

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:
WILLIAM H. BOLLMAN
MANELLI SELTER PLLC
2000 M STREET, NW, 7TH FLOOR
WASHINGTON, DC 20036-3307
USA

PCT

NOTIFICATION OF TRANSMITTAL OF
INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Rule 71.1)

Date of mailing
(day/month/year)

06 AUG 2012

Applicant's or agent's file reference

20-260

IMPORTANT NOTIFICATION

International application No.

PCT/US11/01198

International filing date (day/month/year)

08 July 2011 (08.07.2011)

Priority date (day/month/year)

09 July 2010 (09.07.2010)

Applicant

TELECOMMUNICATION SYSTEMS, INC.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the *PCT Applicant's Guide*.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed invention is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the IPEA/ US

Mail Stop PCT, Attn: IPEA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
Facsimile No. (571) 273-3201

Authorized officer

William Krynski

Telephone No. 571-272-1700

Form PCT/IPEA/416 (January 2004)

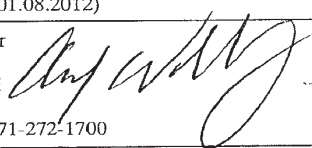
PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 20-260	FOR FURTHER ACTION		See Form PCT/IPEA/416																								
International application No. PCT/US11/01198	International filing date (day/month/year) 08 July 2011 (08.07.2011)	Priority date (day/month/year) 09 July 2010 (09.07.2010)																									
International Patent Classification (IPC) or national classification and IPC IPC: H04W 8/16 (2009.01) USPC: 455/456.1																											
Applicant TELECOMMUNICATION SYSTEMS, INC.																											
1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising: a. ☒ (sent to the applicant and to the International Bureau) a total of <u>0</u> sheets, as follows: ☐ sheets of the description, claims and/or drawings which have been amended and/or sheets containing rectifications authorized by this Authority, unless those sheets were superseded or cancelled, and any accompanying letters (see Rules 46.5, 66.8, 70.16, 91.2, and Section 607 of the Administrative Instructions). ☐ sheets containing rectifications, where the decision was made by this Authority not to take them into account because they were not authorized by or notified to this Authority at the time when this Authority began to draw up this report, and any accompanying letters (Rules 66.4bis, 70.2(e), 70.16 and 91.2). ☐ superseded sheets and any accompanying letters, where this Authority either considers that the superseding sheets contain an amendment that goes beyond the disclosure in the international application as filed, or the superseding sheets were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in item 4 of Box No.I and the Supplemental Box (see Rule 70.16(b)). b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____ containing a sequence listing, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see paragraph 3bis of Annex C of the Administrative Instructions).																											
4. This report contains indications relating to the following items: <table style="width: 100%; border: none;"> <tr> <td style="width: 10%;">☒</td> <td style="width: 20%;">Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td>☐</td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td>☐</td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td>☐</td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td>☒</td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td>☐</td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td>☐</td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td>☐</td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>				☒	Box No. I	Basis of the report	☐	Box No. II	Priority	☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	☐	Box No. IV	Lack of unity of invention	☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement	☐	Box No. VI	Certain documents cited	☐	Box No. VII	Certain defects in the international application	☐	Box No. VIII	Certain observations on the international application
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☐	Box No. VIII	Certain observations on the international application																									
Date of submission of the demand 09 January 2012 (09.01.2012)		Date of completion of this report 01 August 2012 (01.08.2012)																									
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201		Authorized officer William Krynski  Telephone No. 571-272-1700																									

Form PCT/IPEA/409 (cover sheet) (July 2011)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US11/01198

Box No. I Basis of the report1. With regard to the **language**, this report is based on:

- ☒ the international application in the language in which it was filed.
- ☐ a translation of the international application into English which is the language of a translation furnished for the purposes of:
- ☐ international search (Rules 12.3(a) and 23.1(b)).
 - ☐ publication of the international application (Rule 12.4(a)).
 - ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a) and (b)).

2. With regard to the **elements** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☒ the international application as originally filed/furnished
- ☒ the description:
- pages 1-11 as originally filed/furnished
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____
- ☒ the claims:
- pages 12-14 as originally filed/furnished
- pages* NONE as amended (together with any statement) under Article 19
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____
- ☒ the drawings:
- pages 1-12 as originally filed/furnished
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____
- ☐ a sequence listing - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since either they are considered to go beyond the disclosure as filed, or they were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in the Supplemental Box (Rules 70.2(c) and (c-bis)):

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____

5. ☐ This report has been established:

- ☐ taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rules 66.1(d-bis) and 70.2(e)).
- ☐ without taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rules 66.4bis) and 70.2(e)).

6. ☐ Supplementary international search report(s) from Authority(ies) _____ has/have been received and taken into account in establishing this report (Rule 45bis.8(b) and (c)).

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US11/01198

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>1-9</u>	YES
	Claims <u>NONE</u>	NO
Inventive Step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-9</u>	NO
Industrial Applicability (IA)	Claims <u>1-9</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and Explanations (Rule 70.7)
Please See Continuation Sheet

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

V. 2. Citations and Explanations:

Claims 1-9 lack an inventive step as being obvious over Shim (US 2006/0246920 A1) in view of Szabo et al. (US 2009/0328135 A1).

Regarding claim 1, Shim discloses a wireless device (a wireless communications system, para [0001]) capable of being located over a network by a requesting party (an application requesting location information, para [0006], [0023], [0030]), said wireless device comprising:

privacy settings having at least five options (five levels of privacy options, para [0043]-[0047]);

wherein each of said at least five options corresponds to a given combination of settings within said device (different circumstances under which positioning is allowed are described, para [0043]-[0047]) relating to a privacy of reporting of location of said wireless device to a requesting device (determining the response to a location request, para [0039]).

Shim does not disclose said wireless device comprising a phone; and a display to display a visually-continuous location privacy slider having stops.

However, Szabo et al. disclose a wireless device comprising:

a phone (a mobile telephone, para [0021]); and

a display (a user interface with a display, para [0026]) to display a visually-continuous location privacy slider having stops (a slider tool for selecting privacy options, Fig. 5, element 500, para [0059]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the display and visually-continuous slider of Szabo et al. with the wireless device of Shim to increase ease and familiarity of use when setting location privacy controls.

Regarding claim 2, Shim and Szabo et al. disclose the invention as shown in claim 1 above, and Shim further teaches wherein:

said at least five stops correspond to a given combination of settings for individual location functions (five levels of privacy options, para [0043]-[0047]) defined by a Location Privacy Checking Protocol (PCP) standard (a privacy checking protocol, para [0005], [0105]).

Regarding claim 3, Shim and Szabo et al. disclose the invention as shown in claim 1 above, and Shim further discloses wherein said

Supplemental Box

given combination of settings for individual location functions comprise:
position not allowed (position requests are blocked, para [0043]);
position given without notification (position requests are allowed, para [0044]);
notify when position given (position is given with notification, para [0045]);
notification of position if position request authorized (position is only given if there is an affirmative response to a notification, para [0047]); and
position given if no response to authorization request (position is given if there is no response to a notification, para [0046]).

Regarding claim 4, Shim and Szabo et al. disclose the invention as shown in claim 1 above, and Shim further discloses wherein: said network is a wireless network (a wireless communications system, para [0001]).

Regarding claim 5, Shim discloses a method of implementing a desired level of location privacy (an entity for protecting privacy, para [0004], [0041]) on a wireless device (a wireless communications system, para [0001]) with privacy settings with a plurality of options each gradually increasing in location privacy (five levels of privacy options, para [0043]-[0047]), comprising:
establishing a first combination of privacy settings among a plurality of applications operable on a wireless device when a lowest level of privacy is selected (position requests are allowed, para [0044]);
establishing a second combination of privacy settings among said plurality of applications operable on a wireless device when a central level of privacy is selected (position is given if there is no response to a notification, para [0046]);
establishing a third combination of privacy settings among said plurality of applications operable on a wireless device when a highest level of privacy is selected (position requests are blocked, para [0043]).

Shim does not disclose a visually-continuous location privacy slide set to any of a plurality of stops from one end to the other. However, Szabo et al. disclose a visually-continuous location privacy slide set to any of a plurality of stops from one end to the other for different privacy levels (a slider tool for selecting privacy options, Fig. 5, element 500, para [0059]);
a level of privacy selected by a slide stopped at a first stop position at one end of a visually-continuous location privacy slide (a slider tool for selecting the minimum privacy, Fig. 5, element 516, para [0060]);
a level of privacy selected by said slide stopped at a central stop position of said visually-continuous location privacy slide (a slider tool for selecting some privacy, Fig. 5, element 514, para [0060]);
and a level of privacy selected by said slide stopped at a last stop position at a second end of said visually-continuous location privacy slide (a slider tool for selecting the maximum privacy, Fig. 5, element 504 para [0060]).
It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the visually-continuous slider settings of Szabo et al. with the method of Shim to increase ease and familiarity of use when setting location privacy controls.

Regarding claim 6, Shim and Szabo et al. disclose the invention as shown in claim 5 above, and Shim further discloses wherein said plurality of stops consist of: five stops (five levels of privacy options, para [0043]-[0047]).

Regarding claim 7, Shim and Szabo et al. disclose the invention as shown in claim 5 above, and Shim further discloses wherein a plurality of stops comprise:
at least five stops (five levels of privacy options, para [0043]-[0047]) corresponding to a given combination of settings for individual location functions defined by a Location Privacy Checking Protocol (PCP) standard (a privacy checking protocol, para [0005], [0105]).

Regarding claim 8, Shim and Szabo et al. discloses the invention as shown in claim 5 above, and Shim further discloses wherein said plurality of stops comprise:
a first stop corresponding to position not allowed (position requests are blocked, para [0043]);
a second stop corresponding to position given without notification (position requests are allowed, para [0044]);
a third stop corresponding to notify when position given (position is given with notification, para [0045]);
a fourth stop corresponding to notification of position if position request authorized (position is only given if there is an affirmative response to a notification, para [0047]); and
a fifth stop corresponding to position given if no response to authorization request (position is given if there is no response to a notification, para [0046]).

Regarding claim 9, Shim and Szabo et al. disclose the invention as shown in claim 5 above, and Shim further discloses wherein: a location of said wireless device is requested (an application requesting location information, para [0006], [0023], [0030]) via a wireless network to said wireless device (a wireless communications system, para [0001]).

Claims 1-9 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

----- NEW CITATIONS -----

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 20-317	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US 08/05575	International filing date (day/month/year) 13 October 2009 (13.10.2009)	(Earliest) Priority Date (day/month/year) 14 October 2008 (14.10.2008)
Applicant TELECOMMUNICATION SYSTEMS, INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of:

- ☒ the international application in the language in which it was filed.
- ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. ☐ This international search report has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).

c. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (see Box No. II).

3. ☐ Unity of invention is lacking (see Box No. III).

4. With regard to the title,

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

- a. the figure of the drawings to be published with the abstract is Figure No. 1
- ☒ as suggested by the applicant.
- ☐ as selected by this Authority, because the applicant failed to suggest a figure.
- ☐ as selected by this Authority, because this figure better characterizes the invention.
- b. ☐ none of the figures is to be published with the abstract.

Form PCT/ISA/210 (first sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 09/05575

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G08B 1/08 (2009.01)

USPC - 340/539.13

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
USPC: 340/539.13Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 340/7.59, 539.13; 455/456.1 (keyword limited - see terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PubWEST (PGPB, USPT, USOC, EPAB, JPAB); GOOGLE

Search Terms: location, proximity, alert, notification, server, database, restraining order, geographic, monitor, wireless, limit, prohibit, identifier

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2006/0097866 A1 (Adamczyk et al.) 11 May 2006 (11.05.2006), entire document, especially; abstract, para. [0003], [0044]-[0046], [0051], [0052], [0054], [0068], [0072], [0082]	1 - 13
A	US 2004/0046667 A1 (Copley) 11 March 2004 (11.03.2004), entire document	1 - 13

☐ Further documents are listed in the continuation of Box C.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

17 November 2009 (17.11.2009)

Date of mailing of the international search report

03 DEC 2009

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents

P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-3201

Authorized officer:

Lee W. Young

PCT Helpdesk: 571-272-4300

PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: WILLIAM H. BOLLMAN
MANELLI DENISON & SELTER PLLC
2000 M STREET, NW
7TH FLOOR
WASHINGTON, DC 20036

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year) **03 DEC 2009**

Applicant's or agent's file reference
20-317

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/US 09/05575

International filing date (day/month/year)

13 October 2009 (13.10.2009)

Priority date (day/month/year)

14 October 2008 (14.10.2008)

International Patent Classification (IPC) or both national classification and IPC

IPC(8) - G08B 1/08 (2009.01)

USPC - 340/539.13

Applicant TELECOMMUNICATION SYSTEMS, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Date of completion of this opinion

17 November 2009 (17.11.2009)

Authorized officer:

Lee W. Young

PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2009)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 09/05575

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of:
 - ☒ the international application in the language in which it was filed.
 - ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. ☐ This opinion has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:
 - a. (means)
 - ☐ on paper
 - ☐ in electronic form
 - b. (time)
 - ☐ in the international application as filed
 - ☐ together with the international application in electronic form
 - ☐ subsequently to this Authority for the purposes of search
4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US 09/05575

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	None.	YES
	Claims	1 - 13	NO
Inventive step (IS)	Claims	None.	YES
	Claims	1 - 13	NO
Industrial applicability (IA)	Claims	1 - 13	YES
	Claims	None.	NO

2. Citations and explanations:

Claims 1 - 13 lack novelty under PCT Article 33(2) as being anticipated by US 2006/0097866 A1 to Adamczyk et al. (hereinafter 'Adamczyk').

Regarding claims 1 and 8, Adamczyk teaches a method of providing location based proximity alert services and a location based proximity alert physical server, comprising: retrieving, at a location based proximity alert physical server, a current location of a wireless client device associated with a given restraining order target identifier (abstract, para. [0003], [0051], [0052], [0054]); accessing a law enforcement database comprising a plurality of restraining order target identifiers, each associated with a corresponding restraining order limit identifier, to obtain a relevant restraining order limit identifier associated with the given restraining order target identifier (para. [0003], [0051], [0052], [0054]); and generating a geo-proximity alert message when the current location is within a prohibited geographic area associated with the given restraining order target identifier (para. [0052], [0068]).

Regarding claims 2 and 9, Adamczyk teaches that the restraining order target identifier is a mobile identification number (MIN) (para. [0044]-[0046], [0054], [0082]).

Regarding claim 3, Adamczyk teaches that the restraining order target identifier is a mobile telephone number (para. [0044]-[0046], [0054], [0082]).

Regarding claim 4, Adamczyk teaches determining a distance between the wireless client associated with the restraining order requester identifier (para. [0052]), and a wireless client requesting the geo-proximity alert message (para. [0068]).

Regarding claims 5 and 11, Adamczyk teaches that the prohibited geographic area associated with the given restraining order target identifier is a prohibited perimeter around a given school (para. [0072]).

Regarding claims 6 and 12, Adamczyk teaches that the prohibited geographic area associated with the given restraining order target identifier is a prohibited perimeter around a given park (para. [0072]).

Regarding claims 7 and 13, Adamczyk teaches that the geo-proximity alert message is an email message (para. [0082]).

Regarding claim 10, Adamczyk teaches that the restraining order violation module generates the geoproximity alert message if a distance between the wireless client associated with the restraining order requester identifier is less than a preconfigured minimum distance to a wireless client requesting the geoproximity alert message (para. [0052], [0068]).

Claims 1 - 13 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.

NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers: claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added."
"Claims 7 to 13 cancelled: new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under Article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments and any accompanying statement, under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the time of filing the amendments (and any statement) with the International Bureau, also file with the International Preliminary Examining Authority a copy of such amendments (and of any statement) and, where required, a translation of such amendments for the procedure before that Authority (see Rules 55.3(a) and 62.2, first sentence). For further information, see the Notes to the demand form (PCT/IPEA/401).

If a demand for international preliminary examination is made, the written opinion of the International Searching Authority will, except in certain cases where the International Preliminary Examining Authority did not act as International Searching Authority and where it has notified the International Bureau under Rule 66.1bis(b), be considered to be a written opinion of the International Preliminary Examining Authority. If a demand is made, the applicant may submit to the International Preliminary Examining Authority a reply to the written opinion together, where appropriate, with amendments before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later (Rule 43bis.1(c)).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see the *PCT Applicant's Guide*, National Chapters.

SEQUENCE LISTINGS AND TABLES RELATED THERETO IN INTERNATIONAL APPLICATIONS FILED IN THE U.S. RECEIVING OFFICE

The Administrative Instructions (AIs) under the Patent Cooperation Treaty (PCT), in force as of July 1, 2009, contain important changes relating to the manner of filing, and applicable fees for, sequence listings and/or tables related thereto (sequence-related tables) in international applications. The complete text may be accessed at <http://www.wipo.int/pct/en/texts/index.htm>.

Effective July 1, 2009, Part 8 and Annex C-bis will no longer form part of the AIs. Part 8 was introduced in 2001 as a temporary solution to problems arising from the filing of very large sequence listings on paper and provided for a *sequence listing forming part of the international application* to be filed in electronic form on physical medium (e.g., CD), together with the remainder of the application on paper. In 2002, Part 8 was expanded to include sequence-related tables and Annex C-bis was added to provide technical requirements. All applicants may now file complete international applications in electronic form, eliminating the need for these temporary provisions.

I. AIS PART 8 AND ANNEX C-BIS DELETED AS OF JULY 1, 2009

- A) Sequence-related tables cannot be filed as a separate part of the description or in text format. They must be provided as an integral part of the international application either:
- in PDF format as part of an international application filed in electronic form via EFS-Web; or
 - on paper as part of an international application filed on paper.
- B) A *sequence listing forming part of an international application* may be provided either:
- in electronic form, as part of an international application filed in electronic form via EFS-Web, in
 - Annex C/ST.25 text format (preferred), or
 - PDF format; or
 - on paper as part of an international application filed on paper.
- C) A *sequence listing not forming part of the international application* (for search under PCT Rule 13ter) in Annex C/ST.25 text format
- is not required where the *sequence listing forming part of the international application* was filed in Annex C/ST.25 text format as part of an international application filed in electronic form via EFS-Web
 - is required for search where the *sequence listing forming part of the international application* was filed in PDF
 - is required for search on physical medium (e.g., CD) where the *sequence listing forming part of the international application* was filed on paper as part of an international application filed on paper.

II. CALCULATION OF THE INTERNATIONAL FILING FEE AND FEE REDUCTION UNDER AI § 707

- A) A sequence-related table must form an integral part of the international application and will incur FULL page fees with no upper limit.
- B) A *sequence listing forming part of an international application* filed:
- via EFS-Web in Annex C/ST.25 text format will incur NO page fees;
 - on paper or in PDF format will incur FULL page fees with no upper limit.

III. AVAILABILITY OF SEQUENCE LISTINGS SUBMITTED FOR SEARCH UNDER PCT RULE 13TER

International Searching Authorities will be required to transmit to the International Bureau a copy of an Annex C/ST.25 text format sequence listing provided for search under PCT Rule 13ter. Any such sequence listing will be made available on PATENTSCOPE® (*sequence listings forming part of the international application* are already available).

IV. JULY 2009 REQUEST (PCT/RO/101)

The Request now has two options for the last sheet: one for paper filings; and one for EFS-Web filings. The July 2009 Request may be accessed at <http://www.wipo.int/pct/en/forms/index.htm>

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:
WILLIAM H. BOLLMAN
MANELLI DENISON & SELTER PLLC
2000 M STREET, NW, 7TH FLOOR
WASHINGTON, DC 20036

PCT

NOTIFICATION OF TRANSMITTAL OF
INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Rule 71.1)

Date of mailing
(day/month/year)

14 JAN 2011

Applicant's or agent's file reference

20-317

IMPORTANT NOTIFICATION

International application No.

International filing date (day/month/year)

Priority date (day/month/year)

PCT/US09/05575

13 October 2009 (13.10.2009)

14 October 2008 (14.10.2008)

Applicant

TELECOMMUNICATION SYSTEMS, INC.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the *PCT Applicant's Guide*.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed invention is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the IPEA/ US

Mail Stop PCT, Attn: IPEA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
Facsimile No. 572-273-3201

Authorized officer

KEN WIEDER

Telephone No. (571) 272.2986

Form PCT/IPEA/416 (January 2004)

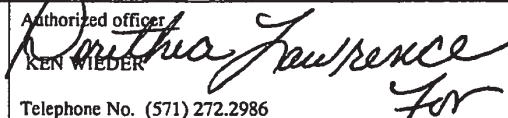
PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 20-317	FOR FURTHER ACTION		See Form PCT/IPEA/416																								
International application No. PCT/US09/05575	International filing date (day/month/year) 13 October 2009 (13.10.2009)	Priority date (day/month/year) 14 October 2008 (14.10.2008)																									
International Patent Classification (IPC) or national classification and IPC IPC: G08B 1/08(2006.01) USPC: 340/530.13																											
Applicant TELECOMMUNICATION SYSTEMS, INC.																											
1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of <u>2</u> sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising: a. ☐ (sent to the applicant and to the International Bureau) a total of ___ sheets, as follows: ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions). ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box. b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions). 4. This report contains indications relating to the following items: <table style="width: 100%; border: none;"> <tr> <td style="width: 10%;">☒</td> <td style="width: 20%;">Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td>☐</td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td>☐</td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td>☐</td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td>☒</td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td>☐</td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td>☐</td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td>☐</td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>				☒	Box No. I	Basis of the report	☐	Box No. II	Priority	☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	☐	Box No. IV	Lack of unity of invention	☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	☐	Box No. VI	Certain documents cited	☐	Box No. VII	Certain defects in the international application	☐	Box No. VIII	Certain observations on the international application
☒	Box No. I	Basis of the report																									
☐	Box No. II	Priority																									
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability																									
☐	Box No. IV	Lack of unity of invention																									
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement																									
☐	Box No. VI	Certain documents cited																									
☐	Box No. VII	Certain defects in the international application																									
☐	Box No. VIII	Certain observations on the international application																									
Date of submission of the demand 16 April 2010 (16.04.2010)		Date of completion of this report 03 January 2011 (03.01.2011)																									
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer  KEN WIEDER Telephone No. (571) 272.2986																									

Form PCT/IPEA/409 (cover sheet)(April 2007)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US09/05575

Box No. I Basis of the report

1. With regard to the language, this report is based on:

- ☒ the international application in the language in which it was filed.
- ☐ a translation of the international application into English, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3(a) and 23.1(b))
- ☐ publication of the international application (under Rule 12.4(a))
- ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☒ the international application as originally filed/furnished
- ☒ the description:
- pages 1-11 as originally filed/furnished
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____
- ☒ the claims:
- pages 12-15 as originally filed/furnished
- pages* NONE as amended (together with any statement) under Article 19
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____
- ☒ the drawings:
- pages 1-3 as originally filed/furnished
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☒ The amendments have resulted in the cancellation of:

- ☒ the description, pages NONE
- ☒ the claims, Nos. NONE
- ☒ the drawings, sheets/figs NONE
- ☒ the sequence listing (*specify*): NONE
- ☒ any table(s) related to the sequence listing (*specify*): NONE

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

5. ☐ This report has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 70.2(e)).

* If item 4 applies, some or all of those sheets may be marked "superseded."

Form PCT/IPEA/409 (Box No. I) (April 2007)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US09/05575

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>NONE</u>	<u>YES</u>
	Claims <u>1-13</u>	<u>NO</u>
Inventive Step (IS)	Claims <u>NONE</u>	<u>YES</u>
	Claims <u>1-13</u>	<u>NO</u>
Industrial Applicability (IA)	Claims <u>1-13</u>	<u>YES</u>
	Claims <u>NONE</u>	<u>NO</u>

2. Citations and Explanations (Rule 70.7)
Please See Continuation Sheet

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US09/05575

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

V. 2. Citations and Explanations:

Claims 1 - 13 lack novelty under PCT Article 33(2) as being anticipated by US 2006/0097866 A1 to Adamczyk et al. (hereinafter 'Adamczyk').

Regarding claims 1 and 8, Adamczyk teaches a method of providing location based proximity alert services and a location based proximity alert physical server, comprising: retrieving, at a location based proximity alert physical server, a current location of a wireless client device associated with a given restraining order target identifier (abstract, para. [0003], [0051], [0052], [0054]); accessing a law enforcement database comprising a plurality of restraining order target identifiers, each associated with a corresponding restraining order limit identifier, to obtain a relevant restraining order limit identifier associated with the given restraining order target identifier (para. [0003], [0051], [0052], [0054]); and generating a geo-proximity alert message when the current location is within a prohibited geographic area associated with the given restraining order target identifier (para. [0052], [0088]).

Regarding claims 2 and 9, Adamczyk teaches that the restraining order target identifier is a mobile identification number (MIN) (para. [0044]-[0046], [0054], [0082]).

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US09/05575

Supplemental Box

Regarding claim 3, Adamczyk teaches that the restraining order target identifier is a mobile telephone number (para. [0044]-[0046], [0054], [0082]).

Regarding claim 4, Adamczyk teaches determining a distance between the wireless client associated with the restraining order requester identifier (para. [0052]), and a wireless client requesting the geo-proximity alert message (para. [0068]).

Regarding claims 5 and 11, Adamczyk teaches that the prohibited geographic area associated with the given restraining order target identifier is a prohibited perimeter around a given school (para. [0072]).

Regarding claims 6 and 12, Adamczyk teaches that the prohibited geographic area associated with the given restraining order target identifier is a prohibited perimeter around a given park

Regarding claims 7 and 13, Adamczyk teaches that the geo-proximity alert message is an email message (para. [0082]).

Regarding claim 10, Adamczyk teaches that the restraining order violation module generates the geoproximity alert message if a distance between the wireless client associated with the restraining order requester identifier is less than a preconfigured minimum distance to a wireless client requesting the geoproximity alert message (para. [0052], [0068]).

Claims 1 - 13 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry. (para. [0072]).

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

To:
WILLIAM H. BOLLMAN
MANELLI DENISON & SELTER PLLC
2000 M STREET, NW
7TH FLOOR
WASHINGTON, DC 20036

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT AND
THE WRITTEN OPINION OF THE INTERNATIONAL
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing (day/month/year) 03 DEC 2009	
Applicant's or agent's file reference 20-317	FOR FURTHER ACTION See paragraphs 1 and 4 below
International application No. PCT/US 09/05575	International filing date (day/month/year) 13 October 2009 (13.10.2009)
Applicant TELECOMMUNICATION SYSTEMS, INC.	

- ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.
Filing of amendments and statement under Article 19:
The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):
When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.
Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes
1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 8270
For more detailed instructions, see the notes on the accompanying sheet.
- ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.
- ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.
- Reminders**
Shortly after the expiration of 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.
The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.
Within 19 months from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later); otherwise, the applicant must, within 20 months from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.
In respect of other designated Offices, the time limit of 30 months (or later) will apply even if no demand is filed within 19 months.
See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774
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PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT AND
THE WRITTEN OPINION OF THE INTERNATIONAL
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

To: WILLIAM BOLLMAN MANELLI SELTER PLLC 2000 M STREET, NW, 7TH FLOOR WASHINGTON, DC 20036	Date of mailing (day/month/year) 20 NOV 2012
Applicant's or agent's file reference 40047	FOR FURTHER ACTION See paragraphs 1 and 4 below
International application No. PCT/US2012/000374	International filing date (day/month/year) 29 August 2012
Applicant TELECOMMUNICATION SYSTEMS, INC.	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes
1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70

For more detailed instructions, see *PCT Applicant's Guide*, International Phase, paragraphs 9.004 – 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:**

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Reminders

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. Following the expiration of 30 months from the priority date, these comments will also be made available to the public.

Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90*bis*.1 and 90*bis*.3).

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

Name and mailing address of the ISA/ Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774
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Form PCT/ISA/220 (July 2010)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 40047	FOR FURTHER ACTION	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US2012/000374	International filing date (day/month/year) 29 August 2012	(Earliest) Priority Date (day/month/year) 02 September 2011
Applicant TELECOMMUNICATION SYSTEMS, INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of:

- ☒ the international application in the language in which it was filed.
☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).

c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☐ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

- ☒ the text is approved as submitted by the applicant.
☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- ☒ the text is approved as submitted by the applicant.
☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

- a. the figure of the **drawings** to be published with the abstract is Figure No. 1
☒ as suggested by the applicant.
☐ as selected by this Authority, because the applicant failed to suggest a figure.
☐ as selected by this Authority, because this figure better characterizes the invention.
- b. ☐ none of the figures is to be published with the abstract.

Form PCT/ISA/210 (first sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/000374

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - H04M 11/04 (2012.01)

USPC - 455/404.2

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(8) - G06F 15/18, H04M 11/04, H04W 24/00 (2012.01)

USPC - 455/404.2, 455/456.1, 706/12

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

MicroPatent, Google Patents, and Google

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2009/0222388 A1 (HUA et al) 03 September 2009 (03.09.2009) entire document	1-12
Y	US 2008/0318591 A1 (OLIVER) 25 December 2008 (25.12.2008) entire document	1-12
A	US 2010/0308993 A1 (MA et al) 09 December 2010 (09.12.2010) entire document	1-12
A	US 6,998,985 B2 (REISMAN et al) 14 February 2006 (14.02.2006) entire document	1-12

☐ Further documents are listed in the continuation of Box C.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

05 November 2012

Date of mailing of the international search report

20 NOV 2012

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-3201

Authorized officer:

Blaine R. Copenheaver

PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To: WILLIAM BOLLMAN
MANELLI SELTER PLLC
2000 M STREET, NW, 7TH FLOOR
WASHINGTON, DC 20036

Date of mailing
(day/month/year)

20 NOV 2012

Applicant's or agent's file reference
40047

FOR FURTHER ACTION

See paragraph 2 below

International application No.
PCT/US2012/000374

International filing date (day/month/year)
29 August 2012

Priority date (day/month/year)
02 September 2011

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - H04M 11/04 (2012.01)
USPC - 455/404.2

Applicant TELECOMMUNICATION SYSTEMS, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Date of completion of this opinion
05 November 2012

Authorized officer:

Blaine R. Copenhæver

PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2011)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2012/000374

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - ☒ the international application in the language in which it was filed.
 - ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:
 - a. (means)
 - ☐ on paper
 - ☐ in electronic form
 - b. (time)
 - ☐ in the international application as filed
 - ☐ together with the international application in electronic form
 - ☐ subsequently to this Authority for the purposes of search
4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2012/000374

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-12	YES
	Claims	None	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-12	NO
Industrial applicability (IA)	Claims	1-12	YES
	Claims	None	NO

2. Citations and explanations:

Claims 1-6 lack an inventive step under PCT Article 33(3) as being obvious over Hua et al, hereinafter Hua in view of Oliver.

Regarding Claim 1, Hua discloses an aggregate location dynameter in a physical wireless network server (paragraph 42 for having a wireless data following conventional protocols using GPS location data to determine crowd behavior with paragraph 73 for motion tracking for the crowd using optical flow or dynameter means for monitoring flow), said aggregate location dynameter comprising: a network monitor for an indication of a possible viral event (paragraph 42 for monitoring a communications network using audio, video, and sensor data to detect crowd behavior via a wireless network and having rules to determine crowd feature data therefore a network monitoring means with visual, auditory, and sensor data inputs, and paragraph 83 for raising an alert or an indication of a crowd event); a crowd risk determinant to assess location information pertaining to a possible viral event triggered by said network monitor (paragraph 42 for assessing GPS location information and crowd behavior to determine a threat level or risk and using the HFCD to determine crowd behavior); and an alert module to alert in an event of a public safety risk determined from an analysis of said possible viral event (paragraph 44 or detecting specific crowd behavior and generating a response to the human operator that includes audio and visual warnings or alert means). Hua discloses using a wireless network but does not explicitly disclose monitoring the wireless network. Oliver has a system records the movement of people carrying mobile devices within a specific area (abstract) and discloses monitoring a wireless network (paragraph 48 for monitoring wireless devices using the base stations). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the network monitoring as taught by Oliver in the crowd system of Hua in order to determine the pattern of mobile device transmissions (Oliver, paragraph 48).

Regarding Claim 2, Hua discloses the system as shown above. Hua does not explicitly disclose a historical database maintaining location-based information indicating a possible viral event associated with a plurality of wireless devices. Oliver has a system records the movement of people carrying mobile devices within a specific area (abstract) and discloses a historical database maintaining location-based information indicating a possible viral event associated with a plurality of wireless devices (paragraph 48 for monitoring wireless devices using the base stations and paragraph 47 for tracking data over time or storing historical information). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the network monitoring as taught by Oliver in the crowd system of Hua in order to determine the pattern of mobile device transmissions (Oliver, paragraph 48).

Regarding Claim 3, Hua discloses wherein said historical databases comprises: an acceptable/non-acceptable crowd shape database (paragraph 72 for calculating crowd shape, size and density with paragraph 90 for logging all information into a database).

Regarding Claim 4, Hua discloses wherein said historical databases comprises: a configurable parameter threshold database (paragraph 72 for calculating a crowd level or threshold feature such as crowd density with paragraph 90 for logging all information into a database).

Regarding Claim 5, Hua discloses wherein said historical databases comprises: a historical wireless device location trends database (paragraph 42 for predicting crowd behavior or determining trends with paragraph 102 for storing data on different storage mediums).

Regarding Claim 6, Hua discloses wherein said historical databases comprises: a risk rules database (paragraph 42 for having a crowd behavior detection module with specific rules for detecting crowd moods and paragraph 44 for generating warnings to an operator based on crowd behavior rules).

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US2012/000374

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Claims 7-12 lack an inventive step under PCT Article 33(3) as being obvious over Oliver in view of Hua.

Regarding Claim 7, Oliver teaches method of alerting to a problematic crowd risk with location based services (LBS) (paragraph 53 for monitoring the crowd without extensive devices for monitoring the crowd and paragraph 36 for determining the direction and location of multiple mobile devices using GPS signals or location base services), comprising: monitoring wireless traffic for a possible impending viral event associated with a formation of a plurality of wireless devices (paragraph 48 for monitoring wireless devices using the base stations with paragraph 47 for determining crowd behavior such as the route used at a sporting event or shopping center); requesting location information associated with said plurality of wireless devices (paragraph 47 for monitoring a plural set of mobile or wireless devices and tracking the devices over time) and determining the movement of said plurality of wireless devices (paragraph 47 for tracking individuals in the crowd by tracking their wireless device location). Oliver does not explicitly teach determining a crowd risk of said crowd based on a shape, and triggering alert of an impending crowd problem when said determined crowd risk is above a given threshold. Hua has selectively identifying a user specified behavior of a crowd (abstract) and teaches teach determining a crowd risk of said crowd based on a shape (paragraph 72 for using a crowd density map to determine the shape of the crowd and determine crowd level features), and triggering alert of an impending crowd problem when said determined crowd risk is above a given threshold (paragraph 44 or detecting specific crowd behavior and generating a response to the human operator that includes audio and visual warnings or alert means). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the crowd risk as taught by Hua in the wireless method of Oliver in order to detect and analyze crowd behavior (Hua, paragraph 42).

Regarding Claim 8, Hua teaches wherein said monitoring wireless traffic comprises: monitoring wireless traffic at a given point in a wireless network (paragraph 53 for monitoring the crowd without extensive devices for monitoring the crowd and paragraph 36 for determining the direction and location of multiple mobile devices using GPS signals or location base services); and comparing a given traffic parameter associated with said monitored wireless traffic (paragraph 52 for tracking and recording or storing the movement of wireless mobile devices or crowd information. Oliver does not explicitly teach with a historical traffic parameter associated with crowd risk determination. Hua has selectively identifying a user specified behavior of a crowd (abstract) and teaches with a historical traffic parameter associated with crowd risk determination (paragraph 44 or detecting specific crowd behavior and generating a response to the human operator that includes audio and visual warnings or alert means with paragraph 48 for using crowd motion history or historical data). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the crowd risk as taught by Hua in the wireless method of Oliver in order to detect and analyze crowd behavior (Hua, paragraph 42).

Regarding Claim 9, Oliver teaches wherein: said given point is at a given base station in said wireless network (paragraph 48 for monitoring base station transmissions for mobile device transmissions or a wireless network).

Regarding Claim 10, Oliver teaches logging a snapshot look at current location data associated with location data (paragraph 30 for storing the unique ID of the mobile device, the time and the position or location of the mobile device).

Regarding Claim 11, Oliver teaches wherein said requesting location information comprises: initiating a location request (paragraph 40 for having the base station initiate a paging or location request); and comparing a viral pattern of respective locations of said plurality of wireless devices (paragraph 40 for determining which devices respond to the paging request or are located near the base station and paragraph 47 for monitoring the movement of people or a crowd over a period of time to determine overcrowding or shopping habits). Oliver does not explicitly teach to predetermined risk rules. Hua has selectively identifying a user specified behavior of a crowd (abstract) and teaches with a historical traffic parameter associated with crowd risk determination (paragraph 44 or detecting specific crowd behavior and generating a response to the human operator that includes audio and visual warnings or alert means with paragraph 48 for using crowd motion history or historical data). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the crowd risk as taught by Hua in the wireless method of Oliver in order to detect and analyze crowd behavior (Hua, paragraph 42).

Regarding Claim 12, Hua teaches logging said viral pattern (paragraph 47 for monitoring the movement of people or a crowd over a period of time to determine overcrowding or shopping habits therefore recording the crowd movement patterns).

Claims 1-12 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

Search History:

Limited Classification Search

The Patent Analyst performed a limited classification search within the following US, IPC, ECLA, or F-Term classification areas:

U.S. Class/Subclasses: 455/404.2, 455/456.1, 706/12

IPC (8) Class/Subclasses: G06F 15/18, H04M 11/04, H04W 24/00 (2012.01)

See Global Search Results.

Global Patent Literature Text Search

The Patent Analyst performed the following global text search, which was not limited by classification but may or may not have been limited by other criteria:

MICROPAT:

7 hits	(monitor*3 or track*3) (wireless*3 or mobil*5 or cell*5 or phon*3) Full patent spec. (crowd*3 or group*3) flow*3 alert*3 emergenc*5 databas*3 wireless*3 network*3 locat*5 trend*3 histor*5 Current US Class 706012 Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
2529 hits	Current US Class 706012 Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
8 hits	(monitor*3 or track*3) (wireless*3 or mobil*5 or cell*5 or phon*3) Full patent spec. (crowd*3 or group*3) flow*3 alert*3 emergenc*5 databas*3 wireless*3 network*3 locat*5 trend*3 histor*5 Current US Class 4554042 Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
1898 hits	Current US Class 4554042 Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
28 hits	(monitor*3 or track*3) (wireless*3 or mobil*5 or cell*5 or phon*3) Full patent spec. (crowd*3 or group*3) flow*3 alert*3 emergenc*5 databas*3 wireless*3 network*3 locat*5 trend*3 histor*5 Current US Class 4554561 Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
285 hits	Full patent spec. (monitor*3 or track*3) (wireless*3 or mobil*5 or cell*5 or phon*3)

	(crowd*3 or group*3) flow*3 alert*3 emergenc*5 databas*3 wireless*3 network*3 Current US Class 4554561 Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
351 hits	Full patent spec. (monitor*3 or track*3) (wireless*3 or mobil*5 or cell*5 or phon*3) (crowd*3 or group*3) flow*3 alert*3 emergenc*5 Current US Class 4554561 Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
7627 hits	Current US Class 4554561 Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
74 hits	Full patent spec. (monitor*3 or track*3) (wireless*3 or mobil*5 or cell*5 or phon*3) (crowd*3 or group*3) flow*3 alert*3 emergenc*5 Current IPC-R h04m001104 Databases EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
7185 hits	Current IPC-R h04m001104 Databases EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
37 hits	Full patent spec. (monitor*3 or track*3) (wireless*3 or mobil*5 or cell*5 or phon*3) (crowd*3 or group*3) flow*3 alert*3 emergenc*5 Current IPC-R h04w002400 Databases EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
7617 hits	Current IPC-R h04w002400 Databases EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
6 hits	Full patent spec. (monitor*3 or track*3) (wireless*3 or mobil*5 or cell*5 or phon*3) (crowd*3 or group*3) flow*3 alert*3 emergenc*5 Current IPC-R g06f001518 Databases EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
303 hits	Full patent spec. (monitor*3 or track*3) (wireless*3 or mobil*5 or cell*5 or phon*3) (crowd*3 or group*3) Current IPC-R g06f001518 Databases EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
7508 hits	Current IPC-R g06f001518 Databases EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
11 hits	Full patent spec. (dynomet*6 same (peopl*3 or crowd*3 or group*5 or mobil*3 or cell*5 or phon*3 or wirless*5)) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012

239 hits	Full patent spec. dynomet*6 Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
37 hits	Full patent spec. ((crowd*3 near5 (shap*3 or densit*3 or number*3 or control*5 or behavior)) same (risk*3 or threat*3 or emergenc*5) same (determin*3 or analy*5 or calculat*5 or estimat*5)) crowd*3 (wireless*3 or rf*3 or cell*5 or mobil*5) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
44 hits	Full patent spec. ((crowd*3 near5 (shap*3 or densit*3 or number*3 or control*5 or behavior)) same (risk*3 or threat*3 or emergenc*5) same (determin*3 or analy*5 or calculat*5 or estimat*5)) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
9 hits	Full patent spec. (lmd or (locat*5 near3 monitor*5)) event*5 ((crowd*3 near5 (shap*3 or densit*3 or number*3 or control*5)) same (risk*3 or threat*3 or emergenc*5) same (determin*3 or analy*5 or calculat*5 or estimat*5)) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
41 hits	Full patent spec. (lmd or (locat*5 near3 monitor*5)) event*5 ((crowd*3 near5 (shap*3 or densit*3 or number*3 or control*5)) same (risk*3 or threat*3 or emergenc*5)) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
2065 hits	Full patent spec. (lmd or (locat*5 near3 monitor*5)) event*5 (threat*3 or risk*3 or emergenc*5) (crowd*3 or public*3) ((threat*3 or risk*3 or emergenc*5) same (crowd*3 or public*3)) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
11 hits	Full patent spec. lmd event*5 (threat*3 or risk*3 or emergenc*5) (crowd*3 or public*3) ((threat*3 or risk*3 or emergenc*5) same (crowd*3 or public*3)) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
307 hits	Full patent spec. lmd event*5 (threat*3 or risk*3 or emergenc*5) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
37 hits	Full patent spec. ((crowd*3 near5 (shap*3 or densit*3 or number*3 or control*5 or behavior)) same (risk*3 or threat*3 or emergenc*5) same (determin*3 or analy*5 or calculat*5 or estimat*5)) crowd*3 (wireless*3 or rf*3 or cell*5 or mobil*5) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
44 hits	Full patent spec. ((crowd*3 near5 (shap*3 or densit*3 or number*3 or control*5 or behavior)) same (risk*3 or threat*3 or emergenc*5) same (determin*3 or analy*5 or calculat*5 or estimat*5)) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
9 hits	Full patent spec. (lmd or (locat*5 near3 monitor*5)) event*5 ((crowd*3 near5 (shap*3 or densit*3 or number*3 or control*5)) same (risk*3 or threat*3 or emergenc*5) same (determin*3 or analy*5 or calculat*5 or estimat*5)) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012

	Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
41 hits	Full patent spec. (lmd or (locat*5 near3 monitor*5)) event*5 ((crowd*3 near5 (shap*3 or densit*3 or number*3 or control*5)) same (risk*3 or threat*3 or emergenc*5)) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
2065 hits	Full patent spec. (lmd or (locat*5 near3 monitor*5)) event*5 (threat*3 or risk*3 or emergenc*5) (crowd*3 or public*3) ((threat*3 or risk*3 or emergenc*5) same (crowd*3 or public*3)) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
11 hits	Full patent spec. lmd event*5 (threat*3 or risk*3 or emergenc*5) (crowd*3 or public*3) ((threat*3 or risk*3 or emergenc*5) same (crowd*3 or public*3)) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
307 hits	Full patent spec. lmd event*5 (threat*3 or risk*3 or emergenc*5) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
16 hits	Full patent spec. ((track*3 or monitor*5) near10 crowd*3 near10 (wireless*3 or rf*3 or mobil*5)) (safe*3 or emergenc*6) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
34 hits	Full patent spec. ((track*3 or monitor*5) near10 crowd*3 near10 (wireless*3 or rf*3 or mobil*5)) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
4 hits	Full patent spec. (location*3 or position*3 or coordinat*5) (crowd*3 or people*3 or public*3) notif*6 ((location*3 or position*3 or coordinat*5) same (crowd*3 or people*3 or public*3) same (notif*6 or alert*5 or announc*5) same (contamin*6 or biologic*6 or virus*3 or hazzard*5)) ((track*3 or monitor*5) same crowd*3 same (wireless*3 or rf*3 or mobil*5)) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
119 hits	Full patent spec. (location*3 or position*3 or coordinat*5) (crowd*3 or people*3 or public*3) notif*6 ((location*3 or position*3 or coordinat*5) same (crowd*3 or people*3 or public*3) same (notif*6 or alert*5 or announc*5) same (contamin*6 or biologic*6 or virus*3 or hazzard*5)) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
3872 hits	Full patent spec. (location*3 or position*3 or coordinat*5) (crowd*3 or people*3 or public*3) notif*6 ((location*3 or position*3 or coordinat*5) same (crowd*3 or people*3 or public*3) same notif*6) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
178330 hits	Full patent spec. (location*3 or position*3 or coordinat*5) (crowd*3 or people*3 or public*3) notif*6 Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
17 hits	Full patent spec. dynomet*6 (location*3 or position*3 or coordinat*5) (crowd*3 or people*3 or public*3) Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012

PCT Application No.: PCT-US2012-00374
Date of Search: 05 November 2012

224 hits	Full patent spec. dynamete*5 Databases USG USA EPA EPB WO JP DEG DEA DET DEU GBA FRA Years 1836-2012
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GOOGLE PATENT http://www.google.com/advanced_patent_search

No. of Hits	Document Part: Text String
1500 hits	wireless monitor crowd flow
67 hits	wireless monitor crowd flow virus
1 hit	wireless monitor crowd flow dynameter
93 hits	crowd flow wireless monitoring risk alert database

Computer Accessed Text Databases Searched

The Patent Analyst searched the following computer accessed text databases:

GOOGLE <http://www.google.com>

No. of Hits	Document Part: Text String
45700 hits	dynamometer monitor crowd flow
7 hits	dynamometer monitor crowd flow emergency alert
1520000 hits	dynamometer monitor crowd flow movement phone
8 hits	dynamometer monitor crowd motion flow smart phone

Date search was completed: 05 November 2012

SM/ER

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:
William H Bollman
Manelli Selter PLLC
2000 M Street, N.W. 7th Floor
Washington, DC 20036-3307
USA

PCT

NOTIFICATION OF TRANSMITTAL OF
INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Rule 71.1)

Date of mailing
(day/month/year) **05 SEP 2013**

Applicant's or agent's file reference

40047

IMPORTANT NOTIFICATION

International application No.

International filing date (day/month/year)

Priority date (day/month/year)

PCT/US12/00374

29 August 2012 (29.08.2012)

02 September 2011 (02.09.2011)

Applicant

TELECOMMUNICATION SYSTEMS, INC.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the *PCT Applicant's Guide*.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed invention is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the IPEA/ US

Mail Stop PCT, Attn: IPEA/US

Commissioner for Patents

P.O. Box 1450

Alexandria, Virginia 22313-1450

Facsimile No. (571) 273-3201

Authorized officer

ANDRE ROBINSON

Telephone No. (571) 272-5005

Form PCT/IPEA/416 (January 2004)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 40047	FOR FURTHER ACTION		See Form PCT/IPEA/416																								
International application No. PCT/US12/00374	International filing date (<i>day/month/year</i>) 29 August 2012 (29.08.2012)	Priority date (<i>day/month/year</i>) 02 September 2011 (02.09.2011)																									
International Patent Classification (IPC) or national classification and IPC IPC: H04M 11/04 (2006.01) USPC: 455/404.2																											
Applicant TELECOMMUNICATION SYSTEMS, INC.																											
1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising: a. ☐ (<i>sent to the applicant and to the International Bureau</i>) a total of <u>0</u> sheets, as follows: ☐ sheets of the description, claims and/or drawings which have been amended and/or sheets containing rectifications authorized by this Authority, unless those sheets were superseded or cancelled, and any accompanying letters (see Rules 46.5, 66.8, 70.16, 91.2, and Section 607 of the Administrative Instructions). ☐ sheets containing rectifications, where the decision was made by this Authority not to take them into account because they were not authorized by or notified to this Authority at the time when this Authority began to draw up this report, and any accompanying letters (Rules 66.4<i>bis</i>, 70.2(e), 70.16 and 91.2). ☐ superseded sheets and any accompanying letters, where this Authority either considers that the superseding sheets contain an amendment that goes beyond the disclosure in the international application as filed, or the superseding sheets were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in item 4 of Box No. I and the Supplemental Box (see Rule 70.16(b)). b. ☐ (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) _____ containing a sequence listing, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see paragraph 3<i>bis</i> of Annex C of the Administrative Instructions).																											
4. This report contains indications relating to the following items: <table style="width: 100%; border: none;"> <tr> <td style="width: 10%;">☒</td> <td style="width: 20%;">Box No. I</td> <td style="width: 70%;">Basis of the report</td> </tr> <tr> <td>☐</td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td>☐</td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td>☐</td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td>☒</td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td>☐</td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td>☐</td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td>☐</td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>				☒	Box No. I	Basis of the report	☐	Box No. II	Priority	☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	☐	Box No. IV	Lack of unity of invention	☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement	☐	Box No. VI	Certain documents cited	☐	Box No. VII	Certain defects in the international application	☐	Box No. VIII	Certain observations on the international application
☒	Box No. I	Basis of the report																									
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☐	Box No. VIII	Certain observations on the international application																									
Date of submission of the demand 18 March 2013 (18.03.2013)		Date of completion of this report 28 August 2013 (28.08.2013)																									
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201		Authorized officer  ANDRE ROBINSON Telephone No. (571) 272-5005																									

Form PCT/IPEA/409 (cover sheet) (July 2011)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US12/00374

Box No. 1 Basis of the report

1. With regard to the **language**, this report is based on:

- ☒ the international application in the language in which it was filed.
- ☐ a translation of the international application into English which is the language of a translation furnished for the purposes of:
- ☐ international search (Rules 12.3(a) and 23.1(b)).
 - ☐ publication of the international application (Rule 12.4(a)).
 - ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a) and (b)).

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☒ the international application as originally filed/furnished
- ☒ the description:
- pages 1-15 as originally filed/furnished
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____
- ☒ the claims:
- pages 16-18 as originally filed/furnished
- pages* NONE as amended (together with any statement) under Article 19
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____
- ☒ the drawings:
- pages 1-7 as originally filed/furnished
- pages* NONE received by this Authority on _____
- pages* NONE received by this Authority on _____

☐ a sequence listing - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since either they are considered to go beyond the disclosure as filed, or they were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in the Supplemental Box (Rules 70.2(c) and (c-bis)):

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____

5. ☐ This report has been established:

- ☐ taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rules 66.1(d-bis) and 70.2(e)).
- ☐ without taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rules 66.4bis) and 70.2(e)).

6. ☐ Supplementary international search report(s) from Authority(ies) _____ has/have been received and taken into account in establishing this report (Rule 45bis.8(b) and (c)).

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US12/00374

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>1-12</u>	YES
	Claims <u>NONE</u>	NO
Inventive Step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-12</u>	NO
Industrial Applicability (IA)	Claims <u>1-12</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and Explanations (Rule 70.7)

Claims 1-6 lack an inventive step under PCT Article 33(3) as being obvious over Hua et al, hereinafter Hua in view of Oliver. Regarding Claim 1, Hua discloses an aggregate location dynamometer in a physical wireless network server (paragraph 42 for having a wireless data following conventional protocols using GPS location data to determine crowd behavior with paragraph 73 for motion tracking for the crowd using optical flow or dynamometer means for monitoring flow), said aggregate location dynamometer comprising: a network monitor for an indication of a possible viral event (paragraph 42 for monitoring a communications network using audio, video, and sensor data to detect crowd behavior via a wireless network and having rules to determine crowd feature data therefore a network monitoring means with visual, auditory, and sensor data inputs, and paragraph 83 for raising an alert or an indication of a crowd event); a crowd risk determinant to assess location information pertaining to a possible viral event triggered by said network monitor (paragraph 42 for assessing GPS location information and crowd behavior to determine a threat level or risk and using the HFCD to determine crowd behavior); and an alert module to alert in an event of a public safety risk determined from an analysis of said possible viral event (paragraph 44 or detecting specific crowd behavior and generating a response to the human operator that includes audio and visual warnings or alert means). Hua discloses using a wireless network but does not explicitly disclose monitoring the wireless network. Oliver has a system records the movement of people carrying mobile devices within a specific area (abstract) and discloses monitoring a wireless network (paragraph 48 for monitoring wireless devices using the base stations). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the network monitoring as taught by Oliver in the crowd system of Hua in order to determine the pattern of mobile device transmissions (Oliver, paragraph 48). Regarding Claim 2, Hua discloses the system as shown above. Hua does not explicitly disclose a historical database maintaining location-based information indicating a possible viral event associated with a plurality of wireless devices. Oliver has a system records the movement of people carrying mobile devices within a specific area (abstract) and discloses a historical database maintaining location-based information indicating a possible viral event associated with a plurality of wireless devices (paragraph 48 for monitoring wireless devices using the base stations and paragraph 47 for tracking data over time or storing historical information). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the network monitoring as taught by Oliver in the crowd system of Hua in order to determine the pattern of mobile device transmissions (Oliver, paragraph 48). Regarding Claim 3, Hua discloses wherein said historical databases comprises: an acceptable/non-acceptable crowd shape database (paragraph 72 for calculating crowd shape, size and density with paragraph 90 for logging all information into a database). Regarding Claim 4, Hua discloses wherein said historical databases comprises: a configurable parameter threshold database (paragraph 72 for calculating a crowd level or threshold feature such as crowd density with paragraph 90 for logging all information into a database). Regarding Claim 5, Hua discloses wherein said historical databases comprises: a historical wireless device location trends database (paragraph 42 for predicting crowd behavior or determining trends with

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

paragraph 102 for storing data on different storage mediums). Regarding Claim 6, Hua discloses wherein said historical databases comprises: a risk rules database (paragraph 42 for having a crowd behavior detection module with specific rules for detecting crowd moods and paragraph 44 for generating warnings to an operator based on crowdbehavior rules).

Claims 7-12 lack an inventive step under PCT Article 33(3) as being obvious over Oliver in view of Hua. Regarding Claim 7, Oliver teaches method of alerting to a problematic crowd risk with location based services (LBS) (paragraph 53 for monitoring the crowd without extensive devices for monitoring the crowd and paragraph 36 for determining the direction and location of multiple mobile devices using GPS signals or location base services), comprising: monitoring wireless traffic for a possible impending viral event associated with a formation of a plurality of wireless devices (paragraph 48 for monitoring wireless devices using the base stations with paragraph 47 for determining crowd behavior such as the route used at a sporting event or shopping center); requesting location information associated with said plurality of wireless devices (paragraph 47 for monitoring a plural set of mobile or wireless devices and tracking the devices over time) and determining the movement of said plurality of wireless devices (paragraph 47 for tracking individuals in the crowd by tracking their wireless device location). Oliver does not explicitly teach determining a crowd risk of said crowd based on a shape, and triggering alert of an impending crowd problem when said determined crowd risk is above a given threshold. Hua has selectively identifying a user specified behavior of a crowd (abstract) and teaches teach determining a crowd risk of said crowd based on a shape (paragraph 72 for using a crowd density map to determine the shape of the crowd and determine crowd level features), and triggering alert of an impending crowd problem when said determined crowd risk is above a given threshold (paragraph 44 or detecting specific crowd behavior and generating a response to the human operator that includes audio and visual warnings or alert means). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the crowd risk as taught by Hua in the wireless method of Oliver in order to detect and analyze crowd behavior (Hua, paragraph 42). Regarding Claim 8, Hua teaches wherein said monitoring wireless traffic comprises: monitoring wireless traffic at a given point in a wireless network (paragraph 53 for monitoring the crowd without extensive devices for monitoring the crowd and paragraph 36 for determining the direction and location of

Supplemental Box

multiple mobile devices using GPS signals or location base services); and comparing a given traffic parameter associated with said monitored wireless traffic (paragraph 52 for tracking and recording or storing the movement of wireless mobile devices or crowd information. Oliver does not explicitly teach with a historical traffic parameter associated with crowd risk determination. Hua has selectively identifying a user specified behavior of a crowd (abstract) and teaches with a historical traffic parameter associated with crowd risk determination (paragraph 44 or detecting specific crowd behavior and generating a response to the human operator that includes audio and visual warnings or alert means with paragraph 48 for using crowd motion history or historical data). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the crowd risk as taught by Hua in the wireless method of Oliver in order to detect and analyze crowd behavior (Hua, paragraph 42). Regarding Claim 9, Oliver teaches wherein: said given point is at a given base station in said wireless network (paragraph 48 for monitoring base station transmissions for mobile device transmissions or a wireless network). Regarding Claim 10, Oliver teaches logging a snapshot look at current location data associated with location data (paragraph 30 for storing the unique ID of the mobile device, the time and the position or location of the mobile device). Regarding Claim 11, Oliver teaches wherein said requesting location information comprises: initiating a location request (paragraph 40 for having the base station initiate a paging or location request); and comparing a viral pattern of respective locations of said plurality of wireless devices (paragraph 40 for determining which devices respond to the paging request or are located near the base station and paragraph 47 for monitoring the movement of people or a crowd over a period of time to determine overcrowding or shopping habits). Oliver does not explicitly teach to predetermined risk rules. Hua has selectively identifying a user specified behavior of a crowd (abstract) and teaches with a historical traffic parameter associated with crowd risk determination (paragraph 44 or detecting specific crowd behavior and generating a response to the human operator that includes audio and visual warnings or alert means with paragraph 48 for using crowd motion history or historical data). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the crowd risk as taught by Hua in the wireless method of Oliver in order to detect and analyze crowd behavior (Hua, paragraph 42). Regarding Claim 12, Hua teaches logging said viral pattern (paragraph 47 for monitoring the movement of people or a crowd over a period of time to determine overcrowding or shopping habits therefore recording the crowd movement patterns).

Claims 1-12 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

----- NEW CITATIONS -----

Electronic Patent Application Fee Transmittal				
Application Number:		14885136		
Filing Date:		16-Oct-2015		
Title of Invention:		Aggregate Location Dynamometer (ALD)		
First Named Inventor/Applicant Name:		Michael A. Cuff		
Filer:		William H Bollman		
Attorney Docket Number:		40308		
Filed as Large 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	1806	1	180	180
Total in USD (\$)				180

Electronic Acknowledgement Receipt	
EFS ID:	24877453
Application Number:	14885136
International Application Number:	
Confirmation Number:	1789
Title of Invention:	Aggregate Location Dynamometer (ALD)
First Named Inventor/Applicant Name:	Michael A. Cuff
Customer Number:	117657
Filer:	William H Bollman
Filer Authorized By:	
Attorney Docket Number:	40308
Receipt Date:	10-FEB-2016
Filing Date:	16-OCT-2015
Time Stamp:	14:09:20
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$180
RAM confirmation Number	414
Deposit Account	506250
Authorized User	BOLLMAN, WILLIAM H
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 CFR 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 CFR 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 CFR 1.19 (Document supply fees)

Charge any Additional Fees required under 37 CFR 1.20 (Post Issuance fees)

Charge any Additional Fees required under 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	Transmittal Letter	2016-2-10-Transmittal-40308.pdf	19953	no	1
			75797c36aa179b5762da1fb4f05da35ec726918f		
Warnings:					
Information:					
2	Transmittal Letter	2016-2-10-IDS-Trans-40308.pdf	19298	no	2
			c0ac1957e7e7fc6b8cfa9aae637c430a9441745a		
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	2016-2-10-IDS40308.pdf	387718	no	28
			1cbdde589ca12715c62afbabb5d218f54573a862e		
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
4	Miscellaneous Incoming Letter	2016-2-10-LOCA-40308.pdf	91748	no	1
			550888b0bd23613e9ae5a6c9a6536d79782b834a		
Warnings:					
Information:					
5	Other Reference-Patent/App/Search documents	2016-2-10-NPO1.pdf	439121	no	7
			6b689eaac9e5fee5618906d55e9b5bedd70add40		
Warnings:					
Information:					
6	Other Reference-Patent/App/Search documents	2016-2-10-NPO2.pdf	894997	no	11
			1c20c3a3ca46852b883272b54be820974cea9e39		
Warnings:					
Information:					
7	Other Reference-Patent/App/Search documents	2016-2-10-NPO3.pdf	558969	no	13
			49b5d0f1c5b667cd206625ae880640bae4d520ab		
Warnings:					
Information:					

8	Other Reference-Patent/App/Search documents	2016-2-10-NPO4.pdf	404133 9d1b1620ad9133cbe94b1be701bdc0c51041ba1f	no	9
Warnings:					
Information:					
9	Other Reference-Patent/App/Search documents	2016-2-10-NPO5.pdf	328668 76d7c5a33255f69633b5efdda4173e5995373120	no	6
Warnings:					
Information:					
10	Other Reference-Patent/App/Search documents	2016-2-10-NPO6.pdf	336372 2128585e906e4718be9236a97e045615dbdabce4	no	6
Warnings:					
Information:					
11	Other Reference-Patent/App/Search documents	2016-2-10-NPO7.pdf	347373 2924c4fb532fbd475c83cd85921ee5963830b661	no	7
Warnings:					
Information:					
12	Other Reference-Patent/App/Search documents	2016-2-10-NPO8.pdf	301617 fb3babfe6b10cc5c1a0a29f6b95a57fb27c4225e	no	7
Warnings:					
Information:					
13	Other Reference-Patent/App/Search documents	2016-2-10-NPO9.pdf	677060 469f48d06f597ca5b8e2269801f565627035dcf0	no	12
Warnings:					
Information:					
14	Other Reference-Patent/App/Search documents	2016-2-10-NPO10.pdf	365180 386d911707b606ddf2624a3f984e8e3ff8967abe	no	6
Warnings:					
Information:					
15	Fee Worksheet (SB06)	fee-info.pdf	30194 5d59eb2f9a31c217299c971a2c4434f21a976c2a	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			5202401		

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

TRANSMITTAL LETTER (Large Entity)

Application Number: **14/885,136**

Group Art Unit: **2641**

Filed: **October 16, 2015**

Examiner Name: **AJIBADE AKONAI,
Olumide**

Applicant: **CUFF e tal.**

Attorney Docket Number: **40308**

TITLE: Aggregate Location Dynamometer (ALD)

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

SIR:

Transmitted herewith are:

1. PTO1449 – 28 pages;
2. Information Disclosure Statement – 2 pages;
3. Listing of Commonly Owned Applications and Patents – 1 page.

In the event of non-payment or improper payment of a required fee, the Director is authorized to charge or to credit **Deposit Account No. 506250 under Order No. 40308** as required to correct the error.

Respectfully submitted,

/William H. Bollman/

William H. Bollman
Reg. No.: 36,457
Attorney for Applicant(s)

Date: February 10, 2016
**Manelli Selter PLLC
2000 M Street, NW 7th Floor
Washington, DC 20036-3307
(202) 261-1020**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent of application of:

CUFF

Serial No. 14/885,136

Filed: October 16, 2015

Title: Aggregate Location Dynamometer (ALD)

Group Art Unit: 2641

Examiner: AJIBADE AKONAI, Olumide

Client Reference: 40308

Attorney Docket: 40308

INFORMATION DISCLOSURE STATEMENT

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

Sir:

Attached is form PTO-1449 listing documents which were cited, *inter alia*, in an application listed in the Listing of Commonly Owned Applications and Patents filed in this application. No aspect of these submissions constitute a disclaimer of claim scope.

This Information Disclosure Statement is being submitted under 1.97(c).

This information Disclosure Statement is intended to be in full compliance with the rules, but should the Examiner find any part of its required content to have been omitted, prompt notice to that effect is earnestly solicited, along with additional time under Rule 1.97(f), to enable the Applicant to comply fully.

Consideration of the foregoing and enclosures plus the return of a copy of the herewith Form PTO-1449 with the Examiner's initials in the left column per MPEP 609 along with an early action on the merits of this application are earnestly solicited.

Respectfully submitted,

February 10, 2016

/William H. Bollman/

Date

William H. Bollman
Reg. No. 36,457

Manelli Selter PLLC
2000 M Street, N.W.
7th Floor
Washington, D.C. 20036-3307

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.: **14/885,136**

Filed: **October 16, 2015**

Group Art Unit: **2641**

Examiner: **AJIBADE AKONAI**

Attorney Docket No.: **40308**

IN RE PATENT APPLICATION OF:

CUFF ET AL.

TITLE: **AGGREGATE LOCATION DYNOMETER (ALD)**

February 8, 2016

AMENDMENT

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

Responsive to the Office Action dated November 19, 2015, please enter the following remarks in the subject application:

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-12. (canceled)

13. (previously presented) An aggregate location dynamometer in a physical wireless network server, said aggregate location dynamometer comprising:

a network monitor to monitor a wireless network for an indication of a potential viral event indicated by an aggregation of current locations of a plurality of physical wireless devices associated with said potential viral event; and

a crowd risk determinant to assess said aggregation of said current locations of said plurality of physical wireless devices pertaining to said potential viral event triggered by said network monitor.

14. (previously presented) The aggregate location dynamometer in a physical wireless network server, said aggregate location dynamometer according to claim 13, further comprising:

an alert module to initiate an alert message relating to a public safety risk determined from said potential viral event.

15. (previously presented) The aggregate location dynamometer in a physical wireless network server, said aggregate location dynamometer according to claim 13, further comprising:

an historical database maintaining a geographic region associated with said potential viral event.

16. (previously presented) The aggregate location dynamometer in a physical wireless network server, said aggregate location dynamometer according to claim 13, further comprising:

an historical database maintaining a plurality of acceptable crowd shapes, a crowd shape being defined by a past aggregation of said current locations of said plurality of physical wireless devices associated with a known acceptable viral event.

17. (previously presented) The aggregate location dynamometer in a physical wireless network server, said aggregate location dynamometer according to claim 13, further comprising:

an historical database maintaining a plurality of unacceptable crowd shapes, a crowd shape being defined by a past aggregation of said current locations of said plurality of physical wireless devices associated with a known unacceptable viral event.

18. (previously presented) The aggregate location dynamometer in a physical wireless network server, said aggregate location dynamometer according to claim 13, further comprising:

a configurable parameter defining a threshold of a crowd shape becoming unacceptable and thus initiating said crowd risk.

19. (previously presented) The aggregate location dynamometer in a physical wireless network server, said aggregate location dynamometer according to claim 13, further comprising:

an historical database maintaining a plurality of crowd shape trends based on historical locations of physical wireless devices during previous known viral events.

20. (previously presented) A method of alerting to a problematic crowd risk based on location based services (LBS), comprising:

monitoring wireless traffic for a potential impending viral event associated with a formation by an aggregation of current locations of a plurality of physical wireless devices within a given region;

requesting location information associated with said plurality of physical wireless devices; and

determining a crowd risk of said aggregation of said current locations of said plurality of physical wireless devices based on a crowd shape of said aggregation of said current locations of said plurality of physical wireless devices.

21. (previously presented) The method of alerting to a problematic crowd risk based on location based services (LBS) according to claim 20, further comprising:

triggering a crowd alert message when said determined crowd risk is above a given threshold.

22. (previously presented) The method of alerting to a problematic crowd risk with location based services (LBS) according to claim 20, wherein:

said crowd risk of said aggregation of said plurality of physical wireless devices is further determined based on a movement of said aggregation of said plurality of physical wireless devices.

23. (previously presented) The method of alerting to a problematic crowd risk with location based services (LBS) according to claim 22, wherein said monitoring wireless traffic comprises:

monitoring wireless traffic at a given point in a wireless network;
and

comparing a given traffic parameter associated with said aggregation of said current locations of said plurality of physical wireless devices, with an historical traffic parameter associated with a previous problematic crowd formation.

24. (previously presented) The method of alerting to a problematic crowd risk with location based services (LBS) according to claim 23, wherein:

said given point is at a given base station in said wireless network.

25. (previously presented) The method of alerting to a problematic crowd risk with location based services (LBS) according to claim 22, further comprising:

logging a snapshot formation created by said aggregation of said current locations of said plurality of physical wireless devices.

26. (previously presented) The method of alerting to a problematic crowd risk with location based services (LBS) according to claim 22, further comprising:

initiating a location request for each of said plurality of physical wireless devices.

27. (previously presented) The method of alerting to a problematic crowd risk with location based services (LBS) according to claim 21, further comprising:

comparing a viral pattern formed by said aggregation of said current locations of said plurality of wireless devices to predetermined risk rules.

28. (previously presented) The method of alerting to a problematic crowd risk with location based services (LBS) according to claim 27, further comprising:

logging said viral pattern.

REMARKS

Claims 13-28 remain pending in the application.

Double Patenting

In the Office Action, claims 13-28 were rejected on the ground of nonstatutory double patenting as allegedly being obvious over claims 1-12 of U.S. Pat. No. 8,649,806.

Filed herewith is a suitable Terminal Disclaimer to U.S. Pat. No. 8,649,806. It is respectfully requested that the rejection now be withdrawn.

Double Patenting

Claims 13-28 were rejected on the ground of nonstatutory double patenting as allegedly being obvious over claims 13-26 of copending U.S. Appl. No. 14/176,691, now U.S. Pat. No. 9,198,054.

Filed herewith is a suitable Terminal Disclaimer to U.S. Pat. No. 9,198,054. It is respectfully requested that the rejection now be withdrawn.

Conclusion

All objections and/or rejections having been addressed, it is respectfully submitted that the subject application is in condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,

/William H. Bollman/

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Washington D.C. 20036-3307

**TERMINAL DISCLAIMER TO OBTAIN A DOUBLE PATENTING
REJECTION OVER A "PRIOR" PATENT**

Docket Number (Optional)

40308

In re Application of: CUFF

Application No.: 14885136

Filed: October 16, 2015

For: Aggregate Location Dynamometer (ALD)

The applicant, TeleCommunication Systems, Inc., owner of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of **prior patent** No. 8649806 as the term of said **prior patent** is presently shortened by any terminal disclaimer. The applicant hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the **prior patent** are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the applicant does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the **prior patent**, "as the term of said **prior patent** is presently shortened by any terminal disclaimer," in the event that said **prior patent** later:

- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. ☐ The undersigned is the applicant. If the applicant is an assignee, the undersigned is authorized to act on behalf of the assignee.

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

2. ☒ The undersigned is an attorney or agent of record. Reg. No. 36457

/William H. Bollman/

Signature

February 8, 2016

Date

William H. Bollman

Typed or printed name

Attorney of Record

Title

202-261-1000

Telephone Number

- ☒ Terminal disclaimer fee under 37 CFR 1.20(d) included.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

This collection of information is required by 37 CFR 1.321. 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.

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.

TERMINAL DISCLAIMER TO OBTAIN A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT	Docket Number (Optional) 40308
In re Application of: CUFF Application No.: 14885136 Filed: October 16, 2015 For: Aggregate Location Dynamometer (ALD) The applicant, <u>TeleCommunication Systems, Inc.</u>, owner of <u>100</u> percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent No. <u>6198054</u> as the term of said prior patent is presently shortened by any terminal disclaimer. The applicant hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns. In making the above disclaimer, the applicant does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later: - expires for failure to pay a maintenance fee; - is held unenforceable; - is found invalid by a court of competent jurisdiction; - is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321; - has all claims canceled by a reexamination certificate; - is reissued; or - is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer. Check either box 1 or 2 below, if appropriate. 1. ☐ The undersigned is the applicant. If the applicant is an assignee, the undersigned is authorized to act on behalf of the assignee. I hereby acknowledge that any willful false statements made are punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both. 2. ☒ The undersigned is an attorney or agent of record. Reg. No. <u>36457</u> <u>/William H. Bollman/</u> Signature <u>February 8, 2016</u> Date <u>William H. Bollman</u> Typed or printed name <u>Attorney of Record</u> Title <u>202-261-1000</u> Telephone Number ☒ Terminal disclaimer fee under 37 CFR 1.20(d) included. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.	

This collection of information is required by 37 CFR 1.321. 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.

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).
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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.
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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.

Electronic Patent Application Fee Transmittal				
Application Number:		14885136		
Filing Date:		16-Oct-2015		
Title of Invention:		Aggregate Location Dynamometer (ALD)		
First Named Inventor/Applicant Name:		Michael A. Cuff		
Filer:		William H Bollman		
Attorney Docket Number:		40308		
Filed as Large 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:				
Statutory or Terminal Disclaimer	1814	2	160	320
Total in USD (\$)				320

Electronic Acknowledgement Receipt	
EFS ID:	24851661
Application Number:	14885136
International Application Number:	
Confirmation Number:	1789
Title of Invention:	Aggregate Location Dynamometer (ALD)
First Named Inventor/Applicant Name:	Michael A. Cuff
Customer Number:	117657
Filer:	William H Bollman
Filer Authorized By:	
Attorney Docket Number:	40308
Receipt Date:	08-FEB-2016
Filing Date:	16-OCT-2015
Time Stamp:	14:47:33
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$320
RAM confirmation Number	1136
Deposit Account	506250
Authorized User	BOLLMAN, WILLIAM H
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 CFR 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 CFR 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 CFR 1.19 (Document supply fees)

Charge any Additional Fees required under 37 CFR 1.20 (Post Issuance fees)

Charge any Additional Fees required under 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	Transmittal Letter	2016-2-8-Transmittal-40308.pdf	19324	no	1
			310878b680d6ba48157eff8a8846f4486d1e508d		
Warnings:					
Information:					
2		2016-2-8-Amendment-40308.pdf	62985	yes	8
			fc4de21fe2e7256032ccb76b25d7e3dab11dc66d		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Amendment/Req. Reconsideration-After Non-Final Reject		1	1	
	Claims		2	6	
	Applicant Arguments/Remarks Made in an Amendment		7	8	
Warnings:					
Information:					
3	Terminal Disclaimer Filed	2016-2-8-Terminal-Disclaimer1-40308.pdf	295085	no	2
			797599c7ffec2d38bfb020dfa15b2f2db8e3a241		
Warnings:					
Information:					
4	Terminal Disclaimer Filed	2016-2-8-Terminal-Disclaimer2-40308.pdf	299913	no	2
			0a9ae5a30361f885c39e5ec13d963f47d3db2727		
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	30029	no	2
			fdc54b5adb480ec8ea5b5717b9df7e394278818c		
Warnings:					
Information:					
Total Files Size (in bytes):			707336		

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

TRANSMITTAL LETTER (Large Entity)

Application Number: **14/885,136**

Group Art Unit: **2641**

Filed: **October 16, 2015**

Examiner Name: **AJIBADE AKONAI,
Olumide**

Applicant: **CUFF e tal.**

Attorney Docket Number: **40308**

TITLE: Aggregate Location Dynamometer (ALD)

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

SIR:

Transmitted herewith are:

1. Amendment – 8 pages;
2. Two Terminal Disclaimers – 4 pages.

In the event of non-payment or improper payment of a required fee, the Director is authorized to charge or to credit **Deposit Account No. 506250 under Order No. 40308** as required to correct the error.

Respectfully submitted,

/William H. Bollman/

William H. Bollman
Reg. No.: 36,457
Attorney for Applicant(s)

Date: February 3, 2016
**Manelli Selter PLLC
2000 M Street, NW 7th Floor
Washington, DC 20036-3307
(202) 261-1020**

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.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 14/885,136	Filing Date 10/16/2015	☐ To be Mailed
ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO							
APPLICATION AS FILED – PART I							
(Column 1)		(Column 2)					
FOR	NUMBER FILED	NUMBER EXTRA			RATE (\$)	FEE (\$)	
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A			N/A		
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A			N/A		
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A			N/A		
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*			X \$ =		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*			X \$ =		
☐ 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).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.					TOTAL		
APPLICATION AS AMENDED – PART II							
(Column 1)		(Column 2)		(Column 3)			
AMENDMENT	02/08/2016	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(i))	* 16	Minus	** 20	= 0	X \$80 =	0
	Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X \$420 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0
(Column 1)		(Column 2)		(Column 3)			
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						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 number found in the appropriate box in column 1.							

This collection of information is required by 37 CFR 1.16. 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, 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.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/885,136	10/16/2015	Michael A. Cuff	40308	1789

117657	7590	11/19/2015
TeleCommunication Systems, Inc. 275 West Street Annapolis, MD 21401		

EXAMINER	
AJIBADE AKONAI, OLUMIDE	

ART UNIT	PAPER NUMBER
2641	

MAIL DATE	DELIVERY MODE
11/19/2015	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.

Office Action Summary	Application No. 14/885,136	Applicant(s) CUFF ET AL.	
	Examiner OLUMIDE T. AJIBADE AKONAI	Art Unit 2641	AIA (First Inventor to File) Status No

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 10/16/2015.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ 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.

4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☒ Claim(s) 13-28 is/are pending in the application.
5a) Of the above claim(s) ____ is/are withdrawn from consideration.

6) ☐ Claim(s) ____ is/are allowed.

7) ☒ Claim(s) 13-28 is/are rejected.

8) ☐ Claim(s) ____ is/are objected to.

9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, 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.

Application Papers

10) ☐ The specification is objected to by the Examiner.

11) ☒ The drawing(s) filed on 10/16/2015 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12) ☐ 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)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date ____.

3) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.

4) ☐ Other: ____.

The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions

of the AIA as explained in MPEP § 2159. See MPEP §§ 706.02(I)(1) - 706.02(I)(3) for applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/forms/. The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to <http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp>.

2. Claims 13-28 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-12 of U.S. Patent No. 8,649,806.
3. Claims 13-28 provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claims 13-26 of copending Application No. 14/176691 (reference application).

This is a provisional nonstatutory double patenting rejection because the patentably indistinct claims have not in fact been patented.

Application No. 14/188136	U.S. Patent No. 8,649,806	Application No. 14/176691
13	1	13
14	1	13
15	2	14

16	2	15
17	3	16
18	4	17
19	3	18
20	7	19
21	8	19
22	7	19
23	8	21
24	9	22
25	10	23
26	11	24
27	11	25
28	12	26

Although the conflicting claims are not identical, they are not patentably distinct from each other because the patent claims include all the limitations of the instant application claims, respectively (see table above). The patent and co-pending application claims also include additional limitations. Hence, the instant application claims are generic to the species of invention covered by the respective patent claims. As such, the instant application claims are anticipated by the patent and co-pending application claims and are therefore not patentably distinct therefrom (See *Eli Lilly and*

Co. v. Barr Laboratories Inc., 58 USPQ2D 1869, " a later genus claim limitation is anticipated by, and therefore not patentably distinct from, an earlier species claim", In re Goodman, 29 USPQ2d 2010, "Thus, the generic invention is 'anticipated' by the species of the patented invention" and the instant "application claims are generic to species of invention covered by the patent claim, and since without terminal disclaimer, extant species claim preclude issuance of generic application claims").

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to OLUMIDE T. AJIBADE AKONAI whose telephone number is (571)272-6496. The examiner can normally be reached on M-F, 8.30p-5p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Appiah can be reached on 571-272-7904. 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 applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 14/885,136
Art Unit: 2641

Page 6

/OLUMIDE T AJIBADE AKONAI/
Primary Examiner, Art Unit 2641

Notice of References Cited	Application/Control No. 14/885,136	Applicant(s)/Patent Under Reexamination CUFF ET AL.	
	Examiner OLUMIDE T. AJIBADE AKONAI	Art Unit 2641	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-8,649,806 B2	02-2014	Cuff; Michael A.	H04W64/006	455/404.1
	B	US-				
	C	US-				
	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.



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BIB DATA SHEET

CONFIRMATION NO. 1789

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.	
14/885,136	10/16/2015	455	2641	40308	
RULE					
APPLICANTS TeleCommunication Systems, Inc., Annapolis, MD; INVENTORS Michael A. Cuff, Clyde Hill, WA; Todd Gehrke, Seattle, WA; Farhad Kasad, Bothell, WA; ** CONTINUING DATA ***** This application is a CON of 14/176,691 02/10/2014 PAT 9198054 which is a CON of 13/317,996 11/02/2011 PAT 8649806 which claims benefit of 61/573,112 09/02/2011 ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 10/29/2015					
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☒ No Verified and // ☐ Met after Allowance Acknowledged Examiner's Signature Initials		STATE OR COUNTRY WA	SHEETS DRAWINGS 7	TOTAL CLAIMS 16	INDEPENDENT CLAIMS 2
ADDRESS TeleCommunication Systems, Inc. 275 West Street Annapolis, MD 21401 UNITED STATES					
TITLE Aggregate Location Dynamometer (ALD)					
FILING FEE RECEIVED 1600	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:			☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit	

<i>Index of Claims</i> 	Application/Control No. 14885136	Applicant(s)/Patent Under Reexamination CUFF ET AL.
	Examiner OLUMIDE T AJIBADE AKONAI	Art Unit 2641

✓	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	11/16/2015								
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	26	✓								
	27	✓								
	28	✓								

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	3	"13317996"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/11/16 09:32
L2	2	"14176691"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/11/16 09:37
L3	3	(network and monitor and viral and alert and risk).clm. and 455/404.1,404.2,405,456.6,456.2,456.3,456.5,456.6,457,435.1,435.2.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/11/16 09:42
L4	38	(monitor\$3 track\$3) near3 (network system) with (viral crowd) and (455/414.1,456.1-456.6,457,404.1,404.2.ccls. or "340"/\$.ccls.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/11/16 09:42
L5	188	((track\$3 monitor\$3 analy\$3) near3 (group set crowd multitude plurality)) with (((wireless mobile portable cellular RF hand\$1held hand) adj (phone node\$1 telephone device equipment apparatus user unit subscriber radio terminal station)) or radio\$1phone or radio\$1telephone or cell\$1phone or (terminal adj (unit equipment)) or telephone or hand\$2phone or hand\$1set or (subscriber adj (unit\$1 terminal\$1)) or (user adj equipment) PDA "personal digital assistant" WTRU (subscriber near station\$1) smart\$1phone\$1 "portable communication device" "portable communication unit" "wireless communication device" laptop tablet) with (emergency mob riot crowd stampede)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/11/16 10:16
L6	73	L5 AND ((H04W4/22 OR H04W4/02 OR H04W4/028 OR H04W76/007 OR H04W4/023 OR H04W64/006 OR H04W4/025 OR H04M11/04 OR H04M2242/04 OR G06Q30/0201).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/11/16 10:16
S2	4	("20080318591" "20090222388" "20100308993" "6998985").PN.	US-PGPUB; USPAT	OR	OFF	2013/09/30 13:28
S3	3	(track\$3 monitor\$3) near4 (multiple plurality) near3 (((wireless mobile portable cellular RF hand\$1held hand) adj (phone node\$1 telephone device equipment apparatus user unit subscriber radio terminal station)) or radio\$1phone or radio\$1telephone or cell\$1phone or (terminal adj (unit equipment)) or telephone or hand\$2phone or hand\$1set or (subscriber adj (unit\$1 terminal\$1)) or (user adj equipment) PDA "personal digital assistant" WTRU (subscriber near station\$1) smart\$1phone\$1 "portable communication device" "portable communication unit" "wireless communication device") same (location position) same (emergency mob riot crowd stampede)	US-PGPUB; USPAT	OR	OFF	2013/09/30 13:40

S4	3	((track\$3 monitor\$3) near4 (multiple plurality) near3 (((wireless mobile portable cellular RF hand\$1held hand) adj (phone node\$1 telephone device equipment apparatus user unit subscriber radio terminal station)) or radio\$1phone or radio\$1telephone or cell\$1phone or (terminal adj (unit equipment)) or telephone or hand\$2phone or hand\$1set or (subscriber adj (unit\$1 terminal\$1)) or (user adj equipment) PDA "personal digital assistant" WTRU (subscriber near station\$1) smart\$1phone\$1 "portable communication device" "portable communication unit" "wireless communication device") same (location position) same (emergency mob riot crowd stampede)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 13:40
S5	9	((track\$3 monitor\$3) near3 crowd) with (((wireless mobile portable cellular RF hand\$1held hand) adj (phone node\$1 telephone device equipment apparatus user unit subscriber radio terminal station)) or radio\$1phone or radio\$1telephone or cell\$1phone or (terminal adj (unit equipment)) or telephone or hand\$2phone or hand\$1set or (subscriber adj (unit\$1 terminal\$1)) or (user adj equipment) PDA "personal digital assistant" WTRU (subscriber near station\$1) smart\$1phone\$1 "portable communication device" "portable communication unit" "wireless communication device") and (emergency mob riot crowd stampede)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 13:52
S7	46	((analysis behavior monitor\$3 track\$3) near3 (group crowd)) with (((wireless mobile portable cellular RF hand\$1held hand) adj (phone node\$1 telephone device equipment apparatus user unit subscriber radio terminal station)) or radio\$1phone or radio\$1telephone or cell\$1phone or (terminal adj (unit equipment)) or telephone or hand\$2phone or hand\$1set or (subscriber adj (unit\$1 terminal\$1)) or (user adj equipment) PDA "personal digital assistant" WTRU (subscriber near station\$1) smart\$1phone\$1 "portable communication device" "portable communication unit" "wireless communication device") same (alert\$3 emergency PSAP)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 14:01
S9	9	((track\$3 monitor\$3) near3 crowd) with (((wireless mobile portable cellular RF hand\$1held hand) adj (phone node\$1 telephone device equipment apparatus user unit subscriber radio terminal station)) or radio\$1phone or radio\$1telephone or cell\$1phone or (terminal adj (unit equipment)) or telephone or hand\$2phone or hand\$1set or (subscriber adj (unit\$1 terminal\$1)) or (user adj equipment) PDA "personal digital assistant" WTRU (subscriber near station\$1) smart\$1phone\$1 "portable communication device" "portable communication unit" "wireless communication device")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 14:35
S10	0	((track\$3 monitor\$3) near3 (((wireless mobile portable cellular RF hand\$1held hand) adj (phone node\$1 telephone device equipment apparatus user unit subscriber radio terminal station)) or radio\$1phone or radio\$1telephone or cell\$1phone or (terminal adj (unit equipment)) or telephone or hand\$2phone or hand\$1set or (subscriber adj (unit\$1 terminal\$1)) or (user adj equipment) PDA "personal digital assistant" WTRU (subscriber near station\$1) smart\$1phone\$1 "portable communication device" "portable communication unit" "wireless communication device")) with (crowd near4 behavior)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 14:37
S11	0	((((wireless mobile portable cellular RF hand\$1held hand) adj (phone node\$1 telephone device equipment apparatus user unit subscriber radio terminal station)) or radio\$1phone or radio\$1telephone or cell\$1phone or (terminal adj (unit equipment)) or telephone or hand\$2phone or hand\$1set or (subscriber adj (unit\$1 terminal\$1)) or (user adj equipment) PDA "personal digital assistant" WTRU (subscriber near station\$1) smart\$1phone\$1 "portable communication device" "portable communication unit" "wireless communication device") with (crowd near4 behavior) and 455/456.1,456.5,404.1,404.2.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 14:38
S12	1	((((wireless mobile portable cellular RF hand\$1held hand) adj (phone node\$1 telephone device equipment apparatus user unit subscriber radio terminal station)) or radio\$1phone or radio\$1telephone or cell\$1phone or (terminal adj (unit equipment)) or telephone or hand\$2phone or hand\$1set or (subscriber adj (unit\$1 terminal\$1)) or (user adj equipment) PDA "personal digital assistant" WTRU (subscriber near station\$1) smart\$1phone\$1 "portable communication device" "portable communication unit" "wireless communication device") with (crowd near4 behavior)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 14:39
S13	1	(wireless network) with ((traffic crowd) near3 (direction movement pattern)) same (notif\$7 alert\$3) with (event accident riot mob risk danger stampede hooligan) and 455/404.1,404.2,456.1,456.5,456.6.ccls.	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2013/09/30 14:48

			EPO; JPO; DERWENT; IBM_TDB			
S14	2	(wireless network) with ((traffic crowd) near3 (direction movement pattern)) same (notif\$7 alert\$3) and 455/404.1,404.2,456.1,456.5,456.6.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 14:49
S15	132	((cluster group aggregation traffic crowd) near3 (behavior pattern)) with (alert notif\$7) and (((wireless mobile portable cellular RF hand\$1held hand) adj (phone node\$1 telephone device equipment apparatus user unit subscriber radio terminal station)) or radio\$1phone or radio\$1telephone or cell\$1phone or (terminal adj (unit equipment)) or telephone or hand\$2phone or hand\$1set or (subscriber adj (unit\$1 terminal\$1)) or (user adj equipment) PDA "personal digital assistant" WTRU (subscriber near station\$1) smart\$1phone\$1 "portable communication device" "portable communication unit" "wireless communication device")	US-PGPUB; USPAT	OR	OFF	2013/09/30 14:59
S16	0	(monitor\$3 track\$3) near3 ((cluster group multiple plurality) near3 (behavior pattern)) with (alert notif\$7) and (((wireless mobile portable cellular RF hand\$1held hand) adj (phone node\$1 telephone device equipment apparatus user unit subscriber radio terminal station)) or radio\$1phone or radio\$1telephone or cell\$1phone or (terminal adj (unit equipment)) or telephone or hand\$2phone or hand\$1set or (subscriber adj (unit\$1 terminal\$1)) or (user adj equipment) PDA "personal digital assistant" WTRU (subscriber near station\$1) smart\$1phone\$1 "portable communication device" "portable communication unit" "wireless communication device") with ((network wireless) near3 (traffic flow pattern)) same (predict\$3 determin\$5 detect\$3) near5 (risk accident situation incident fight riot crowd mob stampede)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 15:22
S17	2	(monitor\$3 track\$3) near3 (((wireless mobile portable cellular RF hand\$1held hand) adj (phone node\$1 telephone device equipment apparatus user unit subscriber radio terminal station)) or radio\$1phone or radio\$1telephone or cell\$1phone or (terminal adj (unit equipment)) or telephone or hand\$2phone or hand\$1set or (subscriber adj (unit\$1 terminal\$1)) or (user adj equipment) PDA "personal digital assistant" WTRU (subscriber near station\$1) smart\$1phone\$1 "portable communication device" "portable communication unit" "wireless communication device") with ((network wireless) near3 (traffic flow pattern)) same (predict\$3 determin\$5 detect\$3) near5 (risk accident situation incident behavior fight riot crowd mob stampede)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 15:25
S18	10	(monitor\$3 track\$3) near3 crowd\$1 with (((wireless mobile portable cellular RF hand\$1held hand) adj (phone node\$1 telephone device equipment apparatus user unit subscriber radio terminal station)) or radio\$1phone or radio\$1telephone or cell\$1phone or (terminal adj (unit equipment)) or telephone or hand\$2phone or hand\$1set or (subscriber adj (unit\$1 terminal\$1)) or (user adj equipment) PDA "personal digital assistant" WTRU (subscriber near station\$1) smart\$1phone\$1 "portable communication device" "portable communication unit" "wireless communication device")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 22:46
S19	16	("20050264412" "20070030144" "20070041514" "20070083409" "20070103292" "20070103294" "20070126573" "20070275690" "20070280462" "20090140851" "5960337" "6281834" "7091852" "7177623" "7233781" "7245216").PN. OR ("8314683").URPN.	US-PGPUB; USPAT; USOCR	OR	OFF	2013/09/30 22:54
S20	0	(monitor\$3 track\$3) near3 ((network system) near2 (load traffic)) with (crowd\$1 population) near2 (activit\$3 movement moving move\$1)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 22:58
S21	5	(monitor\$3 track\$3) near3 ((network system) near2 (load activity traffic)) with (crowd\$1 population)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 23:00

S22	145	dynamometer	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 23:04
S24	26	(monitor\$3 track\$3) near3 (network system) with (viral crowd) and (455/414.1,456.1-456.6,457,404.1,404.2.ccls. or "340"/\$.ccls.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 23:06
S25	1	((location and dynamometer and crowd).clm. and (455/414.1,456.1-456.6,457,404.1,404.2.ccls. or "340"/\$.ccls.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 23:09
S26	1	((location and traffic and wireless and crowd).clm. and (455/414.1,456.1-456.6,457,404.1,404.2.ccls. or "340"/\$.ccls.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 23:09
S27	1	(monitor\$3 track\$3) near3 crowd\$1 with (network near3 (traffic movement flow))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 23:26
S28	0	management near3 crowd\$1 with (network near3 (monitor\$3 track\$3))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 23:34
S29	6	management near3 crowd\$1 and "455"/\$.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 23:34
S30	3	(monitor\$3 track\$3) near3 crowd\$1 and "434"/\$.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/09/30 23:36
S34	1281	((track\$3 monitor\$3) near3 (group set plurality multiple crowd)) with (((wireless mobile portable cellular RF hand\$1held hand) adj (phone node\$1 telephone device equipment apparatus user unit subscriber radio terminal station)) or radio\$1phone or radio\$1telephone or cell\$1phone or (terminal adj (unit equipment)) or telephone or hand\$2phone or hand\$1set or (subscriber adj (unit\$1 terminal\$1)) or (user adj equipment) PDA "personal digital assistant" WTRU (subscriber near station\$1) smart\$1phone\$1 "portable communication device" "portable communication unit" "wireless communication device") and (emergency mob riot crowd stampede)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/05/01 15:04
S35	3	(detect\$3 determin\$5 track\$3 monitor\$3) near5 viral same (emergency mob risk emergency riot crowd stampede) same (alarm alert "911") same (wireless cellular PLMN mobile) and	US-PGPUB; USPAT; USOCR;	OR	OFF	2014/05/01 15:07

		455/404.1,404.2,456.6,456.2,456.3,456.5,456.6,457.ccls.	FPRS; EPO; JPO; DERWENT; IBM_TDB			
S37	3	(detect\$3 determin\$5 track\$3 monitor\$3) near5 viral same (emergency mob risk emergency riot crowd stampede) and 455/404.1,404.2,456.6,456.2,456.3,456.5,456.6,457.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/05/01 15:08
S38	768	(detect\$3 determin\$5 track\$3 monitor\$3) near5 viral same (emergency mob risk emergency riot crowd stampede)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/05/01 15:09
S39	69	(detect\$3 determin\$5 track\$3 monitor\$3) near5 viral same (emergency mob risk emergency riot crowd stampede) and (((wireless mobile portable cellular RF hand\$1held hand) adj (phone node\$1 telephone device equipment apparatus user unit subscriber radio terminal station)) or radio\$1phone or radio\$1telephone or cell\$1phone or (terminal adj (unit equipment)) or telephone or hand\$2phone or hand\$1set or (subscriber adj (unit\$1 terminal\$1)) or (user adj equipment) PDA "personal digital assistant" WTRU (subscriber near station\$1) smart\$1phone\$1 "portable communication device" "portable communication unit" "wireless communication device")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/05/01 15:09
S40	3	S39 AND ((H04W64/006).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2014/05/01 15:12
S41	0	((cluster group aggregation traffic crowd) near3 (behavior pattern)) with (alert notif\$7) and ((H04W64/006).CPC.)	US-PGPUB; USPAT	OR	OFF	2014/05/01 15:12

11/16/2015 10:26:05 AM

C:\Users\oajibadeakonai\Documents\EAST\Workspaces\14885136.wsp

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	3	"13317996"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/11/16: 09:32
L2	2	"14176691"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/11/16: 09:37
L3	3	(network and monitor and viral and alert and risk).clm. and 455/404.1,404.2,405,456.6,456.2,456.3,456.5,456.6,457,435.1,435.2.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/11/16: 09:42
L4	38	(monitor\$3 track\$3) near3 (network system) with (viral crowd) and (455/414.1,456.1-456.6,457,404.1,404.2.ccls. or "340"/\$.ccls.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/11/16: 09:42

11/ 16/ 2015 10:15:32 AM

C:\Users\oajibadeakonai\Documents\EAST\Workspaces\14885136.wsp

Search Notes 	Application/Control No. 14885136	Applicant(s)/Patent Under Reexamination CUFF ET AL.
	Examiner OLUMIDE T AJIBADE AKONAI	Art Unit 2641

CPC- SEARCHED		
Symbol	Date	Examiner
H04W 4/22 4/02 4/028 76/007 4/023 64/006 4/025	11/16/2015	OA
H04M11/04 2242/04	11/16/2015	OA
G06Q 30/0201	11/16/2015	OA

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
455	414.1,456.1-456.6,457,404.1,404.2	11/16/2015	OA

SEARCH NOTES		
Search Notes	Date	Examiner
EAST search	11/16/2015	OA

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

	/OLUMIDE T AJIBADE AKONAI/ Primary Examiner.Art Unit 2641
--	--



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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	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/885,136	10/16/2015	Michael A. Cuff	40308

117657
TeleCommunication Systems, Inc.
275 West Street
Annapolis, MD 21401

CONFIRMATION NO. 1789
POA ACCEPTANCE LETTER



Date Mailed: 11/13/2015

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 11/05/2015.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/ytdemisse/

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:



Practitioners associated with Customer Number:

83086

OR



Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number

Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:



The address associated with Customer Number:

117657

OR

☐	Firm or Individual Name			
	Address			
	City	State	Zip	
	Country			
	Telephone	Email		

Assignee Name and Address: TeleCommunication Systems, Inc.
275 West Street
Annapolis, MD 21401

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of The practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	6/26/2014
Name	Bruce White	Telephone	410-280-1224
Title	Sr. VP, General Counsel and Corporate Secretary		

This collection of information is required by 37 CFR 1.31, 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.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: TeleCommunication Systems, Inc.
Application No./Patent No.: 14885136 Filed/Issue Date: October 16, 2015
Titled: Aggregate Location Dynamometer
TeleCommunication Systems, Inc., a Corporation
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☒ The assignee of the entire right, title, and interest.
2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):
- ☐ The extent (by percentage) of its ownership interest is ____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
- ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

- A. ☒ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 036809, Frame 0756, or for which a copy thereof is attached.
- B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37 CFR 3.73(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.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☒ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/William H. Bollman/

Signature

William H. Bollman

Printed or Typed Name

November 5, 2015

Date

36457

Title or Registration 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.

Electronic Acknowledgement Receipt	
EFS ID:	23994868
Application Number:	14885136
International Application Number:	
Confirmation Number:	1789
Title of Invention:	Aggregate Location Dynamometer (ALD)
First Named Inventor/Applicant Name:	Michael A. Cuff
Customer Number:	117657
Filer:	William H Bollman
Filer Authorized By:	
Attorney Docket Number:	40308
Receipt Date:	05-NOV-2015
Filing Date:	16-OCT-2015
Time Stamp:	11:28:19
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	Power of Attorney	2015-11-5-POA-40308.pdf	91352 d11515eea29f152f14c802ad226ee12582d9dc40	no	1

Warnings:

Information:

2	Assignee showing of ownership per 37 CFR 3.73	2015-11-5-Statement-37-CFR-40308.pdf	251330 bd589117ee35f2507f4e62f4555e245133496a35	no	3
Warnings:					
Information:					
Total Files Size (in bytes):				342682	
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.					

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 14/885,136				
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			N/A	280			
SEARCH FEE (37 CFR 1.16(k), (j), or (m))	N/A	N/A	N/A			N/A	600			
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720			
TOTAL CLAIMS (37 CFR 1.16(i))	16	minus 20 = *			OR	x 80 =	0.00			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2	minus 3 = *				x 420 =	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			
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL		TOTAL	1600			
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.										



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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO.	TOT CLAIMS	IND CLAIMS
14/885,136	10/16/2015	2642	1600	40308	16	2

CONFIRMATION NO. 1789

FILING RECEIPT



0000000078369980

117657
TeleCommunication Systems, Inc.
275 West Street
Annapolis, MD 21401

Date Mailed: 10/30/2015

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)

Michael A. Cuff, Clyde Hill, WA;
Todd Gehrke, Seattle, WA;
Farhad Kasad, Bothell, WA;

Applicant(s)

TeleCommunication Systems, Inc., Annapolis, MD;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 14/176,691 02/10/2014
which is a CON of 13/317,996 11/02/2011 PAT 8649806
which claims benefit of 61/573,112 09/02/2011

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 - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 10/29/2015

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/885,136**

Projected Publication Date: 02/11/2016

Non-Publication Request: No

Early Publication Request: No

Title

Aggregate Location Dynamometer (ALD)

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).

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.: **Unknown**
(continuation of 14/176,691)
Filed: **October 16, 2015**
Group Art Unit: **2641**
Examiner: **AJIBADE**

Attorney Docket No.: **40308**

IN RE PATENT APPLICATION OF:

CUFF ET AL.

TITLE: **AGGREGATE LOCATION DYNOMETER (ALD)**

October 16, 2015

PRELIMINARY AMENDMENT

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

Prior to action in the above-referenced application, kindly amend
the application as follows:

IN THE SPECIFICATION:

Page 1, line 2, kindly insert the following paragraph:

The present application is a continuation of U.S. Appl. No. 14/176,691, entitled "Aggregate Location Dynamometer (ALD)", filed on February 10, 2014; which is a continuation of U.S. Appl. No. 13/317,996 entitled "Aggregate Location Dynamometer (ALD)", filed on November 2, 2011, now U.S. Patent 8,649,806; which claims priority from U.S. Provisional Application No. 61/573,112, entitled "Aggregate Location Dynamometer (ALD)", filed September 2, 2011, the entirety of all three of which are expressly incorporated herein by reference.

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-12. (canceled)

13. (new) An aggregate location dynamometer in a physical wireless network server, said aggregate location dynamometer comprising:

a network monitor to monitor a wireless network for an indication of a potential viral event indicated by an aggregation of current locations of a plurality of physical wireless devices associated with said potential viral event; and

a crowd risk determinant to assess said aggregation of said current locations of said plurality of physical wireless devices pertaining to said potential viral event triggered by said network monitor.

14. (new) The aggregate location dynamometer in a physical wireless network server, said aggregate location dynamometer according to claim 13, further comprising:

an alert module to initiate an alert message relating to a public safety risk determined from said potential viral event.

15. (new) The aggregate location dynamometer in a physical wireless network server, said aggregate location dynamometer according to claim 13, further comprising:

an historical database maintaining a geographic region associated with said potential viral event.

16. (new) The aggregate location dynamometer in a physical wireless network server, said aggregate location dynamometer according to claim 13, further comprising:

an historical database maintaining a plurality of acceptable crowd shapes, a crowd shape being defined by a past aggregation of said current locations of said plurality of physical wireless devices associated with a known acceptable viral event.

17. (new) The aggregate location dynamometer in a physical wireless network server, said aggregate location dynamometer according to claim 13, further comprising:

an historical database maintaining a plurality of unacceptable crowd shapes, a crowd shape being defined by a past aggregation of said current locations of said plurality of physical wireless devices associated with a known unacceptable viral event.

18. (new) The aggregate location dynamometer in a physical wireless network server, said aggregate location dynamometer according to claim 13, further comprising:

a configurable parameter defining a threshold of a crowd shape becoming unacceptable and thus initiating said crowd risk.

19. (new) The aggregate location dynamometer in a physical wireless network server, said aggregate location dynamometer according to claim 13, further comprising:

an historical database maintaining a plurality of crowd shape trends based on historical locations of physical wireless devices during previous known viral events.

20. (new) A method of alerting to a problematic crowd risk based on location based services (LBS), comprising:

monitoring wireless traffic for a potential impending viral event associated with a formation by an aggregation of current locations of a plurality of physical wireless devices within a given region;

requesting location information associated with said plurality of physical wireless devices; and

determining a crowd risk of said aggregation of said current locations of said plurality of physical wireless devices based on a crowd shape of said aggregation of said current locations of said plurality of physical wireless devices.

21. (new) The method of alerting to a problematic crowd risk based on location based services (LBS) according to claim 20, further comprising:

triggering a crowd alert message when said determined crowd risk is above a given threshold.

22. (new) The method of alerting to a problematic crowd risk with location based services (LBS) according to claim 20, wherein:

said crowd risk of said aggregation of said plurality of physical wireless devices is further determined based on a movement of said aggregation of said plurality of physical wireless devices.

23. (new) The method of alerting to a problematic crowd risk with location based services (LBS) according to claim 22, wherein said monitoring wireless traffic comprises:

monitoring wireless traffic at a given point in a wireless network;
and

comparing a given traffic parameter associated with said aggregation of said current locations of said plurality of physical wireless devices, with an historical traffic parameter associated with a previous problematic crowd formation.

24. (new) The method of alerting to a problematic crowd risk with location based services (LBS) according to claim 23, wherein:

said given point is at a given base station in said wireless network.

25. (new) The method of alerting to a problematic crowd risk with location based services (LBS) according to claim 22, further comprising:

logging a snapshot formation created by said aggregation of said current locations of said plurality of physical wireless devices.

26. (new) The method of alerting to a problematic crowd risk with location based services (LBS) according to claim 22, further comprising:

initiating a location request for each of said plurality of physical wireless devices.

27. (new) The method of alerting to a problematic crowd risk with location based services (LBS) according to claim 21, further comprising:

comparing a viral pattern formed by said aggregation of said current locations of said plurality of wireless devices to predetermined risk rules.

CUFF et al. (Cont. of 14/176,691)

28. (new) The method of alerting to a problematic crowd risk with location based services (LBS) according to claim 27, further comprising:
logging said viral pattern.

CUFF et al. (Cont. of 14/176,691)

Remarks

Claims 13-28 are pending in the application, original claims 1-12 having been canceled, and claims 13-28 being new.

An early and favorable action on the merits is earnestly solicited.

Claim of Priority

The Applicants hereby claim the benefit under Title 35, United States Code, 120 of the following United States applications:

United States Appl. No. 14/176,691 entitled "Aggregate Location Dynamometer (ALD)," filed February 10, 2014.

United States Appl. No. 13/317,996 entitled "Aggregate Location Dynamometer (ALD)," filed November 2, 2011, now U.S. Patent No. 8,649,806.

United States Provisional Patent Application No. 61/573,112, entitled "Aggregate Location Dynamometer (ALD)," filed September 2, 2011.

Respectfully Submitted,

/William H. Bollman/

William H. Bollman
Reg. No. 36,457

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DECLARATION FOR UTILITY OR DESIGN APPLICATION

Aggregate Location Dynamometer (ALD)

As a below named inventor, I hereby declare that:

This declaration is directed to the application attached hereto, and to any/all subsequently filed continuing applications therefrom. If the application is not attached hereto, the application is as identified by the attorney docket number as set forth above and/or the following:

United States Application Number or PCT International Appln. No. 14/176,691

filed on 02-10-2014

If the application is a continuing application claiming priority from the application identified above, I specifically authorize such later filing of any/all continuing applications therefrom, and specifically authorize later inclusion of the identification of such continuing application here as United States Application Number _____

The above-identified application or continuing 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 have reviewed and understand the contents of the above-identified application.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations § 1.56.

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.

LEGAL NAME OF INVENTOR

Inventor: Michael A. Cuff

Date: 9/9/2015

Signature: Michael A. Cuff

An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form. Use a separate form for each inventor; or check the box below and complete the attached page(s) to list additional inventors.

☒ Additional inventors are being named on the 1 supplemental sheet(s) attached hereto.

**SUPPLEMENTAL SHEET FOR
DECLARATION**

ADDITIONAL INVENTOR(S)
Supplemental Sheet Page 1 of 1

LEGAL NAME OF JOINT INVENTOR, IF ANY

Inventor: Todd Gehrke Date: 9-10-2015
Signature: Todd Gehrke

LEGAL NAME OF JOINT INVENTOR, IF ANY

Inventor: Farhad Kasad Date: _____
Signature: _____

LEGAL NAME OF JOINT INVENTOR, IF ANY

Inventor: _____ Date: _____
Signature: _____

LEGAL NAME OF JOINT INVENTOR, IF ANY

Inventor: _____ Date: _____
Signature: _____

LEGAL NAME OF JOINT INVENTOR, IF ANY

Inventor: _____ Date: _____
Signature: _____

LEGAL NAME OF JOINT INVENTOR, IF ANY

Inventor: _____ Date: _____
Signature: _____

LEGAL NAME OF JOINT INVENTOR, IF ANY

Inventor: _____ Date: _____
Signature: _____

LEGAL NAME OF JOINT INVENTOR, IF ANY

Inventor: _____ Date: _____
Signature: _____

**SUBSTITUTE STATEMENT IN LIEU OF AN OATH OR DECLARATION FOR UTILITY
OR DESIGN PATENT APPLICATION (35 U.S.C. 115(d) AND 37 CFR 1.64)**

Title of Invention	Aggregate Location Dynamometer (ALD)		
This statement is directed to:			
☐ The attached application,			
OR			
☒ United States application or PCT international application number <u>14176691</u> filed on <u>February 10, 2014</u>			
LEGAL NAME of inventor to whom this substitute statement applies:			
(E.g., Given Name (first and middle (if any)) and Family Name or Surname)			
Farhad Kasad			
Residence (except for a deceased or legally incapacitated inventor):			
City	Bothell	State	WA
		Country	US
Mailing Address (except for a deceased or legally incapacitated inventor):			
8534 NE 202nd Way			
City	Bothell	State	WA
		Zip	98011
		Country	US
I believe the above-named inventor or joint inventor to be the original inventor or an original joint inventor of a claimed invention in the application.			
The above-identified application was made or authorized to be made by me.			
I hereby acknowledge that any willful false statement made in this statement is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.			
Relationship to the inventor to whom this substitute statement applies:			
☐ Legal Representative (for deceased or legally incapacitated inventor only).			
☒ Assignee,			
☐ Person to whom the inventor is under an obligation to assign,			
☐ Person who otherwise shows a sufficient proprietary interest in the matter (petition under 37 CFR 1.46 is required), or			
☐ Joint Inventor.			

[Page 1 of 2]

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.

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SUBSTITUTE STATEMENT

Circumstances permitting execution of this substitute statement:

- ☐ Inventor is deceased,
☐ Inventor is under legal incapacity,
☒ Inventor cannot be found or reached after diligent effort, or
☐ Inventor has refused to execute the oath or declaration under 37 CFR 1.63.

If there are joint inventors, please check the appropriate box below:

- ☒ An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) naming the entire inventive entity has been or is currently submitted.

OR

- ☐ An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) has not been submitted. Thus, a Substitute Statement Supplemental Sheet (PTO/AIA/11 or equivalent) naming the entire inventive entity and providing inventor information is attached. See 37 CFR 1.64(b).

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.

PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

Name: **Bruce White**

Date (Optional):

Signature: *Bruce White*

APPLICANT NAME AND TITLE OF PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

If the applicant is a juristic entity, list the applicant name and the title of the signer:

Applicant Name:

Title of Person Executing This Substitute Statement: **Senior Vice President & General Counsel, TeleCommunication Systems, Inc.**

The signer, whose title is supplied above, is authorized to act on behalf of the applicant.

Residence of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent):

City **Annapolis**

State **MD**

Country **US**

Mailing Address of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent)

**275 West Street
Suite 400**

City **Annapolis**

State **MD**

Zip **21401**

Country **US**

Note: Use an additional PTO/AIA/02 form for each inventor who is deceased, legally incapacitated, cannot be found or reached after diligent effort, or has refused to execute the oath or declaration under 37 CFR 1.63.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Declaration and Power of Attorney

As below named inventors, we hereby declare that:

Our residence, post office address and citizenship are as stated below next to our names.

We believe we are the original, first and joint inventors of the subject matter which is claimed and for which a patent is sought on the invention entitled **AGGREGATE LOCATION DYNOMETER (ALD)**, the specification of which is filed herewith.

We hereby state that we have reviewed and understand the contents of the above-identified specification, including the claims, as amended by an amendment, if any, specifically referred to in this oath or declaration.

We acknowledge the duty to disclose all information known to us which is material to patentability as defined in Title 37, Code of Federal Regulations, 1.56.

We hereby claim foreign priority benefits under Title 35, United States Code, 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

None

We hereby claim the benefit under Title 35, United States Code, 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, 112, we acknowledge the duty to disclose all information known to us to be material to patentability as defined in Title 37, Code of Federal Regulations, 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

**U.S. Provisional Application, Serial No. 61/573,112, entitled
"AGGREGATE LOCATION DYNOMETER (ALD)," filed on September 2, 2011.**

We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Best Available Copy

20-266

We hereby appoint the following attorneys with full power of substitution and revocation, to prosecute said application, to make alterations and amendments therein, to receive the patent, and to transact all business in the Patent and Trademark Office connected therewith:

William H. Bollman	(Reg. No. 36,457)
Edward J. Stemberger	(Reg. No. 36,017)
Jeffrey S. Melcher	(Reg. No. 35,950)
Leon R. Turkevich	(Reg. No. 34,035)
Paul E. White, Jr.	(Reg. No. 32,011)
Dan Fuil	(Reg. No. 46,504)

all telephone calls to:

William H. Bollman at (202) 261-1020.

Full name of 1st joint inventor: Michael A. CUFF

Inventor's signature



Date:

11/01/2011

Residence: Clyde Hill, King County, Washington

Citizenship: USA

Post Office Address: 2417 96th Ave NE, Clyde Hill, WA 98004Full name of 2nd joint inventor: Todd GEHRKE

Inventor's signature



Date:

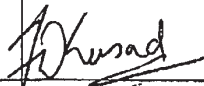
Nov 1 2011

Residence: Seattle, King County, Washington

Citizenship: USA

Post Office Address: 10215 66th Avenue South, Seattle, WA 98178Full name of 3rd joint inventor: Farhad KASAD

Inventor's signature



Date:

11/01/2011

Residence: Bothell, King Country, Washington

Citizenship: USA

Post Office Address: 8534 NE 202nd Way, Bothell, WA 98011

APPLICATION UNDER UNITED STATES PATENT LAWS

Invention: **AGGREGATE LOCATION DYNOMETER (ALD)**

Inventor(s): Michael A. CUFF;
Todd GEHRKE; and
Farhad KASAD

MANELLI SELTER PLLC
2000 M Street, N.W. 7th Floor
Washington, D.C. 20036-3307
Attorneys
Telephone: (202) 261-1000

This is a:

- ☐ [] Provisional Application
- ☐ [] Regular Utility Application
- ☒ [X] Continuing Application
- ☐ [] PCT National Phase Application
- ☐ [] Design Application
- ☐ [] Reissue Application
- ☐ [] Plant Application

SPECIFICATION

AGGREGATE LOCATION DYNOMETER (ALD)

BACKGROUND OF THE INVENTION

5 1. Field of the Invention

This invention relates generally to wireless telecommunications. More particularly, it relates to cell location services, cell network trafficking and analysis of location information.

10 2. Background of Related Art

Location based applications obtain a geographic position of a particular wireless device and provide services accordingly. Location based services (LBS) prevail in today's market due to an incorporation of tracking technology in handheld devices.

15 Location based pull services allow a wireless device user to locate another wireless device. Current location services are generally focused on individual wireless device user applications.

SUMMARY OF THE INVENTION

20 In accordance with the principles of the present invention, a method of alerting to a problematic crowd risk in a given geographical location, comprises an Aggregate Location Dynometer (ALD). The Aggregate Location Dynometer (ALD) utilizes location based services (LBS) to analyze aggregate location information pertaining to a multitude of wireless devices, to detect potential crowd
25 risks.

An Aggregate Location Dynometer (ALD) resides in a physical network server, in accordance with the present invention, and comprises three main components: a Network Monitor, a Crowd Risk Determinant, and an Alert Module.

30 The Network Monitor monitors a wireless network for indication of a possible impending viral event, in accordance with the principles of the present

invention. In particular, the Network Monitor utilizes location based services (LBS) to monitor the formation of a plurality of wireless devices at a given point in a wireless network, e.g., a given base station (BS). The Network Monitor compares obtained traffic parameters pertaining to monitored wireless traffic, with historical traffic parameters having to do with crowd risk determination, to determine if a viral event may be occurring or impending. A snapshot look at current location data collected by the Network Monitor is subsequently logged in an appropriate historical database.

In accordance with the principles of the present invention, the Crowd Risk Determinant analyzes location information to determine if a viral event triggered by the Network Monitor, also indicates a crowd safety risk. In particular, the Crowd Risk Determinant initiates a location request to obtain location information pertaining to a multitude of wireless devices in a given area, regarding a viral event that has been triggered by the Network Monitor. The Crowd Risk Determinant compares the viral pattern formed by the shape and movement of wireless devices in locations observed, with predetermined risk rules to determine if the viral event is also a crowd safety risk. The observed viral pattern is subsequently logged in an appropriate historical database.

The Alert Module, in accordance with the principles of the present invention, alerts proper authorities in an event of a crowd safety risk. The Crowd Risk Determinant triggers the Alert Module to alert of an impending crowd problem when crowd risk has exceeded a given threshold.

The Aggregate Location Dynamometer (ALD) utilizes historical databases, in accordance with the present invention, to maintain location-based information indicating possible viral events associated with a plurality of wireless devices. Historical databases include an Acceptable/Non-Acceptable Crowd Shape database, a Configurable Parameter Threshold database, a Historical Wireless Device Location Trends database, and a Risk Rules database.

BRIEF DESCRIPTION OF THE DRAWINGS

Features and advantages of the present invention will become apparent to those skilled in the art from the following description with reference to the drawings, in which:

5 **FIG. 1** depicts an exemplary Aggregate Location Dynamometer (ALD), in accordance with the principles of the present invention.

FIG. 2 depicts the flow of an exemplary Network Monitor of the Aggregate Location Dynamometer (ALD), in accordance with the principles of the present invention.

10 **FIG. 3** depicts the flow of an exemplary Crowd Risk Determinant of the Aggregate Location Dynamometer (ALD), in accordance with the principles of the present invention.

FIG. 4 depicts the flow of an exemplary Alert Module of the Aggregate Location Dynamometer (ALD), in accordance with the principles of the present invention.

15 **FIG. 5** denotes first exemplary Aggregate Location Dynamometer (ALD) location results, in accordance with the principles of the present invention.

FIG. 6 denotes second exemplary Aggregate Location Dynamometer (ALD) location results, in accordance with the principles of the present invention.

20 **FIG. 7** denotes third exemplary Aggregate Location Dynamometer (ALD) location results, in accordance with the principles of the present invention.

DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

25 Thus far, location capabilities have been concerned with locating an individual wireless device. Yet, there is such a vast abundance of individuals populating the nation's major cities. The present inventor has appreciated the benefits of using location based services (LBS) to obtain sets of aggregate location data corresponding to a number and pattern of wireless devices within an area, region, city, etc. of interest.

30 The present invention introduces an Aggregate Location Dynamometer (ALD), an analytical server utilizing location based services (LBS) on

a network to predict public safety risks, e.g., the unexpected impending formation of a flash mob, or a riot, etc.

The Aggregate Location Dynamometer (ALD) analyzes a bird's-eye view of people formation, presuming those individuals possess respective
5 handheld wireless devices that permit collection of current location information, whether that current location information be obtained from the wireless devices themselves, and/or from a network-based location server.

In accordance with the principles of the present invention, the Aggregate Location Dynamometer (ALD) predicts public safety risk in a given
10 geographical area through evaluation of the positioning and movement of wireless devices. The Aggregate Location Dynamometer (ALD) monitors wireless device network traffic to predict an impending viral event. If a possible impending viral event is sensed from a general monitoring of wireless traffic, the Aggregate Location Dynamometer (ALD) may request impending viral location information
15 pertaining to clusters of wireless devices in a vicinity of the possible event, to more accurately assess crowd risk.

Crowd risk is assessed based upon given wireless network traffic parameters such as the number of wireless devices in communication with a given base station (e.g., a density), the shape formed by representations of the
20 individual locations of the densest areas where active wireless devices are currently located, and/or the movement of the wireless devices within the region as defined.

Markers, each representing a wireless device at a given location at a given time, may be displayed on a display of the Aggregate Location
25 Dynamometer (ALD). The markers may represent wireless devices served within the given region, whether actively communicating with another wireless device, or merely sensed as present.

The present invention preferably provides an alert of a possible impending crowd related public safety risk in real time, as the crowd risk arises,
30 informing emergency personnel as early as possible, even before such event is consummated.

FIG. 1 depicts an exemplary Aggregate Location Dynamometer (ALD) **400**, in accordance with the principles of the present invention.

In particular, an Aggregate Location Dynamometer (ALD) **400** determines crowd safety risk with the help of location based services (LBS) **318**, as depicted in **FIG. 1**.

The Aggregate Location Dynamometer (ALD) **400** is generally based in a server in a wireless network **322**. Three main components form the Aggregate Location Dynamometer (ALD) **400**: a Network Monitor **302**, a Crowd Risk Determinant **304**, and an Alert Module **306**.

The Network Monitor **302** begins the risk determination process of the Aggregate Location Dynamometer (ALD) **400** by monitoring the network for indication of a possible viral event, in accordance with the principles of the present invention. Determination of a viral event is the first step in the escalation-based response of the Aggregate Location Dynamometer (ALD) **400**.

The Crowd Risk Determinant **304** assesses location information pertaining to a possible viral event triggered by the Network Monitor **302**. The Crowd Risk Determinant **304** determines if a viral event also indicates a public safety risk.

The Alert Module **306** performs predetermined responsive measures to alert appropriate public safety personnel **320** in the event of a possible or probable or current public safety risk.

Historical databases are empirically determined and maintained in the Aggregate Location Dynamometer (ALD) **400** for use in crowd risk assessment. The historical databases preferably store sets of aggregate current location information pertaining to trackable wireless devices. Exemplary historical databases accessible by the Aggregate Location Dynamometer (ALD) **400** include but are not limited to a Historical Wireless Device Location Trends and Statistics database **312**, a Configurable Parameter Threshold database **310**, a Risk Rules database **314**, and an Acceptable/Non-Acceptable Crowd Shape database **308**.

The Historical Wireless Device Location Trends and Statistics database **312**, as shown in **FIG. 1**, preferably stores sets of instantaneous

aggregate location information obtained over a period of time. Data stored in the Historical Wireless Device Location Trends and Statistics database **312** provides empirical evaluation of crowd activities used to detect a crowd trend. The Aggregate Location Dynamometer (ALD) **400** preferably uses data stored in the Historical Wireless Device Location Trends and Statistics database **312** to determine if a current situation is considered to be 'normal' to the monitored area, or abnormal, triggering a viral event. The data maintained in the Historical Wireless Device Location Trends and Statistics database **312** is preferably refreshed over time.

The Configurable Parameter Threshold database **310**, as depicted in **FIG. 1**, preferably comprises a set of configurable location-based parameters and thresholds including density, clustering, spread, geographical boundary, motion trends, and/or special events occurring in particular areas. The Configurable Parameter Threshold database **310** can also include non-location based parameters such as time of day and/or message content. The parameters stored in the Configurable Parameter Threshold database **310** are accessed by the Network Monitor **302** to assist in detecting a viral event.

The Risk Rules database **314**, as shown in **FIG. 1**, preferably comprises a set of configurable location-based parameters and thresholds including density, clustering, spread, geographical boundary, motion trends, and/or special events occurring in particular areas. The Risk Rules database **314** can also include non-location based parameters such as time of day and/or message content. The parameters stored in the Risk Rules database **314** are accessed by the Crowd Risk Determinant **304** to assist in determining if a viral event also indicates a public safety risk.

The Acceptable/Non-Acceptable Crowd Shape database **308**, as shown in **FIG. 1**, holds empirically determined past, historical cluster information regarding acceptable and/or non-acceptable past shape formations of clustered wireless devices. Specific shape parameters stored in the Acceptable/Non-Acceptable Crowd Shape database **308** are accessed by the Crowd Risk

Determinant **304** to assist in determining if a viral event also indicates a public safety risk.

A viral event is the first state of alarm in the multi-state risk determination process of the Aggregate Location Dynamometer (ALD) **400**. A viral event is defined as occurring when one or more predefined parameter thresholds have been surpassed, as determined in the exemplary embodiment in the Network Monitor **302**. The occurrence of a viral event does not necessarily infer a definite public safety risk. Instead, a viral event triggers the Crowd Risk Determinant **304** to further analyze a potentially malignant event more closely. For example, the Crowd Risk Determinant **304** provides a closer inspection of aggregate current location information, e.g., via use of a location-based push/pull service. A match of more detailed location information to a historical pattern leading to crowd risk may determine that a particular viral event also indicates a likely public safety risk.

A public safety risk confirms a compromise in crowd safety, e.g., the impending formation of a flash mob, or a riot, etc. Determination of a public safety risk triggers the Alert Module **306** to implement proper public safety response services.

The Network Monitor **302** begins the risk determination process of the Aggregate Location Dynamometer (ALD) **400**, by monitoring the network for indication of a possible viral event, in accordance with the principles of the present invention.

Moreover, the Network Monitor **302** retrieves subsequent sets of instantaneous aggregate location information. Location information triggered by the Network Monitor **302** may be portrayed in the form of snapshots displayed on a display of the Aggregate Location Dynamometer (ALD) **400**. Snapshots by the Network Monitor **302** comprise markers, each representing the location of individual wireless devices within a given region being monitored.

The Network Monitor **302** preferably obtains information regarding the number of wireless devices in a geographical area, at a given time, supported by a particular wireless network carrier (e.g., the number of wireless devices

sending messages over a wireless network via a particular base station (BS) **324**). The Network Monitor **302** uses predefined parameters and thresholds to determine if the monitored network indicates that a viral event may be occurring or impending (e.g., surpassed parameter thresholds possibly indicative of an excessive number and/or use of wireless devices for a given area, cell tower, etc.).

For instance, a Maximum Number of Devices parameter may indicate the maximum number of wireless devices that may be present within range of a particular base station (BS) **324** at a given time before a possible viral event is triggered. The Maximum Number of Devices parameter may be set manually, or empirically determined (e.g., the average number of devices present at a particular base station (BS) **324** over a course of time, as determined by historical data stored in the Historical Wireless Device Location Trends and Statistics database **312**).

The Network Monitor **302** triggers a possible viral event if a predefined parameter threshold has been surpassed (e.g., a given density of current location markers each representing a separate wireless device, or a directed convergence of at least two highly dense clusters of markers toward each other at a significant rate of speed is or has occurred, etc.).

The Network Monitor **302** preferably tallies the number of wireless devices in each instantaneous aggregate location snapshot that is captured. Predetermined parameters and thresholds are used to assess the number (e.g., the density) of wireless devices in a particular area to determine whether or not a possible viral event is occurring.

The Maximum Number of Devices parameter may alternatively be set to indicate the maximum number of wireless devices that may be present in an instantaneous aggregate location snapshot before a possible viral event is triggered. If the number of devices present in a given snapshot exceeds the Maximum Value of Devices parameter established for the respective location, a viral event may be triggered.

The Network Monitor **302** also preferably tallies the difference in the number of wireless devices in a given area, from one consecutive instantaneous aggregate location snapshot to the next. If the difference in the number of wireless devices from snapshot to snapshot exceeds a predefined value in a number of consecutive snapshots for a given area, base station, etc., then a viral event may be triggered. Thresholds for such a predefined Maximum Difference in Number of Wireless Devices parameter and a predefined Interval of Consecutive Snapshots parameter may be set manually, or empirically determined (e.g., the average difference in number of devices in consecutive instantaneous aggregate location snapshots capturing a particular area, e.g., a number of square feet, a particular base station (BS), etc., over a course of time, supported by a particular network carrier, as recorded in the Historical Wireless Device Location Trends and Statistics database **312**).

FIG. 2 depicts the flow of an exemplary Network Monitor **302** of the Aggregate Location Dynamometer (ALD) **400**, in accordance with the principles of the present invention.

In particular, as shown in step **500** of **FIG. 2**, the Network Monitor **302** preferably continuously, or at least periodically or intermittently, monitors network traffic.

In step **510**, monitored wireless data traffic is inspected for the presence of abnormal events, e.g., excessive volume for the time of day, etc. Configurable thresholds for the monitored parameters may be dynamic over the course of the day and even for traffic for any given tower or base station. The configurable thresholds for monitored parameters may be stored in the Configurable Parameter Threshold database **310**.

As shown in step **520**, if one or more parameter thresholds are exceeded, a viral event may be triggered. In response, the Network Monitor **302** triggers the Crowd Risk Determinant **304** to perform a location-based push/pull service to determine the location of each trackable wireless device within a particular geographic area (e.g., communicating through given base stations or antennas).

When parameter thresholds are not surpassed, indicating that a viral event is not occurring, location data may be logged in the Historical Wireless Device Location Trends and Statistics database **312**, as depicted in step **530**. Location data logged in the Historical Wireless Device Location Trends and Statistics database **312** may be used by the Crowd Risk Determinant **304** for future analyses of crowd risk.

FIG. 3 depicts the flow of an exemplary Crowd Risk Determinant **304** of the Aggregate Location Dynamometer (ALD) **400**, in accordance with the principles of the present invention.

In particular, the Crowd Risk Determinant **304** performs a location-based push/pull service to obtain location information pertaining to trackable wireless devices in a given area regarding a respective viral event triggered by the Network Monitor **302**, as shown in step **540** of **FIG. 3**.

In step **550**, collected location data is analyzed to assess the viral event that is occurring. The Crowd Risk Determinant **304** uses bounds and priorities set forth in the Risk Rules database **314** to determine if a possible viral event indicates a public safety risk. A viral pattern may or may not imply public safety risk. In step **560**, if a public safety risk is determined, the Crowd Risk Determinant **304** triggers the Alert Module **306** to take responsive public safety measures. Location data associated with a public safety risk is logged **530** in the Historical Wireless Device Location Trends and Statistics database **312**.

If the Crowd Risk Determinant **304** confirms that a particular viral event does not indicate a public safety risk, the Aggregate Location Dynamometer (ALD) **400** is triggered to routinely log location data **530** in the Historical Wireless Device Location Trends and Statistics database **312** for potential future analyses.

Determination of a public safety risk in the Crowd Risk Determinant **304** triggers the Alert Module **306** to implement proper public safety response services. An Alert Module **306** is the final step in the risk determination process of the Aggregate Location Dynamometer (ALD) **400**.

FIG. 4 depicts the flow of an exemplary Alert Module **306** of the Aggregate Location Dynamometer (ALD) **400**, in accordance with the principles of the present invention.

In particular, as shown in step **700** of **FIG. 4**, the Alert Module **306** is triggered by the Crowd Risk Determinant **304** and supplied the predetermined conditions constituting how to handle a determined public safety risk.

The Alert Module **306** immediately alerts the proper authorities **320** in the presence of a public safety risk, as depicted in step **710**.

Subsequent aggregate data collections may be made by the Alert Module **306** in step **720**. A particular public safety event may be programmed to result in multiple aggregate location data collections, set to occur at specific intervals. Moreover, a particular risk determination result may be configured to act as a triggered push/pull service **540** to acquire additional location data. Subsequent location information is routinely logged in the Historical Wireless Devices Location Trends and Statistics database **530**.

Configurable parameters are maintained in the Risk Rules database **314** to assist the Crowd Risk Determinant **304** in determining if location information pertaining to a viral event indicates a likely public safety risk. Factors for risk determination include but are not limited to the shape a cluster of location markers representing individual wireless devices of given density is forming, whether or not markers are spreading out or coming together, and/or at what rate of change a cluster of wireless devices is moving. Factors for risk determination also include the behavior of collective XY location coordinates of the most dense clusters of wireless devices, to where the most dense clusters of wireless devices of concern are moving, and/or whether or not a cluster of wireless devices in a particular location makes sense given the time of day.

For instance, empirical data may indicate that it is unusual for there to be a large number of wireless devices present downtown after business hours, or after a time when local bars and clubs have closed for the night. In this case, a configurable threshold may be set for a combination of location and time of day parameters (e.g., to articulate the number of wireless devices that must be

present within a defined downtown region, after a given hour) to trigger a public safety risk. A configurable parameter threshold (e.g., specifying the number of wireless devices capable of inhabiting a particular geographic expanse or particular shape of device formation, or a given density within that region) may manually or empirically be set. If a parameter threshold is surpassed, the Crowd Risk Determinant **304** informs the Alert Module **306** of the development of a public safety risk.

The shape of a cluster of wireless devices may often offer significant clues to crowd risk potential. When location information is collected, the best-fit shape of dense clusters formed by accumulation of wireless devices in a given area may be determined. The best-fit shape of a cluster of wireless devices may be compared against data contained in the historical Acceptable/Non-Acceptable Crowd Shape database **308** to determine danger potential. Different thresholds may be set for like parameters based on varying location.

FIG. 5 denotes first exemplary Aggregate Location Dynameter (ALD) **400** location results, in accordance with the principles of the present invention.

In particular, the large oval shape **101** formed by markers representing individual wireless devices in the given geographical area **200** shown in **FIG. 5**, may be interpreted as a group of individuals enjoying a sporting event in a stadium. Factors to consider are time of day and scheduled events. The example in **FIG. 5** uses precise location.

FIG. 6 denotes second exemplary Aggregate Location Dynameter (ALD) **400** location results, in accordance with the principles of the present invention.

In particular, the pattern **102** in the geographical area **200** shown in **FIG. 6** may be interpreted as cell sites pertaining to trackable individuals, assuming most individuals carry wireless devices. The same pattern may mean different things at different hours of the day. The exemplary location result shown in **FIG. 6** uses coarse location.

FIG. 7 denotes third exemplary Aggregate Location Dynamometer (ALD) **400** location results, in accordance with the principles of the present invention.

In particular, the crescent shape **103** in the geographical area **200** shown in **FIG. 7** is recognized as a pattern to be wary of. This crescent shape may represent a variety of different occurrences (e.g., a protest in front of a given location such as a court house, a famous author at a bookstore, etc.). The exemplary location result shown in **FIG. 7** uses precise location.

A rate-based parameter threshold may also or alternatively be set to define an acceptable rate at which wireless devices would otherwise normally inhabit a geographic area. For instance, if over a certain number of wireless devices enter an area in under a given amount of time (e.g., if three hundred wireless devices rush into a central pre-defined location in under ten minutes) then a public safety risk may be triggered.

Message content may be analyzed as an attribute for risk determination in response to a viral traffic event. For instance, a determination of the most frequent phrases may be matched against a database of suspected terms (e.g., "meet at the Lincoln Memorial", etc.).

Motion trends are also analyzed to assess crowd risk. The Crowd Risk Determinant **304** preferably determines whether the accumulation of wireless devices is becoming more or less dense about a central location and whether or not this behavior is expected based on trends and configured thresholds established for particular locations.

Precise accuracy of each individual device location is not extremely important in the present invention. Instead, focus lies in the volume, density, shape and movement of data points collected. Serving cell tower locations for each wireless device may be sufficient to satisfy initial triggering requirements for a possible viral event. The Aggregate Location Dynamometer (ALD) **400** is concerned with aggregate location data as opposed to data involving individual device locations. Data regarding parameters such as special events, geographical boundaries, motion trends, density, clustering, spread, time

of day and/or message content relating to trackable wireless devices are recorded in the Historical Wireless Device Location Trends and Statistics database **312**, as opposed to exact locations of specific wireless devices. Anonymity regarding precise locations of specific wireless devices alleviates
5 some concern surrounding the privacy of individuals during location based services (LBS), as used within the present invention.

An Aggregate Location Dynamometer (ALD) **400** has benefit to entities other than emergency management and crowd risk assessment parties. For instance, the present invention may also be used to estimate location trends in
10 cities, to rank areas such as parks and beaches by volume of visitors, and even to peg traffic patterns. Historical crowd data need not represent a public safety issue, e.g., it may merely relate to city planning or disaster recovery. Thus, data collected while scanning for crowd risk provides cities, states and government with valuable information.

15 Though, preferably all wireless devices in a given area would be monitored for crowd gathering tendencies, it is also within the principles of the present invention to monitor only those devices by the relevant wireless carrier providing Location Dynamometer (ALD) **400** services.

The present invention greatly benefits police, fire and general
20 emergency response personnel **320** desiring early warning about possible crowd related risks, e.g., riots. Moreover, the present invention is intended to combat nefarious cell technology to spawn mobs and riots without resorting to network restrictions.

While the invention makes use of the current location data of
25 preferably all wireless devices within a given region, area, etc., the invention also preferably makes distinction between the current mode of operation of the wireless devices being analyzed for a possible public safety risk. For instance, analysis of the density, shape, movement, etc. in determining a possible public safety risk may analyze only wireless devices in active mode.

30 While the invention has been described with reference to the exemplary embodiments thereof, those skilled in the art will be able to make

various modifications to the described embodiments of the invention without departing from the true spirit and scope of the invention.

5

CLAIMS

What is claimed is:

1. An aggregate location dynamometer in a physical wireless network server, said aggregate location dynamometer comprising:
 - 5 a network monitor to monitor a wireless network for an indication of a possible viral event;
 - a crowd risk determinant to assess location information pertaining to a possible viral event triggered by said network monitor; and
 - an alert module to alert in an event of a public safety risk
- 10 determined from an analysis of said possible viral event.
2. The aggregate location dynamometer in a physical wireless network server, said aggregate location dynamometer according to claim 1, further comprising:
 - 15 a historical database maintaining location-based information indicating a possible viral event associated with a plurality of wireless devices.
3. The aggregate location dynamometer in a physical wireless network server, said aggregate location dynamometer according to claim 2, wherein
- 20 said historical databases comprises:
 - an acceptable/non-acceptable crowd shape database.
4. The aggregate location dynamometer in a physical wireless network server, said aggregate location dynamometer according to claim 2, wherein
- 25 said historical databases comprises:
 - a configurable parameter threshold database.
5. The aggregate location dynamometer in a physical wireless network server, said aggregate location dynamometer according to claim 2, wherein
- 30 said historical databases comprises:
 - a historical wireless device location trends database.

6. The aggregate location dynamometer in a physical wireless network server, said aggregate location dynamometer according to claim 2, wherein said historical databases comprises:

a risk rules database.

5

7. A method of alerting to a problematic crowd risk with location based services (LBS), comprising:

monitoring wireless traffic for a possible impending viral event associated with a formation of a plurality of wireless devices;

10 requesting location information associated with said plurality of wireless devices;

determining a crowd risk of said crowd based on a shape and movement of said plurality of wireless devices; and

15 triggering alert of an impending crowd problem when said determined crowd risk is above a given threshold.

8. The method of alerting to a problematic crowd risk with location based services (LBS) according to claim 7, wherein said monitoring wireless traffic comprises:

20 monitoring wireless traffic at a given point in a wireless network;
and

comparing a given traffic parameter associated with said monitored wireless traffic with a historical traffic parameter associated with crowd risk determination.

25

9. The method of alerting to a problematic crowd risk with location based services (LBS) according to claim 8, wherein:

said given point is at a given base station in said wireless network.

30

10. The method of alerting to a problematic crowd risk with location based services (LBS) according to claim 8, further comprising:

logging a snapshot look at current location data associated with location data.

5

11. The method of alerting to a problematic crowd risk with location based services (LBS) according to claim 7, wherein said requesting location information comprises:

initiating a location request; and

10 comparing a viral pattern of respective locations of said plurality of wireless devices to predetermined risk rules.

12. The method of alerting to a problematic crowd risk with location based services (LBS) according to claim 11, further comprising:

15 logging said viral pattern.

ABSTRACT

An Aggregate Location Dynamometer (ALD) in a physical wireless network alerts to a problematic crowd risk using location based services (LBS). An Aggregate Location Dynamometer (ALD) comprises a Network Monitor, a Crowd Risk Determinant and an Alert Module. The Network Monitor monitors wireless traffic for a potential viral event, associated with a formation of a plurality of wireless devices. The Crowd Risk Determinant requests location information associated with a plurality of wireless devices in a given area regarding a respective viral event. The Crowd Risk Determinant determines if the viral event also indicates a crowd safety risk, based on the shape and movement of observed wireless devices. The Alert Module triggers an alert of an impending crowd problem when crowd risk is above a given threshold. Historical databases are empirically determined and maintained in the Aggregate Location Dynamometer (ALD) for use in viral event and crowd risk assessment.

15

FIG. 1

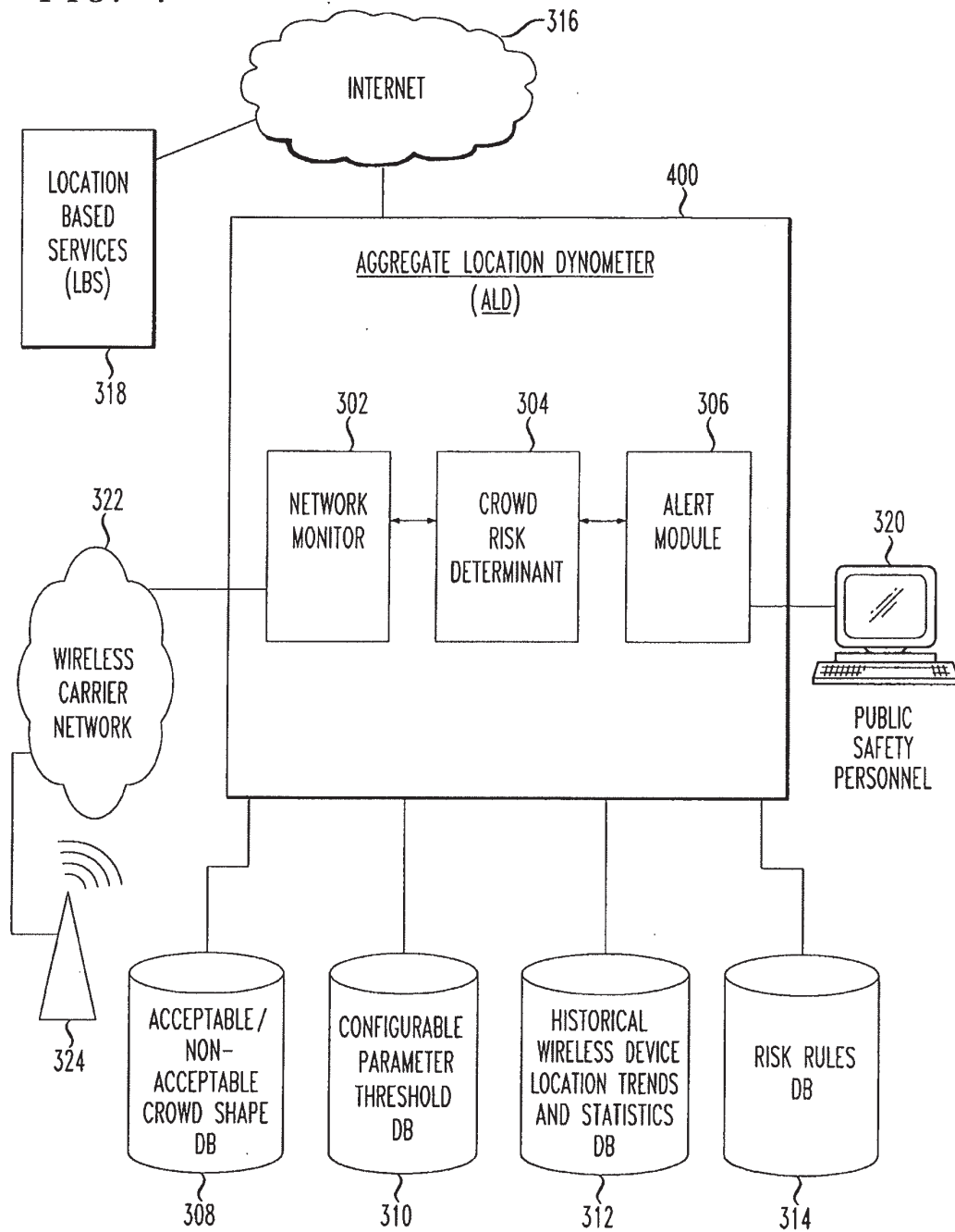


FIG. 2

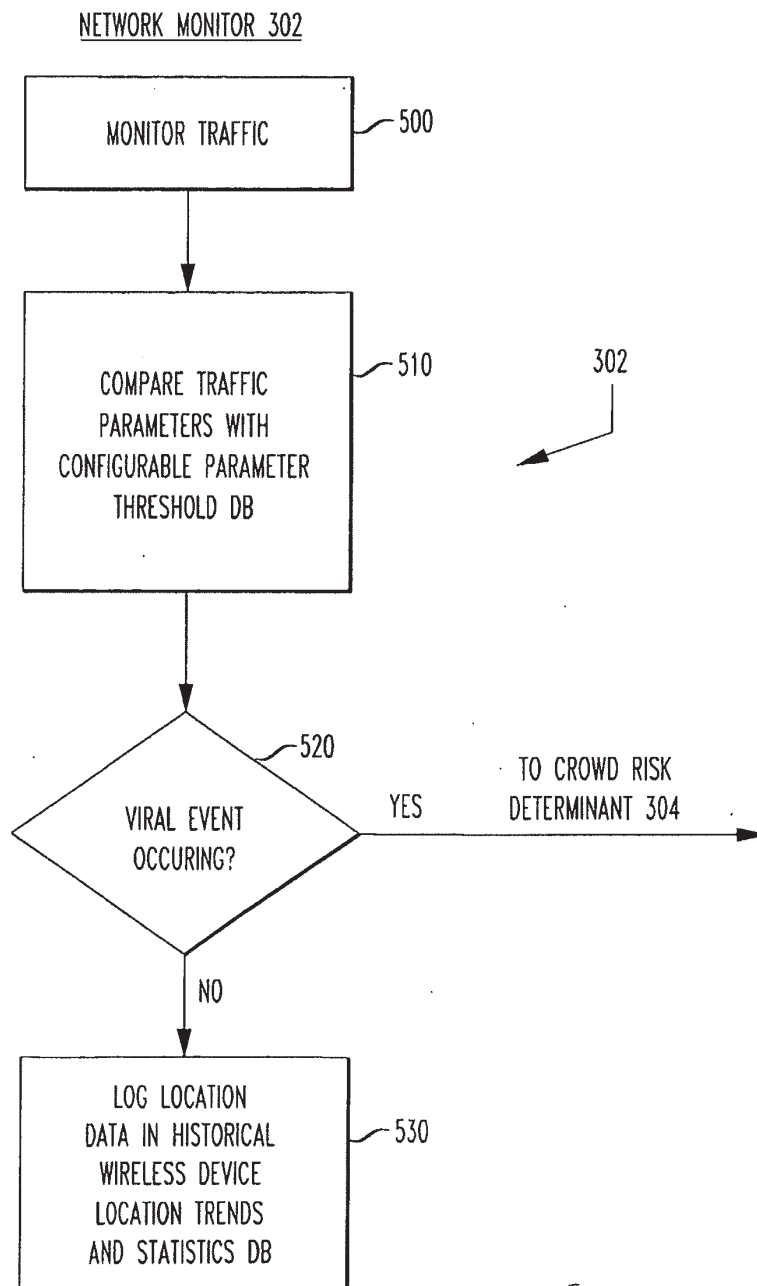


FIG. 3

3/7

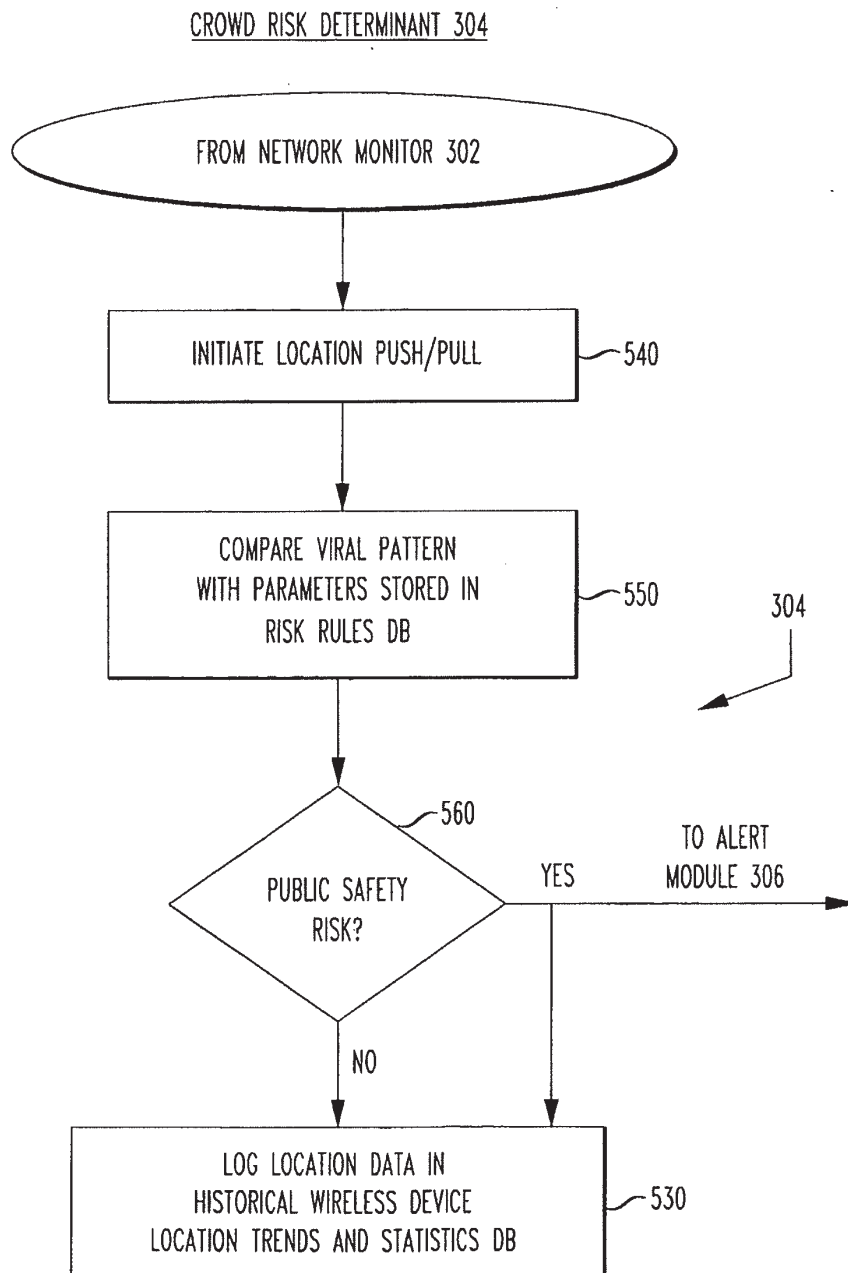
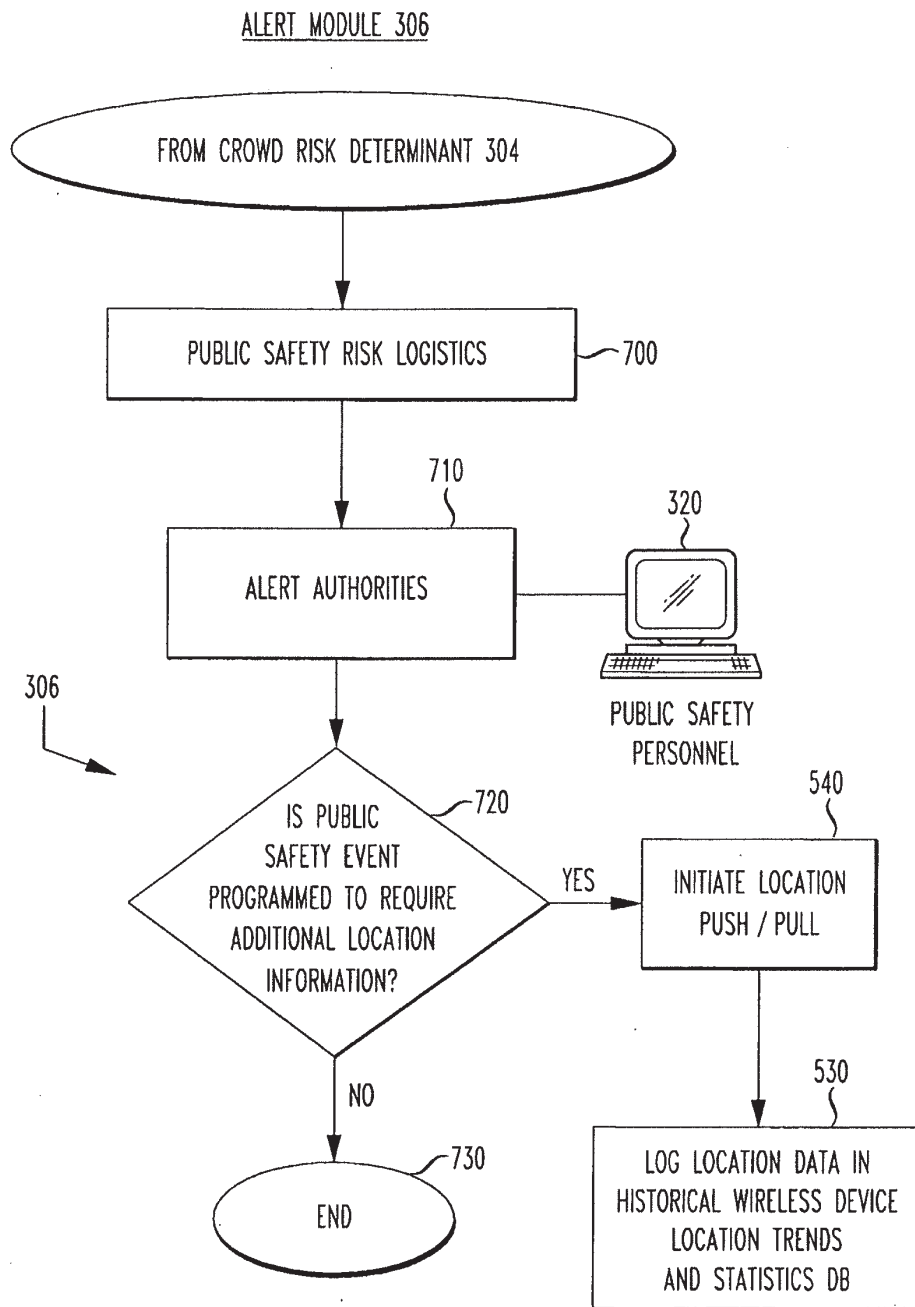


FIG. 4

4/7



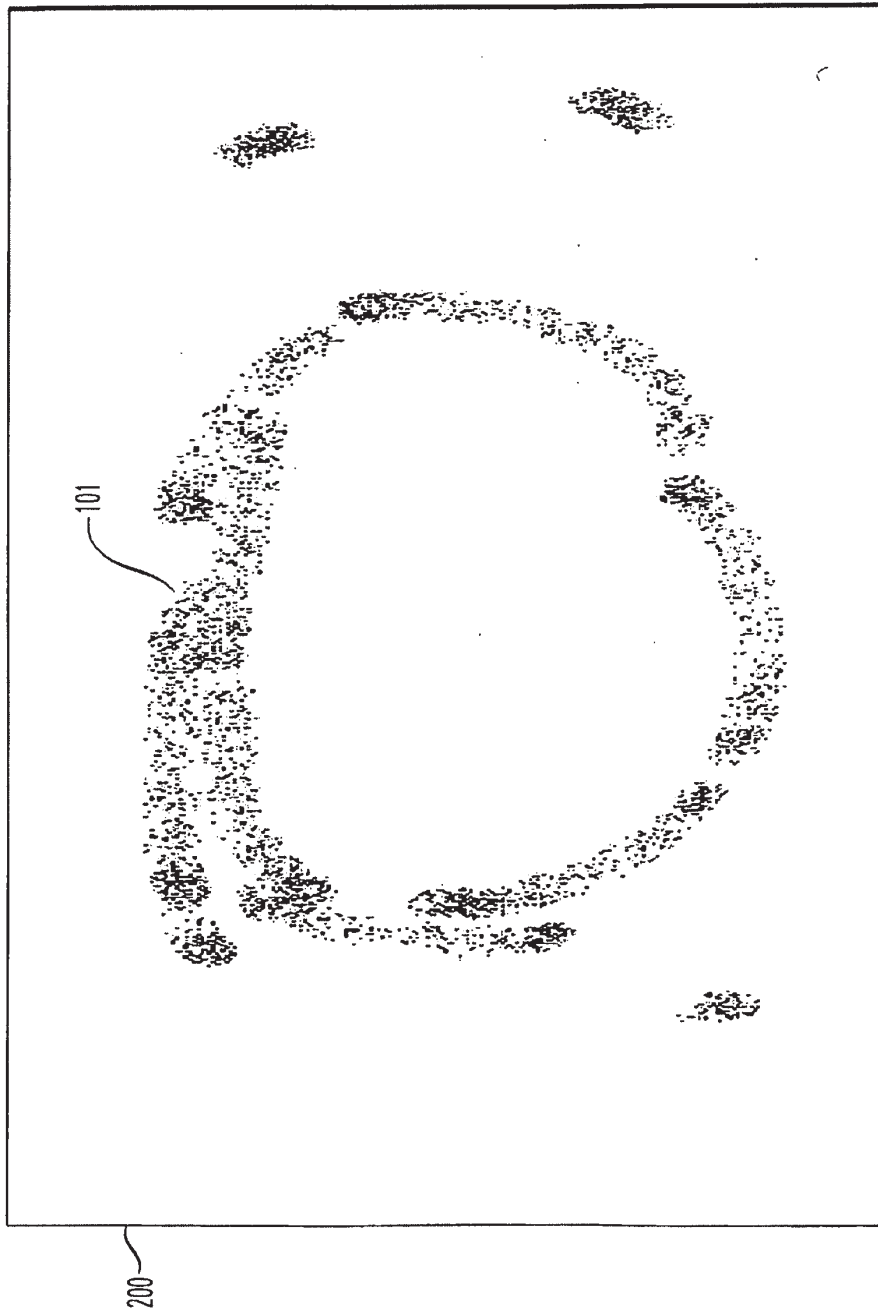


FIG. 5

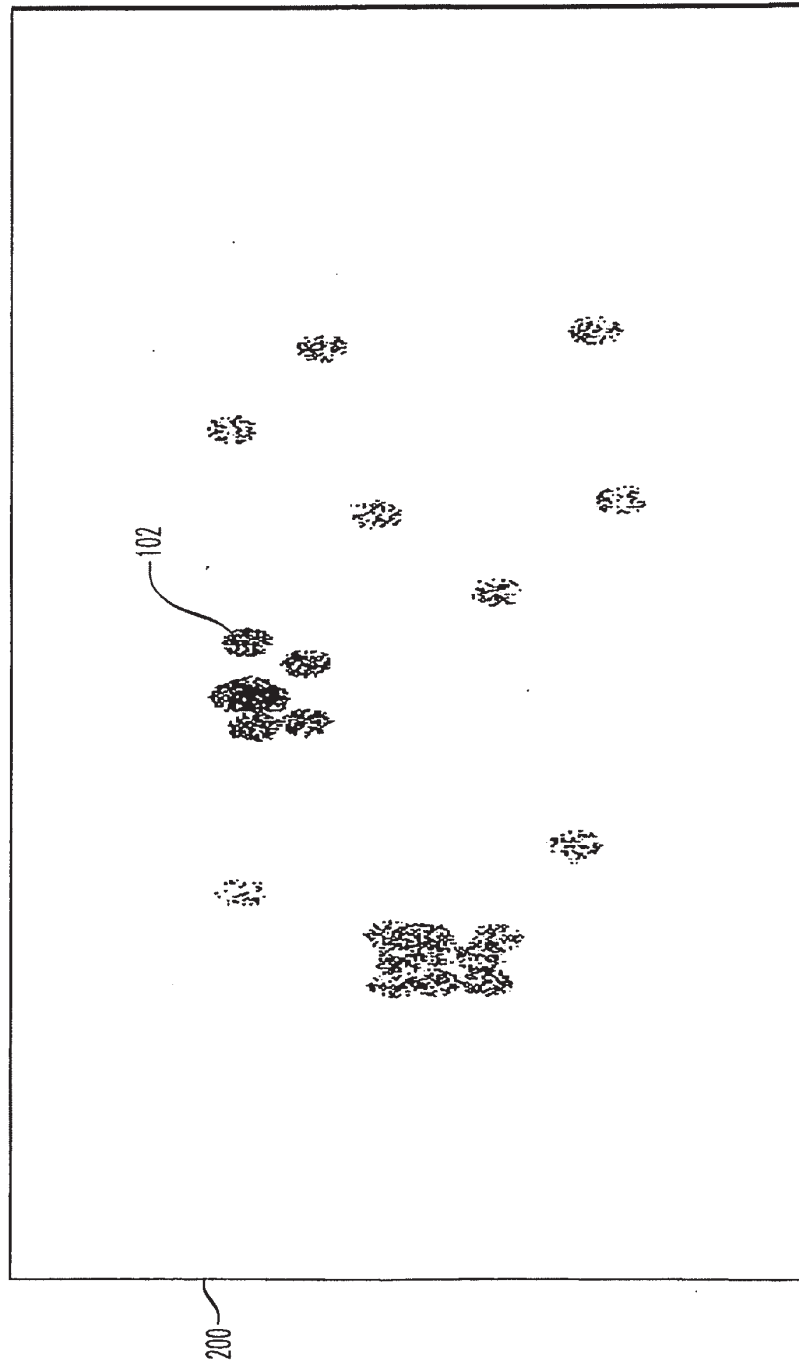


FIG. 6



FIG. 7

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		Aggregate Location Dynamometer (ALD)		
First Named Inventor/Applicant Name:		Michael A. Cuff		
Filer:		William H Bollman		
Attorney Docket Number:		40308		
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility application filing	1011	1	280	280
Utility Search Fee	1111	1	600	600
Utility Examination Fee	1311	1	720	720
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 (\$)				1600

Electronic Acknowledgement Receipt	
EFS ID:	23806823
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Confirmation Number:	1789
Title of Invention:	Aggregate Location Dynamometer (ALD)
First Named Inventor/Applicant Name:	Michael A. Cuff
Customer Number:	117657
Filer:	William H Bollman
Filer Authorized By:	
Attorney Docket Number:	40308
Receipt Date:	16-OCT-2015
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Application Type:	Utility under 35 USC 111(a)

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Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 1600
RAM confirmation Number	152
Deposit Account	506250
Authorized User	BOLLMAN, WILLIAM H
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)

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Charge any Additional Fees required under 37 C.F.R. Section 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	Application Data Sheet	2015-10-16-Application-Data-Sheet-40308.pdf	2707495 7e996eb7952acc4109f0d84cc944097bc4c7743b	no	7

Warnings:

Information:

2		2015-10-16-Preliminary-Amendment-40308.pdf	64306 51c69e2b55a2b03d495840a67056623418ad0a7c	yes	8
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Multipart Description/PDF files in .zip description

Document Description	Start	End
Preliminary Amendment	1	1
Specification	2	2
Claims	3	7
Applicant Arguments/Remarks Made in an Amendment	8	8

Warnings:

Information:

3	Oath or Declaration filed	2015-10-16-Declaration-40308.pdf	485344 14c32680d98404331c4ccd88f981fc9fd8de7759	no	6
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Warnings:

Information:

4		2015-10-16-Specification-40308.pdf	878221 8450d27f9e16b0be93d6909b45eb7ae64571ac2a	yes	20
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Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	16
Claims	17	19

	Abstract		20	20
Warnings:				
Information:				
5	Drawings-only black and white line drawings	2015-10-16-Drawings-40308.pdf	123986 488a1366f71b8179149f2ca0fa186d6621c45596	no 7
Warnings:				
Information:				
6	Fee Worksheet (SB06)	fee-info.pdf	34704 120660a78b4c3aa52ae66a442bd3f51e5bd167e4	no 2
Warnings:				
Information:				
Total Files Size (in bytes):			4294056	
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	40308
		Application Number	
Title of Invention	Aggregate Location Dynamometer (ALD)		
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:

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Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Michael	A.	Cuff		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
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Inventor 2					Remove
Legal Name					
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Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
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Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Farhad		Kasad		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					

Application Data Sheet 37 CFR 1.76		Attorney Docket Number		40308	
		Application Number			
Title of Invention	Aggregate Location Dynamometer (ALD)				
City	Bothell	State/Province	WA	Country of Residence i	US
Mailing Address of Inventor:					
Address 1	8534 NE 202nd Way				
Address 2					
City	Bothell	State/Province	WA		
Postal Code	98011	Country i	US		
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.					Add

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☐ An Address is being provided for the correspondence Information of this application.		
Customer Number	117657	
Email Address		Add Email Remove Email

Application Information:

Title of the Invention	Aggregate Location Dynamometer (ALD)		
Attorney Docket Number	40308	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	7	Suggested Figure for Publication (if any)	

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 i

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.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	40308
		Application Number	
Title of Invention	Aggregate Location Dynamometer (ALD)		

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	83086		

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 this 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 blank.

Prior Application Status	Pending		Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)		
	Continuation of	14176691	2014-02-10		
Prior Application Status	Patented		Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14176691	Continuation of	13317996	2011-11-02	8649806	2014-02-11
Prior Application Status	Expired		Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)		
13317996	Claims benefit of provisional	61573112	2011-09-02		
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button. Add					

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) 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 Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Remove	Access Code ^j (if applicable)
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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	40308
		Application Number	
Title of Invention	Aggregate Location Dynamometer (ALD)		
Additional Foreign Priority Data may be generated within this form by selecting the Add button. Add			

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.

Authorization to Permit Access:

☒ Authorization to Permit Access to the Instant Application by the Participating Offices

If 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 World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

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.

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	40308
		Application Number	
Title of Invention	Aggregate Location Dynamometer (ALD)		

Applicant 1				Remove	
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. ☒					
Organization Name		TeleCommunication Systems, Inc.			
Mailing Address Information For Applicant:					
Address 1		275 West Street			
Address 2		Suite 400			
City		Annapolis	State/Province		MD
Country ⁱ		US	Postal Code		21401
Phone Number			Fax Number		
Email Address					
Additional Applicant Data may be generated within this form by selecting the Add button. Add					

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.			
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.			
Remove			
If the Assignee or Non-Applicant Assignee is an Organization check here. ☐			

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	40308
		Application Number	
Title of Invention	Aggregate Location Dynamometer (ALD)		

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 i		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.

Add

Signature:

Remove

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

Signature	/William H. Bollman/		Date (YYYY-MM-DD)	2015-10-16
First Name	William	Last Name	Bollman	Registration Number
			36457	

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

Add

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.**

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 the Freedom of Information Act requires disclosure of these records.
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 inspections 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.

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875				Application or Docket Number 14/885,136	Filing Date 10/16/2015	☐ To be Mailed
ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO						
APPLICATION AS FILED – PART I						
(Column 1)		(Column 2)				
FOR	NUMBER FILED	NUMBER EXTRA			RATE (\$)	FEE (\$)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*			X \$ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*			X \$ =	
☐ 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).					
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))						
* If the difference in column 1 is less than zero, enter "0" in column 2.					TOTAL	
APPLICATION AS AMENDED – PART II						
(Column 1)		(Column 2)		(Column 3)		
AMENDMENT	10/16/2015	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	
	Total (37 CFR 1.16(i))	* 16	Minus	** 20	= 0	X \$80 = 0
	Independent (37 CFR 1.16(h))	* 2	Minus	*** 3	= 0	X \$420 = 0
	☐ Application Size Fee (37 CFR 1.16(s))					
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					
	TOTAL ADD'L FEE					0
(Column 1)		(Column 2)		(Column 3)		
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$ =
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =
	☐ Application Size Fee (37 CFR 1.16(s))					
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					
	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 number found in the appropriate box in column 1.						

This collection of information is required by 37 CFR 1.16. 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, 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.