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[Continued on next page]

(54) Title: LOCATION DETERMINATION USING A COMPANION DEVICE

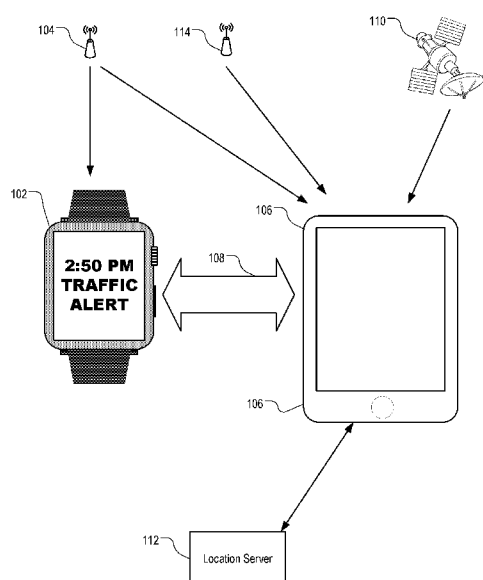


FIG. 1

(57) Abstract: Methods, systems, and computer program products for a mobile device (102) determining its location based on a location of a companion device (106) are described. A mobile device (102) can receive a request for determining a location of the mobile device (102) from an application. The request can include an accuracy specification providing a lower limit on accuracy of the determined location. The mobile device (102) can determine that the mobile device (102) is incapable of achieving that accuracy. The mobile device (102) can then submit a location request to a companion device (106) that has paired with the mobile device (102). The companion device (106), upon receiving the location request, can determine a location of the companion device (106) and provide the location of the companion device (106) to the mobile device (102). The mobile device (102) can then designate the location of the companion device (106) as the location of the mobile device (102), and provide the location to the application. 5098'718 1.docx

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12 January 2017

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2016/034313

A. CLASSIFICATION OF SUBJECT MATTER
INV. G01S5/02
ADD.

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)
G01S

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)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 2 270 534 A1 (NOKIA CORP [FI]) 5 January 2011 (2011-01-05) abstract figures 1-8 paragraphs [0001], [0004], [0006] - [0021], [0011], [0012], [0025], [0032], [0042], [0043], [0048] claims 1-15	1-20
A	US 2014/045463 A1 (HSIEH JEFFREY [US] ET AL) 13 February 2014 (2014-02-13) abstract figures 1-4 paragraphs [0005], [0008] - [0013], [0039], [0044], [0045] ----- -/-	2,11



Further documents are listed in the continuation of Box C.



See patent family annex.

* 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

18 November 2016

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29/11/2016

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2016/034313

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2014/256346 A1 (VENKATRAMAN SAI PRADEEP [US] ET AL) 11 September 2014 (2014-09-11) abstract figures 1-4 paragraphs [0005] - [0009], [0016], [0023], [0027], [0029], [0033], [0036], [0042] claims 1-44 -----	5,6,9, 14,15,17
A	US 2003/220116 A1 (SAGEFALK WILLY [SE] ET AL) 27 November 2003 (2003-11-27) abstract figures 1-8E paragraphs [0002] - [0026] claims 1-23 -----	7-9,16, 17

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2016/034313

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2016/034313

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-4, 10-13, 18-20

Mobile device and companion device

2. claims: 5, 6, 8, 9, 14, 15, 17

Assistance information

3. claims: 7, 16

Wireless communication channel
