UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RAVE WIRELESS, INC. AND MOTOROLA SOLUTIONS, INC.,
Petitioners

v.

SAMSCLOUD, LLC,
Patent Owner

IPR2027-00010

PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 12,154,421

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EXHIBIT LIST

Exhibit No.	Description
1001	U.S. Patent No. 11,468,757 ("'757 Patent")
1002	File History for '757 Patent
1003	U.S. Patent No. 12,154,421 ("'421 Patent")
1004	File History for '421 Patent
1005	Declaration of David H. Williams
1006	Curriculum Vitae of David H. Williams
1007	U.S. Patent No. 7,317,927 ("Staton")
1008	U.S. Patent App. Pub. No. 2018/0158305 ("Noland")
1009	U.S. Patent App. Pub. No. 2019/0166480 ("Rauner")
1010	U.S. Patent Application No. 2017/0287006 ("Azmoodeh")
1011	U.S. Patent 10,085,117 ("Smith")
1012	File History for Reissue Application No. 18/648,671
1013	U.S. Patent No. 7,881,733 ("Staton '733")
1014	U.S. Patent Application No. 2014/0155094 A1 ("Zises")
1015	U.S. Patent Application No. 2016/0358432 A1 ("Branscomb")
1016	U.S. Patent Application No. 2018/0075108 A1 ("Park")
1017	U.S. Patent No. 6,714,791 ("Friedman")
1018	U.S. Patent No. 6,353,390 ("Beri")
1019	U.S. Patent No. 6,721,652 ("Sanqunetti")
1020	Nat'l Emergency No. Ass'n, *A Public Safety Answering Point Managers' Guide to Geographic Information Technology* (Oct.

	2002), https://cdn.ymaws.com/www.nena.org/resource/collection/2BEE3832-DD9B-4CD6-AB89-979F2CA8F789/57-001A_GIS_Guide.pdf.
1021	U.S. Patent No. 7,133,685 ("Hose")
1022	U.S. Patent No. 7,164,986 ("Humphries")
1023	U.S. Patent No. 10,257,644 ("Samsung SDS")
1024	U.S. Patent No. 9,747,380 ("IBM")
1025	U.S. Patent No. 5,839,088 ("Hancock '088")
1026	U.S. Patent No. 6,339,744 ("Hancock '744")
1027	U.S. Patent No. 6,618,593 ("Drutman")
1028	U.S. Patent No. 8,103,729 ("Tornabene")
1029	Cleary Center, The Jeanne Clery Act, https://www.clerycenter.org/the-clery-act#:~:text=The%20Clery%20Act%20requires%20colleges,place%20to%20improve%20campus%20safety.
1030	Stephen Lawson, *Worker Tracking Service Coming to Nextel Phones*, Network World (Mar. 4, 2003), https://www.networkworld.com/article/895404/uc-voip-worker-tracking-service-coming-to-nextel-phones.html.
1031	Gary Krakow, *Two New Cellular Phones Built for Abuse*, NBC News (Feb. 20, 2004, 3:51 PM EST), https://www.nbcnews.com/id/wbna4324939.
1032	CIO Staff, *Sprint Launches GPS-Based Child-Locator Service*, CIO (Apr. 13, 2006), https://www.cio.com/article/257110/mobile-sprint-launches-gps-based-child-locator-service.html.
1033	U.S. Patent No. 9,510,141 ("Matamala")

1034	Ecma Int'l, ECMA-340, *Near Field Communication — Interface and Protocol (NFCIP-1)* (3d ed. June 2013).

MANDATORY NOTICES UNDER 37 C.F.R. 42.8(A)(1)

I. REAL PARTY-IN-INTEREST UNDER 37 C.F.R. 42.8(B)(1)

Rave Wireless, Inc., is a Delaware corporation ("Rave") and wholly-owned subsidiary of Motorola Solutions, Inc. ("MSI"), which is a Delaware corporation and publicly traded company. Rave and MSI are the Petitioners.

No other parties exercised or could have exercised control over this Petition; no other parties funded or directed this Petition. *See* Office Patent Trial Practice Guide, 77 FED. REG. 48759, 48759-60.

II. RELATED MATTERS UNDER 37 C.F.R. 42.8(B)(2)

Patent Owner ("PO") asserted the '421 Patent against Rave in a complaint filed on July 23, 2026. *Samscloud, LLC v. Rave Wireless, Inc., d/b/a Rave Mobile Safety*, Case No. 1-26-cv-00900 (D. Del.). On the same day, PO also asserted the '757 Patent against Raptor Technologies, LLC in *Samscloud, LLC v. Rave Wireless, Inc.*, Case No. 1-26-cv-00899 (D. Del.) and Genetec Inc. in *Samscloud, LLC v. Genetec Inc.*, 1-26-cv-00901 (D. Del.).

III. LEAD AND BACK-UP COUNSEL UNDER 37 C.F.R. 42.8(B)(3)

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A Power of Attorney is filed concurrently herewith under 37 C.F.R. 42.10(b).

IV. SERVICE INFORMATION UNDER 37 C.F.R. 42.8(B)(4)

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V. CLAIM LISTING

A. Claim 1

1[pre]	A method for facilitating supervision of individuals based on geofencing, the method comprising:
1[a]	receiving, using a communication device, at least one security parameter from at least one supervisor device associated with at least one supervisor;
1[b]	receiving, using the communication device, a geographical location from the at least one supervisor device;
1[c]	analyzing, using a processing device, the geographical location based on the at least one security parameter;
1[d]	generating, using the processing device, a geofence corresponding to a geographical area based on the analyzing;
1[e]	receiving, using the communication device, at least one supervisee data associated with a supervisee from at least one supervisee device;
1[f]	analyzing, using the processing device, the at least one supervisee data based on the geofence;
1[g]	generating, using the processing device, a supervision notification based on the analyzing of the at least one supervisee data;
1[h]	transmitting, using the communication device, the supervision notification to the at least one supervisor device; and
1[i]	storing, using a storage device, the at least one supervisee data and the supervision notification, wherein:
1[j]	the geofence is characterized by a geofence area corresponding to the geographical area, wherein the geofence comprises a plurality of geofence grid boxes associated with the geofence area, wherein each geofence grid box is characterized by a grid box geofence area of the geofence area, wherein the method comprises:
1[j][1]	receiving, using the communication device, at least one grid parameter

	from the at least one supervisor device;
1[j][2]	analyzing, using the processing device, the at least one grid parameter;
1[j][3]	determining, using the processing device, the grid box geofence area based on the analyzing of the at least one grid parameter; and
1[j][4]	generating, using the processing device, a number of geofence grid boxes based on the determining.

B. Claim 2

2[a]	The method of claim 1 further comprising: receiving, using the communication device, at least one location indication associated with the geographical area from the at least one supervisor device;
2[b]	identifying, using the processing device, at least one location corresponding to the at least one location indication;
2[c]	analyzing, using the processing device, the at least one supervisee data based on the at least one location; and
2[d]	determining, using the processing device, a location anomaly based on the analyzing of the at least one supervisee data based on the at least one location, wherein the generating of the supervision notification is based on the determining.

C. Claim 3

3[a]	The method of claim 1, wherein the supervision notification comprises at least one supervisee event, wherein the at least one supervisee event is associated with at least one action, wherein the method comprises:
3[b]	determining, using the processing device, the at least one action based on the supervision notification; and
3[c]	performing, using the processing device, the at least one action based on the determining, wherein the at least one action comprises an establishment of a communication session between the at least one supervisor device and the at least one supervisee device.

D. Claim 4

4[a]	The method of claim 1 further comprising: identifying, using the processing device, the supervisee based on the analyzing of the at least one supervisee data; and
4[b]	retrieving, using the storage device, supervisee profile data associated with the supervisee based on the identifying, wherein the generating of the supervision notification is based on the retrieving.

E. Claim 5

5[a]	The method of claim 1 further comprising: identifying, using the processing device, at least one object associated with the supervisee based on the analyzing of the at least one supervisee data; and
5[b]	determining, using the processing device, a lethality of the at least one object based on the identifying, wherein the generating of the supervision notification is based on the determining.

F. Claim 6

6[a]	The method of claim 1 further comprising: receiving, using the communication device, at least one environment data associated the geographical area corresponding to the geofence;
6[b]	analyzing, using the processing device, the at least one environment data; and determining, using the processing device, at least one threat based on the analyzing of the at least one environment data, wherein the generating of the supervisor notification is based on the determining.

G. Claim 7

7[a]	The method of claim 1 further comprising: retrieving, using the storage device, a blueprint associated with the geographical area corresponding to the geofence;

7[b]	analyzing, using the processing device, the blueprint and the at least one supervisee data; and
7[c]	determining, using the processing device, a location of the supervisee on the blueprint based on the analyzing of the blueprint and the at least one supervisee data, wherein the generating of the supervision data is based on the determining.

H. Claim 8

8[a]	The method of claim 1, wherein the at least one supervisee device comprises at least one sensor,
8[b]	wherein the at least one sensor is configured for detecting at least one signal made by the supervisee,
8[c]	wherein the at least one sensor is configured for generating the at least one supervisee data based on the detecting.

I. Claim 9

9[a]	The method of claim 1, wherein: the at least one security parameter comprises an altitude,
9[b]	the at least one grid parameter comprises a building floor, and
9[c]	the building floor is estimated from the altitude.

J. Claim 10

10[a]	The method of claim 1, wherein the supervisee is associated with at least one identification, wherein the method comprises:
10[b]	receiving, using the communication device, at least one indication corresponding to the at least one identification from the at least one supervisee device; and

10[c]	identifying, using the processing device, the supervisee based on the at least one indication, wherein the generating of the supervision notification is based on the identifying.

K. Claim 11

11[pre]	A system for facilitating supervision of individuals based on geofencing, the system comprising:
11[a]	a communication device configured for:
11[a][1]	receiving at least one security parameter from at least one supervisor device associated with at least one supervisor;
11[a][2]	receiving a geographical location from the at least one supervisor device;
11[a][3]	receiving at least one supervisee data associated with a supervisee from at least one supervisee device; and
11[a][4]	transmitting a supervision notification to the at least one supervisor device;
11[b]	a processing device configured for:
11[b][1]	analyzing the geographical location based on the at least one security parameter;
11[b][2]	generating a geofence corresponding to a geographical area based on the analyzing;
11[b][3]	analyzing the at least one supervisee data based on the geofence; and
11[b][4]	generating the supervision notification based on the analyzing of the at least one supervisee data; and
11[c]	a storage device configured for storing the at least one supervisee data and the supervision notification, wherein:
11[d]	the geofence is characterized by a geofence area corresponding to the geographical area, wherein the geofence comprises a plurality of

	geofence grid boxes associated with the geofence area, wherein each geofence grid box is characterized by a grid box geofence area of the geofence area,
11[d][1]	wherein the communication device is further configured for receiving at least one grid parameter from the at least one supervisor device,
11[d][2]	wherein the processing device is further configured for: analyzing the at least one grid parameter;
11[d][3]	determining the grid box geofence area based on the analyzing of the at least one grid parameter; and
11[d][4]	generating a number of geofence grid boxes based on the determining.

L. Claim 12

12[a]	The system of claim 11, wherein the communication device is further configured for receiving at least one location indication associated with the geographical area from the at least one supervisor device, wherein the processing device is further configured for:
12[b]	identifying at least one location corresponding to the at least one location indication;
12[c]	analyzing the at least one supervisee data based on the at least one location; and
12[d]	determining a location anomaly based on the analyzing of the at least one supervisee data based on the at least one location, wherein the generating of the supervision notification is based on the determining.

M. Claim 13

13[a]	The system of claim 11, wherein the supervision notification comprises at least one supervisee event, wherein the at least one supervisee event is associated with at least one action, wherein the processing device is further configured for:
13[b]	determining the at least one action based on the supervision notification; and

13[c]	performing the at least one action based on the determining, wherein the at least one action comprises an establishment of a communication session between the at least one supervisor device and the at least one supervisee device.

N. Claim 14

14[a]	The system of claim 11, wherein the processing device is further configured for identifying the supervisee based on the analyzing of the at least one supervisee data,
14[b]	wherein the storage device is configured for retrieving supervisee profile data associated with the supervisee based on the identifying, wherein the generating of the supervision notification is based on the retrieving.

O. Claim 15

15[a]	The system of claim 11, wherein the processing device is further configured for: identifying at least one object associated with the supervisee based on the analyzing of the at least one supervisee data; and
15[b]	determining a lethality of the at least one object based on the identifying, wherein the generating of the supervision notification is based on the determining.

P. Claim 16

16[a]	The system of claim 11, wherein the communication device is further configured for receiving at least one environment data associated the geographical area corresponding to the geofence, wherein the processing device is further configured for:
16[b]	analyzing the at least one environment data; and determining at least one threat based on the analyzing of the at least one environment data, wherein the generating of the supervisor notification is based on the determining.

Q. Claim 17

17[a]	The system of claim 11, wherein the storage device is further configured for retrieving a blueprint associated with the geographical area corresponding to the geofence,
17[b]	wherein the processing device is further configured for analyzing the blueprint and the at least one supervisee data; and
17[c]	determining a location of the supervisee on the blueprint based on the analyzing of the blueprint and the at least one supervisee data, wherein the generating of the supervision data is based on the determining.

R. Claim 18

18[a]	The system of claim 11, wherein the at least one supervisee device comprises at least one sensor,
18[b]	wherein the at least one sensor is configured for detecting at least one signal made by the supervisee,
18[c]	wherein the at least one sensor is configured for generating the at least one supervisee data based on the detecting.

S. Claim 19

19[a]	The system of claim 18, wherein: the at least one signal made by the supervisee comprises shaking the supervisee device abruptly, pressing a button, or speaking a specific phrase, wherein: the at least one sensor is configured for detecting the at least one signal,
19[b]	and the supervisee device is configured to optionally make an emergency call when the at least one sensor detects the at least one signal;
19[c]	wherein a phone number dialed in the emergency call is determined based on the geofence.

T. Claim 20

20[a]	The system of claim 11, wherein the supervisee is associated with at least one identification,

20[b]	wherein the communication device is further configured for receiving at least one indication corresponding to the at least one identification from the at least one supervisee device,
20[c]	wherein the processing device is further configured for identifying the supervisee based on the at least one indication, wherein the generating of the supervision notification is based on the identifying.

U. Claim 21

21[a]	The system of claim 11, wherein each geofence grid box is further characterized by: a) storing at least one emergency contact number associated with the geographical area represented by the grid box geofence area;
21[b]	b) wherein the emergency contact number includes a 911 service or equivalent emergency service specific to then geographical area of the grid box; and
21[c]	c) wherein the processing device is configured to automatically select and transmit supervisee data to the stored emergency contact number upon detecting an emergency situation within the corresponding grid box geofence area.

V. Claim 22

22[pre]	A method for facilitating supervision of individuals based on geofencing, the method comprising:
22[a]	receiving, using a communication device, at least one security parameter from at least one supervisor device associated with at least one supervisor;
22[b]	receiving, using the communication device, a geographical location from the at least one supervisor device;
22[c]	analyzing, using a processing device, the geographical location based on the at least one security parameter;
22[d]	receiving, using the communication device, at least one supervisee data associated with a supervisee from at least one supervisee device;

22[e]	analyzing, using the processing device, the at least one supervisee data based on the geographical location;
22[f]	generating, using the processing device, a supervision notification based on the analyzing of the at least one supervisee data;
22[g]	transmitting, using the communication device, the supervision notification to the at least one supervisor device; and
22[h]	storing, using a storage device, the at least one supervisee data and the supervision notification; wherein:
22[i]	the at least one supervisee device comprises at least one sensor,
22[j]	wherein the at least one sensor is configured for detecting at least one signal made by the supervisee,
22[k]	wherein the at least one sensor is configured for generating the at least one supervisee data based on the detecting,
22[l]	wherein the supervisee data comprises audio and video recordings;
22[m]	wherein the at least one sensor is selected from one or more nearby sensors based on the most proximal nearby sensor by geographical location in real-time; and
22[n]	wherein the at least one sensor tracks the supervisee as the supervisee moves between the one or more nearby sensors.

W. Claim 23

23[a]	The method of claim 22**,** wherein: the supervision notification is sent to a first distinct group of one or more supervisor devices correlated with the geographical location;
23[b]	the first distinct group of one or more supervisor devices is comprised of nearby first responders and dispatchers; and

23[c]	the supervision notification may be sent to a second distinct group of one or more supervisor devices based on the location and expertise of the second distinct group.

X. Claim 24

24[a]	The method of claim 22**,** wherein: wherein the supervisee is associated with at least one identification,
24[b]	wherein the communication device is further configured for receiving at least one indication corresponding to the at least one identification from the at least one supervisee device,
24[c]	wherein the processing device is further configured for identifying the supervisee based on the at least one indication, wherein the generating of the supervision notification is based on the identifying.

PETITION

I. INTRODUCTION

PO sued Rave, a U.S. company, just over two months ago, alleging that Rave's software products infringe the '421 Patent. Claims 1-24 ("Challenged Claims") nevertheless issued after material Office errors, including those errors affecting the closely related '757 Patent. The '421 Patent is a continuation-in-part of the '757 Patent application and shares the same inventor and "geofence grid box" limitations. The Office allowed the claims after finding the prior art lacked that functionality, but the Staton '733 reference (EX[1013]) cited by the Office itself discloses it. EX[1004], 254-258; EX[1005], ¶¶36, 94, 202-204. Petitioners request review to correct the material errors.

II. REQUIREMENTS UNDER 37 C.F.R. 42.104

A. Grounds for Standing

Petitioners certify that the '421 Patent is eligible for *inter partes* review and that Petitioners satisfy 37 C.F.R. 42.104.

B. Identification of Challenge and Statement of Precise Relief Requested

Ground	'421 Patent Claims	Basis for Challenge
1	1-4, 6, 10, 11-14, 16, 20, 21	Obvious in view of Staton + knowledge of a person of ordinary skill in the art ("POSITA")
2	5, 7, 8, 15, 17-19, 22-24	Obvious in view of Staton + Noland + knowledge of a POSITA

Ground	'421 Patent Claims	Basis for Challenge
3	9	Obvious in view of Staton + Smith + knowledge of a POSITA
4	1-4, 6-8, 10, 11-14, 16-19, 20, 21	Obvious in view of Rauner + Azmoodeh + knowledge of a POSITA
5	5, 15, 22-24	Obvious in view of Rauner + Azmoodeh + Noland + knowledge of a POSITA
6	9	Obvious in view of Rauner + Azmoodeh + Smith + knowledge of a POSITA

III. THE '421 PATENT AND PROSECUTION HISTORY

The '421 Patent is a continuation-in-part of the application that issued as the '757 Patent. It, like the '757 Patent, purports to improve "conventional geofencing applications" that "do not allow easy access for a user to create the geofence." EX[1003], 1:28-29.

It describes a generic "communication device" that receives a security "parameter" and "geographical location" from a "supervisor device" to create a geofence for monitoring a "supervisee." *Id.* 11:56-63, 12:1-14.

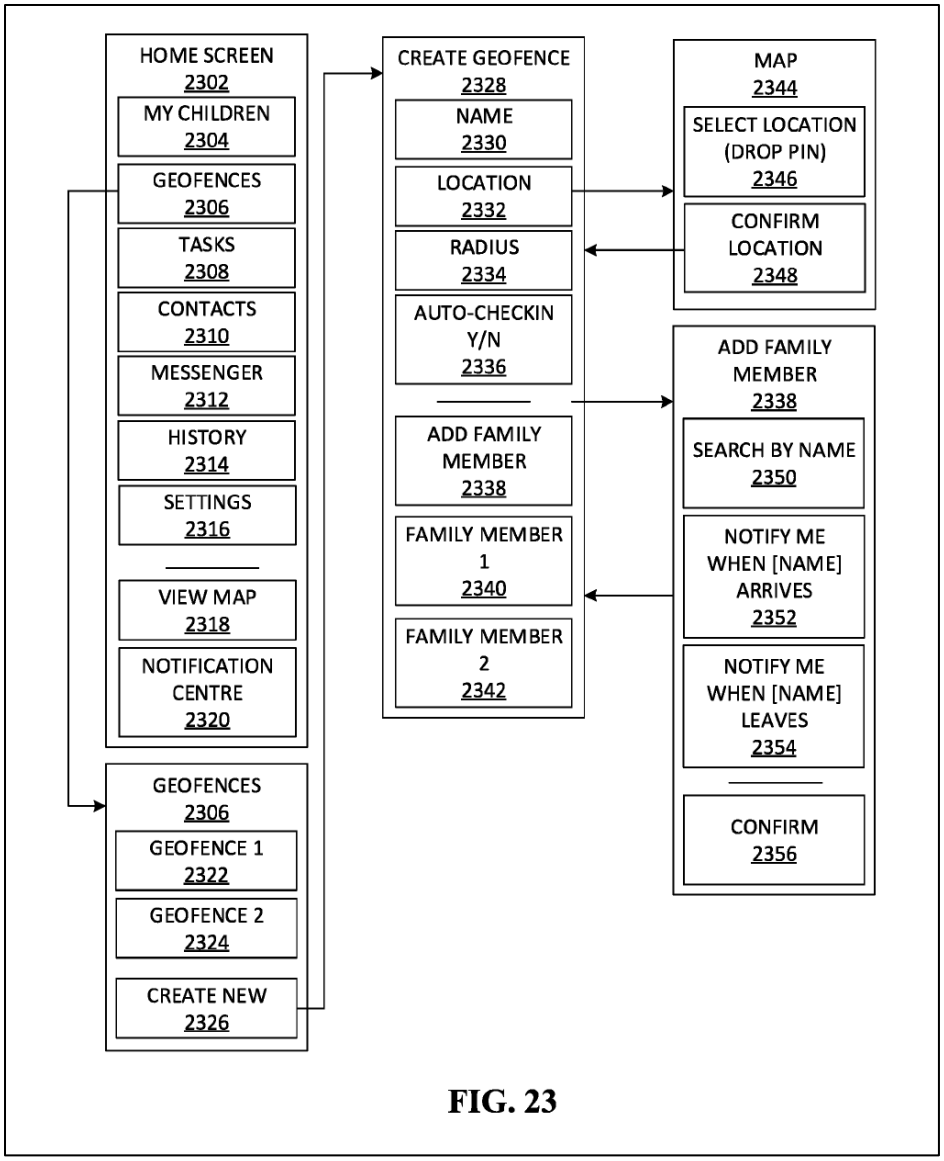


FIG. 23

It also describes "geofence grid boxes." EX[1003], 13:27-41. A communication device receives a "grid parameter," which a processing device analyzes to determine the boxes' area and number. *Id.* 13:32-41; Fig. 5, 14:49-64. It does not explain the parameter or how it creates the boxes. EX[1005], ¶¶54-63, 85-92, 98-102. Fig. 5 largely repeats the claim language:

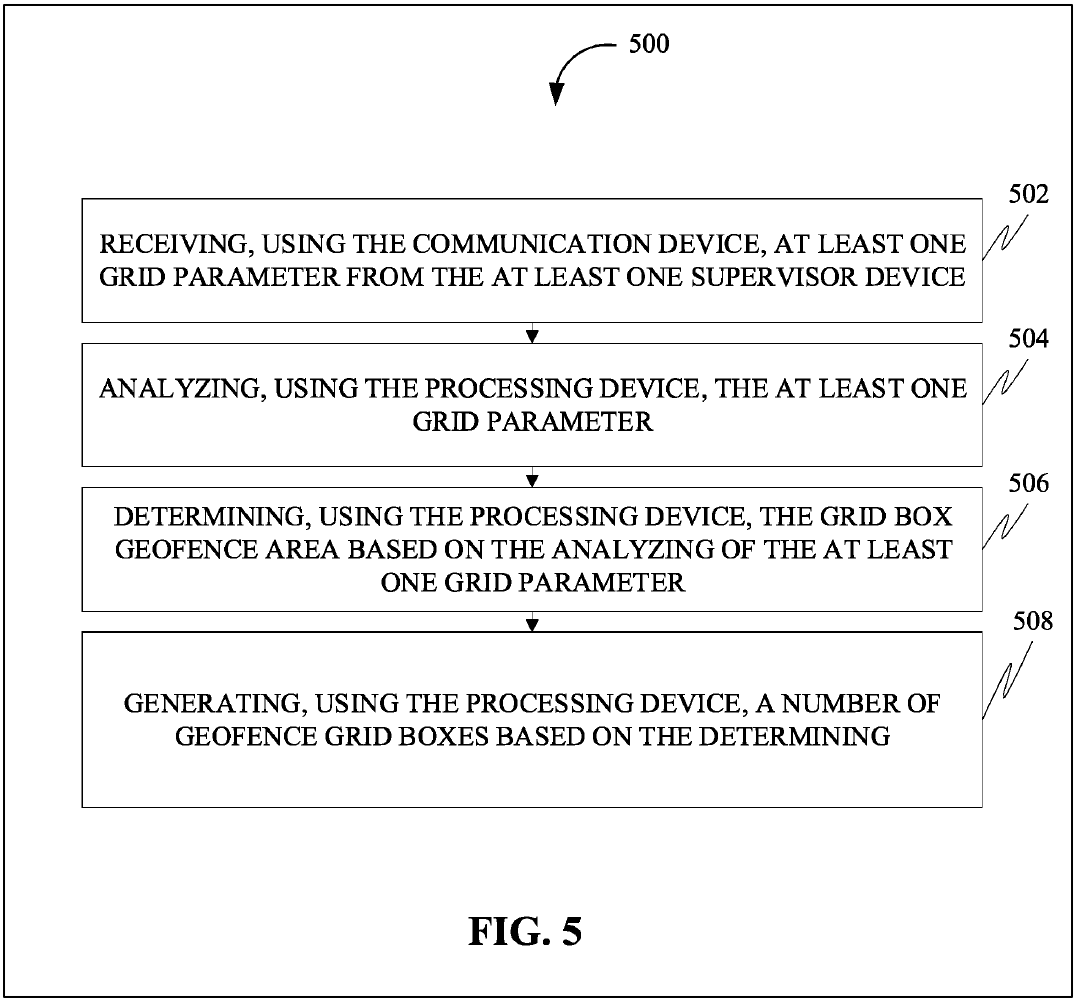


FIG. 5

Despite these disclosures, the Office allowed the claims based on the "geofence grid box" limitations, finding that cited art lacked them. EX[1004], 254-258. That finding was incorrect because prior art contains the functionality. EX[1005], ¶¶35-84, 94, 202.

IV. PRIORITY DATE AND LEVEL OF ORDINARY SKILL IN THE ART

The '421 Patent claims priority to Provisional Application No. 62/814,097, filed March 5, 2019. EX[1003], (21)-(22), (60), (63). Petitioners assume, without conceding, that the Challenged Claims are entitled to that priority date.

As of March 5, 2019, a POSITA would have had a bachelor's degree in electrical engineering, computer science, or a similar field and two years' experience with location-based services or mobile applications, or equivalent experience. EX[1005], ¶33. Additional relevant experience could substitute for education. *Id.*

V. CLAIM CONSTRUCTION

"Geofence": A POSITA would understand "geofence" to include a virtual geographic boundary and associated settings or parameters that trigger an alert upon entry or exit. EX[1005], ¶¶103-114. The specification describes it as:

> a virtual perimeter for a real-world geographical area that *…allows an individual to trigger an alert to multiple users when the individual may enter and/or exit the geofence*

EX[1003], 1:20-25.

§ 112(f) Terms: Applicant conceded during prosecution that § 112(f) applies to the terms below because they use generic "device" placeholders with functional language and insufficient structure. EX[1004], 181-183. Applicant identified the corresponding structure, which Petitioners apply here. EX[1004], 207-208; *id.*:

Term	Corresponding Structure
"a communication device configured for: receiving...receiving...receiving...and transmitting"	Program or database inside a "server computer" that "handles messages between the server computer and external devices," EX[1004], 207-208; EX[1003] Figs. 1, 2-10.

"a processing device configured for: analyzing...generating...analyzing...and generating…"	Program or database "inside of the server computer" that "receives data from the communication device" and "stores the processed data on the storage device," EX[1004], 207-208; EX[1003], Figs. 1, 2-10.
"a storage device configured for storing..."	Program or database "inside of the server computer" that "stores" the data, EX[1004], 207-208; EX[1003], Figs. 1, 2-10.

Petitioners apply the plain meaning to all other terms and submit that the claims are invalid under any reasonable construction. 37 C.F.R. §42.200.

VI. SUMMARY OF PRIOR ART

A. Staton (EX[1007])

Staton issued January 8, 2008 and is prior art under 35 U.S.C. §§ 102(a)(1)-(2). Staton discloses monitoring individuals with geofences comprising geofence grid boxes. EX[1007], Abs., 3:6-18, Fig. 5; EX[1005], ¶¶115-120.

B. Noland (EX[1008])

Noland, published June 7, 2018, is prior art under 35 U.S.C. §§ 102(a)(1)-(2). It discloses automated gunshot detection and emergency response. EX[1008], ¶¶[0015]–[0019]; EX[1005], ¶¶121-125.

C. Rauner (EX[1009])

Rauner was filed January 7, 2019, published May 30, 2019, and is a continuation of Application No. 15/865,245, filed January 8, 2018, making it prior

art under 35 U.S.C. § 102(a)(2). It uses geofences to coordinate emergency response. EX[1009], (22), (43), ¶¶[0048], [0239]; EX[1005], ¶¶126-131.

D. Azmoodeh (EX[1010])

Azmoodeh, published October 5, 2017, is prior art under 35 U.S.C. §§ 102(a)(1)-(2) and it uses geofence grid boxes to monitor devices within a geographic region. EX[1010], ¶¶[0015], [0022], [0046]; EX[1005], ¶¶132-135.

E. Smith (EX[1011])

Smith, issued September 25, 2018, is prior art under 35 U.S.C. §§ 102(a)(1)-(2) and it discloses altitude-based geofencing using lateral position and altitude parameters. EX[1011], Abs., 4:54-60, 5:46-48, 5:62-65; EX[1005], ¶¶136-139.

VII. GROUNDS OF UNPATENTABILITY

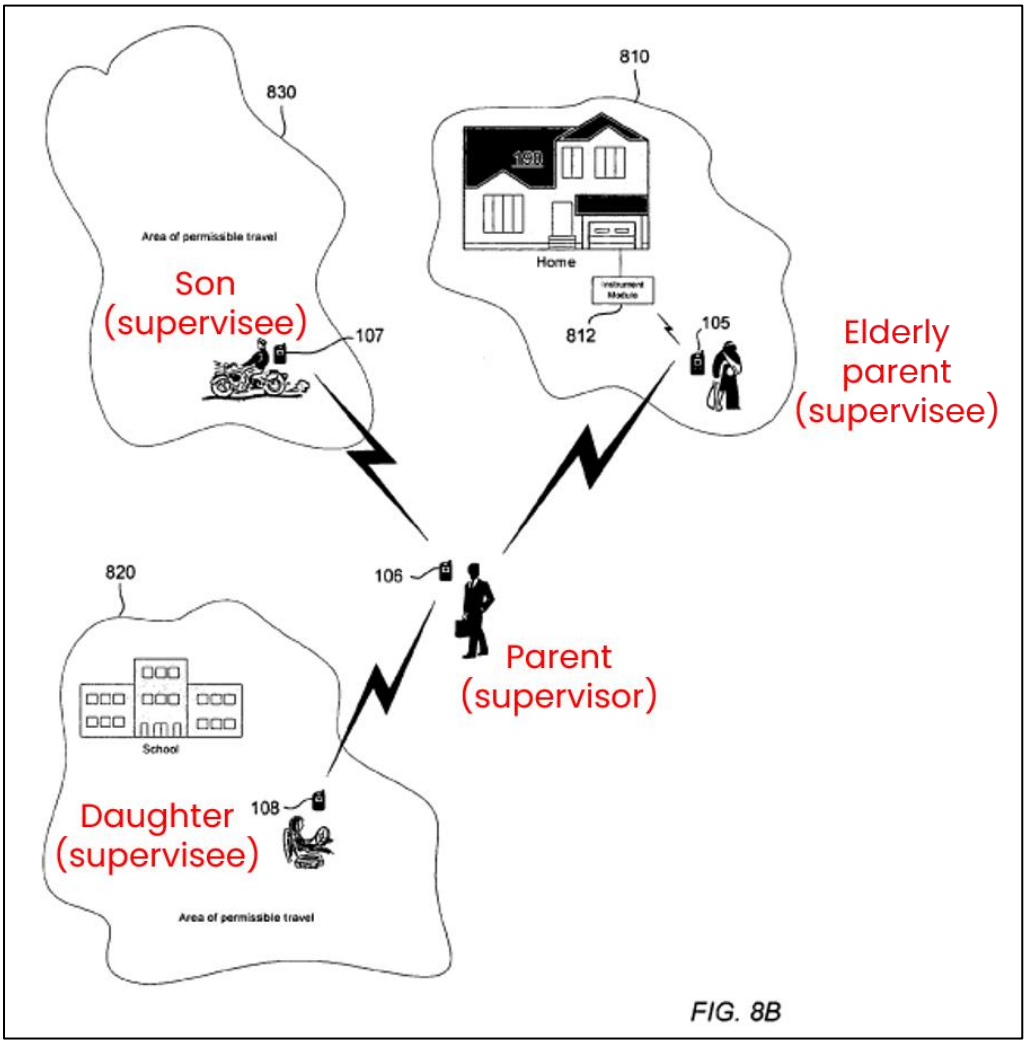
A. Ground 1: Obviousness of Claims 1-4, 6, 10, 11-14, 16, 20, and 21 In View of Staton (EX[1007]) + Knowledge of a POSITA

1. Claim 1

a. 1[pre]

To the extent limiting, Staton discloses the preamble—a **method for facilitating supervision of individuals based on geofencing**. §V; EX[1005], ¶¶108, 154-157, 503-509. The geofence's virtual geographic boundary corresponds to Staton's "geographical zones." EX[1005], ¶¶154-156; EX[1007], 1:20-22, 26:24-26; *id.* 8:11-14, 1:64-67. "'[G]eofencing' events" with settings/parameters track "entering or leaving a geographical area that has been geofenced." *Id.* 13:65-67,

14:1-3. For example, in Fig. 8B, annotated below, "a parent can own a PDA 106 which monitors all of the other PDAs" and "the parent may…delineate specific areas where the son can travel, and…cannot travel." *Id.* 27:11-15, 27:52-54.



b. 1[a]

Staton discloses 1[a]. EX[1005], ¶¶158-161, 503-509.

Applicant's §112(f) "**communication device**" is disclosed by Staton's backend control system's communication components—the functions, including programs, middleware, and software, running in the gateways, routing services,

databases, web server, networks, and codec—that handle messaging between server-side components and client devices (red below). EX[1007], 6:44-48, 6:66-7:23; *id.* 7:6-15. Staton renders obvious that the communication device components are implemented on a common server, specifically suggesting and motivating that the various parts of backend control system are on a single computer system, with a reasonable expectation of success. EX[1007], 19:62-67, Fig. 6; EX[1005], ¶¶140-149.

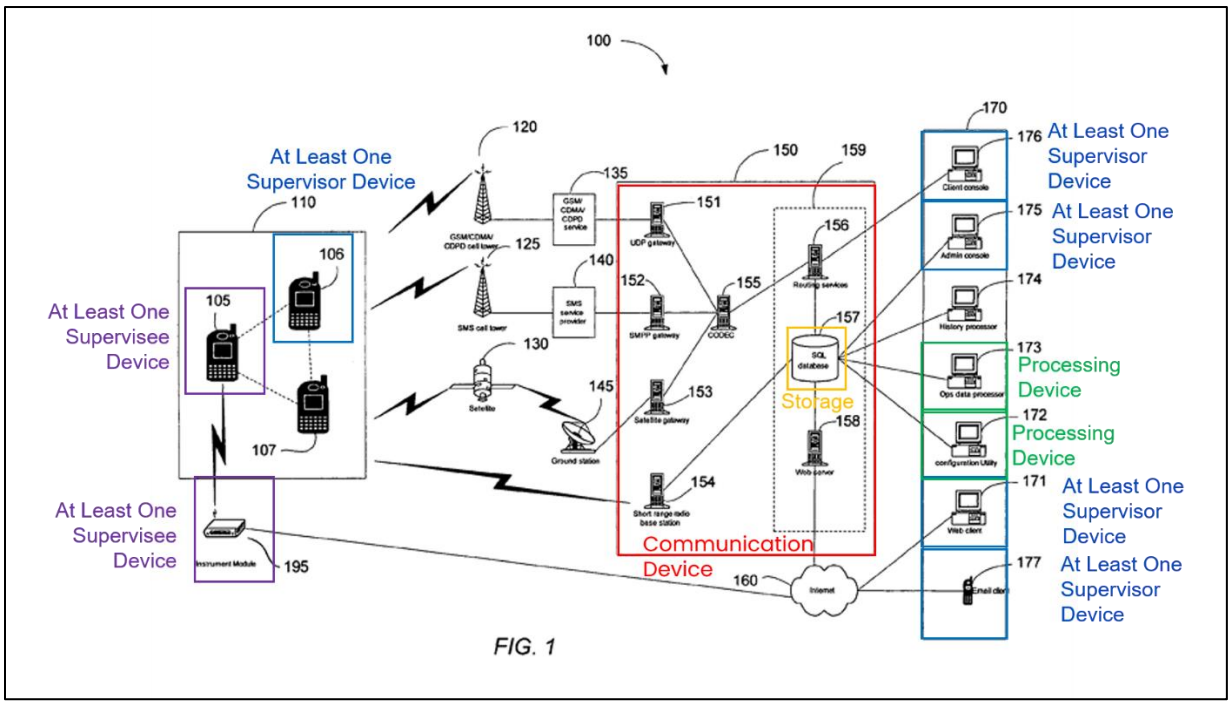


FIG. 1

The "**at least one security parameter**" corresponds to properties and rules associated with Staton's geographical zones, *e.g.*, "a name, description and a flag determining if the zone is an off-limits zone or an enclosed zone." EX[1007], 14:53-55. Security parameters also include "speed threshold," a "'no-fly zone'" flag, "color

coded…security threat," *id.* 16:14-17, or configurable events such as "Zone Boundary Enter…Zone Boundary Exit…and Smart Time reporting…or Scheduled Time reporting." *Id.* 11:50-53. These zone properties, event rules, thresholds, and settings govern the supervisory monitoring behavior of the system and are "security parameters."

The "**at least one supervisor device associated with at least one supervisor**" includes devices (blue above) that supervisors use for configuration and monitoring individuals, including PDA 106 (monitoring PDA), home computer (not depicted), web client 171, and client and administrator consoles 176 and 175. *See* EX[1007], 7:25-33; 15:17-22; 17:26-33; 24:12-25; EX[1005], ¶¶113, 150-153, 158.

In operation, Staton's communication device "**receiv[es]**" the security parameters from the supervisor device. EX[1005], ¶¶159-161. The supervisor device's user interface permits configuring the PDA through user interfaces, including entering zone boundaries, priority events, time reporting, event outputs, and messaging events. EX[1007], 11:27-50, 27:66-28:2. These parameters are sent to the backend control system's communication components (**communication device**) for processing. *Id.* 11:27-50, 25:60-62.

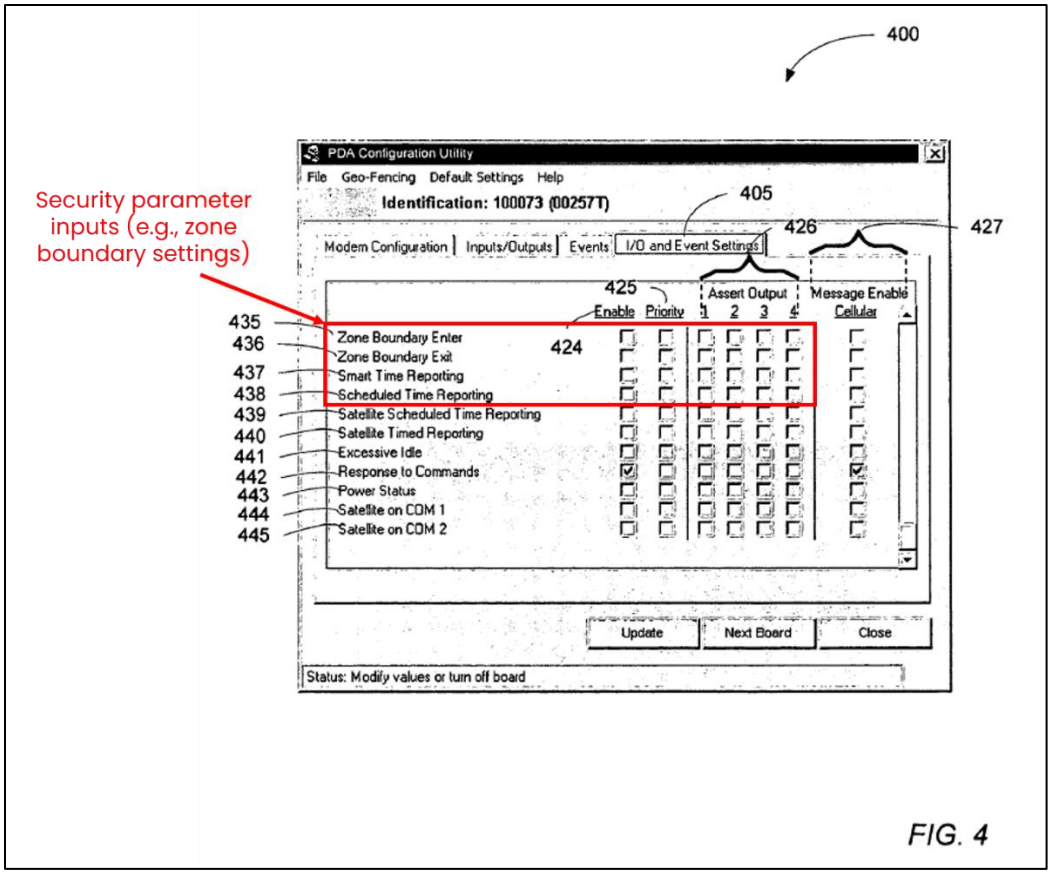


FIG. 4

c. 1[b]

Staton discloses 1[b]. EX[1005], ¶¶162-163, 503-509.

The "**geographical location**" corresponds to the geographical areas/coordinates the supervisor defines to create geographical zones. *Id.* For example, "a geographical Zone can be created [by] selecting a plurality of coordinates …," EX[1007], 14:56-59, or by "display[ing] a map on which the user selects a rectangular shape 503 around the geographical area 504 that the user desires to define," *id.* 15:27-30. *See also id.* 2:49-52 ("geographical zone" can be home, work, school, state, city, etc.), 6:14-22, 14:22-24 ("constructed through a

combination of waypoints and/or zones"), 14:33-35 ("[E]ach waypoint defined by a coordinate and a radius.").

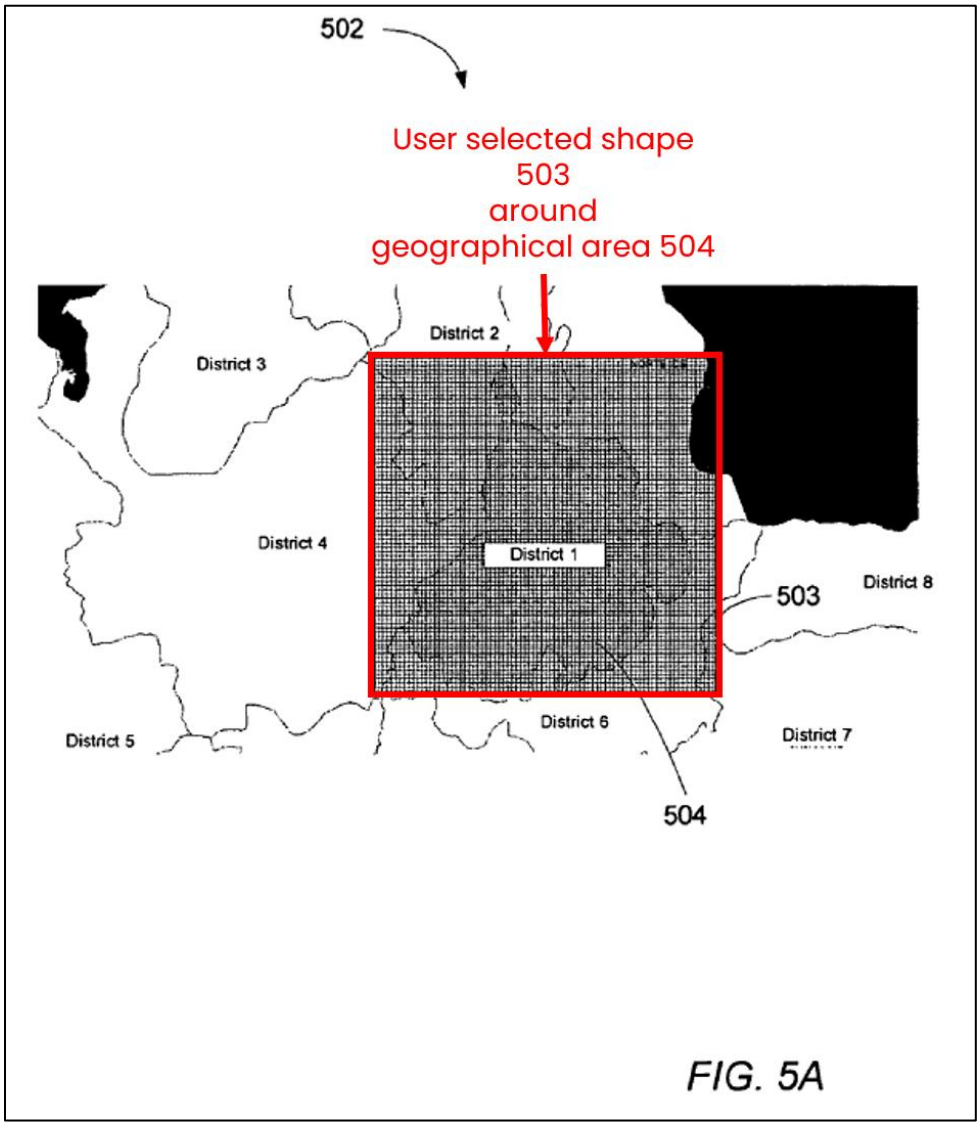


FIG. 5A

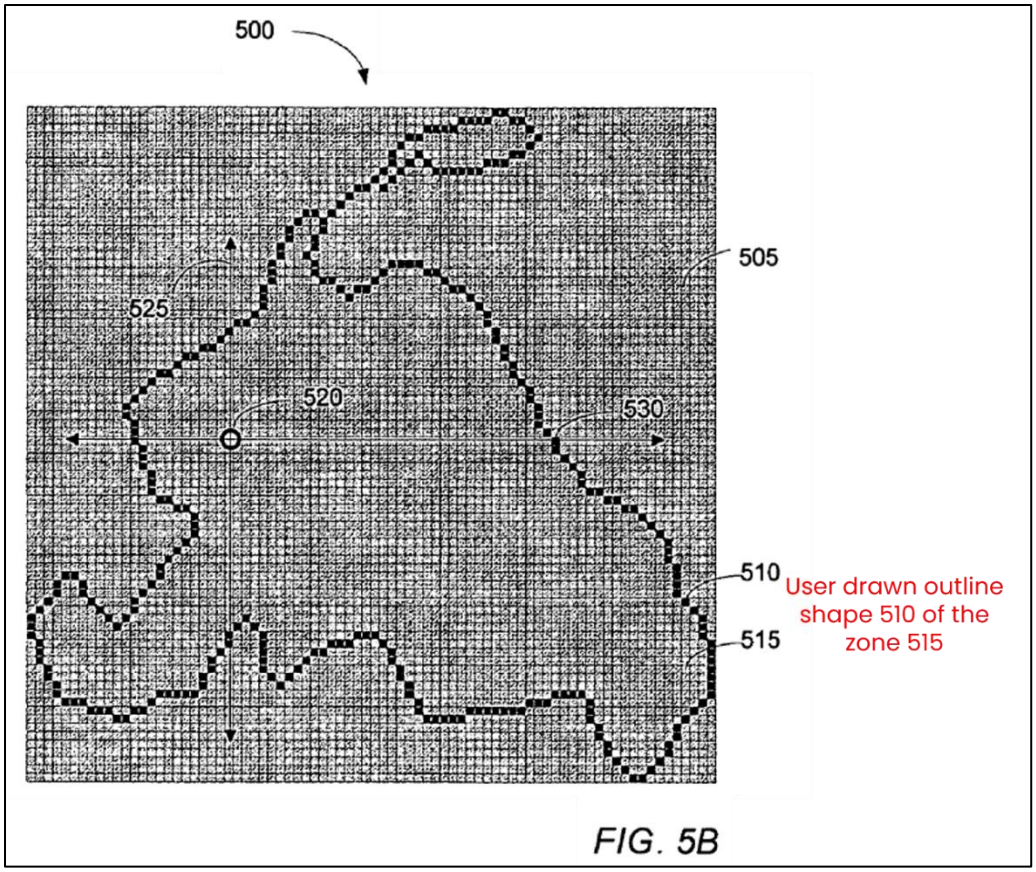


FIG. 5B

The geographical information is "**receiv[ed], using the communication device"** (communication components of backend control system) "**from the at least one supervisor device**" (supervisor functionality including home computer). EX[1005], ¶¶160-163; §VII.A.1.b. A supervisor inputs the geographical location using a home computer or other supervisor device, which connects to the configuration utility through a secure connection or web browser. EX[1007], 15:17-23, 27:26-27, 27:52-54, 27:66-28:2. The selected location is transmitted through communications components of the backend control system (**communication device**) to the configuration utility. EX[1005], ¶¶164-167.

d. 1[c]

Staton discloses 1[c]. EX[1005], ¶¶164-167, 503-509. Staton's §112(f) "**processing device**" is disclosed by Staton's processing components including operations data processor 173 and configuration utility 172 (green below), and response, notification, and event routers (not shown) which build and process geographical zones and notifications based on supervisor input. EX[1007], 15:4-9 ("Waypoints and zones are built by the operations data processor 173."); 11:48-50 ("The user interface may be part of an application that resides in the configuration utility 172 (FIG. 1)."); 15:25-31 ("configuration application displays a map on which the user selects a rectangular shape 503"). It would have been obvious to implement the processing device on the same server as the communications device as described for limitation 1[a]. §VII.A.1.b; EX[1005], ¶¶148-149. Staton's processing device tracks the processing device in the '421 Patent—both comprise one or more computing devices comprising hardware or software. EX[1003], 6:36-37, 29:8-23.

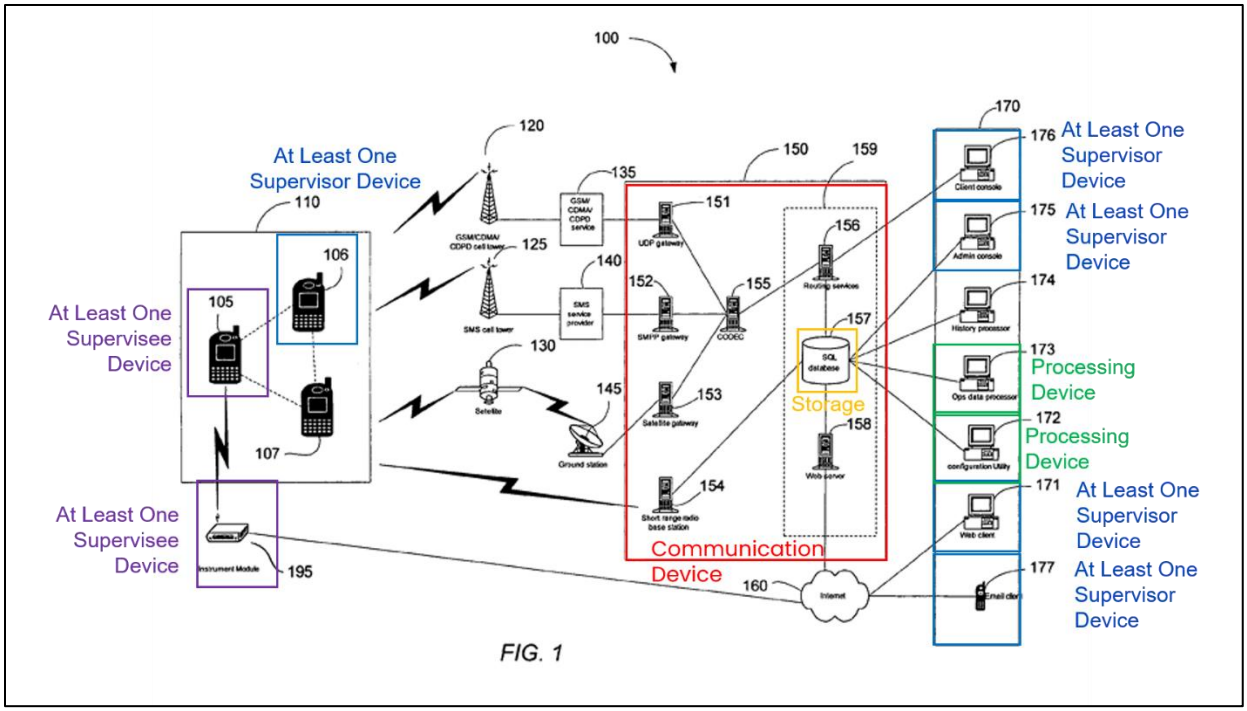


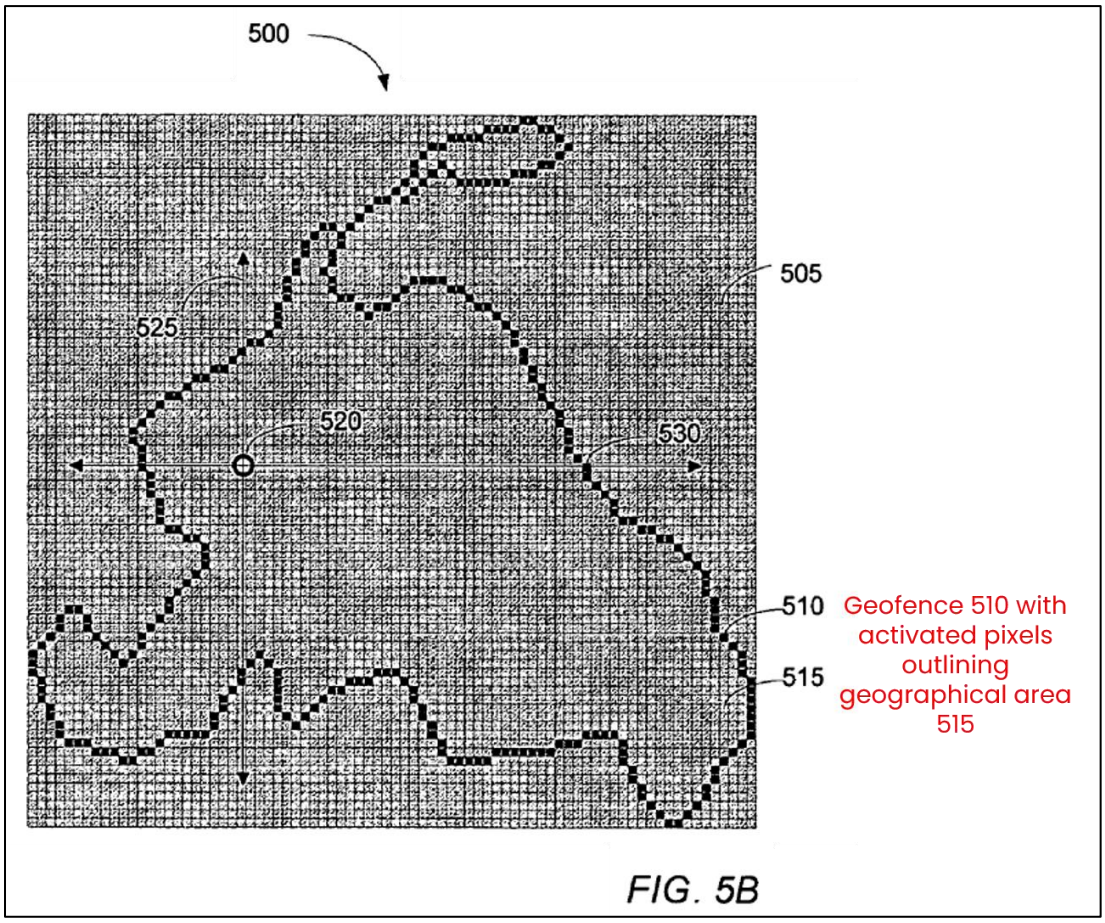
FIG. 1

Staton discloses the processing device "**analyzing…the geographical location based on the at least one security parameter**" because the operations data processor and configuration utility process the supervisor-selected location using the zone's security parameters to build the geographical zone, to control the kind of zone generated and how it is analyzed. EX[1005], ¶¶164, 166. For example, the off-limits/enclosed flag determines whether the resulting zone is a restricted or contained area. EX[1007], 14:53-55; EX[1005], ¶¶164, 166. Other security parameters likewise affect locations and zone operation: danger levels identify unsafe areas, while speed and time thresholds detect boundary crossings and schedule deviations. EX[1007], 16:14-15, 28:52-56, 11:64-12:1, 5:10-14; EX[1005], ¶¶166-167.

e. 1[d]

Staton discloses 1[d]. EX[1005], ¶¶168-171, 503-509; §V.

The "**geofence corresponding to a geographical area**," shown below, is outline shape 510 of zone 515 in pixel map 500—a virtual boundary defined by pixels or coordinates for a real-world area. EX[1007], 2:53-65, 16:47-52. It also includes associated settings, such as triggering alerts upon entry or exit. *Id.* 14:1-3; 15:31-34.



The geofence is "**generat[ed], using the processing device**," *e.g.*, the configuration utility and operations data processor, as described for limitation 1[c].

EX[1007], 15:4-5, 16:43-52, 26:39-41. Staton confirms those server-side processing components generate the geofence: "Waypoints and zones are built by the operations data processor 173," and the pixilated image may be "created in the configuring computer" and "simply loaded onto the PDA 105," so that "the PDA 105 does not need to build or construct the image by itself." *Id.* 15:4-5, 16:53-56. It is "**based on the analyzing**" because those components build the zone from the selected area and associated parameters, including off-limits/enclosed flags, speed thresholds, and event configurations. *Id.* 14:53-55, 16:13-20.

f. 1[e]

Staton discloses 1[e]. EX[1005], ¶¶172-174, 503-509.

The "**at least one supervisee device**" is the device carried by/associated with the monitored individual (the supervisee), *e.g.*, PDA 105. *Id.* The "**at least one supervisee data**" is Staton's geocoded location data, event messages, and other information transmitted from the supervisee device to the communication components of backend control system 150 ("**receiving, using the communication device**"). For example, "the PDA 105 communicates with…base stations 120, which in turn communicates with the service provider 135," which sends data to backend control system 150 to "map[] the correct destination if any" for sending a notification. EX[1007], 8:14-19.

The data received by the backend control system constitutes "**supervisee data associated with a supervisee**" because it includes the monitored individual's location and event data. EX[1005], ¶¶173-174; EX[1007], 16:18-23 (supervisee data including whether supervisee is in a geofence is transmitted from PDA 105), 8:11-14, 28:5-12, 29:19-30.

g. 1[f]

Staton discloses 1[f]. EX[1005], ¶¶175-190, 503-509.

The response and notification routers of the backend control system (parts of the "**processing device**," *see* §VII.A.1.d) **analyze supervisee data** in two ways:

(1) They analyze whether/to whom a supervision notification should be sent; *e.g.*, "[t]he remote notify router 681" receives geocoded location and event information and queries the resources database to determine whether a notification is required. EX[1007], 22:22-28. The analysis is "**based on the geofence**" because the data reflects geofence events such as entering or leaving a geofence. *Id.* 14:2-4, 14:12-13, 13:65-66.

(2) They analyze if a supervisor client console is tracking the supervisee PDA; *e.g.*, for an inbound event, the response router determines whether client console is tracking the supervisee PDA and requires notification. *Id.* 21:47-51. That analysis is likewise "**based on the geofence**" because the console

tracks PDAs within a waypoint or geographical zone. *Id.* 21:47-51, 17:30-33, 17:48-52.

To the extent PO asserts that this limitation requires a server-side comparison of the supervisee's real-time location with the geofence boundary, that is not required, but Staton also renders that obvious. EX[1005], ¶180. Staton's supervisee's PDA performs this "simple calculation" using GPS data, loaded zones, and event data, but Staton does not say whether the server also does. EX[1007], 16:6-9, 16:57-61, 26:44-50. Allocating the function between server and client was a routine design choice. A POSITA would have been motivated to add the server comparison for redundancy or to support lower-power client devices and conserve battery power. EX[1005], ¶¶181, 185-187, 224, 237. The modification would have had a reasonable expectation of success because the Staton server already receives supervisee data, has the geofence map, and includes the PDAs' geofencing software. *See* §§VII.A.1.e-f (limitations 1[d]-1[e]); EX[1007], 26:63-65; EX[1005], ¶¶182-189. Selecting the server, client, or both remained a routine design choice. EX[1005], ¶¶188, 506. Indeed, the '421 Patent recognizes that steps may be performed by a server or client computer, EX[1003] 9:1-3, and that a server may analyze supervisee location. *Id.* 25:55-57; *id.* 6:64-67 ("[T]he server computer may include a processing device configured for performing data processing tasks such as, for example, but not limited to, analyzing, identifying, determining, generating….").

h. 1[g]

Staton discloses 1[g] under either analysis method (or the alternative obviousness rationale) from 1[f], EX[1005], ¶¶190-194, 503-509:

(1) After analyzing geocoded location and event information, remote notify router 681 (portion of **processing device**) **generates a supervision notification** by formatting and encoding a message. EX[1007], 22:22-33. The notification is "**based on the analyzing**" **of the supervisee data** because the router generates it only after determining that the incoming event requires notification. *Id*.

(2) After determining that client console is tracking the PDA, response router 620 (portion of **processing device**) **generates a supervision notification** by routing the event message to that console. *Id.* 21:47-53. The notification is "**based on the analyzing**" **of the supervisee data** because the router tracks supervisee PDAs within a waypoint or geographical zone. *Id.* 17:30-33, 17:48-52.

i. 1[h]

Staton discloses 1[h] for either notification pathway in 1[g]. EX[1005], ¶¶195-197, 503-509:

(1) After remote notify router 681 formats and encodes the notification, the message enters the outbound SMTP or SMS queue and is sent through the

corresponding gateway. EX[1007], 22:33-36. Those gateways are part of the backend control system's **communication device** and **transmit** the message (**supervision notification**) to PDA 106 or another monitoring device (the "**at least one supervisor device**"). *Id.* 8:11-14, 8:21-25, 29:55-57.

(2) Response router 620 **transmits** the incoming message (**supervision notification**) to client console 176 (**supervisor device**) through the backend control system's communication networks (**communication device**). *Id.* 21:49-51; *see also id.* Fig. 6; EX[1005], ¶¶195-197.

j. 1[i]

Staton discloses 1[i]. EX[1005], ¶¶198-199, 503-509.

Applicant's §112(f) "**storage device**" is the history recorder 641 and history database 642 and associated storage infrastructure (*e.g.*, history queue 640, resources database) within Staton's backend control system. *Id.* It would have been obvious to implement the storage device on the same server as the communications and processing device as described for limitation 1[a]. §VII.A.1.b; EX[1005], ¶¶148-149.

The history database **stores** "**supervisee data**" (geocoded location data and incoming messages from PDA 105) and "**supervision notifications**" (outbound event messages). *Id.* "[H]istory queue 640 receives the inbound [**supervisee data**] and outbound messages [**supervision notifications**] for all PDAs 105 and all of the

messages from the instrument module 195" (EX[1007], 22:5-8), from which they are "fed … to the history recorder 641" and then "saved in a history database" for "reporting and statistical analysis" (*id.* 22:7-12). *Id.* 19:56-59 ("The history database 642 maintains records of all events and transactions....").

k. 1[j]

Staton discloses 1[j]. EX[1005], ¶¶200-201, 503-509.

Staton's geofence is the outline shape 510 and zone 515 as represented in the pixel map 500. *See* §VII.A.1.e (1[d]). The **geofence is characterized by a** "**geofence area corresponding to the geographical area**" is the area within the activated pixel boundary—*i.e.*, the zone 515 in outline shape 510—and corresponds to the geographical area. EX[1007], 16:49-51, 26:34-39.

Staton discloses "**the geofence comprises a plurality of geofence grid boxes associated with the geofence area**," specifically, "dividing the identified geometrical area into a grid, allowing a user to select at least one section from within the grid in order to define a geographical area" (*id.* 3:10-12) and that the grid consists of "smaller rectangles" (grid boxes) that are mapped to pixels (*id.* 15:27-34) because "each pixel 505 is a square" box (*id.* 16:49). "These squares" (**geofence grid boxes**) "are then used to draw the outline shape 510 of the zone 515" (**geofence**), as annotated below. *Id.* 16:50-51.

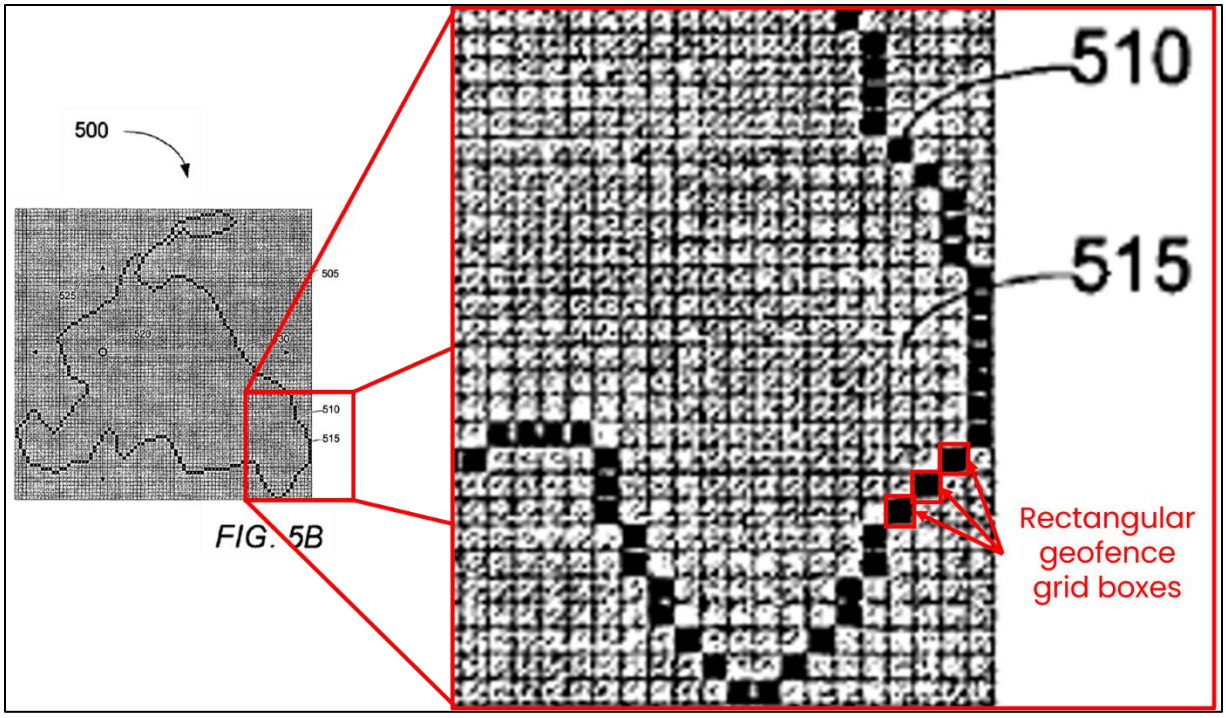


FIG. 5B

Staton also discloses that "**each geofence grid box is characterized by a grid box geofence area of the geofence area**," specifically that "a geographical area is…mapped to each pixel 505 of the pixel map 500" such that each pixel is a defined portion of the geographical zone 515. *Id.* 16:50-52. In the above example, the activated pixels collectively define the geofence area, and each activated pixel is a grid box geofence area of that geofence area. *Id.* 15:33-34 ("Each pixel in the grid can be activated to be part of the geographical zone."); *id.* 2:57-65, 15:66-16:4.

l. 1[j][1]

Staton discloses 1[j][1]. EX[1005], ¶¶205-207, 503-509.

The "**at least one grid parameter**" is the resolution of the area definition selected through Staton's configuration application:

> The user can also select the resolution of the area definition. In other words, when the selected area is subdivided into a grid of rectangles, the grid includes a much higher number of vertical and horizontal lines, thus increasing the number of grid rectangles obtained from the subdivision. The increase in number [of] rectangles increases the resolution because each rectangle covers less geographical area. A user who desires to have great detail in defining the area may reduce the size of the grid rectangles and thus increase resolution of the area.

EX[1007], 15:46-55. This resolution parameter determines the grid's granularity by determining the number and size of the geofence grid boxes, just as the claim recites. EX[1005], ¶¶206-207; *see also* EX[1007], 14:34-44.

The grid parameter is "**receiv[ed]…from the at least one supervisor device**" **using** the backend control system's communication infrastructure ("**communication device**," *see* §VII.A.1.b (1[a])): the home computer connects to the configuration utility through the Internet or a secure connection, and device configuration is entered through the backend. EX[1007], 15:17-23, 25:60-63. Indeed, resolution selection is part of configuring zones, and Staton expressly teaches configuring zones is performed by a supervisor. *Id.* 27:52-54, 27:66-28:2; EX[1005], ¶¶205-207, 505-509.

m. 1[j][2]

Staton discloses 1[j][2]. EX[1005], ¶¶208-209, 503-509. When the user selects the resolution ("**grid parameter**"), the configuration application (part of the "**processing device**," §VII.A.1.d (1[c])) **analyzes** that resolution value to determine how to subdivide the geographical area into a grid of rectangles. EX[1007], 15:4-15, 15:46-16:4. This processing is reflected in Staton's explanation that when a higher resolution is selected, "the selected area is subdivided into a grid of rectangles, [and] the grid includes a much higher number of vertical and horizontal lines, thus increasing the number of grid rectangles obtained from the subdivision." *Id.* 15:47-50. The resolution directly controls the number of grid lines and the resulting rectangle sizes, and "[t]he increase in number [of] rectangles increases the resolution because each rectangle covers less geographical area," *id.* 15:51-52, so the grid dimensions are determined from the resolution parameter before generating the grid. EX[1005], ¶¶209, 214. The processing device **analyzes** the resolution, *e.g.,* converts the user-selected resolution value into specific grid dimensions (number of vertical and horizontal subdivisions, area per rectangle). EX[1005], ¶¶65-66, 209, 214. Indeed, the '421 Patent itself confirms that "analyzing" a grid parameter requires nothing more than processing it to determine grid box geofence areas, *see* EX[1003], 14:49-64 (Fig. 5 flowchart: analyzing grid parameter, then determining grid box

geofence area based on the analyzing), and Staton's resolution-to-grid computation performs precisely that function. *See* §VII.A.1.l (1[j][1]).

n. 1[j][3]

Staton discloses 1[j][3]. EX[1005], ¶¶210-214, 503-509. **Based on the grid parameter** (resolution) **analysis**, the **processing device determines the grid box geofence area**—the geographical area represented by each pixel or grid box. EX[1005], ¶¶210-214. The resolution controls how finely the geographical area is subdivided (EX[1007], 15:46-55, 16:2-4), so Staton discloses the determining based on the analyzing because higher resolution means each grid rectangle covers less area (and vice versa). EX[1007], 15:46-55 ("A user who desires to have great detail in defining the area may reduce the size of the grid rectangles and thus increase resolution of the area"), 16:2-4; §VII.A.1.l.

o. 1[j][4]

Staton discloses 1[j][4]. EX[1005], ¶¶215-217, 503-509. The **processing device** "**generat[es]…a number of geofence grid boxes**" by dividing the rectangle into a grid of smaller rectangles. EX[1007], 15:31-34, 16:48-49. The number is "**based on the determining**" because higher resolution yields more rectangles, each covering less area. EX[1007], 15:48-65; EX[1005], ¶¶215-217.

2. Claim 2

a. 2[a]

Staton discloses 2[a]. EX[1005], ¶¶218-220, 510-512.

The "**location indication associated with the geographical area**" is a parent-designated (supervisor-designated) permissible or non-permissible area, unsafe neighborhood, or predefined travel path (*e.g.*, designated "specific areas where the son can travel," "non-permissible travel…outside of city limits," "regular paths of travel from home to school and back"). EX[1007], 27:26-32, 27:52-57, 28:52–56. Each location indication is "**receiv[ed]…from the at least one supervisor device**" using the "**communication device**" of backend control system, as with limitation 1[a]. *Id.* 25:60-62, 27:66-28:2; EX[1005], ¶220; §VII.A.1.b.

b. 2[b]

Staton discloses 2[b]. EX[1005], ¶221, 510-512.

Operations data processor and configuration utility of backend control system 150 (part of **processing device**) **identify a location corresponding to each location indication** by translating the location indication into coordinates, a zone, route, or pixel map (*e.g.*, "[w]aypoints and zones" or non-permissible areas are built from the parent's indications by the "operations data processor" and "loaded on to the PDAs with the configuration utility"). EX[1005], ¶221; EX[1007], 14:56–59, 15:4–9.

c. 2[c]

Staton discloses 2[c] for both types of analysis in 1[f]. EX[1005], ¶¶222-224, 510-512.

(1) Remote notify router 681 (part of the **processing device**) **analyzes** the supervisee event data (**supervisee data**) **based on the location** to determine notification requirements. *Id.* When a supervisee enters an unsafe neighborhood, deviates from a predefined path, or crosses a non-permissible area, the remote notify router receives the geocoded location and event information and "queries the resources database 670 to find out" if the event/configuration "requires a notification." EX[1007], 16:18-23, 22:22-28, 27:29-32.

(2) Response router 620 (part of the **processing device**) **analyzes** the data (**supervisee data**) **based on the location** by determining whether client console 176 is tracking the supervisee PDA in relation to the designated location and, if so, routing the event message to that console. *Id.* 21:47–51, 17:48-52 (client console allows viewing "all PDAs that are within a waypoint" or "within a geographical zone"); EX[1005], ¶¶223.

To the extent PO asserts that 2[c] requires a server-side comparison of the supervisee's real-time location with the geofence boundary, Staton renders it obvious for the same reasons in 1[f]. EX[1005], ¶¶224, 511; §VII.A.1.g.

d. 2[d]

Staton discloses 2[d]. EX[1005], ¶¶225-226, 510-512.

The "**determining, using the processing device, a location anomaly based on the analyzing of the at least one supervisee data based on the at least one location**" is the determination of a path deviation or entry into a prohibited or unsafe area relative to the supervisor-designated locations in limitation 2[a]. §VII.A.2.a; EX[1007], 27:28–32 (if daughter "deviates from such predefined paths," a signal is sent "indicating a warning of path deviation"), 28:55-57 ("event alarms indicating that the unsafe neighborhood has been entered"), 28:8–17 (if supervisee "leaves the area, an event is immediately sent" to supervisor).

The "**generating of the supervision notification is based on the determining**" because detecting the anomaly triggers the notification pathways described for 1[g]-1[h]: remote notify router 681 formats and encodes the message, and/or response router 620 routes it to tracking console 176. EX[1007], 22:28-33, 21:47-51; EX[1005], ¶¶225-226; §§VII.A.1.h-i.

To the extent PO argues that the path-derivation/zone-entry determination must be performed by the server-side processing device rather than the PDA, it would have been obvious for the same reasons explained for 1[f]. EX[1007], 26:62-72; §VII.A.1.g; EX[1005], ¶226.

3. Claim 3

a. 3[a]

Staton discloses 3[a]. EX[1005], ¶¶227, 513-514. Staton's **supervision notification comprises supervisee event** data, including "event reason or source, and any other relevant information." EX[1007], 16:18–23; §§VII.A.1.h-i. The **supervisee event is associated with an action** because waypoint and zone events are "configurable to take one or more actions," *e.g.*, trigger "making a telephone call, reporting to a control center, starting an alarm." EX[1007], 3:19-21, 16:32-33; EX[1005], ¶227.

b. 3[b]

Staton discloses 3[b]. EX[1005], ¶¶228, 513-514. After receiving the supervision notification, the **processing device** (processing components of backend control system 150, *see* §VII.A.1.d (1[c])) **determines the action based on the supervision notification** by "look[ing] up the correct PDAs…and any other parties that must be contacted, such as the police or 911" in resources database 670 and determining whether the event requires notification. EX[1007], 26:67-27:2, 22:22-28; EX[1005], ¶228.

c. 3[c]

Staton discloses 3[c]. EX[1005], ¶¶229, 513-514. The remote notify router (part of **processing device performs the action based on the determining** by processing the event, identifying the recipient, "format[ting] and encod[ing] the message," and placing it in the outbound queue for transmission through the

appropriate gateway. EX[1007], 22:28-36, 26:51-61 (message is "processed and analyzed to find out the final recipient"), 23:58-60, 24:60-64, 8:21-23 (backend "reroutes an event message, text message or any other information originating from PDA 105 to PDA 106"); EX[1005], ¶229. That rerouting **establishes a messaging session between the supervisee device** (PDA 105) **and the supervisor device** (PDA 106) through the backend. EX[1007], 8:21-25, 23:57-60.

In addition, when a supervisor receives notice that a child's PDA deviated from a predefined path, the parent can call the child. EX[1007], 27:32-34; EX[1005], ¶229. To the extent PO argues the parent's call is not "performed" "using" the processing device, it would have been obvious to have the backend automatically initiate that call or message session upon a path-deviation event using Staton's pre-programmed calling operations. EX[1007], 3:19-21; EX[1005], ¶¶229, 513-514.

4. Claim 4

a. 4[a]

Staton discloses 4[a]. EX[1005], ¶¶230-232, 515-516.

When the **processing device** of the backend control system 150 "processes a received message by one PDA," it "relay[s] the data in the message to the correct PDA." EX[1007], 24:64-67. This **identifies the supervisee based on the analyzing of the supervisee data** (incoming PDA identification, location, and event information). EX[1005], ¶¶231-232. Response router 620 (of the **processing device**)

identifies the supervisee PDA by "determin[ing] if a client console 176 is tracking PDA 105" associated with the incoming event. EX[1007], 21:47–50; EX[1005], ¶¶231-232. Remote notify router 681 (of the **processing device**) likewise **identifies the supervisee by** "quer[ying] the resources database 670 to find out if the configuration information or event information received requires a notification." EX[1007], 22:22–28, 21:47-50; EX[1005], ¶¶231-232.

b. 4[b]

Staton discloses 4[b]. EX[1005], ¶¶233, 515-516. **Based on identifying** the supervisee, the operations data processor (of the **processing device**) **retrieves supervisee profile data** from resources database 670, part of the backend storage infrastructure, *(see* §VII.A.1.j (1[i])). EX[1007], 24:12–16. The database stores "relational information of members and accounts" and "which PDAs are associated with which PDAs" (**supervisee profile data associated with the supervisee**). *Id.* 24:12-16, 24:60-64; EX[1005], ¶233.

The "**generating of the supervision notification is based on the retrieving**" because the remote notify router 681 (part of the **processing device**) then uses the retrieved profile data to determine whether and to whom to send notification, if so, "retrieves the contact information" before formatting and encoding the notification. EX[1007], 22:25–33; EX[1005], ¶233.

5. Claim 6

a. 6[a]

Staton discloses 6[a]. EX[1005], ¶¶234-235, 517-518.

Instrument module 195 connects to sensors measuring **environment data associated with a geographical area corresponding to the geofence**, including "the levels of carbon monoxide, chlorine, smoke, smog, oxygen in the air, or temperature." EX[1007], 3:35-37; *id.* 5:15-18. The sensors are zone-specific because the PDA "load[s] a specific configuration for that Zone such that it interacts with Zone-specific instruments" operating there. *Id.* 14:4–11. The backend control system's **communication device receives** this environment data from instrument module 195 through an Internet or other network connection. *Id.* 7:65-8:8, 19:25-36 (backend control system 150 receives a measurement of "high levels of smoke" and relays it to the PDA"); EX[1005], ¶235.

b. 6[b]

Staton discloses 6[b]. EX[1005], ¶¶236-237, 517-518.

The **processing device analyzes the environment data** (in remote notify router of processing device), **determines a threat based on the analyzing** from dangerous smoke, carbon monoxide, or other conditions, and **generates a notification** reporting the threat **based on the determining**. *Id.* Remote notify router 681 "receives the geocoded location and event information," "queries the resources database 670" to determine if notification is required, "retrieves the contact

information for the appropriate PDA," and "formats and encodes the message." EX[1007], 22:16–36, 19:15-19 (environmental emergencies would be "priority message"); EX[1005], ¶236; §§VII.A.1.h-i, VII.A.5.a. Staton discloses that the initial determination of an event for a hazardous condition based on sensor data occurs in Staton's PDA, but Staton's backend remote notify router also determines a threat by receiving the event information and determining if a notification is required. EX[1005], ¶237.

To the extent PO argues that the initial hazardous event determination must occur on the server-side, it would have been obvious to add or move that function from the PDA for the same reasons in 1[f]: redundancy, compatibility with lower-power clients, and PDA-battery conservation. EX[1005], ¶237; §VII.A.1.g. Because the environmental data already reaches the backend, whose processing device includes geofencing and event-processing software, a POSITA would have expected success in making this modification. EX[1007], 7:65-8:8, 19:25-36, 26:52–61; EX[1005], ¶237; §VII.A.1.g.

6. Claim 10

a. 10[a]

Staton discloses the **supervisee associated with at least one identification**: address information in resources database 670 identifies PDA 105 and its user. EX[1007], 20:47-52, 24:56–64, 25:1–7; EX[1005], ¶¶519-520; EX[1003], 7:50-53.

b. 10[b]

Staton's gateway (part of **communication device**) **receives at least one indication corresponding to the identification from the supervisee device** in the inbound packet's PDA-address tag. EX[1007], 20:47-52; EX[1005], ¶521.

c. 10[c]

Staton's backend **processing device** (processing components of backend control system 150, §VII.A.1.d) **identifies the supervisee based on the indication** by using the PDA-address tag to retrieve permissions and settings. EX[1007], 23:60–24:5; EX[1005], ¶¶522-524. It "**generat[es]" the supervision notification based on the identifying**" by the remote notify router (of **processor device**) using the PDA record to determine whether notice is required, retrieve contacts, and format the notice. EX[1007], 22:22–36; EX[1005], ¶; §VII.A.1.h.

7. Claim 11

Claim 11 is claim 1's system counterpart. Staton discloses **the system for facilitating supervision of individuals based on geofencing** (11[pre]) for the reasons in §VII.A.1.a (1[pre]); the remaining limitations follow:

11[a] "**a communication device configured for: receiving…receiving…receiving…and transmitting….**" *See* §VII.A.1.b (1[a] communication device). Functions 11[a][1]–11[a][4] are invalid for the same reasons as 1[a]–1[b], 1[e], and 1[h]. §§V, VII.A.1.b–c, f, i; EX[1005], ¶¶241-246, 525-527.

11[b] "**a processing device configured for: analyzing…generating…analyzing…and generating….**" *See* §VII.A.1.d (1[c] processing device). Functions 11[b][1]–11[b][4] are invalid for the same reasons as 1[c]–1[d] and 1[f]–1[g]. §§VII.A.1.d–e, g–h; EX[1005], ¶¶247-252, 525-527.

11[c] "**a storage device configured for storing….**" *See* §VII.A.1.j (1[i] storage device). Function 11[c] is invalid for the same reasons as 1[i]. §VII.A.1.j; EX[1005], ¶¶253, 525-527.

11[d] grid-based limitations. Limitations 11[d], 11[d][1]–[4] are invalid for the same reasons as 1[j], 1[j][1]–[4]. §§VII.A.1.k–o; EX[1005], ¶¶254-258, 525-527. The backend receives the grid parameter, satisfying 11[d][1]. §VII.A.1.l.

If PO requires one server for all three devices, Staton makes that arrangement obvious because it encourages running backend components on a common computer system. EX[1007], 19:62–67; §VII.A.1.b; EX[1005], ¶¶140-149, 254-259, 525-527.

8. Claim 12

Limitations 12[a]-12[d] recite the same steps as 2[a]-2[d], performed by the same devices, and are invalid for the same reasons. §§VII.A.2, VII.A.7; EX[1005], ¶¶260, 528-529.

9. Claim 13

Claim 13[a]-[c] recites claim 11's processing device performing functions 3[a]-[c], and is invalid for the same reasons as claims 3 and 11. §§VII.A.3, VII.A.7; EX[1005], ¶¶261, 530-531.

10. Claim 14

Claim 14[a]-[b] recites claim 11's processing and storage devices performing functions 4[a]-[b], and is invalid for the same reasons as claims 4 and 11. §§VII.A.4, VII.A.7; EX[1005], ¶¶262, 532-533.

11. Claim 16

Claim 16[a]-[b] recites claim 11's communication and processing devices performing functions 6[a]-[b], and is invalid for the same reasons as claims 6 and 11. §§VII.A.5, VII.A.7; EX[1005], ¶¶263, 534-535.

12. Claim 20

Limitations 20[a]–20[c] correspond to 10[a]–10[c] and are invalid for the same reasons as claims 10 and 11. §§VII.A.6-VII.A.7; EX[1005], ¶¶536-540.

13. Claim 21

a. 21[a]

Staton's resources database 670 **stores**, for each geofence grid box, "**at least one emergency contact number**": during geofencing events, the control center looks up PDAs and other parties, including police or 911. EX[1007], 22:22–36, 26:62–27:2; EX[1005], ¶¶541-543. The contacts are "**associated with the**

geographical area represented by the grid box geofence area" because each grid box is part of a zone with contact settings. EX[1007], 16:13–17; EX[1005], ¶543.

b. 21[b]

Staton discloses that the "**emergency contact number includes a 911 service or equivalent emergency service**" because it contacts "the police or 911." EX[1007], 26:62–27:2; EX[1005], ¶544. The number is "**specific to the geographical area of the grid box**" because the control center selects the "correct" contact for that zone. EX[1007], 22:22–28, 26:62-27:2; EX[1005], ¶544.

c. 21[c]

Staton's notification pipeline satisfies that the "**processing device is configured to automatically select and transmit supervisee data**." Remote notify router 681 (of **processing device**) queries the resources database, retrieves contacts, formats the message, and queues it for transmission. EX[1007], 22:22–36; EX[1005], ¶¶545-547. The pipeline automatically "**select[s] and transmit[s] supervisee data to the stored emergency contact number upon detecting an emergency situation within the corresponding grid box geofence area**" because detection occurs within the grid-box-defined zone and contact retrieval and transmission follow. EX[1005], ¶¶545-547.

B. Ground 2: Obviousness of Claims 5, 7, 8, 15, 17-19, and 22-24 in view of Staton (EX[1007]) + Noland (EX[1008]) + Knowledge of a POSITA

Claims 5, 7, and 8 depend from claim 1; claims 15 and 17-19 depend from claim 11. Staton discloses claims 1 and 11 and Staton in view of Noland discloses the dependent claims and claims 22-24. §§VII.A.1, VII.A.7.

1. A POSITA Would Have Combined Staton with Noland

A POSITA would have been motivated to combine Staton with Noland, with a reasonable expectation of success. First, both references share the '421 Patent's field: facilitating supervision of individuals based on geofencing. EX[1003], 1:20-23; EX[1005], ¶¶265-270, 548-551. Staton monitors persons in configurable geofence zones and generates event notifications for boundary or rule violations. EX[1007], 13:65–14:19. Noland likewise monitors geofenced areas, including school or building boundaries. EX[1008], ¶[0148]; EX[1005], ¶¶268, 549.

Second, a POSITA would incorporate Noland's weapon detection, blueprints, audio/video sensors, and panic button into Staton to improve notification quality and urgency. EX[1005], ¶¶271-275, 550. Weapon type and lethality would inform responses (*id.* ¶¶[0156]); blueprints would pinpoint threats (*id.* ¶¶[0034], [0179]); live audio and video from the threat location would give supervisors and responders real-time situational awareness (*id.* ¶¶[0126], [0130]); and a panic button in the

instrument module would provide a manual override (*id.* ¶¶[0037], [0104]); EX[1005], ¶¶271-275, 550.

Third, the combination would yield predictable results and have a reasonable expectation of success. EX[1005], ¶¶276-279, 551. Staton accepts external sensors and devices through its backend. EX[1007], 6:34–8:8. A POSITA would have recognized that Noland's threat sensors, blueprint/floorplan location capability, and processing gateway fit Staton's expandable sensor integration, and integrating them was within the POSITA's skill. EX[1005], ¶¶276-279, 551. In particular, a POSITA would have integrated Noland's threat sensors as instruments of Staton's zone-specific instrument module 195, which interacts with PDA 105 in that zone and "can be in the same housing" as the PDA. EX[1007], 10:33-35, 14:4-11; EX[1008], ¶¶[0016], [0091]; EX[1005], ¶¶276, 548-551. Integrating this functionality into Staton's processing, communication, and storage devices would be straightforward. §§VII.A.1.b, d, j; EX[1005], ¶¶276-279, 551. Both systems' backend processors receive, analyze, and act on incoming data, so integration would require only routine software changes. EX[1007], 6:34-8:8; EX[1005], ¶¶276-279, 551.

A POSITA could likewise add Noland's panic button to Staton's instrument-module architecture, which accepts external sensor input, detects preconfigured events, and executes operations. EX[1007], 6:34–43, 9:2–5; EX[1005], ¶¶276-279, 551.

2. Claim 5

a. 5[a]

Noland discloses "**identifying…at least one object associated with the supervisee**"—an identified weapon in the supervisee's geofenced zone. EX[1005], ¶¶280-284, 552. Specifically, in the system, Noland's system gateway 110 (incorporated in Staton's **processing device**) analyzes sound data from the threat sensing devices integrated with the supervisee device in the supervisee's geofenced zone (**based on analyzing the supervisee data**) to "determine whether the sound waveform indicates a valid gunshot or gunshots and, if so, to further determine the general type of weapon…and establish the location or room number of the shooter(s)." EX[1008], ¶¶[0107]-[0108].

b. 5[b]

Noland discloses "**determining, using the processing device, a lethality**" **of the object** "**based on the identifying**." EX[1005], ¶¶285-288, 552. Noland's system gateway 110 (integrated into Staton's processing device) "utiliz[es] lookup tables of waveforms of gunshots of numerous firearms firing numerous different bullets…," EX[1008], ¶[0111], classifies the weapon, *id.* ¶[0127], and ties the kind of weapon being fired to "the level of threat" posed to human life. *Id.* ¶[0156]. For example, the system "advise[s] the first responders as to the kind(s) of weapon is being fired to enable the first responders to know the level of the threat…and necessary tactics." *Id.*; EX[1005], ¶¶281-288, 552.

The system then "**generat[es] the supervision notification…based on the determining**." EX[1005], ¶¶281-288, 552. The determined weapon type/caliber are included in alert messages and "sent via the Internet 120 to designated mobile devices 130 and local authorities 132." EX[1008], ¶[0096]. This lethality information is incorporated into the supervision notification transmitted to the supervisor device, as described for claim 1. §§VII.A.1.h-i, VII.B.1; EX[1005], ¶¶281-288, 552.

3. Claim 7

a. 7[a]

The system discloses **retrieving, using the storage device, a blueprint associated with the geographical area corresponding to the geofence**. EX[1005], ¶¶289-294, 553. Noland discloses **blueprints** associated with the geofence where the threat sensing device is installed, including "proximity information of floor plans" and "building layouts," are pre-loaded into the system's storage. EX[1008], ¶[0034]; *id.* ¶[0113] (geometry and location of each room "integrated into the schematics of the facility"); EX[1005], ¶¶290-294, 553. In the combined system, these facility schematics would have been stored in and **retrieved** using part of **the storage device** (resources database 670/history database 642) to "create and format the alert message content," which includes a schematic overlay. EX[1008], ¶[0179]; EX[1005], ¶¶289-294, 553; §VII.B.1.

b. 7[b]

The system **analyzes, using the processing device, the blueprint and the at least one supervisee data**. Noland's system gateway 110 (in Staton's processing device) analyzes the blueprint and threat data (**supervisee data**) to determine "the general type of weapon…and establish[es] the location or room number of the shooter(s)" and correlates the "known location of the threat sensing device" with the stored room geometry and facility schematics. EX[1008], ¶¶[0107], [0111], [0113]; EX[1005], ¶¶295-297, 553; §VII.B.1.

c. 7[c]

The system **determines, using the processing device** [system gateway 110 in Staton's processing device], **a location of the supervisee on the blueprint based on the analyzing of the blueprint and the at least one supervisee data** [described in 7[b]]. EX[1005], ¶¶298-300, 553. The **generating of the supervision data** [notification] **is based on the determining**. EX[1005], ¶¶298-300, 553; §VII.B.1. The notification is based on "a schematic of the school overlaid by icons showing shooter location" and the supervisee data that triggered the threat assessment. EX[1008], ¶¶[0179], [0097], Fig. 2B; EX[1005], ¶¶298-300, 553. Although not depicted in the annotated figure below, Noland also tracks "where injured persons are located inside the school" and otherwise "track[s] a location of, or presence of" persons at the facility. EX[1008], ¶¶[0148], [0156].

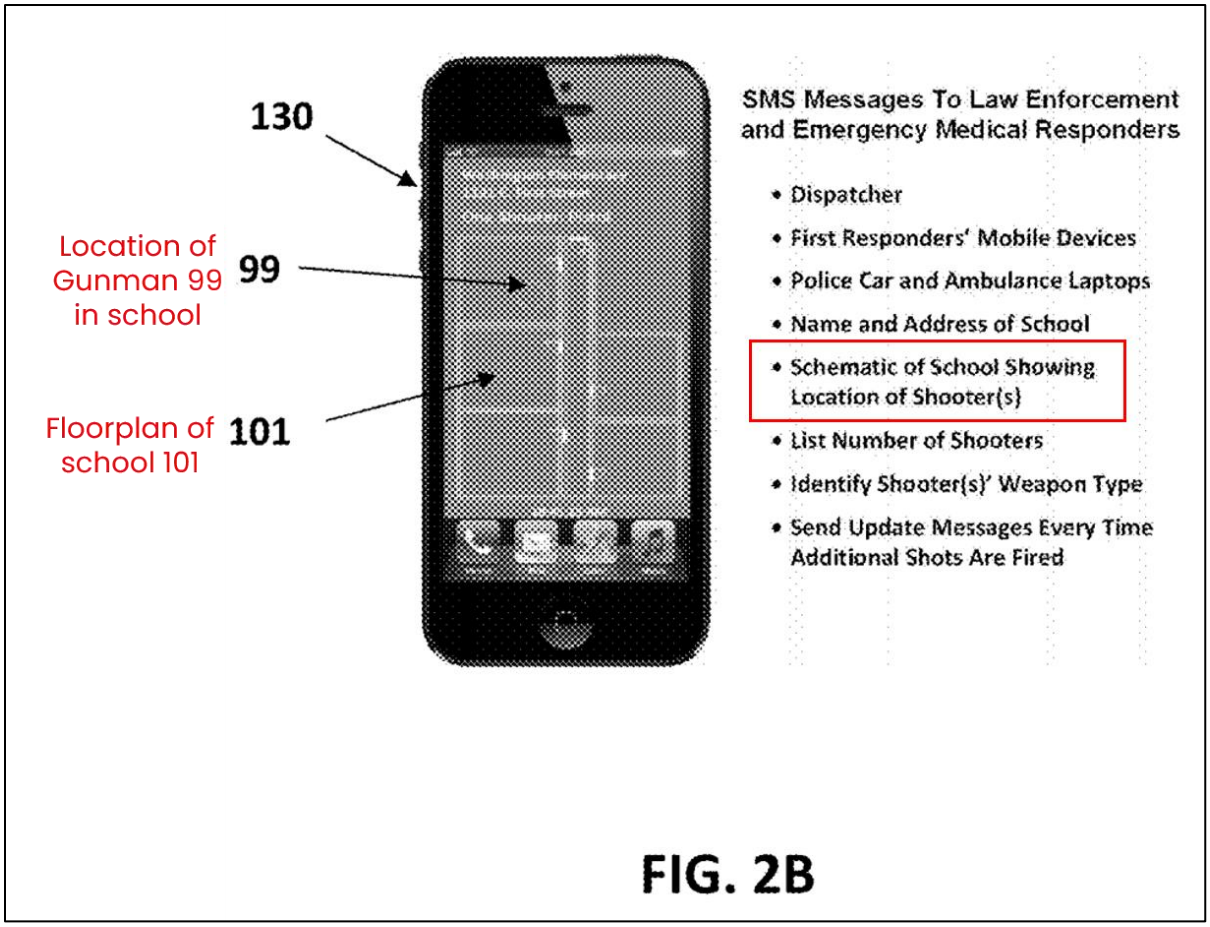


FIG. 2B

4. Claim 8

a. 8[a]

The system discloses **the at least one supervisee device** [instrument module 195 in supervisee device] **comprises at least one sensor** [panic button in instrument module]. EX[1005], ¶¶554-556. Staton's supervisee device PDA 105 (**supervisee device**) can include its instrument module 195 "can be in the same housing." EX[1007], 10:34-36, 6:34–43. Staton's instrument module 195 detects Noland's panic button. §VII.B.1.

b. 8[b]

The system discloses **the at least one sensor** [instrument module detecting panic button] **is configured for detecting at least one signal made by the supervisee** [supervisee's button press]. EX[1005], ¶557. The key fob is "linked to the staff member" and, when activated (*e.g.* through button press), "immediately provides positional information regarding not only the staff member, but also of the threat." EX[1008], ¶¶[0104], ¶[0037], EX[1005], ¶557.

c. *8[c]*

The system discloses **the at least one sensor** [instrument module detecting panic button] **is configured for generating the at least one supervisee data based on the detecting** [instrument module 195 reports an emergency with supervisee position] when the panic button detects the supervisee's press. EX[1005], ¶¶558-559. When instrument module 195 receives a signal from a connected device, it determines if an event has occurred, and transmits an event message to PDA 105, which transmits it to the backend control system of Staton. EX[1007], 9:2–9; EX[1008], ¶¶[0037], [0104] (panic button causes provides positional information of supervisee and threat); EX[1005], ¶¶558-559; §VII.B.1.

5. Claim 15

Claim 15[a]-[b] recites claim 11's processing device performing 5[a]-[b], and is invalid for the same reasons as claims 5 and 11. §§VII.B.2, VII.A.7; EX[1005], ¶¶311, 560.

6. Claim 17

Claim 17[a]-[c] recites claim 11's storage and processing devices performing 7[a]-[c], and is invalid for the same reasons as claims 7 and 11. §§VII.B.3, VII.A.7; EX[1005], ¶¶312, 561-562.

7. Claim 18

Claim 18[a]-[c] corresponds to claim 8[a]-[c], and is invalid for the same reasons as claims 8 and 11. §§VII.B.4, VII.A.7; EX[1005], ¶¶313, 563.

8. Claim 19

a. 19[a]

The system discloses **the at least one signal made by the supervisee** [pressing panic button] **comprises shaking the supervisee device abruptly, pressing a button** [panic button press]**, or speaking a specific phrase, wherein: the at least one sensor is configured for detecting the at least one signal** [instrument module detects signal]. EX[1005], ¶¶564-565; §VII.B.4. Activating Noland's panic button satisfies "**pressing a button**"; Staton's instrument module detects it and reports the supervisee's position. EX[1008], ¶¶[0037], [0104]; EX[1007], 9:2–9; EX[1005], ¶565.

b. 19[b]

The system discloses **the supervisee device** [Staton's PDA 105] **is configured to optionally make an emergency call when the at least one sensor detects the at least one signal**. EX[1005], ¶566. Staton's PDA 105 "can be

configured with a calling number for the monitoring PDA 106, such that when an event occurs, PDA 105 automatically dials monitoring PDA 106." EX[1007], 25:9–13, claim 12, 3:19-21. The call is "optional" because events are individually configurable. *Id.* 11:40–50.

c. 19[c]

The system discloses the **phone number dialed in the emergency call is determined based on the geofence.** EX[1005], ¶¶567-568. Staton's control center uses geofence-event data to select correct recipients, including police or 911. EX[1007], 13:65–14:4, 22:22–36, 26:62–27:2; EX[1005], ¶567.

9. Claim 22

a. 22[pre]-22[h]

The combined system renders claim 22 obvious. EX[1005], ¶¶569-572. Limitations 22[pre]–22[h] correspond to 1[pre]–1[i], except 22[e] requires analysis "based on the geographical location" rather than "based on the geofence." Staton analyzes PDA geocoded position against geographic-zone data, satisfying both formulations. §§VII.A.1.a–j; EX[1005], ¶¶569-572. These limitations are invalid for the same reasons as 1[pre]–1[i]. §§VII.A.1.a–j.

b. 22[i]

The system discloses **the at least one supervisee device comprises at least one sensor**. EX[1005], ¶¶572-574. Noland's acoustic and image-based threat **sensors** communicate sensed signals through Staton's instrument-module

architecture, which can be housed within the roaming **supervisee device**. EX[1008], ¶¶[0130], [0147]; EX[1007], 6:34–43, 10:34-36; §VII.B.1; EX[1005], ¶¶572-574.

c. 22[j]

The system discloses the "**sensor is configured for detecting at least one signal made by the supervisee**" because the sensors detect the supervisee's physical presence. EX[1005], ¶575. Noland's geophones distinguish children from adults by footstep characteristics, and its acoustic and image sensors record audio and images of the supervisee. EX[1008], ¶¶[0130], [0135], [0147]; EX[1005], ¶575.

d. 22[k]

The system discloses the "**sensor is configured for generating the at least one supervisee data based on the detecting**": detection generates, transmits, and stores Noland's sensor data. EX[1008], ¶[0130]; EX[1005], ¶576.

e. 22[l]

The system discloses "**the supervisee data comprises audio and video recordings**": Noland's sensors transmit live video and audio to gateway 110 for storage or dissemination. EX[1008], ¶¶[0126]–[0127]; EX[1005], ¶577.

f. 22[m]

The system discloses **the at least one sensor is selected from one or more nearby sensors based on the most proximal nearby sensor by geographical location in real-time**. EX[1005], ¶578. Noland's gateway compares signal

amplitude in real time; the greatest amplitude identifies the closest sensor. EX[1008], ¶¶[0111], [0205], [0145], [0096], [0106]; EX[1005], ¶578.

g. 22[n]

The system discloses **the at least one sensor tracks the supervisee as the supervisee moves between the one or more nearby sensors**. EX[1005], ¶¶579-581. Noland tracks within and between rooms, reports facial identification to other devices, and uses time-based algorithms to distinguish movement between rooms. EX[1008], ¶¶[0116], [0124], [0229], [0156], [0102], [0098]; EX[1005], ¶¶579-581.

10. Claim 23

a. 23[a]

The system discloses **the supervision notification is sent to a first distinct group of one or more supervisor devices correlated with the geographical location**. EX[1005], ¶¶582-583. Staton's control center looks up the correct PDAs and other parties, including police or 911 (**first distinct group of…supervisor devices**), using geofence-event data identifying the zone (**correlated with the geographical location**). EX[1007], 22:22–28, 26:62–27:2; EX[1005], ¶583.

b. 23[b]

The system discloses **the first distinct group of one or more supervisor devices is comprised of nearby first responders and dispatcher**. EX[1005], ¶584. Noland identifies first responders and dispatchers as distinct recipients and uses geofencing to locate **nearby** responders. EX[1008], ¶¶[0091], [0148], [0173],

[0182], Fig. 2B; EX[1005], ¶584. A POSITA would have been motivated, with a reasonable expectation of success, to add that role-based routing to Staton for more granular role-based emergency response. EX[1005], ¶¶584-586.

c. 23[c]

The system discloses **the supervision notification may be sent to a second distinct group of one or more supervisor devices based on the location and expertise of the second distinct group**. EX[1005], ¶¶585-587. Noland distinguishes classes by role (**expertise**); groups other than Class One form a "**second distinct group**" selected "**based on the location and expertise**." EX[1008], ¶¶[0087], [0173], [0182]–[0184], [0244]; EX[1005], ¶¶585-587.

11. Claim 24

Staton and Noland render claim 24 obvious. EX[1005], ¶¶588-589; §VII.B.9. Its limitations 24[a]–24[c] mirror 10[a]–10[c] and are invalid for the same reasons. §VII.A.6; EX[1005], ¶¶588-589.

C. Ground 3: Obviousness of Claim 9 in view of Staton (EX[1007]) + Smith (EX[1011]) + Knowledge of a POSITA

Claim 9 depends from claim 1, which Staton discloses. §VII.A.1. Staton combined with Smith renders claim 9 obvious.

1. A POSITA Would Have Been Motivated to Combine the Staton With Smith

Staton and Smith address the'421 Patent's field: facilitating supervision of individuals based on geofencing. EX[1003], 1:20-23; EX[1005], ¶591. Staton

monitors persons in geofenced zones and generates boundary-event notifications. EX[1007], 13:65–14:4, 1:20–22. Smith likewise defines virtual boundaries and triggers actions based on a trackable object's position. EX[1011], 1:53–63; EX[1005], ¶¶590-591.

A POSITA would have been motivated to incorporate Smith's altitude-based boundary definition into Staton's system. EX[1005], ¶592. Staton uses two-dimensional coordinates and pixel maps. EX[1007], 14:56–59, 15:27–34. Smith identifies the absence of an "altitude, height, or 'z-axis' attribute" as preventing floor-level determinations and addresses it with a three-dimensional boundary having "an altitude parameter." EX[1011], 1:27–33, 4:54–60. Staton's school, worksite, and hospital monitoring would benefit from that granularity. EX[1011], 5:62–65; EX[1005], ¶¶592-593.

A POSITA would have expected success because Staton already reports PDA altitude. EX[1007], 5:10–14. Using that data as an additional zone-defining input, alongside Staton's existing properties, would be a straightforward modification using common mobile-device sensors. EX[1011], 3:55–62, claim 6; EX[1007], 14:53–55, 16:13–17; EX[1005], ¶594. Staton's framework would remain intact, extended by one axis. EX[1005], ¶597.

2. Claim 9

a. 9[a]

Smith's "**at least one security parameter comprises an altitude**" is the supervisor-supplied altitude input defining a boundary (a "**security parameter**"). EX[1011], 4:54–65, claim 1; EX[1005], ¶¶595-597.

b. 9[b]

The "**at least one grid parameter comprises a building floor.**" EX[1005], ¶¶598-600. In Smith, a "building floor" is a geofence grid box within the geofence area. *Id.* Smith's Fig. 9 depicts floors whose boundaries trigger actions based on floor identity. EX[1011], 5:4–5, 5:32–40, 5:46–48, claim 1; EX[1005], ¶¶599-600. A floor vertically subdivides the geofence as Staton's resolution horizontally subdivides its pixel map. §VII.A.1.l, EX[1005], ¶¶599-600.

The supervisor's altitude or floor input is the "**grid parameter comprises a building floor**" because it defines the vertical grid and floor identity. EX[1005], ¶¶598, 602; EX[1011], 5:4-6, 5:33-43, 5:46-55; EX[1003], 25:26-29.

c. 9[c]

The "**building floor is estimated from the altitude**." EX[1005], ¶¶601-602. Smith estimates altitude and then the user's floor from it. EX[1011], 3:55–62, 4:37–50, 5:46–48, 5:62–65, claim 6; EX[1005], ¶¶601-603.

D. Ground 4: Obviousness of Claims 1-4, 6-8, 10-14, 16-21 in view of Rauner (EX[1009]) + Azmoodeh (EX[1010]) + Knowledge of a POSITA

Rauner+Azmoodeh render claims 1-4, 6-8, 10-14, and 16-21 obvious. Claim 1 is the independent method claim; claim 11 is the independent system claim; the others depend from them.

1. A POSITA Would Have Combined Rauner With Azmoodeh

First, both references share the '421 Patent's field: facilitating supervision of individuals based on geofencing. EX[1003], 1:20-23; EX[1005], ¶¶322-325, 604-610. Rauner uses geofences to monitor and coordinate emergency response across campuses, buildings, and municipalities; Azmoodeh monitors device distribution and activity within a geographic region. EX[1009], ¶¶[0048], [0239]; EX[1010], ¶[0015]. Although Azmoodeh's primary application is content delivery, its grid-cell technique is domain-independent and addresses the same problem of subdividing and monitoring a geofenced area using location data. EX[1010], ¶[0015]; EX[1005], ¶¶64, 135.

Second, Rauner discloses a GPS-integrated "alphanumeric grid," building schematics, and X-Y-Z plotting. EX[1009], ¶¶[0094], [0215], [0198]. But it does not expressly subdivide the geofenced area into defined portions or make cell count user-configurable. EX[1005], ¶¶83, 326, 375-376. Azmoodeh fills those gaps by dividing the geofenced area into cells representing physical-location portions, with cell count

based on geofence size or user input. EX[1010], ¶¶[0022], [0046]; EX[1005], ¶¶326-332.

Third, a POSITA would add Azmoodeh's cell subdivision to improve Rauner's granularity and flexibility to "more accurately encompass the location of interest." EX[1010], ¶[0023]. Rauner cross-references geofences with individual locations and determines whether devices are within structures. EX[1009], ¶¶[0198], [0244]. Cell subdivision would provide more granular positions within the geofence, while user-configurable resolution would accommodate deployments from buildings to metropolitan areas. EX[1010], ¶[0047]; EX[1009], ¶[0048], ¶¶[0089]–[0094]; EX[1005], ¶¶325-332.

Fourth, a POSITA would have expected success because the combination only adds Azmoodeh's cell-subdivision routine—under which the cell count is "defined based on a size of the geo-fence, or based on user input" (EX[1010], ¶[0046])—to Rauner's mapping module 158, which already creates a GPS-integrated "alphanumeric grid" and calculates each grid box's coordinate ranges (EX[1009], ¶¶[0093]–[0094]). Both references implement geofencing as processor-executed software (*id.* ¶[0097]; EX[1010], ¶[0033]). Dividing Rauner's known geofence area by a user-specified cell count or size is basic coordinate arithmetic, and Rauner's administrator already enters configuration values through administration module

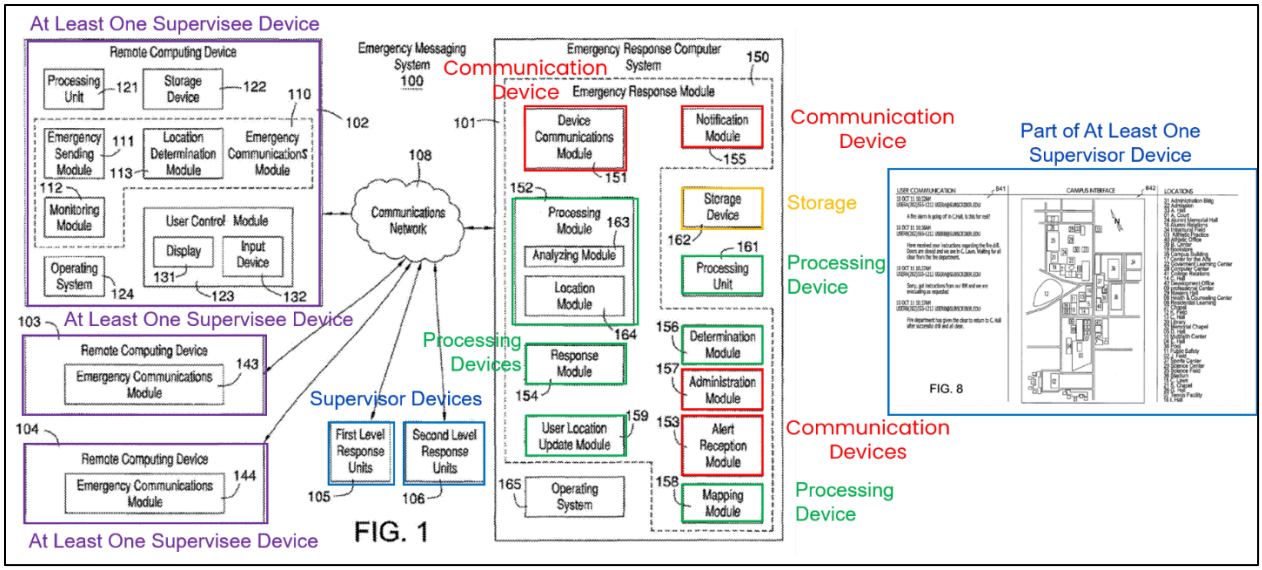
157 (EX[1009], ¶[0092]). This was a known technique applied to a known system with predictable results. EX[1005], ¶¶330-332.

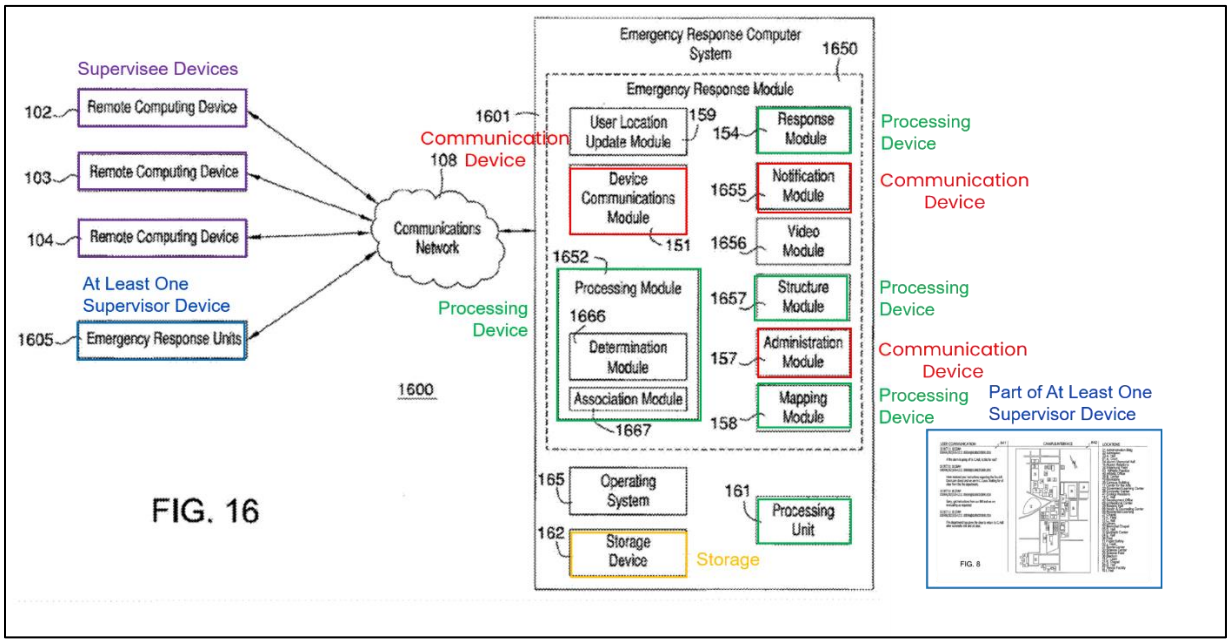
2. Claim 1

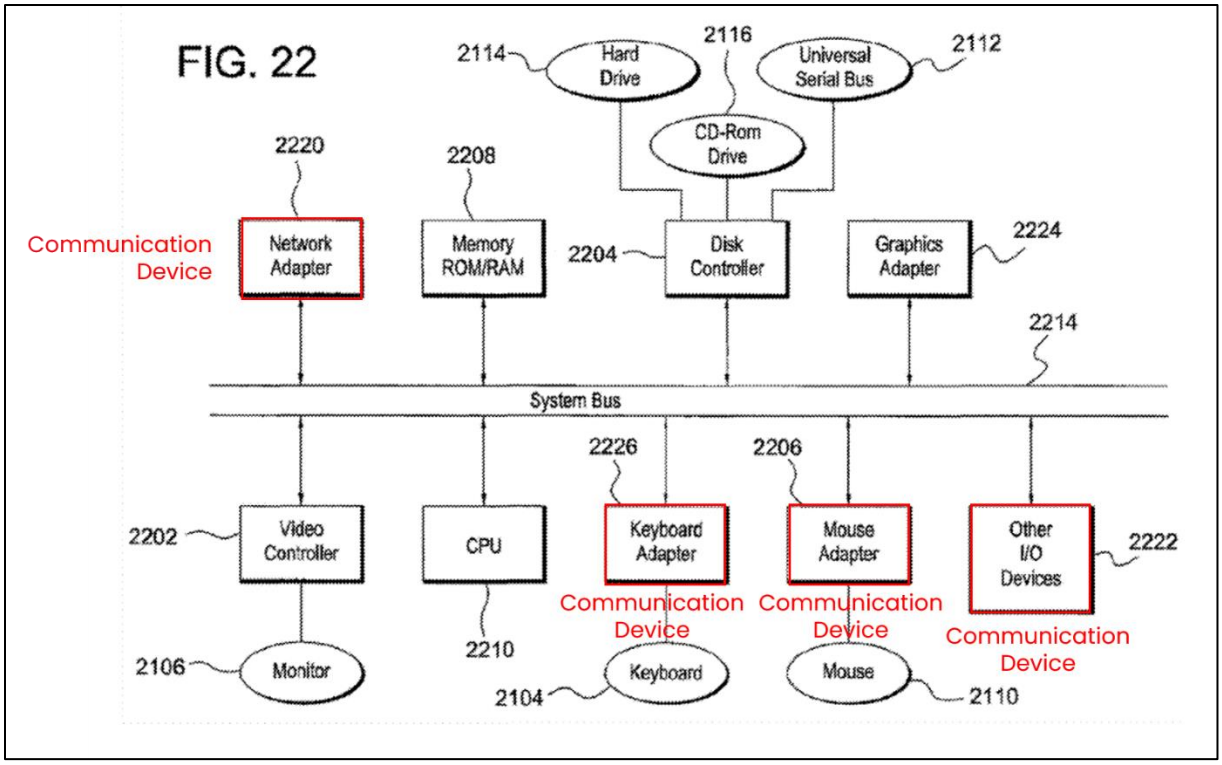
a. 1[pre]

To the extent limiting, Rauner[1] discloses 1[pre]. EX[1005], ¶¶333-334, 611-616. Rauner discloses **supervising individuals** (students, faculty, staff, workers) **based on geofences** to monitor locations and coordinate emergency response. *Id.*; EX[1009], ¶¶[0048], [0239]. The annotated system below identifies the communication device (red), at least one supervisor device (blue), processing device (green), storage device (orange), and at least one supervisee device (purple), all of which are described further herein. EX[1005], ¶¶315, 612 The system uses geofences to coordinate emergency response. EX[1009], ¶¶[0037], [0176], [0244].

[1] Rauner describes two related embodiments: (1) the core architecture (system 100, ¶¶[0047]–[0095]); and (2) an extension with additional modules (system 1600, ¶¶[0157]–[0200]). EX[1005], ¶¶129-130. Grounds 4-6 rely on the second embodiment, which also includes the components of embodiment 1. EX[1009], ¶¶[0162]–[0166]; EX[1005], ¶¶318-320.


At Least One Supervisee Device
Remote Computing Device
Processing Unit
121
Storage Device
122
110
Emergency Sending Module
111
Location Determination Module
Emergency Communications Module
113
112
Monitoring Module
User Control Module
Display
Input Device
131
123
132
Operating System
124
102
Emergency Messaging System
100
Communications Network
108
Emergency Response Computer System
150
Communication Device
Emergency Response Module
101
Device Communications Module
151
Notification Module
155
152
Processing Module
163
Analyzing Module
Location Module
164
Storage Device
162
161
Processing Unit
Storage
Processing Device
103
At Least One Supervisee Device
Remote Computing Device
Emergency Communications Module
143
Processing Devices
Response Module
154
156
Determination Module
157
Administration Module
Supervisor Devices
104
Remote Computing Device
Emergency Communications Module
144
First Level Response Units
Second Level Response Units
105
106
User Location Update Module
159
153
Alert Reception Module
165
Operating System
158
Mapping Module
Communication Devices
Processing Device
At Least One Supervisee Device
Part of At Least One Supervisor Device
FIG. 8
FIG. 1


Supervisee Devices
102
Remote Computing Device
103
Remote Computing Device
104
Remote Computing Device
At Least One Supervisor Device
1605
Emergency Response Units
Communications Network
1601
Communication
108 Device
Processing Device
1600
Emergency Response Computer System
1650
Emergency Response Module
User Location Update Module
159
154
Response Module
Device Communications Module
151
1655
Notification Module
1656
Video Module
1652
Processing Module
1657
Structure Module
1666
Determination Module
157
Administration Module
Association Module
1667
158
Mapping Module
165
Operating System
161
Processing Unit
162
Storage Device
Storage
Processing Device
Communication Device
Processing Device
Communication Device
Processing Device
Part of At Least One Supervisor Device
FIG. 8
FIG. 16



b. 1[a]

Rauner discloses 1[a]. EX[1005], ¶¶315, 335-345, 611-616.

Applicant's §112(f) "**communication device**"[2] (red above) is the communications function (including programs, middleware, and software) of emergency response computer system 101, including device communications module 151 (DCM), which communicates with remote computing devices over communications network 108, notification module 155/1655, which works through DCM to transmit notifications, administration module 157, which communicates with system administrators, alert reception module 153, which receives event or alert

[2] Rauner discloses the communication, processing, and storage devices implemented on the same server. EX[1009], ¶¶[0054], [0097]; EX[1005], ¶¶317-321.

notifications from third-party sources, and the communications modules shown in Fig. 22, including network adapter 2220, keyboard adapter 2226, mouse adapter 2206, and other input/output devices 2222 coupled to system bus 2214. EX[1009], ¶¶[0067], [0069], [0081], [0085], [0203]-[0204]; EX[1005], ¶¶315, 335, 612.

The "**at least one supervisor device**" is the set of devices used by supervisory personnel to configure, monitor, and receive system outputs, including the system administrator's terminal interface (e.g., EX[1009], Figs. 8-14, *see* insert of Fig. 8, blue above), which provides inputs to and receives outputs from the backend server's administration module 157 (EX[1009], ¶¶[0085], [0089]; EX[1005], ¶336); PSAP computers (not shown above), which access the cloud-hosted emergency response system through a browser interface (EX[1009], ¶[0031]); and the first- and second-level response unit devices (blue above), which receive system notifications and reports (*id.* ¶¶[0057]–[0058], [0137]).

The **security parameters** include mass-event and Clery trigger words (*e.g.*, "homicide" and "murder"), distance thresholds, mass-event trigger limits, and escalation rules designated and **associated** with the administrator (supervisor). *Id.* ¶¶[0076], [0089]-[0090], [0092]; EX[1005], ¶¶337-340.

The administration module (part of **communication device**) **receives** these **security** parameters from the administrator terminal interface (part of **supervisor device**) when the administrator "logs into administration module 157 and enters

[the] configuration page" to designate trigger words and configure thresholds (*id.* ¶[0089]). EX[1009], ¶¶[0031], [0085], [0089]; EX[1005], ¶¶341-345.

c. 1[b]

Rauner discloses 1[b]. EX[1005], ¶¶346-347, 611-616. The "**geographical location**" is the map and geospatial data uploaded by the administrator through the administrator terminal interface (part of **supervisor device)** and **received** by the administration module (part of **communication device**), as with limitation 1[a]. EX[1009], ¶¶[0094]-[0095]; §VII.D.2.b. The administrator defines geographic areas by "clicking," "draw[ing]," "drag[ging]," "select[ing]," or using a "pin drop" to define the area. EX[1009], ¶¶[0094]-[0095].

d. 1[c]

Rauner discloses 1[c]. EX[1005], ¶¶348-354, 611-616. Applicant's §112(f) "**processing device**" is processing unit 161 including its processing module 152/1652, analyzing module 163, response module 154, determination module 156/1666, and mapping module 158. *Id.*

The administrator inputs **security parameters** (trigger words, Clery event terms, distance thresholds, escalation rules (EX[1009], ¶¶[0076], [0089]–[0090], [0092]-[0094])), which inform the areas the system monitors. EX[1005], ¶348; EX[1003], 11:56-61 (broadly disclosing any type of parameters for security-monitoring purposes). The mapping module of the **processing device analyzes the**

supervisor's geographical location input based on those parameters because they determine which areas warrant monitoring. EX[1009], ¶¶[0076], [0089]-[0094]; EX[1005], ¶¶349-350.

Other disclosures further show geographical-location analysis using security parameters. EX[1005], ¶¶351-354. For example, Rauner "compares the geographic area" identified in third-party warnings "with all stakeholder defined areas" and "compares the content" of warnings "to select appropriate emergency plans(s)." EX[1009], ¶[0218]. Rauner's response module analyzes trigger-word content, message frequency, and location to determine response levels, assigning a second-level response when a predetermined number of trigger messages are "sent from locations within a predetermined distance of each other." *Id.* ¶¶[0079], [0121], [0123]-[0124], Claim 8.

e. 1[d]

Rauner discloses 1[d]. EX[1005], ¶¶355-356, 611-616; §V. Mapping module 158 of the **processing device generates the geofences**—graphic boundaries or representations of defined **geographic areas** with associated settings to trigger an alert**—based on the inputs and analysis** described in limitations 1[b]-1[c]. EX[1009], ¶¶[0093], [0239], [0215], [0244]; §§VII.D.2.c-d. The administrator uploads a map, selects features, and configures security parameters, and the mapping

module processes these inputs to generate the geofence. *Id.* ¶¶[0089]–[0094]; EX[1005], ¶¶355-356.

f. 1[e]

Rauner discloses 1[e]. EX[1005], ¶¶357-358, 611-616. Rauner's remote computing devices 102–104 (**supervisee devices**) are carried by monitored users (**supervisees**). They transmit emergency trigger messages and location information regarding the supervisee (**supervisee data**) that are **received** by device communications module 151 (of **communication device**). EX[1009], ¶¶[0105], [0111]; EX[1005], ¶¶357-358. The devices also periodically report their locations, as often as every ten seconds. EX[1009], ¶¶[0072], [0182].

g. 1[f]

Rauner discloses 1[f]. EX[1005], ¶¶359-363, 611-616. Processing unit 161's processing, analyzing, determination, and structure modules (**processing device**) **analyze supervisee data based on the geofence** in several ways. They identify affected devices within a geofenced area, cross-reference geofences with individual locations for census reports, determine whether devices are in a geofenced building, and use overlapping geofences to route events based on device location. EX[1009], ¶¶[0037], [0176], [0195], [0198], [0244]; EX[1005], ¶¶359-363.

h. 1[g]

Rauner discloses 1[g]. EX[1005], ¶¶364-367, 611-616. Analyzing, response, and determination modules on processing unit 161 (of **processing device**) **generate**

supervision notifications based on the geofence analysis of the supervisee data. EX[1009], ¶¶[0076], [0078]–[0082]. Examples include 911 notices (*id.* ¶[0050]), mass-event warnings (*id.* ¶[0082]), and geofence-based census reports produced by cross-referencing the geofence with individual locations (*id.* ¶[0244]). *Id.* ¶¶[0050], Claims 1, 6; EX[1005], ¶¶364-367.

i. 1[h]

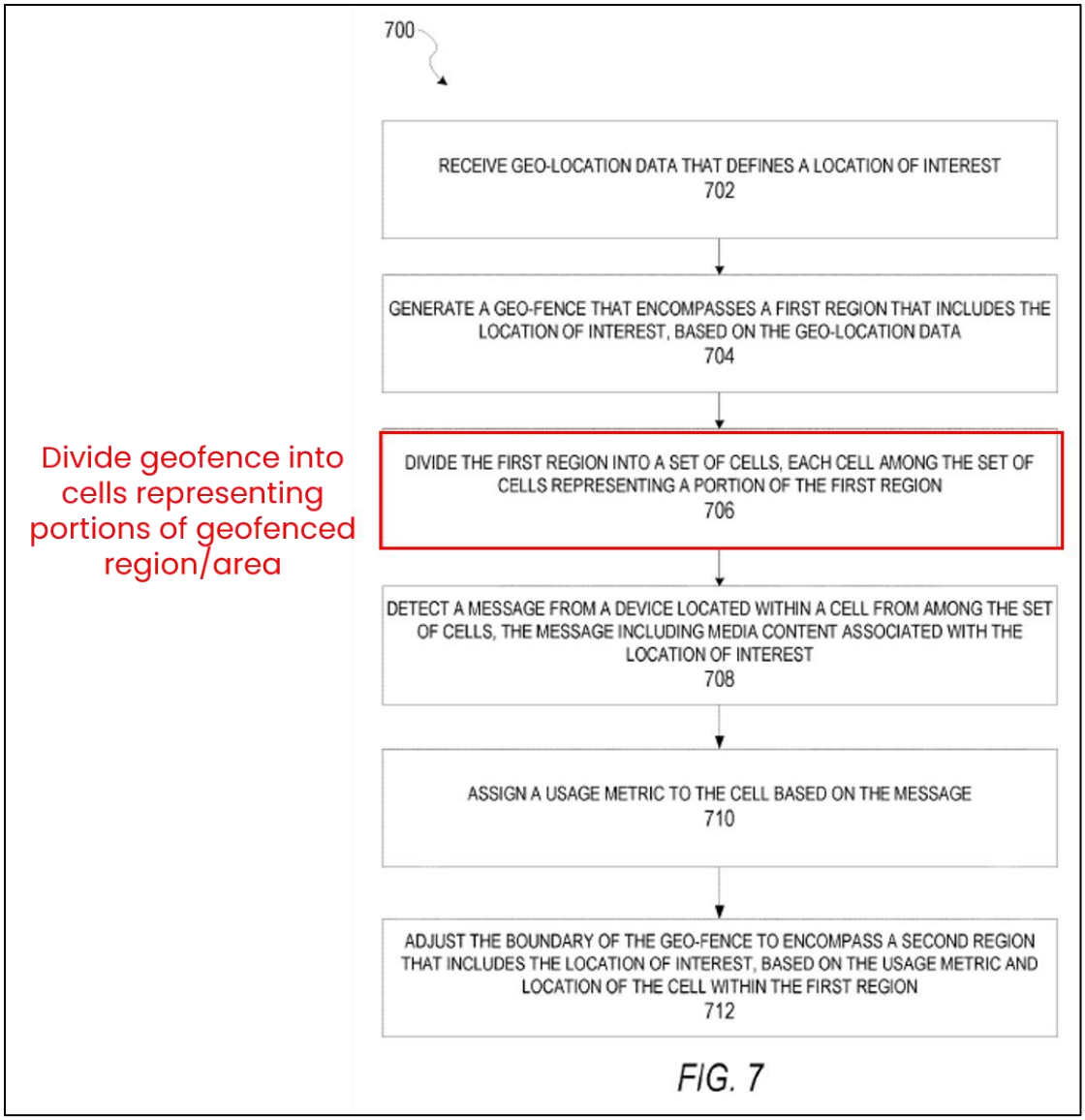
Rauner discloses 1[h]. EX[1005], ¶¶368-371, 611-616. Device communications module 151 and notification module 155 (parts of **communication device**) **transmit the supervision notifications** of 1[g] to **supervisor devices**. EX[1009] ¶[0067]; §§VII.D.2.h. For example, Rauner identifies response units, administrators, subscribers, and selected system administrators as recipients of emergency notices, emails, alerts, and reports. *Id.* ¶¶[0050], [0067], [0083], [0137], [0168], [0119], Claim 1; EX[1005], ¶¶368-371.

j. 1[i]

Rauner discloses 1[i]. EX[1005], ¶¶372-374, 611-616. Applicant's §112(f) "**storage device**" is storage device 162, which **stores both supervisee data** (locations of supervisees) and **supervision notifications** (911 notice and mass event warning messages). EX[1009], ¶¶[0075], [0072] (supervisee data); *id.* ¶¶[0050], [0083] (notifications).

k. 1[j]

The combination renders 1[j] obvious. EX[1005], ¶¶375-377, 611-616. As described in §VII.D.1, when combined, Rauner's **geofence characterized by a geofence area corresponding to the geographical area** and associated grid overlay are supplemented by Azmoodeh's teaching that grid cells structurally subdivide the geofence (**geofence area corresponding to the geographical area**), with each cell (each of the **plurality of geofence grid boxes associated with the geofence area**) representing a defined portion (**grid box geofence area of the geofence area**) and the cells together covering the whole. §VII.D.1; EX[1005], ¶¶375-377.



EX[1010], Fig. 7 (annotated).

l. 1[j][1]

The combination renders 1[j][1] obvious. EX[1005], ¶¶378-379, 611-616; §VII.D.1. The **grid parameter** is user input defining the number of cells. EX[1010], ¶¶[0046]; EX[1009], ¶¶[0089]–[0094]. The administration module (part of **communication device**) **receives** it from the administrator terminal interface (part

of **supervisor device**), allowing the administrator to configure the grid. §VII.D.1; EX[1010], ¶[0046]; EX[1009], ¶¶[0089]-[0094]; EX[1005], ¶¶378-379.

m. 1[j][2]

The combination renders 1[j][2] obvious. EX[1005], ¶¶380-381, 611-616. The **grid parameter** (user input defining number of grid cells) is **analyzed** by the mapping module (of **processing device**), which analyzes the user-supplied cell count to set the number of cells in the region. §VII.D.1; EX[1009], ¶¶[0093]-[0094]; EX[1010], ¶[0046]; EX[1005], ¶¶380-381.

n. 1[j][3]

The combination renders 1[j][3] obvious. EX[1005], ¶¶382-384, 611-616. In the combined system, mapping module (of **processing device**) determines the **grid box geofence area** by calculating coordinate ranges and associating coordinates with each grid box. §VII.D.1; EX[1009], ¶[0094]. Because Azmoodeh's cells represent portions of the geofenced area, **the area of each cell is determined** depending on the total geofence area and user-supplied cell count (is **based on the analyzing of the at least one grid parameter**). EX[1009], ¶¶[0093]-[0094]; EX[1010] ¶¶[0022], [0046]; EX[1005], ¶¶383-384.

o. 1[j][4]

The combination renders 1[j][4] obvious. EX[1005], ¶¶385-388, 611-616. **A number of geofence grid boxes** is **generated using** the mapping module 158 (portion of **processing device**) (EX[1009], ¶[0093]), which creates "an

alphanumeric grid over the graphical representation." *Id.* ¶[0094]; §VII.D.1. The geofence is divided "into a set of cells, each cell among the set of cells representing a portion of the first region," with the number determined by user input (**based on the area determination**). §VII.D.1; EX[1010], Claim 1, ¶[0046]; EX[1005], ¶¶385-387.

3. Claim 2

a. 2[a]

Rauner discloses 2[a]. EX[1005], ¶¶390-395, 617-618. The "**location indication**" is (1) a name of a geofenced structure or feature (**associated with the geographical area**) supplied by the administrator through the terminal interface (part of **supervisor device**), EX[1009], ¶[0094]; and/or (2) building schematics **associated** with a geofenced building (**geographical area**) (*id.* ¶[0215]). *Id.* Claim 2. In either case, the indication is supplied by the administrator through the terminal interface (part of **supervisor device**) and received through administration module 157 (part of **communication device**), as with limitation 1[a]. *Id.* ¶¶[0094], [0215], Claim 2, [0031]; EX[1005], ¶¶390-393, 617-618.

b. 2[b]

Rauner discloses 2[b]. EX[1005], ¶¶394-395, 617-618. The mapping module (of **processing device**) **identifies the location corresponding to the location indication** by translating the named feature or building schematic into geospatial

coordinates. EX[1009], ¶[0094] (calculating a coordinate range and associating it with the feature); EX[1005], ¶¶394-395, 617-618.

c. 2[c]

Rauner discloses 2[c]. EX[1005], ¶¶396-398, 617-618. The structure module 1657 and/or determination module 156/1666 (part of **processing device**) **analyze** by cross-referencing supervisee-device locations (**supervisee data**) with administrator-designated structures and locations within the geographic area (**the location**). EX[1009], ¶¶[0198], [0139], [0189]; EX[1005], ¶¶396-398, 617-618.

d. 2[d]

Rauner discloses 2[d]. EX[1005], ¶¶399-403, 617-618 Rauner discloses at least two **location anomalies determined by the processing device based on analyzing supervisee data based on the location** and associated **notifications based on the determining**. EX[1009], Claim 8, ¶¶[0078], [0082], [0123]; EX[1005], ¶¶399-403, 617-618:

> (1) Threat escalation event **notifications based on determining location anomalies**, which in turn are **based on analyzing supervisee data at the location**, EX[1009], ¶[0208] ("creating a Threat Escalation Event when the frequency of call/text events exceeds a defined threshold" for a defined location), *id.* (same when "the content of call/text events meets defined criteria" for a defined location), ¶[0209] (Threat Escalation Event distributed

by "cross referencing the stakeholder location with the location(s) of the underlying events").

(2) Spatial clustering escalation **notifications based on determining location anomalies**, which in turn are **based on analyzing** if trigger messages from supervisee devices (**supervisee data**) "were sent from **locations** within a predetermined distance of each other," *id.* ¶¶[0121], [0124] (ten messages with trigger word "gun" sent within 500 meters triggers second-level response), Claim 8.

4. Claim 3

a. 3[a]

Rauner discloses 3[a]. EX[1005], ¶¶404-405, 619-620. The "**supervision notification compris[ing] at least one supervisee event**" is Rauner's Emergency Event—an emergency call or text that takes the device location and pairs it with the user and provides a **supervision notification**, as described in 1[g]. EX[1009], ¶¶[0208], [0050]; §VII.D.2.h. The **action associated with the supervisee event** is distributing that location and profile through an emergency-response workflow to recipients selected based on location, proximity, status, hierarchy, or event type. EX[1009], ¶¶[0050], [0110], [0208]; §VII.D.2.h; EX[1005], ¶¶404-405, 619-620. More specifically, the **action** associated with the Emergency Event is that "[t]he system automatically places the 'caller' and each of the individuals/entities in the

emergence response work-flow into a group messaging" session. EX[1009], ¶[0110].

b. 3[b]

Rauner discloses 3[b] in two ways. EX[1005], ¶¶406-407, 619-620.

(1) Response module 154 and determination module 156 (of **processing device) determine** the emergency-response workflow for acting on the Emergency Event (an **action**) **based on the supervision notification**. EX[1009], ¶¶[0078]-[0081], [0110], [0167], [0169]; EX[1005], ¶¶406-407, 619-620.

(2) The same modules **determine** response level and which first- or second-level units to notify (an **action**) based on message frequency, content, and location derived from (**based on**) **the supervision notification**. EX[1009], ¶¶[0079]-[0080], [0252]; EX[1005], ¶¶406-407, 619-620.

c. 3[c]

Rauner discloses 3[c]. EX[1005], ¶¶408-410, 619-620. Processing unit 161 (**processing device**) **performs the action based on the determining**, where the **action** establishes group messaging (**communication session**) between emergency-response (**supervisor**) and caller (**supervisee**) devices. EX[1009], ¶[0110]; *see also id.* ¶¶[0169], [0049], [0038]; EX[1005], ¶¶408-410, 619-620.

5. Claim 4

a. 4[a]

Rauner discloses 4[a]. EX[1005], ¶¶411-413, 621-622. **Based on analyzing** the emergency event received from the user (**supervisee data**), processing unit 161 (**processing device**) **identifies** the caller's supervisee profile (**the supervisee**) with the emergency communication event. EX[1009], ¶¶[0050], [0110], [0169]; §§VII.D.2.f-g; EX[1005], ¶¶412-413, 621-622.

b. 4[b]

Rauner discloses 4[b]. EX[1005], ¶¶414-416, 621-622. Rauner stores user profile data (**supervisee profile data**) in **storage device** 162 **based on the identifying**. EX[1009], ¶[0099]. **Based on identifying the supervisee**, the system **retrieves the profile using the storage device** and pairs it with the event. EX[1009], ¶¶[0099], [0208]; EX[1005], ¶¶414-416, 621-622.

The **supervision notification generation** is **based on the retrieving** because the notification incorporates the retrieved profile data. EX[1009], ¶[0050], Claim 6, ¶[0244]; EX[1005], ¶¶414-416, 621-622.

6. Claim 6

a. 6[a]

Rauner discloses 6[a]. EX[1005], ¶¶417-421, 623-624. Rauner's system **receives environment data associated with the geographical area corresponding to the geofence** in two ways:

(1) The system receives georeferenced sensor feeds—traffic, motion, heat, air quality, water quality, radiation, or moisture (**environment data**)—from external monitoring systems. EX[1009], ¶¶[0212]-[0213], Claim 14. A POSITA would have understood device communications module 151 or network adapter 2220, parts of the **communication device**, to receive them. EX[1005], ¶¶418-421, 623-624.

(2) Alert reception module 153 of the **communication device** receives event or alert notifications from agencies such as FEMA, USGS, CDC, NOAA, and FDA, which include geographic parameters for tornado, radiation, and other threats (**environment data**). *Id.* ¶¶[0069], [0214], [0218], [0242]-[0243]; EX[1005], ¶¶418-421, 623-624.

b. 6[b]

Rauner discloses 6[b], for each type of environmental data described in 6[a]. EX[1009], ¶¶[0169], [0172], [0213]; EX[1005], ¶¶422-425, 623-624.

(1) The **processing device analyzes** whether sensor data within the defined area (**environmental data**) meets the trigger requirements (**determines a threat**) and distributes the sensor data to mobile or web services "as an event" (**generates a supervision notification based on the determining**). EX[1009], ¶¶[0213], [0214], [0243]; *see also* §VII.D.2.h-i.

(2) The **processing device** compares (**analyzes**) georeferenced event locations with data from available sensor(s) (**environmental data**) to **determine a threat** and distributes an emergency warning with sensor output (**generates a supervision notification based on the determining)**. EX[1009], ¶¶[0122], [0124], [0218], [0243], [0245], claims 7, 12; §§VII.D.2.h-i.

7. Claim 7

a. 7[a]

Rauner discloses 7[a]. EX[1005], ¶¶426-428, 625-626. Rauner's structure module 1657 **retrieves** a schematic (a **blueprint**) for a geofenced structure (**associated with the geographical area corresponding to the geofence**) from storage device 162 (**storage device**). EX[1009], ¶[0174]. It cross-references the emergency location with geofenced building schematics and selects the appropriate building plan. EX[1009], ¶¶ [0195], [0215]; EX[1005], ¶¶426-427, 625-626.

b. 7[b]

Rauner discloses 7[b]. EX[1005], ¶¶428-432, 625-626. Structure module 1657 (of **processing device**) **analyzes** the retrieved schematic and remote-device locations (**supervisee data**) to determine whether devices are in the structure at the emergency location. EX[1009], ¶[0198]; EX[1005], ¶¶428-432, 625-626.

c. 7[c]

Rauner discloses 7[c]. EX[1005], ¶¶430-432, 625-626. **Based on analyzing the blueprint and supervisee data**, structure module 1657 (part of **processing device**) **determines** and plots the **locations** of remote devices (**supervisees**) into the building schematic. EX[1009], ¶[0198]. The structure module 1657 then **generates supervision data based on the determining** when it "provide[s] information about a location" "to the emergency response units." *Id.* ¶¶[0174], [0197]–[0198]. It may also use those locations to trigger ingress, egress, or evacuation plans. *Id.* ¶[0199]; §§VII.D.2.h-i (supervision notification structures).

8. Claim 8

a. 8[a]

Rauner discloses 8[a]. EX[1005], ¶¶433, 627-628. Rauner's remote computing device 102 **(the supervisee device**) includes a microphone **sensor** as part of input device 132. EX[1009], ¶¶[0061]-[0062]; EX[1003], 24:55-59 ("audio sensors (such as a microphone)"); EX[1005], ¶¶433, 627-628. Input device 132 also includes buttons (**sensors**), and Rauner discloses a panic button. EX[1009], ¶¶[0061], [0110]; EX[1005], ¶¶433, 627-628.

b. 8[b]

Rauner discloses 8[b]. EX[1005], ¶¶434-435, 627-628. The microphone **detects a signal made by the supervisee**—the user's voice. EX[1009], ¶[0105], [0180]; EX[1005], ¶¶434-435, 627. And the button **detects** the supervisee's press, **a**

signal made by the supervisee. EX[1009], ¶¶[0110], [0088]; EX[1005], ¶¶434-435, 627-628.

c. *8[c]*

Rauner discloses 8[c]. EX[1005], ¶¶436-437, 627-628. The microphone's audio recording **generates supervisee data based on the detecting**, which is transmitted with the supervisee's location to device communications module 151. EX[1009], ¶¶[0111], [0113]; EX[1005], ¶¶436-437, 627-628. The button press initiates an Emergency Communication Event, and the emergency sending module transmits it with the device location to device communications module 151 as supervisee data. EX[1009], ¶¶[0110]-[0111]; EX[1005], ¶¶436-437, 627-628.

9. Claim 10

a. 10[a]

Rauner discloses 10[a]. EX[1005], ¶¶629-630. Each remote-device user has a stored profile and "unique user ID," providing the "**at least one identification**" with which the "**supervisee is associated**." EX[1009], ¶¶[0050], [0099]; EX[1005], ¶630.

b. 10[b]

Rauner discloses 10[b]. EX[1005], ¶631. A user's device sends the trigger and location through the network to device communications module 151 (of **communication device**), which associates the caller's profile with the event. EX[1009], ¶[0110]. This device identity and location data is an "**indication corresponding to the at least one identification**" received from the remote

computing device (**supervisee device**). EX[1009], ¶¶[0071], [0110]–[0111]; EX[1005], ¶631.

c. 10[c]

Rauner discloses 10[c]. EX[1005], ¶¶632-634. Processing unit 161 (**processing device**) **identifies the supervisee** by pairing device data with the user profile, and the **generating of the supervision notification is based on the identifying** because the 911 notice and reports include the user ID, name, and phone number. EX[1009], ¶¶[0050], [0208], Claim 6; EX[1005], ¶¶632-633; §VII.D.5.a.

10. Claim 11

Rauner and Azmoodeh render claim 11 obvious. EX[1005], ¶¶635-638. Claim 11 is the system counterpart to claim 1. Rauner discloses a "**system for facilitating supervision of individuals based on geofencing**" (11[pre]) for the reasons in §VII.D.2.a, with the remaining limitations as follows:

11[a] "a communication device configured for: receiving…receiving …receiving…and transmitting…." *See* §VII.D.2.b (1[a] communication device). Functions 11[a][1]–11[a][4] are invalid for the same reasons as 1[a]–1[b], 1[e], and 1[h]. §§VII.D.2.b–c, f, i; EX[1005], ¶¶438-443, 635-638.

11[b] "a processing device configured for: analyzing…generating… analyzing…and generating…." *See* §§VII.D.2.d (1[c] processing device).

Functions 11[b][1]–11[b][4] are invalid for the same reasons as 1[c]–1[d] and 1[f]–1[g]. §§VII.D.2.d–e, g–h; EX[1005], ¶¶444-448, 635-638.

11[c] "a storage device configured for storing…." *See* §§VII.D.2.j. Function 11[c] is invalid for the same reasons as 1[i]. §VII.D.2.j; EX[1005], ¶¶449, 635-638.

11[d] Grid-based limitations. Limitations 11[d], 11[d][1]–[4] are invalid for the same reasons as 1[j], 1[j][1]–[4]. §§VII.D.2.k–o; EX[1005], ¶¶450-454, 635-638. The grid parameter is received by the **communication device**. §VII.D.2.l.

11. Claim 12

Claim 12[a]-[d] recites claim 11's communication and processing devices performing 2[a]-[d], and is invalid for the same reasons as claims 2 and 11. §§VII.D.3, VII.D.10; EX[1005], ¶¶456, 639-640.

12. Claim 13

Claim 13[a]-[c] recites claim 11's processing device performing 3[a]-[c], and is invalid for the same reasons as claims 3 and 11. §§VII.D.4, VII.D.10; EX[1005], ¶¶457, 641-642.

13. Claim 14

Claim 14[a]-[b] recites claim 11's processing and storage devices performing 4[a]-[b], and is invalid for the same reasons as claims 4 and 11. §§VII.D.5, VII.D.10; EX[1005], ¶¶458, 643-644.

14. Claim 16

Claim 16[a]-[b] recites claim 11's communication and processing devices performing 6[a]-[b], and is invalid for the same reasons as claims 6 and 11. §§VII.D.6, VII.D.10; EX[1005], ¶¶459, 645-646.

15. Claim 17

Claim 17[a]-[c] recites claim 11's storage and processing devices performing 7[a]-[c], and is invalid for the same reasons as claims 7 and 11. §§VII.D.7, VII.D.10; EX[1005], ¶¶460, 647-648.

16. Claim 18

Claim 18[a]-[c] corresponds to claim 8[a]-[c], and is invalid for the same reasons as claims 8 and 11. §§VII.D.8, VII.D.10; EX[1005], ¶¶461, 649-650.

17. Claim 19

a. 19[a]

Rauner discloses two of the three alternatives for "**the at least one signal made by the supervisee comprises**." EX[1005], ¶¶651-654.

For "**pressing a button**," Rauner's input device 132 includes buttons, and the user initiates an Emergency Communication Event by pushing a panic button. EX[1009], ¶¶[0061], [0110]; EX[1005], ¶¶652-654.

For "**speaking a specific phrase**," Rauner records the emergency message, converts it to text, and checks trigger words; its microphone therefore detects the

signal and generates supervisee data. EX[1009], ¶¶[0076], [0105], [0113]; EX[1005], ¶¶652-654.

b. 19[b]

Rauner discloses "**the supervisee device is configured to optionally make an emergency call when the…sensor detects the…signal**": its emergency module calls a responder based on location, and call-screen buttons initiate autodialing. EX[1009], ¶¶[0041], [0225]; EX[1005], ¶655. It "[o]ptionally" makes the call based on configuration. EX[1005], ¶655.

c. 19[c]

Rauner discloses "**a phone number dialed in the emergency call is determined based on the geofence**". EX[1005], ¶¶656-658. It associates geographic areas with telephone numbers and displays the applicable number within the area. EX[1009], ¶[0228]; EX[1005], ¶¶656-658. Rauner updates emergency numbers across geographic boundaries and sorts them by proximity in overlapping geofences. EX[1009], ¶¶[0226]–[0229]. The geofences select the number, and 19[b] establishes autodialing. EX[1005], ¶¶656-658.

18. Claim 20

Limitations 20[a]–20[c] correspond to 10[a]–10[c] and are invalid for the same reasons. §§VII.D.9–10; EX[1005], ¶¶659-663.

19. Claim 21

a. 21[a]

The combination renders 21[a] obvious. EX[1005], ¶¶664-667. Rauner **stores emergency contact numbers by geographic area**, including local poison-control numbers associated with geofences and **each geofence grid box**. EX[1009], claims 1, 7, ¶¶[0136], [0225]-[0228].

The emergency contact number is "**associated with the geographical area represented by the grid box geofence area**" because Azmoodeh's cells collectively make up the geofenced location, allowing Rauner's number to be keyed to each cell. EX[1010], ¶[0022]; EX[1005], ¶¶664-667.

b. 21[b]

The combination renders 21[b] obvious. EX[1005], ¶668. Rauner discloses local emergency numbers, including 911 in the United States, country-specific numbers, and local numbers where no national 911 exists (**a 911 call service or equivalent emergency service**). EX[1009], ¶¶[0226]–[0227].

Those numbers are "**specific to the geographical area of the grid box**" because Rauner uses geographic reference locations below the national level, the same granularity refinement supplied by Azmoodeh's cells. EX[1009], ¶[0226]; EX[1010], ¶[0046]; EX[1005], ¶668.

c. 21[c]

The combination renders 21[c] obvious. EX[1005], ¶¶669-672. Rauner's determination module 1666 (of **processing device**) uses the remote device's location to **select** the response unit, and notification module 1655 (of **processing device**) forwards the trigger and location (**supervisee data**) for **transmission to the stored emergency contact number upon detecting an emergency situation**. EX[1005], ¶¶669-672. The transmitted **supervisee data** includes the user ID, name, location, time, and date. EX[1009], ¶¶[0050], [0168]; EX[1005], ¶¶669-672.

Selection and transmission are "**automatic**": Rauner distinguishes its automatic computer-performed analysis and communication from dispatcher-mediated systems. EX[1009], ¶¶[0169]-[0170]. Azmoodeh identifies the cell where the event originated, satisfying "**within the corresponding grid box geofence area**." EX[1010], ¶[0047]; EX[1005], ¶¶669-672.

E. Ground 5: Obviousness of Claims 5, 15, 22-24 in view of Rauner (EX[1009]) + Azmoodeh (EX[1010]) in further view of Noland (EX[1008]) + Knowledge of a POSITA

Rauner+Azmoodeh render claims 1 and 11 obvious. §§VII.D.2, VII.D.10. Claims 5 and 15 depend from them; claims 23 and 24 depend from independent method claim 22. All are rendered obvious in view of Noland.

1. A POSITA Would Have Been Motivated to Combine the Rauner and Azmoodeh System with Noland

First, all three references and the '421 Patent concern facilitating supervision of individuals based on geofencing. EX[1003], 1:20-23; EX[1005], ¶¶462-465, 673-677. Noland's threat-sensing system supervises students, staff, and other occupants, and uses geofences defining "a school attendance zone or a specific building boundary that can be monitored," making it analogous to the Rauner+Azmoodeh system. EX[1008], ¶¶[0015]–[0019], [0061], [0148]; EX[1005], ¶465-467; §VII.D.1.

Second, Rauner contemplates external sensors, including gunshot detection, and cross-references georeferenced events with supervisor-defined areas before distributing alerts. EX[1009], ¶¶[0211]-[0212], [0216], [0223]. Noland improves that capability by providing implementation details for detecting and classifying weapons. §VII.B.1; EX[1005], ¶¶468-470, 674.

Third, a POSITA would have had a reasonable expectation of success in combining Noland's structures with the Rauner+Azmoodeh system. Noland's gateway outputs weapon type, caliber, shooter location, and shot count, while Rauner consumes external event data and distributes it through geofence-based channels. EX[1008], ¶¶[0096], [0100], [0107]; EX[1009], ¶¶[0211]–[0214]. Integrating the gateway into Rauner's processing pipeline would require directing that output to the existing event-processing system. EX[1005], ¶475. Both are

server-side processors that receive, analyze, and act on incoming sensor data. EX[1005], ¶475.

2. Claim 5

a. 5[a]

The system renders 5[a] obvious. EX[1005], ¶¶476-481, 678. As described for Ground 2, Noland's weapon detection discloses **identifying, using the processing device, at least one object**, §VII.B.2.a, and it would have been obvious to integrate Noland's gateway into Rauner+Azmoodeh's **processing unit** to identify the weapon in the supervisee's geofenced zone (**object associated with the supervisee**) **based on analyzing the supervisee data**. EX[1005], ¶¶476-481, 678; §VII.E.1. Noland Fig. 2A, annotated below, illustrates this: threat sensing devices 10a–10n report gunshot data to system gateway 110, which determines "the general type of weapon" and the shooter's location. EX[1008], ¶¶[0091], [0107]; EX[1005], ¶¶476-481, 678.

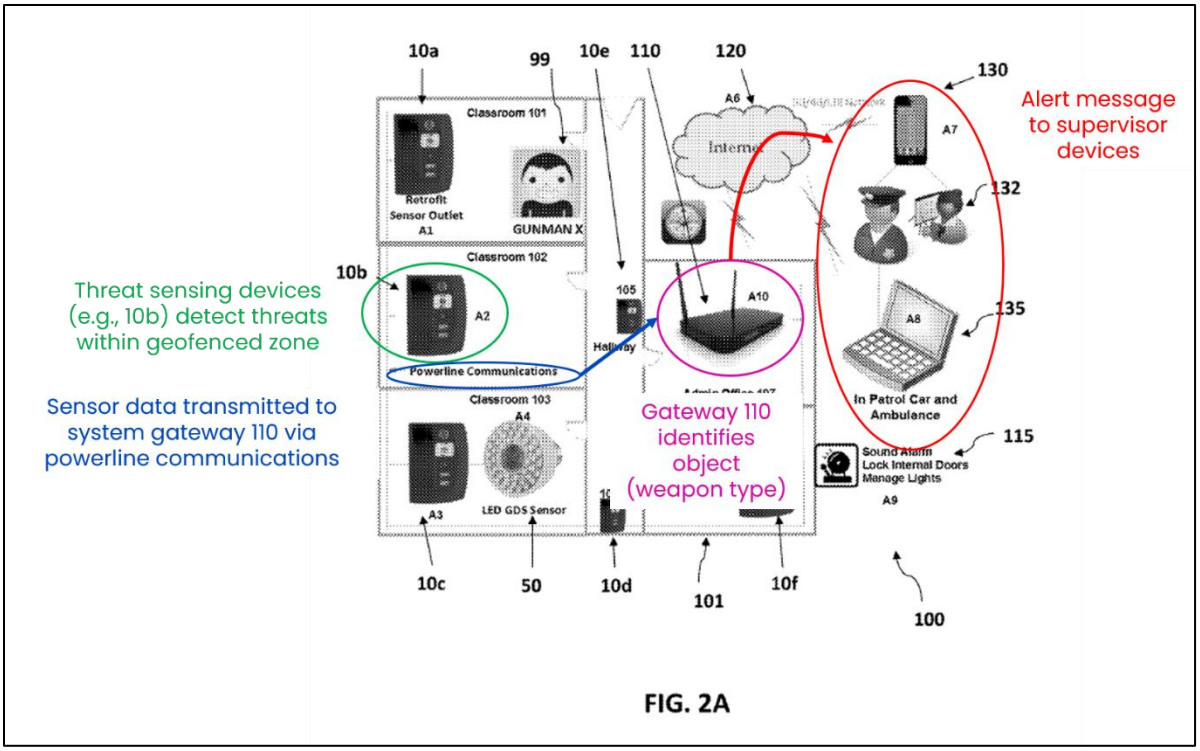


FIG. 2A

b. 5[b]

The system renders 5[b] obvious. EX[1005], ¶¶482-488, 678. As described for Ground 2, Noland's gateway (as integrated into Rauner+Azmoodeh's processing device) **determines, using the processing device, the object's lethality based on the identifying** in 5[a] and **generates** an alert. §§VII.B.2.b, VII.E.1. The system's notification framework **generates the supervision notification based on the determining**, by incorporating the alert in the notification sent to supervisors (**supervision notification**). EX[1005], ¶¶482-488; §§VII.D.2.h-i (supervision notification structures).

3. Claim 15

Claim 15[a]-[b] recites claim 11's processing device performing 5[a]-[b], and is invalid for the same reasons as claims 5 and 11. §§VII.E.2, VII.D.10; EX[1005], ¶¶679-681.

4. Claim 22

a. 22[pre]-22[k]

The combination renders claim 22 obvious. EX[1005], ¶¶682-685. Limitations 22[pre]–22[h] correspond to 1[pre]–1[i], except 22[e] requires geographical-location analysis; Rauner's analysis of device locations against administrator-selected areas satisfies both formulations. §§VII.D.2.a–j; EX[1009], ¶¶[0037], [0139]; EX[1005], ¶¶682-685. These limitations are invalid for the same reasons as 1[pre]–1[i]. §§VII.D.2.a–j. Limitations 22[i]–22[k] correspond to 8[a]–8[c] and are invalid for the same reasons. §VII.D.8; EX[1005], ¶¶682-685.

b. 22[l]

Rauner+Azmoodeh and Noland render obvious "**the supervisee data comprises audio and video recordings**." EX[1005], ¶686. Noland's sensors transmit live video and audio to gateway 110. EX[1008], ¶¶[0126], [0127]. A POSITA would combine those feeds with Rauner's architecture, which already ingests third-party sensor and camera feeds keyed to event location. EX[1009], ¶[0211]-[0212], claims 15-16; §VII.E.1; EX[1005], ¶686.

c. 22[m]

Rauner+Azmoodeh and Noland render obvious "**the at least one sensor is selected from one or more nearby sensors based on the most proximal nearby sensor by geographical location in real-time**." EX[1005], ¶¶676, 687. Rauner selects nearby cameras but does not expressly state real-time selection; Noland identifies the closest sensor by comparing signal amplitude in real time. EX[1009], ¶[0211]-[0212], claim 15; EX[1008], ¶¶[0111], [0205], [0145], [0096], [0106]. Adding that known comparison would improve proximity selection through straightforward processing of known data Rauner receives. §VII.E.1; EX[1005], ¶¶676, 687.

d. 22[n]

Rauner+Azmoodeh and Noland render obvious "**the at least one sensor tracks the supervisee as the supervisee moves between the one or more nearby sensors**." EX[1005], ¶¶688-691. Noland supplies sensor-to-sensor tracking, while Rauner tracks devices between locations and adjusts update intervals for movement speed. EX[1008], ¶¶[0116], [0124], [0229]; EX[1009], ¶¶[0117], [0182], [0233], [0249]; §VII.B.9.g; EX[1005], ¶¶688-691.

5. Claim 23

a. 23[a]

Rauner+Azmoodeh discloses **that the supervision notification is sent to a first distinct group of supervisor devices** ("appropriate response units")

correlated with the geographical location. Rauner associates geographic areas with response units **and** notifies units associated with the emergency location**.** EX[1009], ¶¶[0176]–[0177], [0188], [0190]; §VII.D.2.c, i; EX[1005], ¶¶692-693.

b. 23[b]

Rauner+Azmoodeh discloses "**the first distinct group of one or more supervisor devices is comprised of nearby first responders and dispatchers**." EX[1005], ¶694. Its response units include University Dispatch, police, fire, and ambulance services, and the system automatically notifies the closest available unit. EX[1009], ¶¶[0057], [0172], [0209]; EX[1005], ¶694.

c. 23[c]

Rauner+Azmoodeh discloses "**the supervision notification may be sent to a second distinct group of one or more supervisor devices based on the location and expertise of the second distinct group**." EX[1005], ¶¶695-696**.** If a supervisee speaks Spanish, Rauner builds a recipient list of law-enforcement first responders with Spanish proficiency (**second distinct group based on expertise**) and selects them in proximity to the event (**based on location**). EX[1009], ¶¶[0251]–[0252]; EX[1005], ¶¶695-696.

6. Claim 24

The combination renders claim 24 obvious. Its limitations 24[a]–24[c] mirror 10[a]–10[c] and are invalid for the same reasons. §§VII.D.9, VII.E.4; EX[1005], ¶¶697-700.

F. Ground 6: Obviousness of Claim 9 in view of Rauner (EX[1009]) + Azmoodeh (EX[1010]) in further view of Smith (EX[1011])

Claim 9 depends from claim 1 (Ground 4), which Rauner+Azmoodeh discloses. §VII.D.2. Smith's altitude teachings render claim 9 obvious.

1. A POSITA Would Have Been Motivated to Combine the Rauner and Azmoodeh System with Smith

Rauner, Azmoodeh, and Smith concern the '421 patent's field: facilitating supervision of individuals based on geofencing. EX[1005], ¶¶701-702. Rauner+Azmoodeh monitors individuals within geofences and coordinates emergency response; Smith defines three-dimensional boundaries. EX[1005], ¶¶701-702; §VII.D.1; EX[1011], 1:53–63.

A POSITA would have been motivated to incorporate Smith's altitude-based boundary into Rauner+Azmoodeh. EX[1005], ¶703. Rauner contemplates buildings and floors and plots individuals using X, Y, and Z information but does not explain the Z-value or how a three-dimensional boundary is generated. EX[1009], ¶¶[0093], [0198]; EX[1005], ¶703. Smith supplies a three-dimensional boundary with "an altitude parameter," allowing first responders to determine a user's floor. EX[1011], 1:27–33, 4:54–60, 5:62–65; EX[1005], ¶703.

A POSITA would have expected success because Rauner plots GPS data in three dimensions and Azmoodeh covers altitude and three-dimensional geofences. EX[1009], ¶[0198]; EX[1010], ¶¶[0018], [0041]. Adding Smith's altitude parameter

to existing security parameters would use common mobile-device sensor data while leaving the framework intact. EX[1009], ¶¶[0089]–[0094]; EX[1011], 3:55–62, claim 6; EX[1005], ¶¶704-705.

2. Claim 9

a. 9[a]

Smith's "altitude parameter" satisfies "**at least one security parameter comprises an altitude**," as explained in Ground 3. §VII.C.2.a; EX[1005], ¶¶706-707.

b. 9[b]

The "**at least one grid parameter comprises a building floor**" for the reasons in Ground 3. §VII.C.2.b; EX[1005], ¶¶708-710. Smith vertically subdivides the geofence, complementing Azmoodeh's horizontal cell subdivision. §VII.D.2.k–o.

c. 9[c]

The "**building floor is estimated from the altitude**" using Smith's estimation process, as explained in Ground 3. §VII.C.2.c; EX[1005], ¶¶711-713.

VIII. SECONDARY CONSIDERATIONS

Petitioners are aware of no evidence of secondary considerations rebutting obviousness.

IX. CONCLUSION

Petitioners respectfully request institution of IPR of claims 1-24 of the '421

Patent and cancellation of the Challenged Claims.

Respectfully submitted,

October 8, 2026 / Eliot D. Williams /

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CERTIFICATE OF SERVICE

In accordance with 37 C.F.R. §§42.6(e) and 42.105, the undersigned certifies that on October 8, 2026, a complete and entire copy of the **PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 12,154,421 UNDER 35 U.S.C. §§311-319 AND 37 C.F.R. §§42.100 *ET SEQ.*** ("Petition") including exhibits and testimony relied upon were served via overnight mail on the Patent Owner at the correspondence address of record for the subject patent and via electronic mail on counsel for Patent Owner in the District Court Litigation, as included below:

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CERTIFICATION UNDER 37 C.F.R. §42.24(d)

Pursuant to 37 C.F.R. §42.24(d), the undersigned hereby certifies that the word count under §42.24(a)(1) for the foregoing Petition for *Inter Partes* Review totals 13,967 words, within the 14,000 word limit allowed under §42.24(a)(1)(i).

Date: October 8, 2026

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