

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43bis.1)**

To:

see form PCT/ISA/220

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/GB2018/052383

International filing date (day/month/year)
22.08.2018

Priority date (day/month/year)
07.09.2017

International Patent Classification (IPC) or both national classification and IPC
INV. G06K9/20

Applicant
ZAPPAR LIMITED

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 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

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually 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:




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Date of completion of this opinion

see form
PCT/ISA/210

Authorized Officer

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Box No. I Basis of the 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:
 - a. forming part of the international application as filed:
 - in the form of an Annex C/ST.25 text file.
 - on paper or in the form of an image file.
 - b. furnished together with the international application under PCT Rule 13ter.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. furnished subsequent to the international filing date for the purposes of international search only:
 - in the form of an Annex C/ST.25 text file (Rule 13ter.1(a)).
 - on paper or in the form of an image file (Rule 13ter.1(b) and Administrative Instructions, Section 713).
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 forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of

the entire international application

claims Nos. 22

because:

the said international application, or the said claims Nos. relate to the following subject matter which does not require an international search (*specify*):

the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed (*specify*):

no international search report has been established for the whole application or for said claims Nos. 22

a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:

furnish a sequence listing in the form of an Annex C/ST.25 text file, and such listing was not available to the International Searching Authority in the form and manner acceptable to it; or the sequence listing furnished did not comply with the standard provided for in Annex C of the Administrative Instructions.

furnish a sequence listing on paper or in the form of an image file complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in the form and manner acceptable to it; or the sequence listing furnished did not comply with the standard provided for in Annex C of the Administrative Instructions.

pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rule 13*ter*.1(a) or (b).

See Supplemental Box for further details

Box No. IV Lack of unity of invention

1. In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has, within the applicable time limit:
- paid additional fees
 - paid additional fees under protest and, where applicable, the protest fee
 - paid additional fees under protest but the applicable protest fee was not paid
 - not paid additional fees
2. This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- complied with
 - not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
- all parts.
 - the parts relating to claims Nos. 1-21, 23-25

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)	Yes: Claims	<u>16, 24</u>
	No: Claims	<u>1-15, 17-21, 23, 25</u>
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-21, 23-25</u>
Industrial applicability (IA)	Yes: Claims	<u>1-21, 23-25</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Reference is made to the following documents:

- D1 WO 03/087991 A2 (ESCHER GROUP LTD [US]) 23 October 2003
- D2 US 2002/186884 A1 (SHAKED DORON [IL] ET AL) 12 December 2002
- D3 HAN PENGFEI ET AL: "L-split marker for augmented reality in aircraft assembly", OPTICAL ENGINEERING, SOC. OF PHOTO-OPTICAL INSTRUMENTATION ENGINEERS, BELLINGHAM, vol. 55, no. 4, April 2016
- D4 FILIPPO BERGAMASCO ET AL: "Image-Space Marker Detection and Recognition Using Projective Invariants", 3D IMAGING, MODELING, PROCESSING, VISUALIZATION AND TRANSMISSION (3DIMPVT), 2011 INTERNATIONAL CONFERENCE ON, IEEE, 16 May 2011, pages 381-388

Re Item IV

Lack of unity of invention

- 1 The subject matter of **claim 1 is considered to be a matter of common knowledge** as it merely defines dotted fiducial markers indicating the position of data to be read. It is disclosed for instance in **D1** as follows:

An optically readable marker (9 in Figs. 1, 2, 3) comprising:

data to be extracted (27 in Figs. 2 and 3); and

an identifier arranged to identify a location of the data to be extracted, wherein the identifier comprises a plurality of dots arranged in a set pattern, and wherein the dots are small compared to the size of the data to be extracted (fiducial points 22 in Figs. 2 and 3).

- 2 Corresponding **method claim 17 is provided in D1** as well (page 12, lines 27 to 29).

- 3 The application claims **two contributions** with respect to this common knowledge:

I. a specific configuration of fiducial points: claims 4 and 6 to 11, pages 14 to 18 in description, Figures 3 to 5;

II. a method of dot detection, the modified "FAST" algorithm, **claim 22**, pages 19 to 22, Figures 6, 7.

- 4 The two subjects do not share a common inventive concept, the only link being provided through the subject matter of claim 1, which is a matter of common knowledge (fiducial marker points). The current application is **non-unitary in the sense of Rule 13 PCT**.

- 5 For the purpose of the search all claims but claim 22 are grouped with the first invention.

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Re. D1

- 6 As noted above, **D1 teaches the subject matter of independent claims 1 and 17.** The subject matter of **independent claim 23 and dependent claims 2, 6 to 8, 13 and 17 to 19** are disclosed in the same passages (see Fig. 3 in particular).
The subject matter of these claims is therefore not new (Art. 33(1) and (2) PCT) with respect to D1.

Re. D2

- 7 D2 discloses a marker (comprising text) and an identifier for a marker made out of dots completely surrounding the marker (see Fig. 4). A method of detecting the dots and the identifier is also provided (Fig. 5). Any of the sides of the rectangle can be considered as the subset of at least three collinear dots optionally claimed in claims 9 and 10.
It is therefore noted that **the subject matter of claims 1 to 13, 17 to 21 and 23 lacks novelty (Art. 33(1) and (2) PCT) with respect to D2.**
- 8 **Claims 14 to 16** define obvious analogous uses for markers; **the subject matter of these claims lacks therefore an inventive step (Art. 33(1) and (3) PCT).**

Re. D3 and D4

- 9 Both D3 and D4 disclose markers (n.b. the terminology is different, the markers of D3 and D4 correspond to the identifier of the claims) for augmented reality (see abstracts) made out of patterns comprising collinear dots (the L-shaped corners of D3 comprise at least three collinear dots - see Fig. 2, as do the sides of the square in D4 - Fig. 1(e)).
- 10 D3 also teaches that those markers comprise data inside (including text, Fig. 18); this is otherwise obvious for Augmented Reality markers (see e.g. <https://en.wikipedia.org/w/index.php?title=ARToolkit&oldid=787438905>, see also 2.1 in D3).
- 11 It is therefore concluded that **with respect to D3 the subject matter of claims 1 to 15, 17 to 21, 23 and 25 lacks novelty (Art. 33(1) and (2) PCT)**, and that **the subject matter of claims 14 to 16, 24 and 25 lacks inventive step ((Art. 33(1) and (3) PCT - see argument in 8 above).**
- 12 Furthermore **the subject matter of claims 1 to 21 and 23 to 25 is deemed to lack an inventive step (Art. 33(1) and (3) PCT) with respect to D4** (see 8 and 10 above).