

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

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

To:

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

FOR FURTHER ACTION
See paragraph 2 below

International application No.
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International Patent Classification (IPC) or both national classification and IPC
INV. G06K9/00 G06K9/20 G08G1/01 G08G1/04 G08G1/052 G08G1/056 G08G1/16

Applicant
CONTINENTAL AUTOMOTIVE 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 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.

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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. 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>2-8, 10-16</u>
	No: Claims	<u>1, 9</u>
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-16</u>
Industrial applicability (IA)	Yes: Claims	<u>1-16</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Item V

Reference is made to the following documents:

- D1 US 2006/092043 A1 (LAGASSEY PAUL J [US]) 4 May 2006
(2006-05-04)
- D2 EP 3 193 319 A1 (EKIN AKIF [TR]) 19 July 2017 (2017-07-19)
- D3 US 2004/222904 A1 (CIOLLI ROBERT [AU]) 11 November 2004
(2004-11-11)
- D4 EP 1 271 406 A2 (FUJITSU LTD [JP]; IKEUCHI KATSUSHI [JP];
SAKAUCHI MASAO [JP]) 2 January 2003 (2003-01-02)

- 1 Document **D1** (the following passages in brackets correspond to this document) discloses, according to **all** the features of **claim 1**, an apparatus, comprising:
- a data collection system (see paragraphs [0002], [0107], [0130], [0175]-[0176], [0182]-[0184], [0193]; "100" in Fig. 1 and Fig. 2; "51" and "52" in Fig. 3; "50", "60", "61" and "70" in Fig. 4; Fig. 5), including
- at least one sensor (see "15" and "35" in Fig. 1 and Fig. 2; "201", "202", "211", "212" and "231" in Fig. 5) operable for detecting one or more objects in a detection area (see paragraphs [0008], [0010], [0015], [0046]-[0049], [0053]-[0058], [0065]-[0066], [0069]-[0072], [0075]-[0076], [0118], [0137]-[0138], [0143], [0174], [0193]; "1" in Fig. 1 and Fig. 2; "230" in Fig. 5),
- at least one communication device (see "50" in Fig. 1 and Fig. 2; "204" in Fig. 5) in electrical communication with the at least one sensor (see paragraphs [0046]-[0049], [0052]-[0058], [0060], [0062]-[0063], [0065]-[0066], [0070], [0081], [0100], [0109], [0115]-[0116], [0158], [0194]), and
- at least one signal device (see "25" in Fig. 1 and Fig. 2; "200", "218" and "219" in Fig. 5) in electrical communication with the communication device (see paragraphs [0046]-[0049], [0053]-[0059], [0062]-[0063], [0070], [0083]-[0087], [0100], [0115]-[0116], [0131], [0135]-[0136], [0193]),
- wherein the communication device commands the at least one signal device to send a signal (see "75" to "77" and "81" in Fig. 3 and Fig. 4) to at least one agency (see "45" in Fig. 1 and Fig. 2; "205", "225", "217" and "227" in Fig. 5) when a traffic event has occurred in the detection area (see paragraphs [0006], [0015], [0046]-[0049], [0060], [0062]-[0063], [0091]-[0095], [0100], [0107], [0153]-[0154], [0157], [0159], [0161]-[0162], [0177]-[0180], [0187]-[0191]).

Similarly, each of the cited documents **D2 and D3** (see the corresponding passages cited in the international search report) also discloses an apparatus as claimed in claim 1.

The subject-matter of claim 1 therefore is not new, Article 33(2) PCT.

- 2 Document **D1** (the following passages in brackets correspond to this document) discloses, according to **all** the features of **claim 9**, a data collection system for recording a traffic event (see paragraphs [0002], [0107], [0130], [0175]-[0176], [0182]-[0184], [0193]; "100" in Fig. 1 and Fig. 2; "51" and "52" in Fig. 3; "50", "60", "61" and "70" in Fig. 4; Fig. 5), comprising at least one sensor (see "15" and "35" in Fig. 1 and Fig. 2; "201", "202", "211", "212" and "231" in Fig. 5) operable for detecting the movement of one or more vulnerable road users in a detection area (see "1" in Fig. 1 and Fig. 2; "230" in Fig. 5), and one or more vehicles in the detection area (see paragraphs [0008], [0010], [0015], [0046]-[0049], [0053]-[0059], [0065]-[0066], [0069]-[0072], [0075]-[0076], [0086], [0118], [0133], [0137]-[0138], [0143], [0174], [0193]), at least one communication device (see "50" in Fig. 1 and Fig. 2; "204" in Fig. 5) in electrical communication with the at least one sensor (see paragraphs [0046]-[0049], [0052]-[0058], [0060], [0062]-[0063], [0065]-[0066], [0070], [0081], [0100], [0109], [0115]-[0116], [0158], [0194]), at least one signal device (see "25" in Fig. 1 and Fig. 2; "200", "218" and "219" in Fig. 5) in electrical communication with the communication device (see paragraphs [0046]-[0049], [0053]-[0059], [0062]-[0063], [0070], [0083]-[0087], [0100], [0115]-[0116], [0131], [0135]-[0136], [0193]), an infrastructure component (see "20" and "30" in Fig. 1 and Fig. 2), the at least one sensor connected to the at least one infrastructure component (see paragraphs [0065]-[0066], [0072], [0130], [0135], [0138]), and an intersection (see "1" in Fig. 1 and Fig. 2; "230" in Fig. 5), the infrastructure component located near the intersection (see paragraphs [0008], [0010], [0046]-[0049], [0054]-[0058], [0065]-[0066], [0069], [0073], [0087], [0137]-[0138], [0177]-[0180]), wherein the communication device commands the at least one signal device to produce at least one signal when the at least one sensor detects at least one traffic event detected in the detection area (see paragraphs [0006], [0015], [0046]-[0049], [0060], [0062]-[0063], [0091]-[0095], [0100], [0107], [0153]-[0154], [0157], [0159], [0161]-[0162], [0177]-[0180], [0187]-[0191], [0193]).

Similarly, each of the cited documents **D2 and D3** (see the corresponding passages cited in the international search report) also discloses a data collection system as claimed in claim 9.

The subject-matter of claim 9 therefore is not new, Article 33(2) PCT.

- 3 Even if novelty of independent **claims 1 and 9** could have been argued, based on minor differences between the features of said claim and those disclosed in each of documents D1 to D3, the subject-matter of independent claims 1 and 9 would not have involved an inventive step, Article 33(3) PCT, having regard to the disclosure of documents D1 to D3 and the normal knowledge of a person skilled in the art of data collection and warning systems for road traffic. In particular, the very generic formulation used in said claims is open to many interpretations.
- 4 Furthermore, dependent **claims 2 to 8 and 10 to 16** do not appear to contain any additional features which in combination with the features of any claim to which they refer, involve an inventive step for the reason that the subject-matter of said claims is either in principle directly derivable from the disclosure of document **D1** (for **claims 2, 3, 11 and 12**: see paragraphs [0006], [0015], [0046]-[0049], [0061], [0065]-[0066], [0098], [0101], [0106]-[0107], [0161]-[0162], [0194]; "45" in Fig. 1 and Fig. 2; for **claims 4 and 16**: see paragraphs [0008], [0010], [0015], [0046]-[0049], [0053]-[0058], [0065]-[0066], [0069], [0072], [0075]-[0076], [0083]-[0087], [0118], [0130], [0132], [0137]-[0138], [0193]; "15" and "35" in Fig. 1 and Fig. 2; "201", "202", "211", "212" and "231" in Fig. 5; for **claims 5 and 10**: see paragraphs [0065]-[0066], [0072], [0130], [0135], [0138]; "20" and "30" in Fig. 1 and Fig. 2; for **claims 6 and 13**: see paragraphs [0046]-[0049], [0054]-[0058], [0072]-[0073], [0091]-[0095], [0107], [0139], [0144]-[0151], [0156], [0175]-[0180]; for **claims 7, 8, 14 and 15**: see paragraphs [0002], [0006], [0046]-[0049], [0083]-[0087], [0107], [0133], [0143]) or from the disclosure of document **D2** (for **claims 4 and 16**: see paragraphs [0017]-[0020]; "6", "7" and "9" in Fig. 1; for **claims 5 and 10**: see paragraphs [0015], [0017]-[0020]; Fig. 1; Fig. 2; for **claims 7, 8, 14 and 15**: see paragraph [0020]), or represents simple design details which are generally known to a person skilled in the field of data collection and warning systems for road traffic, see for example document **D3** (for **claims 2 and 11**: see paragraphs [0150]-[0152]; Fig. 1; Fig. 6; for **claims 4 and 16**: see paragraphs

[0073]-[0091], [0142]-[0146]; Fig. 1; Fig. 6; for **claims 5 and 10**: see paragraphs [0115]-[0120]; Fig. 1; Fig. 6; for **claims 7, 8, 14 and 15**: see paragraphs [0142]-[0146]; Fig. 1; Fig. 6) or document **D4** (for **claims 4 and 16**: see paragraphs [0027]-[0029]; for **claims 7 and 14**: see paragraphs [0004], [0011]).

Thus, dependent claims 2 to 8 and 10 to 16 do not meet the requirements of Article 33(3) PCT.

Item VII

Certain defects in the international application

- 1 The independent **claims 1 and 9** should have been drafted in the proper two-part form recommended by Rule 6.3.(b),(i),(ii) PCT, having a preamble that correctly reflects the nearest prior art.
- 2 The claims do not include reference signs in parentheses where features shown in the drawings are referred to, Rule 6.2.(b) PCT.
- 3 In order to meet the requirements of Rule 5.1.(a),(ii) PCT, the relevant prior art, i.e. the documents **D1 to D4** noted above, should have been acknowledged by reference and briefly discussed in the introductory part of the description.
- 4 The opening part of the description should have been modified to bring it into agreement with any new independent claim, Rule 5.1.(a),(iii) PCT.
- 5 The general "spirit" and "gist" statement in the description in paragraph [0023] is unclear, and when used to interpret the claims renders them also unclear, contrary to Article 6 PCT. Paragraph [0023] should therefore have been deleted entirely.

Accordingly, paragraphs [0012] and [0015], including a vague and ambiguous reference to possible equivalents should also have been deleted.

Item VIII

Certain observations on the international application

- 1 The various definitions of the apparatus or system given in independent **claims 1 and 9** are such that the claims as a whole are not concise, contrary to Article 6 PCT. Moreover, lack of clarity of the claims as a whole arises,

since the plurality of independent claims makes it difficult, if not impossible, to determine the matter for which protection is sought, and places an undue burden on others seeking to establish the extent of the protection.

The claims should have been recast to include only the minimum necessary number of independent claims in any one category with dependent claims as appropriate, Rule 6.4 PCT.

In the present case it was considered appropriate to use only one independent claim relating to the data collection and warning system for recording a traffic event.

- 2 It is clear from the present description in paragraph [0019] that the feature defining that the sensor is continuously detecting data regarding the location, as well as speed and direction of each vehicle and the location, speed, and direction of each vulnerable road user is an essential technical feature of the present invention.

Since **independent claims 1 and 9** do not contain this feature they both do not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(a) PCT that any independent claim must contain all the technical features essential to the invention.

This deficiency could be overcome by adding said feature to present independent claims 1 and 9, respectively.

It should however have been noted that the same considerations as made in above paragraphs 1 and 2 of Item V in respect of lack of novelty and lack of inventive step of claims 1 and 9 would also have applied to such amended claims 1 and 9, respectively.

- 3 Some of the features in the apparatus **claim 1** (see line 9) relate to a method of using the communication device rather than clearly defining the communication device in terms of its technical features (i.e. by using formulations like: "... configured to ...", "... arranged for ...", or "... adapted to ...").

The intended limitations are therefore not clear from this claim, contrary to the requirements of Article 6 PCT.

The same objection is also valid in line 14 of independent **claim 9**.

The same objection is also valid for "... sends ..." in line 2 of **claims 2, 3, 11 and 12**; and for "... records and saves ..." in line 2 of **claim 6** and in line 4 of **claim 13**.

The wording of said claims should have been correspondingly amended.

- 4 The terms "... intersection ..." and "... near ..." used in line 12 of independent **claim 9** are as such vague and unclear and leave the reader in doubt as to the meaning of the technical feature to which they refer, thereby rendering the definition of the subject-matter of said claim unclear, Article 6 PCT.
- The claim should have been amended to include a short explanation of said terms, or the objectionable terms should have been replaced by terms having a generally known and accepted technical meaning.
- 5 The formulation "... the communication device commands the at least one signal device ..." in lines 9-10 of **claim 1** and in lines 15-16 of **claim 9** is not clear, since a communication device is per se configured to communicate and not to command another device, Article 6 PCT.
- Accordingly, the formulation "... the communication device records and saves data ..." in line 2 of **claim 6** and in line 4 of **claim 13** is not clear, since a communication device is per se configured to communicate and not to record or save data obtained by another device.
- 6 Furthermore, **claim 1** (see line 10) does not meet the requirements of Article 6 PCT in that the claim attempts to define the subject-matter in terms of the result to be achieved ("... to send ...") which merely amounts to a statement of the underlying problem. The technical features necessary for achieving this result should have been added.
- The same objection is also valid in line 15 of independent **claim 9**.
- 7 **Claim 1** does not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined. The following functional statements do not enable the skilled person to determine which technical features are necessary to perform the stated functions:
- "... when a traffic event has occurred in the detection area ..."
- Indeed, it is not clear how such a traffic event can be detected by using exclusively at least one sensor operable for detecting merely the presence of one or more objects in the detection area, see also paragraph 2 just above.
- 8 The feature "... the movement of one or more vulnerable road users ..." in lines 3-4 of **claim 9** is not clear, Article 6 PCT, since said feature has not been previously defined in said independent claim, i.e. said feature has no antecedent.

- 9 The expressions in brackets "Light Imaging, Detection, and Ranging" and "Laser Imaging, Detection, and Ranging" in **claims 4 and 16** are not a reference signs, Rule 6.2(b) PCT; see also PCT/GL/ISPE/6, paragraph 5.11. The brackets should have been deleted.
- 10 The formulation "... The apparatus of claim 1, further comprising a predetermined time period ..." in lines 1-2 of **claim 6** is not clear, since an apparatus, being a physical entity, cannot comprise a predetermined time period, being a predetermined unit in the indefinite continued progress of existence and events that occur in apparently irreversible succession from the past through the present to the future, Article 6 PCT.
- The same objection is also valid for "... The warning system of claim 9, further comprising: a first predetermined time period ... a second predetermined time period ..." in 1-3 of system **claim 13**.
- 11 Following amendment is necessary to **claims 8 and 15**, Article 6 PCT:
- in **line 2**: "... the at least one traffic event further comprising a collision between at least one vehicle at least one vulnerable road user ..." should have been replaced by "... the at least one traffic event further comprising a collision between at least one vehicle **and** at least one vulnerable road user ...".
- 12 Dependent **claims 10 to 16** are unclear since they define a warning system whereas independent claim 9, on which said claims 10 to 16 depend, relate explicitly to a data collection system, Article 6 PCT. To overcome said objection all claims 9 to 16 should have been redefined as data collection and warning system.