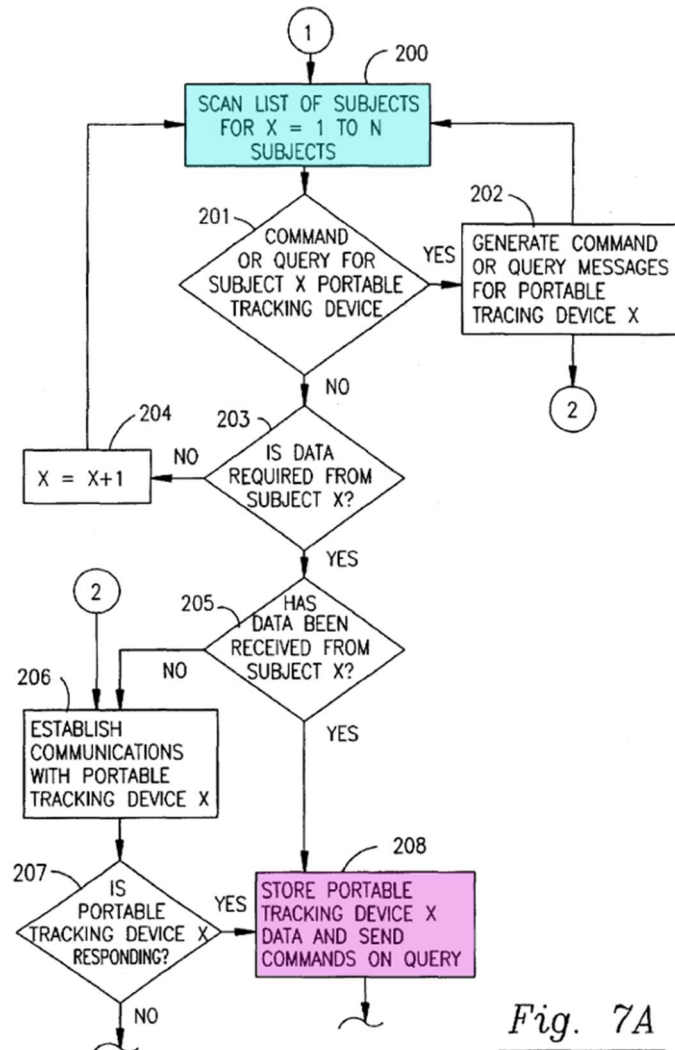


Fig. 7A

In the combined Layson’757-Layson’213 system, these stored locations would be provided to Layson’213’s correlation database for correlation and reporting purposes. *See* §XII.A.1.a. Layson’213 teaches that its correlation database may receive “exclusion zone violations reported by [an] offender location monitoring system”—i.e., Layson’757’s central database—in real-time (Ex-1008, 18:35-40) for continuous processing to generate “a table report” of such violations. Ex-1008, 19:41-52. To provide evidence for use by “law enforcement” (Ex-1008, 19:50-52), such a report would at least include, for each time interval, the identities and locations of any offenders in violation of the victim’s buffer/exclusion zone. Ex-1008, 23:9-21 (data characterizing “exclusion zone violations”); Ex-1002 ¶190. Such information would be stored (i.e., maintained) by Layson’757-Layson’213’s databases (Ex-1008, 9:45-50) for later use in generating such reports. One of a finite number of ways of storing such information would be as a list. *Id.*

- (5) **Element 1[D]: iv) from the list of (iii), forwarding the location of at least a mobile remote unit to the mobile consumer upon determination that the remote unit maintained close proximity to the mobile consumer over the period of time of (i).**

Layson’757-Layson’213 renders obvious Element 1[D]. Ex-1002 ¶¶191-199.

Determining that the remote unit maintained close proximity:

Layson’757 teaches determining that a mobile remote unit is in close proximity to the mobile consumer, by determining that the offender device (“mobile remote unit”)

is within the victim's buffer zone (in "close proximity to the mobile consumer"). *See* Element 1[B]. Layson'757-Layson'213 further teaches determining that the offender device maintained that close proximity "over the period of time." As Layson'757 explains, the central database system may notify or report a violation of a victim's buffer zone to "corrections, law enforcement and victims based on the nature of the offender's violation," according to "guidelines in the schedule rules for each offender." Ex-1007, 9:50-54; *see also* Ex-1007, 3:3-8.

A POSITA would have been motivated to turn to Layson'213 for specific guidelines a tracking system would use to determine whether or not to issue notifications to law enforcement and victims. Ex-1002 ¶¶193-196. Layson'213 teaches determining whether an offender has violated an "exclusion zone" (e.g., a location from which the offender is banned according to a court order, such as Layson'757's "buffer zone") based on the offender's presence in that zone for at least a "loiter time," in contrast to merely passing through (e.g., a "pedophile driving by a school on the way to work"). Ex-1008, 23:33-36. Layson'213's use of a loiter time helps to ensure that the offender's presence within the exclusion zone is reported as a violation when it is intentional, as opposed to temporary and inadvertent. Ex-1002 ¶194.

"Over the period of time": As explained for Element 1[A] ("intervals over a period of time"), Layson'213's loiter time would have been chosen to cover two

or more intervals over which the victim's and offender's location is reported, to ensure the close proximity time is sufficient to qualify as loitering, as opposed to transitory and inadvertent violations, and therefore identify intentional violations of the victim's buffer zone. Ex-1002 ¶197. Accordingly, Layson'213's loiter time would correspond to a "period of time."

Forwarding the location: Layson'757-Layson'213 further teaches forwarding the location of the offender's portable tracking device to the victim (through their portable monitoring device), in response to determining that the offender maintained close proximity to the victim over the period of time. In particular, a POSITA implementing Layson'757's system would have been motivated to include Layson'213's loiter time as part of Layson'757's "guidelines" for reporting a violation described above, such that Layson'757's central database only sends reports to law enforcement/victims that the offender's tracking device is in violation of the buffer/exclusion zone around the victim's tracking device after determining that the offender device has maintained close proximity to the victim's tracking device for a duration of a loitering time period. Ex-1002 ¶198. A POSITA would have been motivated to do so because it would both waste law enforcement resources and place unnecessary stress on victims to send out notifications for temporary, inadvertent occurrences, such as when an offender is temporarily passing

through a buffer/exclusion zone while driving on their way to work, as taught by Layson'213 (Ex-1008, 23:33-36). *Id.*

The notifications/reports to law enforcement and victims would have included the location of the offender's portable tracking device. Ex-1002 ¶199. Layson'757 explains that the notifications to victims may take the form of "[d]ata and voice messages." Ex-1007, 3:13-17. A POSITA would have understood that Layson'757's system provides notifications of buffer zone violations to victims to help those victims escape the threat posed by an approaching offender (Ex-1007, 1:12-14), and that a victim would need knowledge of the offender's location to do so (or otherwise risk the victim fleeing in the direction of the offender). Ex-1002 ¶199 (citing Ex-1011, 20:16-29). Accordingly, a POSITA would have been motivated to provide the victim with the location of an offender in violation of the victim's buffer zone, through a data or voice message sent to the victim's portable monitoring device. *Id.* And, because, as explained for Element 1[C], Layson'213's table report would include the locations of the offender devices that were in violation of the victim's buffer zone over time, a POSITA would have been motivated to use the information in this table report both to make its determination that the offender device maintained close proximity with the victim over the period of time, and to obtain the offender device's location that is then forwarded to the victim. *Id.*

2. **Ground 2: Claim 4 is rendered obvious by Layson’757-Layson’213 in view of Wang**
 - a. **A POSITA would have been motivated to combine Layson’757-Layson’213 with Wang with a reasonable expectation of success**

In Layson’757’s tracking system, each portable tracking device is configured to compare its position to “location constraints [] sent from the central data-base system,” and alert the central database in response to any violations of those constraints. Ex-1007, 9:45-50. Layson’757 explains that the constraints “define locations and a distance radius” around a location, and correspond to areas where the subject (victim or offender) “is allowed or not allowed.” Ex-1007, 9:37-43. The location constraints may be static or dynamic (e.g., a buffer region around a moving victim). Ex-1007, 9:35-41.

Wang similarly teaches a “tracking system” (Ex-1009, 1:2) in which each mobile unit can operate within defined “borders” provided by the network, as illustrated in annotated Figure 1. Ex-1009, 3:50-56.

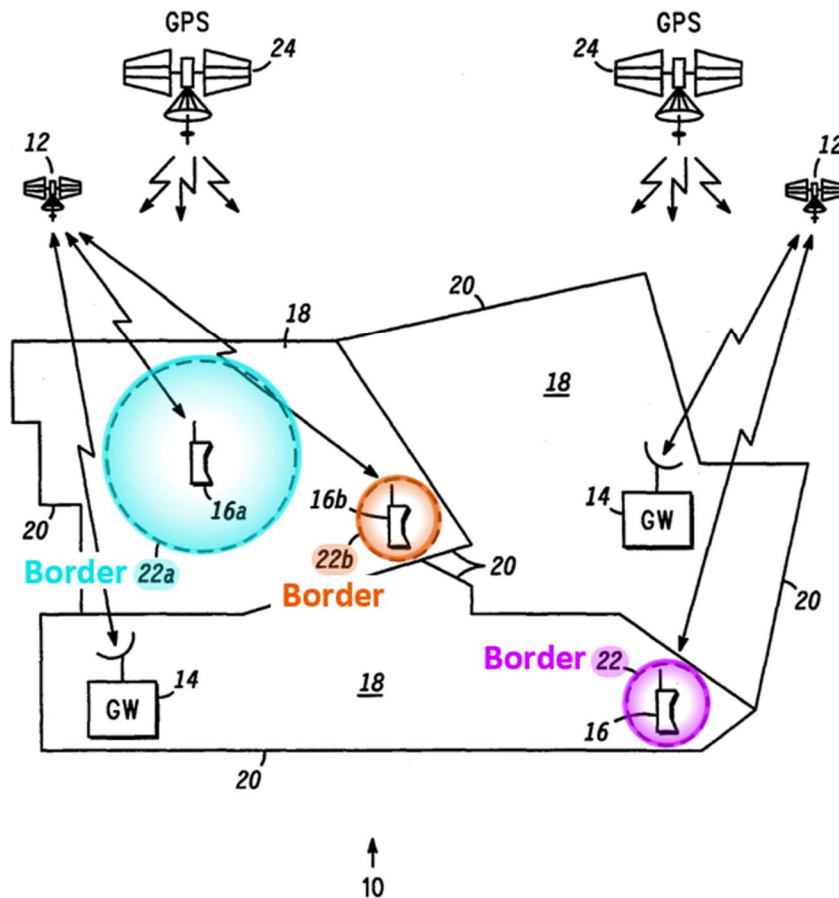


FIG. 1

When a mobile unit is located anywhere within its permissible border, it does not need to transmit its location to the network. Ex-1009, 3:56-58. In this manner, the borders are used to reduce the consumption of “communication resources” and battery power that would otherwise be expended through repeated location transmissions. Ex-1009, 1:38-52. “However, when the mobile unit 16 goes outside the border 22, it sends a new location communication to network 10” and is provided with a new border. Ex-1009, 5:58-61. Wang’s borders may take any shape (Ex-1009, 6:20-24) and are sized based on the network’s desired accuracy level for the

associated mobile unit's location (Ex-1009, 3:64-4:3). For instance, Wang's network need only know that mobile unit 16a is located *somewhere* within its border 22a, rather than its precise location. *Id.* In this manner, Wang teaches that its system may conserve resources. Ex-1009, 1:44-59. *See also*, Ex-1002 ¶¶200-209.

A POSITA seeking to implement Layson'757's location constraints would have recognized that, where an offender's location constraints include both static permitted regions (e.g., the offender's home or workplace) and dynamic prohibited regions (e.g., buffer region around a victim), the permitted and prohibited regions may sometimes overlap (e.g., a victim driving by an offender's home), and that notifying the authorities of the offender's presence in such an overlapping area would correspond to a false alarm. Ex-1002 ¶206 (citing Ex-1008, 23:33-38). To avoid such false alarms,⁵ a POSITA would have been motivated to modify Layson'757-Layson'213, based on Wang's teachings, such that Layson'757's portable monitoring devices do not provide their locations to the central database when located within a permitted region (analogous to the region defined by Wang's border), as specified in the offender's location constraints. Ex-1002 ¶205.

At the same time, a POSITA also would have recognized that an offender's location constraints will include static regions associated with any corresponding

⁵ The Layson'757-Layson'213 combination already addresses another type of false alarms, through Layson'213's "loiter time." Ex-1008, 23:33-36.

victims (e.g., the victim's home or workplace), such that the offender's portable monitoring device will report violations of such locations (Ex-1007, 8:29-43), regardless of the victim's presence at those locations. Ex-1002 ¶¶207-209. Thus, providing those static locations to the victim's portable tracking device as permitted regions, within which the victim's device does not need to report its location, would both conserve communication resources and help to protect the victim's privacy. Ex-1002 ¶209 (citing Ex-1011, 20:35-44).

b. Claim 4

(1) Element 4[pre]: A method according to claim 1 utilized to further limit the provision of remote unit location to the network comprising:

Layson'757-Layson'213-Wang teaches the preamble of Claim 4, to the extent it is limiting. As explained in §XII.A.2.a, Layson'757's offender portable tracking devices, as modified by Wang's teachings, will not transmit their positions to the central database when they are located in Layson'757's permitted areas (specified by their location constraints), even if also located in an overlapping victim buffer region, to preserve resources and prevent false alarms. Ex-1002 ¶210.

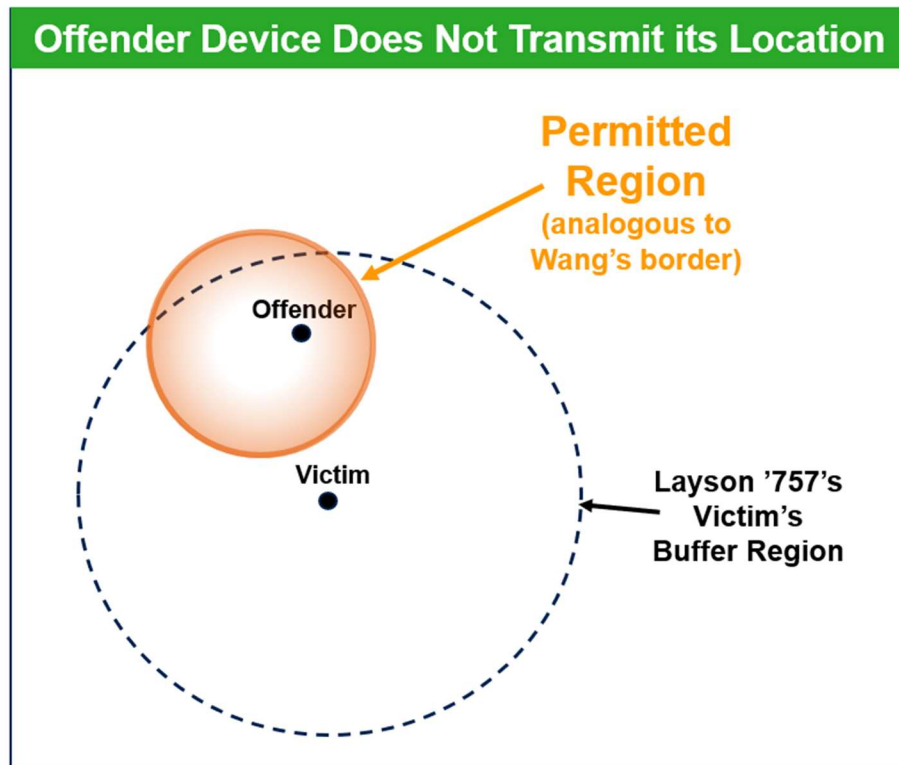
(2) Element 4[A]: obtaining at the network, exclusion region information within which the remote unit should not provide its location [to] the network;

The permitted areas in Layson'757's location constraints (e.g., the offender's home or workplace) correspond to the claimed "exclusion region information." In

the Layson'757-Layson'213-Wang system, such permitted areas are treated analogously to Wang's "borders" (Ex-1009, 3:50-56), within which the device does not need to transmit its location to the network (Ex-1009, 3:56-58). Ex-1002 ¶¶211-218.

Layson'757's system includes "location constraints" for each offender device that identify areas (each specified by a location and a distance radius around the location) where the offender carrying the device "is allowed or not allowed." Ex-1007, 9:37-43. Because these location constraints are "sent from the central database system" to the portable tracking device, they must first be "obtain[ed] at the network" by the central database. Ex-1007, 9:45-50.

Wang teaches the use of "borders" provided to the mobile units by the network. Ex-1009, 3:50-56. When a mobile unit is located within its border, it does not need to transmit its location to the network, as illustrated below. Ex-1009, 3:56-58.

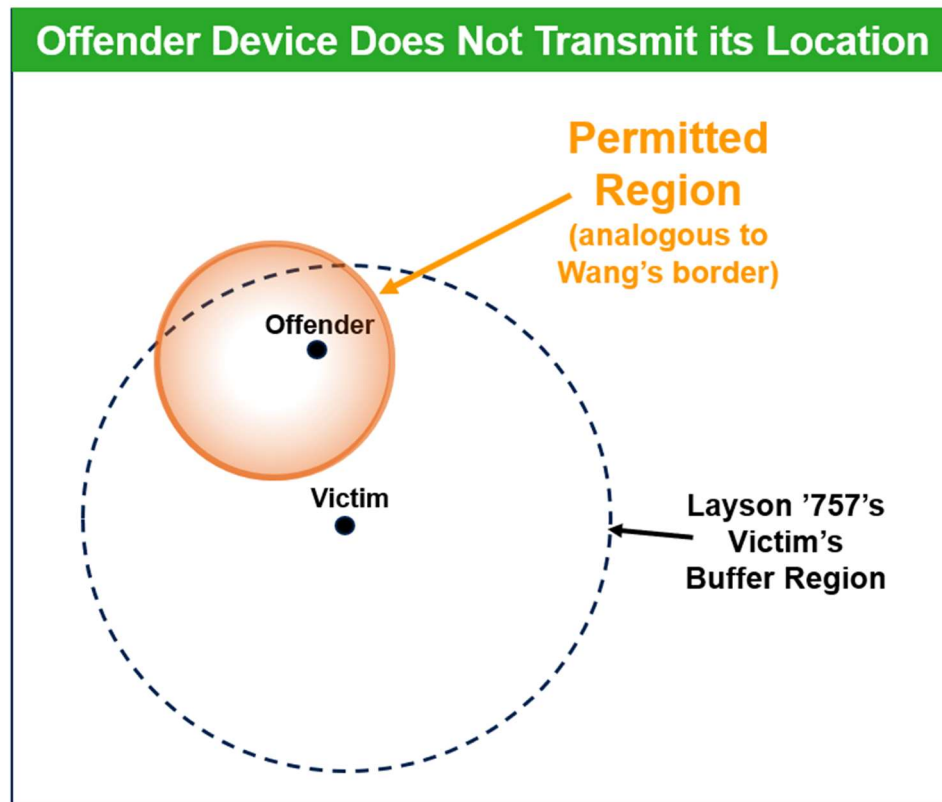


As explained in §XII.A.2.a, a POSITA would have been motivated to modify each of Layson'757's offender devices (each a "remote unit"), based on Wang's teachings, to not transmit its location to the central database ("network") when located within a permitted region identified in the offender's location constraints, such as the offender's home (analogous to Wang's border), because doing so would conserve network communication bandwidth and prevent false positives. Ex-1002 ¶¶214-217.

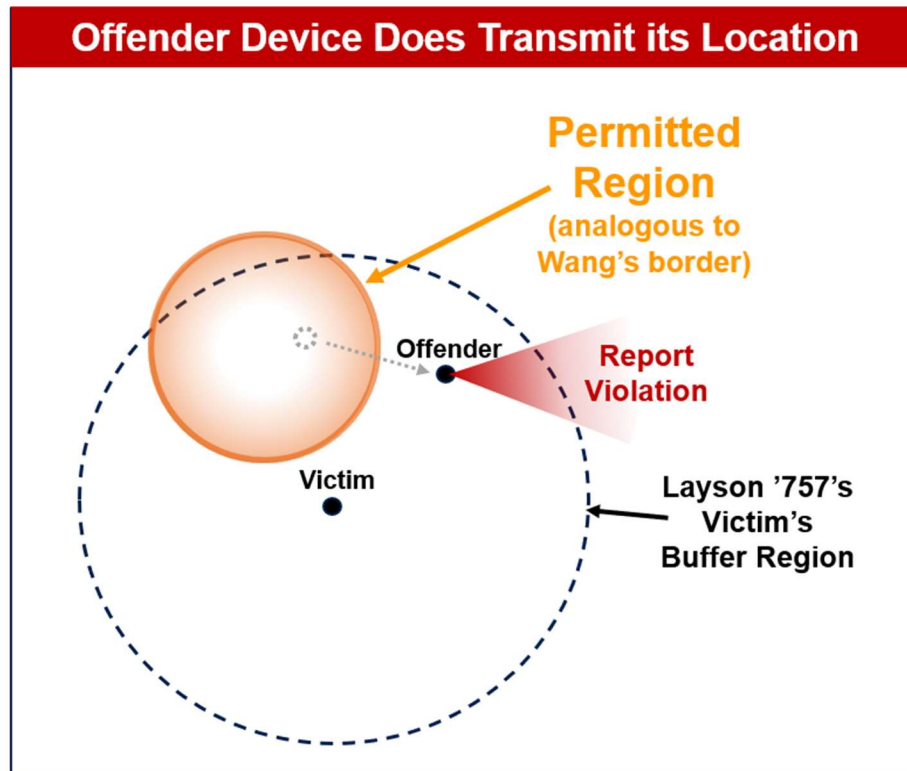
The permitted regions of Layson'757's location constraints (e.g., the offender's home or workplace) thus correspond to the claimed "exclusion regions" in the combined Layson'757-Layson'213-Wang system.

(3) Element 4[B]: determining that the remote unit is not in the exclusion region before providing the location of the remote unit to the network.

As explained in §XII.A.2.a, a POSITA would have been motivated to modify each of Layson'757's portable devices, based on Wang, such that each tracking device does not transmit its location to the central database when located within a permitted region of Layson'757's location constraints (analogous to Wang's border), even if also located in a prohibited region (i.e., victim's buffer zone), as illustrated below. Ex-1002 ¶¶219-221.



Accordingly, such a device would first determine that it is not located in a permitted region identified in its location constraints (claimed “exclusion region”) (Ex-1009, Fig. 6-step 78) before providing its location to the central database, as illustrated below. Ex-1002 ¶221.



3. **Ground 3: Claims 9 and 14 are rendered obvious by Layson'757-Layson'213 in view of IllinoisLaw**
 - a. **A POSITA would have been motivated to combine Layson'757-Layson'213 with IllinoisLaw with a reasonable expectation of success**

As explained in §XII.A.1.a, in the combined Layson'757-Layson'213 system, the reporting and correlating actions of Layson'213's correlation database (Ex-1008, 19:41-20:27) would be performed on the locations of Layson'757's portable tracking

devices received at Layson'757's central location (Ex-1007, 7:9-19). Ex-1002 ¶¶222-235.

Layson'213 teaches providing the correlation database with multiple crime incidents, and "correlating [those] crime incidents with offender(s) locations" (Ex-1008, 21:37-39), to generate a table reporting "suspect offenders" (Ex-1008, 21:61-64). One such crime is stalking. Layson'757 teaches that the crime of stalking involves a prolonged victim-offender encounter. Ex-1007, 8:54-55. A POSITA would have recognized that the Layson combined system could easily be used to identify offenders located within a buffer region of the victim (the location of the "crime incidents" (Ex-1008, 21:37-39)) for a prolonged period of time as potential criminal stalkers (Ex-1008, 21:59-64 (identifying "suspect offenders")). Ex-1002 ¶¶223-227.

In addressing this crime of stalking, a POSITA would have been motivated to implement a system that identifies potential stalking incidents using the legal definition of the crime. For example, IllinoisLaw provides Illinois's definition of "stalking." Ex-1010, 0009. IllinoisLaw teaches that the crime of stalking may be characterized by the stalker "mov[ing] in relative proximity to a person as that person moves from place to place." Ex-1010, 0010. A POSITA seeking to use Layson'757-Layson'213's system to address the crime of stalking would thus have been motivated to design a system that would identify potential stalking scenarios where

a stalker “move[s] in relative proximity to a person as that person moves from place to place.” *Id.* A POSITA would have understood that following a person “from place to place” would correspond to following that person for at least longer than an incidental distance (e.g., from home to work), because following for a *short* distance might be accidental and innocent. Ex-1002 ¶227 (citing Ex-1037, 0011 (characterizing stalking as involving following over “a prolonged distance”)). In the combined Layson’757-Layson’213-IllinoisLaw system, the locations and corresponding times of a potential stalking victim would be used as the “multiple crime incidents” provided in a query of Layson’213’s correlation database (as described above), to identify offenders located within a buffer distance around the victim’s locations at approximately the same times. Ex-1002 ¶¶228-234. In order to limit false positives, the list would be filtered to identify those offenders whose locations correlated with those of the victim as the victim traveled “from place to place,” as taught by IllinoisLaw, in addition to Layson’s “loiter time.” Ex-1002 ¶234.

The combined Layson’757-Layson’213-IllinoisLaw system could also be used to alert a victim and/or law enforcement to potential stalking behavior of an offender against whom the victim already holds a restraining order. Ex-1002 ¶229. Layson’757 teaches that “wide[] buffer zones” may be implemented around “locations that are meant to [] exclude a subject,” such as a victim (Ex-1007, 9:41-46), enabling “advanced notification” of a nearby offender to be provided to the

victim. Ex-1007, 8:39-43. Layson'757 also teaches that the central database “contains guidelines” regarding the “notification response to corrections, [and] law enforcement” based on the nature of the offender’s violation of the victim’s buffer zone. Ex-1007, 9:50-54. Thus, Layson'757’s system may be used to warn a victim of a nearby offender even if that offender is not yet in violation of a minimum required separation distance prescribed in a restraining order, while waiting to alert law enforcement until the offender is in violation of the restraining order. Ex-1002 ¶¶231-232. A POSITA would have recognized that stalking may violate a restraining order, even where an offender maintains the minimum specified separation distance from their victim. Ex-1002 ¶233. In order to alert law enforcement to such behavior, a POSITA would have been motivated to implement a system that addresses the legally-defined characteristics of stalking, such as following and maintaining surveillance as the victim “move[s] from place to place.” Ex-1010, 0010. To capture such movement “from place to place,” a POSITA would have included a “minimum distance” threshold in Layson'757’s system, as taught by IllinoisLaw, because following for a *short* distance might be incidental and innocent. Ex-1002 ¶234 (citing Ex-1037, 0011 (stalking involves following for a “prolonged distance”)).

b. Claim 9

- (1) Element 9[pre]: A method for determining that a first portable remote unit associated with a network is being tracked by at least a second portable remote unit over a tracking period comprising:**

Layson’757-Layson’213-IllinoisLaw teaches the preamble of Claim 9, to the extent it is limiting. Ex-1002 ¶¶236-240.

Each of Layson’757’s portable tracking devices corresponds to a “portable remote unit,” because it is configured for wireless communication (Ex-1007, 2:65-3:13), and obtains and transmits information about its current position to the central location as the monitored person moves about (*id.*, 1:62-66, 7:66-8:5 (similar)). Ex-1002 ¶237. Accordingly, Layson’757’s victim portable tracking unit is “a first portable remote unit” and Layson’757’s offender portable tracking unit is “a second portable remote unit.”

Layson’757’s victim portable tracking unit is “associated with a network,” because it communicates wirelessly using a “network cell site.” Ex-1007, 2:65-3:2.

As will be discussed further in the subsequent limitations, Layson’757-Layson’213-IllinoisLaw teaches a method for determining that a victim portable tracking device (first portable remote unit) is being tracked by one or more offender portable tracking devices (at least a second portable remote unit) over a tracking period.

(2) Element 9[A]: obtaining the location of the first portable remote unit or tracked unit;

Layson'757-Layson'213-IllinoisLaw teaches Element 9[A]. Ex-1002 ¶¶240-241. Layson'757 teaches obtaining the location of its portable tracking devices (both victim and offender) at the central database. *See* Element 9[pre]; Ex-1007, 7:5-19.

(3) Element 9[B]: obtaining the location of the at least a second communication unit or tracking unit that is within proximity or a pre-specified radius of the tracked unit;

Layson'757-Layson'213-IllinoisLaw teaches Element 9[B]. Ex-1002 ¶¶242-244.

Layson'757 teaches obtaining the locations of offender tracking devices at the central database, as explained for Element 9[pre]. *See also* Ex-1007, 7:5-19. In the combined Layson'757-Layson'213 system, these locations are provided to Layson'213's correlation database (Ex-1008, 8:28-32), along with the victim locations, as explained in §XII.A.1.a.

As explained in §XII.A.3.a, for a victim who suspects that he/she is being stalked, Layson'213's correlation database may be used to identify potential stalkers, by using a series of the victim's locations as "crime incidents" in a central database query (Ex-1008, 21:37-39). Ex-1002 ¶244. Such a query involves specifying when the crime incident occurred, along with "a buffer distance around crime incident location." Ex-1008, 21:37-49. Layson'213's correlation database would then

identify offender tracking devices located within the buffer distance (i.e., in “proximity or a pre-specified radius”) around the victim’s location in a “table report.” Ex-1008, 21:59-64.

(4) Element 9[C]: verifying whether the tracking and tracked unit(s) have traveled a minimum pre-specified distance over the tracking period;

Layson’757-Layson’213-IllinoisLaw teaches Element 9[C]. Ex-1002 ¶¶245-248.

As explained for Element 9[B], a victim’s location (obtained from a victim portable tracking device) may be used as the location of a potential stalking crime incident in a query of Layson’213’s correlation database. Ex-1002 ¶246. A series of victim locations captured over a tracking period would be used in a database query to identify those offenders who were located within a buffer distance of the victim over time. Ex-1008, 21:37-39 (explaining that a central database query may involve correlating “*multiple crime incidents* with offender(s) locations”). Such offenders would be included in Layson’213’s table reporting “suspect offenders,” generated in response to the query. Ex-1008, 21:61-64.

As explained in §XII.A.3.a, in the combined Layson’757-Layson’213-IllinoisLaw system, a POSITA would have been motivated to ensure that any offenders whose locations correlated over time with the victim’s location had traveled together with the victim as the victim “move[d] from place to place” to

avoid false positives arising when an offender and victim are merely incidentally located in the same area over a period of time. Ex-1002 ¶247. Accordingly, a POSITA would have been motivated to implement a check for a minimum pre-specified distance of joint travel over a period of time (corresponding, for example, to the victim's travel from work to home) to evaluate whether the offender "move[d] from place to place" with the victim over the period of time, crossing the line into criminal stalking. Ex-1010, 0010. Such incidents would then be included in Layson'213's filtered table reporting "suspect offenders" (Ex-1008, 21:61-64) who may be stalking the victim. Ex-1002 ¶248.

(5) Element 9[D]: forwarding the result of the verification to the network at the end of the tracking period.

Layson'757-Layson'213-IllinoisLaw teaches Element 9[D]. Ex-1002 ¶¶249-250.

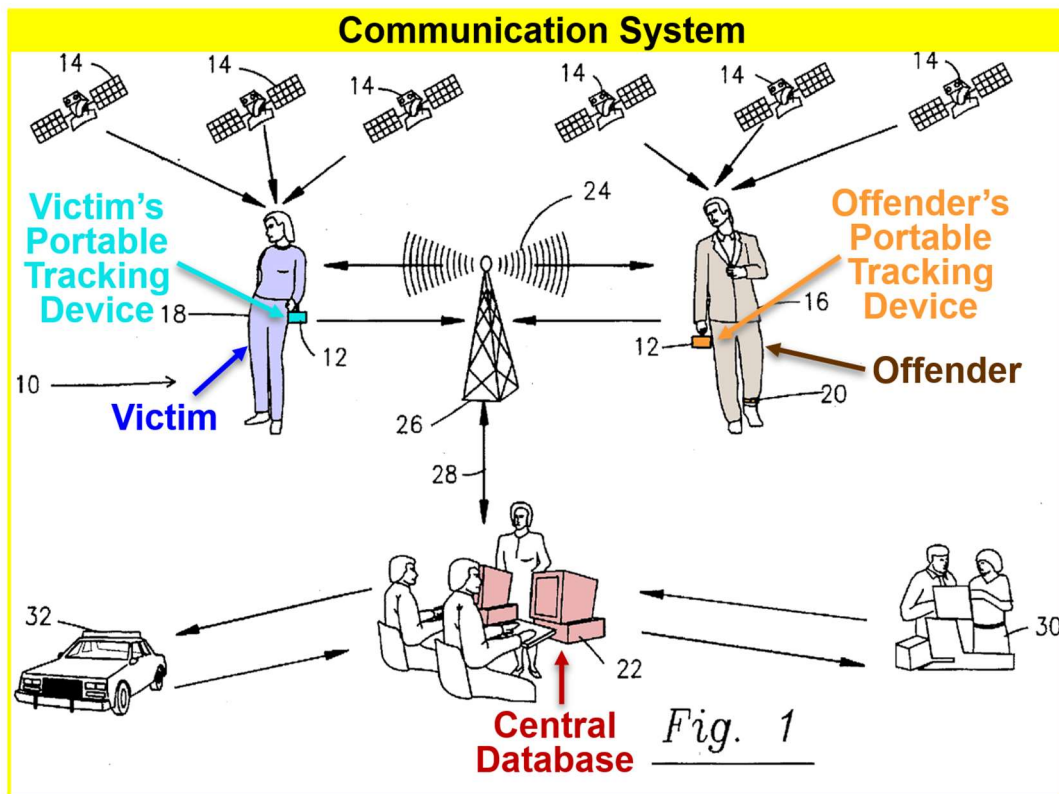
As explained for Element 9[C], Layson'757-Layson'213-IllinoisLaw teaches generating a report of suspect offenders who may be stalking a victim, based on their portable tracking devices maintaining proximity with the victim's device while traveling from "place to place." Layson'213 teaches that such reports may be sent from the correlation database to a "law enforcement query terminal" using a "connection to the communications network." Ex-1008, 10:12-14.

c. Independent Claim 14

(1) Element 14[pre]: A communication system comprising:

Layson'757-Layson'213-IllinoisLaw teaches the preamble of Claim 14, to the extent it is limiting. Ex-1002 ¶¶251-256.

Layson'757 discloses a communication system, "system 10," as illustrated in annotated Figure 1, below, which includes "a portable tracking device 12" for each "subject (offender 16 or victim 18)" (Ex-1007, 2:46-49) connected with "central data-base system 22" (Ex-1007, 3:9-12) via "network cell site 26" (Ex-1007, 2:65-3:2).



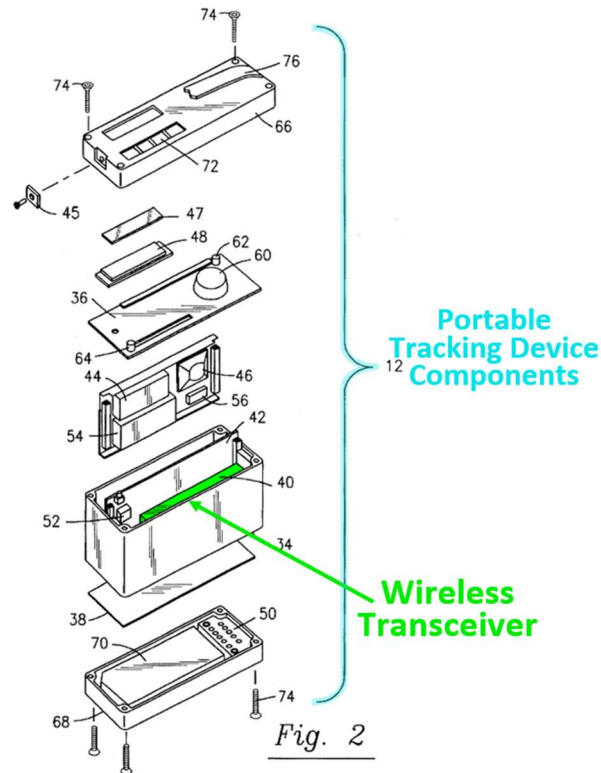
(2) Element 14[A]: a portable mobile remote unit;

Layson’757’s victim portable tracking device corresponds to the claimed “portable mobile remote unit,” because it obtains and transmits position information to the central location as the monitored person moves about (Ex-1007, 1:62-66, 7:66-8:5 (similar)).⁶ Ex-1002 ¶¶255-256.

(3) Element 14[B]: a network of communication units;

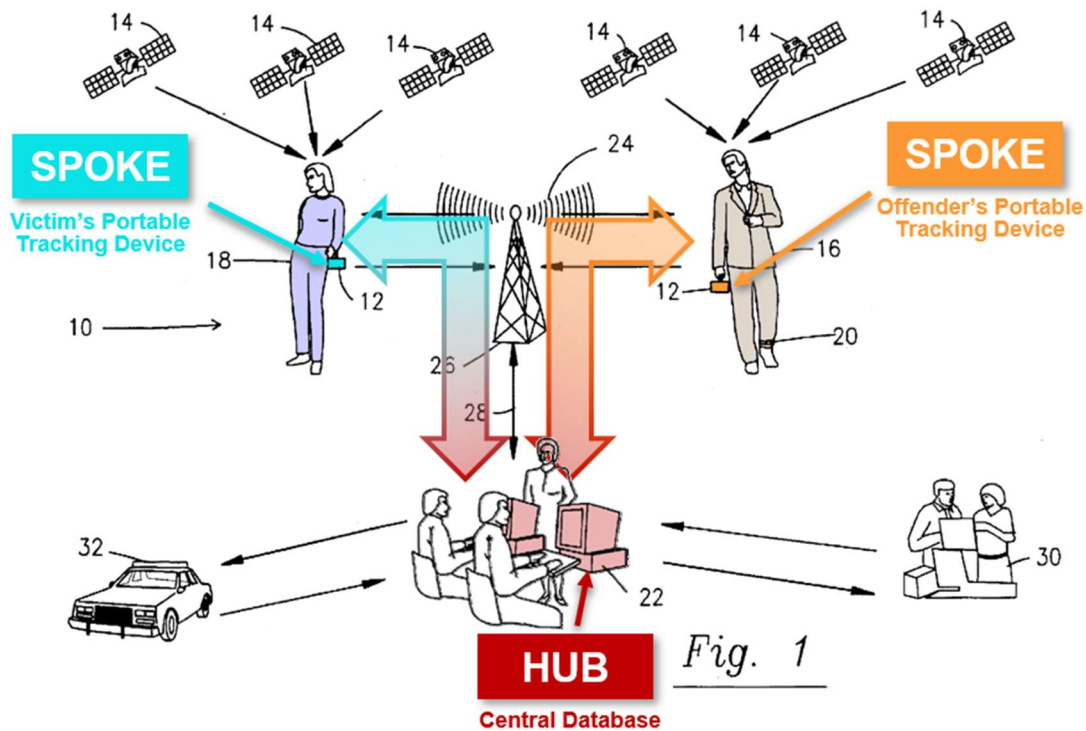
Each of Layson’757’s portable tracking devices is a “communication unit” because it is capable of sending and receiving communications. *See, e.g.*, Ex-1007, 3:3-4 (sending), 3:9-12 (receiving). Annotated Figure 2 shows a “wireless transceiver 40 [that] provides two-way data and voice communications between the portable tracking device 12 and the central data-base system 22.” Ex-1007, 3:36-38.

⁶ In contrast to Claim 1, where Petitioner maps the claimed “portable mobile remote unit” to Layson’757’s offender tracking device and the claimed “wireless consumer” to Layson’757’s victim device, for Claim 14, Petitioner maps the claimed “portable mobile remote unit” to Layson’757’s victim device, and the “another mobile remote unit [that]...has tracked the portable mobile remote” (Element 14[F]) to Layson’757’s offender device.



Layson’757’s system includes multiple portable tracking devices. Ex-1007, 2:46-49, 7:35-38 (“[T]he central data-base system 22 ... performs event processing for **the multiple portable tracking apparatus** in real-time.”) (emphasis added).

Together with the central database, Layson’757’s portable tracking devices form “a network of communication units,” because each device is communicatively connected to the central database system. Ex-1007, 3:9-11.

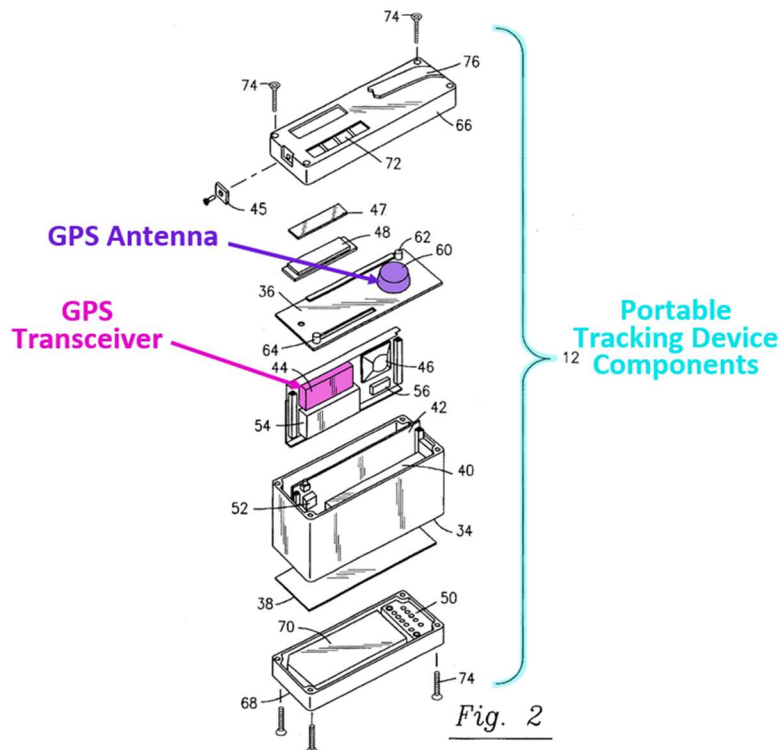


In particular, a POSITA would have recognized this configuration—i.e., a set of devices configured to communicate with a central control location—as corresponding to a “hub-and-spoke” communication network. Ex-1002 ¶60 (citing Exs-1048, -1049)

(4) Element 14[C]: means to obtain the location of the portable mobile remote unit;

Layson’757-Layson’213 teaches the claimed “means” under the construction proposed in §X.A.1, which is equivalent to “an antenna 20 and a transceiver 21” configured to receive signals, together with a “control unit” programmed to use such signals to determine location. Ex-1002 ¶¶261-264.

As illustrated in annotated Figure 2, below, each portable tracking device includes “GPS antenna 60,” which communicates with “the GPS satellite constellation” and provides signals to “GPS transceiver 44.” Ex-1007, 4:23-35. GPS transceiver 44 is also a control unit, because it uses the received signals to “determin[e] location.” Ex-1007, Abstract, 3:45-48 (similar).

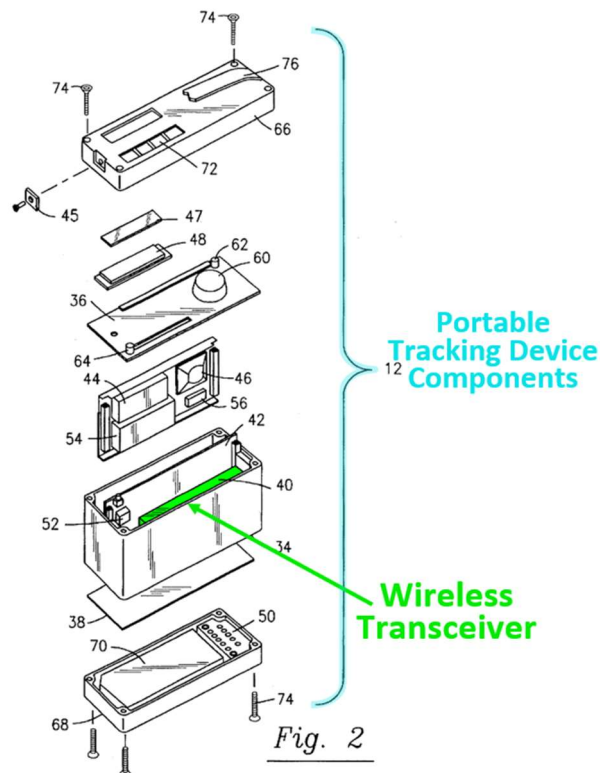


Each of Layson’757’s portable tracking devices performs the recited function each time it (1) uses GPS antenna 60 and transceiver 44 to acquire GPS signals (Ex-1007, 4:23-35), and then (2) uses GPS transceiver 44 to determine the current location of the device using those signals (Ex-1007, Abstract). Ex-1002 ¶264.

(5) Element 14[D]: means to obtain geographic boundary information in order to disclose a global location at the network;

Layson'757-Layson'213 teaches the claimed “means” under the construction proposed in §X.A.2, which is equivalent to “an antenna 20 and a transceiver circuitry 21” configured to receive signals that include geographic boundary information. Ex-1002 ¶¶265-273.

Annotated Figure 2, below, illustrates a “transceiver 40” within Layson'757's portable tracking devices that “provides two-way data and voice communications between the portable tracking device 12 and the central data-base system 22.” Ex-1007, 3:36-38.



Such data received by the transceiver from the central database includes “geographic boundary information” in the form of location constraints. Ex-1002 ¶268. The central database sends “location constraints” to each portable tracking device (Ex-1007, 8:36-39), which identify “buffer zones” around locations meant to exclude a subject.⁷ Ex-1007, 8:36-43, 9:41-43 (similar). These dynamically-updated location constraints (Ex-1007, 9:42-44) “are sent from the central data-base system to the portable tracking apparatus.” Ex-1007, 9:45-50.

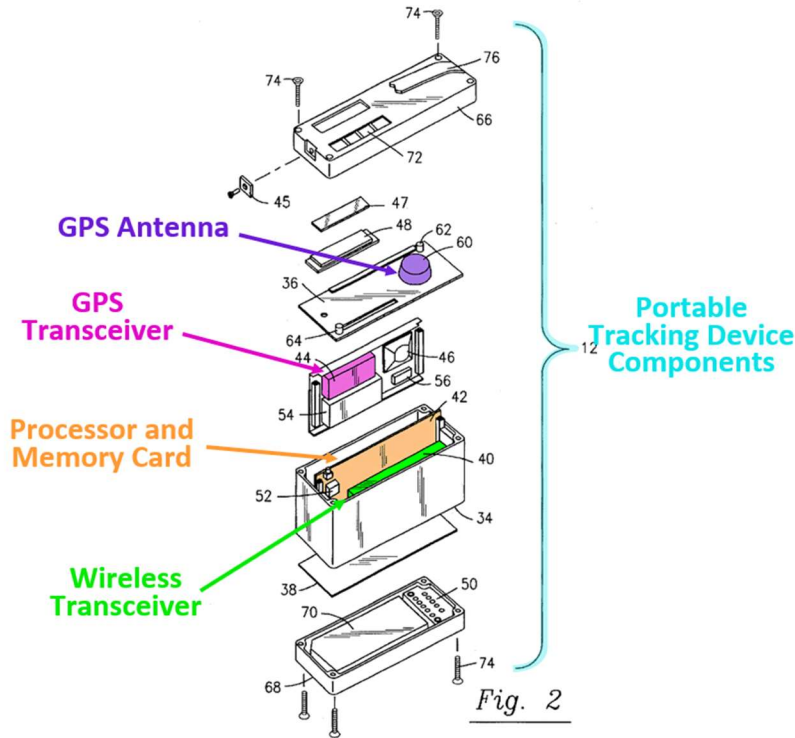
To enable the central database to accurately identify when an offender is located too close to a victim, or vice versa, each of the monitored subjects’ devices would receive location constraints from the central database (both offender and victim, Ex-1007, 1:17-18). In particular, the victim device would receive the associated offender’s location and “buffer zone” around that location (Ex-1007, 8:36-43) (the claimed “geographic boundary information”), so that the victim does not enter it inadvertently. Ex-1002 ¶269. As explained for Element 14[E], below, these location constraints are used by the victim device in determining whether to transmit its location to the central database (“to disclose a global location at the network”). Ex-1002 ¶¶270-273.

⁷ Layson’757 defines the monitored “subjects” as including both the offender and the victim: “subjects, such as criminal offenders and victims.” Ex-1007, 1:17-18. *See also id.*, 1:9.

- (6) **Element 14[E]: means to provide the location of the portable mobile remote unit to the network upon determination that the portable mobile remote unit is within the geographic boundary obtained at the network;**

Layson’757-Layson’213 teaches the claimed “means” under the construction proposed in §X.A.3, which is equivalent to “an antenna 20 and a transceiver circuitry 21” configured to transmit location information, together with a “control unit” programmed to determine that the unit is within the geographic boundary. Ex-1002 ¶¶274-279.

Each of Layson’757’s devices also includes a “processor and memory card 42” that “provides the execution environment for the algorithms to compare the current location obtained from the GPS receiver 44” against the “location constraints” provided by the central database (“network”). Ex-1007, 3:45-51.



The location constraints provided to the victim's portable tracking device include the offender location obtained at the network, together with a buffer zone around that location ("geographic boundary"). Ex-1007, 8:36-43. The victim portable device's processor and memory card 42 (Ex-1007, 3:45-51) "continuously processe[s]" these location constraints, enabling the device to notify the central database "immediately when a violation occurs"—i.e., when the victim portable tracking device is located within the buffer zone around the offender's device. Ex-1007, 9:45-50. Thus, the victim device provides its location to the central database at intervals when the offender and victim are in proximity, in the same way as described for the offender device in Element 1[B].

Notifying the central database of the violation would have entailed the victim's portable tracking device providing its current location to the central database, for use in dynamically updating the offender's location constraints (Ex-1007, 9:43-48). Ex-1002 ¶¶277-278. Such notification would be sent by the portable tracking device using transceiver 40, which enables two-way data communication between the device and the central location. Ex-1007, 3:36-38.

- (7) **Element 14[F]: means to determine and report to the system upon request that, another mobile remote unit of the network has tracked the portable mobile remote over a period of time.**

Layson'757-Layson'213-IllinoisLaw teaches the claimed "means" under the construction proposed in §X.A.4, which is equivalent to a control unit programmed to: (1) receive, at intervals, the location of the "tracked" mobile unit, (2) receive the locations of "other" mobile units, during such intervals, and (3) maintain a list of such "other" units within a predefined geographic boundary of the "tracked" unit for a period of time as the tracked unit and such "other" units have moved a minimum distance, together with a transmitter configured to transmit a message identifying such "other" unit. Ex-1002 ¶¶279-282.

Layson'757's "central data-base system" is a control unit of a network control center, because it "implements distributed and parallel processing in order to

perform event processing for the multiple portable tracking apparatus in real-time.”
Ex-1007, 7:35-39; Ex-1002 ¶281.

Receive the “tracked” unit’s location: As explained for Element 14[E], the central database receives the location of the victim portable tracking device (“tracked” unit) at intervals when an offender device is in proximity of the victim device.

Receive “other” units’ locations: The central database also receives the locations of offender tracking devices (“other” mobile units) during such intervals (*see* Element 1[B]).

Maintain a list: Layson’757’s central database maintains a list of offender tracking devices (such “other” units) located within a buffer region surrounding the victim tracking device (i.e., within a predefined geographic boundary of the “tracked” unit) that provided their location at each interval.⁸ As explained in §XII.A.3.a, the central database may determine that such offender devices

⁸ As noted in §X.A.4, to the extent that Patent Owner or the Board adopts a construction that does not require a “minimum distance” as part of the algorithm that performs the recited function, then Claim 14 is rendered obvious by the Layson’757-Layson’213 combination without the need to rely on IllinoisLaw. As shown by the relied upon evidence to this point in the analysis, Layson’757-Layson’213 and its described “loiter time” teaches this element if function can be performed using time-only based techniques. But, under the construction set out in §X.A.4, the IllinoisLaw teaching is brought in if the function also needs to include a minimum distance-based approach as well.

maintained close proximity to the victim device while the devices traveled a minimum distance threshold, for a period of time, to identify and report potential stalking behavior, thus performing the recited function. Ex-1002 ¶281.

Layson’757’s central database also includes a transmitter, to enable it to communicate “via the wireless communication link.” Ex-1007, 3:9-13. The central database uses such transmitter to report potential stalking behavior to the victim and law enforcement for reporting buffer zone violations (*see* Element 15[D]).

4. Ground 4 Claim 15 is rendered obvious by Layson’757-Layson’213-IllinoisLaw-Wang

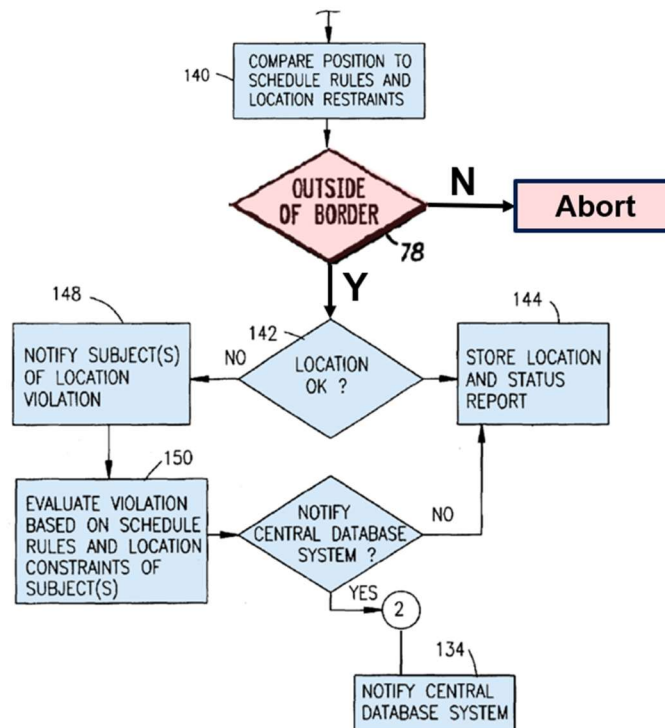
A POSITA would have been motivated to combine Layson’757-Layson’213-IllinoisLaw with Wang with a reasonable expectation of success, for the reasons explained in §XII.A.2.a (motivation to combine Layson’757-Layson’213-Wang). Ex-1002 ¶283.

- a. Claim 15: The portable mobile remote according to claim 14, having means to further determine if location disclosure for the remote unit is prohibited at a specific geographic boundary before sending its location to the network.**

Layson’757-Layson’213-IllinoisLaw-Wang teaches the claimed “means” under the construction proposed in §X.A.5, which is equivalent to a control unit programmed to: (1) compare its current location to an exclusion zone; (2) if its current location is within the exclusion zone, abort; (3) otherwise, proceed to provide its current location to the network. Ex-1002 ¶¶284-287.

Each of Layson'757's portable monitoring devices includes a "control unit," that includes a "processor and memory card [that] provide[] the execution environment for the algorithms" used to compare the current location of the device to the "location constraints stored in the memory," and to initiate transmission of "a data message to the central data-base system" in response to identifying a violation. Ex-1007, 3:45-60. In the combined system, Layson'757's comparison step would be modified as illustrated below (combining aspects of Figures 6A and 6B of Layson'757, with step 78 of Wang's Figure 6):

Layson'757 Modified By Wang



As illustrated above, in step 140, the victim's device compares its current location to location constraints received from the central database. As explained for

Element 14[D], these location constraints would include a buffer region around an offender's location, as a prohibited region. And, as explained in §XII.A.2.a, these location constraints would also include permitted regions, in the form of the victim's home and work. In step 78, the victim device compares its location to its permitted regions in its location constraints (analogous to Wang's border, Ex-1009, 6:7-9) (claimed "exclusion zone"). If its current location *is* within a permitted region, the device does not store its location or send its location to the central database (abort in the above figure). If its current location *is not* within a permitted region, in step 142 the victim device determines if the device is located in a prohibited region (e.g., the offender's buffer region), and either immediately provides its location to the central database (step 134) in response to determining it is in a prohibited region (through the device's reporting of the violation, as explained for Element 14[E]), or it stores its location for later batch upload to the central database (step 144). Each of Layson'757's portable tracking devices, as modified by Wang, performs the recited function, each time it executes Layson'757's algorithms, as modified by Wang. Ex-1002 ¶287.

B. Geographic Boundary Claims

1. Ground 6: Claim 6 is rendered obvious by Suarez in view of Mintz

a. A POSITA would have been motivated to combine Suarez-Mintz and had a reasonable expectation of success

In addition to the reasons set forth below, a POSITA would have been motivated to combine the teachings of Suarez and Mintz (“Suarez-Mintz”). Both teach dispatching a mobile service provider (e.g., vehicle) to respond to a call for assistance. Ex-1013, Abstract; Ex-1014, 7:11-17. *See also*, Ex-1002 ¶¶288-290. For example, Suarez’s dispatch controller receives a “request for dispatch” and transmits an assignment message to a fleet of vehicles so that each available vehicle replies to the assignment message. Ex-1013, Abstract, 3:20-25 (outbound messages), 7:19-26 (reply). As shown in annotated Figure 15, Suarez’s assignment message includes a “criteria parameter” such as a radius establishing perimeters around the assignment location (Ex-1013, 5:39-41) to indicate which vehicles should reply to an assignment message. Ex-1013, 5:14-17.

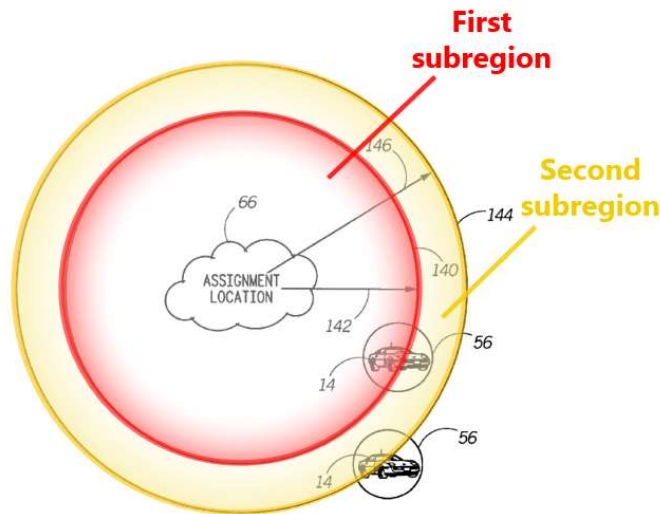


FIG. 15

Mintz allows a customer to submit a request for service to the control center that is then broadcasted as a message to all of the taxis in an area. Ex-1014, 7:11-17. Upon receiving the call message, each of Mintz's participating taxis determines its priority within a plurality of concentric "sectors" up to a maximum radius ($R_{\max}$) from the customer as annotated in Figure 3 below. Ex-1014, 11:4-8, 11:37-42. Taxis beyond $R_{\max}$ would be considered out of range of the customer assignment location. Ex-1014, 10:61-62.

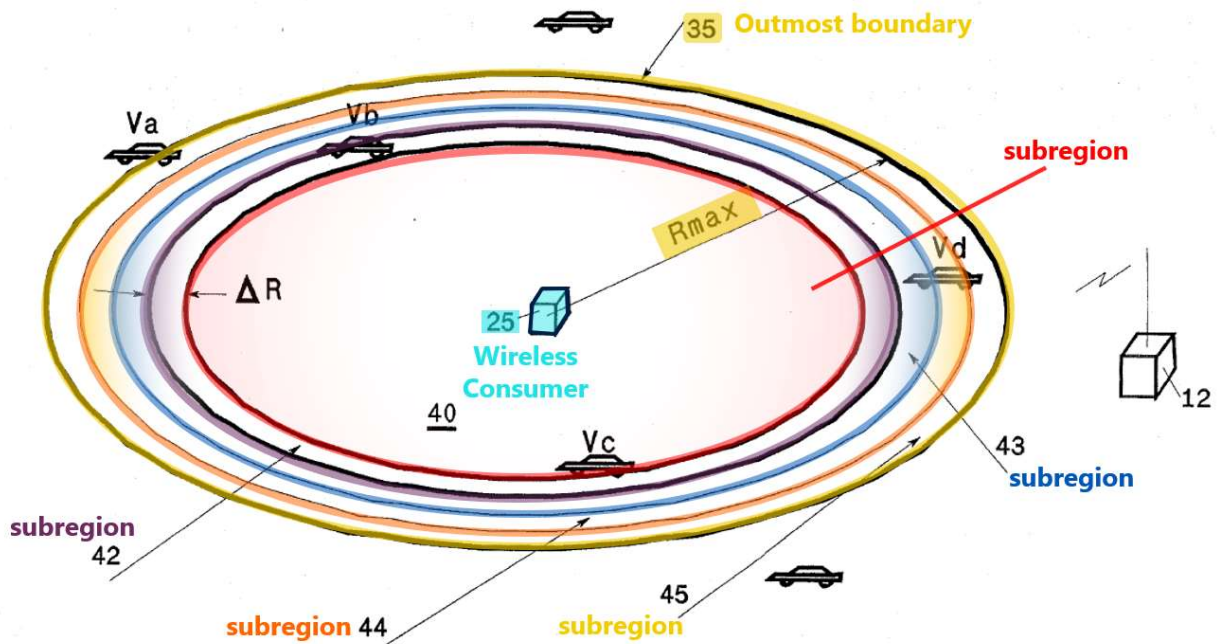


Fig 3

A POSITA would have been motivated to combine Mintz’s teaching of prioritizing responses by sector up to a maximum search radius in Suarez because, as Mintz explains, “it is desired to allocate the task of servicing the customer to the vehicle which is closest to him.” Ex-1014, 11:6-10. That is, a POSITA would have considered Mintz’s teaching of getting services from the closer available provider first, thereby minimizing travel and reducing wait times. Ex-1002 ¶290.

a. Independent Claim 6

- (1) Element 6[pre]: A method for providing the location of portable remote units that exist within a prescribed geographic boundary to a wireless consumer requesting that information comprising:**

Suarez teaches the preamble of Claim 6, to the extent that the preamble is limiting. Ex-1002 ¶¶291-293. Specifically, Suarez's vehicle dispatch system manages a fleet of vehicles. Ex-1013, 2:66-3:10. Each vehicle includes a wireless communication device 36 (*id.*, 3:31-33), as shown in orange in Figures 2 and 9 below. Suarez's wireless communication devices may use pager or cellular communications. Ex-1013, 3:31-39; *see also id.*, 2:14-17. Suarez's wireless communication devices 36 in each vehicle correspond to the claimed portable remote units because the devices are in a moving vehicle, just as they are in the '752 Patent. Ex-1001, 4:59-61, 5:34-35.

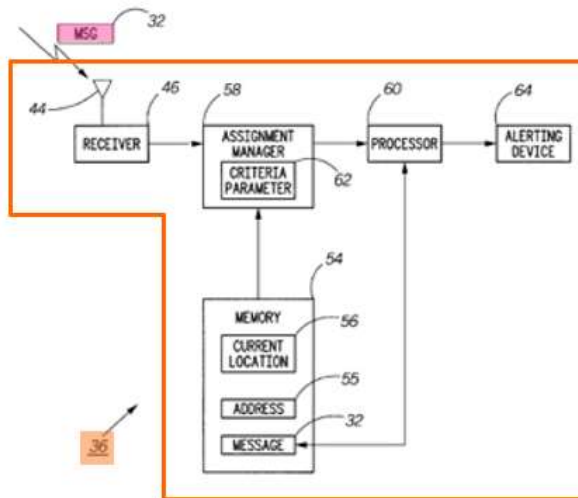


FIG. 2

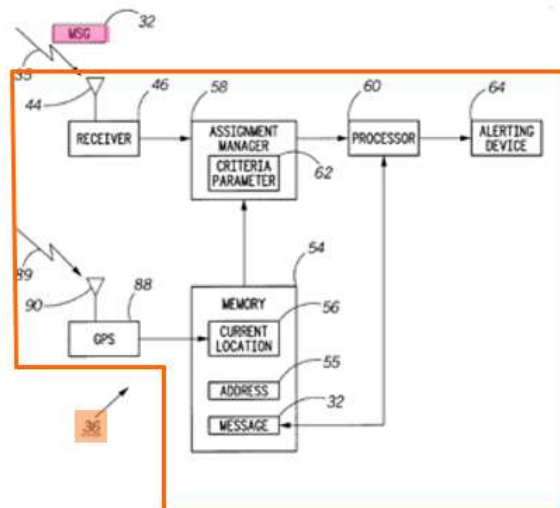
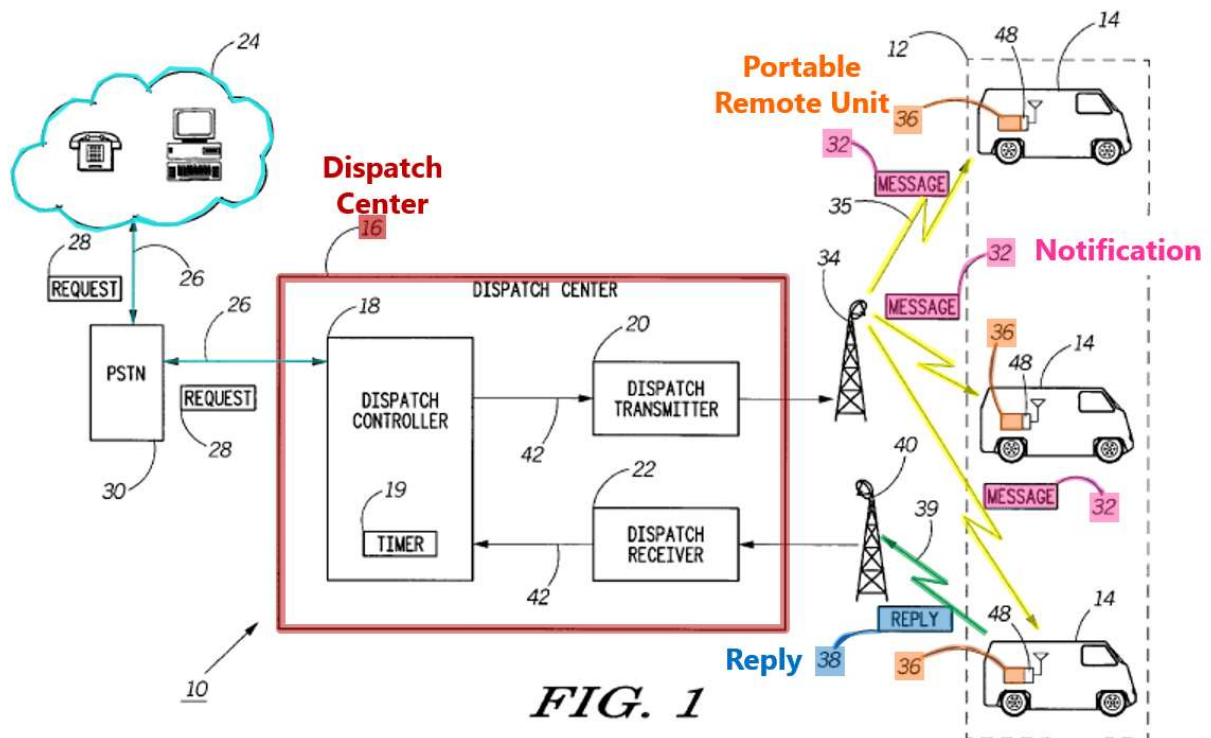


FIG. 9

Additionally, Suarez teaches a wireless consumer. As shown below in annotated Figure 1, Suarez's dispatch center 16 (red) receives an inbound "request for dispatch" (teal) from "message input device 24," such as "a telephone or computer terminal" using "radio frequency (RF) channels, satellite links, or Internet." Ex-1013, 3:1-10. The "message input device" corresponds to the claimed wireless consumer submitting a request for dispatch through a wireless connection. Ex-1002 ¶292.



As explained in further detail below, Suarez's requests are sent to portable remote units that exist within a prescribed geographic boundary, including proximity to the assignment location and a specific radius around it. Ex-1013, 5:39-41. The wireless consumer who submitted the request for dispatch would be provided with

the appropriate nearby service provider's location by the dispatch center. Ex-1002 ¶293.

(2) Element 6[A]: i) receiving at the network a wider than normal prescribed geographic boundary to query for mobile remote units from the wireless consumer;

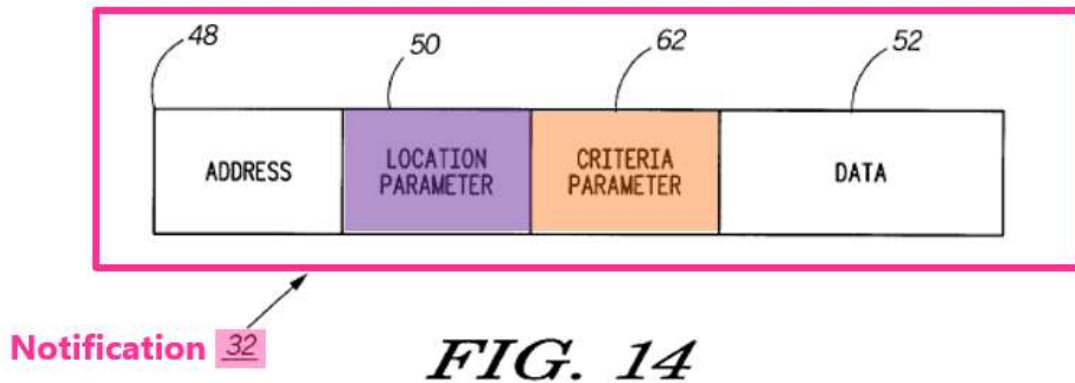
Suarez's network receives a wider than normal prescribed geographic boundary to search for mobile remote units. Ex-1002 ¶¶294-305. Suarez's vehicle dispatch center and fleet of vehicles comprise the network. Specifically, Suarez's vehicle dispatch system 10 utilizes telephone or "any wireless RF channel" for the dispatch center 16 to communicate with "message input device 24" (Ex-1013, 3:4-10) and the "wireless communication device[s] 36." Ex-1013, 3:31-40. Suarez's vehicles 14 each have "a wireless communication device 36 capable of receiving and processing" signals from dispatch center 16. *Id.*, 3:31-33. Suarez's wireless communication device 36 in each vehicle and dispatch center collectively make up the network because they are communication resources that communicate with each other over one or more radio connections. Ex-1002 ¶294.

A POSITA would have understood that the "network" of the dispatch center and wireless communication devices receive the user's request details, such as the user's location and other details like search region in at least two ways: (1) from the

user to the dispatch center and (2) from the dispatch center to the wireless communication devices in each vehicle. Ex-1002 ¶¶295-297.

First, dispatch center 16 receives a “request for dispatch” (Ex-1013, Abstract, 3:20-25) from “message input device 24” through “radio frequency (RF) channels, satellite links, or Internet.” Ex-1013, 3:1-10. A POSITA would have understood that the network, via the dispatch center, receives request details, such as a “wider than normal prescribed geographic boundary to query” from the wireless user by the dispatch center acting as the entry point for the user’s information. Ex-1002 ¶297.

Second, upon receiving this request, the dispatch center encodes the request to an outbound assignment message 32 that is sent to the network of wireless communication devices in each vehicle. Ex-1013, 3:21-25. The assignment message 32, as shown below in annotated Figure 14, includes “location parameter 50” (purple, Ex-1013, 10:3-5) identifying “assignment location 66 of the request for dispatch 28.” *Id.*, 9:57-58. Location parameter 50 is the point of origin for the assignment, such as the latitude and longitude of the customer. Ex-1002 ¶¶298-299.



The assignment message 32 also includes “a criteria parameter” (orange). Ex-1013, 9:65-10:1. Criteria parameter 62 may be a radius establishing a perimeter around the assignment location. Ex-1013, 5:39-47.⁹ As shown in annotated Figure 15 below, the criteria parameter is first set at N=1 to search area 140 bounded by radius 142 from the assignment location 66 before continuing to expand to the next level criteria parameter (e.g., N=2, N=3, etc.) with a larger radius (yellow, *id.*, 10:66-11:4) until a reply is received. *Id.*, 11:14-20.

⁹ Criteria parameter 62 of assignment message 32 in Figure 14 can be the same as the criteria parameter of Figure 4. Ex-1013, 10:16-20.

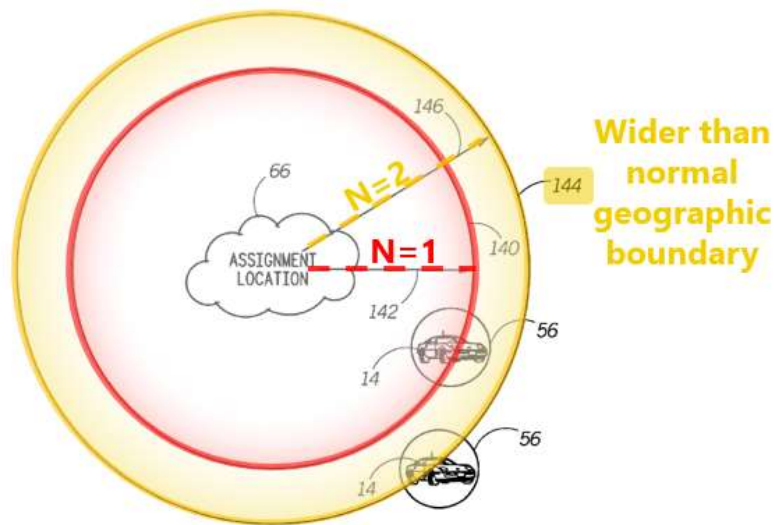
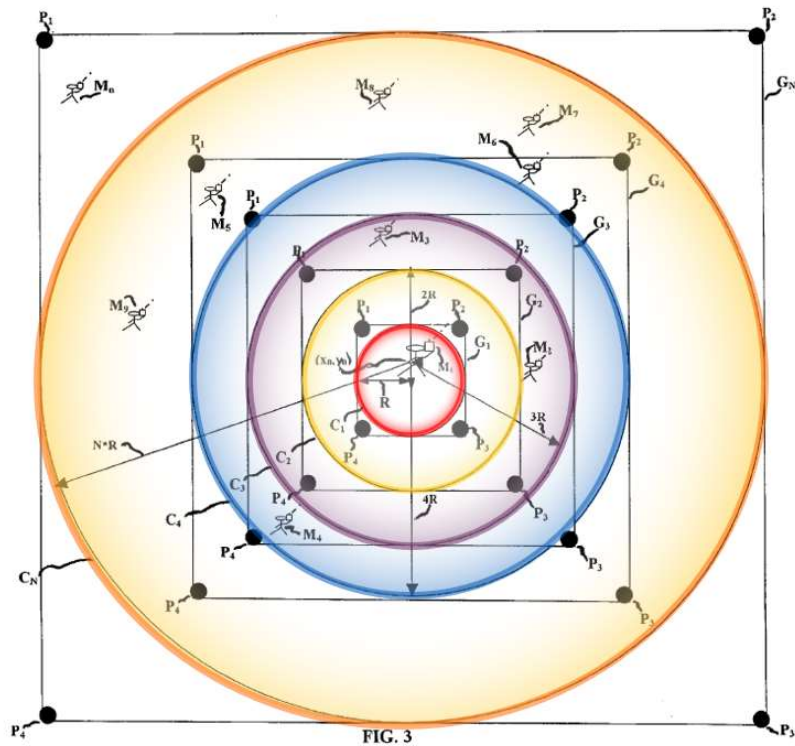


FIG. 15

A POSITA would have understood that the assignment message's location parameter 50 and criteria parameter 62 teach a prescribed geographic boundary describing a search region for the wireless consumer because they are a central location where the user is located and a radius around that location. Ex-1002 ¶¶300-301. Moreover, a POSITA would have understood Suarez's two or three ($N=2$ or 3) search radii (e.g., 146) are searched to include a "wider than normal prescribed geographic boundary to query for mobile units," which is the maximum search boundary (144) for which a vehicle would be dispatched to the customer. Ex-1002 ¶301. This is the same type of "geographic boundary" envisioned by the '752 Patent, as shown in annotated Figure 3 which "depicts a wide geographic area" made of concentric cells or regions (C_1 (red), C_2 (yellow), C_3 (purple), C_4 (blue), C_N (yellow)). Ex-1001, 7:8-20.



Thus, Suarez satisfies this claim element in at least two ways: via (1) the user and (2) the dispatch center. Ex-1002 ¶¶302-303. First, the network (e.g., dispatch center) receives “a wider than normal prescribed geographic boundary to query for mobile remote units” from the user of “message input device 24” when it submits its “request for dispatch” to the dispatch center 16. Second, the network (e.g., network of portable remote units) receives “a wider than normal prescribed geographic boundary to query for mobile remote units” from the dispatch center 16 when it generates the assignment messages for the network of portable remote units that may accept the assignment. Both of these teachings in Suarez satisfy this claim element. Ex-1002 ¶303.

Additionally, a POSITA would have found “a wider than normal prescribed geographic boundary to query for mobile remote units” to be an obvious design choice, as disclosed by Mintz. As shown in annotated Figure 3 below, Mintz provides an example of a **customer 25** (teal) that requests a taxi within a circular area 40 having a boundary 35 (yellow) at different distances from customer 25. Ex-1014, 10:59-63. Upon receiving the customer’s call message, each participating taxi determines its location relative to “the customer and within the maximum radius $R_{\max}$ ” (yellow). Ex-1014, 11:37-42. For example, if the range of interest for a taxi is 0-10 km from the customer, as indicated either by the customer or the dispatcher, Mintz requests a response from taxis that are 0-5 km from the customer before requesting responses from taxis in the range of 5-10 km, such that the maximum radius (10 km) is divided into ranges. Ex-1014, 9:50-59. A POSITA would have considered Mintz’s maximum search radius, $R_{\max}$, to describe a wider than normal geographic region within which to search, as defined by wireless customer. Ex-1002 ¶304. Specifically, the “normal” search radius is the smaller 5 km radius, and the “wider than normal” radius is the 10 km radius that is searched when the normal search radius is exhausted. *Id.*

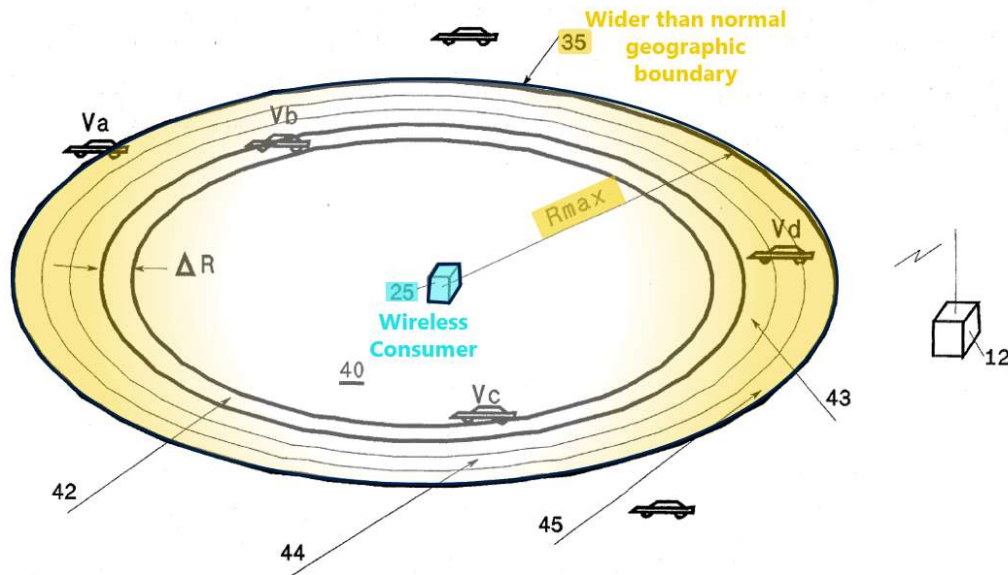


Fig 3

A POSITA would have been motivated to include Mintz's maximum radius $R_{\max}$ when implementing Suarez's third ($N=3$) or highest criteria parameter, so that there would be a clearly defined and predictable limit on the search. Ex-1002 ¶305. Similar to the '752 patent (Ex-1001, 7:42-57), Suarez and Mintz teach embodiments where the search for target vehicles to dispatch starts at smaller concentric regions to identify the sub region(s) closest to the customer "[s]ince it is desired to allocate the task of servicing the customer to the vehicle which is closest to him." Ex-1014, 11:6-10. Thus, in the Suarez-Mintz combination, a POSITA would have been motivated to implement a small search sub region as the normal search region (e.g., within 5 km) and then larger search region(s) (e.g., within 10 km) to be the wider than normal search region. Ex-1002 ¶305. This would ensure that the closest vehicles are provided with the first opportunity to respond to a service request—the request

will be potentially fulfilled with slightly more distant vehicles if nearby vehicles are not available, but not with vehicles that are at an impractical distance (i.e., greater than $R_{\max}$). *Id.*

(3) Element 6[B]: ii) splitting the geographic boundary of (i) into sub geographic regions to constitute the prescribed geographic boundary;

As described in the previous element, Suarez-Mintz teaches a wider than normal prescribed geographic boundary, which it splits into sub geographic regions.¹⁰ Ex-1002 ¶¶306-308. As shown in Suarez’s Figure 15 below, the criteria parameter set at $N=1$ establishes the first sub region (red) bounded by the first perimeter 140. Ex-1013, 10:48-53. If there are no responses, the criteria parameter is then set to $N=2$ corresponding to a second sub region (yellow) bounded by a second perimeter 144. Ex-1013, 10:66-11:4; *see also id.*, 11:14-20 ($N=3$ (not depicted in Fig. 15)). The dispatch controller 18 generates the criteria parameter “to be sent in the assignment message 32” (*id.*, 10:15-16), so that Suarez’s dispatch controller splits the geographic boundary into sub regions. Ex-1002 ¶306.

¹⁰ The ’752 Patent refers to the “sub geographic regions” as “sub regions.” *See, e.g.*, Ex-1001, 7:1-2.

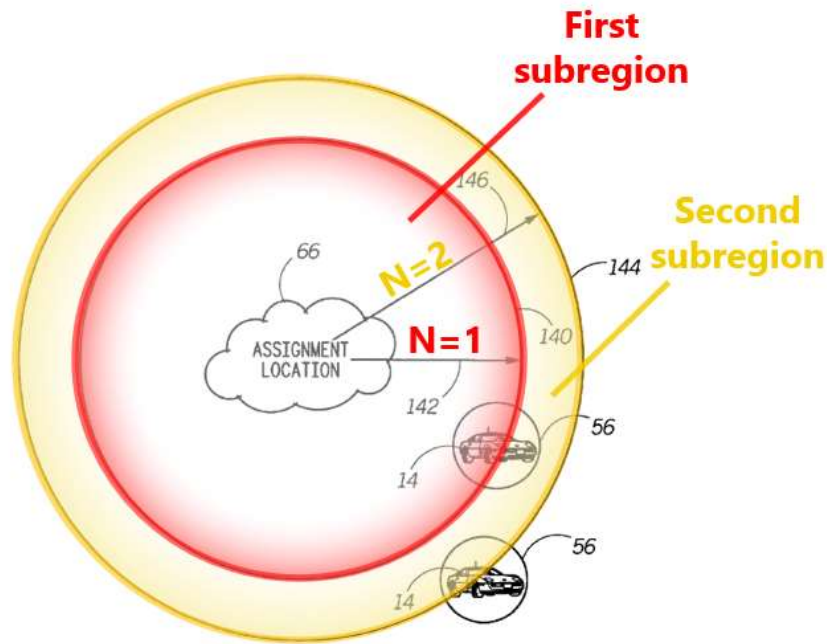
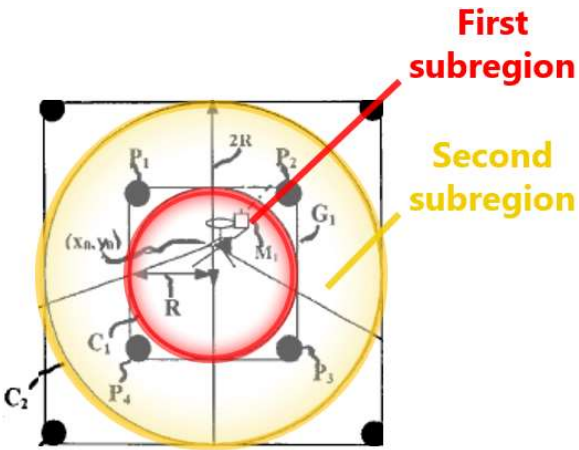


FIG. 15

Suarez's $N=2$ or 3 search radii split the wider than normal region into concentric sub regions constituting a new prescribed sub geographic region. Ex-1002 ¶307. Again, this is like the '752 Patent, which depicts a “wide geographic area” defined by cells, “also known as region[s].” Ex-1001, 7:8-18,7:42-57 (“incrementing the radii information”).

'752 Patent, Figure 3 (partial)



Suarez, Figure 15

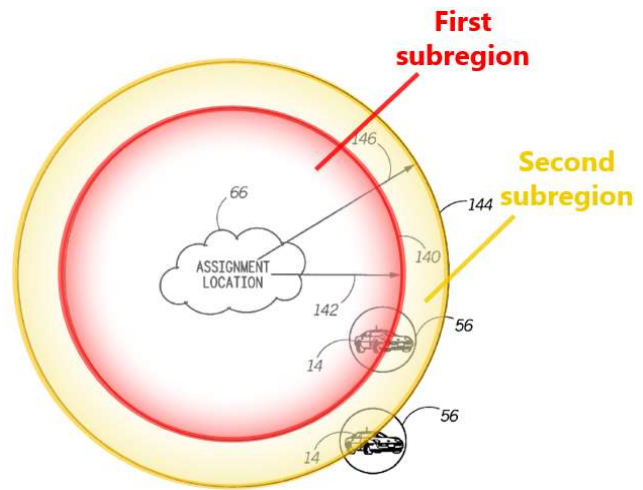


FIG. 15

Moreover, Mintz explicitly teaches this concentric splitting. As shown in annotated Figure 3 below, Mintz's circular target area with boundary 35 is "*split*" into a plurality of concentric sectors... each having a width ΔR and being radially disposed with respect to the customer." Ex-1014, 10:59-11:10 (emphasis added). These concentric sectors (e.g., 0-5 km, 5-10 km, etc.) are logically the same as Suarez's expanding search areas, as explained above. Ex-1002 ¶308.

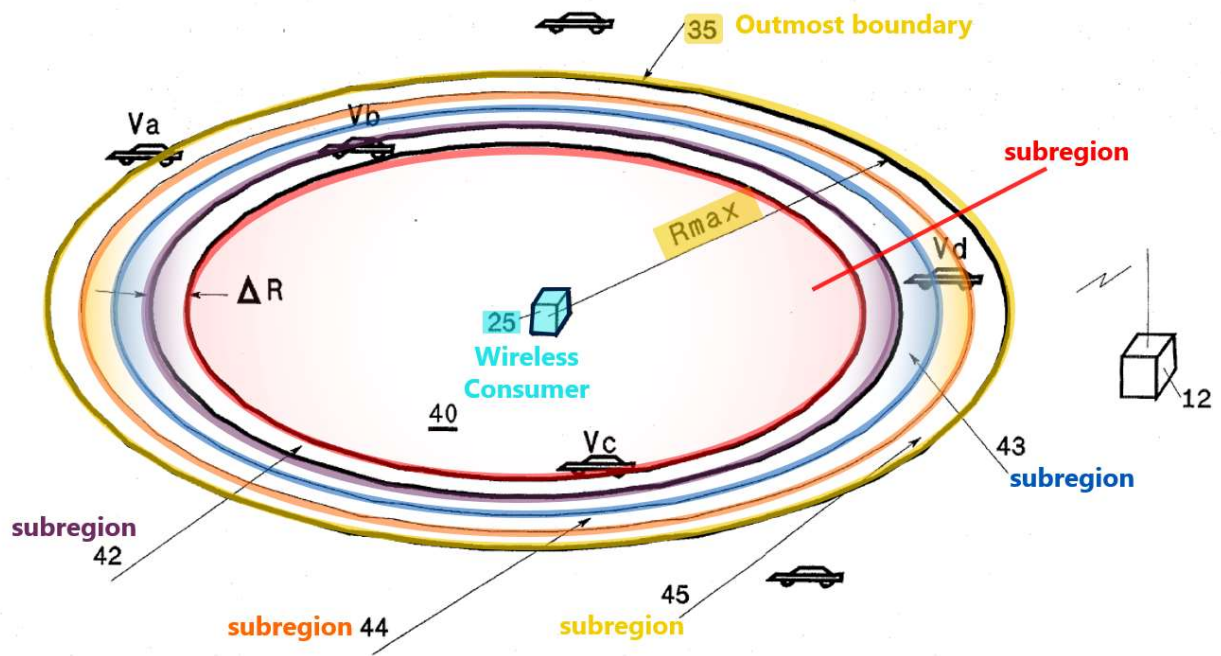


Fig 3

- (4) Element 6[C]:** iii) requesting in the sub geographic region(s), the location of remote units that are present in each sub region;

Suarez-Mintz requests the location of the remote units present in a sub region when Suarez encodes input device 24's inbound request into outbound assignment messages 32 which are then sent to the vehicles' wireless communication devices. Ex-1013, 3:21-24; Ex-1002 ¶¶309-310. The assignment message includes location parameter 50 and criteria parameter 62. Ex-1013, 9:65-10:1. Using these parameters, wireless communication device 36 replies with the vehicle's current location to the dispatch center (Ex-1013, 7:23-35) when the vehicle's current location "affirmative[ly] match[es]" the location parameter 50 using the criteria parameter

62. Ex-1013, Abstract, Cl. 1 (13:6-10). Therefore the assignment message is a request for the location of remote units.

Moreover, the location parameter and criteria parameter define the boundary of the sub region. Ex-1002 ¶309. As shown in annotated Figure 15 below, in Suarez-Mintz, the criteria parameter is used to search the area bounded by radius 142 (red) from the assignment location 66 before continuing to expand to the next criteria parameter (e.g., $N=2$, $N=3$, etc.) with a larger radius (yellow, *id.*, 10:66-11:4) until a reply is received or the maximum radius is reached. Ex-1013, 11:14-20; Ex-1014, 11:37-42 ($R_{\max}$).

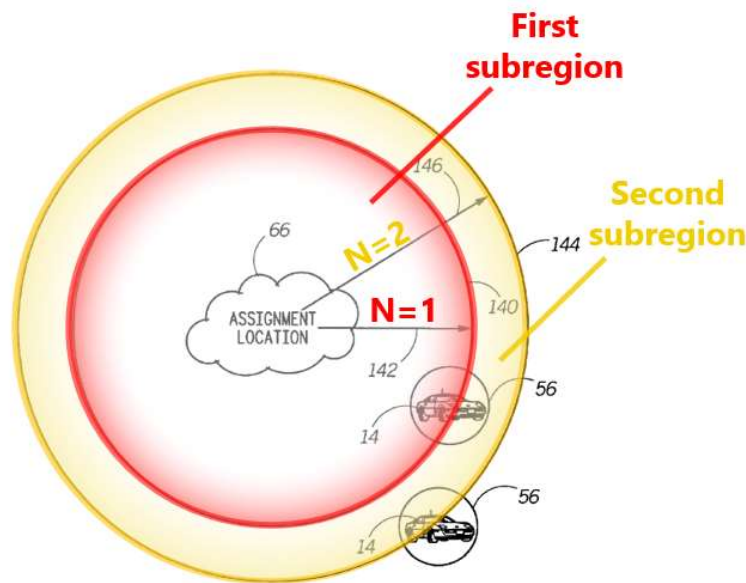


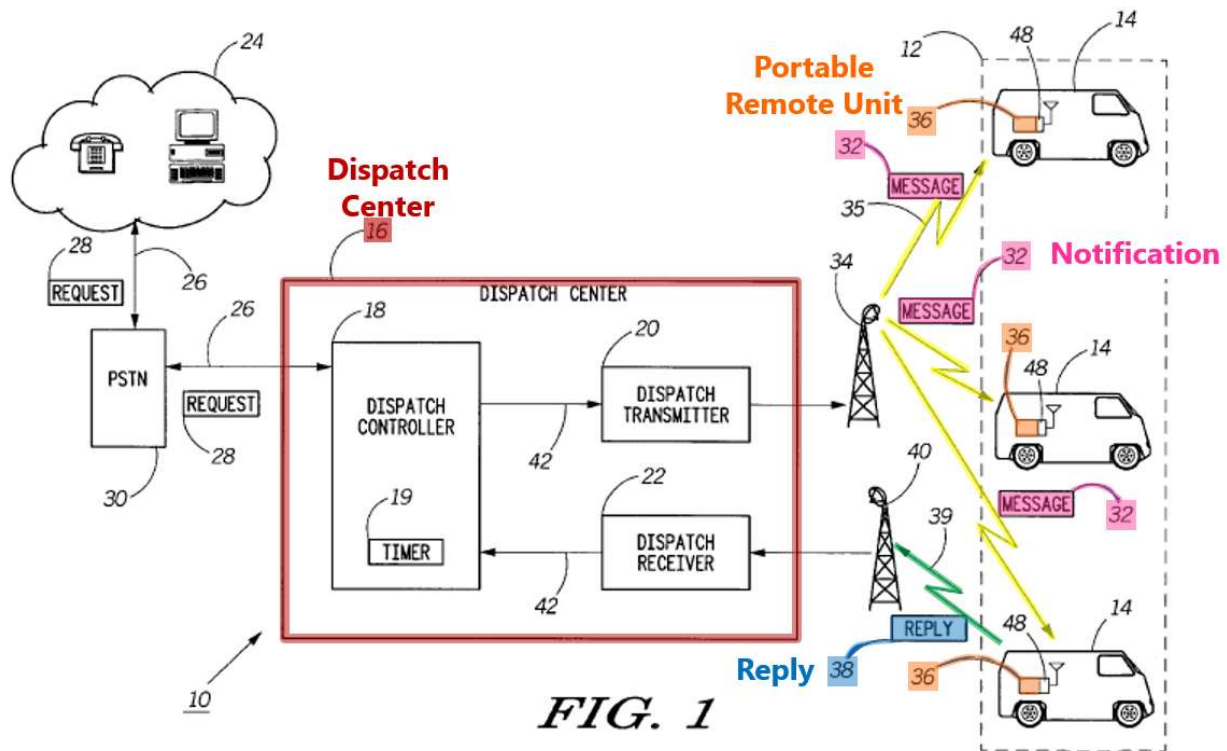
FIG. 15

In one example, the criteria parameter is used as a filter so that the assignment message is “seen *only* by the vehicles 14 within the fleet 12 that meet the specified criteria.” Ex-1013, 5:14-17 (emphasis added). Suarez explains that the dispatch controller 18 uses the wireless communication device addresses to transmit the assignment message “only to the addressed wireless communication device 36.” *Id.*, 3:43-46. Therefore, Suarez’s dispatch controller will specify where the request should be sent in the assignment message that is then forwarded on to the appropriate networked devices. Ex-1002 ¶310. Moreover, a POSITA would have been motivated to do so to prevent unnecessary overload and processing and eliminate problems of “drivers affirmatively replying to assignment messages clearly outside the range for the purpose of maximizing their own income.” Ex-1013, 6:9-14; Ex-1002 ¶310.

(5) Element 6[D]: iv) verifying after each request of (iii) in a sub region whether at least a portable remote unit disclosed a global location in the region;

Suarez-Mintz verifies that a portable remote unit disclosed a global location in a sub region. Suarez’s wireless communication device 36 of the vehicle (the portable remote unit) responds with “reply [38, blue] to the dispatch center” when the vehicle’s current location “affirmative[ly] match[es]” the location parameter 50 using the criteria parameter 62. Ex-1013, Abstract, Cl. 1 (13:6-10). “[T]he dispatch

center 16 checks for receipt of the reply 38 by at least one vehicle 14.” Ex-1013, 10:28-29.



As explained above, the criteria parameter defines the sub regions in Suarez. The criteria parameter is used to search the area bounded by radius 142 from the assignment location 66 before continuing to expand to the next criteria parameter (e.g., N=2, N=3, etc.) with a larger radius (Ex-1013, 10:66-11:4) until a reply is received. *Id.*, 11:14-20. Mintz further teaches that the control center monitors any responses from the vehicles in the various sub regions. Ex-1014, 9:5-6. A POSITA would have understood that Suarez-Mintz thus verifies whether a portable remote unit disclosed its location in the sub region (bounded by radius 142, 146, etc.) before

it continues to the next larger radius criteria parameter, going through each sub region in turn, up to Mintz's maximum radius, $R_{\max}$. Ex-1002 ¶¶311-312.

(6) Element 6[E]: v) maintaining a list of all remote units that disclosed their location after each request from the verification of step (iv);

Suarez-Mintz maintains a list of all remote units that disclosed their location. When Suarez's vehicle's current location "affirmative[ly] match[es]" the requested location, that vehicle exists within the geographic region. Ex-1013, Cl. 1 (13:6-10). The vehicle's affirmative reply 38 includes the vehicle's identification, current location, and estimated travel time to the assignment location (*id.*, 7:19-26), which a POSITA would have understood to be stored as a list in the dispatch center so that the appropriate vehicles can be dispatched. Ex-1002 ¶313. Mintz further explains that, in response to the service call, each taxi is given a "priority" with each taxi "transmitting an indication signal in the appropriate time or time/frequency slot in accordance with his respective priority." Ex-1014, 8:39-44. For example, Mintz's control center arranges the time slots with a "descending order of priorities." Ex-1014, 9:5-8. The control center then targets all of the responding taxis having the highest priority range based on the valid indication signals received so that "taxis having a lower priority are excluded from further consideration." *Id.*, 9:11-15; *see also* Ex-1001, 5:44-49. A POSITA would have implemented Suarez's responses with estimated travel times and Mintz's descending order of priorities as a prioritized

list of responding participants that is maintained throughout Mintz's targeting process. Ex-1002 ¶313.

- (7) **Element 6[F]: vi) providing to the network and from the list of (v) the location of at least a remote unit that revealed its location in the sub region.**

As explained in the previous element, once each wireless communication device in Suarez verifies that it is in the specified geographic location (i.e., the claimed sub region), it will reply to the dispatch center with an "affirmative indication" with its vehicle's identification, current location, and estimated travel time in order to fulfill the assignment, and Suarez-Mintz teaches a POSITA to prioritize the responses in list form. Ex-1002 ¶¶314-315.

Mintz's control center provides the network (i.e., responding networked vehicles) the location of at least a remote unit(s) (vehicle(s)) within the sub region from the list. For example, once Mintz's control center receives a vehicle's response, the control center notifies the vehicles to stop transmitting indication signals and identifies the vehicles to perform the task. Ex-1014, 20:22-27, 18:58-63 (same). Mintz also configures a map based on the responding vehicles "broadcast[ing] their indication signals in slots *corresponding to their position.*" *Id.*, 23:37-47 (emphasis added); *see also id.*, 25:46-51 ("Information may be sent by the control center to the vehicles to enable them to minimize average travel delays."). Therefore Mintz's

control center provides the network (networked vehicles in the fleet and control center) the location of the remote units (vehicles) within the sub region from the list of vehicle responses (determined by their “priority”) by providing a map to the network vehicle(s). A POSITA would have been motivated to provide a remote unit’s location in a sub region to the network in Suarez-Mintz at least so that responding vehicles (especially the one chosen from the prioritized list) would know whether or not they were dispatched to the customer. Ex-1002 ¶315.

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

At this time, the district court has not set a trial date, and therefore the concerns animating the Board’s precedent in *NHK/Fintiv* are not present. If, prior to institution, the court sets a trial date and/or PO raises an *NHK/Fintiv* argument, Petitioner will respectfully request an opportunity to respond to PO.

XIV. CONCLUSION

Claims 1, 4, 6, 9, and 14-15 of the ’752 Patent should be canceled.

Respectfully Submitted,

/s/ Ben Haber

Ben Haber (Reg. No. 67,129)

CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), Petitioner certifies that this petition includes 13,954 words, as measured by Microsoft Word, exclusive of the table of contents, mandatory notices under § 42.8, certificates of service, word count, and exhibits.

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

The undersigned hereby certifies that the above document was served on May 3, 2024, by filing this document through the Patent Trial and Appeal Board P-TACTS System, as well as delivering a copy via express mail upon the attorney of record for the patent at the following address:

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