

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT8300525

SUBMISSION TYPE:	NEW ASSIGNMENT	
NATURE OF CONVEYANCE:	ASSIGNMENT	
CONVEYING PARTY DATA		
Name		Execution Date
BLUE UMBRELLA LLC		11/29/2023
RECEIVING PARTY DATA		
Name:	GAMBA GROUP HOLDINGS LLC	
Street Address:	8273 NW 127 LN	
City:	PARKLAND	
State/Country:	FLORIDA	
Postal Code:	33076	
PROPERTY NUMBERS Total: 19		
Property Type	Number	
Patent Number:	7899583	
Patent Number:	8836580	
Patent Number:	8896485	
Patent Number:	7924149	
Patent Number:	8866673	
Patent Number:	9020687	
Patent Number:	8941485	
Patent Number:	9374673	
Patent Number:	9204257	
Patent Number:	9491584	
Patent Number:	9602193	
Patent Number:	9204251	
Patent Number:	9420423	
Patent Number:	9538332	
Patent Number:	9674684	
Patent Number:	9772193	
Patent Number:	9961507	
Patent Number:	10470013	
Patent Number:	10117078	

CORRESPONDENCE DATA**Fax Number:**

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 9542574319**Email:** umendelson@gmail.com**Correspondent Name:** EHUD MENDELSON**Address Line 1:** 8273 NW 127 LN**Address Line 4:** PARKLAND, FLORIDA 33076

ATTORNEY DOCKET NUMBER:	BLU2GAMBA PATENTS1-19
NAME OF SUBMITTER:	EHUD MENDELSON
SIGNATURE:	/EHUD MENDELSON/
DATE SIGNED:	11/29/2023
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 4

source=Patent assignment blue to gamba#page1.tif

source=Patent assignment blue to gamba#page2.tif

source=Patent assignment blue to gamba#page3.tif

source=Patent assignment blue to gamba#page4.tif

PATENTS ASSIGNMENT AGREEMENT

THIS AGREEMENT is made this day of November 27, 2023, by and between Blue Umbrella llc represent by Ehud Mendelson (the "Assignor"), having its primary place of business at 8273 NW 127 Ln. Parkland Florida 33076 , and Gamba Group Holdings(the "Assignee") having its primary place of business at 8273 NW 127 Ln. Parkland, Florida 33076 (collectively the "Parties").

WHEREAS, Licensor is has invented RF Beacon and Method of use (the "Invention"), and has been granted United States Letters Patents for said invention, Patent No- .See Attach A (the "Patent"), granted on the patent application filed with the United States Patent and Trademark Office.

WHEREAS, Assignee wishes to acquire all right, title and interest in the Patent, and Assignor wishes to sell its interest in the Patent to Assignee.

NOW THEREFORE, in consideration of the mutual promises, covenants, warranties, and other good and valuable consideration set forth herein, and in accordance with applicable law, the Parties hereby agree as follows:

1. *Assignment.* Assignor hereby assigns to Assignee, and its successors, representatives and assigns, all right, title and interest in the Patent including all reexaminations, extensions and reissues thereof. Assignor hereby requests the Commissioner of Patents of the United States to record this assignment of all right, title and interest in the Patent to Assignee.
2. *Payment.* In consideration of the assignment of the Patent pursuant to this Agreement, and of the promises and covenants contained herein, Assignee shall pay to Assignor a fee in the amount Set in Attachment A of this agreement, payable upon execution of sale or licenses of a patent or patents from the list attach A to this Agreement, until such execution will take place it is agree that the Assignor Ehud Mendelson payment/fee will be conceders as a loan to the Gamba Group Holdings llc in the dynamic amount set in the attachment A. Until such execution of sale or license will take place, Ehud Mendelson will receive a personal loan to his business account in the USA (Db. Blue Umbrella and or search4parking bank account), payment for the loan will payable upon execution of sale or licenses of a patent or patents from the list attach A to this Agreement.

3. *Assignor's Representations and Warranties.* Assignor hereby represents and warrants
 - i) that it has the legal right and authority to execute this Agreement, and to validly assign the entire interest in the Patent to Assignee,
 - ii) that it has not executed any other agreement that would conflict with the terms of this Agreement, nor shall it execute any such agreement in the future, and
 - iii) that to the best of Assignor's knowledge, the Patent is valid and enforceable as of the date of this Agreement. Assignor makes no representations or warranties as to the validity or enforceability of the Patent subsequent to the date of this Agreement.
4. *Patent Status.* Assignee hereby acknowledges that any finding or ruling subsequent to the date of this Agreement that the Patent is invalid or unenforceable shall not give rise to a cause of action against Assignor under this Agreement.
5. *Further Actions.* Assignor hereby agrees to execute any further agreements and to take any further actions necessary to aid Assignee in perfecting its interest in the Patent and in enforcing any and all protections or privileges deriving from the Patent.
6. *Counterparts.* This Agreement may be executed in several counterparts, each of which shall constitute an original and all of which, when taken together, shall constitute one agreement.
7. *Severability.* If any part or parts of this Agreement shall be held unenforceable for any reason, the remainder of this Agreement shall continue in full force and effect. If any provision of this Agreement is deemed invalid or unenforceable by any court of competent jurisdiction, and if limiting such provision would make the provision valid, then such provision shall be deemed to be construed as so limited.
8. *Notice.* Any notice required or otherwise given pursuant to this Agreement shall be in writing and mailed certified return receipt requested, postage prepaid, or delivered by overnight delivery service, addressed as follows:

If to Assignor: Blue Umbrella LLC by her president Ehud Mendelson 8273 NW 127 Ln.
Parkland, Florida 33076

If to Assignee: Gamba Group Holdings LLC having its primary place of business at 8273
NW 127 Ln. Parkland, Florida 33076

9 *Headings.* The headings for section herein are for convenience only and shall not affect the meaning of the provisions of this Agreement.

10. *Entire Agreement.* This Agreement constitutes the entire agreement between Assignor and Assignee, and supersedes any prior understanding or representation of any kind preceding the date of this Agreement. There are no other promises, conditions, understandings or other agreements, whether oral or written, relating to the subject matter of this Agreement.

Attach A List of patents assignment:

Patents #:	Application #:
7899583	US11/396,843
8836580	US11/429,864
8896485	US11/472,706
7924149	US12/069,899
8866673	US12/587,042
9020687	US12/930,735
8941485	US12/932,811
9374673	US13/135,421
9204257	US13/135,421
9491584	US14/285,332
9602193	US14/285,273
9204251	US14/285,209
9420423	US15/086,028
9538332	US15/237,727
9674684	US15/397,685
9772193	US15/403,146
9961507	US15/687,445
10470013	US15/953,389
10117078	US15/972,074

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed the day and year first above written.

ASSIGNOR

Ehud Mendelson

Signature

Print Name

ASSIGNEE

Gamba Group Holdings President

Signature

Print Name

State of FLORIDA

County of BROWARD

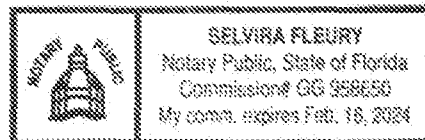
I, the undersigned, a Notary Public in and for said County, in the State aforesaid, DO HEREBY CERTIFY THAT EHUD MENDELSON personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person, and acknowledged that EHUD MENDELSON signed, sealed and delivered the said instrument as his/her/their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal, this 27th day of November, 2023

Signature of Notary Public

(Seal)

Printed Name of Notary



My commission expires on February 16, 2024

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT5756053

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
GAMBA GROUP LIMITED	10/06/2019

RECEIVING PARTY DATA

Name:	BLUE UMBRELLA LLC
Street Address:	11190 HERON BAY BLVD SUITE 916
City:	CORAL SPRINGS
State/Country:	FLORIDA
Postal Code:	33076

PROPERTY NUMBERS Total: 16

Property Type	Number
Patent Number:	7899583
Patent Number:	7924149
Patent Number:	8836580
Patent Number:	8866673
Patent Number:	8896485
Patent Number:	8941485
Patent Number:	9020687
Patent Number:	9204251
Patent Number:	9204257
Patent Number:	9374673
Patent Number:	9420423
Patent Number:	9491584
Patent Number:	9538332
Patent Number:	9602193
Patent Number:	9674684
Patent Number:	9772193

CORRESPONDENCE DATA**Fax Number:**

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 9542574319
Email: umen79@yahoo.com
Correspondent Name: EHUD MENDELSON
Address Line 1: 11190 HERON BAY BLVD SUITE 916
Address Line 4: CORAL SPRINGS, DELAWARE 33076

ATTORNEY DOCKET NUMBER:	ASSIGNMENT GAMBA TO BLU8X
--------------------------------	---------------------------

NAME OF SUBMITTER:	EHUD MENDELSON
---------------------------	----------------

SIGNATURE:	/ehud mendelson/
-------------------	------------------

DATE SIGNED:	10/06/2019
---------------------	------------

	This document serves as an Oath/Declaration (37 CFR 1.63).
--	--

Total Attachments: 3

source=ASSIGNMENT of patents from gamba group to blue umbrella sign and ready#page1.tif
source=ASSIGNMENT of patents from gamba group to blue umbrella sign and ready#page2.tif
source=ASSIGNMENT of patents from gamba group to blue umbrella sign and ready#page3.tif

ASSIGNMENT

WHEREAS, I:

Ehud Mendelson President of **Gamba Group Limited**, a For Profit Corporation organized and existing under the laws of the state of Malta, and having an office and place of business at **262 Triq San Alber, Gzira, Malta, GZR 1152**, represent by **Ehud Mendelson** president of the company which residing, respectively, at: **11190 Heron Bay Blvd. Suite 916, Coral Springs, FL, 33076**,

Which own the patents listed as follow:

<u>Patent#</u>	<u>Application #</u>
<u>7899583</u>	<u>11396843</u>
<u>7924149</u>	<u>12069899</u>
<u>8836580</u>	<u>11429864</u>
<u>8866673</u>	<u>12587042</u>
<u>8896485</u>	<u>11472706</u>
<u>8941485</u>	<u>12932811</u>
<u>9020687</u>	<u>12930735</u>
<u>9204251</u>	<u>14285209</u>
<u>9204257</u>	<u>14285273</u>
<u>9374673</u>	<u>13135421</u>
<u>9420423</u>	<u>15086028</u>
<u>9491584</u>	<u>14285332</u>
<u>9538332</u>	<u>15237727</u>
<u>9602193</u>	<u>14285406</u>
<u>9674684</u>	<u>15397685</u>
<u>9772193</u>	<u>15403146</u>

WHEREAS, **Blue Umbrella Limited Liability company**, a For Profit Corporation organized and existing under the laws of the state of **Nevada** and having an office and place of business at **11190 Heron Bay Blvd. Suite 916, Coral Springs, FL, 33076**,

, is desirous of acquiring the entire interest in said Patents, said United States patents which listed above (page 1) and Currently owns by Gamba Group Limited, and in any patents which may issue thereon

NOW, THEREFORE,

be it known that for and in consideration of **Blue Umbrella Limited Liability company**, and other good and valuable consideration, I do hereby sell, assign, and transfer unto **Blue Umbrella Limited Liability company**, its successors, assigns, and legal representatives, all right, title, and interest in and to said patents listed in page 1 and any improvements thereon for all countries of the world, and in and to said application, including any continuations and divisions thereof, and any substitute applications therefor, and any patents which may issue thereon, and any reissues of the same; and all right, title, and interest in and to every patents application filed on said patents listed in page 1 in any other country, including renewals, revivals, continuations, and divisions thereof, and any substitute applications therefor, and any and all patents which may issue thereon, and any reissues and extensions of the same; and we hereby authorize and request competent authorities to grant and issue any and all patents on said listed in page 1 to **Blue Umbrella Limited Liability company** as the assignee of the entire interest therein; and we further agree to execute upon request of the assignee such additional documents, if any, as are necessary and proper to secure patents protection on said patents throughout all countries of the world, and otherwise to give full effect to and perfect the rights of the assignee under this Assignment.

In Testimony Whereof, I have hereunto signed my name on
The dates indicated hereinafter:

09/20/19
Date

Ehud Mendelson
Ehud Mendelson

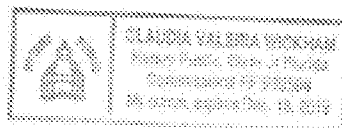
State of Florida
Country of Bahama

Before me a Notary Public for said county, personally appeared Ehud Mendelson, to me know and known to me to be the person who executed the foregoing instrument and acknowledged it to be a free act and deed.

Witness my hand and seal

September, 20th, 2019.

Claudia Valera
Notary Public



[Notary Seal]

My Commission expires:

Dec. 18, 2019

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT4052350

SUBMISSION TYPE:	NEW ASSIGNMENT	
NATURE OF CONVEYANCE:	ASSIGNMENT	
CONVEYING PARTY DATA		
	Name	Execution Date
	EHUD MENDELSON	09/14/2016
RECEIVING PARTY DATA		
Name:	GAMBA GROUP LIMITED	
Street Address:	265 TRIQ SAN ALBER	
City:	GZIRA	
State/Country:	MALTA	
Postal Code:	GZR 1155	
PROPERTY NUMBERS Total: 1		
Property Type	Number	
Application Number:	15086028	
CORRESPONDENCE DATA		
Fax Number:	(561)883-0115	
<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>		
Phone:	561-716-3915	
Email:	Patents@AllenHertz.com	
Correspondent Name:	ALLEN D HERTZ, P. A.	
Address Line 1:	12784 TULIPWOOD CIRCLE	
Address Line 4:	BOCA RATON, FLORIDA 33428	
ATTORNEY DOCKET NUMBER:	MEN-16-001	
NAME OF SUBMITTER:	ALLEN D. HERTZ	
SIGNATURE:	/Allen D Hertz/	
DATE SIGNED:	09/14/2016	
	This document serves as an Oath/Declaration (37 CFR 1.63).	
Total Attachments: 3		
source=MEN-16-001_Mendelson_Apple_Interference_Assignment#page1.tif		
source=MEN-16-001_Mendelson_Apple_Interference_Assignment#page2.tif		
source=MEN-16-001_Mendelson_Apple_Interference_Assignment#page3.tif		

ASSIGNMENT

WHEREAS, I:

(4) **Ehud Mendelson**,

residing, respectively, at:

(4) **11190 Heron Bay Blvd. Suite 916, Coral Springs, FL,**
33076,

have made an invention entitled: **RF BEACON DEPLOYMENT AND**
METHOD OF USE

and [] are about to make application for United States
Letters Patent therefor, the same being executed
by us on _____, 2016; and

[X] have made application for United States Letters
Patent thereof, filed **March 30, 2016**, under **Serial**
No. 15/086,028, currently pending; and

WHEREAS, **Gamba Group Limited**, an For Profit Corporation
organized and existing under the laws of the state of **Malta** and
having an office and place of business at **265 Triq San Alber,**
Gzira, Malta, GZR 1155, is desirous of acquiring the entire
interest in said invention, said United States patent
application, and in any Letters Patent which may issue thereon;

NOW, THEREFORE, be it known that for and in consideration of my employment Gamba Group Limited, and other good and valuable consideration, I do hereby sell, assign, and transfer unto Gamba Group Limited, its successors, assigns, and legal representatives, all right, title, and interest in and to said invention and any improvements thereon for all countries of the world, and in and to said application, including any continuations and divisions thereof, and any substitute applications therefor, and any patent which may issue thereon, and any reissues of the same; and all right, title, and interest in and to every patent application filed on said invention in any other country, including renewals, revivals, continuations, and divisions thereof, and any substitute applications therefor, and any and all patents which may issue thereon, and any reissues and extensions of the same; and we hereby authorize and request competent authorities to grant and issue any and all patents on said invention to Gamba Group Limited as the assignee of the entire interest therein; and we further agree to execute upon request of the assignee such additional documents, if any, as are necessary and proper to secure patent protection on said invention throughout all countries of the world, and otherwise to give full effect to and perfect the rights of the assignee under this Assignment.

IN TESTIMONY WHEREOF, I have hereunto signed my name on
the dates indicated hereinafter:

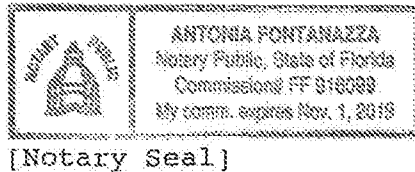
09/14/2016
Date

Ehud Mendelson
Ehud Mendelson

STATE OF Florida)
COUNTY OF Broward) ss.:

Before me a Notary Public for Said County, personally
appeared Ehud Mendelson, to me known and
known to me to be the person who executed the foregoing
instrument and acknowledged it to be a free act and deed.

Witness my hand and seal 14 Sept, 2016.



Antonia Fontanazza
Notary Public
My Commission expires:
Nov. 1, 2019



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/086,028	08/16/2016	9420423	MEN-16-001	1238

31877 7590 07/27/2016
ALLEN D. HERTZ
ALLEN D HERTZ, P.A.
12784 TULIPWOOD CIRCLE
BOCA RATON, FL 33428

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Ehud MENDELSON, Coral Springs, FL;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

PTO/SB/08a (07-09)

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 4 of 5

Complete if Known

Application Number	15/086,028
Filing Date	March 30, 2016
First Named Inventor	Ehud MENDELSON
Art Unit	2648
Examiner Name	April Guzman GONZALES
Attorney Docket Number	MEN-16-001

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number Number-Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
Change(s) applied to document, /T.W./ 7/19/2016		US- 2001/0026223	10-01-2001	~~Raymond, et al.~~	Menard
		US- 2002/0129138	09-2002	Carter, Trent R.	
		US- 2002/0131386	09-2002	Gwon, Youngjune L.	
		US- 2003/0034881	02-2003	Linnett et al.	
		US- 2003/0045280	03-2003	Simons, Paul R.	
		US- 2003/0050039	03-2003	Baba et al.	
		US- 2003/0087628	05-2003	Michibata, Yasuyo	
		US- 2004/0066917	04-2004	Yasukawa et al.	
		US- 2004/0072583	04-2004	Weng, Yuan Sung	
		US- 2004/0239498	12-2004	Miller, John D.	
		US- 2005/0021369	01-2005	Cohen et al.	
		US- 2005/0070315	03-2005	Rai et al.	
		US- 2005/0111630	05-2005	Potorny et al.	
		US- 2006/0033641	02-2006	Jaupitre et al.	
		US- 2006/0095331	05-2006	O'Malley et al.	
		US- 2006/0122767	06-2006	Athalye, Ravi G.A.	
		US- 2006/0163349	07-2006	Neugebauer, Charles F.	
		US- 2006/0253226	11-2006	Mendelson, Ehud	
		US- 2007/0032225	02-2007	Konicek et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶

Examiner
Signature

/APRIL G GONZALES/

Date
Considered

07/06/2016

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

PTO/SB/08a (07-09)

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 1 of 5

Complete if Known

Application Number	15/086,028
Filing Date	March 30, 2016
First Named Inventor	Ehud MENDELSON
Art Unit	2648
Examiner Name	April Guzman GONZALES
Attorney Docket Number	MEN-16-001

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
		US- 3,114,128	12-1963	Ljungman	
		US- 3,130,298	04-1964	Schwarz	
		US- 3,158,836	11-1964	McCauley	
		US- 3,166,732	01-1965	Ljungman	
		US- 3,867,615	02-1975	Sioufi	
		US- 4,491,970	01-1985	LaWhite, et al.	
		US- 5,195,126	03-1993	Carrier, et al.	
		US- 5,272,483	12-1993	~~Kala~~ Kato	
		US- 5,293,163	03-1994	Kakihara	
		US- 5,305,370	04-1994	Kearns, et al.	
		US- 5,319,363	06-1994	Welch et al.	
		US- 5,383,127	01-1995	Shibata	
		US- 5,416,712	05-1995	Geier	
		US- 5,432,508	07-1995	Jackson	
		US- 5,442,348	08-1995	Mushell	
		US- 5,454,461	10-1995	Jacobs	
		US- 5,485,520	01-1996	Chaum et al.	
		US- 5,504,482	04-1996	Schreder	
		US- 5,568,535	10-1996	Sheffer, et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁵
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				
		JP 9126804 A	05-1997	YAMAZAKI, MNORU		

Examiner
Signature

/APRIL G GONZALES/

Date
Considered

07/06/2016

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

PTO/SB/08a (07-09)

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 2 of 5

Complete if Known

Application Number	15/086,028
Filing Date	March 30, 2016
First Named Inventor	Ehud MENDELSON
Art Unit	2648
Examiner Name	April Guzman GONZALES
Attorney Docket Number	MEN-16-001

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number Number-Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US- 5,606,506	02-1997	Kyrtsos	
		US- 5,638,279	06-1997	Kishi et al.	
		US- 5,652,570	07-1997	Robert Lepkofker	
		US- 5,712,619	01-1998	Simkin, et al.	
		US- 5,742,233	04-1998	Hoffman, et al.	
		US- 5,771,001	06-1998	Cobb, Marlon J.	
		US- 5,798,733	08-1998	Ethridge, Jeffrey Noel	
		US- 5,838,237	11-1998	Revell, et al.	
		US- 5,873,040	02-1999	Dunn, et al.	
		US- 5,910,782	06-1999	Schmitt et al.	
		US- 5,929,777	07-1999	Reynolds, Kevin T.	
		US- 5,940,481	08-1999	Zeitman	
		US- 5,971,921	10-1999	Ned R. Timbel	
		US- 5,995,040	11-1999	Issler et al.	
		US- 6,028,537	02-2000	Suman et al.	
		US- 6,072,396	06-2000	John J. Gaukel	
		US- 6,340,928	01-2002	McCurdy, Rogger A.	
		US- 6,535,127 03/2003	~~10-2000~~	Taylor, Elizabeth Anne	
		US- 6,636,732	10-2003	Boling et al.	

Change(s) applied
to document,
/T.W./
7/21/2016

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶

Examiner
Signature

/APRIL G GONZALES/

Date
Considered

07/06/2016

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/086,028	03/30/2016	Ehud MENDELSON	MEN-16-001	1238

31877 7590 07/13/2016
ALLEN D. HERTZ
ALLEN D HERTZ, P.A.
12784 TULIPWOOD CIRCLE
BOCA RATON, FL 33428

EXAMINER

GONZALES, APRIL GUZMAN

ART UNIT	PAPER NUMBER
----------	--------------

2648

MAIL DATE	DELIVERY MODE
-----------	---------------

07/13/2016

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

**UNITED STATES DEPARTMENT OF COMMERCE****U.S. Patent and Trademark Office**

Address : COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
15/086,028	30 March, 2016	MENDELSON, EHUD	MEN-16-001

ALLEN D. HERTZ ALLEN D HERTZ, P.A. 12784 TULIPWOOD CIRCLE BOCA RATON, FL 33428		EXAMINER	
		APRIL G. GONZALES	
		ART UNIT	PAPER
		2648	20160706

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner for Patents

The IDS filed on 06/30/2016 has been acknowledged, verified and signed.

/APRIL G GONZALES/
Primary Examiner, Art Unit 2648

PTO/SB/08a (07-09)

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 1 of 5

Complete if Known

Application Number	15/086,028
Filing Date	March 30, 2016
First Named Inventor	Ehud MENDELSON
Art Unit	2648
Examiner Name	April Guzman GONZALES
Attorney Docket Number	MEN-16-001

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
		US- 3,114,128	12-1963	Ljungman	
		US- 3,130,298	04-1964	Schwarz	
		US- 3,158,836	11-1964	McCauley	
		US- 3,166,732	01-1965	Ljungman	
		US- 3,867,615	02-1975	Sioufi	
		US- 4,491,970	01-1985	LaWhite, et al.	
		US- 5,195,126	03-1993	Carrier, et al.	
		US- 5,272,483	12-1993	Kala	
		US- 5,293,163	03-1994	Kakihara	
		US- 5,305,370	04-1994	Kearns, et al.	
		US- 5,319,363	06-1994	Welch et al.	
		US- 5,383,127	01-1995	Shibata	
		US- 5,416,712	05-1995	Geier	
		US- 5,432,508	07-1995	Jackson	
		US- 5,442,348	08-1995	Mushell	
		US- 5,454,461	10-1995	Jacobs	
		US- 5,485,520	01-1996	Chaum et al.	
		US- 5,504,482	04-1996	Schreder	
		US- 5,568,535	10-1996	Sheffer, et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁵
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				
		JP 9126804 A	05-1997	YAMAZAKI, MNORU		

Examiner
Signature

/APRIL G GONZALES/

Date
Considered

07/06/2016

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

PTO/SB/08a (07-09)

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 2 of 5

Complete if Known

Application Number	15/086,028
Filing Date	March 30, 2016
First Named Inventor	Ehud MENDELSON
Art Unit	2648
Examiner Name	April Guzman GONZALES
Attorney Docket Number	MEN-16-001

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
		US- 5,606,506	02-1997	Kyrtsos	
		US- 5,638,279	06-1997	Kishi et al.	
		US- 5,652,570	07-1997	Robert Lepkofker	
		US- 5,712,619	01-1998	Simkin, et al.	
		US- 5,742,233	04-1998	Hoffman, et al.	
		US- 5,771,001	06-1998	Cobb, Marlon J.	
		US- 5,798,733	08-1998	Ethridge, Jeffrey Noel	
		US- 5,838,237	11-1998	Revell, et al.	
		US- 5,873,040	02-1999	Dunn, et al.	
		US- 5,910,782	06-1999	Schmitt et al.	
		US- 5,929,777	07-1999	Reynolds, Kevin T.	
		US- 5,940,481	08-1999	Zeitman	
		US- 5,971,921	10-1999	Ned R. Timbel	
		US- 5,995,040	11-1999	Issler et al.	
		US- 6,028,537	02-2000	Suman et al.	
		US- 6,072,396	06-2000	John J. Gaukel	
		US- 6,340,928	01-2002	McCurdy, Rogger A.	
		US- 6,535,127	10-2000	Taylor, Elizabeth Anne	
		US- 6,636,732	10-2003	Boling et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁵
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				

Examiner
Signature

/APRIL G GONZALES/

Date
Considered

07/06/2016

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

PTO/SB/08a (07-09)

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 3 of 5

Complete if Known

Application Number	15/086,028
Filing Date	March 30, 2016
First Named Inventor	Ehud MENDELSON
Art Unit	2648
Examiner Name	April Guzman GONZALES
Attorney Docket Number	MEN-16-001

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
		US- 6,738,628	05-2004	McCall et al.	
		US- 6,807,564	10-2004	Zellner, et al.	
		US- 6,970,101	11-2005	Squire et al.	
		US- 7,026,954	04-2006	Slemmer et al.	
		US- 7,031,875	04-2006	Ellenby et al.	
		US- 7,034,678	04-2006	Burkley et al.	
		US- 7,245,216	07-2007	Burkley et al.	
		US- 7,483,917	01-2009	Sullivan et al.	
		US- 7,743,337	06-2010	Maeda et al.	
		US- 7,907,931	03-2011	Hartigan et al.	
		US- 7,933,395	04-2011	Bailly et al.	
		US- 8,041,330	10-2011	Garin, Lionel Jacques	
		US- 8,126,960	02-2012	Obradovich et al.	
		US- 8,770,477	07-2014	Hefetz, Guy	
		US- 8,896,485	11-2014	Mendelson, Ehud	
		US-			
		US-			
		US-			
		US-			

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁵
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				

Examiner
Signature

/APRIL G GONZALES/

Date
Considered

07/06/2016

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

PTO/SB/08a (07-09)

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 4 of 5

Complete if Known

Application Number	15/086,028
Filing Date	March 30, 2016
First Named Inventor	Ehud MENDELSON
Art Unit	2648
Examiner Name	April Guzman GONZALES
Attorney Docket Number	MEN-16-001

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
		US- 2001/0026223	01-2001	Raymond, et al.	
		US- 2002/0129138	09-2002	Carter, Trent R.	
		US- 2002/0131386	09-2002	Gwon, Youngjune L.	
		US- 2003/0034881	02-2003	Linnett et al.	
		US- 2003/0045280	03-2003	Simons, Paul R.	
		US- 2003/0050039	03-2003	Baba et al.	
		US- 2003/0087628	05-2003	Michibata, Yasuyo	
		US- 2004/0066917	04-2004	Yasukawa et al.	
		US- 2004/0072583	04-2004	Weng, Yuan Sung	
		US- 2004/0239498	12-2004	Miller, John D.	
		US- 2005/0021369	01-2005	Cohen et al.	
		US- 2005/0070315	03-2005	Rai et al.	
		US- 2005/0111630	05-2005	Potorny et al.	
		US- 2006/0033641	02-2006	Jaupitre et al.	
		US- 2006/0095331	05-2006	O'Malley et al.	
		US- 2006/0122767	06-2006	Athalye, Ravi G.A.	
		US- 2006/0163349	07-2006	Neugebauer, Charles F.	
		US- 2006/0253226	11-2006	Mendelson, Ehud	
		US- 2007/0032225	02-2007	Konicek et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁵
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				

Examiner
Signature

/APRIL G GONZALES/

Date
Considered

07/06/2016

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

PTO/SB/08a (07-09)

Approved for use through 07/31/2012. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 5 of 5

Complete if Known

Application Number	15/086,028
Filing Date	March 30, 2016
First Named Inventor	Ehud MENDELSON
Art Unit	2648
Examiner Name	April Guzman GONZALES
Attorney Docket Number	MEN-16-001

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
		US- 2008/0227473	09-2008	Haney, Richard D.	
		US- 2008/0280624	11-2008	Wrappe, Thomas Keith	
		US- 2009/0006418	01-2009	O'Malley, Matt	
		US- 2012/0188101	07-2012	Ganot, Zvi	
		US- 2013/0113936	05-2013	Cohen et al.	
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁵
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				

Examiner
Signature

/APRIL G GONZALES/

Date
Considered

07/06/2016

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
 or **Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

31877 7590 06/03/2016
ALLEN D. HERTZ
ALLEN D. HERTZ, P.A.
12784 TULIPWOOD CIRCLE
BOCA RATON, FL 33428

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

Allen D. Hertz (Via EFS-web)	(Depositor's name)
	(Signature)
July 07, 2016	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/086,028	07/30/2016	Ehud MENDELSON	MEN-16-001	1238

TITLE OF INVENTION: RF BEACON DEPLOYMENT AND METHOD OF USE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0	\$0	\$480	09/06/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
GONZALES, APBIL GUZMAN	2648	455-041200

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.303).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1. Allen D. Hertz, P.A.

2. Allen D. Hertz

3.

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☒ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☒ Payment by credit card. Via EFS Credit Card Process
☐ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
☐ Applicant asserting small entity status. See 37 CFR 1.27
☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature

Date July 07, 2016

Typed or printed name

Allen D. Hertz

Registration No. 50,942

Electronic Patent Application Fee Transmittal				
Application Number:		15086028		
Filing Date:		30-Mar-2016		
Title of Invention:		RF BEACON DEPLOYMENT AND METHOD OF USE		
First Named Inventor/Applicant Name:		Ehud MENDELSON		
Filer:		Allen D. Hertz		
Attorney Docket Number:		MEN-16-001		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	2501	1	480	480

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				480

Electronic Acknowledgement Receipt

EFS ID:	26290128
Application Number:	15086028
International Application Number:	
Confirmation Number:	1238
Title of Invention:	RF BEACON DEPLOYMENT AND METHOD OF USE
First Named Inventor/Applicant Name:	Ehud MENDELSON
Customer Number:	31877
Filer:	Allen D. Hertz
Filer Authorized By:	
Attorney Docket Number:	MEN-16-001
Receipt Date:	07-JUL-2016
Filing Date:	30-MAR-2016
Time Stamp:	22:06:52
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$ 480
RAM confirmation Number	070816INTEFSW22092200
Deposit Account	5267
Authorized User	Allen Hertz

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	MEN-16-001_Mendelson_Appl e- Interference_Issue_Fee_Submi ssion_070716.pdf	371128	no	1
			342a980d195e12ba30460856a46209b2bd 339b78		
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30183	no	2
			6f218e7c6452a8482e077d589f30314ad67e d0b2		
Warnings:					
Information:					
Total Files Size (in bytes):			401311		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 1 of 5

Complete if Known

Application Number	15/086,028
Filing Date	March 30, 2016
First Named Inventor	Ehud MENDELSON
Art Unit	2648
Examiner Name	April Guzman GONZALES
Attorney Docket Number	MEN-16-001

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
		US- 3,114,128	12-1963	Ljungman	
		US- 3,130,298	04-1964	Schwarz	
		US- 3,158,836	11-1964	McCauley	
		US- 3,166,732	01-1965	Ljungman	
		US- 3,867,615	02-1975	Sioufi	
		US- 4,491,970	01-1985	LaWhite, et al.	
		US- 5,195,126	03-1993	Carrier, et al.	
		US- 5,272,483	12-1993	Kala	
		US- 5,293,163	03-1994	Kakihara	
		US- 5,305,370	04-1994	Kearns, et al.	
		US- 5,319,363	06-1994	Welch et al.	
		US- 5,383,127	01-1995	Shibata	
		US- 5,416,712	05-1995	Geier	
		US- 5,432,508	07-1995	Jackson	
		US- 5,442,348	08-1995	Mushell	
		US- 5,454,461	10-1995	Jacobs	
		US- 5,485,520	01-1996	Chaum et al.	
		US- 5,504,482	04-1996	Schreder	
		US- 5,568,535	10-1996	Sheffer, et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁵
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				
		JP 9126804 A	05-1997	YAMAZAKI, MNORU		

Examiner
SignatureDate
Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 2 of 5

Complete if Known

Application Number	15/086,028
Filing Date	March 30, 2016
First Named Inventor	Ehud MENDELSON
Art Unit	2648
Examiner Name	April Guzman GONZALES
Attorney Docket Number	MEN-16-001

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
		US- 5,606,506	02-1997	Kyrtsos	
		US- 5,638,279	06-1997	Kishi et al.	
		US- 5,652,570	07-1997	Robert Lepkofker	
		US- 5,712,619	01-1998	Simkin, et al.	
		US- 5,742,233	04-1998	Hoffman, et al.	
		US- 5,771,001	06-1998	Cobb, Marlon J.	
		US- 5,798,733	08-1998	Ethridge, Jeffrey Noel	
		US- 5,838,237	11-1998	Revell, et al.	
		US- 5,873,040	02-1999	Dunn, et al.	
		US- 5,910,782	06-1999	Schmitt et al.	
		US- 5,929,777	07-1999	Reynolds, Kevin T.	
		US- 5,940,481	08-1999	Zeitman	
		US- 5,971,921	10-1999	Ned R. Timbel	
		US- 5,995,040	11-1999	Issler et al.	
		US- 6,028,537	02-2000	Suman et al.	
		US- 6,072,396	06-2000	John J. Gaukel	
		US- 6,340,928	01-2002	McCurdy, Rogger A.	
		US- 6,535,127	10-2000	Taylor, Elizabeth Anne	
		US- 6,636,732	10-2003	Boling et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁵
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				

Examiner
SignatureDate
Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 3 of 5

Complete if Known

Application Number	15/086,028
Filing Date	March 30, 2016
First Named Inventor	Ehud MENDELSON
Art Unit	2648
Examiner Name	April Guzman GONZALES
Attorney Docket Number	MEN-16-001

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
		US- 6,738,628	05-2004	McCall et al.	
		US- 6,807,564	10-2004	Zellner, et al.	
		US- 6,970,101	11-2005	Squire et al.	
		US- 7,026,954	04-2006	Slemmer et al.	
		US- 7,031,875	04-2006	Ellenby et al.	
		US- 7,034,678	04-2006	Burkley et al.	
		US- 7,245,216	07-2007	Burkley et al.	
		US- 7,483,917	01-2009	Sullivan et al.	
		US- 7,743,337	06-2010	Maeda et al.	
		US- 7,907,931	03-2011	Hartigan et al.	
		US- 7,933,395	04-2011	Bailly et al.	
		US- 8,041,330	10-2011	Garin, Lionel Jacques	
		US- 8,126,960	02-2012	Obradovich et al.	
		US- 8,770,477	07-2014	Hefetz, Guy	
		US- 8,896,485	11-2014	Mendelson, Ehud	
		US-			
		US-			
		US-			
		US-			

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁵
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				

Examiner
SignatureDate
Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 4 of 5

Complete if Known

Application Number	15/086,028
Filing Date	March 30, 2016
First Named Inventor	Ehud MENDELSON
Art Unit	2648
Examiner Name	April Guzman GONZALES
Attorney Docket Number	MEN-16-001

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
		US- 2001/0026223	01-2001	Raymond, et al.	
		US- 2002/0129138	09-2002	Carter, Trent R.	
		US- 2002/0131386	09-2002	Gwon, Youngjune L.	
		US- 2003/0034881	02-2003	Linnett et al.	
		US- 2003/0045280	03-2003	Simons, Paul R.	
		US- 2003/0050039	03-2003	Baba et al.	
		US- 2003/0087628	05-2003	Michibata, Yasuyo	
		US- 2004/0066917	04-2004	Yasukawa et al.	
		US- 2004/0072583	04-2004	Weng, Yuan Sung	
		US- 2004/0239498	12-2004	Miller, John D.	
		US- 2005/0021369	01-2005	Cohen et al.	
		US- 2005/0070315	03-2005	Rai et al.	
		US- 2005/0111630	05-2005	Potorny et al.	
		US- 2006/0033641	02-2006	Jaupitre et al.	
		US- 2006/0095331	05-2006	O'Malley et al.	
		US- 2006/0122767	06-2006	Athalye, Ravi G.A.	
		US- 2006/0163349	07-2006	Neugebauer, Charles F.	
		US- 2006/0253226	11-2006	Mendelson, Ehud	
		US- 2007/0032225	02-2007	Konicek et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁵
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				

Examiner
SignatureDate
Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 5 of 5

Complete if Known

Application Number	15/086,028
Filing Date	March 30, 2016
First Named Inventor	Ehud MENDELSON
Art Unit	2648
Examiner Name	April Guzman GONZALES
Attorney Docket Number	MEN-16-001

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
		US- 2008/0227473	09-2008	Haney, Richard D.	
		US- 2008/0280624	11-2008	Wrappe, Thomas Keith	
		US- 2009/0006418	01-2009	O'Malley, Matt	
		US- 2012/0188101	07-2012	Ganot, Zvi	
		US- 2013/0113936	05-2013	Cohen et al.	
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			
		US-			

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁵
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				

Examiner
SignatureDate
Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

(19)日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11)特許出願公開番号

特開平9-126804

(43)公開日 平成9年(1997)5月16日

(51)Int.Cl. ⁶	識別記号	庁内整理番号	F I	技術表示箇所
G 0 1 C 21/00			G 0 1 C 21/00	Z
G 0 1 S 5/02			G 0 1 S 5/02	Z
G 0 8 G 1/0969			G 0 8 G 1/0969	
G 0 9 B 29/10			G 0 9 B 29/10	A

審査請求 未請求 請求項の数12 O L (全 27 頁)

(21)出願番号 特願平7-287601

(22)出願日 平成7年(1995)11月6日

(71)出願人 000003207

トヨタ自動車株式会社

愛知県豊田市トヨタ町1番地

(72)発明者 山▲崎▼ 実

愛知県豊田市トヨタ町1番地 トヨタ自動車株式会社内

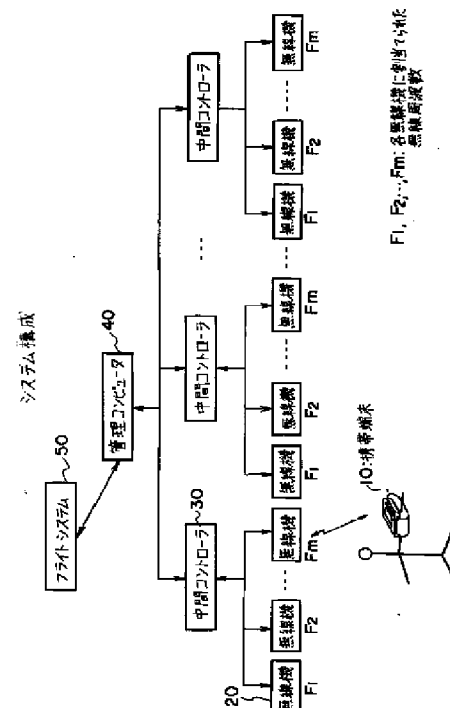
(74)代理人 弁理士 吉田 研二 (外2名)

(54)【発明の名称】 ルート案内システム

(57)【要約】

【課題】 空港ビル内等で利用者を案内する。

【解決手段】 各無線機20の電波範囲にて空港ビル内の必要な領域を網羅できるように空港ビル内に複数の無線機20を分散配置し、電波範囲が重複する無線機20同士が同じ無線周波数とならないよう各無線機20に無線周波数F1～Fmを割り当てる。旅客等の利用者により携帯される携帯端末10は、各無線機20から送信されるその位置を示す無線機IDを受信し、受信した無線機IDに基づき自分の現在地を求め、さらに目的地に至るルートを求め、階間移動装置に留意して表示する。管理コンピュータ40は、無線機20を介し携帯端末10から現在地情報を収集し、フライト情報及び旅客情報に基づき個別の携帯端末10に対しメッセージ送信や呼出しを行う。



【特許請求の範囲】

【請求項1】 携帯端末との無線通信可能範囲が互いに重複する無線機同士の無線周波数が互いに異なるよう、複数の階を有する建物の屋内空間に分散配置された複数の無線機と、上記屋内空間を移動する利用者により携帯される上記携帯端末と、を有し、

上記無線機が、その位置を示す無線機位置情報を無線送信する手段を備え、

上記携帯端末が、上記無線機位置情報を無線受信する手段と、当該無線機位置情報に基づき当該携帯端末の現在地を示す現在地情報を生成する手段と、当該現在地情報、目的地を示す目的地情報及び上記建物の屋内地図を示す地図情報に基づき、現在地から目的地に至るルートを示すルート情報を生成する手段と、上記ルートの各階部分が含まれる各階地図を、上記ルート情報に基づき、かつ、同一階間移動装置の行方向又は列方向の位置が揃うよう単一画面上に並べて、可視表示する手段と、を備え、

複数階に亘る屋内空間にて上記携帯端末の利用者を目的地まで案内することを特徴とするルート案内システム。

【請求項2】 請求項1記載のルート案内システムにおいて、

上記携帯端末が、目的地の候補の分類を可視表示する手段と、利用者により操作される可操作部材と、利用者が可操作部材の操作によりいずれかの分類を選択した場合にその分類をさらに細かく分類して可視表示させる手段と、利用者が可操作部材の操作により入力終了を指示した場合にそれまでに選択された階層的な分類に従い目的地を決定する手段と、を備えることを特徴とするルート案内システム。

【請求項3】 請求項1又は2記載のルート案内システムにおいて、

上記無線機が、上記携帯端末の利用者の呼出し先を示す呼出し先情報及び／又は当該利用者に伝達すべきメッセージを示すメッセージ情報を無線送信する手段を備え、上記携帯端末が、上記無線機から上記呼出し先情報及び／又はメッセージ情報を無線受信する手段と、上記呼出し先情報を上記目的地情報として扱う手段と、上記メッセージ情報に基づき上記メッセージを上記ルートと共に又は当該ルートに代えて可視表示する手段と、を備えることを特徴とするルート案内システム。

【請求項4】 請求項1乃至3記載のルート案内システムにおいて、

上記携帯端末が、相異なる階に配置されている複数の無線機からそれぞれ無線機位置情報を無線受信した場合に、当該無線機位置情報を無線送信した無線機の各階毎個数を判定し、当該個数が他の階に比べ少ない階に配置されている無線機からの無線機位置情報を、上記現在地情報の生成に使用することを禁止する手段を備えることを特徴とするルート案内システム。

【請求項5】 請求項1乃至4記載のルート案内システムにおいて、

上記携帯端末が、上記建物内に設けられているトイレ、レストラン、階間移動装置等の設備の位置を示す情報を、外部記憶媒体から上記地図情報として読み出す手段を備えることを特徴とするルート案内システム。

【請求項6】 請求項1乃至5記載のルート案内システムにおいて、

上記携帯端末が、その携帯端末の現在地がルートから所定程度以上外れた場合に、ルートから外れた旨を当該携帯端末の利用者に報知する手段を備えることを特徴とするルート案内システム。

【請求項7】 請求項1乃至6記載のルート案内システムにおいて、

上記携帯端末が、その携帯端末の現在地がルートから所定程度以上外れた場合に、その時点での現在地から目的地に至るルートを示すルート情報を生成する手段を備えることを特徴とするルート案内システム。

【請求項8】 請求項1乃至7記載のルート案内システムにおいて、

上記携帯端末が、上記ルートの全体が単一画面上に表示されかつ当該ルートが最大表示されるよう、その現在地の変化に応じ表示倍率を変化させる手段を備えることを特徴とするルート案内システム。

【請求項9】 請求項8記載のルート案内システムにおいて、

上記携帯端末が、ルート及びその周辺のエリアを示す地図を表示するのみでは画面上の表示可能領域に対する実表示領域の不足が生じる場合に、隣接するエリアの地図にて表示を補填する手段と、補填の際、既に踏破されたルートの少なくとも一部を含むエリアの地図を優先的に使用する手段と、を備えることを特徴とするルート案内システム。

【請求項10】 請求項1乃至9記載のルート案内システムにおいて、

上記携帯端末が、上記現在地情報を無線送信する手段を備え、

上記無線機が、上記現在地情報を無線受信する手段を備え、

上記ルート案内システムが、上記無線機により無線受信された上記現在地情報を収集することにより上記利用者の動向を管理する手段を有することを特徴とするルート案内システム。

【請求項11】 請求項10記載のルート案内システムにおいて、

上記無線機が、上記携帯端末からの返答を求める返答要求信号を、必要に応じ無線送信する手段を備え、

上記携帯端末が、上記返答要求信号を無線受信する手段と、当該返答要求信号に応じ上記現在地情報の無線送信を実行させる手段と、を備えることを特徴とするルート

案内システム。

【請求項12】 請求項1乃至11記載のルート案内システムにおいて、
上記携帯端末が、その携帯端末の利用者の身体に当該携帯端末を着脱可能に固定するベルトを備えることを特徴とするルート案内システム。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、空港、大規模店舗、大規模公共施設等の屋内において利用者に対し進むべきルートに関する情報を提供するルート案内システムに関する。

【0002】

【従来の技術】自位置等を示す位置情報を屋外の利用者に提供するシステムとしては、例えば、速度センサ及び方位センサを用いて自位置を求める推測航法や、インフラストラクチャから受信した情報に基づき自位置を求めるGPS (Global Positioning System) 等のシステムや、間隔配置されたビーコン局から識別符号を無線受信しこれを目的地に係る識別符号と比較することにより目的地への到来を検出するビーコンシステム (特開平6-52487号参照) が知られている。また、これらのシステムと、CD-ROM等により提供される地図データベースとを組み合わせることにより、現在地から目的地に至るルートを示すルート情報を利用者に提供することができる。例えば、GPS等から得られる自位置、利用者から与えられる目的地、及びCD-ROM等に格納されている地図を用いてルート情報を生成し、可視表示する車載ナビゲーションシステムが既に普及している。

【0003】

【発明が解決しようとする課題】しかし、このシステムは、屋内にいる者に対しルート情報を提供するには適していない。第1に、人工衛星 (GPS衛星) 等のように屋外にあるインフラストラクチャからの信号は、屋根や壁により遮蔽される結果屋内では受信できないから、GPS等のシステムを屋内で利用することは原理上不可能である。

【0004】第2に、特開平6-52487号に記載されているビーコンシステムは、単一の無線周波数を複数のビーコン局にて共用するシステムであるから、利用者がビーコン信号を受信した場合にその信号をどのビーコン局から受信したか確実に特定できるようにするためには、ビーコン局の間隔を疎にする (例えば無線通信可能範囲が互いに重複しないよう、かつ周辺環境の影響も考慮しながら、相隣接するビーコン局の位置を広めに定める) 必要がある。このようなビーコン局配置では利用者がビーコン信号を受信できない空白エリアが必ず発生するため、高々目的地又は経由地への到来・接近を検出できるに過ぎず、現在地から目的地に至るルートを利用者に知らしめることはできない。

【0005】第3に、特開平6-52487号に記載されているビーコンシステムを周知のセルラシステムを参考にして変形し、相異なる無線周波数を相隣接するビーコン局に割り当てかつ相隣接するビーコン局の無線通信可能範囲を重複させれば、上述の空白エリアの問題を解消できる。しかし、そのような変形を施すのみでは、単一平面上におけるルート情報を生成できるようになるに過ぎないから、一般に複数の階を有する建物の中で利用者を効率的かつ確実に目的地まで案内することはできない。

【0006】本発明の第1の目的は、無線通信技術を利用することにより、屋内にいる者に対しルート情報を提供可能にすることにある。本発明の第2の目的は、利用者に対し無線信号を送信する無線機の間隔を密にしかつ電波範囲が重複する無線機に互いに異なる無線周波数を割り当てることにより、いずれの無線機からも無線信号を受信できない空白エリアをなくし利用者が常にルート情報の提供を受けられるようにすると共に、無線信号同士の衝突を防止することにある。本発明の第3の目的は、ルート表示方法を工夫することにより、利用者がルートを直観的に把握できるようにし、さらには複数の階を有する建物の中でも利用者を効率的かつ確実に目的地まで案内できるようにすることにある。

【0007】本発明の第4の目的は、目的地の階層の入力を可能にすることにより、できるだけ少ない入力操作にて目的地を設定可能にし、利用者を行きたいところへ迅速に案内できるようにすることにある。本発明の第5の目的は、無線通信を利用することにより、必要に応じ利用者を所定又は特定の場所へ呼び出すことを可能にすることにある。本発明の第6の目的は、受信した無線信号の送信元の所属階に着目することにより、利用者が階段脇に立ち止まったときや通り過ぎたとき等においても間違いなく利用者を案内できるようにすることにある。本発明の第7の目的は、利用者が頻繁に利用するであろう設備又は利用者が利用する確率の高い設備に関する情報をデータベース化することにより、できるだけ少ない情報量の地図情報を用いて上述の各目的を達成可能にし、ひいては利用者が携帯する装置を小型簡素にすることにある。本発明の第8の目的は、案内されたルートを利用者が見失った場合に自力又は他力でリカバリする機会をその利用者に与えることにより、利用者を目的地まで確実に案内可能にすることにある。本発明の第9の目的は、ルートの表示方法を工夫することにより、現在地の変化によらず常に見易い形で利用者にルート情報を提供可能にし、以て使用性の高い装置を実現することにある。本発明の第10の目的は、無線通信を利用することにより、利用者の動向を常に又は定期的に把握可能にすることにある。本発明の第11の目的は、装置構造の工夫により、利用者が携帯しやすい装置を実現することにある。

【0008】

【課題を解決するための手段】このような目的を達成するために、本発明の第1の構成に係るルート案内システムは、携帯端末との無線機の無線通信可能範囲が互いに重複する無線機同士の無線周波数が互いに異なるよう、複数の階を有する建物の屋内空間に分散配置された複数の無線機と、上記屋内空間を移動する利用者により携帯される上記携帯端末と、を有し、上記無線機が、その位置を示す無線機位置情報を無線送信する手段を備え、上記携帯端末が、上記無線機位置情報を無線受信する手段と、当該無線機位置情報に基づき当該携帯端末の現在地を示す現在地情報を生成する手段と、当該現在地情報、目的地を示す目的地情報及び上記建物の屋内地図を示す地図情報に基づき、現在地から目的地に至るルートを示すルート情報を生成する手段と、上記ルートの各階部分が含まれる各階地図を、上記ルート情報に基づき、かつ、同一階間移動装置の行方向又は列方向の位置が揃うよう単一画面上に並べて、可視表示する手段と、を備え、複数階に亘る屋内空間にて上記携帯端末の利用者を目的地まで案内することを特徴とする。

【0009】本構成においては、建物の屋内空間に分散配置された無線機を利用している。各無線機は、携帯端末との無線通信可能範囲が互いに重複するよう配置され、また各無線機には、携帯端末との無線通信可能範囲が互いに重複する無線機が同じ無線周波数を使用することがないように、無線周波数が割り当てられている。従って、各携帯端末は常にいずれかの無線機から無線機位置情報を受信でき、従来のビーコンシステムで生じていたような空白エリアは生じないから、屋内空間を移動する利用者が常にルート情報を受け取ることができる。その際、無線機からの無線信号が衝突することもない。さらに、受信した無線機位置情報に基づきルート情報を生成する際、その携帯端末が複数の無線機と無線通信可能な位置にあれば、当該複数の無線機からの無線機位置情報をいずれも利用できるから、現在地情報の精度・分解能は高く、従ってルート情報もより正確になる。本構成においては、さらに、ルート情報に基づきルートを可視表示する際、ルートの各階部分が含まれる各階地図が単一画面上に並べて可視表示される。従って、利用者は複数階にまたがるルートを常に一覽できる。同時に、各階地図を並べて可視表示する際、同一の階間移動装置（例えばエレベータ、エスカレータ、階段等）の行方向又は列方向の位置が揃うよう各階位置を位置決めしているから、利用者は表示画面から直観的に現在地、目的地、ルート等の相互関係を見て取ることができる。このように、本構成においては、複数の階を有する建物における利用者の案内が、効率化及び確実化される。

【0010】本発明の第2の構成に係るルート案内システムは、第1の構成において、上記携帯端末が、目的地の候補の分類を可視表示する手段と、利用者により操作

される可操作部材と、利用者が可操作部材の操作によりいずれかの分類を選択した場合にその分類をさらに細かく分類して可視表示させる手段と、利用者が可操作部材の操作により入力終了を指示した場合にそれまでに選択された階層的な分類に従い目的地を決定する手段と、を備えることを特徴とする。本構成においては、目的地の階層的入力を可能にしているため、最少の入力操作にて目的地を設定でき、利用者を行きたいところへ迅速に案内可能になる。

10 【0011】本発明の第3の構成に係るルート案内システムは、第1又は第2の構成において、上記無線機が、上記携帯端末の利用者の呼出し先を示す呼出し先情報及び／又は当該利用者に伝達すべきメッセージを示すメッセージ情報を無線送信する手段を備え、上記携帯端末が、上記無線機から上記呼出し先情報及び／又はメッセージ情報を無線受信する手段と、上記呼出し先情報を上記目的地情報として扱う手段と、上記メッセージ情報に基づき上記メッセージを上記ルートと共に又は当該ルートに代えて可視表示する手段と、を備えることを特徴とする。本構成においては、呼出し先情報の無線送信にて各携帯端末に目的地を設定したメッセージを送信しているため、必要に応じ利用者を所定の又は特定の場所へ呼び出またメッセージを伝達することが可能になる。

20 【0012】本発明の第4の構成に係るルート案内システムは、第1乃至第3の構成において、上記携帯端末が、相異なる階に配置されている複数の無線機からそれぞれ無線機位置情報を無線受信した場合に、当該無線機位置情報を無線送信した無線機の各階毎個数を判定し、当該個数が他の階に比べ少ない階に配置されている無線機からの無線機位置情報を、上記現在地情報の生成に使用することを禁止する手段を備えることを特徴とする。本構成においては、各階毎に受信無線信号の多寡を判定し多数階からの無線機位置情報を現在地決定に利用しているため、例えば、利用者が階段脇に立ち止まったときや通り過ぎたとき等のように複数の階から同時に無線機位置情報を受信できるような状況でも、間違いなく利用者が案内される。

30 【0013】本発明の第5の構成に係るルート案内システムは、第1乃至第4の構成において、上記携帯端末が、上記建物内に設けられているトイレ、レストラン、階間移動装置等の設備の位置を示す情報を、外部記憶媒体から上記地図情報として読み出す手段を備えることを特徴とする。本構成においては、利用者が頻繁に利用するであろう設備又は利用者が利用する確率の高い設備に関する情報が外部記憶媒体上にデータベース化されているため、地図情報の情報量が少なく済み、従って携帯端末が小型簡素になる。

40 【0014】本発明の第6の構成に係るルート案内システムは、第1乃至第5の構成において、上記携帯端末が、その携帯端末の現在地がルートから所定程度以上外

れた場合に、ルートから外れた旨を当該携帯端末の利用者に報知する手段を備えることを特徴とする。本発明の第7の構成に係るルート案内システムは、第1乃至第6の構成において、上記携帯端末が、その携帯端末の現在地がルートから所定程度以上外れた場合に、上記現在地情報、目的地情報及び地図情報に基づき、ルート情報を再度生成する手段を備えることを特徴とする。これらの構成においては、案内されたルートを利用者が見失った場合に、ルート外れ報知(第6の構成)又は再案内(第7の構成)によりリカバリの機会が利用者に与えられるから、利用者が目的地までより確実かつ迅速に案内される。さらに、携帯端末の現在地がルートから所定程度以上外れたか否かの判定は、その時点で無線機から受信できる無線周波数や無線機位置情報が予測から外れたか否かの判定として実現できるから、上記ルート外れ判定により格別の負荷が発生することもない。

【0015】本発明の第8の構成に係るルート案内システムは、第1乃至第7の構成において、上記携帯端末が、上記ルートの全体が単一画面上に表示されかつ当該ルートが最大表示されるよう、その現在地の変化に応じ表示倍率を変化させる手段を備えることを特徴とする。本発明の第9の構成に係るルート案内システムは、第8の構成において、上記携帯端末が、ルート及びその周辺のエリアを示す地図を表示するのみでは画面上の表示可能領域に対する実表示領域の不足が生じる場合に、隣接するエリアの地図にて表示を補填する手段と、補填の際、既に踏破されたルートの少なくとも一部を含むエリアの地図を優先的に使用する手段と、を備えることを特徴とする。これらの構成においては、利用者の移動に伴いルート表示が適宜変化(通常は拡大)していくから、現在地の変化によらず常に見易いルート表示が実現され、これにより使用性が高まる。特に、第9の構成においては、ルートが属するエリアのみでは画面を満たせない場合に既に踏破されたルートの少なくとも一部を優先的に表示できるから、さらに見易いルート表示が実現され、より使用性が高まる。

【0016】本発明の第10の構成に係るルート案内システムは、第1乃至第9の構成において、上記携帯端末が、上記現在地情報を無線送信する手段を備え、上記無線機が、上記現在地情報を無線受信する手段を備え、上記ルート案内システムが、上記無線機により無線受信された上記現在地情報を収集することにより上記利用者の動向を管理する手段を有することを特徴とする。本発明の第11の構成に係るルート案内システムは、第10の構成において、上記無線機が、上記携帯端末からの返答を求める返答要求信号を、必要に応じ無線送信する手段を備え、上記携帯端末が、上記返答要求信号を無線受信する手段と、当該返答要求信号に応じ上記現在地情報の無線送信を実行させる手段と、を備えることを特徴とする。これらの構成においては、利用者の動向が常に又は

定期的に把握される。特に、第11の構成においては、返答要求信号の送信及びその受信に応じた現在地情報の送受信を介し随時利用者の動向を知ることができるから、第3の構成に係る呼出し等をより好適に実行可能になる。

【0017】本発明の第12の構成に係るルート案内システムは、第1乃至第11の構成において、上記携帯端末が、その携帯端末の利用者の身体に当該携帯端末を着脱可能に固定するベルトを備えることを特徴とする。本構成においては、ベルトを用いた身体への装着により、利用者が携帯しやすい携帯端末が実現される。

【0018】

【発明の実施の形態】以下、図面に基づきかつ本発明を空港内のルート案内システムとして実施した場合を例として、本発明に関し説明する。なお、本発明は、空港ビル以外の建物、例えば駅やショッピングセンター等にも適用できる。

【0019】(1)システム構成

図1には、本発明の一実施形態に係る空港内ルート案内システムの一例が示されている。このシステムは、携帯端末10、無線機20、中間コントローラ30及び管理コンピュータ40から構成されており、さらにフライトシステム50と接続されている。

【0020】これらのうち携帯端末10は、空港ビルの利用者、例えば搭乗待ちの旅客がそれぞれ1個ずつ携帯する小型の無線端末であり、利用者に対し、その現在地、現在地から目的地に至るルート、管理コンピュータ40からのメッセージ、ルート外れを警告するメッセージ等を提供する機能を有している。また、携帯端末10は、後述する無線周波数F1〜Fmをスキャンするマルチスキャン機能や、受信した信号の無線周波数にて返答を送信する機能を備えている。携帯端末10は、近接電磁界通信が可能であればよいから、無線端末としては省電力・小形である。

【0021】各無線機20は、対応する中間コントローラ30又はこれを介した管理コンピュータ40からの指令に応じ、あるいは携帯端末10における現在地演算のため定期的に、携帯端末10に宛てて無線信号を送信する無線中継機である。無線機20も、近接電磁界通信が可能であればよいから、無線中継機としては省電力・小形である。また、無線機20は、少なくとも旅客等が進入可能な全てのエリアをその電波範囲(携帯端末10への電波の送信及び携帯端末10からの電波の受信が可能な範囲)の網でカバーできるよう、空港ビル内に分散配置されている。従って、そのようなエリア内では、相隣接する無線機20の電波範囲は一般に互いに一部重複している。本実施形態では、このように無線機20を配置しているため、各携帯端末10は常にいずれかの無線機20から無線信号を受信できる。すなわち、従来のビーコンシステムで生じていたような空白エリアは生じな

い。無論、屋外のインフラストラクチャを利用したりまた屋外に新たなインフラストラクチャを設ける必要もない。

【0022】さらに、各無線機20には、その電波範囲が重複する（一般には相隣り合う）無線機20同士が同じ無線周波数を使用することとならないよう、すなわち無線機20同士の無線信号が衝突しないよう、F1～Fm（m：2以上の自然数）のうちいずれかの無線周波数が割り当てられており、各無線機20は割り当てられた無線周波数にて無線信号を送受信する。仮に、相隣接する無線機20に同一無線周波数を割り当てたとすると、複数の無線機20の電波範囲に重複所属している領域において、これらの無線機20からの無線信号が衝突し正常な無線通信を確保し得ないこととなり得るが、本実施形態ではそのような支障は生じない。

【0023】さらに、無線機20からの無線信号には、その無線機20に固有の無線IDが含まれており各携帯端末10はこれを送元たる無線機20及びその位置の特定に使用している。上述のような無線周波数割当ては、送元たる無線機20の特定にも寄与し得る。すなわち、後述の手順により無線周波数と無線機IDの対応付けを終えた後利用者があまり移動しない間であれば、仮に無線機IDを好適に検出できなかった場合でも、検出した無線周波数を基に、送元たる無線機20を区別又は特定できる。

【0024】なお、空港ビル及びその周辺では航空管制その他の目的で各種の無線システムが使用されているが、本実施形態に係るシステムは基本的には弱電界のシステムであり、また使用する無線周波数もこれらの無線システムと異なるから、これらの無線システムとの相互干渉は生じにくい。スペクトル拡散その他の無線技術の利用も可能である。

【0025】中間コントローラ30は一般に複数設けられており、それぞれ一般に複数の無線機20を管理する。管理コンピュータ40は一般に複数の中間コントローラ30を管理する。なお、システムが小規模な場合は中間コントローラ30を設ける必要はない。

【0026】(2) 携帯端末の構成

図2には、携帯端末10の外観が示されている。携帯端末10の筐体の表面には、ルート表示欄11、項目表示欄12、メッセージ表示欄13及び複数の押し釦14が設けられており、背面にはベルト15が設けられており、側面にはカードポート（図示せず）が設けられている。ルート表示欄11、項目表示欄12及びメッセージ表示欄13は、携帯を可能にするため、LCD等のように小型で平板状の表示デバイスにて実現するのが好ましい。押し釦14は、項目表示欄12に表示されている項目を利用者が選択できるようにするために、項目表示欄12と並んで設けられている。押し釦14に代え、タッチパネル等を用いても構わない。ベルト15は、携帯端

末10を利用者の腕等に固定する手段である。ベルト15を用いた身体への装着により、利用者が携帯しやすくなる。ベルト15は携帯端末10の本体に着脱可能であり、利用者は自分の好みでベルト15を使用／不使用とすることができる。カードポートは、空港ビルの屋内地図が情報として格納されているICカード16を着脱可能なデータ入力ポートである。

【0027】携帯端末10は、そのルート表示欄11上に、現在地から目的地に至るルートを、空港ビルの屋内地図と重ねて表示させる。このような表示を実現するためには、屋内地図情報、目的地情報及び現在地情報が必要である。携帯端末10は、これらのうち屋内地図情報を、そのカードポートに装着されたICカード16から読み出す。ICカード16の交換により屋内地図情報を更新乃至変更できるため、ICカード16の交換のみで、空港ビルの屋内交通状況の変更・変化（空港ビルの新築・増改築、一方通行規制の変更、一時的な進入規制等）に対処でき、また本実施形態における携帯端末10を他の建物（例えば駅）に転用できる。

【0028】目的地情報は、項目表示欄12及び押し釦14を用いた階層的な入力操作（後述）により利用者から与えられる。すなわち、利用者は、項目表示欄12に表示されている項目のうちいずれかを、その項目の横にある押し釦14の操作により選択する、という簡便な操作の繰返しにより、携帯端末10に自分の目的地を設定する。目的地情報は、搭乗便の出発時刻が切迫しているとき等には、管理コンピュータ40等から呼出し先情報として与えられる。

【0029】携帯端末10は、図示しないが、無線機20との間で情報を無線送受信するための無線回路や、無線送受信に係る情報を処理するための処理回路を内蔵している。現在地情報は、無線機20から無線送信される情報のうち無線機IDと呼ばれその無線機20の位置を示す情報に基づき生成される。その手順に関しては後述する。

【0030】このようにして、空港ビルの屋内地図を示す屋内地図情報と、利用者の目的地を示す目的地情報と、利用者の現在地を示す現在地情報とが得られると、携帯端末10は、現在地から目的地に至るルートを求め、求めたルートを、そのルートを含む屋内地図と重ね合わせてかつ現在地や目的地と共にルート表示欄11上に表示する。本実施形態では、その際、携帯端末10により現在地や目的地、さらにはルート周辺の目立つ設備（トイレ、レストラン、エスカレータ、モニュメント等）を文字や目立つ記号で表示させることにより、利用者による視認性能を高めている。また、本実施形態では、現在地、目的地及びルートを表示する際、携帯端末10により併せて目的地までの距離や所要時間を屋内地図情報や平均的な歩行速度等に基づき計算させ表示させることにより、使用性を向上させている。

【0031】また、携帯端末10は、管理コンピュータ40等からのメッセージが無線受信されている場合にはそのメッセージを、利用者が移動した結果その現在地がルートから外れた場合にはその旨のメッセージを、メッセージ表示欄13により表示させる。

【0032】(3) アドレス構造

無線機20の位置、携帯端末10の現在地及び目的地、さらには屋内地図情報を構成する各設備の位置は、本実施形態では、図3に示される構造を有するアドレスにて表現される。すなわち、この実施形態では、空港ビル内における三次元的な位置を表記するために、図3に示される構造を有するアドレス表記“〇-〇-〇-〇-〇-〇”を採用している。

【0033】この表記“〇-〇-〇-〇-〇-〇”のうち最初の数字乃至記号“〇”はいずれかの「階」を、これに続く数字乃至記号“〇-〇”はその「階」の中のいずれかの「ページ」を、さらにこれに続く数字乃至記号“〇〇-〇”はその「ページ」の中のいずれかの「アドレス」を、それぞれ特定している。また、「ページ」は図3(b)に示されるようにその所属「階」の行列区画であり、「ページ」“〇-〇”のうち最初の“〇”は行を、後の“〇”は列を、それぞれ示している。「アドレス」は図3(c)に示されるようにその所属「ページ」の行列区画であり、「アドレス」“〇〇-〇”のうち最初の“〇〇”は行を、後の“〇”は列を、それぞれ示している。例えばアドレス“1-3-3-01-A”は、「1階」の「第3-3ページ」の「アドレス01-A」を意味する。このような階層的なアドレス表記を使用することにより、空港ビル内の位置を、高い分解能で、表記及び特定できる。例えば、先に説明した無線機20の配置の一例をページ“1-3-3”を例として示すと、図3(c)のようになる。図中黒い星印は無線機20の位置を、円はその電波範囲を、それぞれ示している。

【0034】また、ICカード16上の屋内地図情報(カードデータ)も、このアドレスを用いて記述されている。例えばトイレに関するカードデータは、図4(a)に示されるように、そのトイレの特徴(一般用か、障害者用か等)、そのトイレが占有しているアドレスの範囲、及びそのトイレが面しているブロック(アドレスが付与される最小の単位。図3(c)参照)の個数を互いに対応付けた構成を有している。さらに、レストランに関するカードデータは、図4(b)に示されるように、そのレストランの特徴(洋食か、和食か、ファーストフードか等)、そのレストランが占有しているアドレスの範囲、及びそのレストランが面しているブロックの個数を互いに対応付けた構成を有している。また、階間移動装置に関するカードデータは、図4(c)に示されるように、その階間移動装置の特徴(エレベータかエスカレータか等)、並びにその階間移動装置の始点及び終点(必要な場合には経由点も)のアドレスを互いに対

応付けた構成を有している。

【0035】このように、本実施形態においては、利用者が頻繁に利用するであろう設備や利用者が利用する確率の高い設備に関する情報を、ICカード16上にデータベース化している。すなわち、空港ビルの屋内地図映像データそのものではなく、空港ビル内にある各種の設備(トイレ、レストラン、エレベータ、モニュメント等)の位置を示す情報の集合を地図情報としてICカード16上に格納しているため、地図情報の情報量が少なく済む。これは、ICカード16の記憶容量節約・低廉化や、携帯端末10の小型化・低廉化に役立っている。

【0036】なお、ここでは、空港ビルが図3(a)に示されるように地上N階地下M階(N, M: 自然数、 $N+M>2$)の建物であると考えており、また各「階」をn行n列(n: 自然数)に、各「ページ」を26行26列に、それぞれ行列区画しているが、このような建物構成及び区画は一例にすぎない。尚、本実施形態では現在地の判断用に後述のように無線機ID及び無線周波数を各携帯端末10が検出・収集する方式を採用しているが、ICカード16上にはルート外れか否かの判断用に無線機20の位置や無線周波数に関する情報を搭載している。

【0037】(4) 無線インタフェース

図5には、携帯端末10と無線機20の間で無線送受信される信号のフレーム構成、すなわち無線インタフェースの構成が示されている。特に図5(a)は無線機20から携帯端末10へ送信される無線機送信フレームの、図5(b)は携帯端末10から無線機20へ送信される携帯端末送信フレームの、構成を示している。無線機20は、対応する中間コントローラ30からの指令に応じ、又はこの中間コントローラ30を介した管理コンピュータ40からの指令に応じ、無線機送信フレームを無線送信する。また、いずれかの無線機20から無線機送信フレームを受信した携帯端末10は、その無線機送信フレームが所定の条件を満たしている場合、携帯端末送信フレームを無線送信する。

【0038】無線機送信フレームは、“無線機ID”、“メッセージ有無フラグ”、“呼出し先アドレス”、“携帯端末ID”、“メッセージ”及び“返答要求有無フラグ”を含んでいる。これらのうち“無線機ID”及び“携帯端末ID”は、その無線フレームの送元及び宛先を特定する情報であり、それぞれ、送元たる無線機20及び宛先たる携帯端末10に固有の識別符号である。この実施形態では無線機20が固定的に配置されているから、“無線機ID”としては、その無線機20の位置を示し図3に従い表記されたアドレスを用いている。また、“メッセージ”は管理コンピュータ40等が宛先たる携帯端末10の利用者に伝達したがっている情報であり、“メッセージ有無フラグ”はその無線機送信フレー

13

ムに“メッセージ”が含まれているか否かを示すフラグである。“呼出し先アドレス”は、管理コンピュータ40等が宛先たる携帯端末10の利用者を特定の場所（例えば搭乗口）に呼び出したいときに、当該利用者に呼出し先の場所を知らせるために使用され、上述のアドレス表記に従い記述される。“返答要求有無フラグ”は、その無線機送信フレームが、宛先たる携帯端末10からの返答を必要とする性格のフレームであるか否かを示すフラグである。

【0039】携帯端末送信フレームは、“携帯端末ID”、“確認有無フラグ”及び“現在地アドレス”を含んでいる。これらのうち“携帯端末ID”は送元たる携帯端末10に固有の識別符号である。また、“確認有無フラグ”は、先立って受信した無線機送信フレーム中の“メッセージ”を利用者が確認したか否かを示すフラグである。“現在地アドレス”は送元たる携帯端末10及びその利用者の現在地を示す情報であり図3に従い表記される。

【0040】これらのフレームには、携帯端末10に対し又は無線機20に対し動作指令を与える情報（コマンド）が含まれていない。すなわち、本実施形態にて使用される無線フレームは各種の移動無線等にて採用されているものよりも簡単かつ単調な構成であり、従って無線機20及び携帯端末10における無線制御が簡単である。なお、本発明は無線インタフェースの細部に限定を要するものではない。

【0041】（5）施設部分の動作

管理コンピュータ40及び中間コントローラ30は、図6及び図7に示される手順に従って動作する。これらの図のうち図6は定時一斉同報に係る手順であり、図7は特定利用者へのメッセージ送信や特定利用者の呼出しのため実行される手順である。

【0042】まず、図6に示されるように、各中間コントローラ30はそれぞれその管理下にあるすべての無線機20に対し、定時一斉同報を指令する（100）。この定時一斉同報指令は、無線機送信フレームに含まれるべき情報のうち、無線機IDを除く情報を含んでいる。無線機20は、対応する中間コントローラ30から定時一斉同報指令を受信したとき（102）、その指令に含まれる情報及び自己の無線機IDに基づき無線機送信フレームを構成し（104）、この無線機送信フレームを自分に割り当てられている無線周波数にて無線送信する（106）。

【0043】一方、携帯端末10は、常に、無線周波数F1～Fmにおける信号受信有無をモニタしている（無線周波数のマルチスキャン）。携帯端末10は、このマルチスキャンによりいずれかの無線機20からの無線機送信フレームの受信を検出したとき（108）、まずこの無線機送信フレームに返答すべきか否かを判断し（110）、返答すべきであると判断した場合にのみ、無線

14

機20から受信した無線機送信フレームに係る無線周波数と同一の無線周波数にて、かつその無線周波数により無線機20が送信を行っていないタイミングで、携帯端末送信フレームを送信する（112）。

【0044】無線機20は、いずれかの携帯端末10から携帯端末送信フレームを受信したとき（114）、その携帯端末送信フレームに含まれている情報及び自分の無線機IDを（116）、対応する中間コントローラ30に送信する（118）。中間コントローラ30は、自分の管理下にある無線機20から受信した情報を（120）、少なくとも状態監視信号を受信するまで保持する（122）。管理コンピュータ40は、自分の管理下にある中間コントローラ30に対し、定期的に状態監視信号を送信する（124）。状態監視信号を受信すると（126）、中間コントローラ30は保持している情報を管理コンピュータ40に送信する（128）。このようにして中間コントローラ30から携帯端末10に関する情報を受信した管理コンピュータ40は（130）、受信した情報に基づき旅客情報を修正し（132）、これを管理コンピュータ40の操作者に提供すべく表示装置の画面上に表示する（134）。

【0045】ここにいう旅客情報とは、図8（b）に示されるように、各携帯端末10の携帯端末ID、その携帯端末10を携帯している利用者の氏名、その利用者が搭乗する予定の便の便名、その利用者の現在地アドレス等から構成されている。従って、“返答要求有無フラグ”＝“有”の無線機送信フレームの送信を指令する定時一斉同報指令を定期的に発し、その結果各携帯端末10から返信される携帯端末送信フレーム中の“現在地アドレス”をステップ114～130の動作にて管理コンピュータ40に収集し、これに基づき旅客情報を修正すれば、各利用者が今どこにいるのかを、適当な頻度で管理コンピュータ40が把握することができる。なお、図6に示される手順を好適に実行するためには、旅客情報が管理コンピュータ40に初期登録されていなければならない。初期登録の手順に関しては簡略化のためここでは説明を省略しているが、例えば、これから空港ビルを利用しようとしている者に携帯端末10又はICカード16を貸与する際その者が申告した情報や、後述のフライト情報を用いれば、そのような初期登録を行えることは理解されるであろう。

【0046】管理コンピュータ40は、このような定期的な旅客情報の更新・保守の他に、旅客情報を利用した各利用者の動向把握・管理に関連する処理を実行する。すなわち、図7に示されるように、管理コンピュータ40は、フライトシステム50からフライト情報を入力し、これを自分が保持している旅客情報と比較照合する（136）。フライト情報は、図8（a）に示されるように、発着予定便の便名、その便の発着予定時刻、その便に関する有意な情報（例えばキャンセルか否か）等か

15

ら構成されている。従って、フライト情報と旅客情報とを照らし合わせるにより、出発時刻が迫っている便に搭乗する予定の旅客（携帯端末10の利用者）等を特定することができ、また出発時刻が迫っている便に搭乗する予定でまだ搭乗していない旅客（携帯端末10の利用者）等を特定することができる。そのような特定利用者に対しては、「〇〇×××便の発着時刻は〇〇：〇〇です」等のように利用者による確認を必要とするメッセージの送信や、「第〇〇搭乗ゲートへおいで下さい」等の特定の場所への特定の利用者の呼出しを行うことが必要である。

【0047】そこで、管理コンピュータ40は、フライト情報と旅客情報との照合結果に応じ、上述のメッセージ等を含み無線機送信フレームに含まれるべき情報（無線機IDを除く）、すなわち送信データを作成し（138）、これを各中間コントローラ30に送信する（140）。管理コンピュータ40からこの送信データを受信したとき（142）、中間コントローラ30は、これを自分の管理下にある無線機に送信する（144）。以後、図6の手順と同様にしてステップ102～120及び130～134が実行される（状態監視信号に関するステップ122～126はここでは実行する必要がない）。管理コンピュータ40は、メッセージ送信先たる利用者又は呼出し対象たる利用者の携帯端末10から“確認有無フラグ”＝“有”の携帯端末送信フレームが送信されたことをステップ130にて検出するまでは、その利用者に関し図7の手順を繰り返し実行する。これにより、特定の利用者に必要なメッセージを伝達でき、また特定の利用者を特定の場所に呼び出すことができる。

【0048】また、“確認有無フラグ”が“有”か“無”かに関わらずステップ132にて旅客情報を修正しステップ134にてこれを表示しているから、例えば所定回数呼出しを行ったにも関わらず確認有りの携帯端末送信フレームをその特定利用者の携帯端末10が送信していない場合等でも、管理コンピュータ40の操作者はその特定利用者の現在地（＝現在地アドレス）を知ることができる。従って、管理コンピュータ40の操作者又はこの操作者から連絡を受けた空港係員がその特定利用者の現在地まで駆け付けすることができる。これは、搭乗便の出発時刻が切迫しているのにまだ搭乗していない旅客を搭乗口まで案内する処置や、急病にみまわれ携帯端末10を操作できない状況で倒れている利用者の発見・対処等に役立つ。特に、ステップ134にて当該特定利用者の応答履歴を警告表示するようにすれば、上述のような状況を早期に把握することが容易になる。

【0049】さらに、図6及び図7に示される手順を利用して、各携帯端末10にフライトスケジュールを送信することもできる。その際には、無線機送信フレーム中の“メッセージ”にフライトスケジュール情報を設定

16

し、“メッセージ有無フラグ”及び“返答要求有無フラグ”をそれぞれ“有”及び“無”に設定すればよい。

【0050】図9には、図6及び図7におけるステップ108～112の機能を実現するため携帯端末10により所定頻度で繰り返し実行される無線機送信フレームへの応答手順が示されている。この図に示される手順は、その携帯端末10が無線機送信フレームを受信し（200）かつその無線機送信フレーム中の“携帯端末ID”が自分の携帯端末IDと同じであったとき（202）、すなわち携帯端末10が自分宛ての無線機送信フレームを受信したときに実行される。携帯端末10による応答はこのように受動的であるため、本実施形態では、空港ビル内における無線トラフィックを管理コンピュータ40や中間コントローラ30の側で制御又は設定することができる。また、すべての携帯端末10を呼び出すことができるあるいは複数の携帯端末10を同時に呼び出すことができる特殊なIDを予め準備しておくことが可能なシステムに本発明を適用する場合には、ステップ204移行の動作を、無線機送信フレーム中の“携帯端末ID”がその特殊なIDと同じであったときもその携帯端末10により実行させることができる。このようにすれば、システムに含まれるすべての又は上記特殊なIDを共有する複数の携帯端末10に対し、同じメッセージを同時に伝達し又は同じ場所へ同時に呼び出すことが可能になる。

【0051】自分宛ての無線機送信フレームを受信した携帯端末10は、その無線機送信フレーム中の“メッセージ有無フラグ”及び“返答要求有無フラグ”の値を検出する（204、206、212）。“メッセージ有無フラグ”がメッセージ“無”を示す値である場合には（204）、無線機20側がその携帯端末10の利用者にメッセージを伝達しようとしていない、と見なせるため、その携帯端末10はメッセージ表示等の動作を実行しないまま、図9の動作を終了する。但し、“メッセージ有無フラグ”がそれぞれメッセージ“無”を示す値であっても、“返答要求有無フラグ”が返答要求“有”を示す値である場合には（206）、無線機20側がその携帯端末10に対し返答を要求している、と見なせるため、その携帯端末10は後述の動作により逐次生成される現在地アドレスを含む携帯端末送信フレームを無線送信する（208）。なお、ステップ208における送信は、送信先の無線機20又はこれと同一無線周波数の無線機20からの送信が停止しているときに実行する。ステップ204が実行された後ステップ208を実行せずに図9の動作を終了する状況の一例としては、携帯端末10に現在地判定（後述）を行わせるための送信が定時一斉同報指令等に応じ行われた状況を掲げることができる。ステップ208が実行される状況の一例としては、携帯端末10の現在地アドレスの収集や機能確認のための送信が定時一斉同報指令等に応じ行われた状況を掲げるこ

とができる。

【0052】“メッセージ有無フラグ”がメッセージ“有”を示す値である場合には(204)、携帯端末10は、その無線機送信フレーム中の“メッセージ”をそのまま又は文字若しくは記号情報に変換し、メッセージ表示欄13上に例えば図10のような形で表示させる(210)。このとき、頻繁に使用されるであろうメッセージを予めICカード16上に又は携帯端末10内部の記憶素子上にコード化して格納しておけば、受信した無線機送信フレーム中の“メッセージ”を文字又は記号情報に変換する処理を高速化できる。また、メッセージ表示と共に音響や振動を発生するようにすれば、利用者がメッセージ受信に容易に気付くことができる。

【0053】図10においては、メッセージ表示欄13上に「搭乗口までおいで下さい。確認釦を押して下さい」等のメッセージが表示されるから、その携帯端末10の利用者は、表示されたメッセージを読むことにより、例えば搭乗時刻の到来等を知ることができる。また、このときいずれかの押し釦14に確認釦の機能を割り当てその押し釦14の横(項目表示欄12上)に「確認」と表示しておけば、利用者がメッセージ受領を確認したことを、後述するステップ214以降の処理にて確認することが可能になる。特に、表示されるメッセージに図10に示されるように「確認釦を押して下さい」と付記しておけば、利用者による確認操作(確認釦たる押し釦14の操作)を促すことができる。なお、メッセージの内容はこのような呼出しに限られるものではなく、フライト情報の提供、商業宣伝的な情報の提供、外部からの伝言の中継、空港施設の利用案内、法令の紹介等でもよい。

【0054】さらに、図10の例ではルート表示欄11とメッセージ表示欄13が同時に現れているが、図10上のルート表示欄11及びメッセージ表示欄13双方の画面領域を、メッセージ表示時には共にメッセージ表示欄13として用い、逆にメッセージ非表示時には共にルート表示欄11として用いることも可能である。このようにすれば、メッセージ表示時にはメッセージを、メッセージ非表示時にはルートを、それぞれ大きく表示することができる。また、図10上のルート表示欄11及びメッセージ表示欄13双方の画面領域を、利用者が目的地までの誘導を希望していないときには共にメッセージ表示欄13として用い、利用者が目的地までの誘導を希望しておりかつメッセージを受信していないときにはルート表示欄11として用い、利用者が目的地までの誘導を希望しておりかつメッセージを受信したときには図10に示される形態で用いることも可能である。いずれの使用法においても、各表示欄11～13をその必要性に応じて拡張・縮小・廃止しているため、画面の全体サイズを小さくすることが可能になり、携帯端末10の消費電力低減や小形化に貢献できる。

【0055】メッセージを表示した後、携帯端末10は、受信した無線機送信フレーム中の“返答要求有無フラグ”が返答要求“無”を示す値であれば図9の動作を終了し(212)、逆に返答要求“有”を示す値である場合には確認待ち動作に移行する。すなわち、携帯端末10は、確認釦たる押し釦14を利用者が操作するまで(214)、所定時間(例えば数分)を限度として待ち(216)、その間に利用者が確認釦を操作したら“確認有無フラグ”を確認“有”の値にセットした上で(218)携帯端末送信フレームを送信する(220)。ステップ220における送信も、送信先の無線機20又はこれと同一無線周波数の無線機20からの送信が停止しているときに実行する。

【0056】所定時間の経過にもかかわらず利用者が確認釦を操作しないときには、携帯端末10は、“確認有無フラグ”を確認“無”の値にセットし(222)携帯端末送信フレームを送信した上で(220)、再度ステップ214以降の確認待ち動作に移行する(224)。このように確認“無”でもその旨の携帯端末送信フレームを送信するようにしているため、管理コンピュータ40側ではメッセージ受領を確認していない利用者を検出・追跡することができ、場合によっては人手による連絡をつけることも可能になる。

【0057】確認待ち動作の繰返し実行により最終的に確認が得られたとき、すなわち“確認有無フラグ”が確認“有”の値を有する携帯端末送信フレームを送信した後には(224)、携帯端末10は、表示しているメッセージを消去すると共に(226)図9の動作を終了する。

30 【0058】(6)携帯端末の動作…現在地判定

携帯端末10においてルートを表示するためには、ルート情報の生成の基礎となる各種の情報、すなわち現在地情報、目的地情報及び屋内地図情報が必要である。本実施形態では、無線機20から送信され図3に示される表記に従う“無線機ID”に基づき、同様の表記に従う“現在地アドレス”を生成し、これを無線機20を介した返答要求に応じ無線送信すると共にルート決定・表示に使用している。“現在地アドレス”の無線送信に関しては図9に従い説明したため、ここではまず“現在地アドレス”の生成処理に関して説明し、後にルート決定・表示処理に関して説明する。

【0059】図11には、携帯端末10により所定頻度で繰返し実行される現在地判定手順が示されている。携帯端末10は、本システムにて使用され得るすべての無線周波数F1～Fmに関し(300)、監視対象たる無線周波数を逐次変更しながら(302)、無線機送信フレームの受信有無(304)を監視する(マルチスキャン)。無線機送信フレームを受信できたときには、前述の図9の動作を並列的に又は後に実行する一方で、その無線機送信フレームを搬送した無線周波数とその無線機

送信フレーム中の“無線機ID”を互いに対応付けて記憶する(306)。携帯端末10は、このような処理により、現在自分の近傍に位置している無線機20の無線周波数及び無線機IDを検出している。

【0060】マルチスキャンにもかかわらず無線機送信フレームを1個も受信できなかった場合(308)、携帯端末10は、何等かの理由で電波が遮蔽されていると見なし、現在地判定手順を終了する。この場合、例えば、従前の現在地判定手順で求めた“現在地アドレス”を引き続き使用する。

【0061】マルチスキャンにて無線機送信フレームの受信を検出できた無線周波数の個数が1個である場合(308)、携帯端末10は、自分の周囲には無線機20が1個しかないの見なし、その無線機送信フレーム中の“無線機ID”をそのまま“現在地アドレス”として使用する(310)。

【0062】マルチスキャンにて無線機送信フレームの受信を検出できた無線周波数の個数が2個以上である場合(308)、携帯端末10は、自分の周囲には複数個の無線機20がある(言い換えれば複数個の無線機20の電波範囲の重複範囲内に自分が位置している)と見なし、当該複数個の無線機20に係る複数個の無線機送信フレーム中の“無線機ID”の重心を求め、これを“現在地アドレス”として使用する(312)。図3(c)を例にとると、“無線機ID”=“1-3-3-09-F”の無線機20及び“無線機ID”=“1-3-3-09-L”の無線機20から無線機送信フレームを受信できる状況下では、両“無線機ID”の重心である“1-3-3-09-H”がその携帯端末10の“現在地アドレス”となる。このように、電波範囲の重複を利用することにより、無線機20の配置間隔よりも良い分解能で、現在地アドレスを決定できる。

【0063】但し、実際には、“現在地アドレス”の演算に使用し得ない“無線機ID”もある。例えば、利用者が階段脇を通り掛かったときには、利用者の現在階に配置されている無線機20から無線機送信フレームを受信できるばかりでなく、その上又は下の階に配置されている無線機20からも階段の吹抜け空間や踊り場空間を介して無線機送信フレームを受信できる。このような状況下で、上又は下の階に配置されている無線機20の“無線機ID”を“現在地アドレス”の演算に使用してしまうと、利用者が単に階段脇を通り掛かったのみであり実際は他の階への移動を意図してはいないときであっても、他の階にあるアドレスが“現在地アドレス”とされることになりかねない。これは、ルート決定・表示に際して支障となるため、本実施形態では、所定条件を満たす“無線機ID”を次のような手順で“現在地アドレス”の演算から除外している。

【0064】マルチスキャンにて無線機送信フレームの受信を検出できた無線周波数の個数が2個以上である場

合(308)、携帯端末10は、まず、それらの無線機送信フレーム中の“無線機ID”を参照し、当該複数個の無線機送信フレームの送信元たる複数個の無線機20の所属階を判定する。当該複数個の無線機20がいずれも同じ階に属している場合(314)、携帯端末10は、当該複数個の無線機20に係る複数個の“無線機ID”を全て採用し、ステップ312を実行する(316)。逆に、当該複数個の無線機20の所属階が複数個の階に分布している場合(314)、携帯端末10は、受信できた無線機送信フレームの送信元たる無線機20の個数が最も多い階、すなわち最多所属階を求め(318)、最多所属階に属する無線機20の“無線機ID”を採用し(320)、採用した個数が1個であればステップ310を、2個以上であればステップ312を、それぞれ実行する(316)。これにより、間違いなく利用者を案内できかつ利用者の現在地を管理コンピュータ40が収集できるようになる。

【0065】但し、最多所属階が複数個ある場合(322)、そのうち従前の“現在地アドレス”が属していた階(従前の“現在地アドレス”が属していた階が最多所属階でない場合には、これに最も近い階)に属する無線機20の“無線機ID”を採用し(324)、採用した個数が1個であればステップ310を、2個以上であればステップ312を、それぞれ実行する(316)。

【0066】(7)携帯端末の動作…ルート決定

図12には、図11に示される手順により決定された各携帯端末10の現在地を利用してルートを求めるルート決定手順が示されている。この手順は、各携帯端末10により所定頻度で繰り返し実行される。

【0067】本実施形態では、まず、無線機送信フレーム中の“呼出し先アドレス”に何等かのアドレスが設定されているか否かが携帯端末10により判定される(400)。“呼出し先アドレス”に何等かのアドレスが設定されていると判定したときには、携帯端末10は、管理コンピュータ40がその携帯端末10の利用者をそのアドレスに呼び寄せたがっていると見なし、図11の手順にて決定された現在地アドレス、ステップ400にて判定検出した“呼出し先アドレス”及びICカード16上の屋内地図情報に基づき、現在地から呼出し先までのルートを求め(402)、現在地、目的地、ルート、ルート周辺の目印たる設備等を図13に示されるような形でルート表示欄11上に表示させる(404)。ルートを求める際には、壁の存在、通路の一方通行規制等を考慮し、これらの制約条件を満たしながら最も道程が短いルートを算出する。これにより、空港ビルを全く又はほとんど利用したことがない不案内な利用者でも、誘導を受けながら、呼出し先まで躊躇せずに最短時間でたどりつくことができる。

【0068】但し、呼出し先が目近にある場合やその利用者が空港ビル内の地理を熟知している場合のように利

21

10 用者が誘導を希望しないこともあることから、ステップ400からステップ402に移行するのに先立って、携帯端末10は、図14に示されるように「ご案内致しましょうか」等の文字列又は記号列をメッセージ表示欄13上に表示させると共に、いずれか2個の押し釦14に誘導可否入力釦機能を割り当てその押し釦14の横項目表示欄12上に「する」「しない」等と表示させる(406)。携帯端末10は、利用者が「する」の押し釦14を操作したときにはステップ402へ移行し、「しない」の押し釦14を操作したときには図12の手順を終了する。

【0069】なお、図14ではルート表示欄11上にルートが表示されていないが、すでに決定済みのルートがある場合にはそのルートを引き続き表示しておいてもよい。また、ルート表示欄11とメッセージ表示欄13の相対関係に関しては、ステップ210に関して前述した通り変形可能である。

【0070】“呼出し先アドレス”に何もアドレスが設定されていないと判定したときには(400)、携帯端末10は、利用者による目的地の入力を待つ(408)。携帯端末10は、利用者による目的地の入力を促すため、図15最上段に示されるように、「目的地をご入力下さい」等の文字列又は記号列をメッセージ表示欄13上に表示させ、同時に、目的地の候補をそれぞれいずれかの押し釦14に対応するよう項目表示欄12上に列記表示させその押し釦14にその候補を選択する機能を割り当てる。但し、少なくとも1個の押し釦14に関しては、入力終了釦の機能を割り当てる。

【0071】本実施形態における利用者による目的地の入力は階層的な構造による入力であり、目的地の大きな分類乃至特徴から細かな分類乃至特徴へと順に利用者が選択指定していく方法を採用している。例えば、入力の最初の段階では項目表示欄12に「搭乗口」「待合」その他の大まかな分類が表示され、利用者がその中の例えば「レストラン」に対応する押し釦14を操作すると「現在の階」等さらに細かな分類が表示される。図15の例では、設備の分類→所属階→特徴(ここではレストランの種別)→設備の名称の順での階層的目的地入力が行われている。また、利用者は、目的地入力の間常に設けられている「入力終了」の押し釦14を操作することにより、任意の入力段階で目的地入力を終了することができる。利用者が目的地を大まかにでも選択することなしに目的地入力終了を選択したときには、携帯端末10は図12の動作を終了する。

【0072】なお、図15上から2段目の「階」入力画面に項目「現在の階」があるのは、利用者自身が現在階を知っていない場合に対処するためである。また、現在表示されている項目の選択を避け次の画面にて項目を選択できるよう、次の分類へのスキップを指令する機能をいずれかの押し釦14に割り当てておいてもよい。

22

【0073】利用者が目的地を大まかにでも選択した上で目的地入力終了を選択したときには、携帯端末10は、当該選択の結果から目的地のアドレスを特定できるか否かを判断し(410)、特定できると判断した場合にはそのままステップ402に移行しルート決定及び表示を実行する。例えば、利用者が目的地たるレストランの名称まで選択した上で目的地入力終了を選択したときには、図4(b)に示されているカードデータを利用して目的地のアドレスを決定できると判断する。従って、利用者は、項目表示欄12の表示を読みながら押し釦14を数回操作するだけで、効率よく、目的地を入力することができる。

【0074】逆に、利用者がレストランを選択しただけでその所属階も種別も名称も選択していないとき等には、それだけでは目的地のアドレスを特定できないと判断する。特定できないと判断した場合、携帯端末10は、選択入力されている部分的な目的地条件に合致する目的地候補をICカード16上のカードデータから検索し(412)、検索により得られた目的地候補までの道程を壁の存在、一方通行規制等を考慮しながらそれぞれ求め(414)、求めた道程が最も短い目的地候補のアドレスを目的地アドレスとして選択し(416)、その上でステップ402に移行する。

【0075】例えば、利用者がレストランを選択しただけのときには、空港ビル内のレストランのうち利用者の現在地に最も近い(最も道程が短く従って最も早くたどり着ける)レストランが、携帯端末10により目的地に自動設定される。従って、最も近いところにある設備の利用を望んでいる利用者にとっては、目的地の細かな選択指定操作を省略できるため、至便性が高い。例えば“トイレを探しているとき”や“手っ取り早く食事ができればどの様な食事でもよいとき”には、この機能は特に有効である。

【0076】さらに、ステップ412において目的地候補を検索するときに、それまでに利用者が選択指定している目的地条件に応じ、検索条件に予め制約を設けるようにすれば、ステップ412～416の処理を高速化し早期にルートを決定することが可能である。また、この制約処理は、空港ビルの福祉向上にも役立つ。例えば、利用者が目的地を“トイレ”の段階まで選択指定しただけで一般用かそれとも障害者用かを指定していないときには、図4(a)に示されるカードデータのうち身体障害者用に確保しておくべき障害者用トイレを、ステップ412における検索対象から除外することにより、障害者用トイレしか利用できない身体障害者をトイレ混雑等の不便から保護することができる。

【0077】(8)携帯端末の動作…ルート外れリカバリ

図16には、携帯端末10により所定頻度で繰り返し実行されるルート外れリカバリ手順が示されている。この

手順は、携帯端末10のルート表示欄11上に表示されているルートから利用者が大きく外れた場合にもその利用者を目的地まで誘導できるようにするための手順であり、図12に示される手順により既にルートが決定されている場合に実行される(500)。

【0078】ルート外れリカバリ手順においては、ステップ306にて記憶・収集済みの無線周波数・無線ID対、ステップ310又は312にて求めた現在地アドレス、及び図12の手順にて決定済のルートに基づき、その携帯端末10がこれから受信するであろう無線機送信フレームの無線周波数及び無線機IDを少なくとも1タイミン分子予測する(502)。すなわち、携帯端末10は、まず、ステップ310又は312にて求めた現在地アドレスを始点として決定済のルートに沿い利用者が移動した後の携帯端末10のアドレス(移動後の現在地アドレス)を予測し、次に、その移動後の現在地アドレスの近傍にある無線機20が使用している無線周波数及び無線機IDを、ステップ306にて収集した情報から決定することにより、近い将来受信できる無線周波数及び無線機IDを予測する。

【0079】携帯端末10は、受信した無線機送信フレームの無線周波数及び無線機IDを予測と比較する(504)。携帯端末10は、予測通りの無線周波数及び無線機IDを検出したときには、現在地、目的地及びルートの表示を継続する(506~510)。すなわち、現在地の所属ページに変化がないときには(506)、携帯端末10は、現在地を示す文字又は記号(図13の例では黒丸)の位置を変化させる(508)。これにより、利用者はルートに沿った現在地変化をルート表示欄11上で目で追うことができる。また現在地の所属ページに変化があるときには(506)、携帯端末10は、後述の画面自動拡大を含めた処理を実行する(510)。

【0080】逆に、予測に達えた無線周波数及び無線機IDを検出したときには(504)、携帯端末10は、図17に示されるようにルート外れを利用者に知らせ再誘導可否を問う「目的地までのルートから外れています。ご案内致しましょうか」等のメッセージを、メッセージ表示欄13上に表示させる(512)。携帯端末10は、ルート外れ/再誘導可否表示の際には、いずれか2個の押し釦14に「する」「しない」等の選択機能を割り当て、項目表示欄12上にはその押し釦14と並ぶよう「する」「しない」等の文字列又は記号列を表示させる。

【0081】利用者が「しない」を選択するための押し釦14を操作したときには、携帯端末10は再誘導不要であると判定し(514)、ステップ506に移行する。この場合には、ルート表示欄11上に、引き続き図17のような映像が表示される。利用者は、この映像による支援を受け、ルートに復帰することができる。ルー

ト復帰によりステップ504にて予測との一致が検出されるに至ったときには、ルート外れ/再誘導可否表示は消去される(520)。なお、ルート外れ/再誘導可否表示を行っているときに(522)ステップ502を省略しているのは、前回ステップ502を実行したときに予測した情報をルート復帰直後まで保持しその時点で利用することを可能にするためである。

【0082】自力でルートに復帰できない場合には、利用者は図17の状態で「する」を選択するための押し釦14を操作すればよい。これに応じ(514)、携帯端末10は、現在地から目的地に至るルートをステップ402と同様の手順で再決定し(516)、ルート外れ/再誘導可否表示を消去した上で(518)、ステップ506に移行する。ステップ506では現在地の変化のみならずルートの変化も判定検出しており、ルート再作成後のようにルートが変化している場合はステップ510が実行される。従って、ルートに自力復帰できないときでも、利用者は、現在地から目的地へ改めてルート誘導を受けることができる。

20 【0083】(9) 携帯端末の動作…表示制御

前述のステップ404及び510は、現在地、目的地、ルート等をルート表示欄11上に表示させる機能を提供している。携帯端末10は、この機能を、図18に示される現在地・目的地・ルート表示手順を実行することにより実現している。また、複数の階を有する空港ビルにおいては現在地から目的地に至るルートが複数の階にまたがるのが往々にしてあるため、本実施形態では、そのようなルートを表示する際にもルート表示欄11上の映像から利用者が直観的にルートを把握できるように、表示方法を工夫している。

【0084】本実施形態では、携帯端末10は、まず、現在地から目的地に至るルートがよぎるページを、表示候補として選び出す(600)。後に説明するように、表示候補として選び出されたページは、現在地、目的地、ルート、ルート近傍の目立つ設備等と共に、ルート表示欄11による表示の対象となる。但し、ルート外れ発生時のように現在地のアドレスがこれらのページに属していないことがあるから、ステップ600では現在地アドレスの所属ページも併せて表示候補として選び出す。

【0085】携帯端末10は、次に、選び出した表示候補が全て同じ階に属しているか否かを判定する(602)。属していると判定したときには、携帯端末10は、表示候補全てを包含する最小の四角形を求め、この四角形に属する全てのページを表示候補として選び出す(604)。例えば、ルートが図19(a)に示されるように横方向4ページ縦方向4ページの広がりを持している場合には、この4ページ×4ページの正方形に属する合計16ページが、表示候補となる。携帯端末10は、表示候補にて構成される四角形の長辺がルート表示

欄11におさまるよう表示倍率＝ルート表示欄寸法／表示候補群の寸法を決定し(606)、決定した表示倍率に従いかつ現在地や目的地を示す記号又は文字やルートを示す線と重ねて、ルート表示欄11上に表示させる(608)。その際には、携帯端末10は、目的地までの距離や所要時間を併せて表示させる。また、ルート近傍にある設備を示す記号又は文字も、表示の対象とする。但し、ルート近傍にある全ての設備を表示するのは画面の見易さの点でも処理の負担の点でも好ましくないから、携帯端末10は、ステップ608に先立ち、表示

倍率に応じ、目立つ設備のみを選び出す(610)。目立つ設備のみを選択する処理は、カードデータ上のブロック数情報(図4(a)及び(b)参照)を利用し、ブロック数の大きな設備を選び出す、という手順で行う。
【0086】ここで、ステップ604までに選び出された一群の表示候補をそのまま表示したのでは、ルート表示欄11の画面に空きが生じる可能性がある。例えば、ルート表示欄11が常に正方形となるよう設計された携帯端末10を考える。このような携帯端末10を利用してルート表示を実行する際には、表示候補群により構成される四角形が正方形でなくてはならない。従って、ステップ604にて求められた四角形が正方形ではなく長方形である場合、縦横均等な倍率にて表示を行うと、その長方形の短辺側に欠けが生じる。そこで、携帯端末10は、ステップ606実行後、表示候補群四角形がルート表示欄11の画面四角形に適合しているか否か、すなわち両四角形が同一の形状(縦横比)を有しているか否かを判定し(612)、同一の形状を有している場合にのみ、ステップ604までに求めた表示候補群のみによる表示を実行し、同一の形状を有していない場合には不足辺(ルート表示欄11の画面四角形に対し表示候補群四角形が不足している部分)側へ表示候補を補填し、表示候補群四角形がルート表示欄11の画面四角形と同一の形状となるように調整する。なお、項目表示欄12やメッセージ表示欄の拡大縮小により、表示候補群四角形とルート表示欄11の画面四角形の形状の相違を補うようにしてもよい。

【0087】不足辺側へ表示候補を補填する際には、携帯端末10は、まず不足辺側に補うべきページ数を、ステップ604にて求めた四角形の寸法及びルート表示欄11の寸法に基づき演算する(614)。不足辺側に補うべきページ数から見てそれまでに踏破されたルートに係るページ(通過ページ)を表示可能である場合には(616)、携帯端末10は、通過ページを表示候補として選び出す(618)。それでもなお表示候補が不足する場合には(620)、携帯端末10は、表示候補に隣接するページの中から新たな表示候補を選び出す(622)。携帯端末10は、通過ページを表示可能でない場合もステップ622を実行する。ステップ620にて不足していないと判断したときやステップ622の実行

を終えたとき、携帯端末10の動作は、ステップ610に移行する。

【0088】このようにして実行される表示候補補填処理を概念的に表すと、図19のようになる。まず、図19(a)の例は、ステップ612にて“適合している”と判定される場合の例であり、この場合には表示候補の補填は行われない。次に、図19(b)～(d)の例は、いずれも、ステップ612にて“適合していない”と判定される場合の例である。なかでも図19(b)の例は通過ページのみにて補填する場合(ステップ616→618→620→610)の、図19(c)は通過ページ以外のページにて補填する場合(ステップ616→622→610)の、図19(d)は通過ページ及びそれ以外のページ双方にて補填する場合(ステップ616→618→620→622→610)の、例を示している。

【0089】このように、本実施形態においては、ルートの全体が必ず単一画面上に表示されるよう、またルートが最大表示されるよう、図20(a)に示されるように現在地の変化に伴い表示倍率を変化させているため、現在地の変化によらず常に見易いルート表示画面が得られ、高い使用性を実現できる。また、上述のように目印設備を併せて表示しているため、単に現在地、目的地及びルートを表示する場合に比べ、利用者を目的地に誘導しやすい。すなわち、利用者にとっては、例えば「目的地に行くは、〇〇レストランの隣を通り、エスカレータを上って、××レストランの方へ歩めばよい」等のようにルートを解釈する余地ができるから、より有効なルート誘導となる。さらに、目印設備を選ぶときブロック数を目安にしているため、目的地への接近に伴い徐々に小規模な設備が表示され始めることとなるから、利用者を正確に目的地に誘導できる。また、ルート表示欄11の画面に欠けが生じないため、空港ビルの地理に関し利用者に可能な限り多くの情報を提供することができる。さらに、表示候補補填の際に通過ページを優先的に補填に使用し既に踏破されたルートの少なくとも一部を併せて表示しているため、ルート表示がさらに見易くなり、使用性が高まる。

【0090】また、ステップ602にてルートが複数の階にまたがっていると判定された場合、ステップ604に代えステップ624～628が実行される。ステップ624では、ルートがまたがっている全ての階それぞれについて、ステップ604と同様にして表示候補群四角形が求められる。続くステップ626では、同一の階間移動装置(エレベータ、エスカレータ、階段等)がルート表示欄11上で同一列(同一行でも構わない)上に並ぶよう、各階について求められた表示候補群四角形同士が相互に位置決めされる。

【0091】例えば、第1のエスカレータを使用して1階から2階に上り、続いて第2のエスカレータを使用し

27

て2階から3階に上るルートを考える。この場合、第1のエスカレータは、1階に係る表示候補群四角形の中にも、また2階に係る表示候補群四角形の中にも、含まれている。従って、画面の見易さを確保するためには、1階に係る表示候補群四角形の中の第1のエスカレータの位置と、2階に係る表示候補群四角形の中の第1のエスカレータの位置とを、ルート表示欄111上で位置揃えするのが好ましい。本実施形態では、ルート表示欄111上の縦位置を揃えるようにしている。なお、第2のエスカレータに関しても同様である。

【0092】続くステップ628では、図21(b)に示されるように、各階に係る表示候補群四角形が合成される。このようにすれば、ルートが複数回にまたがる場合でも、図20(b)に示されるように、図20(a)と同様の効果を得ることができる。加えて、利用者は、複数階にまたがるルートを常に一覧でき、かつ、直観的に把握できるから、複数の階を有する空港ビルにおいて利用者を効率的かつ確実に案内できる。

【0093】なお、ルート表示欄111上に表示する際には、各階表示候補群四角形の境界に太線等を付すのが好ましい。また、例えば1階から2階を経て1階に戻るようなルートを表示する際には、2階に上る前の部分ルートと、2階から降りた後の部分ルートを、単一の表示候補群四角形にて表示してもよいし、別の表示候補群四角形にて表示してもよい。

【0094】

【発明の効果】本発明の第1の構成によれば、複数の階を有する建物の屋内空間に複数の無線機を分散配置する一方で屋内空間を移動する利用者に無線機との無線通信の携帯端末を携帯させるようにしたため、屋外のインフラストラクチャを利用したりまた屋外に新たなインフラストラクチャを設ける必要がなく、屋内で比較的容易にルート案内を実施できる。また、本構成によれば、携帯端末との無線通信可能範囲が重複する無線機同士の無線周波数が互いに異なるよう、各無線機を配置するようにしたため、各携帯端末は、無線機位置情報同士の衝突なしに、常にいずれかの無線機から無線機位置情報を受信でき、従って屋内の利用者に対し常にルート情報を提供可能になる。さらに、受信した無線機位置情報に基づきルート情報を生成する際、その携帯端末が複数の無線機と無線通信可能な位置にあれば、当該複数の無線機からの無線機位置情報をいずれも利用できるから、現在地情報の精度・分解能は高く、従ってルート情報もより正確になる。また、本構成によれば、ルートの各階部分が含まれる各階地図を単一画面上に並べて可視表示するようにしたため、利用者が複数階にまたがるルートを常に一覧できると同時に、同一の階間移動装置(例えばエレベータ、エスカレータ、階段等)の行方向又は列方向の位置が揃うよう各階位置の表示位置を決めるようにしたため、利用者が表示画面から直観的に現在地、目的地、

28

ルート等の相互関係を見て取ることができる。従って、複数の階を有する建物における利用者の案内を効率化及び確実化できる。

【0095】本発明の第2の構成によれば、目的地を階層的に入力する手段を設けたため、最少の入力操作にて目的地を設定可能になり、利用者を行きたいところへ迅速に案内可能になる。

【0096】本発明の第3の構成によれば、呼出し先情報の無線送信にて各携帯端末に呼出し先を設定したメッセージを送信しているため、必要に応じ利用者を所定の又は特定の場所へ呼び出したメッセージを伝達することが可能になる。

【0097】本発明の第4の構成によれば、各階毎に受信無線信号の多寡を判定し多数階からの無線機位置情報を現在地決定に利用しているため、例えば、利用者が階段脇に立ち止まったときや通り過ぎたとき等のように複数の階から同時に無線機位置情報を受信できるような状況でも、間違いなく利用者を案内できる。

【0098】本発明の第5の構成によれば、トイレ、レストラン、階間移動装置等、利用者が頻繁に利用するであろう設備又は利用者が利用する確率の高い設備に関する情報を、外部記憶媒体上にデータベース化し、これを地図情報として利用しているため、地図情報の情報量が少なく済み、従って携帯端末が小型簡素になる。

【0099】本発明の第6の構成によれば、携帯端末の現在地がルートから所定程度以上外れた場合にその旨を利用者に報知するようにしたため、案内されたルートを利用者が見失った場合でも利用者が自力でリカバリする機会を与えることができ、利用者を目的地までより確実かつ迅速に案内できる。また、本発明の第7の構成によれば、携帯端末の現在地がルートから所定程度以上外れた場合にルート情報を再度生成するようにしたため、案内されたルートを利用者が見失っておりかつその利用者が自力でリカバリできない場合でもリカバリ可能になり、利用者を目的地までより確実かつ迅速に案内できる。さらに、携帯端末の現在地がルートから所定程度以上外れたか否かの判定は、その時点で無線機から受信できる無線周波数や無線機位置情報が予測から外れたか否かの判定等により、格別の負荷なしに実現できる。

【0100】本発明の第8の構成によれば、ルートの全体が単一画面上に表示されかつ当該ルートが最大表示されるよう現在地の変化に応じ表示倍率を変化させるようにしたため、現在地の変化によらず常に見やすいルート表示を実現でき、これにより使用性を高めることができる。本発明の第9の構成によれば、さらに、ルート及びその周辺のエリアの地図を表示するのみでは画面の表示可能領域に対する実表示領域に不足が生じる場合に、既に踏破されたルートの少なくとも一部を含むエリアの地図を優先的に用いて表示を補填するようにしたため、さらに見やすいルート表示を実現でき、より使用性を高める

ことができる。

【0101】本発明の第10の構成によれば、携帯端末から無線機に現在地情報を無線送信し、この現在地情報をシステムにて収集するようにしたため、利用者の動向を簡便に管理・把握できる。本発明の第11の構成によれば、さらに、無線機からの返答要求信号に応じ携帯端末が現在地情報を無線送信するようにしたため、システムが随時利用者の動向を知ることができ、第3の構成に係る呼出し、メッセージ送信等をより好適に実行可能になる。

【0102】そして、本発明の第12の構成によれば、利用者の身体に当該携帯端末を着脱可能に固定するベルトを携帯端末に設けたため、利用者が携帯しやすい携帯端末を実現できる。

【0103】

【補遺】なお、本発明は次のような構成として把握することもできる。

【0104】(1) 本発明の第13の構成に係るルート案内方法は、携帯端末との無線通信可能範囲が互いに重複する無線機同士の無線周波数が互いに異なるよう、複数の階を有する建物の屋内空間に分散配置された複数の無線機から、それぞれ、その位置を示す無線機位置情報を無線送信するステップと、上記屋内空間を移動する利用者により携帯された上記携帯端末が上記無線機位置情報を無線受信するステップと、当該無線機位置情報を受信した携帯端末が当該無線機位置情報に基づき当該携帯端末の現在地を示す現在地情報を生成するステップと、当該現在地情報、目的地を示す目的地情報及び上記建物の屋内地図を示す地図情報に基づき、現在地から目的地に至るルートを示すルート情報を上記携帯端末が生成するステップと、上記ルートの各階部分が含まれる各階地図を、上記ルート情報に基づき、かつ、同一階間移動装置の行方向又は列方向の位置が揃うよう単一画面上に並べて、上記携帯端末が可視表示するステップと、を有し、複数階に亘る屋内空間にて上記携帯端末の利用者を目的地まで案内することを特徴とする。本構成によれば、第1の構成と同様の作用効果が得られる。また、本発明の他の構成を参照して本構成に変形を施すことも可能である。

【0105】(2) 本発明の第14の構成に係る携帯端末は、携帯端末との無線通信可能範囲が互いに重複する無線機同士の無線周波数が互いに異なるよう、複数の階を有する建物の屋内空間に分散配置された複数の無線機から、その位置を示す無線機位置情報を無線受信する手段と、当該無線機位置情報に基づき当該携帯端末の現在地を示す現在地情報を生成する手段と、当該現在地情報、目的地を示す目的地情報及び上記建物の屋内地図を示す地図情報に基づき、現在地から目的地に至るルートを示すルート情報を生成する手段と、上記ルートの各階部分が含まれる各階地図を、上記ルート情報に基づき、

かつ、同一階間移動装置の行方向又は列方向の位置が揃うよう単一画面上に並べて、可視表示する手段と、を備え、複数階に亘る屋内空間にて上記携帯端末の利用者を目的地まで案内することを特徴とする。本構成によれば、第1又は第13の構成に適する携帯端末を提供できる。また、本発明の他の構成を参照して本構成に変形を施すことも可能である。

【0106】(3) 本発明の第15の構成に係る利用者動向管理方法は、携帯端末との無線通信可能範囲が互いに重複する無線機同士の無線周波数が互いに異なるよう、屋内空間に分散配置された複数の無線機により、当該屋内空間を移動する利用者により携帯される上記携帯端末から、その携帯端末の現在地に関する現在地情報を無線受信するステップと、上記無線機により無線受信された上記現在地情報を収集することにより管理コンピュータが上記利用者の動向を管理するステップと、を有することを特徴とする。本構成によれば、利用者の動向を常に又は定期的に把握することができる。特に、管理コンピュータ又はその下位にある中間コントローラの制御の下に無線機から返答要求信号を無線送信し、これの無線受信に応じて携帯端末が現在地情報を無線送信するようにすれば、システムが随時利用者の動向を知ることができ、第3の構成に係る呼出し、メッセージ送信等をより好適に実行可能になる。また、本発明の他の構成を参照して本構成に変形を施すことも可能である。

【0107】(4) 本発明の第16の構成に係る目的地設定方法は、目的地の候補の分類を可視表示する第1ステップと、可操作部材の操作により利用者がいずれかの分類を選択する第2ステップと、選択された分類に属する目的地の候補をさらに分類して第1及び第2ステップを実行する第3ステップと、利用者による可操作部材の操作に応じ第1乃至第3ステップの実行を終了させる第4ステップと、第4ステップの実行後、それまでに選択された階層的な分類に従い目的地を決定する第5ステップと、を有し、屋内空間を移動する上記利用者により携帯された携帯端末において実行されることを特徴とする。本構成によれば、目的地を階層的に入力できるため、最少の入力操作にて目的地を設定でき、利用者を行きたいところへ迅速に案内可能になる。また、本発明の他の構成を参照して本構成に変形を施すことも可能である。

【0108】(5) 本発明の第17の構成に係る利用者呼出し方法は、携帯端末との無線通信可能範囲が互いに重複する無線機同士の無線周波数が互いに異なるよう、屋内空間に分散配置された複数の無線機から、上記屋内空間を移動する利用者により携帯される上記携帯端末に対し、その携帯端末の利用者の呼出し先を示す呼出し先情報を無線送信するステップと、上記無線機から上記呼出し先情報を無線受信した携帯端末が、その携帯端末の現在地を示す現在地情報、上記呼出し先情報及び上記建

31

物の屋内地図を示す地図情報に基づき、目的地から呼び出し先に至るルートを示すルート情報を生成するステップと、生成したルート情報を利用者に提供するステップと、を有することを特徴とする。本構成によれば、呼出し先情報の無線送信にて各携帯端末に目的地（呼出し先）を設定しているため、必要に応じ利用者を所定の又は特定の場所へ呼び出すことが可能になる。また、本発明の他の構成を参照して本構成に変形を施すことも可能である。

【0109】（6）本発明の第18の構成に係るメッセージ送信方法は、携帯端末との無線通信可能範囲が互いに重複する無線機同士の無線周波数が互いに異なるよう、屋内空間に分散配置された複数の無線機から、上記屋内空間を移動する利用者により携帯される上記携帯端末に対し、その携帯端末の利用者に伝達すべきメッセージを示すメッセージ情報を無線送信するステップと、上記無線機から上記メッセージ情報を無線受信した携帯端末が、当該メッセージ情報に基づき上記メッセージを可視表示するステップと、を有することを特徴とする。本構成によれば、利用者に対し無線機側から随時メッセージを伝達可能になる。また、本発明の他の構成を参照して本構成に変形を施すことも可能である。

【0110】（7）本発明の第19の構成に係る現在地決定方法は、携帯端末との無線通信可能範囲が互いに重複する無線機同士の無線周波数が互いに異なるよう、複数の階を有する建物の屋内空間に分散配置された複数の無線機から、その位置を示す無線機位置情報を無線送信するステップと、上記屋内空間を移動する利用者により携帯された上記携帯端末が上記無線機位置情報を無線受信するステップと、当該無線機位置情報を無線受信した携帯端末が、相異なる階に配置されている複数の無線機からそれぞれ無線機位置情報を無線受信した場合に、当該無線機位置情報を無線送信した無線機の各階毎個数を判定するステップと、当該個数が他の階に比べ多い階に配置されている無線機からの無線機位置情報に基づき携帯端末がその現在地を示す現在地情報を生成するステップと、生成した現在地情報又はこれに基づき生成されるルート情報を利用者に提供するステップと、を有することを特徴とする。本構成によれば、各階毎に受信無線信号の多寡を判定し多数階からの無線機位置情報を現在地決定に利用しているため、例えば、利用者が階段脇に立ち止まったときや通り過ぎたとき等のように複数の階から同時に無線機位置情報を受信できるような状況でも、間違いなく利用者を案内できる。また、本発明の他の構成を参照して本構成に変形を施すことも可能である。

【0111】（8）本発明の第20の構成に係るルート外れリカバリ方法は、屋内空間を移動する利用者により携帯される携帯端末の現在地が、予め設定されているルートから所定程度以上外れた場合に、ルートから外れた旨を当該携帯端末の利用者に報知するステップと、利用者か

32

らの指示に応じ、その時点での現在地から目的地にいたるルートを示すルート情報を作成し利用者に提供するステップと、を有することを特徴とする。本構成によれば、携帯端末の利用者がルートを見失った場合でもその利用者が自力でリカバリする機会を与えることができ、利用者を目的地までより確実かつ迅速に案内できる。さらに、利用者の求めに応じルート情報を改めて生成するようにしたため、その利用者が自力でリカバリできない場合でもリカバリ可能になり、利用者を目的地までより確実かつ迅速に案内できる。また、本発明の他の構成を参照して本構成に変形を施すことも可能である。

【0112】（9）本発明の第21の構成に係るルート表示方法は、携帯端末の現在地を示す現在地情報、目的地を示す目的地情報及び当該携帯端末の利用者が移動する屋内空間の地図を示す地図情報に基づき、現在地から目的地に至るルートを示すルート情報を生成するステップと、上記ルートの各階部分が含まれる各階地図を、上記ルート情報に基づき可視表示するステップと、上記ルートの全体が単一画面上に表示されかつ当該ルートが最大表示されるよう、その現在地の変化に応じ表示倍率を変化させるステップと、ルート及びその周辺のエリアを含む地図を表示させたのみでは画面上の表示可能領域に対する実表示領域の不足が生じる場合に、隣接するエリアの地図にて表示を補填するステップと、補填の際、既に踏破されたルートの少なくとも一部を含むエリアの地図を優先的に使用するステップと、を有し、複数の階を有する建物の屋内空間を移動する利用者により携帯された上記携帯端末において実行されることを特徴とする。本構成によれば、ルートの全体が単一画面上に表示されかつ当該ルートが最大表示されるよう現在地の変化に応じ表示倍率を変化させるようにしたため、現在地の変化によらず常に見易いルート表示を実現でき、これにより使用性を高めることができる。さらに、現在地の変化に応じ表示倍率を変化させると表示画面に余剰が生じる場合に、既に踏破されたルートの少なくとも一部を併せて可視表示させるようにしたため、さらに見易いルート表示を実現でき、より使用性を高めることができる。また、本発明の他の構成を参照して本構成に変形を施すことも可能である。

【0113】（10）本発明の第22の構成に係る携帯端末は、屋内に設けられているトイレ、レストラン、階間移動装置等の設備の位置を示す情報を地図情報として格納する外部記憶手段と、当該携帯端末の現在地を示す現在地情報、目的地を示す目的地情報及び外部記憶手段上の地図情報に基づき、現在地から目的地に至るルートを示すルート情報を可視表示する表示器と、その携帯端末の利用者の身体に当該携帯端末を着脱可能に固定するベルトと、を備えることを特徴とする。本構成によれば、利用者が頻繁に利用するであろう設備又は利用者が利用する確率の高い設備に関する情報を、外部記憶媒体

33

上にデータベース化し、これを地図情報として利用しているため、地図情報の情報量が少なく済み、従って携帯端末が小型簡素になり、携帯に便利になる。その結果、ベルトにて利用者の身体に装着することも可能になる。また、本発明の他の構成を参照して本構成に変形を施すことも可能である。

【図面の簡単な説明】

【図1】 本発明の一実施形態に係る空港ビル内ルート案内システムのブロック図である。

【図2】 携帯端末の外観の一例を示す図である。

【図3】 無線機や携帯端末の位置を示すためのアドレスの構造を示す図であり、特に(a)は空港ビルの階構成を、(b)は各階におけるページ配置を、(c)は各ページにおけるアドレス配置並びに無線機の配置、電波範囲及び無線周波数割当てを、それぞれ示す図である。

【図4】 ICカード上にあるカードデータの構造を示す図であり、特に(a)はトイレに関するデータの構造を、(b)はレストランに関するデータの構造を、(c)は階間移動装置に関するデータの構造を、それぞれ示す図である。

【図5】 無線インタフェースを示す図であり、特に(a)は無線機送信フレームの構成を、(b)は携帯端末送信フレームの構成を、それぞれ示す図である。

【図6】 管理コンピュータ、中間コントローラ、無線機及び携帯端末の間で実行される通信の概略手順を示す図であり、特に中間コントローラによる定時一斉同報の手順を示す図である。

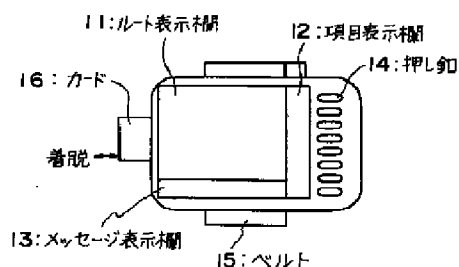
【図7】 管理コンピュータ、中間コントローラ、無線機及び携帯端末の間で実行される通信の概略手順を示す図であり、特に管理コンピュータによるメッセージ送信や呼出しの手順を示す図である。

【図8】 管理コンピュータにより取り扱われる情報を示す図であり、特に(a)はフライト情報の構造を、(b)は旅客情報の構造を、それぞれ示す図である。

【図9】 携帯端末により実行される無線機送信フレームへの応答手順を示すフローチャートである。

【図2】

携帯端末の構成



34

【図10】 メッセージ表示画面の一例を示す図である。

【図11】 携帯端末により実行される現在地判定手順を示すフローチャートである。

【図12】 携帯端末により実行されるルート決定手順を示すフローチャートである。

【図13】 誘導表示画面の一例を示す図である。

【図14】 誘導有無選択画面の一例を示す図である。

【図15】 目的地入力操作の一例を示す図である。

10 【図16】 携帯端末により実行されるルート外れリカバリ手順を示すフローチャートである。

【図17】 ルート外れ表示画面の一例を示す図である。

【図18】 携帯端末により実行される現在地・目的地・ルート表示手順を示すフローチャートである。

20 【図19】 ルートが複数の階にまたがっていないときのルート表示方法を示す図であり、特に(a)は表示候補を補填する必要がない例を、(b)は踏破済みのルートに係るページのみで補填できる例を、(c)はそれ以外のページのみで補填する例を、(d)は双方で補填する例を、それぞれ示す図である。

【図20】 現在地変化に伴う表示倍率自動変更動作を示す図であり、特に(a)はルートが複数の階にまたがっていない場合を、(b)はルートが複数の階にまたがっている場合を、それぞれ示す図である。

【図21】 エスカレータ等の階間移動装置の縦位置を揃える処理を示す図であり、特に(a)は位置揃えを、(b)は表示候補群四角形の合成を、それぞれ示す図である。

30 【符号の説明】

10 携帯端末、11 ルート表示欄、12 項目表示欄、13 メッセージ表示欄、14 押し釦、15 ベルト、16 ICカード、20 無線機、30 中間コントローラ、40 管理コンピュータ、50 フライトシステム、F1, F2, ... Fm 無線周波数。

【図5】

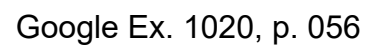
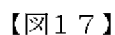
(a) 無線機から携帯端末に送信するフレーム

無線機 ID	メッセージ 有無フラグ	呼出し先 アドレス	携帯端末 ID	メッセージ	返答要求 有無フラグ
--------	----------------	--------------	---------	-------	---------------

(b) 携帯端末から無線機に送信するフレーム

携帯端末 ID	確認 有無フラグ	現在地 アドレス
---------	-------------	-------------

通信手順(1)



【図8】

管理コンピュータが扱う情報

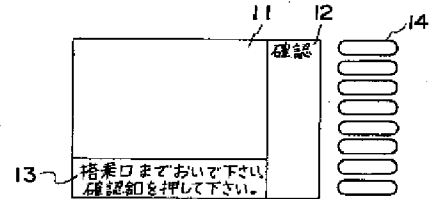
便名	発着時刻	情報
XX123	00:00	
00456	0X:0X	キャンセル
0X789	XX:XX	

(a)フライト情報

端末ID	氏名	搭乗便	現在地アドレス
XXXXXXXX	XXXX	XXXXXX	XXXXXXXX
:	:	:	:
:	:	:	:
:	:	:	:

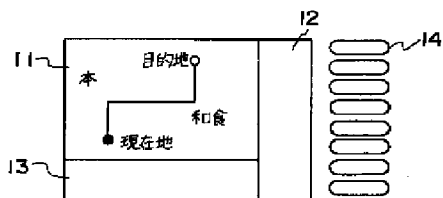
(b)旅客情報

【図10】

メッセージ表示画面の例
(呼出しメッセージの例)

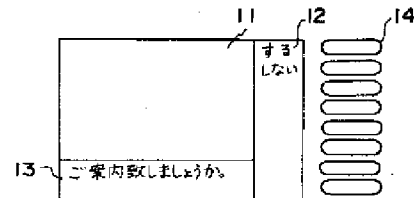
【図13】

誘導表示画面の例



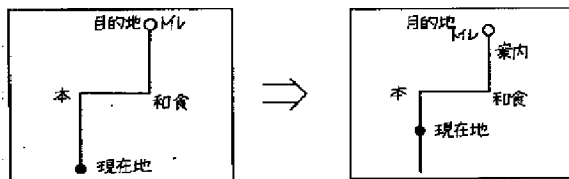
【図14】

誘導有無選択画面の例

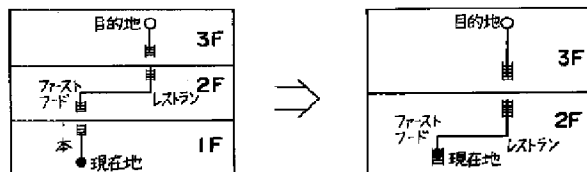


【図20】

現在地変化に伴う表示倍率自動変更



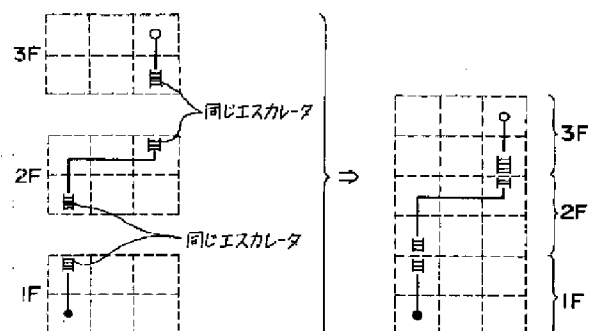
(a) ルートが複数の階にまたがっていないとき



(b) ルートが複数の階にまたがっているとき

【図21】

エスカレータの縦位置をそろえる処理



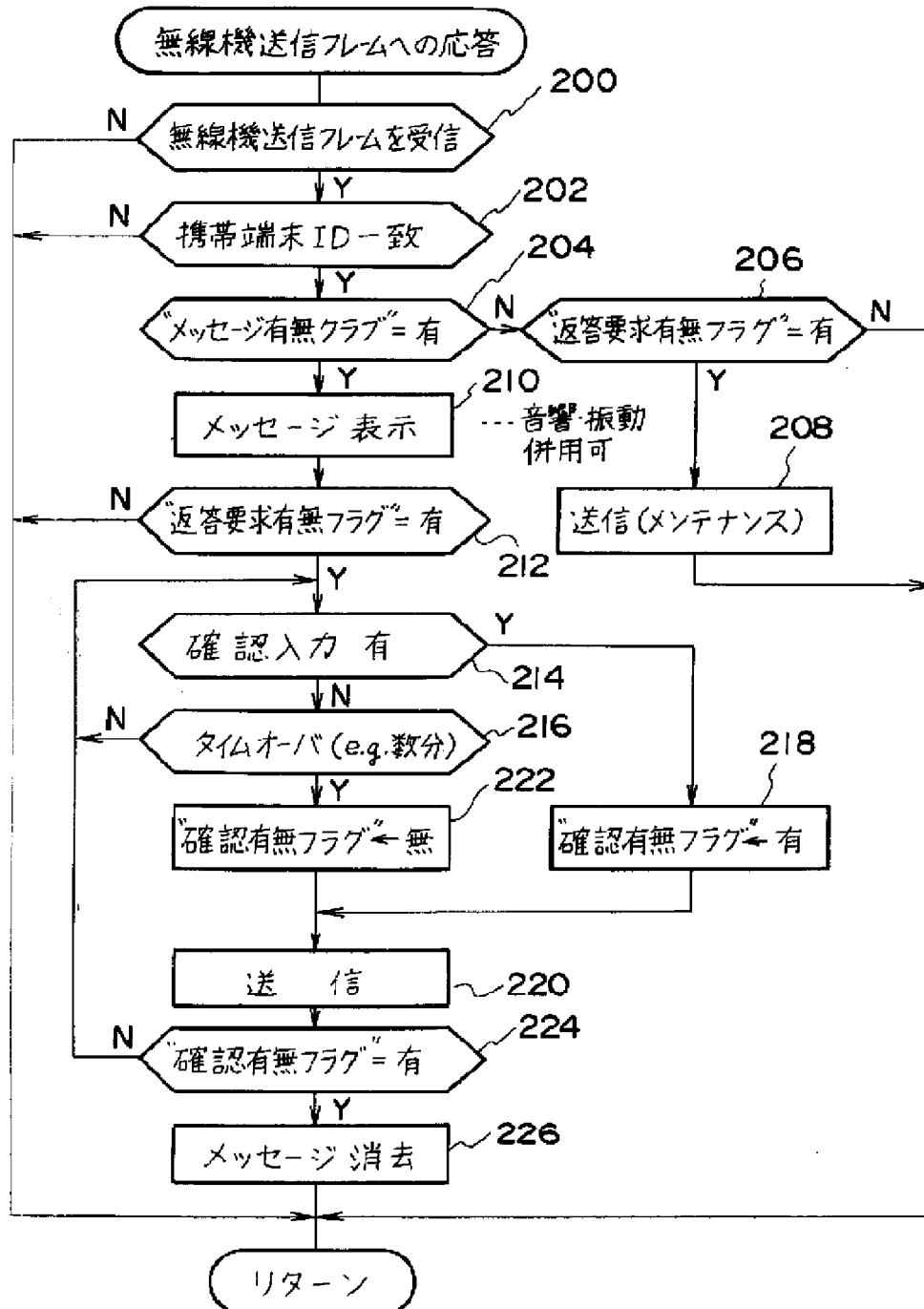
(a)

(b)

□ ページ
● 現在地
○ 目的地
— ルート
目 エスカレータ

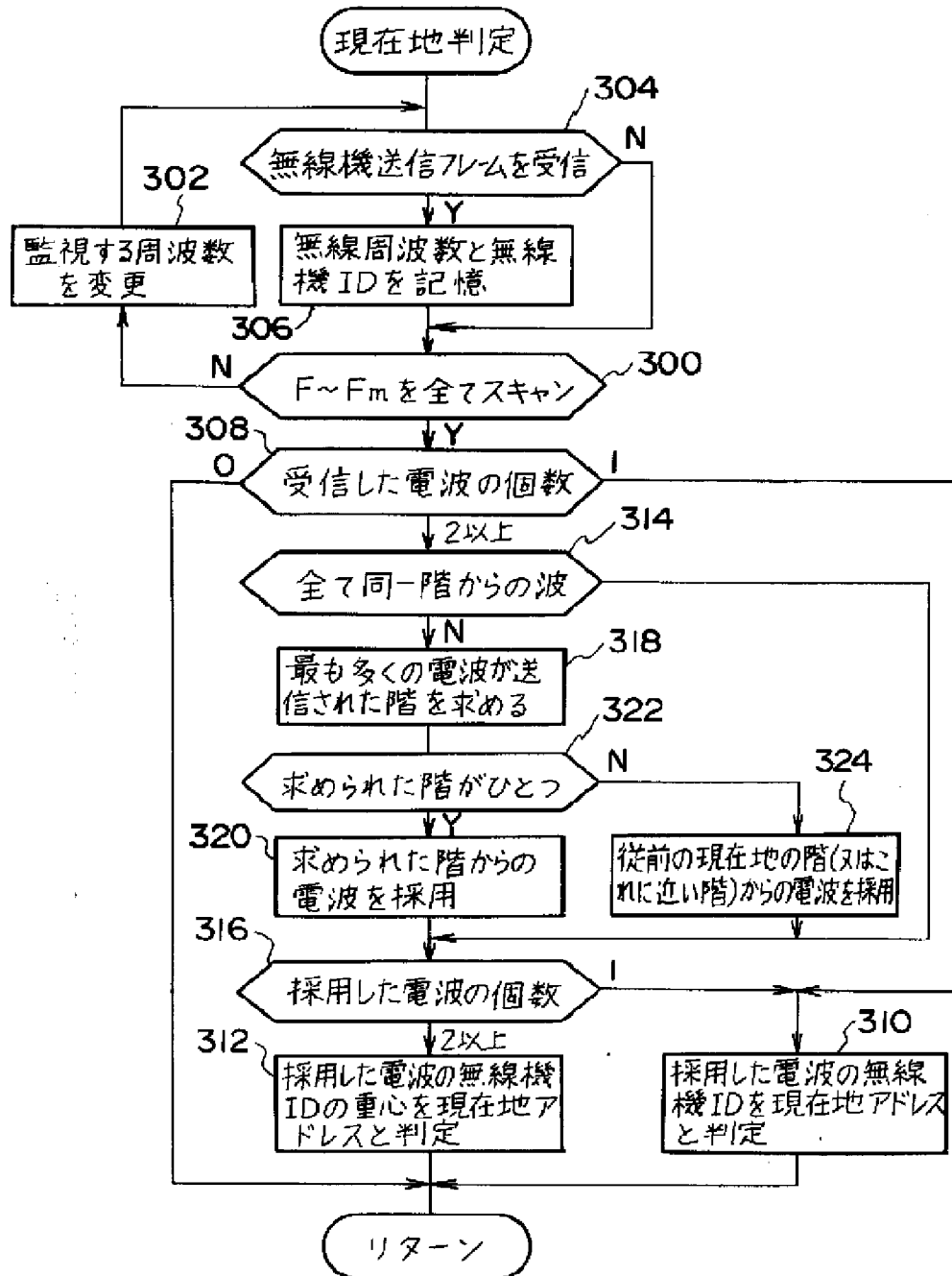
【図9】

携帯端末の動作(1)



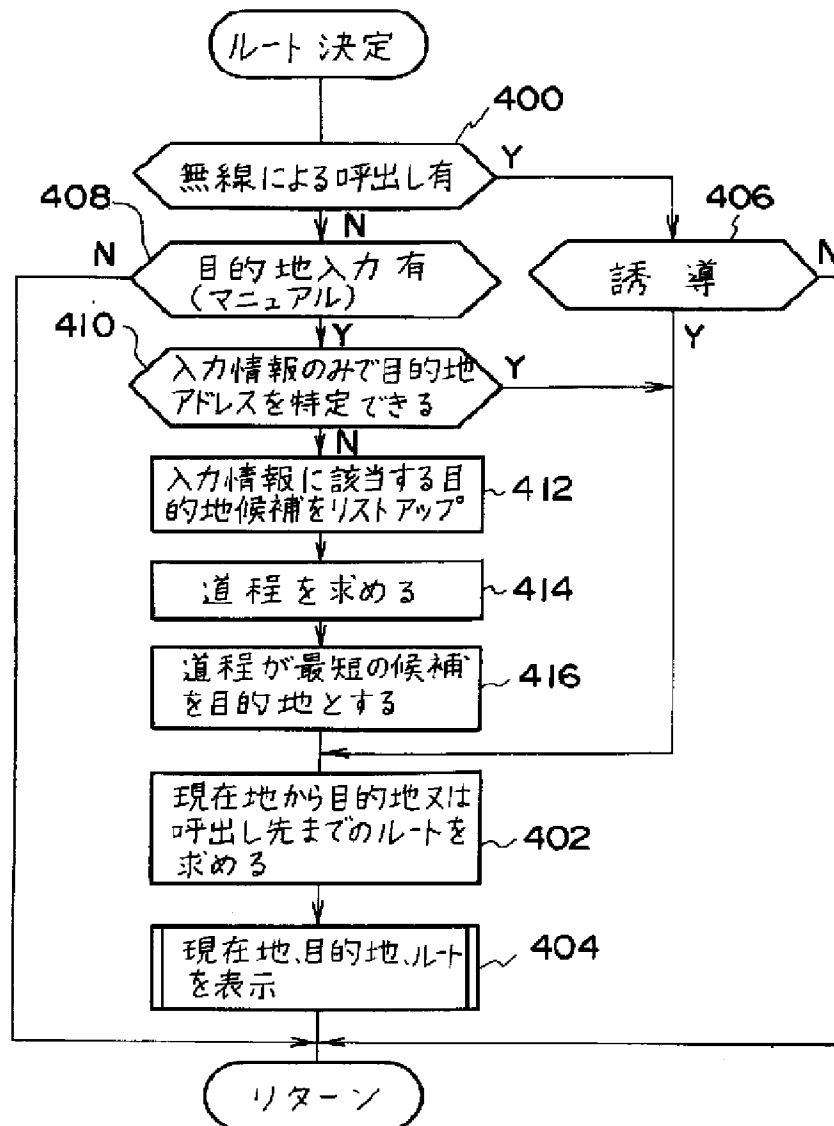
【図11】

携帯端末の動作(2)

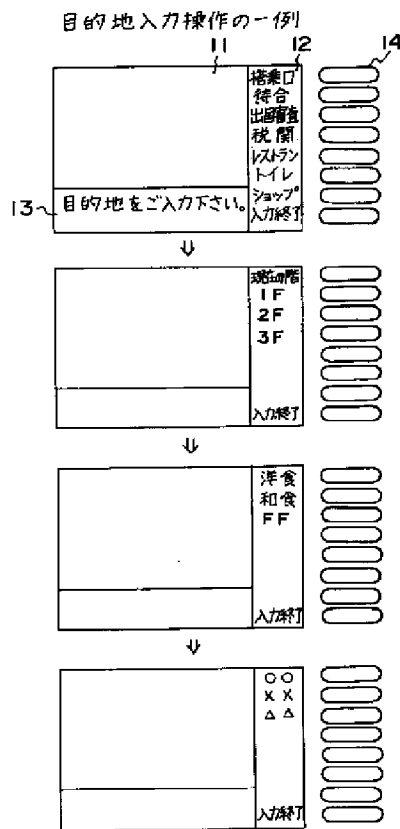


【図12】

携帯端末の動作(3)

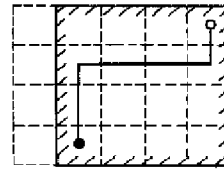


【図15】

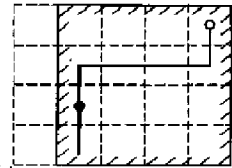


【図19】

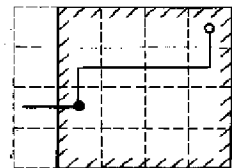
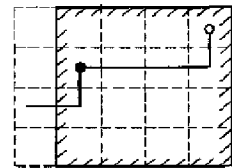
ルートが複数の階にまたがっていないときのルート表示



(a) 補う必要がない例

ルートに従うと
縦く横になるそこで従前のルートの
ページも加える

(b) 従前ルートを補う例

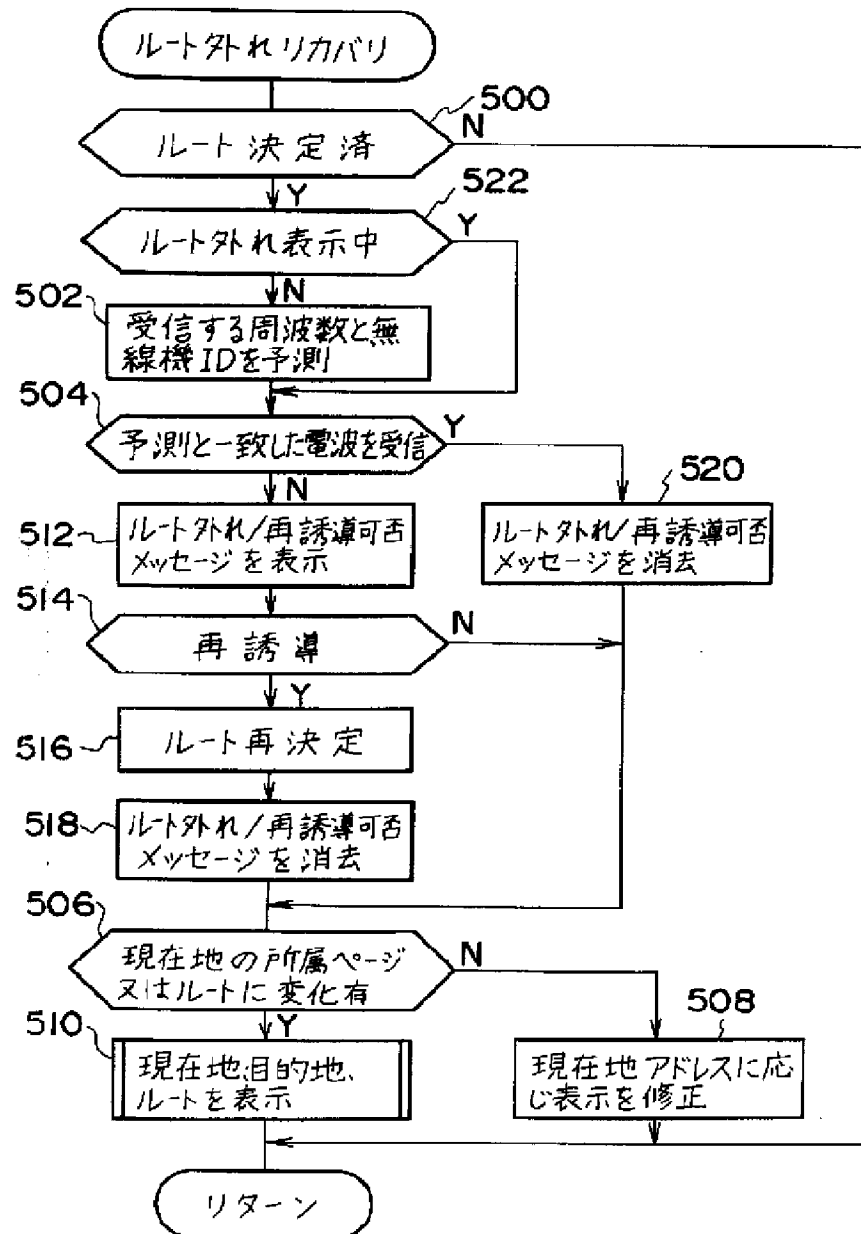
ルートに従うと
縦く横になる不足辺にページ
を足す(c) 不足辺にページを
補う例ルートに従うと
縦く横になるそこで従前のルートの
ページも加える不足辺にページを
足す

(d) (b)と(c)の組合せ

- 現在地
- 目的地
- ルート
- 表示されるページ群
- ページ

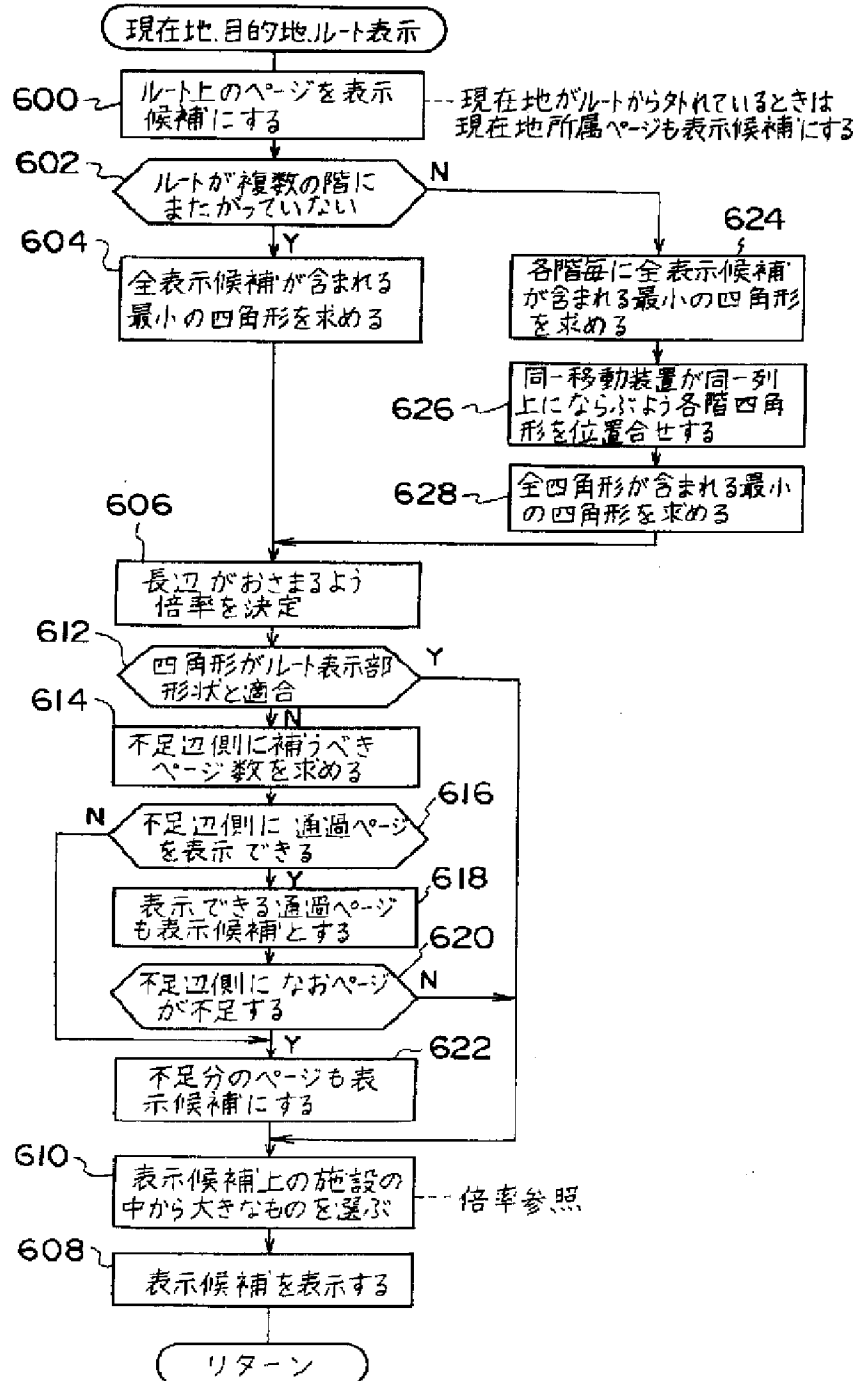
【図16】

携帯端末の動作(4)



【図18】

携帯装置の動作(5)



DERWENT- 1997-323525
ACC-NO:
DERWENT- 199730
WEEK:

Copyright ©2015 Thomson Reuters

TITLE: Route guidance system to guide user inside buildings uses portable terminal which receives wireless transmission of radios distributed in buildings to determine then current position and path

INVENTOR: YAMAZAKI M

PATENT-ASSIGNEE: TOYOTA JIDOSHA KK[TOYT]

PRIORITY-DATA: 1995JP-287601 (November 6, 1995)

PATENT-FAMILY:		
PUB-NO	PUB-DATE	LANGUAGE
JP 09126804 A	May 16, 1997	JA

APPLICATION-DATA:			
PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
JP 09126804A	N/A	1995JP-287601	November 6, 1995

INT-CL-CURRENT:	
TYPE	IPC DATE
CIPP	G09B29/10 20060101
CIPS	G01C21/00 20060101
CIPS	G01S5/02 20060101
CIPS	G06Q30/00 20060101
CIPS	G06Q50/00 20060101
CIPS	G08G1/0969 20060101

ABSTRACTED-PUB-NO: JP 09126804 A

BASIC-ABSTRACT:

The system consists of radio distributed inside building and portable terminal carried by guide user. Each radio transmits its current position at its own frequency. User terminal receives this information based on which the current position of user and route to destination are displayed on indoor map. Each portable terminal will receive radio position information without collision of informations from other radios and hence route information is continuously provided to user. It in turn makes the reaching of the destination easier without fear of moving in a wrong path.

ADVANTAGE - User of portable terminal which can extend to extent is of greater importance. Is excellent form to collect information at exact position.

CHOSEN- Dwg.1/1
DRAWING:

TITLE- ROUTE GUIDE SYSTEM USER BUILD PORTABLE TERMINAL
TERMS: RECEIVE WIRELESS TRANSMISSION RADIO DISTRIBUTE
DETERMINE CURRENT POSITION PATH

DERWENT-CLASS: P85 S02 W06

EPI-CODES: S02-B08A; W06-A02A; W06-A03;

SECONDARY-ACC-NO:

Non-CPI Secondary Accession Numbers: 1997-267669

Electronic Patent Application Fee Transmittal

Application Number:	15086028			
Filing Date:	30-Mar-2016			
Title of Invention:	RF BEACON DEPLOYMENT AND METHOD OF USE			
First Named Inventor/Applicant Name:	Ehud MENDELSON			
Filer:	Allen D. Hertz			
Attorney Docket Number:	MEN-16-001			
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Submission- Information Disclosure Stmt	2806	1	90	90
Total in USD (\$)				90

Electronic Acknowledgement Receipt

EFS ID:	26234769
Application Number:	15086028
International Application Number:	
Confirmation Number:	1238
Title of Invention:	RF BEACON DEPLOYMENT AND METHOD OF USE
First Named Inventor/Applicant Name:	Ehud MENDELSON
Customer Number:	31877
Filer:	Allen D. Hertz
Filer Authorized By:	
Attorney Docket Number:	MEN-16-001
Receipt Date:	30-JUN-2016
Filing Date:	30-MAR-2016
Time Stamp:	21:32:32
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$90
RAM confirmation Number	070116INTEFSW00007289506593
Deposit Account	506593
Authorized User	Allen Hertz

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

37 CFR 1.19 (Document supply fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		MEN-16-001_Mendelson_IDS_Submission_06-30-16.pdf	210047	yes	8
			41ccedb9d136425ce40b7fb4a99dd904f56cc85		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Transmittal Letter		1	3	
	Information Disclosure Statement (IDS) Form (SB08)		4	8	
Warnings:					
Information:					
2	Foreign Reference	JP_09126804-Yamazaki.pdf	2133080	no	29
			8a7a64455297e5e2127ffd511816688ec425166		
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30369	no	2
			8b9d04190618a34b59cc8fa563e52522c1a84794		
Warnings:					
Information:					
Total Files Size (in bytes):			2373496		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	: 15/086,028	Confirmation No.	1238
Applicant	: Ehud MENDELSON		
Filed	: March 30, 2016		
TC/A.U.	: 2648		
Examiner	: April Guzman GONZALES	Tel:	(571) 272-1101
Docket No.	: MEN-16-001		
Customer No.	: 31877		

For: **RF BEACON DEPLOYMENT AND METHOD OF USE**

Mail Stop: IDS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Dear Sir:

This Information Disclosure Statement is submitted:

- ☒ X under 37 CFR 1.97(b), or
(Within three months of filing national application; or date of entry of international application; or before mailing date of first office action on the merits; whichever occurs last)
- ☐ under 37 CFR 1.97(c) together with either a:
 - ☐ Statement under 37 CFR 1.97(e), **or**
 - ☐ a \$90.00 (Small Entity) fee under 37 CFR 1.17(p),
(After the CFR 1.97(b) time period, but before final action or notice of allowance, whichever occurs first)
- ☐ under 37 CFR 1.97(d) together with a:
 - ☐ Statement under 37 CFR 1.97(e), **and**
 - ☐ a \$90.00 (Small Entity) fee set forth in 37 CFR 1.17(p).
(Filed after final action or notice of allowance, whichever occurs first, but before payment of the issue fee)

I. LIST OF PATENTS, PUBLICATIONS OR OTHER INFORMATION

The patents, publications, or other information submitted for consideration by the Office are listed on the PTO/SB/08b attached hereto.

II. COPIES (check at least one box)

a. ___ Submitted herewith is a legible copy of (i) each foreign patent; (ii) each publication or that portion which caused it to be listed; and (iii) all other information or that portion which caused it to be listed.

b. X Some or all of the documents listed on the PTO/SB/08b are not enclosed because they are either U.S. Patents or Published Applications or were cited in the International Search Report and copies should already be in the PTO file. If copies are needed, please contact the undersigned.

III. CONCISE EXPLANATION OF THE RELEVANCE
(check at least one box)

a. X DOCUMENTS IN THE ENGLISH LANGUAGE

The attached patents, publications, or other information in the English language do not require a statement of relevancy.

b. ___ DOCUMENTS NOT IN THE ENGLISH LANGUAGE

A concise explanation of the relevance of all patents, publications, or other information listed that is not in the English language is as follows:

c. ___ ENGLISH LANGUAGE SEARCH REPORT

An English language version of the search report or action that indicates the degree of relevance found by the foreign office is attached, thereby satisfying the requirement for a concise explanation. See MPEP 609(III)(A)(3).

d. ___ OTHER

The following additional information is provided for the Examiner's consideration.

Applicant is submitting an Information Disclosure Statement (IDS) within Three (3) months of the filing date of the Application. All of the references cited in the IDS were included in previous Parent Applications of the subject Application.

Applicant has included a copy of JP 09126804A to Yamazaki as originally provided by the USPTO in Application Serial Number 14/285,273.

IV. STATEMENT UNDER 37 C.F.R. 1.97(e)

___ Each item of information contained in this information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement.

V. CONCLUSION

In accordance with 37 C.F.R. 1.97(g), the filing of this Information Disclosure Statement

shall not be construed to mean that a search has been made or that no other material information as defined in 37 C.F.R. 1.56(a) exists.

Further, in accordance with 37 C.F.R. 1.97(h), no concession is made that any of these documents is prior art under US patent law and the Applicant(s) hereby expressly reserve(s) the right to argue against and/or antedate the cited information as may be appropriate.

It is requested that the information disclosed herein be made of record in this application.

Applicant believes the response is filed with the appropriate fees due at this time. However, if any additional fees are required in connection with the filing of this paper, or excess fees were paid in connection with the filing of this paper, permission is given to charge or credit Deposit Account number 506593 in the name of Allen D. Hertz, P.A.

Respectfully submitted,



Allen D. Hertz

Registration No. 50,942

Attachments:

Information Disclosure Statement, Form PTO/SB/08a

Copy of Cited Foreign Reference(s)

\$90 Fee (Small Entity) under 37 CFR 1.17(p)



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
15/086,028	03/30/2016	2648	730	MEN-16-001	18	3

CONFIRMATION NO. 1238
CORRECTED FILING RECEIPT

31877
ALLEN D. HERTZ
ALLEN D HERTZ, P.A.
12784 TULIPWOOD CIRCLE
BOCA RATON, FL 33428



Date Mailed: 06/16/2016

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Ehud MENDELSON, Coral Springs, FL;

Applicant(s)

Ehud MENDELSON, Coral Springs, FL;

Power of Attorney: The patent practitioners associated with Customer Number 31877

Domestic Priority data as claimed by applicant

This application is a DIV of 14/285,439 05/22/2014 ABN
which is a DIV of 14/285,406 05/22/2014
which is a DIV of 14/285,332 05/22/2014
which is a DIV of 14/285,273 05/22/2014 PAT 9204257
which is a DIV of 14/285,209 05/22/2014 PAT 9204251
which is a DIV of 12/930,735 01/14/2011 PAT 9020687
which is a DIV of 11/396,843 04/03/2006 PAT 7899583
which claims benefit of 60/670,097 04/12/2005
and said 14/285,209 05/22/2014
is a DIV of 13/135,421 07/05/2011 PAT 9374673
which is a DIV of 12/932,811 03/07/2011 PAT 8941485
which is a DIV of 12/069,899 02/13/2008 PAT 7924149
which is a DIV of 11/472,706 06/22/2006 PAT 8896485
which is a DIV of 11/429,864 05/08/2006 PAT 8836580
which claims benefit of 60/678,947 05/09/2005
and said 14/285,209 05/22/2014
is a DIV of 12/587,042 10/01/2009 PAT 8866673

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 04/14/2016

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/086,028**

Projected Publication Date: Request for Non-Publication Acknowledged

Non-Publication Request: Yes

Early Publication Request: No

**** SMALL ENTITY ****

Title

RF BEACON DEPLOYMENT AND METHOD OF USE

Preliminary Class

455

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

31877 7590 06/03/2016
ALLEN D. HERTZ
ALLEN D HERTZ, P.A.
12784 TULIPWOOD CIRCLE
BOCA RATON, FL 33428

EXAMINER

GONZALES, APRIL GUZMAN

ART UNIT

PAPER NUMBER

2648

DATE MAILED: 06/03/2016

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

15/086,028

03/30/2016

Ehud MENDELSON

MEN-16-001

1238

TITLE OF INVENTION: RF BEACON DEPLOYMENT AND METHOD OF USE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0	\$0	\$480	09/06/2016

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax **(571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

31877 7590 06/03/2016
ALLEN D. HERTZ
ALLEN D HERTZ, P.A.
12784 TULIPWOOD CIRCLE
BOCA RATON, FL 33428

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/086,028	03/30/2016	Ehud MENDELSON	MEN-16-001	1238

TITLE OF INVENTION: RF BEACON DEPLOYMENT AND METHOD OF USE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0	\$0	\$480	09/06/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
GONZALES, APRIL GUZMAN	2648	455-041200

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) The names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
- ☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/086,028	03/30/2016	Ehud MENDELSON	MEN-16-001	1238

31877 7590 06/03/2016
ALLEN D. HERTZ
ALLEN D HERTZ, P.A.
12784 TULIPWOOD CIRCLE
BOCA RATON, FL 33428

EXAMINER

GONZALES, APRIL GUZMAN

ART UNIT PAPER NUMBER

2648

DATE MAILED: 06/03/2016

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 15/086,028	Applicant(s) MENDELSON, EHUD	
	Examiner APRIL G. GONZALES	Art Unit 2648	AIA (First Inventor to File) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 03/30/2016.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are 1-18. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) ☐ All b) ☐ Some *c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. ☒ Notice of References Cited (PTO-892) | 5. ☐ Examiner's Amendment/Comment |
| 2. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 6. ☒ Examiner's Statement of Reasons for Allowance |
| 3. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 7. ☐ Other _____. |
| 4. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____. | |

/APRIL G GONZALES/
Primary Examiner, Art Unit 2648

DETAILED ACTION

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Allowable Subject Matter

Claims 1-18 are allowed.

The following is an examiner's statement of reasons for allowance:

Consider **claim 1**, the best prior art of record found during the examination of the present application, **Vayanos (US 6,420,999)**, fails to specifically teach, suggest, or disclose a method, comprising:

defining a geofence using a network of one or more beacons, wherein each beacon is a communication device configured to provide a signal detectable by a baseband subsystem of a mobile device located within a communication range of the respective beacon, defining the geofence including:

associating the network with a geographic region, wherein the signal from at least one beacon in the network is detectable by a mobile device located in the geographic region;

designating an encompassment of the geographic region as the geofence; and

associating a task with the geofence as a location based service;

advertising the geofence, including broadcasting, by each beacon in the network, an identification signal indicating that the beacon is a component of the network;

determining that the mobile device has entered the geofence when the mobile device is in communication with at least one beacon in the network; and

Art Unit: 2648

transmitting, by a beacon in the network, information on the task and a list of unique identifiers of other beacons in the network, wherein the list is usable by the mobile device to register the unique identifiers with the baseband subsystem for the mobile device to determine whether the mobile device has entered the advertised geofence and whether or not to trigger the mobile device to perform the task,

wherein transmitting the information is triggered by the mobile device making a contact with any beacon in the network and is conditioned upon the contact being a first contact between the mobile device and any beacon in the network, and

wherein the method is performed by one or more processors.

Vayanos teaches a method and apparatus that allows more accurate production of a sector coverage map. The sector coverage map is a map that shows which geographic regions are being served by a particular sector of a beacon 103. Beacons are said to be sectorized when separate antennas are used to direct the signals transmitted by the server to a particular geographic sector (column 16 lines 63-67, column 17 lines 1-33). The teachings of Vayanos differ and fall short of the present application, therefore claim 1 is considered novel and non-obvious over the prior art and therefore is allowed.

Claims 2-6 are dependent upon allowable claim 1 therefore they are also allowed.

Consider **claim 7**, the best prior art of record found during the examination of the present application, **Vayanos (US 6,420,999)**, fails to specifically teach, suggest, or disclose a system, comprising: one or more processors; and a non-transitory computer-readable medium storing instructions operable to cause the one or more processors to perform operations comprising:

Art Unit: 2648

defining a geofence using a network of one or more beacons, wherein each beacon is a communication device configured to provide a signal detectable by a baseband subsystem of a mobile device located within a communication range of the respective beacon, defining the geofence including:

associating the network with a geographic region, wherein the signal from at least one beacon in the network is detectable by a mobile device located in the geographic region;

designating an encompassment of the geographic region as the geofence; and

associating a task with the geofence as a location based service;

advertising the geofence, including broadcasting, by each beacon in the network, an identification signal indicating that the beacon is a component of the network;

determining that the mobile device has entered the geofence when the mobile device is in communication with at least one beacon in the network; and

transmitting, by a beacon in the network, information on the task and a list of unique identifiers of other beacons in the network, wherein the list is usable by the mobile device to register the unique identifiers with the baseband subsystem for the mobile device to determine whether the mobile device has entered the advertised geofence and whether or not to trigger the mobile device to perform the task,

wherein transmitting the information is triggered by the mobile device making a contact with any beacon in the network and is conditioned upon the contact being a first contact between the mobile device and any beacon in the network.

Vayanos teaches a method and apparatus that allows more accurate production of a sector coverage map. The sector coverage map is a map that shows which geographic regions are being

Art Unit: 2648

served by a particular sector of a beacon 103. Beacons are said to be sectorized when separate antennas are used to direct the signals transmitted by the server to a particular geographic sector (column 16 lines 63-67, column 17 lines 1-33). The teachings of Vayanos differ and fall short of the present application, therefore claim 7 is considered novel and non-obvious over the prior art and therefore is allowed.

Claims 8-12 depend upon allowable claim 7 therefore they are also allowed.

Consider **claim 13**, the best prior art of record found during the examination of the present application, **Vayanos (US 6,420,999)**, fails to specifically teach, suggest, or disclose a non-transitory computer-readable medium storing instructions operable to cause one or more processors to perform operations comprising:

defining a geofence using a network of one or more beacons, wherein each beacon is a communication device configured to provide a signal detectable by a baseband subsystem of a mobile device located within a communication range of the respective beacon, defining the geofence including:

associating the network with a geographic region, wherein the signal from at least one beacon in the network is detectable by a mobile device located in the geographic region;

designating an encompassment of the geographic region as the geofence; and

associating a task with the geofence as a location based service;

advertising the geofence, including broadcasting, by each beacon in the network, an identification signal indicating that the beacon is a component of the network;

determining that the mobile device has entered the geofence when the mobile device is in communication with at least one beacon in the network; and

Art Unit: 2648

transmitting, by a beacon in the network, information on the task and a list of unique identifiers of other beacons in the network, wherein the list is usable by the mobile device to register the unique identifiers with the baseband subsystem for the mobile device to determine whether the mobile device has entered the advertised geofence and whether or not to trigger the mobile device to perform the task,

wherein transmitting the information is triggered by the mobile device making a contact with any beacon in the network and is conditioned upon the contact being a first contact between the mobile device and any beacon in the network.

Vayanos teaches a method and apparatus that allows more accurate production of a sector coverage map. The sector coverage map is a map that shows which geographic regions are being served by a particular sector of a beacon 103. Beacons are said to be sectorized when separate antennas are used to direct the signals transmitted by the server to a particular geographic sector (column 16 lines 63-67, column 17 lines 1-33). The teachings of Vayanos differ and fall short of the present application, therefore claim 13 is considered novel and non-obvious over the prior art and therefore is allowed.

Claims 14-18 depend upon allowable claim 13 therefore they are also allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Art Unit: 2648

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: see PTO-892 Notice of References Cited.

Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to:**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner April G. Gonzales whose **telephone number is 571-270-1101** and whose **fax number is 571-270-2101**. The examiner can normally be reached on Monday - Friday, 9:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wesley Kim can be reached on 571-272-7867. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

Art Unit: 2648

applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. If you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/APRIL G GONZALES/

Primary Examiner, Art Unit 2648

05/29/2016

Notice of References Cited	Application/Control No. 15/086,028		Applicant(s)/Patent Under Reexamination MENDELSON, EHUD	
	Examiner APRIL G. GONZALES		Art Unit 2648	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-6,445,937 B1	09-2002	daSilva; Ivan Pereira	H04W52/0229	455/574
*	B	US-2003/0148771 A1	08-2003	de Verteuil, Andre Laurent	H04W64/00	455/456.1
*	C	US-7,072,666 B1	07-2006	Kullman; John	H04W64/00	455/404.2
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 1238

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.	
15/086,028	03/30/2016	455	2648	MEN-16-001	
RULE					
APPLICANTS INVENTORS Ehud MENDELSON, Coral Springs, FL; ** CONTINUING DATA ***** This application is a DIV of 14/285,439 05/22/2014 ABN which is a DIV of 14/284,406 05/22/2014 PAT 9312423 which is a DIV of 14/285,332 05/22/2014 which is a DIV of 14/285,273 05/22/2014 PAT 9204257 which is a DIV of 14/285,209 05/22/2014 PAT 9204251 which is a DIV of 12/930,735 01/14/2011 PAT 9020687 which is a DIV of 11/396,843 04/03/2006 PAT 7899583 which claims benefit of 60/670,097 04/12/2005 This application 15/086,028 03/30/2016 is a DIV of 14/285,439 05/22/2014 ABN which is a DIV of 14/284,406 05/22/2014 PAT 9312423 which is a DIV of 14/285,332 05/22/2014 which is a DIV of 14/285,273 05/22/2014 PAT 9204257 which is a DIV of 14/285,209 05/22/2014 PAT 9204251 which is a DIV of 13/135,421 07/05/2011 which is a DIV of 12/932,811 03/07/2011 PAT 8941485 which is a DIV of 12/069,899 02/13/2008 PAT 7924149 which is a DIV of 11/472,706 06/22/2006 PAT 8896485 which is a DIV of 11/429,864 05/08/2006 PAT 8836580 which claims benefit of 60/678,947 05/09/2005 This application 15/086,028 03/30/2016 is a DIV of 14/285,439 05/22/2014 ABN which is a DIV of 14/285,406 05/22/2014 and said 14/284,406 05/22/2014 is a DIV of 14/285,332 05/22/2014 which is a DIV of 14/285,273 05/22/2014 PAT 9204257 which is a DIV of 14/285,209 05/22/2014 PAT 9204251 which is a DIV of 12/587,042 10/01/2009 PAT 8866673 which is a DIV of 11/429,864 05/08/2006 PAT 8836580 which claims benefit of 60/678,947 05/09/2005 ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** ** SMALL ENTITY ** 04/14/2016					
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☒ No Verified and /APRIL GUZMAN GONZALES/ Acknowledged Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY FL	SHEETS DRAWINGS 12	TOTAL CLAIMS 18	INDEPENDENT CLAIMS 3

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	81	(geofence with beacon)	US-PGPUB; USPAT	OR	ON	2016/05/29 22:18
L2	0	L1 and 455/41.2.ccls.	US-PGPUB; USPAT	OR	ON	2016/05/29 22:18
L3	0	L1 and 455/41.3.ccls.	US-PGPUB; USPAT	OR	ON	2016/05/29 22:19
L4	23	L1 and H04W4/021.cpc.	US-PGPUB; USPAT	OR	ON	2016/05/29 22:19
L5	6	L1 and H04W4/008.cpc.	US-PGPUB; USPAT	OR	ON	2016/05/29 22:19
L6	2	L1 and H04W40/244.cpc.	US-PGPUB; USPAT	OR	ON	2016/05/29 22:20
L7	124	geofence.ti.	US-PGPUB; USPAT	OR	ON	2016/05/29 22:21
L8	0	(geofence with beacons with (baseband adj subsystem) with (geographic adj region) with (encompassment) with (broadcasting) with (unique adj identifiers) with (first adj contact) with (triggered))	US-PGPUB; USPAT	OR	ON	2016/05/29 22:49
L11	0	(geofence with beacons with (baseband adj subsystem) with (geographic adj region) with (encompassment) with (broadcasting) with (unique adj identifiers) with (first adj contact) with (triggered)).clm.	US-PGPUB; USPAT	OR	ON	2016/05/29 22:50
L12	0	mendelson.in. and (geofence with beacons with (baseband adj subsystem) with (geographic adj region) with (encompassment) with (broadcasting) with (unique adj identifiers) with (first adj contact) with (triggered)).clm.	US-PGPUB; USPAT	OR	ON	2016/05/29 22:50
L15	0	mendelson.in. and (geofence with beacons with (baseband adj subsystem) with (geographic adj region) with (encompassment) with (broadcasting) with (unique adj identifiers) with (first adj contact) with (triggered))	US-PGPUB; USPAT	OR	ON	2016/05/29 22:50
L16	3	(US-20030148771-\$).did. or (US-6445937-\$ or US-7072666-\$).did.	US-PGPUB; USPAT	OR	ON	2016/05/29 22:55
L17	0	l16 and geofence	US-PGPUB; USPAT	OR	ON	2016/05/29 22:55
L18	0	l16 and geofencing	US-	OR	ON	2016/05/29

			PGPUB; USPAT			22:55
L19	0	l16 and geo	US- PGPUB; USPAT	OR	ON	2016/05/29 22:55
L20	0	l16 and fence	US- PGPUB; USPAT	OR	ON	2016/05/29 22:56
L21	0	l16 and fencing	US- PGPUB; USPAT	OR	ON	2016/05/29 22:56
L22	2	l16 and geographic	US- PGPUB; USPAT	OR	ON	2016/05/29 22:56
L23	5	geofence with beacons with baseband	US- PGPUB; USPAT	OR	ON	2016/05/29 23:00
L24	14	geofence with beacons with geographic	US- PGPUB; USPAT	OR	ON	2016/05/29 23:01
L25	5	geofence with beacons with geographic with identifier	US- PGPUB; USPAT	OR	ON	2016/05/29 23:01
L26	30	geofencing with beacon	US- PGPUB; USPAT	OR	ON	2016/05/29 23:02
L27	0	geofencing with beacon with geographic with identifier	US- PGPUB; USPAT	OR	ON	2016/05/29 23:02
L28	0	geofencing with beacon with identifier	US- PGPUB; USPAT	OR	ON	2016/05/29 23:02
L29	0	geofencing with beacon with geographic	US- PGPUB; USPAT	OR	ON	2016/05/29 23:02
S1	5	(geofence with beacon) and (baseband) and (geographic adj region)	US- PGPUB; USPAT	OR	ON	2016/05/29 16:53
S2	2	"20030148771"	US- PGPUB; USPAT	OR	ON	2016/05/29 17:00
S3	2	"20060068812"	US- PGPUB; USPAT	OR	ON	2016/05/29 17:00
S4	2	"20060079201"	US- PGPUB; USPAT	OR	ON	2016/05/29 17:00
S5	236	"5642303"	US- PGPUB; USPAT	OR	ON	2016/05/29 17:00
S6	79	"6445937"	US- PGPUB; USPAT	OR	ON	2016/05/29 17:01
S7	46	"7072666"	US- PGPUB; USPAT	OR	ON	2016/05/29 17:01
S8	16	"7633389"	US-	OR	ON	2016/05/29

			PGPUB; USPAT			17:02
S9	2	"20090058720"	US- PGPUB; USPAT	OR	ON	2016/05/29 17:02
S10	81	(geofence with beacon)	US- PGPUB; USPAT	OR	ON	2016/05/29 17:03
S11	2	(geofence with beacon with (geographic adj region) with baseband)	US- PGPUB; USPAT	OR	ON	2016/05/29 17:04
S12	3	(geofence with beacon with advertising)	US- PGPUB; USPAT	OR	ON	2016/05/29 17:04

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L9	0	(geofence with beacons with (baseband adj subsystem) with (geographic adj region) with (encompassment) with (broadcasting) with (unique adj identifiers) with (first adj contact) with (triggered))	US- PGPUB; USPAT	OR	ON	2016/05/29 22:50
L10	0	(geofence with beacons with (baseband adj subsystem) with (geographic adj region) with (encompassment) with (broadcasting) with (unique adj identifiers) with (first adj contact) with (triggered)).clm.	US- PGPUB; USPAT	OR	ON	2016/05/29 22:50
L13	0	mendelson.in. and (geofence with beacons with (baseband adj subsystem) with (geographic adj region) with (encompassment) with (broadcasting) with (unique adj identifiers) with (first adj contact) with (triggered)).clm.	US- PGPUB; USPAT	OR	ON	2016/05/29 22:50
L14	0	mendelson.in. and (geofence with beacons with (baseband adj subsystem) with (geographic adj region) with (encompassment) with (broadcasting) with (unique adj identifiers) with (first adj contact) with (triggered))	US- PGPUB; USPAT	OR	ON	2016/05/29 22:50

5/ 29/ 2016 11:04:31 PM
C:\Users\aguzman\Documents\EAST\Workspaces\15086028.wsp

Search Notes 	Application/Control No. 15086028	Applicant(s)/Patent Under Reexamination MENDELSON, EHUD
	Examiner APRIL G GONZALES	Art Unit 2648

CPC- SEARCHED		
Symbol	Date	Examiner
H04W4/021, H04W40/244, H04W4/008	5/29/2016	AGG

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
455	41.2, 41.3	5/29/2016	AGG

SEARCH NOTES		
Search Notes	Date	Examiner
EAST image and keyword search	5/29/2016	AGG
CPC search	5/29/2016	AGG
IP.com search	5/29/2016	AGG
Double Patenting search	5/29/2016	AGG
Interference search	5/29/2016	AGG

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
	EAST keyword claim search	5/29/2016	AGG

	/APRIL G GONZALES/ Primary Examiner.Art Unit 2648
--	--

<i>Index of Claims</i> 	Application/Control No. 15086028	Applicant(s)/Patent Under Reexamination MENDELSON, EHUD
	Examiner APRIL G GONZALES	Art Unit 2648

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47										
CLAIM		DATE								
Final	Original	05/29/2016								
	1	=								
	2	=								
	3	=								
	4	=								
	5	=								
	6	=								
	7	=								
	8	=								
	9	=								
	10	=								
	11	=								
	12	=								
	13	=								
	14	=								
	15	=								
	16	=								
	17	=								
	18	=								

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	81	(geofence with beacon)	US-PGPUB; USPAT	OR	ON	2016/05/29 22:18
L2	0	L1 and 455/41.2.ccls.	US-PGPUB; USPAT	OR	ON	2016/05/29 22:18
L3	0	L1 and 455/41.3.ccls.	US-PGPUB; USPAT	OR	ON	2016/05/29 22:19
L4	23	L1 and H04W4/021.cpc.	US-PGPUB; USPAT	OR	ON	2016/05/29 22:19
L5	6	L1 and H04W4/008.cpc.	US-PGPUB; USPAT	OR	ON	2016/05/29 22:19
L6	2	L1 and H04W40/244.cpc.	US-PGPUB; USPAT	OR	ON	2016/05/29 22:20
L7	124	geofence.ti.	US-PGPUB; USPAT	OR	ON	2016/05/29 22:21
L8	0	(geofence with beacons with (baseband adj subsystem) with (geographic adj region) with (encompassment) with (broadcasting) with (unique adj identifiers) with (first adj contact) with (triggered))	US-PGPUB; USPAT	OR	ON	2016/05/29 22:49
L11	0	(geofence with beacons with (baseband adj subsystem) with (geographic adj region) with (encompassment) with (broadcasting) with (unique adj identifiers) with (first adj contact) with (triggered)).clm.	US-PGPUB; USPAT	OR	ON	2016/05/29 22:50
L12	0	mendelson.in. and (geofence with beacons with (baseband adj subsystem) with (geographic adj region) with (encompassment) with (broadcasting) with (unique adj identifiers) with (first adj contact) with (triggered)).clm.	US-PGPUB; USPAT	OR	ON	2016/05/29 22:50
L15	0	mendelson.in. and (geofence with beacons with (baseband adj subsystem) with (geographic adj region) with (encompassment) with (broadcasting) with (unique adj identifiers) with (first adj contact) with (triggered))	US-PGPUB; USPAT	OR	ON	2016/05/29 22:50
S1	5	(geofence with beacon) and (baseband) and (geographic adj region)	US-PGPUB; USPAT	OR	ON	2016/05/29 16:53
S2	2	"20030148771"	US-PGPUB; USPAT	OR	ON	2016/05/29 17:00
S3	2	"20060068812"	US-	OR	ON	2016/05/29

			PGPUB; USPAT			17:00
S4	2	"20060079201"	US- PGPUB; USPAT	OR	ON	2016/05/29 17:00
S5	236	"5642303"	US- PGPUB; USPAT	OR	ON	2016/05/29 17:00
S6	79	"6445937"	US- PGPUB; USPAT	OR	ON	2016/05/29 17:01
S7	46	"7072666"	US- PGPUB; USPAT	OR	ON	2016/05/29 17:01
S8	16	"7633389"	US- PGPUB; USPAT	OR	ON	2016/05/29 17:02
S9	2	"20090058720"	US- PGPUB; USPAT	OR	ON	2016/05/29 17:02
S10	81	(geofence with beacon)	US- PGPUB; USPAT	OR	ON	2016/05/29 17:03
S11	2	(geofence with beacon with (geographic adj region) with baseband)	US- PGPUB; USPAT	OR	ON	2016/05/29 17:04
S12	3	(geofence with beacon with advertising)	US- PGPUB; USPAT	OR	ON	2016/05/29 17:04

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L9	0	(geofence with beacons with (baseband adj subsystem) with (geographic adj region) with (encompassment) with (broadcasting) with (unique adj identifiers) with (first adj contact) with (triggered))	US- PGPUB; USPAT	OR	ON	2016/05/29 22:50
L10	0	(geofence with beacons with (baseband adj subsystem) with (geographic adj region) with (encompassment) with (broadcasting) with (unique adj identifiers) with (first adj contact) with (triggered)).clm.	US- PGPUB; USPAT	OR	ON	2016/05/29 22:50
L13	0	mendelson.in. and (geofence with beacons with (baseband adj subsystem) with (geographic adj region) with (encompassment) with (broadcasting) with (unique adj identifiers) with (first adj contact) with (triggered)).clm.	US- PGPUB; USPAT	OR	ON	2016/05/29 22:50
L14	0	mendelson.in. and (geofence with beacons with (baseband adj subsystem) with (geographic adj region) with (encompassment) with (broadcasting) with (unique adj identifiers) with (first adj contact) with (triggered))	US- PGPUB; USPAT	OR	ON	2016/05/29 22:50

Issue Classification 	Application/Control No. 15086028	Applicant(s)/Patent Under Reexamination MENDELSON, EHUD	
	Examiner APRIL G GONZALES	Art Unit 2648	

CPC						
Symbol					Type	Version
H04W		4		021	F	2013-01-01
H04W		40		244	I	2013-01-01
H04W		4		008	I	2013-01-01
						
						
						
						
						
						
						
						
						
						
						
						

CPC Combination Sets					
Symbol		Type	Set	Ranking	Version
					
					

NONE		Total Claims Allowed:	
(Assistant Examiner)		18	
(Date)			
/APRIL G GONZALES/			
Primary Examiner.Art Unit 2648		O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)		1	1
(Date)			

Issue Classification 	Application/Control No. 15086028	Applicant(s)/Patent Under Reexamination MENDELSON, EHUD
	Examiner APRIL G GONZALES	Art Unit 2648

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		17												
	2		18												
	3														
	4														
	5														
	6														
	7														
	8														
	9														
	10														
	11														
	12														
	13														
	14														
	15														
	16														

NONE	Total Claims Allowed: 18	
(Assistant Examiner)	(Date)	
/APRIL G GONZALES/ Primary Examiner.Art Unit 2648	05/29/2016	O.G. Print Claim(s) 1
(Primary Examiner)	(Date)	O.G. Print Figure 1

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 15/086,028				
APPLICATION AS FILED - PART I										
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY				
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)			
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	70		N/A				
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	300		N/A				
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	360		N/A				
TOTAL CLAIMS (37 CFR 1.16(j))	18	minus 20 = *	x 40 =	0.00	OR					
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 = *	x 210 =	0.00						
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00						
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00						
			TOTAL	730		TOTAL				
* If the difference in column 1 is less than zero, enter "0" in column 2.										
APPLICATION AS AMENDED - PART II										
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY		
AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=	OR	x	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=	OR	x	=
	Application Size Fee (37 CFR 1.16(s))							OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=	OR	x	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=	OR	x	=
	Application Size Fee (37 CFR 1.16(s))							OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.										



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
15/086,028	03/30/2016	3646	730	MEN-16-001	18	3

CONFIRMATION NO. 1238

FILING RECEIPT



0000000082208856

31877
ALLEN D. HERTZ
ALLEN D HERTZ, P.A.
12784 TULIPWOOD CIRCLE
BOCA RATON, FL 33428

Date Mailed: 04/14/2016

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Ehud MENDELSON, Coral Springs, FL;

Applicant(s)

Ehud MENDELSON, Coral Springs, FL;

Power of Attorney: The patent practitioners associated with Customer Number 31877

Domestic Priority data as claimed by applicant

This application is a DIV of 14/285,439 05/22/2014
which is a DIV of 14/284,406 05/22/2014 PAT 9312423
which is a DIV of 14/285,332 05/22/2014
which is a DIV of 14/285,273 05/22/2014 PAT 9204257
which is a DIV of 14/285,209 05/22/2014 PAT 9204251
which is a DIV of 12/930,735 01/14/2011 PAT 9020687
which is a DIV of 11/396,843 04/03/2006 PAT 7899583
which claims benefit of 60/670,097 04/12/2005
This application 15/086,028
is a DIV of 14/285,439 05/22/2014
which is a DIV of 14/284,406 05/22/2014 PAT 9312423
which is a DIV of 14/285,332 05/22/2014
which is a DIV of 14/285,273 05/22/2014 PAT 9204257
which is a DIV of 14/285,209 05/22/2014 PAT 9204251
which is a DIV of 13/135,421 07/05/2011
which is a DIV of 12/932,811 03/07/2011 PAT 8941485
which is a DIV of 12/069,899 02/13/2008 PAT 7924149
which is a DIV of 11/472,706 06/22/2006 PAT 8896485
which is a DIV of 11/429,864 05/08/2006 PAT 8836580

which claims benefit of 60/678,947 05/09/2005
This application 15/086,028
is a DIV of 14/285,439 05/22/2014
which is a DIV of 14/285,406 05/22/2014
and said 14/284,406 05/22/2014
is a DIV of 14/285,332 05/22/2014
which is a DIV of 14/285,273 05/22/2014 PAT 9204257
which is a DIV of 14/285,209 05/22/2014 PAT 9204251
which is a DIV of 12/587,042 10/01/2009 PAT 8866673
which is a DIV of 11/429,864 05/08/2006 PAT 8836580
which claims benefit of 60/678,947 05/09/2005

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 04/14/2016

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/086,028**

Projected Publication Date: Request for Non-Publication Acknowledged

Non-Publication Request: Yes

Early Publication Request: No

**** SMALL ENTITY ****

Title

RF BEACON DEPLOYMENT AND METHOD OF USE

Preliminary Class

342

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

Under the Paperwork Reduction Act of 1995 no persons are required to respond to a collection of information unless it displays a valid OMB control number

UTILITY PATENT APPLICATION TRANSMITTAL <i>(Only for new nonprovisional applications under 37 CFR 1.53(b))</i>		Attorney Docket No. MEN-16-001	
		First Named Inventor Ehud Mendelson	
		Title RF BEACON DEPLOYMENT AND METHOD OF USE	
		Express Mail Label No. Filed via EFSweb	

APPLICATION ELEMENTS <i>See MPEP chapter 600 concerning utility patent application contents.</i>	ADDRESS TO: Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450
--	--

1. ☒ Fee Transmittal Form (PTO/SB/17 or equivalent) 2. ☒ Applicant asserts small entity status. See 37 CFR 1.27 3. ☐ Applicant certifies micro entity status. See 37 CFR 1.29. Applicant must attach form PTO/SB/15A or B or equivalent. 4. ☒ Specification [Total Pages <u>54</u>] Both the claims and abstract must start on a new page. (See MPEP § 608.01(a) for information on the preferred arrangement) 5. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets <u>12</u>] 6. Inventor's Oath or Declaration [Total Pages <u>1</u>] (including substitute statements under 37 CFR 1.64 and assignments serving as an oath or declaration under 37 CFR 1.63(e)) a. ☒ Newly executed (original or copy) b. ☐ A copy from a prior application (37 CFR 1.63(d)) 7. ☒ Application Data Sheet * See note below. See 37 CFR 1.76 (PTO/AIA/14 or equivalent) 8. CD-ROM or CD-R in duplicate, large table, or Computer Program (Appendix) ☐ Landscape Table on CD 9. Nucleotide and/or Amino Acid Sequence Submission (if applicable, items a. - c. are required) a. ☐ Computer Readable Form (CRF) b. ☐ Specification Sequence Listing on: i. ☐ CD-ROM or CD-R (2 copies); or ii. ☐ Paper c. ☐ Statements verifying identity of above copies	ACCOMPANYING APPLICATION PAPERS 10. ☐ Assignment Papers (cover sheet & document(s)) Name of Assignee _____ 11. ☐ 37 CFR 3.73(c) Statement (when there is an assignee) ☒ Power of Attorney 12. ☐ English Translation Document (if applicable) 13. ☐ Information Disclosure Statement (PTO/SB/08 or PTO-1449) ☐ Copies of citations attached 14. ☐ Preliminary Amendment 15. ☐ Return Receipt Postcard (MPEP § 503) (Should be specifically itemized) 16. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed) 17. ☒ Nonpublication Request Under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent. 18. ☐ Other: _____
--	--

***Note:** (1) Benefit claims under 37 CFR 1.78 and foreign priority claims under 1.55 must be included in an Application Data Sheet (ADS).
 (2) For applications filed under 35 U.S.C. 111, the application must contain an ADS specifying the applicant if the applicant is an assignee, person to whom the inventor is under an obligation to assign, or person who otherwise shows sufficient proprietary interest in the matter. See 37 CFR 1.46(b).

19. CORRESPONDENCE ADDRESS			
☒ The address associated with Customer Number: <u>31877</u>		OR ☐ Correspondence address below	
Name			
Address			
City	State	Zip Code	
Country	Telephone	Email	
Signature	Date		March 30, 2016
Name (Print/Type)	Registration No. (Attorney/Agent)		50,942

This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	RF BEACON DEPLOYMENT AND METHOD OF USE
-----------------------	--

As the below named inventor, I hereby declare that:

This declaration is directed to: ☒ The attached application, or
☐ United States application or PCT international application number _____
 filed on _____

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Ehud Mendelson Date (Optional): March 30, 2016

Signature: _____

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-8199 and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	MEN-16-001
		Application Number	
Title of Invention	RF BEACON DEPLOYMENT AND METHOD OF USE		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)
--

Inventor Information:

Inventor 1 Remove				
Legal Name				
Prefix	Given Name	Middle Name	Family Name	Suffix
Mr.	Ehud		Mendelson	
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service				
City	Coral Springs	State/Province	FL	Country of Residence US
Mailing Address of Inventor:				
Address 1	11190 Heron Bay Blvd			
Address 2				
City	Coral Springs	State/Province	FL	
Postal Code	33076	Country	US	
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button. Add				

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).	
☐ An Address is being provided for the correspondence Information of this application.	
Customer Number	31877
Email Address	Patents@AllenHertz.com Add Email Remove Email

Application Information:

Title of the Invention	RF BEACON DEPLOYMENT AND METHOD OF USE		
Attorney Docket Number	MEN-16-001	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	12	Suggested Figure for Publication (if any)	

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	MEN-16-001
		Application Number	
Title of Invention	RF BEACON DEPLOYMENT AND METHOD OF USE		

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☒ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	31877		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Division of	14285439	2014-05-22

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	MEN-16-001
		Application Number	
Title of Invention	RF BEACON DEPLOYMENT AND METHOD OF USE		

Prior Application Status	Pending	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
14285439	Division of	14285406	2014-05-22		
Prior Application Status	Pending	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
14285406	Division of	14285332	2014-05-22		
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14285332	Division of	14285273	2014-05-22	9204257	2015-12-01
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14285273	Division of	14285209	2014-05-22	9204251	2015-12-01
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14285209	Division of	12930735	2011-01-14	9020687	2015-04-28
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
12930735	Division of	11396843	2006-04-03	7899583	2011-03-01
Prior Application Status	Expired	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
11396843	Claims benefit of provisional	60670097	2005-04-12		
Prior Application Status	Pending	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
	Division of	14285439	2014-05-22		
Prior Application Status	Pending	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
14285439	Division of	14285406	2014-05-22		

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	MEN-16-001
		Application Number	
Title of Invention	RF BEACON DEPLOYMENT AND METHOD OF USE		

Prior Application Status	Pending	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
14285406	Division of	14285332	2014-05-22		
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14285332	Division of	14285273	2014-05-22	9204257	2015-12-01
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14285273	Division of	14285209	2014-05-22	9204251	2015-12-01
Prior Application Status	Pending	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
14285209	Division of	13135421	2011-07-05		
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13135421	Division of	13932811	2011-03-07	8941485	2015-01-27
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13932811	Division of	12069899	2008-02-13	7924149	2011-04-12
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
12069899	Division of	11472706	2006-06-22	8896485	2014-11-25
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
11472706	Division of	11429864	2006-05-08	8836580	2014-09-16
Prior Application Status	Expired	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
11429864	Claims benefit of provisional	60678947	2005-05-09		
Prior Application Status	Pending	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
	Division of	14285439	2015-05-22		

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	MEN-16-001
		Application Number	
Title of Invention	RF BEACON DEPLOYMENT AND METHOD OF USE		

Prior Application Status	Pending	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
14285439	Division of	14285406	2014-05-22		
Prior Application Status	Pending	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
14285406	Division of	14285332	2014-05-22		
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14285332	Division of	14285273	2014-05-22	9204257	2015-12-01
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14285273	Division of	14285209	2014-05-22	9204251	2015-12-01
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14285209	Division of	12587042	2009-10-01	8866876	2014-10-21
Prior Application Status	Patented	Remove			
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
12587042	Division of	11429864	2006-05-08	8836580	2014-09-16
Prior Application Status	Expired	Remove			
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
11429864	Claims benefit of provisional	60678947	2005-05-09		
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.					

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)¹ the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	MEN-16-001
		Application Number	
Title of Invention	RF BEACON DEPLOYMENT AND METHOD OF USE		

Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	 Access Code ⁱ (if applicable)
Additional Foreign Priority Data may be generated within this form by selecting the Add button.			

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013. NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	MEN-16-001
	Application Number	
Title of Invention	RF BEACON DEPLOYMENT AND METHOD OF USE	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	MEN-16-001
		Application Number	
Title of Invention	RF BEACON DEPLOYMENT AND METHOD OF USE		

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.				
Applicant 1				
If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.				
Clear				
☐ Assignee		☐ Legal Representative under 35 U.S.C. 117		☐ Joint Inventor
☐ Person to whom the inventor is obligated to assign.			☐ Person who shows sufficient proprietary interest	
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:				
Name of the Deceased or Legally Incapacitated Inventor:				
If the Applicant is an Organization check here. ☐				
Prefix	Given Name	Middle Name	Family Name	Suffix
Mailing Address Information For Applicant:				
Address 1				
Address 2				
City		State/Province		
Country		Postal Code		
Phone Number		Fax Number		
Email Address				
Additional Applicant Data may be generated within this form by selecting the Add button.				

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	MEN-16-001	
		Application Number		
Title of Invention	RF BEACON DEPLOYMENT AND METHOD OF USE			

Assignee 1				
Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.				
If the Assignee or Non-Applicant Assignee is an Organization check here. ☐				
Prefix	Given Name	Middle Name	Family Name	Suffix
Mailing Address Information For Assignee including Non-Applicant Assignee:				
Address 1				
Address 2				
City		State/Province		
Country		Postal Code		
Phone Number		Fax Number		
Email Address				
Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.				

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). However, if this Application Data Sheet is submitted with the **INITIAL** filing of the application and either box A or B is **not** checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a juristic entity (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature				Date (YYYY-MM-DD)	2016-03-30
First Name	Allen D.	Last Name	Hertz	Registration Number	50942

Additional Signature may be generated within this form by selecting the Add button.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	MEN-16-001
		Application Number	
Title of Invention	RF BEACON DEPLOYMENT AND METHOD OF USE		

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA/82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	Not Yet Assigned
Filing Date	Filed Herewith
First Named Inventor	Ehud Mendelson
Title	RF BEACON DEPLOYMENT AND METHOD OF USE
Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	MEN-16-001

SIGNATURE of Applicant or Patent Practitioner

Signature		Date (Optional)	March 30, 2016
Name	Allen D. Hertz	Registration Number	50,942
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.



*Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number

Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)



I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above:

31877

OR



I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:



The address associated with the above-mentioned Customer Number

OR



The address associated with Customer Number:

OR

Firm or
Individual Name

Address

City

State

Zip

Country

Telephone

Email

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):



Inventor or Joint Inventor (title not required below)



Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)



Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)



Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature

Date (Optional)

March 30, 2016

Name

Ehud Mendelson

Title

Inventor

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.



Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.132, and 1.133. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**NONPUBLICATION REQUEST
UNDER
35 U.S.C. 122(b)(2)(B)(i)**

First Named Inventor

Ehud Mendelson

Title

RF BEACON DEPLOYMENT AND METHOD OF

Attorney Docket Number

MEN-16-001

I hereby certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

I hereby request that the attached application not be published under 35 U.S.C. 122(b).

Signature

March 30, 2016

Date

Allen D. Hertz

50,942

Typed or printed name

Registration Number, if applicable

561-716-3915

Telephone Number

This request must be signed in compliance with 37 CFR 1.33(b) and submitted with the application upon filing.

Applicant may rescind this nonpublication request at any time. If applicant rescinds a request that an application not be published under 35 U.S.C. 122(b), the application will be scheduled for publication at eighteen months from the earliest claimed filing date for which a benefit is claimed.

If applicant subsequently files an application directed to the invention disclosed in the attached application in another country, or under a multilateral international agreement, that requires publication of applications eighteen months after filing, the applicant **must** notify the United States Patent and Trademark Office of such filing within forty-five (45) days after the date of the filing of such foreign or international application. **Failure to do so will result in abandonment of this application (35 U.S.C. 122(b)(2)(B)(iii)).**

This collection of information is required by 37 CFR 1.213(a). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 5 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing this form, call 1-800-PTO-9193 (1-800-796-9193) and select option 2.

RF BEACON DEPLOYMENT AND METHOD OF USE

RELATED APPLICATIONS

[0001] This application is:

A) a Divisional Application of U.S. Patent Application Ser. No. 14/285,439 filed on May 22, 2014,

which is a Divisional Application of U.S. Patent Application Ser. No. 14/285,406 filed on May 22, 2014,

which is a Divisional Application of U.S. Patent Application Ser. No. 14/285,332 filed on May 22, 2014,

which is a Divisional Application of U.S. Patent Application Ser. No. 14/285,273 filed on May 22, 2014, (now US Patent 9,204,257 on December 01, 2015),

which is a Divisional Application of U.S. Patent Application Ser. No. 14/285,209 filed on May 22, 2014, (now US Patent 9,204,251 on December 01, 2015),

which is a Divisional Application of U.S. Patent Application Ser. No. 12/930,735 filed on January 14, 2011 (now US Patent 9,020,687 on April 28, 2015),

which is a Divisional Application of U.S. Patent Application Ser. No. 11/396,843 filed on April 03, 2006 (now US Patent 7,899,583 on March 01, 2011),

which is a Non-Provisional U.S. Patent Application claiming the benefit of U.S. Provisional Patent Application Ser. No. 60/670,097 filed on April 12, 2005 (now expired); and

B) a Divisional Application of U.S. Patent Application Ser. No. 14/285,439 filed on May 22, 2014,

which is a Divisional Application of U.S. Patent Application Ser. No. 14/285,406 filed on May 22, 2014,

which is a Divisional Application of U.S. Patent Application Ser. No. 14/285,332 filed on May 22, 2014,

which is a Divisional Application of U.S. Patent Application Ser. No. 14/285,273 filed on May 22, 2014, (now US Patent 9,204,257 on December 01, 2015),

which is a Divisional Application of U.S. Patent Application Ser. No. 14/285,209 filed on May 22, 2014, (now US Patent 9,204,251 on December 01, 2015),

which is a Divisional Application of pending U.S. Patent Application Ser. No. 13/135,421 filed on July 05, 2011,

which is a Divisional Application of pending U.S. Patent Application Ser. No. 12/932,811 filed on March 07, 2011 (now US Patent 8,941,485 on January 27, 2015),

which is a Divisional Application of pending U.S. Patent Application Ser. No. 12/069,899 filed on February 13, 2008 (issued as US Patent 7,924,149 on April 12, 2011),

which is a Divisional Application of pending U.S. Patent Application Ser. No. 11/472,706 filed on June 22, 2006 (now US Patent 8,896,485 on November 25, 2014),

which is a Divisional Application of pending U.S. Patent Application Ser. No. 11/429,864 filed on May 08, 2006 (now US Patent 8,836,580 on September 16, 2014),

which is a Non-Provisional U.S. Patent Application claiming the benefit of U.S. Provisional Patent Application Ser. No. 60/678,947 filed on May 09, 2005 (now expired), and

C) a Divisional Application of U.S. Patent Application Ser. No. 14/285,439 filed on May 22, 2014,

which is a Divisional Application of U.S. Patent Application Ser. No. 14/285,406 filed on May 22, 2014,

which is a Divisional Application of U.S. Patent Application Ser. No. 14/285,332 filed on May 22, 2014,

which is a Divisional Application of U.S. Patent Application Ser. No. 14/285,273 filed on May 22, 2014, (now US Patent 9,204,257 on December 01, 2015),

which is a Divisional Application of U.S. Patent Application Ser. No. 14/285,209 filed on May 22, 2014, (now US Patent 9,204,251 on December 01, 2015),

which is a Divisional Application of pending U.S. Patent Application Ser. No. 12/587,042 filed on October 01, 2009 (now US Patent 8,866,876 on October 21, 2014),

which is a Divisional Application of pending U.S. Patent Application Ser. No. 11/429,864 filed on May 08, 2006 (now US Patent 8,836,580 on September 16, 2014),

which is a Non-Provisional U.S. Patent Application claiming the benefit of U.S. Provisional Patent Application Ser. No. 60/678,947 filed on May 09, 2005 (now expired).

FIELD OF THE INVENTION

[0001] This invention is directed generally to the field of navigation and, more particularly, to a method and system to be used to provide infrastructure that can enable indoors or outdoors navigation and special Location Based Service (LBS) based applications in a mall, a store, buildings, a department store, and the like and to provide local based services directly to the user's cellular or mobile telephone.

BACKGROUND OF THE INVENTION

[0002] The scope of the present innovation:

The disclosed invention resolves a great deficiency in the technology available for local businesses especially indoor or in places and area where GPS or other existing technology can't

provide indoor navigation and the accuracy needed. Location Based Services (LBS) represent a huge advertising and mapping market - estimated at over \$150 billion a year. Location Based Services (LBS) represent a large opportunity in the navigation market that has not been explored yet.

[0003] Existing System and Industry Trends:

[0004] Local mapping today is mostly paper: Mall maps, store maps, mapping of department stores, commercial buildings, hospitals, schools, campuses, municipalities, shopping centers, down town districts, indoor facilities, building maps, parking areas, parking garages, amusements parks, subway systems, transit maps, museum maps, area attractions maps, hotel and resort maps Cruise ships and even more importantly the emergency maps and procedures posted in buildings.

[0005] Factors in Local Mapping:

[0006] Local maps can be of either indoor or outdoor locations.

[0007] Local maps are available on paper, on the web and in some cases on a kiosk in the facility.

[0008] A high degree of accuracy is needed in order to provide usable maps for navigation indoors, such as an accuracy that is smaller than 10 m to a store, a parking space, or any other desired location.

[0009] A Global Positioning System (GPS) cannot provide acceptably accurate mapping as it is only accurate to within 100-200 feet. This is the reason that the GPS industry does not provide this type of mapping. The same is true for cellular network providers, as the accuracy is also 100-300 feet, and then the system is only applicable when the GPS signal is available. The GPS signal availability is often a problem when the receiving unit is located indoors and also when operation of the cellular system is most needed: in an emergency situation when most of the cellular network fails due to high demand, damaged infrastructure, and the like. Again, this is the reason that there is no local mapping available for cellular users. (Local mapping equates to accuracy in finding a store, room, or parking level within 5 m.)

[0010] At the time of the original application, there is no indoor navigation solution and no infrastructure that can answer to that need. The most recent technology provides access to a user's location through a combination of group "social networking" and a "buddy list".

[0011] Most technology available today attempts to "locate" a moving user in an area. The disclosed invention reverses that idea and lets the user navigate the local area on the local maps.

[0012] Indoor navigation vs. Outdoor Navigation: Pedestrian navigation is more than locating and navigating, most likely the pedestrian is at or near their destination already. There are two possibilities, either the pedestrian is in unknown surroundings and their task will be to explore the surrounding or they are looking for a specific product. For example, their defined goal can be buying a new pair of shoes, getting a book, just going to shop around, exploring a new location, new deals, sales specials, simply sightseeing, and the like.

[0013] The theory behind the invention is based on the belief that "you are what you do", meaning the user is seeking a predetermined service, special sales, coupons discount, or any other deal. This is one exemplary key to the present invention.

[0014] The main task of indoor navigation is to show the user where the specials, sales, and coupons and directly navigate the user to the associated location. The integration of multimodal journey planning and guidance to dynamic waypoints, sales, specials, and the like. The complex public interchange facilities are not adequately addressed by existing systems.

[0015] A waypoint is a fixed location with known address location, longitude and latitude and coordinates. The disclosed navigation system is capable of storing a database of waypoints for the following purpose:

[0016] Waypoints mark a destination, a point along the way to a destination, or a point of reference. Normally, in navigating, a "route" consists of one or more waypoints. To traverse a route, the user navigates to the nearest waypoint, then to the next one in turn until the destination is reached. The system has the ability to compute a great-circle route towards a waypoint, enabling them to find the shortest route even over long distances. The system enabling users to locate a destination on a map and define it as a waypoint. The system is intended for navigation; it can generate a suggested route between two waypoints, based on the cartographic database.

The system indicates the user's current location and gives advance notice of an upcoming point.

[0017] In some aspects, indoor navigation looks simpler than outdoor navigation. For instance, the geographical area covered is much smaller and the expected speed of travel (walking) is much slower. However, other aspects make indoor navigation actually much more challenging. First, among these is the unsuitability of a Global Positioning System (GPS) and related technologies. Second, in a complex indoor environment, the requirements are more stringent. For example, vertical positioning of a topology and a need for accuracy being more precise than a 5 m distance to the store, the product, and even to the aisle or the parking space cannot be achieved with today's existing system.

[0018] The indoor market represents much greater potential than outdoor navigation, as on average individuals spend more than 90% of their time indoors.

[0019] The objectives and goals behind the present invention include:

[0020] The technology behind the present invention is quite simple: a direct communication between the user device (such as a cellular telephone or mobile telephone) and a Wi-Fi or Bluetooth enabled device (commonly included in new mobile telephones), and Wi-Fi or Bluetooth tags (also referred to as sensors or beacons). The Wi-Fi or Bluetooth enabled devices are installed in known locations within an area (such as a building, a store, a facility, and the like). The communication is provided without relying on GPS, local centralized servers, Internet bandwidth or even cellular communication, or cellular identification (ID) they can be supportive are but not essential.

[0021] The main concept is to use existing, off- the-shelf technology and devices with a minimal cost of deployment and to provide a simple indoor and/or pedestrian technology, which delivers accuracy with an integrated suite of applications especially designed for the user (such as a shopper) within an indoor environment.

[0022] The system includes:

- a. An ability to load local mapping at the facility or pre-load local maps via an application or the Internet prior to arrival at the area.

- b. Ability to have special navigation software either as an add-on to existing navigation on the user's cellular telephone or existing navigation system (car, mobile).
- c. Ability to deploy Bluetooth beacons in the local area where each beacon will be installed in a known location or a waypoint to provide the infrastructure needed to navigate in the area. The infrastructure provides a very low cost and fast deployment beacon system.
- d. Ability or option to use the log of the user Bluetooth identification (ID) or the Bluetooth naming extension as a key (not the cellular telephone number) for future marketing purposes or for emergency use. This aggregation of data will be invaluable to retailers, etc. for example Bluetooth enabled cellular telephones or old Bluetooth headphone can be used as beacons (potentially a good use for millions of old cellular telephones).

[0023] System Segments:

[0024] Beacons: The beacons are Bluetooth or tags installed in known locations in the area or facility. Each beacon represents or transmits information associated with at least one of: a waypoint, one or more store or special sales, places, and the like.

[0025] Scanner detection: Whenever a mobile telephone or mobile device with a Bluetooth capacity is switched on and loaded with the subject application, it will periodically scan the area for the associated Bluetooth beacons. Proximity to the tag or beacon will determine the location of the user on the area and/or facility map.

[0026] Navigation: A navigation route can be plotted between waypoints, a store, or other places on the map.

[0027] Sales or marketing tools options: The disclosed system works by passively observing the initial part of the scanning of movement. The disclosed system does not monitor or listen to conversations or text messages. Nor does the system transmit or intercept any information or interfere with the mobile network operators in any way. The disclosed system is a scanning

detector done by the user (not a receiver or transmitter) which can observe the unique identifier (Bluetooth ID or key set) of the device (not a telephone number or name.) and aggregate resultant data.

[0028] Example of Scenarios:

[0029] A user in a mall can load associated maps of the mall from a Bluetooth WAP system (which can be inside the mall directory), directly to a cellular telephone using a Bluetooth communication.

[0030] A Bluetooth navigation application on the user's mobile or cellular telephone will scan signals from known locations. The Bluetooth beacons can be used determine the user's location on the local mall map (the same way as a Global Positioning System (GPS)) with accuracy of less than 5-10 m. It is noted that the greater the number of beacons with a shorter signal range results in a more accurate location process.

[0031] The associated assumptions are based on the following facts:

- a. Globally, more users carry mobile telephones, more than any other device.
- b. A Global Positioning System (GPS) and existing mapping are not accurate enough to handle local mapping needs, particularly indoors, where satellite signals are not available.
- c. On average, people spend more than 90% of their time indoors.
- d. The Bluetooth protocol is the most used communication method today and it is installed in more than 85% of all new cellular phones. (less than 5% are Wi-Fi)
- e. Bluetooth can recognize other Bluetooth devices in the close proximity.
- f. The technology already exists.
- g. The disclosed innovation is based on direct communication scanning the Bluetooth beacons and the user's cellular telephone without the use of a cellular network, use of the Global Positioning System (GPS), Internet access, or access to a central system.
- h. The available local advertising marketing is huge with over \$150 billion in revenue in the US alone.

[0032] Indoor Location Based Services (LBS) applications can include:

Nav4Parking

Nav4Realty

Nav4Mall

Nav4Sale

Nav4Museum

Nav4Show

Nav4Train

Nav4Sign

Nav4Emergency

Nav4Conference

Nav4ThemePark

Nav4Event

Return2Parking

[0033] The present invention offers a complete suite of applications from finding an available parking spot to navigation of indoor malls and/or stores and with a capacity to navigate to emergency exits with a low cost to implement and with a business model that can be used to attract customers.

[0034] The application represents a big opportunity in the navigation market and will open up new avenues for companies from telephone operators, mall store department store owners, to navigation and mapping companies.

[0035] The present invention provides a low cost and easily deployable infrastructure for local based navigation in both an outdoor environment and in an indoor environment without the need for Global Positioning System (GPS) and/or access to a cellular network. Moreover, the concept is especially suitable for local area (indoor and outdoor) services when and where the Global Positioning System (GPS) and/or the cellular network can't provide a solution and the accuracy needed to provide such navigation (10 m or less).

[0036] The present invention integrates existing Bluetooth technology that is proven to be

stable, simple, inexpensive and mature in market use. Moreover, it is a common communication tool and is available on most of all new mobile telephones.

[0037] System architecture:

[0038] The infrastructure consists of Bluetooth beacons installed in known locations within a local area. The beacons will respond to Bluetooth operating device scanning inquiries made by a user's Bluetooth enabled mobile or cellular telephone or other Bluetooth enabled device operating an application program.

[0039] The known location of the beacon is set in a small local database: the table of the beacon (waypoints are equal to the beacons identities according to the Bluetooth address or name of the beacon) is attached to the local area mapping of the area.

[0040] The local area map (mall map, store, building map, area map, etc.) will be available to be downloaded via a WAP system at the entrance of the building, mall, area, or the directory places to provide the mapping for the navigation.

[0041] A user can also download the map information from a website, such as www.indoormapping.org prior to approaching the location where the user may need navigation. The disclosed system creates an indoor mapping portal, such as www.indoormapping.org.

[0042] A user's Bluetooth portion of their mobile telephone will scan the local area for the location beacons. When a user is within proximity (5-10 meters) of the beacon, the location beacons respond, providing room level navigation accuracy. With multiple beacons installed and possibly receiving more than one beacon's signal, a simple triangulation calculation and options for signal strength will determine the exact location of the user on the map of the local area.

[0043] Other signals not on the database list will be ignored.

[0044] There is a mixed use of beacons and WAP depending on the application. For example, in a mall application, the stores can have a WAP to deliver more content to a user's mobile device or cellular telephone, where the beacons serve as navigation antennae and waypoints to help the user navigate about the area.

[0045] Sales sense, next generation marketing tools, the behavioral option module is as follows:

[0046] Recent published research showed that on average individuals spend 90% of their time indoors. Moreover, according to research, indoor navigation may be more important than outdoor navigation and may represent a huge new market.

[0047] The disclosed technology allows shopping centers, malls, department stores, buildings, airports, train stations, exhibition centers, museums, and amusement parks to understand the way that their customers or passengers flow through their premises. At the same time it provides the user (such as a shopper) with unique indoor navigation capability without compromising user privacy.

[0048] The disclosed innovation will allow, for the first time, the navigation and GPS industry to tap into a localized advertising market, estimated to be over \$134 Billion in the US alone.

[0049] The disclosed technology provides a reliable method for identifying the path habits and the behavior that people take through an area.

[0050] There are a number of advantages to the disclosed technology including:

[0051] Extremely large sample size as mobile penetration is above 90%, shoppers remain anonymous, and the system maintains an accuracy to within 5 m based upon use of Bluetooth technology.

[0052] For retail areas, malls in particular, the advantages of understanding shopper behavior are significant. Such information can assist the mall to:

- ❖ Evaluate and improve their retail tenancy mix by identifying which stores shoppers consider complementary,
- ❖ Identify underutilized areas in the mall,
- ❖ Understand the impact of anchor stores on the mall,
- ❖ Measure the implications of particular promotions or center events,

- * Assist with planning day-today mall operations Provide add-ons for the shoppers,
- * Provide shoppers with a "web" like shopping experience,
- * Provide shoppers with incentives and/or advertising,
- * Increase security, and
- * In an emergency, provides the shopper(s) with alarm and notification.

[0053] The disclosed technology would be the only system available that can continuously and accurately gather information along shopper paths without the need for Internet or cellular communication and all without compromising the shopper identity (ID) or his privacy.

[0054] Over the past six (6) years the proposed concept has evolved into a unique and innovative system and method that can also provide a way of surveying the behavior and preferences of the user shopper simply by observing the anonymous signals (encoding Bluetooth naming key plus the Bluetooth ID) given off by their mobile or cellular telephones and at the same time provide the shopper with a unique special application for indoor navigation.

[0055] The present invention offers the next generation approach to the Location Based Services (LBS) market, especially to indoor applications and to areas where a GPS cannot provide accurate navigation and Location Based Services (LBS) services.

[0056] The anonymous data collected using this technology can be used to provide trend reports showing which shops are most visited and at what times, whether there are sufficient public facilities to serve the visiting shoppers or whether more security staff are needed to name only a few of the potential benefits. Ultimately, the data collected by the proposed system assists shopping centers to become more in-tune with their customers so that they can create better, more pleasant places to visit.

[0057] The analytics associated with the present invention can turn a shopping center, , a department store, or a store into finely tuned site, enabling mall or store owners to direct the flow of traffic efficiently around.

[0058] In contrast to alternative techniques, there is no device that tracks the user's cellular telephone. In the proposed method, the user's device (such as a cellular telephone) scans and

tracks beacons or tags along the route, whereby each scan includes the cell's unique Bluetooth identification (ID) (think IP address), and while these identifications (ID's) help track the movement of the signal and its owner, the system doesn't reveal the identity of the user. This is a more precise method than what **GOOGLE** maps uses to detect a general location on a mobile telephone by cell towers which are accurate between 300-1000 m compared to the accuracy of the present invention, which is below 10 m.

[0059] Some reports about shoppers show how valuable behavioral information actually is, and the profit opportunities that come along with this.

Where they go?

Where they go next?

Where they do what?

When they do what?

Who does what?

Understand behavioral patterns across demographics. Similarities, differences, and much more.

[0060] Sales Sense User Preference Optional Module:

[0061] Every day millions of people access the Internet and enter their profile, personal information, or answer questions about their preferences in order to access a service and/or site, to get incentives, coupons, specials, and the like. These sites use the information for marketing and in some cases, share or sell the information. Recent research has found that most people are willing to give information for incentives.

[0062] Using the profile and records, the surfing habits of the user (IP address) is the way that all the search engine companies make money on the Internet. At the same time they try to direct the content to the user according to the user's profile and/or habits.

[0063] But what about real life? As individuals spend more and more time indoors (again, according to recent research, people spend more than 90% of their time indoors).

[0064] A scenario of searching for store, an item, special sales, and coupons is repeated again and again. The question is how can the system transfer the success of the Internet marketing tool and the easy search for the real life? That is the main idea behind the disclosed invention. What if one can take the profile and/or the user input with them anywhere and not depend on any communication at all; no Internet and no cellular communication is required and, more importantly, without compromising the user's identity. Moreover, the user is in complete control over their privacy, more control than when the user is surfing the Internet!

[0065] In the disclosed innovation, using the associated software, the user enters their profile sales preference and their profile sales preference is encoded into the user's cellular telephone. Bluetooth naming as a key (Sequence of numbers and letters, much like a Vehicle Identification Number (VIN) in cars), the key takes part of the Bluetooth device's address and the user's profile to encode a key.

[0066] There are three (3) ways in encoding generating the key:

(A) Set segment: Segment keys are not unique and help to setup the user segment only. In this case the key is not unique and sharing the key presents no privacy issue.

(B) Generate a unique key to be used like the Internet IP. This can be use with minimal user exposes or when users are registered customers and willing to receive additional incentive as store customers.

(C) Create a dynamic key and multiplies profile according to location and/or user's preferences.

[0067] The profile can include: Gender, age or age range, and sales preference (interest), and does not include any personal profile. The profile may be the same as seeing the user and recognizing their gender, age-range, and other preferences just by looking at the user. The user identification (ID) does not reveal any kind of information that most of websites ask for in a registration process and no personal information, wherein the user's name, address, and/or telephone number are exposed.

[0068] As part of the associated suite of Location Based Services (LBS) applications, the

user's mobile telephone will scan the area for the beacons or tags. The infrastructure of beacons will provide accurate location determination and trigger third party delivery of the right content information to the user according to a decoding of the user key and location will allow the third party to use the user preference segments and provide the user with ads, specials, and incentives according to their profile. "Your customer is telling you what they want, are you listening?"

[0069] The main idea behind this is to provide the user with pin-point content according to their desired preference at the location and also direct or navigate them to the desired location where they can find the store, sales, a special, coupons, or any other information the user is looking for. At the same time, there is also a benefit to the sale, mall, or store owner by getting the next generation's sales tools, getting customers' habits and their sale's profile, and able to serve better and accordingly the customers.

[0070] In the sales sense, a user preference module is an add-on to the sales sense marketing where it joins the user's behaviors module to create a very unique Location Based Services (LBS) business and marketing model the analysis of these spatio-temporal data can supply high level human behavior information valuable to urban planners, local business and the Local Based Services (LBS) marketing.

[0071] Merchant (Mall, department stores, other store) indoor applications can all be included as part of a Nav4mall or a Navstore suite.

[0072] The following indoor applications can be enable to use indoor by using the associated deployed beacon infrastructure:

[0073] Map and indoor Navigation is an application which brings the local mall and/or store map to the digital age, allowing download at the directory stand or pie load from Internet site prior to arriving. The application provides an ability to navigate from waypoints to waypoints on the map directory, essentially bringing the store and/or mall directory to the cellular telephone.

[0074] Search and Find is an application where the store and/or the place where the item or products that are on the directory represent waypoints (beacons or tags) on the loading maps.

[0075] Sales / specials is an application where discounts, sales, and coupons can be added-on or a replacement to a mall or store flyer, wherein the application provides the shoppers at points in the mall or store, it can even direct the user (such as a shopper) to the aisle with the products and/or coupons and directs the shoppers to what they looking for.

[0076] Parking and return2parking: Although not directly the same beacons (for the parking the invention uses long range beacons where in store and/or mall the beacons are short range), this application is a service which assists the user in finding available parking spaces and a process for informing the user of a location where their car is parked.

[0077] Info is an application that provides information about events, restrooms, ATM location, seating area, kid's playground(s), fountain(s), public telephones, and the like to the user.

[0078] Emergency: This application is a very important part of the present innovation. This application offers a solution to provide the user with a unique alarm and notification of an emergency situation without depending on other communication links, such as cellular telephones, which are prone to failure in emergency conditions. The disclosed innovation provides the user within a structure (a building, a mall, a store, and the like) an emergency procedure according to the user's location and, in emergency condition, will help navigate each user to safety.

[0079] Panic: Panic is an application that enables the user to initiate a beacon locating transmission to help others find the user in an emergency condition.

[0080] Regarding Privacy: The system does not collect personal information such as name or telephone number. It does, however, record the mobile telephone's Bluetooth identification

number to build a profile of the user or the use of the mobile or cellular telephone in the area. It is like surfing the web here a user's IP address is recorded for future marketing statistics and surfing habits (with permission from the user). Also as part of the process of introducing the encoding key into the Bluetooth device (user's profile) as describe in the sale sense part, the privacy and security increase to the level where viewing the key broadcast by the Bluetooth device can't reveal any user's identity unless the user requests to be register to get incentive specials, sales, etc., even then, the user's name or other personal ID are secure and only the Bluetooth ID and/or key are recorded.

[0081] Marketing: By directly targeting the consumer standing right outside a business, an event, or walking toward a kiosk or restaurant, merchants can maximize their marketing budget while incorporating a new, inexpensive and effective form of advertising.

[0082] The user is in complete control. They can disable their application at any time or just reject content, there is no spam effect and the user is attracted by incentives rather than generic promotions. In a mall like environment a user's incentive to use of the disclosed innovation can be further enhanced with the use of the associated advantages and packages.

[0083] Isn't this all a bit like "big brother"? Not at all, and it isn't even "little brother. It's much less intrusive or invasive than existing methods that are already in widespread use. For instance, CCTV cameras and number plate monitoring as they do collect personal information such as your image or car number plate. The disclosed innovation represents the next generation shopping experience in shopping centers, malls or stores and fits very well with today's business model. Such a service can be offered for free to the users and backed by advertising and the use of the data by the stores. Such service and application and the ability to include the full suite of applications especially designed for shopping malls and/or stores and include the emergency part of it will also ease the fear of locating the user or any other privacy issue.

[0084] Who benefits from the disclosed technology? Everyone benefits from the collected

trending data. The processes disclosed herein provide a way to collect instant feedback from shoppers without having to bother them for information. In the old days, shopping locations would have employed researchers to survey consumers to collect information. The collected information would take time to collate and the response rates are very low these days, as shoppers have increasingly become reluctant to stop and share their feedback. Hence, the present invention provides a very effective method in the same way that TV networks know how many people watched particular programs and use that information to discern what programs to produce and how to calculate the costs advertisers must pay to promote their products during different timeslots. The disclosed system provides the equivalent for shopping center owners and their resident retailers. It is believed that introducing the disclosed system and the marketing tools above can help the users and the sellers upgrade the real shopping experience of today with the advantage of the web like tools.

[0085] The disclosed innovation represents the next generation shopping experience in shopping centers and malls and fits very well with today's business model. Such a service can be offered for free to the users and backed by advertising and the use of the data by the stores. Such service and application and the ability to include the emergency part of it will also ease the fear of locating or any privacy issue.

[0086] For the first time, the shopper will experience Internet type marketing in the traditional sales and advertising venue.

[0087] The following are benefits consumers could see from shopping center stores, resorts, cruise ships, and others using the disclosed technology:

A. Better in-mall inside events; the disclosed system can monitor how successful they were by monitoring the sheer volumes of people attending and for how long.

B. Provide shoppers and/or guests with next generation sales tools: navigation in your mall store area ships or facility directly to the sales or specials that you want them to go

to.

C. Add on to the store, the mall, the ship, the hotel, the resort, the building directory, and the in-store mall, the cruise ship, the resort, the building, and the like.

D. Take the guessing from the customer's next wants; then send them directly to the products coupons special they might want.

E. Improved public transport links—by monitoring how people traveled to a centre. With the government's current emphasis on helping people to use public transport more effectively, having this kind of information can have a very positive, local environmental impact. Busy shopping center can otherwise create large volumes of extra road traffic, also with the disclosed search4parking and return2parking application can improve traffic, saving time and gas.

F. Eliminate congestion within the shopping center: The disclosed innovation can help centre management understand whether opening hours need to be extended or whether the centre layout needs to be improved to avoid congestion.

G. Improve shopping center and public facilities efficiency: The disclosed innovation's data helps managers to understand which parts of their facility are very busy which means they know when to deploy extra employee, cleaning personnel, security, and the like to ensure proper service.

H. Better security: Over crowding also leaves shoppers vulnerable to pickpockets and other security risks. The disclosed system can identify congested areas and ensure security personnel are deployed appropriately. And in an emergency, the disclosed system can provide instant alarm and notification, even if the cellular communication or another communication system is not available.

I. Improved mix of stores and centre layout: The Application helps identify which stores are popular and which are not. making sure that the best possible layout and mix of shops is provided for visiting shoppers. If some shops are unpopular they can be switched for brands that customers actually want.

[0088] Altogether this makes for a much better shopping experience. It is believed that shopping should be an enjoyable pastime. Who wants to go to shopping center that are congested, poorly laid out, have dirty toilets, are badly positioned for transport links and which pose a security threat to visitors?

[0089] How do shopping centre owners and retailers benefit? The benefits for shopping center owners using the disclosed technology are huge and there are many possible uses for the information gathered. The system can help shopping center owners get a better understanding of how people use their shopping center such as the order of stores they visit and the time they spend in different areas of the shopping center.

[0090] These days, visits to shopping malls are falling with increased competition from supermarkets, retail parks, and the Internet. With visit frequency going down, it is critical that the shopping experience at the mall is exceptional and that is where the disclosed system comes in. The information can assist malls at all levels, from the very mundane to the more strategic questions that they face, such as whether or not the shopping mall has the right mix of retailers across the mall.

[0091] Similarly it could help museums identify their most popular exhibits and help exhibition companies plan their venues more carefully around visitor traffic flows.

[0092] The instant invention provides the shopping center with quantitative feedback on whether the changes the management of the shopping center makes in the mall or general area are successful. One of the ways to do this is by looking simply at how long shoppers or guests tend to stay within a mall or area.

[0093] Don't retailers already measure shopper numbers? Yes they have infrared cameras and counting machines that monitor and count the numbers of visitors to their stores. This measure is known as footfall and has been used by retailers for many years. The disclosed system provides another level of data by looking at the aggregate paths that mobile phone carrying visitors take and the length of time they spend, referred to as "dwell time".

[0094] In the past an area, malls, a building, a cruise ship have focused solely on looking at the numbers of shoppers or guests that they are drawing through the doors (footfall) but when

combined with dwell time, they can get a much more accurate predictor of their performance.

[0095] The system has no idea who you are as an individual, as the system only looks at the path the user's phone takes. The process is analogous to looking at a dot moving around a screen. In isolation, this information isn't too interesting until one looks at the wider patterns and trends and see lots of dots taking the same route or visiting the same areas of the mall.

[0096] What is the Bluetooth identification (ID)? A Bluetooth identification (ID) is like an Internet Protocol (IP) number assigned within a computer network or the Internet. The Bluetooth identification (ID) does not contain or reveal the phone number associated with the mobile device. The phone number and/or the electronic serial number is a reference which the cellular network operator uses to identify your phone. The system uses part of the information as a key to calculate anonymous shopper paths.

[0097] The linkage between the Bluetooth identification (ID) and your personal information is not publicly available. The system does not use or have an interest in this information and it would be a breach of the data protection act for the proposed system (or anyone else) to obtain this information without the user's permission. The system considers the Bluetooth key and/or identification (ID) to be analogous to the Internet Protocol (IP) address that is assigned to a user, each time the user logs on to the Internet. The Bluetooth key and/or identification (ID) contains no more information than an Internet Protocol (IP) address. In fact this analogy is very helpful in explaining how the disclosed system works in more detail, as the following point explains.

[0098] The proposed process does not detect any personal information and has absolutely no idea who the user is as an individual. Although the system has an option for users to register, such as mall and/or store customers, to provide more details about themselves (still excluding any real identifying information). This can be considered similar to a membership card, which would provide the user with incentives, coupons, or special discounts if the user participates in the program. Moreover, recent emergency events prove a need for emergency and notification to the right people at the right time. By keeping the Bluetooth key and/or identification (ID) of the Bluetooth devices that are currently located within the area and/or facility, a Nav4emergency feature can provide instant emergency alarming, emergency notification, and emergency navigation, directing the user to and along an exit route (to safety); all without revealing the

user's identity (ID) or breaching a privacy of any user.

[0099] Next Generation Marketing (the business model): The web advertising and the main focus of search engine success is based on technology that tracks the web user's habits and provides the web user with related ads according to the web user's interests.

[00100] Using the disclosed infrastructure of a Bluetooth beacons and the associated applications in a mall, a store, a shopping center, or in any other indoor facility, the present invention will represent a very unique ability to bring a web-like shopping experience by its ability to maintain records of the user's surfing or shopping habits in the shopping center, the mall, or the store. The system will provide a better shopping experience (coupons, specials, and sales according to the user's shopping habits) and service to the shopper.

[00101] Even though it may look like a privacy issue, the add-on services, the application, and the idea that it may save the user's life (nav4emergency application) combined, with the fact that it does not reveal the person's name or telephone number, it is the same as the everyday use when a user is surfing the Internet, as the user's IP address is recorded by web sites and search engines and provides the basis for the ad sense or other web marketing tools, which can be referred to as sale-sense.

[00102] It is believed that introducing the disclosed system and the marketing tools above can help the users, the merchants, and property management to upgrade the real shopping experience of today with the advantage of the web like tools.

[00103] The present invention represents the next generation shopping experience in shopping centers, malls, and the like, and fits very well with today's business model. Such a service can be offered for free to the user and backed by advertising and the use of the data by the stores. Such service and application and the ability to include the emergency part of it will also ease the fear of locating the user or any other privacy issue.

[00104] For the first time the shopper will experience Internet-type marketing in the traditional sales and advertising venue.

[00105] The disclosed innovation provides valuable solutions that enhance the effectiveness

of ad campaigns. The ability to optimize performance in real time has a positive effect on advertiser satisfaction. The fact that this service is well integrated into the disclosed system is a tremendous advantage.

[00106] The disclosed innovation is a performance-enhancing technology, providing great data and allowing improved customer service.

[00107] It can be an extremely effective way to optimize the performance of offline and/or online advertising campaigns in the mall and/or store environment. For excellence in client services the idea is a clear win-win for everyone.

[00108] Helping to understand where users are going in the mall and/or store in real life and their buying behavior patterns will allow the merchants to continually adjust offers, placements and creative content to improve buy-through and maximize sales.

[00109] The disclosed system will evolve the mobile content into a bonfire revenue center that will benefit the shopping mall operator and merchants alike.

[00110] The user is in complete control. He can disable his application -blue umbrella application any time or just reject content, there is no "spam" effect and the user is attracted by incentives rather than generic promotions.

[00111] Probably the best technical analogy would be to compare the disclosed technology with existing web-based systems that measure viewers of web sites, for example **GOOGLE ANALYTICS**.

[00112] These systems work by embedding tags within each page of the web site being measured, so every time a visitor views a page on the site the tag is flagged. This enables the system to collect information on how a visitor viewed a site. This system won't collect any personal information but it will collect the temporary Internet address of your computer to uniquely identify you (not as an individual but for instance as "Visitor Xyz75a") as well as information on how you use the website such as the order of pages you visited or how long you spent on each page. In a very similar observation, the unique Bluetooth naming key that setup a user pre define profile key to provide the user with advertisements, specials, and/or incentives,

according to their segment and all with complete user anonymity.

[00113] Recently published research shows that, on average, people spend 90% from their time indoors.

[00114] Moreover, according to the research, navigation in an indoor environment may be more important than in an outdoor environment. Navigation in an indoor environment may represent a huge new market.

[00115] The disclosed system will allow, for the first time, the navigation and GPS industry to tap into a local advertising market estimated to be \$134 Billion in the US alone. The disclosed innovation represent the elements of analysis, plus direct local content, plus indoor navigation; all collectively provide a next generation location based model.

[00116] The following discloses indoor location technologies. Various technologies are used for wireless indoor location. These may be classified in two aspects: (1) The algorithm, where the method used for determining a location is used. (2) The physical layer, where wireless technology is used to communicate with the mobile device, such as a mobile telephone.

[00117] Location Methods

[00118] Typically, methods used within indoor locations are borrowed from an inventory of outdoor Global Positioning System (GPS) location methods. Specifically, four types of methods are used indoors:

[00119] (1) Proximity Detection (PD), (2) Received Signal Strength (RSSI), (3) Time of Arrival (TOA) and (4) Angle of Arrival (AOA).

[00120] Proximity Detection (PD)

[00121] This method relies upon a dense grid of antennae, each antennae having a well-known position. But the system reverses the normal detection or localization method. In most cases, the mobile device is detected by a tag or beacon. Conversely, in the disclosed method, the user's mobile device, using special Bluetooth based software, scans the area for a known location and a known list of beacons or tags install in the area, the facility, the store, and/or the building. The

beacons or tags have a known name or identifier (ID) that is broadcast and when the user's mobile device is within a proximity of the beacon and/or tag the user's mobile device is considered to be co-located with the beacon and/or tag. When more than one signal is detected by the user's mobile device, a simple triangulation process is used to determine a more precise location of the user's mobile device. In any case, the short range of the Bluetooth signal in this case and in an indoor environment results in a big advantage as the accuracy can be less than 10 m.

[00122] The disclosed method is relatively simple to implement. It can be implemented over different types of physical media, and it is the disclosed method of indoor navigation.

[00123] Like the PD method, triangulation is relatively simple to implement.

[00124] Wireless Local Area Network (WLAN) (IEEE 802.11b): This midrange wireless local networking standard, operating in the 2.4 GHz ISM band, has become very popular in public hotspots and enterprise locations during the last few years. With a typical gross bit rate of 11 Mbps and a range of 50-100 meters, IEEE 802.11b is currently the dominant local wireless networking standard.

[00125] It is therefore appealing to use an existing WLAN infrastructure for indoor locations as well, by adding a location server. Such solutions do exist in the market. One limitation of such systems is the fact that WLAN tags are relatively bulky and power hungry. Thus, such locators are mainly useful to locate WLAN enabled instruments, such as portable computers. It is noted that in WLAN, antennae are actually part of access points (Apes), through which devices communicate with the access network.

[00126] Bluetooth (IEEE 802.15)

[00127] Bluetooth is a newer wireless local networking standard that operates in the 2.4 GHz ISM band. Compared to WLAN, the gross bit rate is lower (1 Mbps), and the range is shorter (typically 10-15 meters, although there are tags with a range of over 300 feet). The shorter range makes it advantage indoor when you need more accuracy. Also, Bluetooth is a lighter standard, highly ubiquitous (embedded in most phones, Personal Data Assistants (PDA's), PC peripherals, etc. exist in more than 85% of the new cell phones). Bluetooth also supports, in addition to IP,

several other networking services. Notably, Bluetooth supports serial port emulation, voice, and various types of object exchange.

[00128] Bluetooth tags are small, pocketsize transceivers.

[00129] Every Bluetooth device's tag has a unique ID. This ID can be used for locating the tag.

[00130] Bluetooth Indoor Location

[00131] How does Bluetooth location work?

[00132] Bluetooth was not made originally for location or navigation. From the outset, the standard was designed for communication, more specifically, in a Personal Area Networking (PAN) environment. However, to facilitate this task, particularly in dynamic, ad-hoc scenarios, devices need a mechanism to identify their neighbors, to synchronize, and finally to connect. Such mechanisms have indeed been built into Bluetooth. More importantly, these mechanisms can also be used to obtain an accurate location.

[00133] The approaches to Bluetooth location: Finds a tag by using one of two Bluetooth mechanisms, (1) Inquiry and (2) Paging that are used normally for link setup:

[00134] The Inquiry mechanism provides a method for a Bluetooth device to discover its neighbor's Bluetooth identification (ID). An inquiry process typically takes 5 seconds. The process concludes with the inquirer (typically the user cell phone) obtaining and collecting all of the identifications (ID's) of all of the Bluetooth devices beacons (tags) install in the area and/or facility that are in range with the Bluetooth enabled device.

[00135] The Paging mechanism follows an inquiry. The inquirer can page (set up a link with) one or more of its discovered neighbors. A paging process typically takes 1-2 seconds. This mechanism is faster, but requires a previous knowledge of the tag's identification (ID) (as well as the Bluetooth clock phase). The relevant location scenario is that of searching for a certain tag. It is the most accurate and the faster response time and it is the disclosed method indoor navigation when and where each tag is associated with a known address position, referred to as a waypoint.

[00136] Why use Bluetooth for indoor location? Bluetooth has some advantages in the context of indoor location. These include:

- a. Bluetooth uses RF - in the 2.4GHz ISM band, specifically. In this frequency range, radio waves penetrate obstacles, such as walls and human bodies, albeit with a substantial loss.
- b. Bluetooth is ubiquitous - Bluetooth chipsets are being implanted everywhere nowadays (phones, accessories, computing devices, etc).
- c. The fact that a Bluetooth location system can locate any Bluetooth enabled device makes it more cost-effective. This means that an increasing fraction of humans and mobile assets around would become locatable in a Bluetooth covered site, with No additional hardware cost (no tags attached). The only need is to pre-register these devices.
- d. Bluetooth is a low power technology. The proposed tag can operate using a battery for more than 6 months, which is a big advantage over Wi-Fi or other technology.
- e. Bluetooth is a low cost technology. The high expected production volumes (hundreds of millions annually) lead to sub-\$1 per chip. This goal has already been met by several integrated circuit (IC) manufacturers. This would eventually result in a low price for the Bluetooth tags, and Bluetooth location systems would become sufficiently ubiquitous.
- f. Bluetooth is a multi-functional communication standard: Location is only one of the services that can be supported by a Bluetooth infrastructure. The same infrastructure can be used to provide additional network services, particularly remote monitoring and control (by using a serial interface). In addition, Bluetooth provides voice and IP services.
- g. In open spaces, relatively free of obstructions and walls (e.g. a large warehouse or a public hotspot), Bluetooth alone would suffice to provide a sub I meter accuracy and that is the range for locating products in a store in a mall or even go to a product in a shelf.

[00137] Conclusion:

[00138] The Bluetooth technology offers two unique advantages. One advantage is a penetration into the market; more than 85% of the new phones. The other advantage is the multi-service nature of the Bluetooth infrastructure that enables using the location access tags for other purposes, such as for navigating, remote monitoring and control, and for a variety of Internet Protocol (IP) and messaging services.

[00139] Applications:

[00140] The system use and costs should scale well with its ability for multi use in an emergency and in non emergency to provide local navigation on malls, stores, campuses, buildings, hospitals, hotels, cruise ships, resorts, malls, and the like, without GPS or a cellular network using the Bluetooth or Wi-Fi beacon for navigation. Some of the key applications that can be enable to be use by the disclosed infrastructure are:

[00141] Nav4Mall, Nav4Store, Nav4Sale, or just University or Building Navigator: These are applications that explore the indoor mall or inside a department store, in resort or cruise ship navigate to the right place or the store or the department that you need. Navigate on the mall map, the store map, the resort map, or the cruise mapping to find your way around each respective environment using your mobile or cellular telephone or navigation system without a GPS or even without need for cellular communication at all. A new kind of service and new marketing process for the malls, store, resorts, business owners an add-on to local advertising.

[00142] With an indoor navigation based on the local map of the mall and/or store, that will provide the user a navigation to his desire location in the mall and/or store to the right, and receiving content according to his pre-defined preferences the user can be directed to a store, a product, or even an isle inside the store as well a new marketing tool to the store and/or mall owner to get the customer with a new service. The store will have also an option to provide or deliver more content (advertising, sale, coupons, promo, etc.) to the user when he approaches the store and the delivery are trigger by the associated infrastructure of Bluetooth beacons. And in an emergency, the Nav4emergency will kick in from the Nav-store mall suite of applications.

[00143] Nav4Museum, Nav4Conference, and/or Nav4Show:

[00144] These applications explore museum or conference show exhibits in a new unique and easy way, find your way around when navigating on the floor map of the museum conference or the show, indoor navigation, navigate to exhibits restaurants, cafes, lavatories, and the like, all to the user navigation or cellular telephone. Any museum conference or show provided to the attended a mapping to the exhibits, some provide also additional audio device (headset) to obtain more information on the exhibits. The disclosed innovation will provide a unique indoor tools that will allow the attending user to navigate the museum, conference or show in an easy way directly to the user's Bluetooth enabled cellular telephone, when the user reaches their desire exhibit the user will allow the Application to download directly to his cellular telephone and/or other Bluetooth device information about the exhibits. An indoor navigation to the exhibits as well to the restaurants, cafes, lavatories, and the like. Each would be applied to the navigation process or cellular telephone and based on the facility map. And in an emergency, the nav4emergency will automatically initiate.

[00145] Nav4Train (Mass Transit and/or Public Transit Navigation):

[00146] For all the users of mass transportation system the disclosed innovation will allow locate and point the user to the exact station or location on a route, an easy way to navigate in the train, subway, underground kind of system, a new way of a subway or bus mapping indoor and/or outdoor locations and directly to the user's navigation or his cellular telephone. Every day millions of people are using the mass transportation system, trains, subways, buses, each of the passengers depend on the transportation map for the route information as well as schedules and additional services provided by the transportation system. Most of the passengers of today carry with them a cellular telephone. The disclosed unique innovation will provide the passenger with the navigation inside the transportation system directly to the passenger's Bluetooth enabled telephone; the passenger will know exact location and/or station on the route as well with additional option information like schedules. A new add-on service to the transportation providers as well to the passengers, utilize the disclosed indoor navigation method, and in an emergency, the Nav4emergency application will kick in.

[00147] Nav4Theme Park (Amusement Park Navigation):

[00148] Amusement Park Navigation provides navigation processes to your desire attractions

as well with a new way for register to an accelerated queuing line all in an easy way to the user cellular telephone without need for GPS Provides a new media and-on service. Ever wonder what it will be like to navigate inside the amusements park to the desired attraction, to know the schedules of the shows at the attractions and even to get your "fast pass" from a remote instead of standing in line. With the disclosed unique innovation all can be become reality and directly to your cellular telephone without the need for a GPS or even cellular communication. It is believed that the disclosed innovation can provide a new tool and service to the benefit of the amusements parks as well to the user. And in emergency, the emergency part will kick in without a need for cellular communication that tend to fail in emergency.

[00149] Cellular next "Killer Application":

[00150] Emerging technology markets are always on the lookout for that elusive killer application. The killer application is a precious, irrefutable application that makes adopters stand up, take notice, and open their wallets. Once it's found, and as soon as adopters realize firsthand the value to be achieved, that killer application eventually expands into other, more advanced areas of adoption and innovation. According to research, the next in cellular telephony will be service depend on location base programming, when the cellular telephone user will receive information according to his location.

[00151] At the original time of writing this specification, there are more than 4 billion cellular telephone users in the world. Each day, thousands more sign up. A variety of mobile devices have been developed in recent years that are capable of supporting dynamic navigation and location-based' services applications. These include wireless telephones, Personal Data Assistants (PDA's), portable computing tablets, and other Smartphone Personal Navigation Devices (PND's) and laptop computers, the disclosed concept will work even on older cellular telephones. It is believed that the disclosed innovation will meet the desire of wireless service providers to increase their average revenue per user.

SUMMARY OF THE INVENTION

[00152] In accordance with the present invention, these are the associated characteristics of

the invention:

[00153] The main object of the present invention is to provide accurate indoor navigation using an application adapted for indoor environments without a need for use of a Global Positioning System (GPS), without access to a central system, and without costly infrastructure. An additional objective it to accomplish the indoor navigation without a need for access to the Internet or any cellular communication.

[00154] It another object of the present invention to provide a method to provide indoor navigation using an indoor application that employs Bluetooth enabled devices, more particularly targeting Bluetooth enabled cellular telephones.

[00155] It is another object of the present invention to provide a method using the indoor navigation application for malls, department stores, regular stores, buildings, down town centers, and other facilities and/or areas. This is especially useful, but not limit to, indoor environments.

[00156] It is another object, the present invention provides a marketing model method directed towards, but not limited to, the Location Based Services (LBS) market.

[00157] It is another object, the present invention provides a business model method directed towards, but not limited to, the Location Based Services (LBS) market.

[00158] The foregoing and other objects of the present invention are achieved by providing an infrastructure of a Bluetooth beacons or tags installed in known locations in the area or a facility. Each beacon or tag would have its own unique identity (ID) and a Bluetooth name to identify the location in the area, the beacon or tag broadcasts the identity (ID) thereof.

[00159] Mapping of the area and/or facility will be downloaded at the area and/or facility or pre download prior to arriving at the area and/or facility, the mapping contain a lookup list of the beacons or tags installed in the area represent a waypoint on the map.

[00160] In a disclosed indoor application, instead of GPS, the disclosed system can use known waypoint positions that are manually detected and identified as a demonstration of the concept of using another sensing method, such as RFID, to detect and identify the waypoints. Theoretically, it would be possible to convert the waypoint positions into GPS coordinates and emulate an

external GPS data source.

[00161] The indoor application relies upon a dense grid of beacons or tags, each having a known position. But the system reverses the normal detection or localization method in most cases. Converse to the common practice where the mobile device (cellular telephone) is detected by a beacon or tag in the area, in the disclosed method, using the described Bluetooth based software, the user's mobile device scans the area for beacons and/or tags installed in the area, the facility, the store, the building, and the like. The beacons or tags have a known name or identification (ID) that is broadcast and when the user mobile is in the proximity to the beacons or tags, the mobile device is considered to be co-located with it. When more than one signal is detected by the mobile device, a simple triangulation process is used to determine the location of the mobile device based upon the known locations of the beacons or tags. In any case, the short range of the Bluetooth signals, and more so in the case when the system is used in an indoor environment, the infrastructure and system introduces a big advantage, as the process provides an accuracy that can be less than 10 m. The disclosed innovation reverses the current idea of locating the user by letting the user navigate utilizing to the sensor network of Bluetooth beacons (whose signal is sent by way points) directly to the user's mobile device. This will allow Location Based Services (LBS) (Local Base System) navigation, even indoors exclusive of a Global Positioning System (GPS) or use of a Cellular network.

[00162] The application on the cellular telephone or any other Bluetooth enabled device will scan the area and/or facility for the known list of the beacons or tags. The identity (ID) or name when a Bluetooth beacon or tag matches the list, the process enables a response with a proximity detection establishing within a 5 meter accuracy. When more than one beacon signals are received, a simple triangulation analysis can be accomplished to determine the current location. Other Bluetooth or Wi-Fi devices not on the list will be filtered out.

[00163] The locating process is established and will be displayed on the map on the device. Because the location of the other beacons or tags are known, navigation between the current location and a different desire beacon or tag representing a target waypoint is easy to achieve.

[00164] In reality no two-directional communications are establish between the beacons or tags and the cellular telephone.

[00165] The disclosed system is a navigation method based on the following unique characteristics:

[00166] One idea behind the present invention is based on a concept of direct communication between mobile telephones and a beacons and/or sensor (referred to as way points). No Internet or cellular network connectivity is needed.

[00167] The system is based on Bluetooth communication protocols, which are available on almost any new cellular telephone.

[00168] The disclosed innovation reverses the current idea of locating the user, wherein the present invention lets the user navigate utilizing the set of beacons of Bluetooth beacons (whose signal is sent by waypoints) transmitting a signal directly to the user's mobile device. This will allow for Location Based Services (LBS) navigation, even when the user is in an indoor environment. More specifically, without any aid from the Global Positioning System (GPS) or a cellular network.

[00169] The beacon signals can reach from 10 meters to more than a 1000 meter distance depending on the application. To get more accuracy, less range, and more beacons may needed so the 10 meter distance is more than needed in a building, a room, or any other suitable environment. Increasing the signal range to the box can be as simple of attaching bigger antenna.

[00170] To comply with privacy concerns, the disclosed method takes the user's privacy to the highest level. Although the disclosed method is like creating a cookie in the cellular telephone, the disclosed method is not the same as an Internet cookie, where the cookie is generated and controlled by the web sites. The disclosed method utilizes a user's profile generated by the user and controlled by the user and more importantly, encrypted and secured as a key.

[00171] The user is in a complete control. The user has a choice to turn it on or off at any time.

[00172] The proposed system respects user privacy and does not collecting any personal identification, such as the user's name, address, telephone number, or any other personal information.

[00173] Moreover the profile input by the user is encoded as a key, with multiple profiles to choose from. The possibility of recognizing the user by the key is close to none.

[00174] There are three options for the user preference:

1. Only user segments generate key, no specific user identification (ID).
2. Segments and part of the Bluetooth device ID encode as a key.
3. The user can choose to be registered (membership privilege, student in a university, school, and business, especially for receiving direct incentive specials, coupons, and the like. Registration can also be adapted for use with nav4emergency protection.

[00175] The proposed system allows the user to choose between participating and receiving incentive, special sales, coupons, and local content tailored to the user's preferences, all for free, or they can choose not to participate and pay a small fee for the service and the software. In any case, the user's privacy is still protected to the highest level compared to any normal daily use of the Internet!

[00176] There is also a great benefit to the participating user. The participating user can have full emergency notification directly to their cellular or mobile telephone and in an emergency, the user can be directed by the emergency procedure in the area, a building, a mall, a store, or any other established region, navigating the user to the exit route, even if the cellular network in the area fails due to the high volume of traffic occurring in an emergency situation, an outage, or any other disabling scenario.

[00177] In the disclosed method, there is no detection or tracking of the user. The user themselves, engages the scanning and detecting method to find the beacons in the area.

[00178] The disclosed secure encoding key method can be used to secure other applications or processing where the privacy and security are needed most in a Near Field Communications (NFC) Applications.

[00179] Other than that, an application for the benefit of the user, including parking, sales, specials, indoor navigation, informing and notifying the user in case of emergency, directing the user to along an exit route to safety, and the like.

[00180] The disclosed method can be attractive not only for shopping malls, department stores, or downtown strips, but also to high rise buildings, commercial buildings, universities, schools, museums, amusements parks, trains, subways, hotels, and other venues or locations.

[00181] It can also be attractive to search engines, advertising companies, cellular telephone operators, manufactures, GPS companies, mapping, local businesses, local advertising. The disclosed method can give the Location Based Services (LBS) a new meaning, a business model that's made easy.

[00182] A facet of behavioral targeting has been around for a while but mostly on-line, but the collection of behavioral patterns has been gaining traction among advertising agencies retargeting program is now a key planning consideration for its advertisers.

[00183] Why? The primary reason is because retargeting is a powerful means to bring lift to advertising campaign results, which generating higher conversion rates and lowering acquisition costs. Advertisers can't get much more effective than targeting a person who has shown interest in a product but didn't buy with a related ad that then gets him to buy, right?

[00184] The legacy of Location Based Services (LBS) technologies that marketers today rely on generally fail to tap the unique opportunities of local advertising market estimates to be over \$150 Billion in the United States alone, people are spending more than 80% of their time indoors, but with no clear technology to provide indoor navigation and not clear business model, The advertisers, the business are disillusioned with the promise of Location Based Services (LBS) but are still longing for a solution that properly addresses the significant audience represented by the explosion of cellular telephones use and the availability of content.

[00185] It is believed that the disclosed innovation technology and business model can provide the next generation method for the Location Based Services (LBS) market to tap into the huge market opportunities.

[00186] Where the disclosed invention is unique:

[00187] The present invention is based upon a Bluetooth protocol, which, at the original time of disclosure, is integrated into more than 85% of the new cellular telephones (compare to only

5% of Wi-Fi). As explained before, the disclosed method represents more accuracy and practical deployment than Wi-Fi.

[00188] The disclosed method employs an infrastructure that enables navigation and Location Based Services (LBS) applications without assistance from GPS or cellular identification (ID), and more precise, indoor navigation. The disclosed method is not for tracking or locating user, the disclosed method is directed towards providing an easy deployment infrastructure in a building, an area, a mall, and/or a store, using a known deployment of beacons or tags that are installed in known locations in the area and serve as Location Based Services (LBS) and navigation infrastructure and a triggering mechanism to allow delivery of desired content to the right people at the right time.

[00189] The disclosed method is about navigation, and more precisely directed towards indoor navigation. The disclosed method is not for tracking or locating the user; it's about providing navigation to a user with a Bluetooth device located within a building, an indoor area, a mall, a store, and the like, by using to a known setup of tags and/or beacons that are installed in a known positions in the area.

[00190] The navigation can be for a physical location like a store, a restroom, etc., or for sales, coupons, specials within an area, a store, and the like.

[00191] The navigation method would be analogous to a current GPS method, displaying information on a map of the area, the store, the mall, or any other associated region.

[00192] The disclosed method represents a very unique way of locating the exact location. In the disclosed method, the user scans the area for a known list of beacons or tags. There are no detectors and no scanning for the user's device and/or cellular telephone. The user controls the scanning of the area for the known tags. In reality, there is no two-way communication to be established. The user's device scans the area for a known tags and the determination of the location would be accomplished by the ability to scan and find beacons or tags from the list. Better interpreted, the location is established by the proximity of the user's device to the beacon or tag, noting that this process provides an accuracy to less than 5 m.

[00193] Additionally, the special indoor application can be designed especially for indoor

applications, such as within a store, within a mall, within shopping plazas, finding where the user parked their car, finding and/or searching a directory, providing an emergency alert and notification, and others.

[00194] Moreover, all the disclosed features do not depend upon cellular communications or access to the Internet. For the navigation method, there is no need for central system or any expensive infrastructure. In fact, the user's device or cellular telephone in conjunction with the infrastructure beacons or tags utilize battery power and can work in a condition where power provided by the electrical infrastructure is unavailable. This capability is very important in most emergency situations.

[00195] Moreover, the disclosed sale sense marketing method comprises a unique way of delivering local content, advertising, coupons, specials, sales, and the like. The delivered content is pin pointed according to the profile or preferences entered by the user and encoded as a security key into the user's Bluetooth name or identifier (ID) to be decoded by a recipient that will decode the user's profile and/or preferences. With additional records of user behavioral activity, the process can provide simple and secure method for targeting the user for Location Based Services (LBS) services and other services like Near Field Communication (NFC).

[00196] The user profile is not a text or file that resides on the user's device. The user profile is a key encoded into the user Bluetooth naming and can be recognized only by the deliver entity that can decode the user key (like a Vehicle Identification Number (VIN)). The user profile is not the device profile and not the user device profile.

[00197] The disclosed innovation will enable a full line of indoor navigation application especially to places or areas where the GPS can't be utilized and/or where more accuracy needed.

BRIEF DESCRIPTION OF THE DRAWINGS

[00198] A better understanding of the present invention may be obtained by reference to the accompanying drawings, which should be considered in conjunction with the detailed description, all in accordance with the present invention.

- [00199] Figure 1 presents an exemplary flow diagram describing an indoor navigation procedure;
- [00200] Figure 2 presents an exemplary flow diagram describing a sales sense marketing procedure;
- [00201] Figure 3 presents an exemplary flow diagram describing of user profile and/or preferences feature;
- [00202] Figure 4 presents an exemplary flow diagram describing use of a user selected preferences configuration and an optional behavioral log to deliver relevant content to the user;
- [00203] Figure 5 presents a schematic diagram representative an exemplary next generation local base services (LBS);
- [00204] Figure 6 present a plan view of an exemplary implementation of beacons or tags as an indoor infrastructure, wherein the exemplary illustration presents a deployment within a mall;
- [00205] Figure 7 presents a plan view of a display on a user's device, wherein the user's device is a mobile telephone displaying an exemplary indoor map, wherein the exemplary indoor map is one feature of a mall application;
- [00206] Figure 8 presents a schematic diagram representative of exemplary features associated with an indoor mall and/or store Location Based Services (LBS) application as activated on a mobile device, wherein the Location Based Services (LBS) would be enabled by the associated infrastructure;
- [00207] Figure 9 presents a schematic diagram representative of exemplary features associated with the indoor mall and/or store Location Based Services (LBS) application as activated on a stationary facility directory;
- [00208] Figure 10 presents a schematic diagram representative of exemplary features associated with various Location Based Services (LBS) applications as activated on a mobile device and enabled by the beacon and/or tag infrastructure;

[00209] Figure 11 presents a schematic diagram representative of a return2parking Location Based Services (LBS) application; and

[00210] Figure 12 presents a schematic diagram representative of a nav4emergency Location Based Services (LBS) application.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[00211] In all the figures of the drawings, features, sub-features and integral parts that correspond to one another bear the same reference symbol.

[00212] Referring now to the drawings in detail and first particularly to Figures 1-12 thereof.

[00213] A flowchart illustrating indoor navigation enabled by the infrastructure according to one embodiment of the present invention is illustrated in FIG. 1. The user, carrying an operating cellular telephone 100 would approach a facility or other area with a preloaded facility or area map 101 and a known list of waypoints represented by Bluetooth beacons and/or tags installed in the facility and/or area, or the user can download the facility and/or area map 101 with a known list of waypoints upon reaching the facility and/or area. The associated Bluetooth beacons and/or tags would be installed in known places. The user mobile telephone navigation application will scan 102 the facility and/or area searching for any of the Bluetooth beacons and/or tags that are on the list of known Bluetooth beacons and/or tags. If any beacons or tags were found 103, then when found 105, the location of the user is determined by a proximity to the found and matched beacon or tag from the list of beacons or tags 106. Scanning would continue if no tags 104 were found. When a beacon or tag is found 105, the location is displayed 107 on the loaded map presented on the mobile telephone or Bluetooth device. The application additionally provides an ability for presenting navigation 108 between waypoints to the user. The accuracy of this system is below 10 m and in case of approaching signal from more than one beacon and/or tag, a triangulation method can be performed to determine the exact location of the user. The method gives the user the control and the privacy as the user's cellular telephone device is the scanner

and it scans the area. In reality and the unique method there is no established communication at all as the scan reveals the beacons and/or tags names (store or exact location address/name) or waypoint location (for example, Macy's). This is accomplished without any need to establish any communication between the beacons and/or tags and the respective cellular telephones.

Additionally, there is no need for access to the Internet, use of GPS, use of a central system, or even cellular communication to perform the navigation, making this solution a unique approach compared to other indoor navigation methods.

[00214] A flowchart illustrating of the sales sense marketing option algorithm according to an embodiment of the present invention is presented in FIG. 2. In the sales sense option method, the user inputs their profile preference into the respective application. The profile can contain gender, age or an age range, sales preferences, and any other suitable characteristic of the user. The information will be encoded into the Bluetooth naming of the cellular telephone as a key 201, such as a Vehicle Identification Number (VIN). To provide maximum privacy and security to the user, there is no personal identification (ID), cell number, or any other information that might reveal the identity of the user, just information that is set by the user preference and sales segments without compromising the user's privacy. When the user approaches the area and/or facility containing the associated infrastructure of the deployed beacons and/or tags, the application identifies the beacons and/or tags and triggers content delivery 202, such as mappings, advertisements, coupons, specials, and the like. The process provides the user with the mapping of the area and/or facility. The process determines and identifies 203 the user's profile based upon decoding the Bluetooth key name 201 and sets the sales segment and preferences 204 accordingly. The feature will provide the user with the area and/or facility mapping and/or the local content according to the user's profile and/or established preferences. The local content provides direct and targeted method of delivering local content, including advertising, coupons, special, sales, and the like. The user's location is determined by scanning the area and/or facility 102 for the known list of beacons or tags and determined by a proximity 106 to the located

beacons and/or tags. Movements of the user's location around the area and/or facility are logged. The log of the movement of the user around the facility will provide a behavioral sales method, which would be added to the sales segment and preference 204. In a unique part of the method of the present invention, not only can the application provide direct content according to user's location, but the application also can direct and navigate 108 the user with directions on how to reach a place of special sales, coupons, and other places associated with the sales segment and preference 204, thus providing a complete and unique approach to indoor navigation where the user's own input of profile and preference 204 with the user behavioral sales habits can benefit both the user and the store and/or facility by providing the user with direct local content and even navigate the user to one or more desired places. The desire locations can include a store location isle where the sale special coupons take place. Again, the application and associated process operates without compromising the user's privacy.

[00215] A flowchart illustrating creation and use of a sales sense user preferences and/or profile options according to an embodiment of the present invention is illustrated in FIG. 3. The user can choose preference to be encoded as a key into the Bluetooth name 301. The options represent an ability of the user to become and obtain benefits of a membership, including such benefits from the facility, the store, the mall, wherein, by providing additional profile and/or preference information, the owner of at least one of the area, the facility, the store, or the mall can use the profile and/or preference information provided by the user to provide more direct and targeted contents to the user but under control of the user, and all while maintaining great attention to the user's privacy. Option 1 is part of the application where the user preference is encoded 302 as a key into the Wi-Fi and/or Bluetooth naming in a method that only the sales segment can be reveal and the user may pay a fee for the software or receive no incentive 303. In another option, option 2, the user provides preferences with part of the user Bluetooth device ID encoding as a key 304. The user accepts an incentive 305 for allowing an inclusion of additional profile information. The incentive 305 can be in form of a special sale, coupons, and the like.

Again, no personal information is exposed and the user is in complete control over the information and/or the software at all times. In Option 3, the preferences of a registered users are encoded as a key 306. In this option, the user would register as a member of the store, the mall, the facility, and/or any other relation to get the full benefits of the system and to be recognized accordingly (again not personal information or any identification (ID) is exposed). For example, when the user enters the store, the mall, the facility with his carry on profile and/or preferences, the user will accept loyalty incentives for including and allowing release of the additional profile information as a membership 307. In all of the options, the user's key will be decoded when the cellular telephone or other Bluetooth enabled device is within the area and/or facility and any and all relevant content would be delivered to the user's cellular telephone or other Bluetooth enabled device according to the user's preference and/or profile 310. Again, all of this is accomplished under user control and without compromising any user privacy.

[00216] A flow diagram illustrating of option secure user's preferences and/or profile according to another embodiment of the present invention is presented in FIG. 4. The user selects preferences and/or profile to be input and encode into the Bluetooth name as a secure key 401. The user's mobile telephone, employing the special navigation application, scans the proximity area 402, in the area and/or facility. The user can pre-load the map before accessing the area or upon accessing the area or the application can trigger receiving the area map. The decoding key will be processed 403 and will establish a user's preference and sales segments. An optional behavioral log 404 will be added to the decoded user key information 403 to provide the user's profile, the user's preference, and the user's behavioral information about the user all under the user control and without revealing the user's identity (ID) or affecting the user's privacy. It is analogous to bringing web sales into the reality and gives the user the ability to receive a direct local content according to his preference that will be delivered 405 to the user's cellular or mobile telephone according to the user's profile and/or preferences.

[00217] A flowchart illustrating of the next generation local base services (LBS) according to

another embodiment of the present invention is presented in FIG. 5. In the proposed process, the system brings together the user's input profile and/or preferences 501 and the user's behaviors 502 in the area, the facility, the store, the mall, and the like to be integrated into the proposed sales sense marketing method 200 where a direct and targeted local content 503, advertising, special sales, coupons, and the like can be used as a trigger to initiate pinpoint delivery of content to the user according to the user preference's 501 and the user's behaviors 502, as well as directing / navigating 208 the user to the desired store area isle where the sales, specials, coupons, and the like are.

[00218] Another exemplary implementation of an infrastructure of beacons or tags in a mall application according to an embodiment of the present invention is presented in FIG. 6. Each of the Bluetooth beacons or tags contain the name of the waypoint (for example: Macy's) and the location of the beacons or tags are known and loaded into a list with a map 101 of the facility into the user mobile device 100. The list allows matching of the beacons or tags signal (names) 602 to the known list loaded with the map 101 to determine the proximity to the beacon or tag providing accuracy to less than 10 m. The beacons or tags 602 can be installed in each location designated as a way point, including a store, a rest room, a special, sales, a specific location, and the like. The user can load the map 101 at the entrance 603 from a directory stand or preload the map 101 from the Internet, any other Location based Services (LBS), or a map provider. The beacons can also be installed in a parking area 604 and, include additional sensors to determine an existence of a car parked in the parking area. The system can provide the user with navigation for parking by directing the user to empty or available parking spots.

[00219] An exemplary illustration of the user mobile telephone 100 with the indoor mapping 101 is presented in FIG. 7. The user's mobile telephone 100 will load the map 101 of the area, the facility, the building, and the like when arriving at the respective location or prior to arriving by preloading the map from an indoor mapping portal, which would be accessed over the Internet.

[00220] An indoor mall and/or store application that can be enabled by using the associated infrastructure for indoor navigation is presented as a schematic diagram in FIG 8. The present invention provides a complete indoor application to the benefit of the user. In a way, the application is like taking the directory stand and indoor navigation to the user mobile telephone 100, starting with a parking feature 801, which can include an ability to find an available parking spot and an ability to find where the car parked (return2parking method). Another feature includes a directory 802 of the mall or store, including which isle products are located on. The application offers a find feature 803, which provides an ability to search and find items, products, locations, and the like. The application offers a navigation feature 804, which provides navigation to the user for guidance between waypoints. The application offers a content delivery feature 805, which provides information pertaining to sales, specials, coupons, and sales events, important information pertaining to the area and/or facility (such as rest room locations, key areas, playground or other kids areas), and the like. In emergency situation, the application offers an emergency and exit route navigation feature 807. The emergency and exit route navigation feature 807 provides the user with emergency information alarming and notification directly to the user's cellular or mobile telephone even if other communication methods, such as cellular communications are inoperable or unusable during the emergency situation. The user can be notified and directed to the safety exit via the included Nav4emergency method as part of the emergency and exit route navigation feature 807 of the indoor application. The application can additionally include a panic feature 808, where the user can punch or activate the secure panic button to ask to be located immediately by the authorities.

[00221] The same application can be utilized through a mall or other directory 901, as shown in a schematic diagram presented in FIG. 9. The mall or other directory 901 would include the same application features as described in FIG. 8, where each feature would be activated by contacting a respective button. These include the parking feature 801; the area directory 802; the search and find feature 803; the navigation feature 804; the sales, specials, and coupons feature

805; the information feature 806, the emergency and exit route feature 807 including emergency information notification, emergency procedures, and exit routing, the panic feature 808, and any other suitable feature. Directories 901 would be deployed about the respective area, the directories containing each of these features, which would be directed towards the area, facility, mall, store and the like associated with the directory 901.

[00222] The indoor or Location Based Services (LBS) application can be adapted to include any of a variety of navigation features, as illustrated in an exemplary schematic diagram presented in FIG. 10. The schematic diagram illustrates an exemplary variety of indoor applications that can be used. A first exemplary feature is referred to as Nav parking 1001, which provides parking information in a parking garage, a mall parking area, and the like to provide the user with direct navigation to an empty parking space. Additionally, the Nav parking feature 1001 can provide the user with information or navigation to the location where the user parked their car, referred to as a return 2 parking feature. A Navrealty feature 1002 provides the user with real estate content triggered by the user's exact location determined by the associated infrastructure Bluetooth beacons or tags. This can include a navrealty function 1002, providing local area real estate information directly to the user's mobile telephone or device, including navigation information if desired. A Navmall / store feature 1003 provides the same functions as previously described herein. A Navsale feature 1004 provides the user with information pertaining to special, sales, coupons, and the like. The same method can be use as a museum conference show feature 1005, where the beacons or tags are installed in known locations throughout the show conference museum. The same method can be used as an amusements parks feature 1007 for locations, such as Disney resorts, Universal Studios, and the like. Using the amusements parks feature 1007, the user can be provided with navigation in an area where GPS navigation is inaccurate and unable to provide location support. Additionally, the amusements parks feature 1007 can provide the user with navigation information, including tickets and fast pass information and locations with accuracy less than 10 m directly to the user mobile device

and all without requirement of Internet bandwidth, or cellular communications or GPS. A Nav emergency feature 1008 provides the user with various information associated with an emergency condition. In an emergency condition, the Nav emergency feature 1008 provides critical information that each user might need for an emergency procedure, an emergency map, and navigation on how to go to safety from the user's current location. A Nav Train feature 1006 provides the user with information related to public or mass transit transportation. The Nav Train feature 1006 can provide information related to a subway, an underground or train mass transit, a bus transportation system, and the like. The Nav Train feature 1006 can provide information directly to the user's mobile or cellular telephone, wherein delivery of the information is triggered by the infrastructure of the beacons and/or tags installed along the route. The information provided gives the user complete navigation on a map of the train, subway, or other mass transit routes directly to the user's mobile or cellular telephone or other suitable electronics device without need for bandwidth, the Internet or the cellular communication.

[00223] A return 2 parking feature is presented in a schematic diagram illustrated in FIG 11. A long range Bluetooth beacon with set identifier (ID) having a range of over 1000 m can be install inside a car or other vehicle 1101, as a separate device 1100, or as a component of the car by the manufacturer and will broadcast 1102 the car identification (ID), which can be a Vehicle Identification Number (VIN), or a special identification (ID) set by the car owner or the car manufacture. The device 1100 can be integrated into the car to provide the signal broadcasting of the car identification (ID) or the Vehicle Identification Number (VIN). The car identification (ID) will be scanned by the return2parking application and forwarded to the user's mobile telephone 100. The scanning result can be displayed inside a series of circles 1103, where each circle 1103 represents a range to the parked car 1004. Directional indicators 1105 can be employed to present a direction to the parked car 1004. The user can find the user's parked car 1004 inside a garage or outside in another area to the accuracy of less than 10 m. The navigation provided guides the user directly to the user's parked car 1104 by presenting the navigation

information on the user's mobile or cellular telephone 100. This is again accomplished without a need for any Internet bandwidth or access to the Internet use of any cellular communication.

[00224] A Nav4emergency feature 1201 is represented in an illustration presented in FIG 12. The illustrated part of the Nav4emergency feature 1201 displays an emergency map and/or an emergency procedure that is unique to each facility, building, place, mall, store, company, floor, and the like. The map can be displayed as part of the Nav4emergency feature 1201 on the user's cellular telephone 100 as part of the standard map or an emergency map and can include a procedure to show the exit and emergency route(s) in case of an emergency condition. The same program can provide alarming and notification, including important and critical information for the user anywhere. The information will be provided to the user even if during the emergency event, the cellular network or other communication method is shut down or not available, which is common during most emergency events, such as 9/11, the incident at Virginia Tech, among others. In the disclosed invention, all of the critical information from the emergency procedure to emergency maps and navigation to the exit (a safety location) are accomplished without any need for Internet bandwidth or cellular communications.

CLAIMS

What is claimed is:

1. A method, comprising:

defining a geofence using a network of one or more beacons, wherein each beacon is a communication device configured to provide a signal detectable by a baseband subsystem of a mobile device located within a communication range of the respective beacon, defining the geofence including:

associating the network with a geographic region, wherein the signal from at least one beacon in the network is detectable by a mobile device located in the geographic region;

designating an encompassment of the geographic region as the geofence; and

associating a task with the geofence as a location based service;

advertising the geofence, including broadcasting, by each beacon in the network, an identification signal indicating that the beacon is a component of the network;

determining that the mobile device has entered the geofence when the mobile device is in communication with at least one beacon in the network; and

transmitting, by a beacon in the network, information on the task and a list of unique identifiers of other beacons in the network, wherein the list is usable by the mobile device to register the unique identifiers with the baseband subsystem for the mobile device to determine whether the mobile device has entered the advertised geofence and whether or not to trigger the mobile device to perform the task,

wherein transmitting the information is triggered by the mobile device making a contact with any beacon in the network and is conditioned upon the contact being a first contact between the mobile device and any beacon in the network, and

wherein the method is performed by one or more processors.

2. The method of claim 1, wherein the beacon is a short range radio frequency beacon.
3. The method of claim 2, wherein the geographic region is located in an environment where signals of a global positioning system (GPS) are unavailable for location determination by the mobile device.
4. The method of claim 1, wherein the signal of each beacon includes an identifier of the corresponding beacon and a location of the corresponding beacon.
5. The method of claim 1, wherein advertising the geofence comprises advertising the location based service.
6. The method of claim 1, comprising:

determining that the mobile device has exited the advertised geofence when the mobile device is no longer in communication with any beacon in the network; and

causing the mobile device to transfer location monitoring to an application subsystem of the mobile device upon determining that the mobile device has exited the advertised geofence.
7. A system, comprising:

one or more processors; and

a non-transitory computer-readable medium storing instructions operable to cause the one or more processors to perform operations comprising:

defining a geofence using a network of one or more beacons, wherein each beacon is a communication device configured to provide a signal detectable by a baseband subsystem of a mobile device located within a communication range of the respective beacon, defining the geofence including:

associating the network with a geographic region, wherein the signal from at least one beacon in the network is detectable by a mobile device located in the geographic region;

designating an encompassment of the geographic region as the geofence; and

associating a task with the geofence as a location based service;

advertising the geofence, including broadcasting, by each beacon in the network, an identification signal indicating that the beacon is a component of the network;

determining that the mobile device has entered the geofence when the mobile device is in communication with at least one beacon in the network; and

transmitting, by a beacon in the network, information on the task and a list of unique identifiers of other beacons in the network, wherein the list is usable by the mobile device to register the unique identifiers with the baseband subsystem for the mobile device to determine whether the mobile device has entered the advertised geofence and whether or not to trigger the mobile device to perform the task,

wherein transmitting the information is triggered by the mobile device making a contact with any beacon in the network and is conditioned upon the contact being a first contact between the mobile device and any beacon in the network.

8. The system of claim 7, wherein the beacon is a short range radio frequency beacon.

9. The system of claim 8, wherein the geographic region is located in an environment where signals of a global positioning system (GPS) are unavailable for location determination by the mobile device.

10. The system of claim 7, wherein the signal of each beacon includes an identifier of the corresponding beacon and a location of the corresponding beacon.

11. The system of claim 7, wherein advertising the geofence comprises advertising the location based service.

12. The system of claim 7, the operations comprising:

determining that the mobile device has exited the advertised geofence when the mobile device is no longer in communication with any beacon in the network; and

causing the mobile device to transfer location monitoring to an application subsystem of the mobile device upon determining that the mobile device has exited the advertised geofence.

13. A non-transitory computer-readable medium storing instructions operable to cause one or more processors to perform operations comprising:

defining a geofence using a network of one or more beacons, wherein each beacon is a communication device configured to provide a signal detectable by a baseband subsystem of a mobile device located within a communication range of the respective beacon, defining the geofence including:

associating the network with a geographic region, wherein the signal from at least one beacon in the network is detectable by a mobile device located in the geographic region;

designating an encompassment of the geographic region as the geofence; and

associating a task with the geofence as a location based service;

advertising the geofence, including broadcasting, by each beacon in the network, an identification signal indicating that the beacon is a component of the network;

determining that the mobile device has entered the geofence when the mobile device is in communication with at least one beacon in the network; and

transmitting, by a beacon in the network, information on the task and a list of unique identifiers of other beacons in the network, wherein the list is usable by the mobile device to register the unique identifiers with the baseband subsystem for the mobile device to determine whether the mobile device has entered the advertised geofence and whether or not to trigger the mobile device to perform the task,

wherein transmitting the information is triggered by the mobile device making a contact with any beacon in the network and is conditioned upon the contact being a first contact between the mobile device and any beacon in the network.

14. The non-transitory computer-readable medium of claim 13, wherein the beacon is a short range radio frequency beacon.

15. The non-transitory computer-readable medium of claim 14, wherein the geographic region is located in an environment where signals of a global positioning system (GPS) are unavailable for location determination by the mobile device.

16. The non-transitory computer-readable medium of claim 13, wherein the signal of each beacon includes an identifier of the corresponding beacon and a location of the corresponding beacon.

17. The non-transitory computer-readable medium of claim 13, wherein advertising the geofence comprises advertising the location based service.

18. The non-transitory computer-readable medium of claim 13, the operations comprising:

determining that the mobile device has exited the advertised geofence when the mobile device is no longer in communication with any beacon in the network; and

causing the mobile device to transfer location monitoring to an application subsystem of the mobile device upon determining that the mobile device has exited the advertised geofence.

RF BEACON DEPLOYMENT AND METHOD OF USE

Abstract

A precise navigation system utilizing a fleet of deployed RF beacons and an associated application. The RF beacons are installed in known locations about a predefined facility area. The RF beacons emit either a Bluetooth or Wi-Fi beacon signal. An RF beacon identifier is encoded into the beacon signal. The location of the beacon is determined by using the beacon identifier in conjunction with a beacon location index. The location can be used to determine a location of the receiving mobile device, initiating conveyance of information associated with merchants in the proximate area, assistance for parking, etc. The system can be employed to assist in emergency conditions, obtaining road sign information, and other applications where RF beacons can transmit specific location based services and information.

+

1 / 12

INDOOR NAVIGATION PROCEDURE

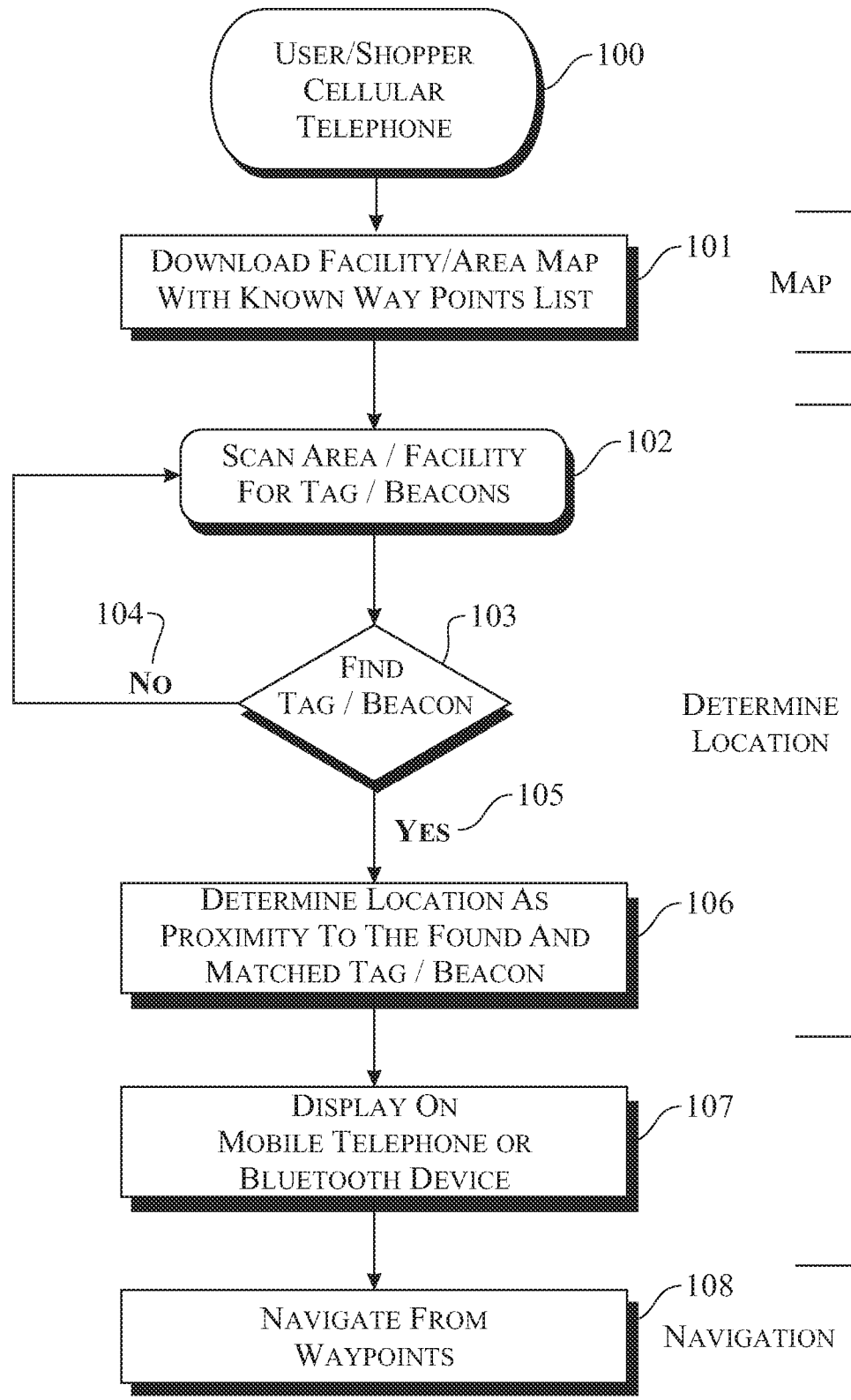


FIG. 1

+

2 / 12

SALES SENSE ALGORITHM

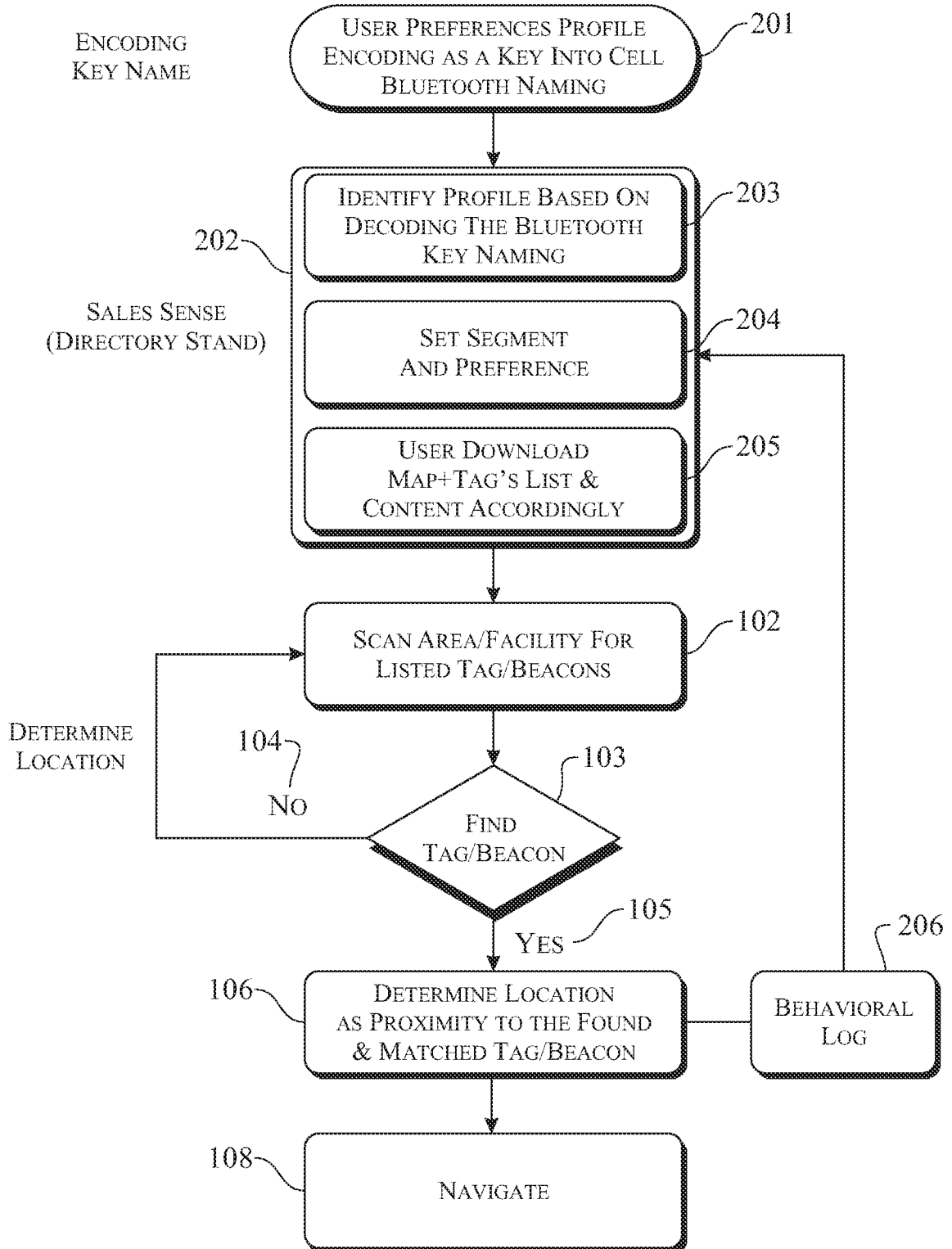


FIG. 2

3 / 12

SALES SENSE USER PREFERENCES/PROFILE OPTIONS:

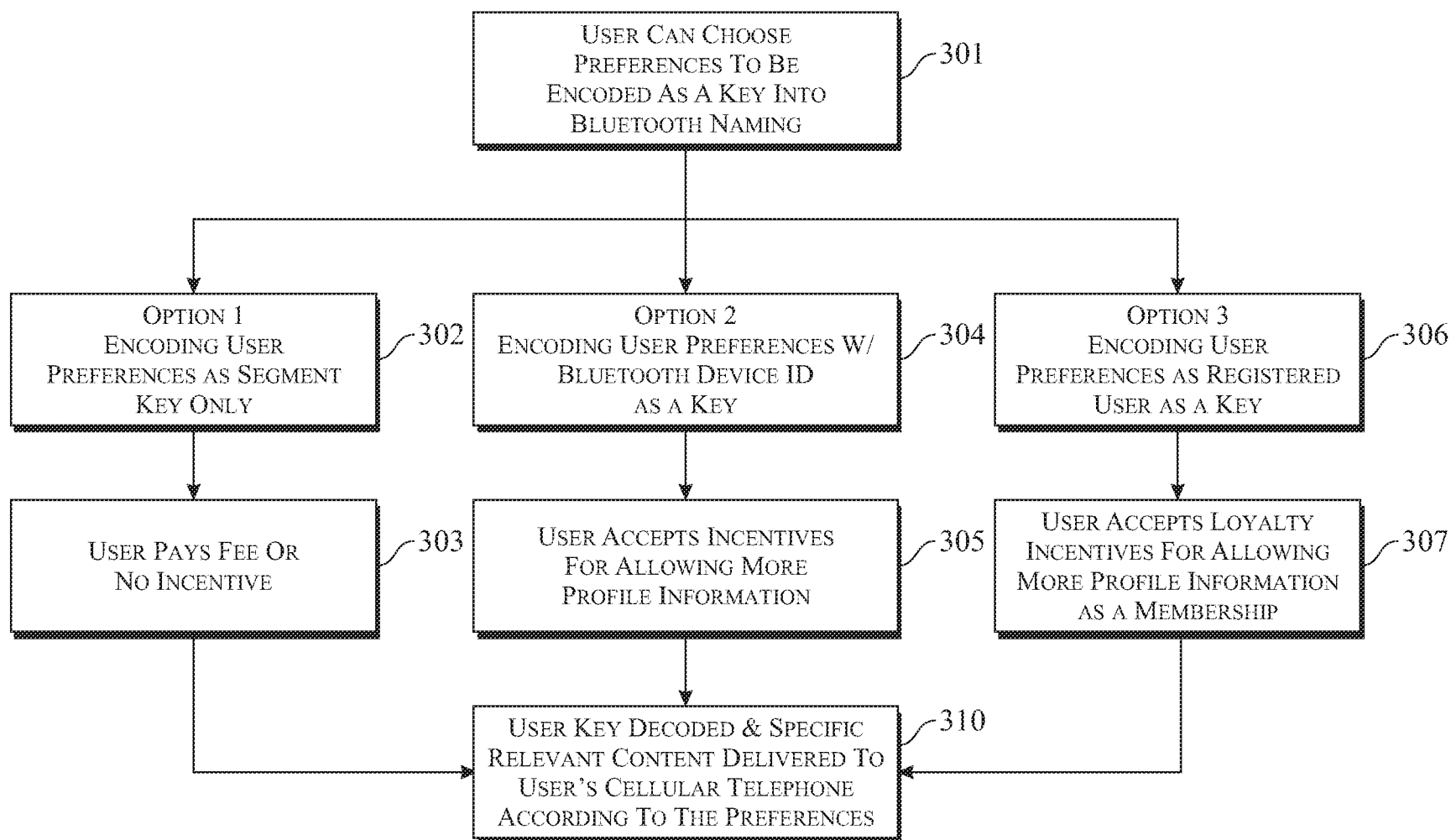


FIG. 3

+

4 / 12

SECURE USER PREFERENCES / PROFILE

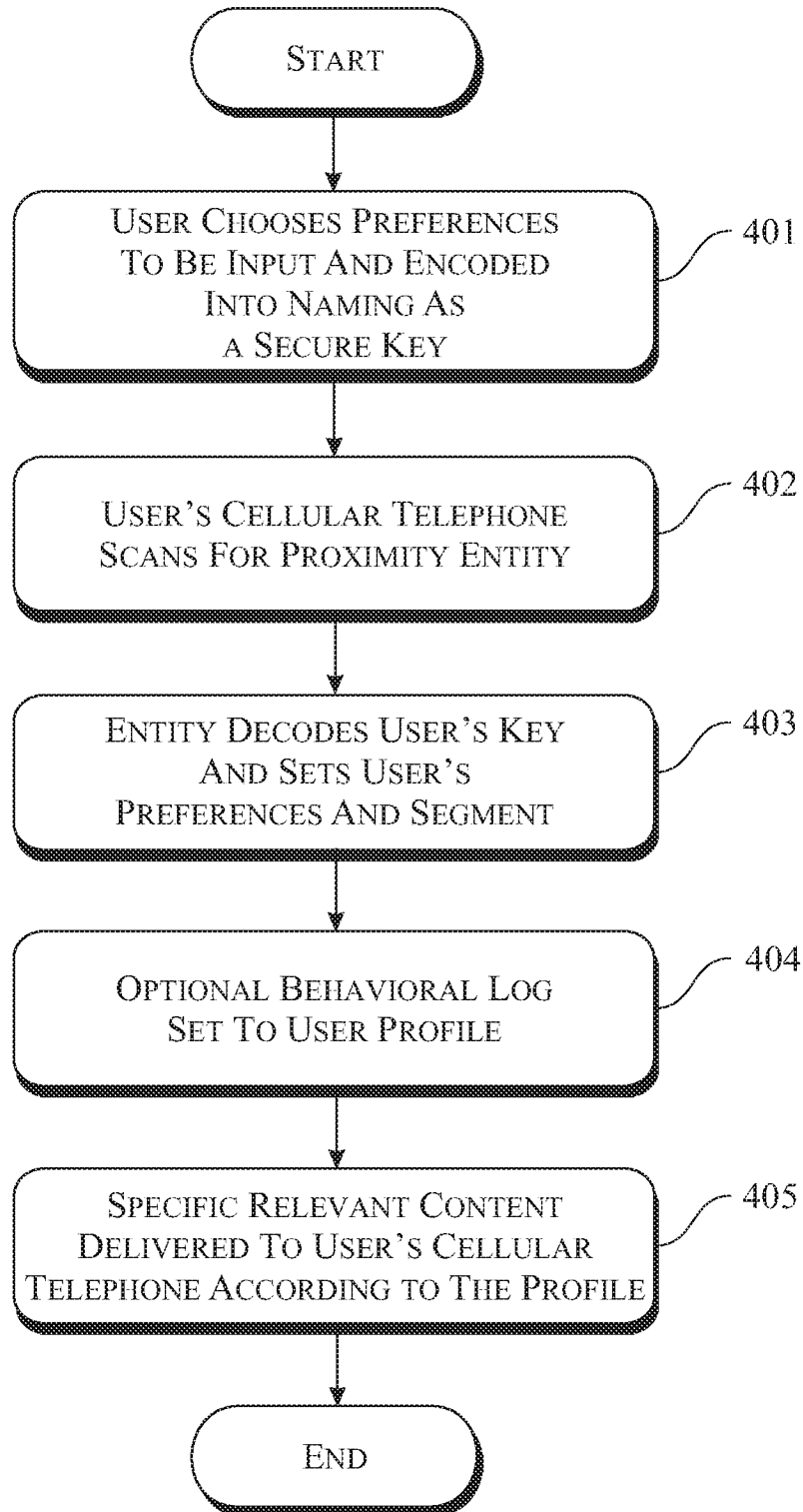


FIG. 4

+

5 / 12

NEXT GENERATION LOCAL BASE SERVICES

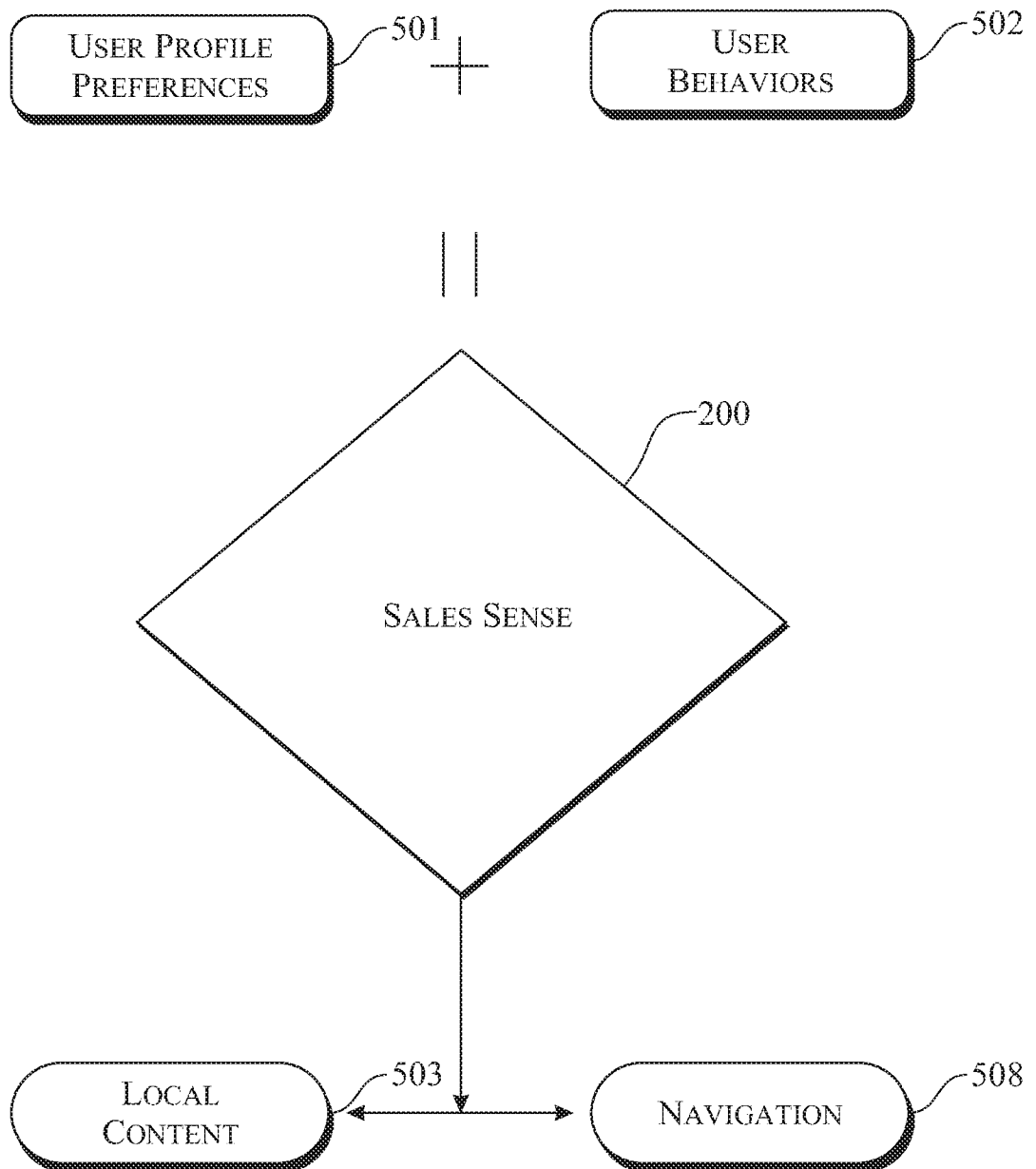


FIG. 5

+

6 / 12

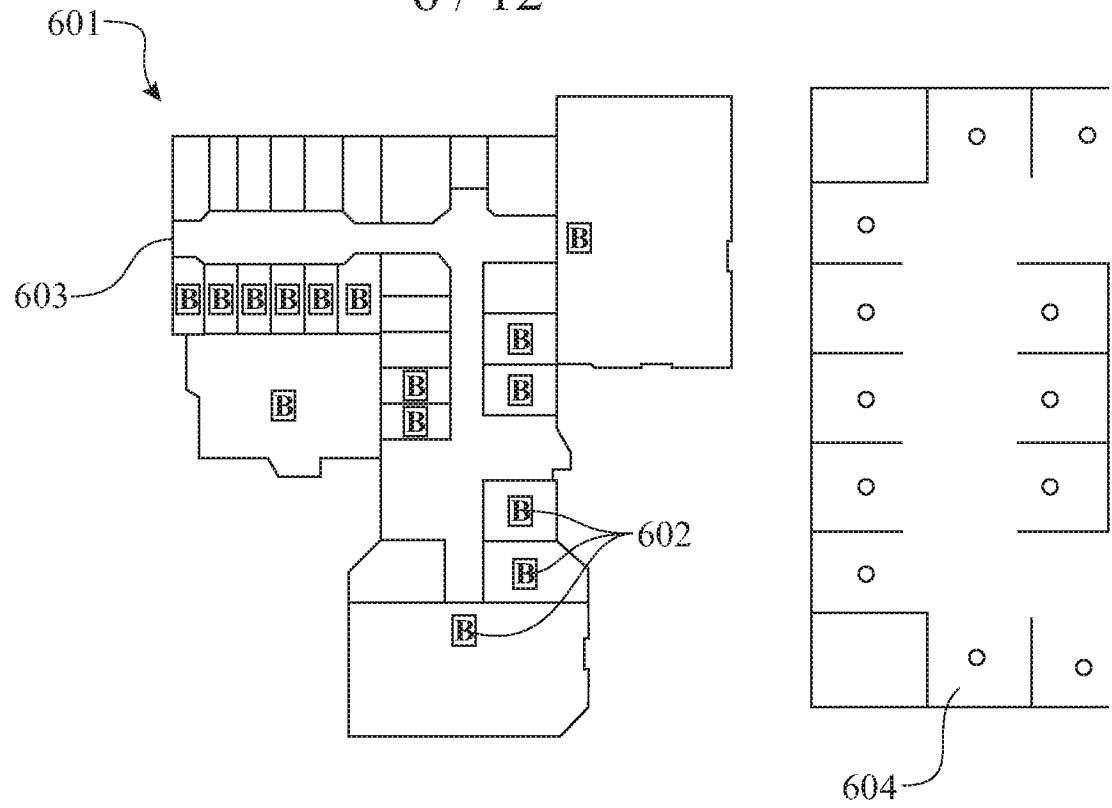


FIG. 6

+

7 / 12

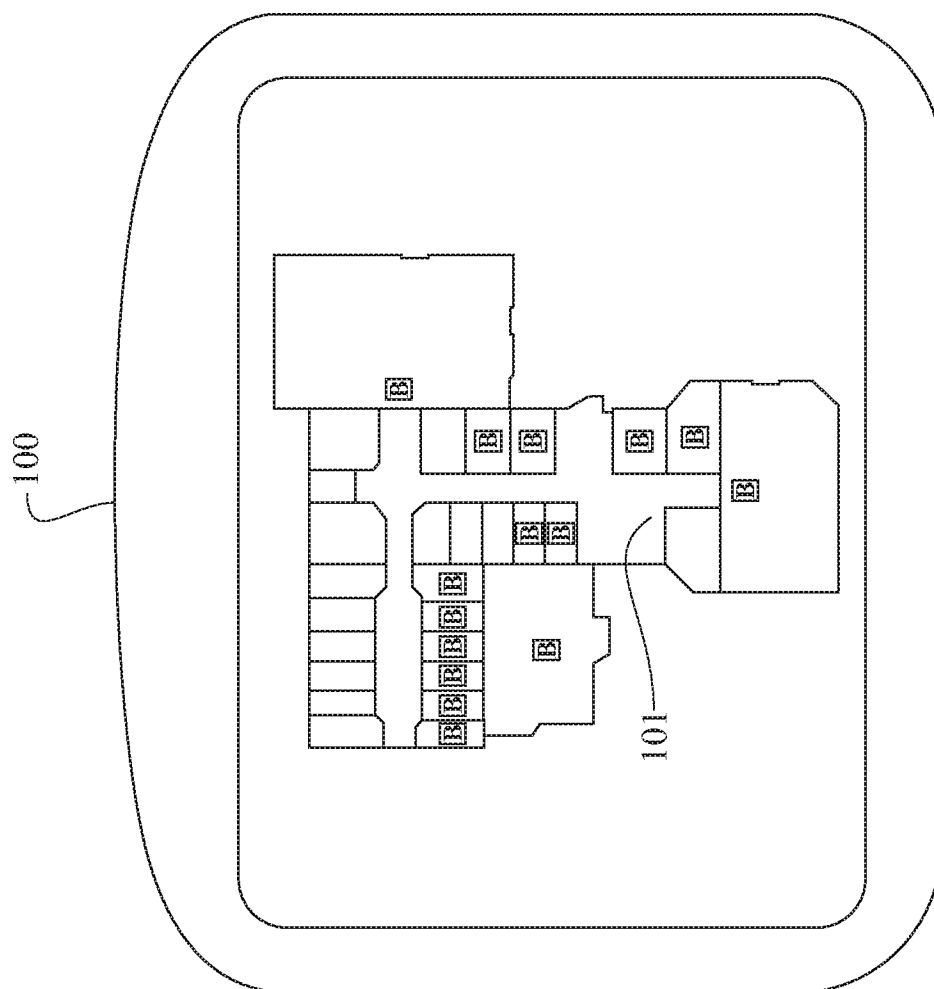


FIG. 7

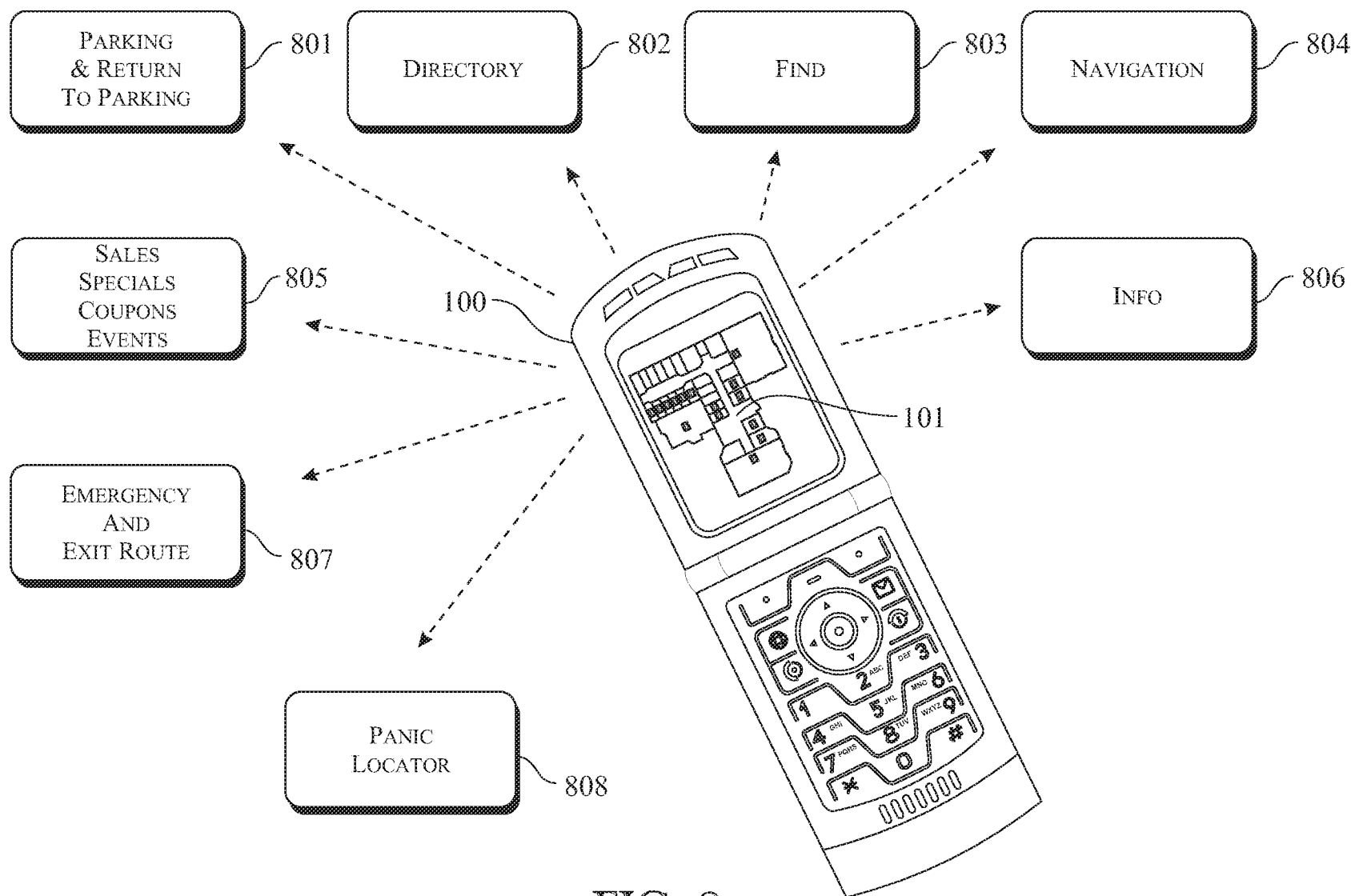


FIG. 8

9 / 12

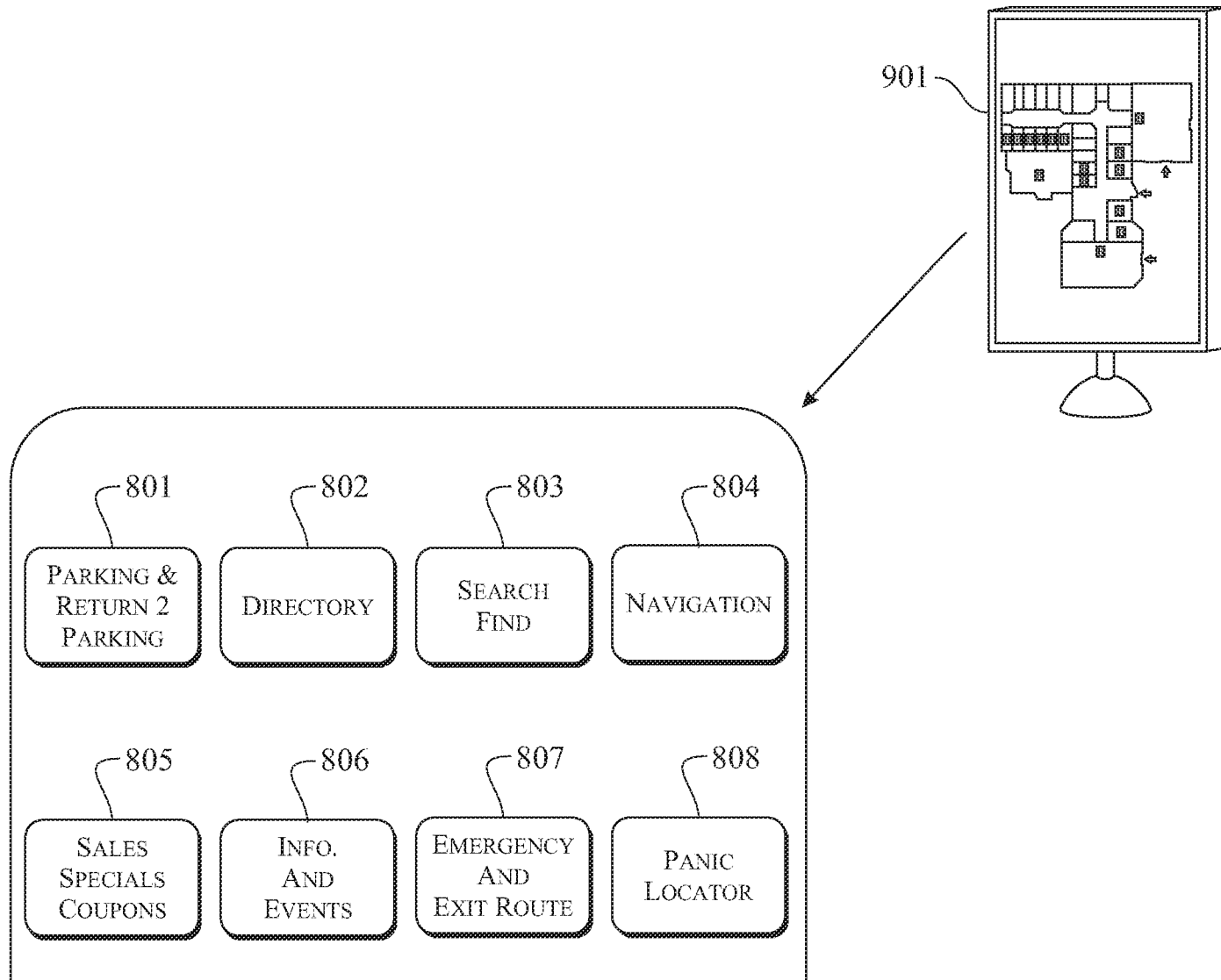


FIG. 9

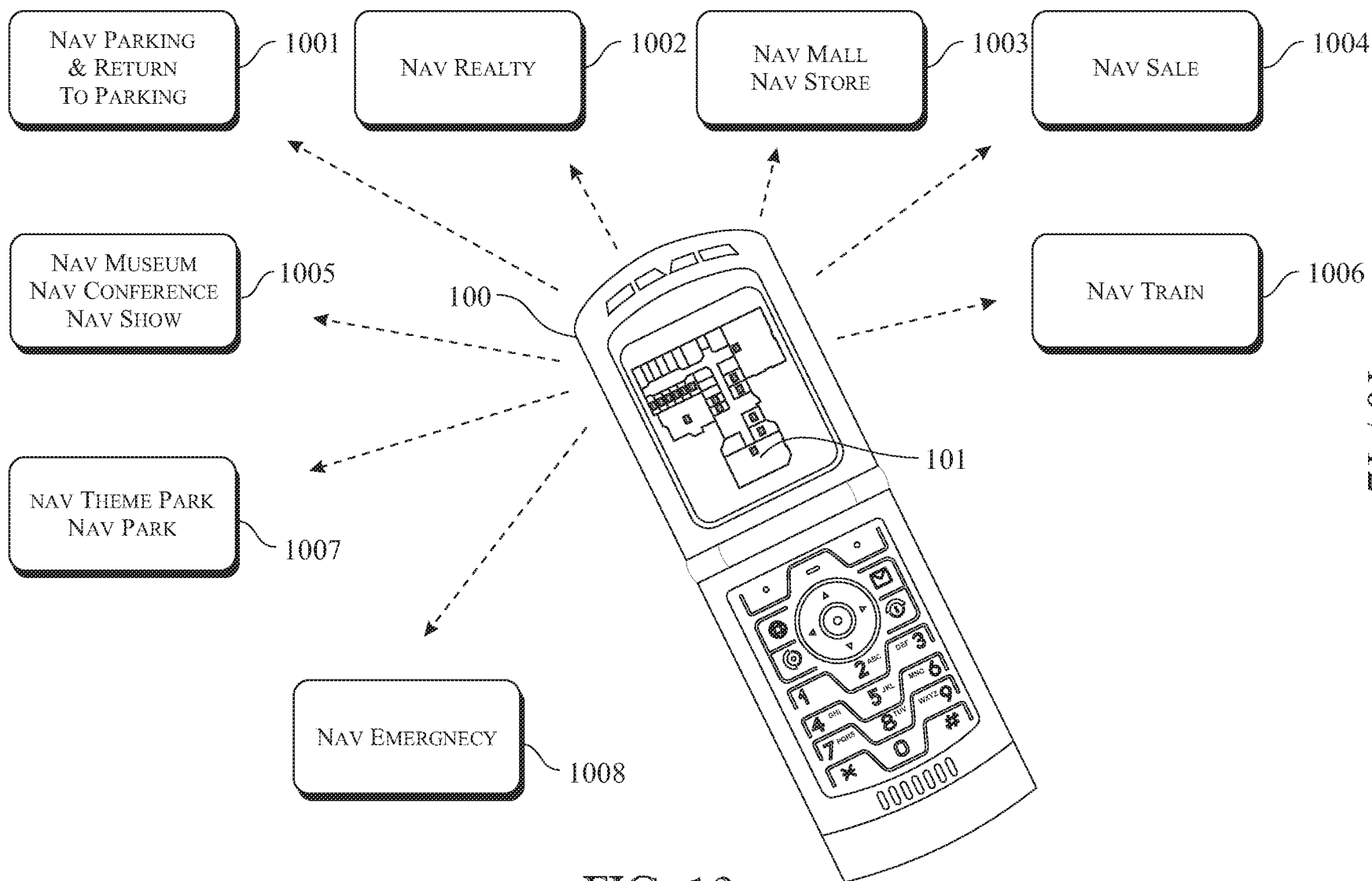


FIG. 10

10 / 12

+

11 / 12

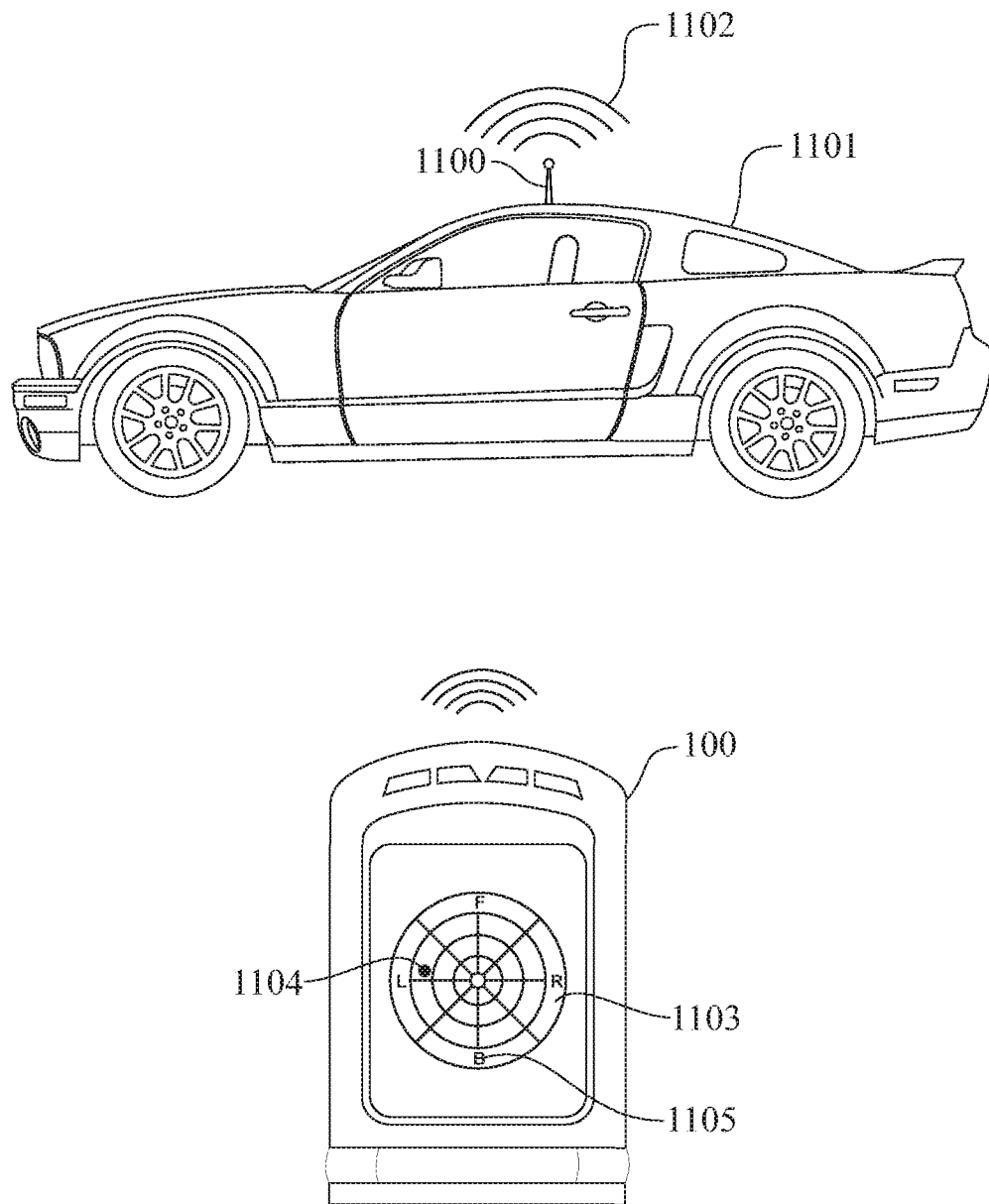


FIG. 11

+

12 / 12

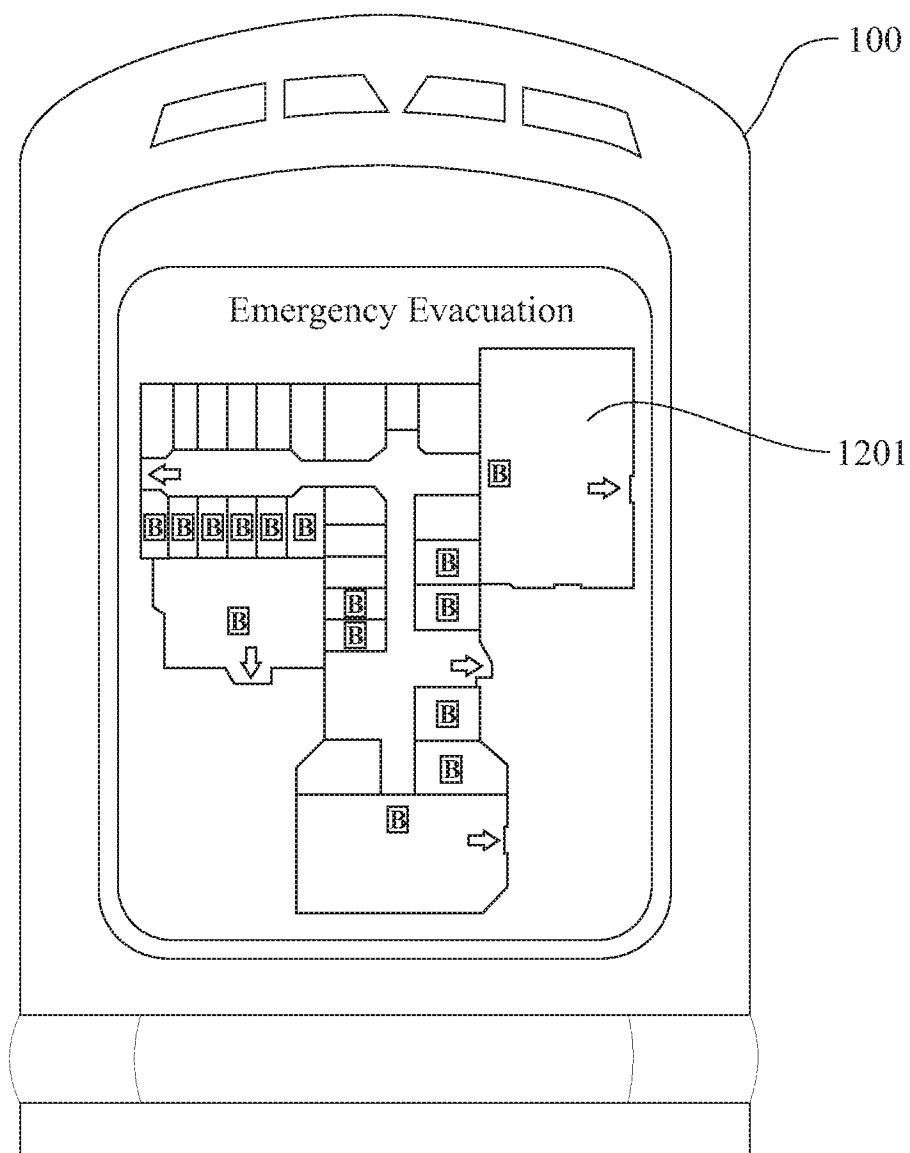


FIG. 12

Electronic Patent Application Fee Transmittal

Application Number:				
Filing Date:				
Title of Invention:	RF BEACON DEPLOYMENT AND METHOD OF USE			
First Named Inventor/Applicant Name:	Ehud MENDELSON			
Filer:	Allen D. Hertz			
Attorney Docket Number:	MEN-16-001			
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	70	70
Utility Search Fee	2111	1	300	300
Utility Examination Fee	2311	1	360	360
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				730

Electronic Acknowledgement Receipt

EFS ID:	25353666
Application Number:	15086028
International Application Number:	
Confirmation Number:	1238
Title of Invention:	RF BEACON DEPLOYMENT AND METHOD OF USE
First Named Inventor/Applicant Name:	Ehud MENDELSON
Customer Number:	31877
Filer:	Allen D. Hertz
Filer Authorized By:	
Attorney Docket Number:	MEN-16-001
Receipt Date:	30-MAR-2016
Filing Date:	
Time Stamp:	23:16:23
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$ 730
RAM confirmation Number	9937
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		MEN-16-001_Mendelson_Interference_Apple_Application_Comp_03-30-16.pdf	4552936 4677de9fa9bdc2a6b223525f43218efc6dcdfc0	yes	81
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Transmittal of New Application		1	1	
	Oath or Declaration filed		2	2	
	Application Data Sheet		3	12	
	Power of Attorney		13	14	
	Nonpublication request from applicant		15	15	
	Specification		16	62	
	Claims		63	68	
	Abstract		69	69	
	Drawings-only black and white line drawings		70	81	
	Warnings:				
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	34805 f9cc90340c1c4974815976cc6f20528cf954a5d1	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			4587741		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

In The United States Patent and Trademark Office

Application No. : 15/086,028 Confirmation No. 1238
Applicant : Ehud MENDELSON
Title : **RF BEACON DEPLOYMENT AND METHOD OF USE**
Filed : March 30, 2016
TC/A.U. : Not Yet Assigned
Examiner : Not Yet Assigned Tel: (571) 27#-####
Docket No. : MEN-16-001
Customer No. : 31877

Mail Stop: Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Transmitted on: March 30, 2016

SUGGESTION FOR INTERFERENCE

Commissioner of Patents and Trademarks
Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

SIR:

Applicant is suggesting an interference with respect to Grainger, et al. United States Patent Number 8,996,030 issued on March 31, 2015, filed as United States Patent Application 13/792,762, filed on March 11, 2013, which claims priority to United States Patent Application 12/942,970, filed on November 09, 2010, which issued as United States Patent Number 8,396,485 on March 12, 2013.

This Application is based upon the Specification and Drawings of US Application Ser. No. 12/587,042 filed on October 01, 2009 (now US Patent 8,866,673, issued on October 21, 2014), with the inclusion of a few paragraphs from Applications which are parents to US Application Ser. No. 12/587,042. The following shows the claim of priority, showing continuity

between this Application, US Application Ser. No. 12/587,042 filed on October 01, 2009, and other Applications claiming benefit back to May 09, 2005.

Parent Application Information:

This Application is a Divisional Application of U.S. Patent Application Ser. No. 14/285,439 filed on May 22, 2014,

which is a Divisional Application of U.S. Patent Application Ser. No. 14/285,406 filed on May 22, 2014,

which is a Divisional Application of U.S. Patent Application Ser. No. 14/285,332 filed on May 22, 2014,

which is a Divisional Application of U.S. Patent Application Ser. No. 14/285,273 filed on May 22, 2014, (now US Patent 9,204,257 on December 01, 2015),

which is a Divisional Application of U.S. Patent Application Ser. No. 14/285,209 filed on May 22, 2014, (now US Patent 9,204,251 on December 01, 2015),

which is a Divisional Application of U.S. Patent Application Ser. No. 12/930,735 filed on January 14, 2011 (now US Patent 9,020,687 on April 28, 2015),

which is a Divisional Application of U.S. Patent Application Ser. No. 11/396,843 filed on April 03, 2006 (now US Patent 7,899,583 on March 01, 2011),

which is a Non-Provisional U.S. Patent Application claiming the benefit of U.S. Provisional Patent Application Ser. No. 60/670,097 filed on April 12, 2005 (now expired); and

a Divisional Application of pending U.S. Patent Application Ser. No. 13/135,421 filed on July 05, 2011,

which is a Divisional Application of pending U.S. Patent Application Ser. No. 12/932,811 filed on March 07, 2011 (now US Patent 8,941,485 on January 27, 2015),

which is a Divisional Application of pending **U.S. Patent Application Ser. No. 12/587,042 filed on October 01, 2009** (now US Patent 8,866,673 on October 21, 2014),

which is a Divisional Application of pending U.S. Patent Application Ser. No. 12/069,899 filed on February 13, 2008 (issued as US Patent 7,924,149 on April 12, 2011),

which is a Divisional Application of pending U.S. Patent Application Ser. No. 11/472,706 filed on June 22, 2006 (now US Patent 8,896,485 on November 25, 2014),

which is a Divisional Application of pending U.S. Patent Application Ser. No. 11/429,864 filed on May 08, 2006 (now US Patent 8,836,580 on September 16, 2014),

which is a Non-Provisional U.S. Patent Application claiming the benefit of U.S. Provisional Patent Application Ser. No. 60/678,947 filed on May 09, 2005 (now expired), and

a Divisional Application of pending U.S. Patent Application Ser. No. 12/587,042 filed on October 01, 2009 (now US Patent 8,866,876 on October 21, 2014),

which is a Divisional Application of pending U.S. Patent Application Ser. No. 11/429,864 filed on May 08, 2006 (now US Patent 8,836,580 on September 16, 2014),

which is a Non-Provisional U.S. Patent Application claiming the benefit of U.S. Provisional Patent Application Ser. No. 60/678,947 filed on May 09, 2005 (now expired).

IN THE CLAIMS:

Claims 1-18 are pending herein.

Applicant has copied Claims 1-18 of Grainger, et al. United States Patent Number 8,996,030 issued on March 31, 2015, filed as United States Patent Application 13/792,762, filed on March 11, 2013.

The status of each Claim is indicated adjacent the Claim Number in accordance with the proper status identifiers: (Original), (Currently Amended), (Canceled), (Previously Presented), (New), (Not Entered), (Withdrawn), and (Withdrawn-Currently Amended) in accordance with 37 CFR 1.121.

Thereafter, starting on a separate page, (Page 11), is the Remarks portion in accordance with 37 CFR § 1.121.

Claims:

Claim 1. (Original) A method, comprising:

defining a geofence using a network of one or more beacons, wherein each beacon is a communication device configured to provide a signal detectable by a baseband subsystem of a mobile device located within a communication range of the respective beacon, defining the geofence including:

associating the network with a geographic region, wherein the signal from at least one beacon in the network is detectable by a mobile device located in the geographic region;

designating an encompassment of the geographic region as the geofence; and

associating a task with the geofence as a location based service;

advertising the geofence, including broadcasting, by each beacon in the network, an identification signal indicating that the beacon is a component of the network;

determining that the mobile device has entered the geofence when the mobile device is in communication with at least one beacon in the network; and

transmitting, by a beacon in the network, information on the task and a list of unique identifiers of other beacons in the network, wherein the list is usable by the mobile device to register the unique identifiers with the baseband subsystem for the mobile device to determine whether the mobile device has entered the advertised geofence and whether or not to trigger the mobile device to perform the task,

wherein transmitting the information is triggered by the mobile device making a contact with any beacon in the network and is conditioned upon the contact being a first contact between the mobile device and any beacon in the network, and

wherein the method is performed by one or more processors.

Claim 2. (Original) The method of claim 1, wherein the beacon is a short range radio frequency beacon.

Claim 3. (Original) The method of claim 2, wherein the geographic region is located in an environment where signals of a global positioning system (GPS) are unavailable for location determination by the mobile device.

Claim 4. (Original) The method of claim 1, wherein the signal of each beacon includes an identifier of the corresponding beacon and a location of the corresponding beacon.

Claim 5. (Original) The method of claim 1, wherein advertising the geofence comprises advertising the location based service.

Claim 6. (Original) The method of claim 1, comprising:

determining that the mobile device has exited the advertised geofence when the mobile device is no longer in communication with any beacon in the network; and

causing the mobile device to transfer location monitoring to an application subsystem of the mobile device upon determining that the mobile device has exited the advertised geofence.

Claim 7. (Original) A system, comprising:

one or more processors; and

a non-transitory computer-readable medium storing instructions operable to cause the one or more processors to perform operations comprising:

defining a geofence using a network of one or more beacons, wherein each beacon is a communication device configured to provide a signal detectable by a baseband subsystem of a mobile device located within a communication range of the respective beacon, defining the geofence including:

associating the network with a geographic region, wherein the signal from at least one beacon in the network is detectable by a mobile device located in the geographic region;

designating an encompassment of the geographic region as the geofence; and

associating a task with the geofence as a location based service;

advertising the geofence, including broadcasting, by each beacon in the network, an identification signal indicating that the beacon is a component of the network;

determining that the mobile device has entered the geofence when the mobile device is in communication with at least one beacon in the network; and

transmitting, by a beacon in the network, information on the task and a list of unique identifiers of other beacons in the network, wherein the list is usable by the mobile device to register the unique identifiers with the baseband subsystem for the mobile device to determine whether the mobile device has entered the advertised geofence and whether or not to trigger the mobile device to perform the task,

wherein transmitting the information is triggered by the mobile device making a contact with any beacon in the network and is conditioned upon the contact being a first contact between the mobile device and any beacon in the network.

Claim 8. (Original) The system of claim 7, wherein the beacon is a short range radio frequency beacon.

Claim 9. (Original) The system of claim 8, wherein the geographic region is located in an environment where signals of a global positioning system (GPS) are unavailable for location determination by the mobile device.

Claim 10. (Original) The system of claim 7, wherein the signal of each beacon includes an identifier of the corresponding beacon and a location of the corresponding beacon.

Claim 11. (Original) The system of claim 7, wherein advertising the geofence comprises advertising the location based service.

Claim 12. (Original) The system of claim 7, the operations comprising:

determining that the mobile device has exited the advertised geofence when the mobile device is no longer in communication with any beacon in the network; and

causing the mobile device to transfer location monitoring to an application subsystem of the mobile device upon determining that the mobile device has exited the advertised geofence.

Claim 13. (Original) A non-transitory computer-readable medium storing instructions operable to cause one or more processors to perform operations comprising:

defining a geofence using a network of one or more beacons, wherein each beacon is a communication device configured to provide a signal detectable by a baseband subsystem of a mobile device located within a communication range of the respective beacon, defining the geofence including:

associating the network with a geographic region, wherein the signal from at least one beacon in the network is detectable by a mobile device located in the geographic region;

designating an encompassment of the geographic region as the geofence; and

associating a task with the geofence as a location based service;

advertising the geofence, including broadcasting, by each beacon in the network, an identification signal indicating that the beacon is a component of the network;

determining that the mobile device has entered the geofence when the mobile device is in communication with at least one beacon in the network; and

transmitting, by a beacon in the network, information on the task and a list of unique identifiers of other beacons in the network, wherein the list is usable by the mobile device to register the unique identifiers with the baseband subsystem for the mobile device to determine whether the mobile device has entered the advertised geofence and whether or not to trigger the mobile device to perform the task,

wherein transmitting the information is triggered by the mobile device making a contact with any beacon in the network and is conditioned upon the contact being a first contact between the mobile device and any beacon in the network.

Claim 14. (Original) The non-transitory computer-readable medium of claim 13, wherein the beacon is a short range radio frequency beacon.

Claim 15. (Original) The non-transitory computer-readable medium of claim 14, wherein the geographic region is located in an environment where signals of a global positioning system (GPS) are unavailable for location determination by the mobile device.

Claim 16. (Original) The non-transitory computer-readable medium of claim 13, wherein the signal of each beacon includes an identifier of the corresponding beacon and a location of the corresponding beacon.

Claim 17. (Original) The non-transitory computer-readable medium of claim 13, wherein advertising the geofence comprises advertising the location based service.

Claim 18. (Original) The non-transitory computer-readable medium of claim 13, the operations comprising:

determining that the mobile device has exited the advertised geofence when the mobile device is no longer in communication with any beacon in the network; and

causing the mobile device to transfer location monitoring to an application subsystem of the mobile device upon determining that the mobile device has exited the advertised geofence.

REMARKS

DETAILED ACTION

Applicant believes that all limitations included in each of the submitted claims was present in the application, therefore no new matter has been added herein. Additionally, all elements of the submitted claims were present in the parent application, wherein each of the claims were filed within ONE (1) YEAR of the issue date of United States Patent Number 8,996,030 issued on March 31, 2015 issued to Grainger, et al.

Suggestion for Interference

In accordance with 37 CFR 41.202(a) applicant is suggesting an interference. The suggestion includes all required information under 37 CFR 2.02 as follows:

41.202(a)(1): Provide sufficient information to identify the application or patent with which the applicant seeks an interference:

Suggested Patent:

Inventors: Grainger, et al.

Patent No.: 8,996,030

Issue Date: March 31, 2015

Appl. No.: 13/792,762

Filing Date: March 11, 2013

41.202(a)(2): Identify all claims the applicant believes interfere, propose one or more counts, and show how the claims correspond to one or more counts:

Count 1: Independent Claim 1 of Grainger, et al. '030 as compared to Independent Claim 1 of the subject Application.

Count 2: Dependent Claim 2 of Grainger, et al. '030, which depends from Independent Claim 1 as compared to Dependent Claim 2 which depends from Independent Claim 1 of the subject Application.

Count 3: Dependent Claim 3 of Grainger, et al. '030, which depends from Dependent Claim 2, which depends from Independent Claim 1 as compared to Dependent Claim 3, which depends from Dependent Claim 2, which depends from Independent Claim 1 of the subject Application.

Count 4: Dependent Claim 4 of Grainger, et al. '030, which depends from Independent Claim 1 as compared to Dependent Claim 4 which depends from Independent Claim 1 of the subject Application.

Count 5: Dependent Claim 5 of Grainger, et al. '030, which depends from Independent Claim 1 as compared to Dependent Claim 5 which depends from Independent Claim 1 of the subject Application.

Count 6: Dependent Claim 6 of Grainger, et al. '030, which depends from Independent Claim 1 as compared to Dependent Claim 6 which depends from Independent Claim 1 of the subject Application.

Count 7: Independent Claim 7 of Grainger, et al. '030 as compared to Independent Claim 7 of the subject Application.

Count 8: Dependent Claim 8 of Grainger, et al. '030, which depends from Independent Claim 7 as compared to Dependent Claim 8 which depends from Independent Claim 7 of the subject Application.

Count 9: Dependent Claim 9 of Grainger, et al. '030, which depends from Dependent Claim 8, which depends from Independent Claim 7 as compared to Dependent Claim 9, which depends from Dependent Claim 8, which depends from Independent Claim 7 of the subject Application.

Count 10: Dependent Claim 10 of Grainger, et al. '030, which depends from Independent Claim 7 as compared to Dependent Claim 10 which depends from Independent Claim 7 of the subject Application.

Count 11: Dependent Claim 11 of Grainger, et al. '030, which depends from Independent Claim 7 as compared to Dependent Claim 11 which depends from Independent Claim 7 of the subject Application.

Count 12: Dependent Claim 12 of Grainger, et al. '030, which depends from Independent Claim 7 as compared to Dependent Claim 12 which depends from Independent Claim 7 of the subject Application.

Count 13: Independent Claim 13 of Grainger, et al. '030 as compared to Independent Claim 13 of the subject Application.

Count 14: Dependent Claim 14 of Grainger, et al. '030, which depends from Independent Claim 13 as compared to Dependent Claim 14 which depends from Independent Claim 13 of the subject Application.

Count 15: Dependent Claim 15 of Grainger, et al. '030, which depends from Dependent Claim 14, which depends from Independent Claim 13 as compared to Dependent Claim 15, which depends from Dependent Claim 14, which depends from Independent Claim 13 of the subject Application.

Count 16: Dependent Claim 16 of Grainger, et al. '030, which depends from Independent Claim 13 as compared to Dependent Claim 16 which depends from Independent Claim 13 of the subject Application.

Count 17: Dependent Claim 17 of Grainger, et al. '030, which depends from Independent Claim 13 as compared to Dependent Claim 17 which depends from Independent Claim 13 of the subject Application.

Count 18: Dependent Claim 18 of Grainger, et al. '030, which depends from Independent Claim 13 as compared to Dependent Claim 18 which depends from Independent Claim 13 of the subject Application.

41.202(a)(3): For each count, provide a claim chart comparing at least one claim of each party corresponds to the count and show why the claims interfere with the meaning of 37 CFR

41.203(a).

Applicant has attached a Claim chart as an appendix comparing each of Claims 1-18 of each party (the claims are replicated) and the proper support from an Application filed prior to the priority date of Grainger, et al. '030 (November 09, 2010).

Applicant respectfully notes, Although the subject Application does not include the term Geofencing, it is well know that what is described in the Specification creates what is now referred to as a Geofence. Applicant respectfully notes, the term geofence was not defined in this context at the time of the original application (2005) and the Applicant has submitted Specifications maintaining consistency therefrom.

Grainger, et al. '030 supports the Applicant's position clearly, In Apple patent above as can see from Column 2, lines 44-67, Geofencing is define as a known location of a number of beacons in a geographic region (hereafter "beacon network"). One can therefore define a Geofence as follows:

"For example, a BLE can broadcast an RF signal that includes its position coordinates (e.g., latitude, longitude), which can be detected by a mobile device. The position coordinates can provide a third location accuracy for the current location of the mobile device by virtue of the mobile device adopting the position coordinates of the BLE as its own position coordinates. **The known locations of a number of beacons in a geographic region (hereafter a "beacon network") can define a geofence that encompasses the geographic region. In some implementations, the beacon can also advertise location based services provided by the beacon network.** Upon determining that the mobile device crossed the geofence defined by the beacon network, the application subsystem can transfer the monitoring back to the baseband subsystem to conserve power. The baseband system can monitor for beacon signals from the beacon network and continuously update its location to be the location of the beacon currently communicating with the mobile device. When the mobile device loses contact with the beacon

network for a defined period of time (e.g., 5 minutes) or when the mobile device exits the geofence defined by the beacon network, the baseband subsystem can transfer the monitoring back to the application subsystem, so that the location of the mobile device can be determined using WiFi.”

Applicant respectfully directs the Examiner to the above quoted passage from Grainger, et al. ‘030 for support of the definitions in the claims as compared to the broader descriptions provided by the Applicant in the subject application.

Applicant respectfully notes, the Specification submitted herein is essentially the same specification (with considerations for improving grammatical, spelling, and other informalities). The original content initiated from 2005, when the concepts disclosed herein were far from any considerations or technologies that are being developed today. For example, Applicant respectfully directs the Examiner to FIG. 8, which depicts a flip phone, not a Smartphone. Conversely, the iPhone was introduced in 2007.

“The first advertisement for iPhone, titled "Hello," aired during the 79th Academy Awards on February 25, 2007, on American Coming in June. On June 4, 2007, Apple released four advertisements announcing a **June 29, 2007**, release date.”

Therefore, the Examiner can appreciate that the terminology presented between the two Applications may differ, but the general concept is the same.

Regarding the limitation of:

“wherein transmitting the information is triggered by the mobile device making a contact with any beacon in the network and is conditioned upon the contact being a first contact between the mobile device and any beacon in the network.”

This is obvious, as the present invention teaches triggering (initiating) a Location Based Services (LBS) application upon receipt of a beacon. Therefore, it is obvious that this information is transferred upon the first contact between the mobile device and the network.

41.202(a)(4): Explain in detail why Applicant will prevail on priority:

Applicant claims priority to Grainger, et al. '030 priority date of November 09, 2010. Applicant claims a priority date as early as May 09, 2005, and maintained proper continuity from the earliest claimed priority date through the filing of this Application.

Applicant earnestly believes all elements claimed by Grainger, et al. '030 were taught by the Applicant in at least one Parent Application.

41.202(a)(5): If a claim is added to provoke an interference provide a claim chart showing the written description for each claim in the application.

Applicant respectfully directs the Examiner to the attached appendix submitted herewith which comprises the claim chart providing the source of support for each element in the claims as originally filed.

Applicant respectfully directs the Examiner to section 41.202(a)(3) herein which comprises the claim chart respective to the parent Applications.

CONCLUSIONS

The present application, after entry of this amendment, comprises Eighteen (18) claims, including three (3) Independent claims. Applicant has already submitted sufficient fees with the original application for twenty (20) claims, including three (3) independent claims. Applicant, therefore, believes that no additional fees respective to Claim counts are required at this time.

Applicant believes this correspondence provides sufficient information to provoke an Interference with Grainger, et al. '030. Applicant believes all sections of 37 CFR 41.202 have been properly submitted herein. Applicant believes the submission has been made in a timely manner. Applicant respectfully requests the Examiner initiate an interference with Grainger, et al.

If the Examiner believes that there are any informalities that can be corrected by Examiner's amendment, a telephone call to the Agent of Record (Allen Hertz) at (561) 883-0115 (Office)(Please leave a message) or (561) 716-3915 (Cell phone) is respectfully solicited.

Respectfully submitted,


Allen D. Hertz

Agent of Record, US Pat. Reg. No.: 50,942

Please submit all correspondence concerning this patent
application to:

Allen D. Hertz

Registration Number: 50,942



31877

PATENT & TRADEMARK OFFICE

Customer Number: 31877
12784 Tulipwood Circle
Boca Raton, Florida 33428
Tel / Fax: 561/883-0115
Cell: 561/716-3915

Attachments:

Appendix A - Support

Count 1: Independent Claim 1 of Grainger, et al. '030 as compared to Independent Claim 1 of the subject Application.

Claim	Claim Limitation	Support (Reference,	Support Quote	Comments
1.	defining a geofence using a network of one or more beacons, wherein each beacon is a communication device configured to provide a signal detectable by a baseband subsystem of a mobile device located within a communication range of the respective beacon, defining the geofence including:	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 4, Lines 10-16 US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19, Lines 12 - 37; FIG. 1 US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 4, Lines 10 - 47	We present a low cost and easily deployed infrastructure for local based navigation outdoors and indoors without the need for GPS and or cellular networks. Moreover, the concept is especially suitable for local area (indoor and outdoor) services when and where the GPS and the cellular network can't provide the solution and the accuracy needed to provide such navigation (10 M or less). FIG. 1 is a flowchart illustrating of the indoor navigation procedure according to an embodiment of the present invention. Referring to FIG. 1, the user with cell phone (100) approach a facility/area where he can download the facility/area map (101) with a known list of waypoints represented by Bluetooth tags installed in the facility/area in a known places. The user cell phone application will scan (102) the area/facility for the known list of the Bluetooth tags/beacons, if tags/beacons was find (103) and (105) then the location of the user is determine as proximity to the find and match tag/beacon from the list (106) scanning is continue if no tags (104) was found, when found the location is display on the loaded map over the cell phone or Bluetooth device (107) and have the ability to navigate (108) between way points Accuracy is below 10 m and in case of approaching signal from more then one beacon/tags a triangulation method will perform to determine the exact location. The method gives the user the control and the privacy as his cell phone device is the scanner and it scans the area. In reality and the unique method there is no established A "user's" Bluetooth cellular phone will scan the local area for the location beacons. When a "user" is within 5/10 meters, the location beacons respond, providing room-level navigation accuracy. With multiple beacons installed and possibly receiving more then one beacon's signal, a simple triangulation calculation and options for signal strength will determine the exact location of the "user" on the downloaded map of the local area.	The geofence is naturally established by the infrastructure of the deployed beacons about the area. The beacons have a fixed signal strength and are therefore limited to transmitting signals to a predefined distance. The user's mobile device (receiving unit) is either within range or outside of the range of the beacon signals. Therefore, the infrastructure defines a geofence region.
	associating the network with a geographic region, wherein the signal from at least one beacon in the network is detectable by a mobile device located in the geographic region;	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19, 12-37, FIG. 1 US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Claim 5	FIG. 1 is a flowchart illustrating of the indoor navigation procedure according to an embodiment of the present invention. Referring to FIG. 1, the user with cell phone (100) approach a facility/area where he can download the facility/area map (101) with a known list of waypoints represented by Bluetooth tags installed in the facility/area in a known places. The user cell phone application will scan (102) the area/facility for the known list of the Bluetooth tags/beacons, if tags/beacons was find (103) and (105) then the location of the user is determine as proximity to the find and match tag/beacon from the list (106) scanning is continue if no tags (104) was found, when found the location is display on the loaded map over the cell phone or Bluetooth device (107) and have the ability to navigate (108) between way points Accuracy is below 10 m and in case of approaching signal from more then one beacon/tags a triangulation method will perform to determine the exact location. The method gives the user the control and the privacy as his cell phone device is the scanner and it scans the area. In reality and the unique method there is no established communication at all as the scan reveille the tags/beacons name (store name) or Claim 5. The method according to claim 1, further comprising a step of determining a current position of a user using a proximity of said display device to a known location of an RF beacon in said area/facility, by associating each beacon identifiers with a beacon location by at least one of embedding a description of said beacon location within said beacon identifier and associating each beacon identifier with each respective beacon location by an index, wherein in a condition having a single beacon signal received, the system determines the location by at least one of utilizing said location and beacon identifier association, and said location and beacon identifier association in conjunction with a signal strength of an RF signal emitted by said RF beacon, wherein in a condition having multiple beacons signal received, said location is determined by at least one of signal strength and a triangulation calculation.	The geofence is naturally established by the infrastructure of the deployed beacons about the area. The beacons have a fixed signal strength and are therefore limited to transmitting signals to a predefined distance. The user's mobile device (receiving unit) is either within range or outside of the range of the beacon signals. Therefore, the infrastructure defines a geofence region.
	designating an encompassment of the geographic region as the geofence; and	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 4, Lines 10 - 47	A "user's" Bluetooth cellular phone will scan the local area for the location beacons. When a "user" is within 5/10 meters, the location beacons respond, providing room-level navigation accuracy. With multiple beacons installed and possibly receiving more then one beacon's signal, a simple triangulation calculation and options for signal strength will determine the exact location of the "user" on the downloaded map of the local area.	The geofence is naturally established by the infrastructure of the deployed beacons about the area. The beacons have a fixed signal strength and are therefore limited to transmitting signals to a predefined distance. The user's mobile device (receiving unit) is either within range or outside of the range of the beacon signals. Therefore, the infrastructure defines a geofence region.

US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 4, Lines 40 - 47	A "user's" Bluetooth cellular phone will scan the local area for the location beacons. When a "user" is within 5/10 meters, the location beacons respond, providing room-level navigation accuracy. With multiple beacons installed and possibly receiving more than one beacon's signal, a simple triangulation calculation and options for signal strength will determine the exact location of the "user" on the downloaded map of the local area.	A user's Bluetooth/Wi-Fi mobile phone will scan the local area for the location beacons. When a user is within proximity to the beacon, the location beacons respond, providing superior accuracy compare to the regular GPS or navigation used today and the exact need to enable indoor lbs and navigation accuracy. With multiple beacons installed and possibly receiving more than one beacon's signal, a simple triangulation calculation and options for signal strength will determine the exact location of the user on the map of the local area.
US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 12, Lines 10 - 24	This method relies upon a dense grid of antennae, each having a well-known position. But the system reverses the normal detection or localization method in most cases the mobile is detected by a tag/beacons in the disclosed method, the user mobile with the Bluetooth special software scan the area for a known location and a known list of tags/beacons install in the area/facility/store building the tags/beacons have an known name/ID that broadcast and when the user mobile is in the proximity to the tag/beacons it is considered to be collocated with it. When more than one signal detects by the mobile, a simple triangulation process is determine the location in any case the short range of the Bluetooth in this case and in indoor make it a big advantage as it the accuracy can be less then 10 m.	
US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 16, Lines 30 - 35	The disclosed innovation reverses the current idea of "locating" the user by letting the user navigate utilizing to the sensor network of Bluetooth beacons (whose signal is sent by way points) directly to the user's mobile device. This will allow LBS (Local Base System) navigation, even indoors without GPS or Cellular network.	
US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 16, Lines 36 - 41	The beacon can reach from 10 meters to more than a 1000 meter distance depending on the application. (to get more accuracy less range and more beacons may needed so the 10 meter is more then needed in building/room environment) getting more range to the "box" is as simple of attaching bigger antenna.	
associating a task with the geofence as a location based service;	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 16, Lines 36 - 41	FIG. 9 is illustrates the mall directory as part of the mall applications according to an embodiment of the present invention referring to FIG. 9, it's illustrates the indoor application in the user cell phone as a buttons each represent the indoor programs describe in FIG. 8, from (801) parking and return2parking, (802) the directory, (803) the search and find (804) represent navigation request between the known way points, (805) the sales, specials, coupons, (806) will provide the user with emergency and notification and exit route and emergency procedure that so important to building/area in case of emergency (9/11, Virginia tech etc.) To a secure panic button (807) that can trigger locate the user (like 911 call) in the area by the security personal and (808) button provides information and event info. About the area/facility/mall/store.
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 21, Line 1 - 18; FIG. 6	FIG. 6 is illustrates the implementation of the tags/beacons in a mall application according to an embodiment of the present invention, each of the Bluetooth tags/beacons (602) contain the name of the waypoint (Macy's for example) and the location of the tags/beacons are known and load in a list with the map of the facility (101) into the user cell phone (100), the list allow matching of the tags/beacons signal (names) (602) to the known list loaded with the map (101) to determine the proximity to the tag/beacon providing accuracy to less then 10 m the tags/beacons (602) can be install in the area in each location designated as way point store/rest room/special sales special location etc. The user can download the map (101) at the entrance (603) from the directory stand or pre download from the indoor mapping portal, the beacons can be installed also in the parking area (604) and with additional sensor to determine existence of the parking car in the parking area can provide the user with parking navigation to empty parking.
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Claim 18	The method according to claim 1, further comprising steps of: f) storing information about customer behavior habit without compromising user ID or privacy, g) providing a location based service (LBS) application and information contents based on at least one of a location of a user as determined by at least one of said location of said display device and said location associated with said RF beacon identifier, and a behavior habit obtained from said display device, and a profile preference provided by data obtained from said display device, wherein said LBS and information content comprises at least one of: a special, a sale, and a promotion events coupon, h) designating a business as a waypoint and presenting advertisements associated with the business on the display device.

advertising the geofence, including broadcasting , by each beacon in the network, an identification signal indicating that the beacon is a component of the network;	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19 Line 12 - Col. 20, Line 9	FIG. 1 is a flowchart illustrating of the indoor navigation procedure according to an embodiment of the present invention. Referring to FIG. 1, the user with cell phone (100) approach a facility/area where he can download the facility/area map (101) with a known list of waypoints represented by Bluetooth tags installed in the facility/area in a known places. The user cell phone application will scan (102) the area/facility for the known list of the Bluetooth tags/beacons, if tags/beacons was find (103) and (105) then the location of the user is determine as proximity to the find and match tag/beacon from the list (106) scanning is continue if no tags (104) was found, when found the location is display on the loaded map over the cell phone or Bluetooth device (107) and have the ability to navigate (108) between way points Accuracy is below 10 m and in case of approaching signal from more then one beacon/tags a triangulation method will perform to determine the exact location. The method gives the user the control and the privacy as his cell phone device is the scanner and it scans the area. In reality and the unique method there is no established	Advertising the signal refers to a broadcasting of the signal of each of the beacons (continuous transmission of the beacon signal during operating hours)
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), - Claim 1(b)	b) determining a current position of said display device by utilizing a proximity to one or more wireless radio frequency (RF) beacons, wherein said RF beacons employ at least one of Bluetooth, long range Bluetooth, and Wi-Fi protocols, each RF beacon comprising a beacon identifier and is installed in known position within said area/facility,	LBS features includes guides and indoor navigation, area information, and the like.
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19, Lines 12 - 37; FIG. 1	FIG. 1 is a flowchart illustrating of the indoor navigation procedure according to an embodiment of the present invention. Referring to FIG. 1, the user with cell phone (100) approach a facility/area where he can download the facility/area map (101) with a known list of waypoints represented by Bluetooth tags installed in the facility/area in a known places. The user cell phone application will scan (102) the area/facility for the known list of the Bluetooth tags/beacons, if tags/beacons was find (103) and (105) then the location of the user is determine as proximity to the find and match tag/beacon from the list (106) scanning is continue if no tags (104) was found, when found the location is display on the loaded map over the cell phone or Bluetooth device (107) and have the ability to navigate (108) between way points Accuracy is below 10 m and in case of approaching signal from more then one beacon/tags a triangulation method will perform to determine the exact location. The method gives the user the control and the privacy as his cell phone device is the scanner and it scans the area. In reality and the unique method there is no established	
determining that the mobile device has entered the geofence when the mobile device is in communication with at least one beacon in the network; and	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19, Lines 12 - 37; FIG. 1	FIG. 1 is a flowchart illustrating of the indoor navigation procedure according to an embodiment of the present invention. Referring to FIG. 1, the user with cell phone (100) approach a facility/area where he can download the facility/area map (101) with a known list of waypoints represented by Bluetooth tags installed in the facility/area in a known places. The user cell phone application will scan (102) the area/facility for the known list of the Bluetooth tags/beacons, if tags/beacons was find (103) and (105) then the location of the user is determine as proximity to the find and match tag/beacon from the list (106) scanning is continue if no tags (104) was found, when found the location is display on the loaded map over the cell phone or Bluetooth device (107) and have the ability to navigate (108) between way points Accuracy is below 10 m and in case of approaching signal from more then one beacon/tags a triangulation method will perform to determine the exact location. The method gives the user the control and the privacy as his cell phone device is the scanner and it scans the area. In reality and the unique method there is no established communication at all as the scan reveille the tags/beacons name (store name) or	
transmitting, by a beacon in the network, information on the task and a list of unique identifiers of other beacons in the network, wherein the list is usable by the mobile device to register the unique identifiers with the baseband subsystem for the mobile device to determine whether the mobile device has entered the advertised geofence and whether or not to trigger the mobile device to perform the task,	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19, Line 38 - Col. 20, Line 8; FIG. 2	FIG. 2 is a flowchart illustrating of the sales sense marketing algorithm according to an embodiment of the present invention, referring to FIG. 2, in the sales sense method the user input his profile preference in the associated Bluetooth application, the profile can contain gender, age range and sales preference of the user, the information will be encode into the Bluetooth naming of the cellular phone as a key (201), like a car VIN #, to provide maximum privacy and secure to the user there is no personal ID nor cell number or any information that can reveille the ID of the user just information that can set the user preference and sales segments without compromise the user privacy, when the user approach the area/facility with the disclosed system/tags/beacons installed the directory stand or the entity system (202) that provide the user with the mapping of the facility/area will determine and identify (203) the user profile based on decoding the Bluetooth key naming (201) and set the sales segment and preference (204) and accordingly will provide the user with the area/facility mapping and the local content according to the user profile/preference,	initiate transfer of info according to at least one beacon location of the mobile device and the beacon identifier
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 4, Lines 28 -	The known location of the beacon is set in a small database: the table of the beacon (waypoints=the beacons identities according to the Bluetooth address/name of the beacon) is attached to the local area mapping of the area.	

	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19, Lines 12 - 37; FIG. 1	FIG. 1 is a flowchart illustrating of the indoor navigation procedure according to an embodiment of the present invention. Referring to FIG. 1, the user with cell phone (100) approach a facility/area where he can download the facility/area map (101) with a known list of waypoints represented by Bluetooth tags installed in the facility/area in a known places. The user cell phone application will scan (102) the area/facility for the known list of the Bluetooth tags/beacons, if tags/beacons was find (103) and (105) then the location of the user is determine as proximity to the find and match tag/beacon from the list (106) scanning is continue if no tags (104) was found , when found the location is display on the loaded map over the cell phone or Bluetooth device (107) and have the ability to navigate (108) between way points Accuracy is below 10 m and in case of approaching signal from more then one beacon/tags a triangulation method will perform to determine the exact location. The method gives the user the control and the privacy as his cell phone device is the scanner and it scans the area. In reality and the unique method there is no Mapping of the area/facility will be download at the area/facility or pre download before arriving to the area/facility, the mapping contain a lookup list of the tags/beacons installed in the area represent a waypoint on the map.	
wherein transmitting the information is triggered by the mobile device making a contact with any beacon in the network and is conditioned upon the contact being a first contact between the mobile device and any beacon in the network, and	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 21, Line 1 - 18; FIG. 6	FIG. 6 is illustrates the implementation of the tags/beacons in a mall application according to an embodiment of the present invention, each of the Bluetooth tags/beacons (602) contain the name of the waypoint (Macy's for example) and the location of the tags/beacons are known and load in a list with the map of the facility (101) into the user cell phone (100), the list allow matching of the tags/beacons signal (names) (602) to the known list loaded with the map (101) to determine the proximity to the tag/beacon providing accuracy to less then 10 m the tags/beacons (602) can be install in the area in each location designated as way point store/rest room/special sales special location etc. The user can download the map (101) at the entrance (603) from the directory stand or pre download from the indoor mapping portal, the beacons can be installed also in the parking area (604) and with additional sensor to determine existence of the parking car in the parking area can provide the user with parking navigation to empty parking.	trigger is done by proximity to a beacon in the area (to the beacon identifier that broadcast by the beacon) see fig 1, 8,941,485 location trigger content delivery , see also 208 on drawing 3 of 8,941,485 trigger (by the user mobile load tag list 305 , scan by the mobile device for the listed beacons 202, determine location as proximity to beacon from the list 206 and trigger content and LBS services 208
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19, Line 38 - Col. 20, Line 8; FIG. 2	FIG. 2 is a flowchart illustrating of the sales sense marketing algorithm according to an embodiment of the present invention, referring to FIG. 2, in the sales sense method the user input his profile preference in the associated Bluetooth application, the profile can contain gender, age range and sales preference of the user, the information will be encode into the Bluetooth naming of the cellular phone as a key (201), like a car VIN #, to provide maximum privacy and secure to the user there is no personal ID nor cell number or any information that can reveille the ID of the user just information that can set the user preference and sales segments without compromise the user privacy, when the user approach the area/facility with the disclosed system/tags/beacons installed the directory stand or the entity system (202) that provide the user with the mapping of the facility/area will determine and identify (203) the user profile based on decoding the Bluetooth key naming (201) and set the sales segment and preference (204) and accordingly will provide the user with the area/facility mapping and the local content according to the user profile/preference,	
wherein the method is performed by one or more processors.	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 15, Line 33 - 41	There are more than 4 billion cell-phone users in the world. Each day, thousands more sign up. A variety of mobile devices have been developed in recent years that are capable of supporting dynamic navigation and location-based services applications. These include wireless telephones, personal digital assistants (PDA's), personal navigation devices (PND's) and laptop computers. It is believed that the disclosed innovation will meet the desire of wireless service providers to increase their average revenue per user.	The application presents a number of electronically operated devices, each are well known to include at least one processor.
Count 2: Dependent Claim 2 of Grainger, et al. '030, which depends from Independent Claim 1 as compared to Dependent Claim 2 which depends from Independent Claim 1 of the subject Application.			
Claim	Claim Limitation	Support (Reference,	Support Quote
2.	the beacon is a short range radio frequency beacon.	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 15, Line 65 - Col. 16, Line 3 US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 16, Lines 36-41 US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October	The foregoing and other objects of the present invention are achieved by providing an infrastructure of a Bluetooth beacons/tags installed in a known location in the area/facility, each tag/beacon have his own unique ID and a Bluetooth name to ID the location in the area, the tags/beacons broadcast the ID. The beacon can reach from 10 meters to more than a 1000 meter distance depending on the application. (to get more accuracy less range and more beacons may needed so the 10 meter is more then needed in building/room environment) getting more range to the "box" is as simple of attaching bigger antenna. The secure encoding key method can be used to secure other applications or processing where the privacy and security are needed most in near field applications.
			Comments The beacons are identified as Bluetooth based transceivers. Bluetooth devices are known as short range radio frequency devices. This is provided throughout all of the Specifications of the entire series of Patent Applications. near field applications are short range radios
Count 3: Dependent Claim 3 of Grainger, et al. '030, which depends from Dependent Claim 2, which depends from Independent Claim 1 as compared to Dependent Claim 3, which depends from Dependent Claim 2, which depends from Independent Claim 1 of the subject Application.			
Claim	Claim Limitation	Support (Reference,	Support Quote
			Comments

3.	the geographic region is located in an environment where signals of a global positioning system (GPS) are unavailable for location determination by the mobile device.	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 4, Lines 10 - 16 US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October	We present a low cost and easily deployed infrastructure for local based navigation outdoors and indoors without the need for GPS and or cellular networks. Moreover, the concept is especially suitable for local area (indoor and outdoor) services when and where the GPS and the cellular network can't provide the solution and the accuracy needed to provide such navigation (10 M or less). The disclosed innovation will enable a full line of indoor navigation application especially to places/area where the GPS can't be provided and more accuracy needed.
----	--	---	--

Count 4: Dependent Claim 4 of Grainger, et al. '030, which depends from Independent Claim 1 as compared to Dependent Claim 4 which depends from Independent Claim 1 of the subject Application.

Claim	Claim Limitation	Support (Reference,	Support Quote	Comments
4.	the signal of each beacon includes an identifier of the corresponding beacon and a location of the corresponding beacon.	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 21, Line 1 - 18; FIG. 6 US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 15, Line 65 - Col. 16, Line 3	FIG. 6 is illustrates the implementation of the tags/beacons in a mall application according to an embodiment of the present invention, each of the Bluetooth tags/beacons (602) contain the name of the waypoint (Macy's for example) and the location of the tags/beacons are known and load in a list with the map of the facility (101) into the user cell phone (100) , the list allow matching of the tags/beacons signal (names) (602) to the known list loaded with the map (101) to determine the proximity to the tag/beacon providing accuracy to less then 10 m the tags/beacons (602) can be install in the area in each location designated as way point store/rest room/special sales special location etc. The user can download the map (101) at the entrance (603) from the directory stand or pre download from the indoor mapping portal, the beacons can be installed also in the parking area (604) and with additional sensor to determine existence of the parking car in the parking area can provide the user with parking navigation to empty parking. The known location of the beacon is set in a small database: the table of the beacon (waypoints=the beacons identities according to the Bluetooth address/name of the beacon) is attached to the local area mapping of the area. The foregoing and other objects of the present invention are achieved by providing an infrastructure of a Bluetooth beacons/tags installed in a known location in the area/facility, each tag/beacon have his own unique ID and a Bluetooth name to ID the location in the area, the tags/beacons broadcast the ID.	

Count 5: Dependent Claim 5 of Grainger, et al. '030, which depends from Independent Claim 1 as compared to Dependent Claim 5 which depends from Independent Claim 1 of the subject Application.

Claim	Claim Limitation	Support (Reference,	Support Quote	Comments
5.	wherein advertising the geofence comprises advertising the location based service.	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 21, Line 1 - 18; FIG. 6 US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Claim 1	FIG. 6 is illustrates the implementation of the tags/beacons in a mall application according to an embodiment of the present invention, each of the Bluetooth tags/beacons (602) contain the name of the waypoint (Macy's for example) and the location of the tags/beacons are known and load in a list with the map of the facility (101) into the user cell phone (100) , the list allow matching of the tags/beacons signal (names) (602) to the known list loaded with the map (101) to determine the proximity to the tag/beacon providing accuracy to less then 10 m the tags/beacons (602) can be install in the area in each location designated as way point store/rest room/special sales special location etc. The user can download the map (101) at the entrance (603) from the directory stand or pre download from the indoor mapping portal, the beacons can be installed also in the parking area (604) and with additional sensor to determine existence of the parking car in the parking area can provide the user with parking navigation to empty parking. Claim 1. A method for navigation indoor and outdoor in a facility area like a mall department store downtown center building on at least one display device selected from a group consisting of a display device, a mobile phone, hand held navigation system, car navigation system, and a Bluetooth enabled device, the method is part of mobile application comprising steps of: a) loading a local area/facility map of-said area/facility to the display device said local area/facility map can be download before arriving to said facility area, b) determining a current position of said display device by utilizing a proximity to one or more wireless radio frequency (RF) beacons, wherein said RF beacons employ at least one of Bluetooth, long range Bluetooth, and Wi-Fi protocols, each RF beacon comprising a beacon identifier and is installed in known position within said area/facility, c) displaying said current position of said display device on a display device overlay image overlaid upon said facility/area map, d) navigating between positions of beacons as shown on said local area/facility maps, e) receiving local content, wherein said local content is determined based upon a location of said	

US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Claim 4	Claim 4. The method according to claim 1, further comprising a step of providing a user of said display device with at least one indoor local base services application, wherein said at least one indoor local base services application includes at least one function selected from a list of functions comprising: (1) obtaining a map and indoor navigation by downloading a local mall/store map from at least one of information provided by a directory stand and an Internet website prior to arriving at said facility area, wherein said map provides navigation between waypoints on said map, (2) obtaining a directory of at least one of a store and a mall as part of said local mapping downloads to said display device, (3) searching and locating at least one of a store, a place, an item, a product, wherein said at least one of said store, said place, said item, said product are associated with a list of said waypoints, (4) obtaining at least one of a discount, a sale, and a coupon, presenting said at least one of said discount, said sale, and said coupon and providing store aisle navigation upon said display device, wherein said store aisle navigation directs said user to a store aisle containing an items associated with said at least one of said discount, said sale, and said coupon, (5) determining available parking spaces in a vicinity of said display device and providing navigation to said user by displaying available parking spaces on said display device, (6) identifying a location of a parked car associated with said display device and providing navigation to return said user to said location of said parked car through a display on said display device,
US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Claim 18	Claim 18. The method according to claim 1, further comprising steps of: f) storing information about customer behavior habit without compromising user ID or privacy, g) providing a location based service (LBS) application and information contents based on at least one of a location of a user as determined by at least one of said location of said display device and said location associated with said RF beacon identifier, and a behavior habit obtained from said display device, and a profile preference provided by data obtained from said display device, wherein said LBS and information content comprises at least one of: a special, a sale, and a promotion events coupon, h) designating a business as a waypoint and presenting advertisements associated with the business on the display device.

Count 6: Dependent Claim 6 of Grainger, et al. '030, which depends from Independent Claim 1 as compared to Dependent Claim 6 which depends from Independent Claim 1 of the subject Application.

Claim	Claim Limitation	Support (Reference,	Support Quote	Comments
6.	determining that the mobile device has exited the advertised geofence when the mobile device is no longer in communication with any beacon in the network; and	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19, Line 38 - Col. 20, Line 8; FIG. 2	FIG. 2 is a flowchart illustrating of the sales sense marketing algorithm according to an embodiment of the present invention, referring to FIG. 2, in the sales sense method the user input his profile preference in the associated Bluetooth application, the profile can contain gender, age range and sales preference of the user, the information will be encode into the Bluetooth naming of the cellular phone as a key (201), like a car VIN #, to provide maximum privacy and secure to the user there is no personal ID nor cell number or any information that can reveille the ID of the user just information that can set the user preference and sales segments without compromise the user privacy, when the user approach the area/facility with the disclosed system/tags/beacons installed the directory stand or the entity system (202) that provide the user with the mapping of the facility/area will determine and identify (203) the user profile based on decoding the Bluetooth key naming (201) and set the sales segment and preference (204) and accordingly will provide the user with the area/facility mapping and the local content according to the user profile/preference,	It is obvious that when the mobile device is no longer in signal range of the beacons, the system is no longer engaged with the mobile device
	causing the mobile device to transfer location monitoring to an application subsystem of the mobile device upon determining that the mobile device has exited the advertised geofence.	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19, Lines 12 - 37; FIG. 1	FIG. 1 is a flowchart illustrating of the indoor navigation procedure according to an embodiment of the present invention. Referring to FIG. 1, the user with cell phone (100) approach a facility/area where he can download the facility/area map (101) with a known list of waypoints represented by Bluetooth tags installed in the facility/area in a known places. The user cell phone application will scan (102) the area/facility for the known list of the Bluetooth tags/beacons, if tags/beacons was find (103) and (105) then the location of the user is determine as proximity to the find and match tag/beacon from the list (106) scanning is continue if no tags (104) was found , when found the location is display on the loaded map over the cell phone or Bluetooth device (107) and have the ability to navigate (108) between way points Accuracy is below 10 m and in case of approaching signal from more then one beacon/tags a triangulation method will perform to determine the exact location. The method gives the user the control and the privacy as his cell phone device is the scanner and it scans the area. In reality and the unique method there is no	user mobile scan the area (the subsystem or base system are part of the user mobile)
		US 8,896,485 (US Appl. Ser. No. 11/472,706, Filed June 22, 2006) Col. 2, Lines 43 - 52	The disclosed system and method automatically updates waypoints, by means of an interface to an existing GPS based system , when each point of interest will have an RF tag/sensor that will broadcast an RF signal that will be converted to a GPS waypoint, or they will update the RF broadcaster (e.g. satellite radio or FM radio stations). In response to the RF signal (from the tags/sensors, or the FM broadcasters) the GPS based navigation system will execute the specified file/program that will initiate a process to automatically execute a waypoint generation program.	The process can continue by using a GPS based feature

US 8,836,580 (US Appl. Ser. No. 11/429,864, Filed May 08, 2006) Col. 10, Line 56 - Col. 11, Line 6	A waypoint is a fixed location with known address location, longitude and latitude and coordinates. Defines Waypoints The disclosed navigation system is capable of storing a database of waypoints for the following purpose: Waypoints mark a destination, a point along the way to a destination, or a point of reference. Normally, in navigating, a "route" consists of one or more waypoints. To traverse a route, the user navigates to the nearest waypoint, then to the next one in turn until the destination is reached. The system has the ability to compute a great-circle route towards a waypoint, enabling them to find the shortest route even over long distances. The system enabling users to locate a destination on a map and define it as a waypoint. The system is intended for navigation; it can generate a suggested route between two waypoints, based on the cartographic database. The system indicates the user's current location and gives advance notice of an upcoming point.
US 8,836,580 (US Appl. Ser. No. 11/429,864, Filed May 08, 2006) Col. 11, Lines 26 - 32	In the disclosed indoor application, instead of GPS, the disclosed system uses known waypoint positions that are manually detected and identified as a demonstration of the concept of using another sensing method, such as RFID, to detect and identify the waypoints. Theoretically, it would be possible to convert the waypoint positions into GPS coordinates and emulate an external GPS data source.

Waypoints are provided in a GPS compatible format. The process can continue by using a GPS based feature.

Count 7: Independent Claim 7 of Grainger, et al. '030 as compared to Independent Claim 7 of the subject Application.

Claim	Claim Limitation	Support (Reference,	Support Quote	Comments
7.	one or more processors; and	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 15, Line 33 - 41	There are more than 4 billion cell-phone users in the world. Each day, thousands more sign up. A variety of mobile devices have been developed in recent years that are capable of supporting dynamic navigation and location-based services applications. These include wireless telephones, personal digital assistants (PDA's), personal navigation devices (PND's) and laptop computers. It is believed that the disclosed innovation will meet the desire of wireless service providers to increase their average revenue per user.	One or more processors are known by those skilled in the art to be included as a component of Bluetooth devices and cellular or mobile telephones
	a non-transitory computer-readable medium storing instructions operable to cause the one or more processors to perform operations comprising:	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 15, Line 33 - 41	There are more than 4 billion cell-phone users in the world. Each day, thousands more sign up. A variety of mobile devices have been developed in recent years that are capable of supporting dynamic navigation and location-based services applications. These include wireless telephones, personal digital assistants (PDA's), personal navigation devices (PND's) and laptop computers. It is believed that the disclosed innovation will meet the desire of wireless service providers to increase their average revenue per user.	One or more non-transitory computer readable medium storing instructions are known by those skilled in the art to be included as a component of Bluetooth devices and cellular or mobile telephones
	defining a geofence using a network of one or more beacons, wherein each beacon is a communication device configured to provide a signal detectable by a baseband subsystem of a mobile device located within a communication range of the respective beacon, defining the geofence including:	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 4, Lines 10-16	We present a low cost and easily deployed infrastructure for local based navigation outdoors and indoors without the need for GPS and or cellular networks. Moreover, the concept is especially suitable for local area (indoor and outdoor) services when and where the GPS and the cellular network can't provide the solution and the accuracy needed to provide such navigation (10 M or less).	The geofence is naturally established by the infrastructure of the deployed beacons about the area. The beacons have a fixed signal strength and are therefore limited to transmitting signals to a predefined distance. The user's mobile device (receiving unit) is either within range or outside of the range of the beacon signals. Therefore, the infrastructure defines a geofence region.
		US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19, Lines 12 - 37; FIG. 1	FIG. 1 is a flowchart illustrating of the indoor navigation procedure according to an embodiment of the present invention. Referring to FIG. 1, the user with cell phone (100) approach a facility/area where he can download the facility/area map (101) with a known list of waypoints represented by Bluetooth tags installed in the facility/area in a known places. The user cell phone application will scan (102) the area/facility for the known list of the Bluetooth tags/beacons, if tags/beacons was find (103) and (105) then the location of the user is determine as proximity to the find and match tag/beacon from the list (106) scanning is continue if no tags (104) was found, when found the location is display on the loaded map over the cell phone or Bluetooth device (107) and have the ability to navigate (108) between way points Accuracy is below 10 m and in case of approaching signal from more then one beacon/tags a triangulation method will perform to determine the exact location. The method gives the user the control and the privacy as his cell phone device is the scanner and it scans the area. In reality and the unique method there is no established	
		US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 4, Lines 10 - 47	A "user's" Bluetooth cellular phone will scan the local area for the location beacons. When a "user" is within 5/10 meters, the location beacons respond, providing room-level navigation accuracy. With multiple beacons installed and possibly receiving more then one beacon's signal, a simple triangulation calculation and options for signal strength will determine the exact location of the "user" on the downloaded map of the local area.	

associating the network with a geographic region, wherein the signal from at least one beacon in the network is detectable by a mobile device located in the geographic region;	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19, 12-37, FIG. 1	FIG. 1 is a flowchart illustrating of the indoor navigation procedure according to an embodiment of the present invention. Referring to FIG. 1, the user with cell phone (100) approach a facility/area where he can download the facility/area map (101) with a known list of waypoints represented by Bluetooth tags installed in the facility/area in a known places. The user cell phone application will scan (102) the area/facility for the known list of the Bluetooth tags/beacons, if tags/beacons was find (103) and (105) then the location of the user is determine as proximity to the find and match tag/beacon from the list (106) scanning is continue if no tags (104) was found, when found the location is display on the loaded map over the cell phone or Bluetooth device (107) and have the ability to navigate (108) between way points Accuracy is below 10 m and in case of approaching signal from more then one beacon/tags a triangulation method will perform to determine the exact location. The method gives the user the control and the privacy as his cell phone device is the scanner and it scans the area. In reality and the unique method there is no established communication at all as the scan reveille the tags/beacons name (store name) or Claim 5. The method according to claim 1, further comprising a step of determining a current position of a user using a proximity of said display device to a known location of an RF beacon in said area/facility, by associating each beacon identifiers with a beacon location by at least one of embedding a description of said beacon location within said beacon identifier and associating each beacon identifier with each respective beacon location by an index, wherein in a condition having a single beacon signal received, the system determines the location by at least one of utilizing said location and beacon identifier association, and said location and beacon identifier association in conjunction with a signal strength of an RF signal emitted by said RF beacon, wherein in a condition having multiple beacons signal received, said location is determined by at least one of signal strength and a triangulation calculation.	The geofence is naturally established by the infrastructure of the deployed beacons about the area. The beacons have a fixed signal strength and are therefore limited to transmitting signals to a predefined distance. The user's mobile device (receiving unit) is either within range or outside of the range of the beacon signals. Therefore, the infrastructure defines a geofence region.
designating an encompassment of the geographic region as the geofence; and	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 4, Lines 10 - 47	A "user's" Bluetooth cellular phone will scan the local area for the location beacons. When a "user" is within 5/10 meters, the location beacons respond, providing room-level navigation accuracy. With multiple beacons installed and possibly receiving more then one beacon's signal, a simple triangulation calculation and options for signal strength will determine the exact location of the "user" on the downloaded map of the local area.	The geofence is naturally established by the infrastructure of the deployed beacons about the area. The beacons have a fixed signal strength and are therefore limited to transmitting signals to a predefined distance. The user's mobile device (receiving unit) is either within range or outside of the range of the beacon signals. Therefore, the infrastructure defines a geofence region.
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 4, Lines 40 - 47	A "user's" Bluetooth cellular phone will scan the local area for the location beacons. When a "user" is within 5/10 meters, the location beacons respond, providing room-level navigation accuracy. With multiple beacons installed and possibly receiving more then one beacon's signal, a simple triangulation calculation and options for signal strength will determine the exact location of the "user" on the downloaded map of the local area.	A user's Bluetooth/Wi-Fi mobile phone will scan the local area for the location beacons. When a user is within proximity to the beacon, the location beacons respond, providing superior accuracy compare to the regular GPS or navigation used today and the exact need to enable indoor lbs and navigation accuracy. With multiple beacons installed and possibly receiving more than one beacon's signal, a simple triangulation calculation and options for signal strength will determine the exact location of the user on the map of the local area.
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 12, Lines 10 - 24	This method relies upon a dense grid of antennae, each having a well-known position. But the system reverses the normal detection or localization method in most cases the mobile is detected by a tag/beacons in the disclosed method, the user mobile with the Bluetooth special software scan the area for a known location and a known list of tags/beacons install in the area/facility/store building the tags/beacons have an known name/ID that broadcast and when the user mobile is in the proximity to the tag/beacons it is considered to be collocated with it. When more than one signal detects by the mobile, a simple triangulation process is determine the location in any case the short range of the Bluetooth in this case and in indoor make it a big advantage as it the accuracy can be less then 10 m.	
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 16, Lines 30 - 35	The disclosed innovation reverses the current idea of "locating" the user by letting the user navigate utilizing to the sensor network of Bluetooth beacons (whose signal is sent by way points) directly to the user's mobile device. This will allow LBS (Local Base System) navigation, even indoors without GPS or Cellular network.	
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 16, Lines 36 - 41	The beacon can reach from 10 meters to more than a 1000 meter distance depending on the application. (to get more accuracy less range and more beacons may needed so the 10 meter is more then needed in building/room environment) getting more range to the "box" is as simple of attaching bigger antenna.	

associating a task with the geofence as a location based service;	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 16, Lines 36 - 41	FIG. 9 is illustrates the mall directory as part of the mall applications according to an embodiment of the present invention referring to FIG. 9, it's illustrates the indoor application in the user cell phone as a buttons each represent the indoor programs describe in FIG. 8, from (801) parking and return2parking, (802) the directory, (803) the search and find (804) represent navigation request between the known way points, (805) the sales, specials, coupons, (806) will provide the user with emergency and notification and exit route and emergency procedure that so important to building/area in case of emergency (9/11, Virginia tech etc.) To a secure panic button (807) that can trigger locate the user (like 911 call) in the area by the security personal and (808) button provides information and event info. About the area/facility/mall/store.	The associated beacon triggers at least one Location Based Service (LBS) feature as part of the trigger application by the beacons.
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 21, Line 1 - 18; FIG. 6	FIG. 6 is illustrates the implementation of the tags/beacons in a mall application according to an embodiment of the present invention, each of the Bluetooth tags/beacons (602) contain the name of the waypoint (Macy's for example) and the location of the tags/beacons are known and load in a list with the map of the facility (101) into the user cell phone (100), the list allow matching of the tags/beacons signal (names) (602) to the known list loaded with the map (101) to determine the proximity to the tag/beacon providing accuracy to less then 10 m the tags/beacons (602) can be install in the area in each location designated as way point store/rest room/special sales special location etc. The user can download the map (101) at the entrance (603) from the directory stand or pre download from the indoor mapping portal, the beacons can be installed also in the parking area (604) and with additional sensor to determine existence of the parking car in the parking area can provide the user with parking navigation to empty parking.	
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Claim 18	The method according to claim 1, further comprising steps of: f) storing information about customer behavior habit without compromising user ID or privacy, g) providing a location based service (LBS) application and information contents based on at least one of a location of a user as determined by at least one of said location of said display device and said location associated with said RF beacon identifier, and a behavior habit obtained from said display device, and a profile preference provided by data obtained from said display device, wherein said LBS and information content comprises at least one of: a special, a sale, and a promotion events coupon, h) designating a business as a waypoint and presenting advertisements associated with the business on the display device.	
advertising the geofence, including broadcasting, by each beacon in the network, an identification signal indicating that the beacon is a component of the network;	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19 Line 12 - Col. 20, Line 9	FIG. 1 is a flowchart illustrating of the indoor navigation procedure according to an embodiment of the present invention. Referring to FIG. 1, the user with cell phone (100) approach a facility/area where he can download the facility/area map (101) with a known list of waypoints represented by Bluetooth tags installed in the facility/area in a known places. The user cell phone application will scan (102) the area/facility for the known list of the Bluetooth tags/beacons, if tags/beacons was find (103) and (105) then the location of the user is determine as proximity to the find and match tag/beacon from the list (106) scanning is continue if no tags (104) was found, when found the location is display on the loaded map over the cell phone or Bluetooth device (107) and have the ability to navigate (108) between way points Accuracy is below 10 m and in case of approaching signal from more then one beacon/tags a triangulation method will perform to determine the exact location. The method gives the user the control and the privacy as his cell phone device is the scanner and it scans the area. In reality and the unique method there is no established	Advertising the signal refers to a broadcasting of the signal of each of the beacons (continuous transmission of the beacon signal during operating hours)
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), - Claim 1(b)	b) determining a current position of said display device by utilizing a proximity to one or more wireless radio frequency (RF) beacons, wherein said RF beacons employ at least one of Bluetooth, long range Bluetooth, and Wi-Fi protocols, each RF beacon comprising a beacon identifier and is installed in known position within said area/facility,	LBS features includes guides and indoor navigation, area information, and the like.
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19, Lines 12 - 37; FIG. 1	FIG. 1 is a flowchart illustrating of the indoor navigation procedure according to an embodiment of the present invention. Referring to FIG. 1, the user with cell phone (100) approach a facility/area where he can download the facility/area map (101) with a known list of waypoints represented by Bluetooth tags installed in the facility/area in a known places. The user cell phone application will scan (102) the area/facility for the known list of the Bluetooth tags/beacons, if tags/beacons was find (103) and (105) then the location of the user is determine as proximity to the find and match tag/beacon from the list (106) scanning is continue if no tags (104) was found, when found the location is display on the loaded map over the cell phone or Bluetooth device (107) and have the ability to navigate (108) between way points Accuracy is below 10 m and in case of approaching signal from more then one beacon/tags a triangulation method will perform to determine the exact location. The method gives the user the control and the privacy as his cell phone device is the scanner and it scans the area. In reality and the unique method there is no established	

FIG. 1 is a flowchart illustrating of the indoor navigation procedure according to an embodiment of the present invention. Referring to FIG. 1, the user with cell phone (100) approach a facility/area where he can download the facility/area map (101) with a known list of waypoints represented by Bluetooth tags installed in the facility/area in a known places. The user cell phone application will scan (102) the area/facility for the known list of the Bluetooth tags/beacons, if tags/beacons was find (103) and (105) then **the location of the user is determine as proximity to the find and match tag/beacon from the list (106)** scanning is continue if no tags (104) was found, **when found the location is display on the loaded map over the cell phone or Bluetooth device (107) and have the ability to navigate (108) between way points** Accuracy is below 10 m and in case of approaching signal from more then one beacon/tags a triangulation method will perform to **determine the exact location**. The method gives the user the control and the privacy as his cell phone device is the scanner and it scans the area. In reality and the unique method there is no established communication at all as the scan reveille the tags/beacons name (store name) or

FIG. 2 is a flowchart illustrating of the sales sense marketing algorithm according to an embodiment of the present invention, referring to FIG. 2, in the sales sense method the user input his profile preference in the associated Bluetooth application, the profile can contain gender, age range and sales preference of the user, the information will be encode into the Bluetooth naming of the cellular phone as a key (201), like a car VIN #, to provide maximum privacy and secure to the user there is no personal ID nor cell number or any information that can reveille the ID of the user just information that can set the user preference and sales segments without compromise the user privacy, when the user approach the area/facility with the disclosed system/tags/beacons installed the directory stand or the entity system (202) that provide the user with the mapping of the facility/area will determine and identify (203) the user profile based on decoding the Bluetooth key naming (201) and set the sales segment and preference (204) and accordingly will provide the user with the area/facility mapping and the local content according to the user profile/preference, US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 4, Lines 28 - 31

The known location of the beacon is set in a small database: the table of the beacon (waypoints=the beacons identities according to the Bluetooth address/name of the beacon) is attached to the local area mapping of the area.

FIG. 1 is a flowchart illustrating of the indoor navigation procedure according to an embodiment of the present invention. Referring to FIG. 1, the user with cell phone (100) approach a facility/area where he can download the facility/area map (101) with a known list of waypoints represented by Bluetooth tags installed in the facility/area in a known places. The user cell phone application will scan (102) the area/facility for the known list of the Bluetooth tags/beacons, **if tags/beacons was find (103) and (105) then the location of the user is determine as proximity to the find and match tag/beacon from the list (106) scanning is continue if no tags (104) was found**, when found the location is display on the loaded map over the cell phone or Bluetooth device (107) and have the ability to navigate (108) between way points Accuracy is below 10 m and in case of approaching signal from more then one beacon/tags a triangulation method will perform to determine the exact location. The method gives the user the control and the privacy as his cell phone device is the scanner and it scans the area. In reality and the unique method there is no established communication at all as the Mapping of the area/facility will be download at the area/facility or pre download before arriving to the area/facility, the mapping contain a lookup list of the tags/beacons installed in the area represent a waypoint on the map.

FIG. 6 is illustrates the implementation of the tags/beacons in a mall application according to an embodiment of the present invention, each of the Bluetooth tags/beacons (602) contain the name of the waypoint (Macy's for example) and the location of the tags/beacons are known and load in a list with the map of the facility (101) into the user cell phone (100), the list allow matching of the tags/beacons signal (names) (602) to the known list loaded with the map (101) to determine the proximity to the tag/beacon providing accuracy to less than 10 m the tags/beacons (602) can be install in the area in each location designated as way point store/rest room/special sales special location etc. The user can download the map (101) at the entrance (603) from the directory stand or pre download from the indoor mapping portal, the beacons can be installed also in the parking area (604) and with additional sensor to determine existence of the parking car in the parking area can provide the user with parking navigation to empty parking.

trigger is done by proximity to a beacon in the area (to the beacon identifier that broadcast by the beacon) see fig 1, 8,941,485 location trigger content delivery, see also 208 on drawing 3 of 8,941,485 trigger (by the user mobile load tag list 305 , scan by the mobile device for the listed beacons 202, determine location as proximity to beacon from the list 206 and trigger content and LBS services 208

US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19, Line 38 - Col. 20, Line 8; FIG. 2

FIG. 2 is a flowchart illustrating of the sales sense marketing algorithm according to an embodiment of the present invention, referring to FIG. 2, in the sales sense method the user input his profile preference in the associated Bluetooth application, the profile can contain gender, age range and sales preference of the user, the information will be encode into the Bluetooth naming of the cellular phone as a key (201), like a car VIN #, to provide maximum privacy and secure to the user there is no personal ID nor cell number or any information that can reveille the ID of the user just information that can set the user preference and sales segments without compromise the user privacy, when the user approach the area/facility with the disclosed system/tags/beacons installed the directory stand or the entity system (202) that provide the user with the mapping of the facility/area will determine and identify (203) the user profile based on decoding the Bluetooth key naming (201) and set the sales segment and preference (204) and accordingly will provide the user with the area/facility mapping and the local content according to the user profile/preference,

Count 8: Dependent Claim 8 of Grainger, et al. '030, which depends from Independent Claim 7 as compared to Dependent Claim 8 which depends from Independent Claim 7 of the subject Application.

Claim	Claim Limitation	Support (Reference,	Support Quote	Comments
8.	the beacon is a short range radio frequency beacon.	See comments pertaining to Claim 2		

Count 9: Dependent Claim 9 of Grainger, et al. '030, which depends from Dependent Claim 8, which depends from Independent Claim 7 as compared to Dependent Claim 9, which depends from Dependent Claim 8, which depends from Independent Claim 7 of the

Claim	Claim Limitation	Support (Reference,	Support Quote	Comments
9.	the geographic region is located in an environment where signals of a global positioning system (GPS) are unavailable for location determination by the mobile device.	See comments pertaining to Claim 3		

Count 10: Dependent Claim 10 of Grainger, et al. '030, which depends from Independent Claim 7 as compared to Dependent Claim 10 which depends from Independent Claim 7 of the subject Application.

Claim	Claim Limitation	Support (Reference,	Support Quote	Comments
10.	the signal of each beacon includes an identifier of the corresponding beacon and a location of the corresponding beacon.	See comments pertaining to Claim 4		

Count 11: Dependent Claim 11 of Grainger, et al. '030, which depends from Independent Claim 7 as compared to Dependent Claim 11 which depends from Independent Claim 7 of the subject Application.

Claim	Claim Limitation	Support (Reference,	Support Quote	Comments
11.	wherein advertising the geofence comprises advertising the location based service.	See comments pertaining to Claim 5		

Count 12: Dependent Claim 12 of Grainger, et al. '030, which depends from Independent Claim 7 as compared to Dependent Claim 12 which depends from Independent Claim 7 of the subject Application.

Claim	Claim Limitation	Support (Reference,	Support Quote	Comments
12.	determining that the mobile device has exited the advertised geofence when the mobile device is no longer in communication with any beacon in the network; and	See comments pertaining to Claim 6		
	causing the mobile device to transfer location monitoring to an application subsystem of the mobile device upon determining that the mobile device has exited the advertised geofence.	See comments pertaining to Claim 6		

Count 13: Independent Claim 13 of Grainger, et al. '030 as compared to Independent Claim 13 of the subject Application.

Claim	Claim Limitation	Support (Reference,	Support Quote	Comments
13.	A non-transitory computer-readable medium storing instructions operable to cause one or more processors to perform operations comprising:	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 15, Line 33 - 41	There are more than 4 billion cell-phone users in the world. Each day, thousands more sign up. A variety of mobile devices have been developed in recent years that are capable of supporting dynamic navigation and location-based services applications. These include wireless telephones, personal digital assistants (PDA's), personal navigation devices (PND's) and laptop computers. It is believed that the disclosed innovation will meet the desire of wireless service providers to increase their average revenue per user.	One or more processors are known by those skilled in the art to be included as a component of Bluetooth devices and cellular or mobile telephones

defining a geofence using a network of one or more beacons, wherein each beacon is a communication device configured to provide a signal detectable by a baseband subsystem of a mobile device located within a communication range of the respective beacon, defining the geofence including;	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 4, Lines 10-16	We present a low cost and easily deployed infrastructure for local based navigation outdoors and indoors without the need for GPS and or cellular networks. Moreover, the concept is especially suitable for local area (indoor and outdoor) services when and where the GPS and the cellular network can't provide the solution and the accuracy needed to provide such navigation (10 M or less).	The geofence is naturally established by the infrastructure of the deployed beacons about the area. The beacons have a fixed signal strength and are therefore limited to transmitting signals to a predefined distance. The user's mobile device (receiving unit) is either within range or outside of the range of the beacon signals. Therefore, the infrastructure defines a geofence region.
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19, Lines 12 - 37; FIG. 1	FIG. 1 is a flowchart illustrating of the indoor navigation procedure according to an embodiment of the present invention. Referring to FIG. 1, the user with cell phone (100) approach a facility/area where he can download the facility/area map (101) with a known list of waypoints represented by Bluetooth tags installed in the facility/area in a known places. The user cell phone application will scan (102) the area/facility for the known list of the Bluetooth tags/beacons, if tags/beacons was find (103) and (105) then the location of the user is determine as proximity to the find and match tag/beacon from the list (106) scanning is continue if no tags (104) was found, when found the location is display on the loaded map over the cell phone or Bluetooth device (107) and have the ability to navigate (108) between way points Accuracy is below 10 m and in case of approaching signal from more then one beacon/tags a triangulation method will perform to determine the exact location. The method gives the user the control and the privacy as his cell phone device is the scanner and it scans the area. In reality and the unique method there is no established	
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 4, Lines 10 - 47	A "user's" Bluetooth cellular phone will scan the local area for the location beacons. When a "user" is within 5/10 meters, the location beacons respond, providing room-level navigation accuracy. With multiple beacons installed and possibly receiving more then one beacon's signal, a simple triangulation calculation and options for signal strength will determine the exact location of the "user" on the downloaded map of the local area.	
associating the network with a geographic region, wherein the signal from at least one beacon in the network is detectable by a mobile device located in the geographic region;	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19, 12-37, FIG. 1	FIG. 1 is a flowchart illustrating of the indoor navigation procedure according to an embodiment of the present invention. Referring to FIG. 1, the user with cell phone (100) approach a facility/area where he can download the facility/area map (101) with a known list of waypoints represented by Bluetooth tags installed in the facility/area in a known places. The user cell phone application will scan (102) the area/facility for the known list of the Bluetooth tags/beacons, if tags/beacons was find (103) and (105) then the location of the user is determine as proximity to the find and match tag/beacon from the list (106) scanning is continue if no tags (104) was found, when found the location is display on the loaded map over the cell phone or Bluetooth device (107) and have the ability to navigate (108) between way points Accuracy is below 10 m and in case of approaching signal from more then one beacon/tags a triangulation method will perform to determine the exact location. The method gives the user the control and the privacy as his cell phone device is the scanner and it scans the area. In reality and the unique method there is no established communication at all as the scan reveille the tags/beacons name (store name) or	The geofence is naturally established by the infrastructure of the deployed beacons about the area. The beacons have a fixed signal strength and are therefore limited to transmitting signals to a predefined distance. The user's mobile device (receiving unit) is either within range or outside of the range of the beacon signals. Therefore, the infrastructure defines a geofence region.
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Claim 5	Claim 5. The method according to claim 1, further comprising a step of determining a current position of a user using a proximity of said display device to a known location of an RF beacon in said area/facility, by associating each beacon identifiers with a beacon location by at least one of embedding a description of said beacon location within said beacon identifier and associating each beacon identifier with each respective beacon location by an index, wherein in a condition having a single beacon signal received, the system determines the location by at least one of utilizing said location and beacon identifier association, and said location and beacon identifier association in conjunction with a signal strength of an RF signal emitted by said RF beacon, wherein in a condition having multiple beacons signal received, said location is determined by at least one of signal strength and a triangulation calculation.	
designating an encompassment of the geographic region as the geofence; and	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 4, Lines 10 - 47	A "user's" Bluetooth cellular phone will scan the local area for the location beacons. When a "user" is within 5/10 meters, the location beacons respond, providing room-level navigation accuracy. With multiple beacons installed and possibly receiving more then one beacon's signal, a simple triangulation calculation and options for signal strength will determine the exact location of the "user" on the downloaded map of the local area.	The geofence is naturally established by the infrastructure of the deployed beacons about the area. The beacons have a fixed signal strength and are therefore limited to transmitting signals to a predefined distance. The user's mobile device (receiving unit) is either within range or outside of the range of the beacon signals. Therefore, the infrastructure defines a geofence region.
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 4, Lines 40 - 47	A "user's" Bluetooth cellular phone will scan the local area for the location beacons. When a "user" is within 5/10 meters, the location beacons respond, providing room-level navigation accuracy. With multiple beacons installed and possibly receiving more then one beacon's signal, a simple triangulation calculation and options for signal strength will determine the exact location of the "user" on the downloaded map of the local area.	A user's Bluetooth/Wi-Fi mobile phone will scan the local area for the location beacons. When a user is within proximity to the beacon, the location beacons respond, providing superior accuracy compare to the regular GPS or navigation used today and the exact need to enable indoor lbs and navigation accuracy. With multiple beacons installed and possibly receiving more then one beacon's signal, a simple triangulation calculation and options for signal strength will determine the exact location of the user on the map of the local area.

	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 12, Lines 10 - 24	This method relies upon a dense grid of antennae, each having a well-known position. But the system reverses the normal detection or localization method in most cases the mobile is detected by a tag/beacons in the disclosed method, the user mobile with the Bluetooth special software scan the area for a known location and a known list of tags/beacons install in the area/facility/store building the tags/beacons have an known name/ID that broadcast and when the user mobile is in the proximity to the tag/beacons it is considered to be collocated with it. When more than one signal detects by the mobile, a simple triangulation process is determine the location in any case the short range of the Bluetooth in this case and in indoor make it a big advantage as it the accuracy can be less then 10 m.	
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 16, Lines 30 - 35	The disclosed innovation reverses the current idea of “locating” the user by letting the user navigate utilizing to the sensor network of Bluetooth beacons (whose signal is sent by way points) directly to the user’s mobile device. This will allow LBS (Local Base System) navigation, even indoors without GPS or Cellular network.	
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 16, Lines 36 - 41	The beacon can reach from 10 meters to more than a 1000 meter distance depending on the application. (to get more accuracy less range and more beacons may needed so the 10 meter is more then needed in building/room environment) getting more range to the “box” is as simple of attaching bigger antenna.	
associating a task with the geofence as a location based service;	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 16, Lines 36 - 41	FIG. 9 is illustrates the mall directory as part of the mall applications according to an embodiment of the present invention referring to FIG. 9, it’s illustrates the indoor application in the user cell phone as a buttons each represent the indoor programs describe in FIG. 8, from (801) parking and return2parking, (802) the directory, (803) the search and find (804) represent navigation request between the known way points, (805) the sales, specials, coupons, (806) will provide the user with emergency and notification and exit route and emergency procedure that so important to building/area in case of emergency (9/11, Virginia tech etc.) To a secure panic button (807) that can trigger locate the user (like 911 call) in the area by the security personal and (808) button provides information and event info. About the area/facility/mall/store.	The associated beacon triggers at least one Location Based Service (LBS) feature as part of the trigger application by the beacons.
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 21, Line 1 - 18; FIG. 6	FIG. 6 is illustrates the implementation of the tags/beacons in a mall application according to an embodiment of the present invention, each of the Bluetooth tags/beacons (602) contain the name of the waypoint (Macy’s for example) and the location of the tags/beacons are known and load in a list with the map of the facility (101) into the user cell phone (100), the list allow matching of the tags/beacons signal (names) (602) to the known list loaded with the map (101) to determine the proximity to the tag/beacon providing accuracy to less then 10 m the tags/beacons (602) can be install in the area in each location designated as way point store/rest room/special sales special location etc. The user can download the map (101) at the entrance (603) from the directory stand or pre download from the indoor mapping portal, the beacons can be installed also in the parking area (604) and with additional sensor to determine existence of the parking car in the parking area can provide the user with parking navigation to empty parking.	
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Claim 18	The method according to claim 1, further comprising steps of: f) storing information about customer behavior habit without compromising user ID or privacy, g) providing a location based service (LBS) application and information contents based on at least one of a location of a user as determined by at least one of said location of said display device and said location associated with said RF beacon identifier, and a behavior habit obtained from said display device, and a profile preference provided by data obtained from said display device, wherein said LBS and information content comprises at least one of: a special, a sale, and a promotion events coupon, h) designating a business as a waypoint and presenting advertisements associated with the business on the display device.	
advertising the geofence, including broadcasting, by each beacon in the network, an identification signal indicating that the beacon is a component of the network;	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19 Line 12 - Col. 20, Line 9	FIG. 1 is a flowchart illustrating of the indoor navigation procedure according to an embodiment of the present invention. Referring to FIG. 1, the user with cell phone (100) approach a facility/area where he can download the facility/area map (101) with a known list of waypoints represented by Bluetooth tags installed in the facility/area in a known places. The user cell phone application will scan (102) the area/facility for the known list of the Bluetooth tags/beacons, if tags/beacons was find (103) and (105) then the location of the user is determine as proximity to the find and match tag/beacon from the list (106) scanning is continue if no tags (104) was found, when found the location is display on the loaded map over the cell phone or Bluetooth device (107) and have the ability to navigate (108) between way points Accuracy is below 10 m and in case of approaching signal from more then one beacon/tags a triangulation method will perform to determine the exact location. The method gives the user the control and the privacy as his cell phone device is the scanner and it scans the area. In reality and the unique method there is no established	Advertising the signal refers to a broadcasting of the signal of each of the beacons (continuous transmission of the beacon signal during operating hours)
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), - Claim 1(b)	b) determining a current position of said display device by utilizing a proximity to one or more wireless radio frequency (RF) beacons, wherein said RF beacons employ at least one of Bluetooth, long range Bluetooth, and Wi-Fi protocols, each RF beacon comprising a beacon identifier and is installed in known position within said area/facility.	LBS features includes guides and indoor navigation, area information, and the like.

	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19, Lines 12 - 37; FIG. 1	FIG. 1 is a flowchart illustrating of the indoor navigation procedure according to an embodiment of the present invention. Referring to FIG. 1, the user with cell phone (100) approach a facility/area where he can download the facility/area map (101) with a known list of waypoints represented by Bluetooth tags installed in the facility/area in a known places. The user cell phone application will scan (102) the area/facility for the known list of the Bluetooth tags/beacons, if tags/beacons was find (103) and (105) then the location of the user is determine as proximity to the find and match tag/beacon from the list (106) scanning is continue if no tags (104) was found, when found the location is display on the loaded map over the cell phone or Bluetooth device (107) and have the ability to navigate (108) between way points Accuracy is below 10 m and in case of approaching signal from more then one beacon/tags a triangulation method will perform to determine the exact location. The method gives the user the control and the privacy as his cell phone device is the scanner and it scans the area. In reality and the unique method there is no established
determining that the mobile device has entered the geofence when the mobile device is in communication with at least one beacon in the network; and	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19, Lines 12 - 37; FIG. 1	FIG. 1 is a flowchart illustrating of the indoor navigation procedure according to an embodiment of the present invention. Referring to FIG. 1, the user with cell phone (100) approach a facility/area where he can download the facility/area map (101) with a known list of waypoints represented by Bluetooth tags installed in the facility/area in a known places. The user cell phone application will scan (102) the area/facility for the known list of the Bluetooth tags/beacons, if tags/beacons was find (103) and (105) then the location of the user is determine as proximity to the find and match tag/beacon from the list (106) scanning is continue if no tags (104) was found, when found the location is display on the loaded map over the cell phone or Bluetooth device (107) and have the ability to navigate (108) between way points Accuracy is below 10 m and in case of approaching signal from more then one beacon/tags a triangulation method will perform to determine the exact location. The method gives the user the control and the privacy as his cell phone device is the scanner and it scans the area. In reality and the unique method there is no established communication at all as the scan reveille the tags/beacons name (store name) or
transmitting, by a beacon in the network, information on the task and a list of unique identifiers of other beacons in the network, wherein the list is usable by the mobile device to register the unique identifiers with the baseband subsystem for the mobile device to determine whether the mobile device has entered the advertised geofence and whether or not to trigger the mobile device to perform the task,	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19, Line 38 - Col. 20, Line 8; FIG. 2	FIG. 2 is a flowchart illustrating of the sales sense marketing algorithm according to an embodiment of the present invention, referring to FIG. 2, in the sales sense method the user input his profile preference in the associated Bluetooth application, the profile can contain gender, age range and sales preference of the user, the information will be encode into the Bluetooth naming of the cellular phone as a key (201), like a car VIN #, to provide maximum privacy and secure to the user there is no personal ID nor cell number or any information that can reveille the ID of the user just information that can set the user preference and sales segments without compromise the user privacy, when the user approach the area/facility with the disclosed system/tags/beacons installed the directory stand or the entity system (202) that provide the user with the mapping of the facility/area will determine and identify (203) the user profile based on decoding the Bluetooth key naming (201) and set the sales segment and preference (204) and accordingly will provide the user with the area/facility mapping and the local content according to the user profile/preference, US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 4, Lines 28 - 31
		initiate transfer of info according to at least one beacon location of the mobile device and the beacon identifier
		The known location of the beacon is set in a small database: the table of the beacon (waypoints=the beacons identities according to the Bluetooth address/name of the beacon) is attached to the local area mapping of the area.
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19, Lines 12 - 37; FIG. 1	FIG. 1 is a flowchart illustrating of the indoor navigation procedure according to an embodiment of the present invention. Referring to FIG. 1, the user with cell phone (100) approach a facility/area where he can download the facility/area map (101) with a known list of waypoints represented by Bluetooth tags installed in the facility/area in a known places. The user cell phone application will scan (102) the area/facility for the known list of the Bluetooth tags/beacons, if tags/beacons was find (103) and (105) then the location of the user is determine as proximity to the find and match tag/beacon from the list (106) scanning is continue if no tags (104) was found , when found the location is display on the loaded map over the cell phone or Bluetooth device (107) and have the ability to navigate (108) between way points Accuracy is below 10 m and in case of approaching signal from more then one beacon/tags a triangulation method will perform to determine the exact location. The method gives the user the control and the privacy as his cell phone device is the scanner and it scans the area. In reality and the unique method there is no established communication at all as the Mapping of the area/facility will be download at the area/facility or pre download before arriving to the area/facility, the mapping contain a lookup list of the tags/beacons installed in the area represent a waypoint on the map.
	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 16, Lines 4 - 7	

	wherein transmitting the information is triggered by the mobile device making a contact with any beacon in the network and is conditioned upon the contact being a first contact between the mobile device and any beacon in the network.	US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 21, Line 1 - 18; FIG. 6	FIG. 6 is illustrates the implementation of the tags/beacons in a mall application according to an embodiment of the present invention, each of the Bluetooth tags/beacons (602) contain the name of the waypoint (Macy's for example) and the location of the tags/beacons are known and load in a list with the map of the facility (101) into the user cell phone (100), the list allow matching of the tags/beacons signal (names) (602) to the known list loaded with the map (101) to determine the proximity to the tag/beacon providing accuracy to less then 10 m the tags/beacons (602) can be install in the area in each location designated as way point store/rest room/special sales special location etc. The user can download the map (101) at the entrance (603) from the directory stand or pre download from the indoor mapping portal, the beacons can be installed also in the parking area (604) and with additional sensor to determine existence of the parking car in the parking area can provide the user with parking navigation to empty parking.	trigger is done by proximity to a beacon in the area (to the beacon identifier that broadcast by the beacon) see fig 1, 8,941,485 location trigger content delivery , see also 208 on drawing 3 of 8,941,485 trigger (by the user mobile load tag list 305 , scan by the mobile device for the listed beacons 202, determine location as proximity to beacon from the list 206 and trigger content and LBS services 208
		US 8,866,673 (US Appl. Ser. No. 12/587,042, Filed October 01, 2009), Col. 19, Line 38 - Col. 20, Line 8; FIG. 2	FIG. 2 is a flowchart illustrating of the sales sense marketing algorithm according to an embodiment of the present invention, referring to FIG. 2, in the sales sense method the user input his profile preference in the associated Bluetooth application, the profile can contain gender, age range and sales preference of the user, the information will be encode into the Bluetooth naming of the cellular phone as a key (201), like a car VIN #, to provide maximum privacy and secure to the user there is no personal ID nor cell number or any information that can reveille the ID of the user just information that can set the user preference and sales segments without compromise the user privacy, when the user approach the area/facility with the disclosed system/tags/beacons installed the directory stand or the entity system (202) that provide the user with the mapping of the facility/area will determine and identify (203) the user profile based on decoding the Bluetooth key naming (201) and set the sales segment and preference (204) and accordingly will provide the user with the area/facility mapping and the local content according to the user profile/preference,	
Count 14: Dependent Claim 14 of Grainger, et al. '030, which depends from Independent Claim 13 as compared to Dependent Claim 14 which depends from Independent Claim 13 of the subject Application.				
Claim	Claim Limitation	Support (Reference,	Support Quote	Comments
14.	the beacon is a short range radio frequency beacon.	See comments pertaining to Claim 2		
Count 15: Dependent Claim 15 of Grainger, et al. '030, which depends from Dependent Claim 14, which depends from Independent Claim 13 as compared to Dependent Claim 15, which depends from Dependent Claim 14, which depends from Independent Claim 13 of the subject Application.				
Claim	Claim Limitation	Support (Reference,	Support Quote	Comments
15.	the geographic region is located in an environment where signals of a global positioning system (GPS) are unavailable for location determination by the mobile device.	See comments pertaining to Claim 3		
Count 16: Dependent Claim 16 of Grainger, et al. '030, which depends from Independent Claim 13 as compared to Dependent Claim 16 which depends from Independent Claim 13 of the subject Application.				
Claim	Claim Limitation	Support (Reference,	Support Quote	Comments
16.	the signal of each beacon includes an identifier of the corresponding beacon and a location of the corresponding beacon.	See comments pertaining to Claim 4		
Count 17: Dependent Claim 17 of Grainger, et al. '030, which depends from Independent Claim 13 as compared to Dependent Claim 17 which depends from Independent Claim 13 of the subject Application.				
Claim	Claim Limitation	Support (Reference,	Support Quote	Comments
17.	wherein advertising the geofence comprises advertising the location based service.	See comments pertaining to Claim 5		
Count 18: Dependent Claim 18 of Grainger, et al. '030, which depends from Independent Claim 13 as compared to Dependent Claim 18 which depends from Independent Claim 13 of the subject Application.				
Claim	Claim Limitation	Support (Reference,	Support Quote	Comments
18.	determining that the mobile device has exited the advertised geofence when the mobile device is no longer in communication with any beacon in the network; and	See comments pertaining to Claim 6		
	causing the mobile device to transfer location monitoring to an application subsystem of the mobile device upon determining that the mobile device has exited the advertised geofence.	See comments pertaining to Claim 6		

Electronic Acknowledgement Receipt

EFS ID:	25353705
Application Number:	15086028
International Application Number:	
Confirmation Number:	1238
Title of Invention:	RF BEACON DEPLOYMENT AND METHOD OF USE
First Named Inventor/Applicant Name:	Ehud MENDELSON
Customer Number:	31877
Filer:	Allen D. Hertz
Filer Authorized By:	
Attorney Docket Number:	MEN-16-001
Receipt Date:	30-MAR-2016
Filing Date:	
Time Stamp:	23:31:21
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		MEN-16-001_Mendelson_Appl e_Interference_Suggestion_03 3016.pdf	403369 cd96c954dc67a926c17a4a782e6a283e17e 9786e	yes	35

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Amendment Copy Claims/Response to Suggested Claims	1	4
	Claims	5	10
	Applicant Arguments/Remarks Made in an Amendment	11	20
	Examination support document	21	35

Warnings:

Information:

Total Files Size (in bytes):	403369
------------------------------	--------

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.