

**PATENT COOPERATION TREATY**

**PCT**

**INTERNATIONAL SEARCH REPORT**

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference P36245WO1	<b>FOR FURTHER ACTION</b> see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US2018/044290	International filing date ( <i>day/month/year</i> ) 30 July 2018 (30-07-2018)	(Earliest) Priority Date ( <i>day/month/year</i> ) 29 September 2017 (29-09-2017)
Applicant  APPLE 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 5 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 43.6*bis*(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. 5  
 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

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2018/044290

## 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.

**INTERNATIONAL SEARCH REPORT**

International application No  
PCT/US2018/044290

**A. CLASSIFICATION OF SUBJECT MATTER**  
 INV. G06T15/00 G06T19/00  
 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)  
 G06T

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 A	US 2014/278847 A1 (GALLO FABIO [CH]) 18 September 2014 (2014-09-18) paragraph [0001] - paragraph [0101] figures 1-6F	1-11, 21-25 12-20
X A	WO 2015/010165 A1 (NAT ICT AUSTRALIA LTD [AU]) 29 January 2015 (2015-01-29) page 1, line 1 - page 27, line 15 figures 1-13	1-11, 21-25 12-20
A	US 2016/300389 A1 (GLENN III LLOYD FRANKLIN [US] ET AL) 13 October 2016 (2016-10-13) paragraph [0002] - paragraph [0097]; figures 1-10	1-25

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 <b>11 January 2019</b>	Date of mailing of the international search report <b>21/01/2019</b>
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer <b>Ernst, Jens</b>
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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2018/044290
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2014278847 A1	18-09-2014	EP 3114629 A2	11-01-2017
		US 2014278847 A1	18-09-2014
		WO 2014140915 A2	18-09-2014
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WO 2015010165 A1	29-01-2015	AU 2014295814 A1	28-01-2016
		US 2016148418 A1	26-05-2016
		WO 2015010165 A1	29-01-2015
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US 2016300389 A1	13-10-2016	NONE	
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**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

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

1. claims: 1-11, 21-25

Method of providing a 3D map on a display of a client device, the method comprising retrieving, by the client device, (data of) map objects, receiving, by the client device, (data of) an original position and a sequence of virtual positions of a host device, transmitted by said host device, and rendering, by the client device, a series of images of the 3D map based on the retrieved data and the virtual positions of the host device;

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2. claims: 12-20

Method of providing a 3D map on a display of a client device, the method comprising retrieving, by a client device, map objects, receiving, by the client device, an origin position and a stream of virtual positions of a host virtual camera, rendering, by the client device, a first series of images of the 3D map based thereon, capturing, by the client device, one or more images of its physical environment, determining, by the client device, its initial physical position based on the one or more images, generating, by the client device, a stream of virtual positions of a client virtual camera corresponding to the client device as measured using one or more second images captured by the client device, and rendering, by the client device, a second series of images of the 3D map using the stream of virtual positions of the client virtual camera;

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