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- (71) Applicant (for all designated States except US): **MI-CROSOFT CORPORATION** [US/US]; One Microsoft Way, Redmond, WA 98052-6399 (US).

(72) Inventors: **KANSAL, Aman**; c/o Microsoft Corporation, LCA - International Patents, One Microsoft Way, Redmond, WA 98052-6399 (US). **CROSS, Brian, D.**; c/o Microsoft Corporation, LCA - International Patents, One Microsoft Way, Redmond, WA 98052-6399 (US). **GARCIA, Gerardo**; c/o Microsoft Corporation, LCA - International Patents, One Microsoft Way, Redmond, WA 98052-6399 (US).

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[Continued on next page]

(54) Title: ENERGY EFFICIENT LOCATION DETECTION

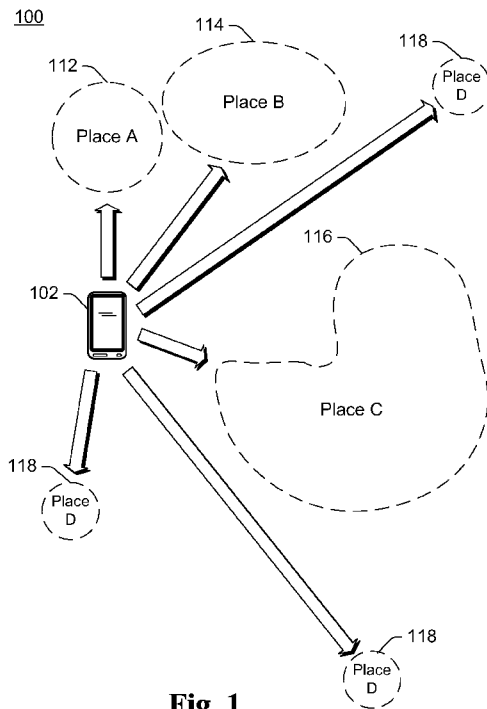


Fig. 1

(57) Abstract: In a device, one or more low energy sensors are used to determine a mobility state of the device. Based on both the mobility state of the device and one or more places of interest for the device, a determination is made as to when to use a high energy sensor to determine a location of the device. One of the one or more places of interest for the device within which the device is located at any particular time can be determined based on the mobility state of the device and/or the location of the device as determined by the high energy sensor.

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DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT,
LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE,
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- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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A. CLASSIFICATION OF SUBJECT MATTER***H04W 64/00(2009.01)i, G01S 5/02(2010.01)i, H04W 88/02(2009.01)i***

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)

H04W 64/00; H04B 7/00; G01S 19/26; G01S 19/34; G01S 1/00; H04B 1/38

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: low power, sensor, mobility, location, POI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|-----------------------|
| Y A | US 2009-0278738 A1 (SUNIL GOPINATH) 12 November 2009 See description paragraphs [0027], [0028]. | 1,5,8 2-4,6-7,9-10 |
| Y | US 2010-0311336 A1 (VESA HUOTARI et al.) 09 December 2010 See description paragraphs [0040]-[0042]. | 1,5,8 |
| A | US 2010-0253503 A1 (JR-FU JUANG) 07 October 2010 See description paragraph [0027]. | 1-10 |

 Further documents are listed in the continuation of Box C. See patent family annex.

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Date of the actual completion of the international search

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Korean Intellectual Property Office
189 Cheongsu-ro, Seo-gu, Daejeon Metropolitan
City, 302-701, Republic of Korea

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Authorized officer

JUNG, Yun Seok

Telephone No. 82-42-481-8123



INTERNATIONAL SEARCH REPORT

Information on patent family members

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| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|--|------------------|--|--|
| US 2009-0278738 A1 | 12. 11. 2009 | CN 101999083 A EP 2291674 A2 JP 2011-520131 A KR 10-2011-0009695 A TW 201007193 A US 8072379 B2 WO 2009-140168 A2 WO 2009-140168 A3 | 30. 03. 2011 09. 03. 2011 14. 07. 2011 28. 01. 2011 16. 02. 2010 06. 12. 2011 19. 11. 2009 19. 11. 2009 |
| US 2010-0311336 A1 | 09. 12. 2010 | None | |
| US 2010-0253503 A1 | 07. 10. 2010 | CN 101852848 A US 8059029 B2 | 06. 10. 2010 15. 11. 2011 |