

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/US2019/063953	International filing date (day/month/year) 02.12.2019	Priority date (day/month/year) 30.11.2018
--	--	--

International Patent Classification (IPC) or both national classification and IPC
INV. G06Q10/00 G06F16/00

Applicant
VISA INTERNATIONAL SERVICE ASSOCIATION

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:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Fax: +49 89 2399 - 4465	Date of completion of this opinion see form PCT/ISA/210	Authorized Officer Haitof, Houssam Telephone No. +49 89 2399-0
---	--	--



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>1-35</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-35</u>
Industrial applicability (IA)	Yes: Claims	<u>1-35</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 VIII:

The application does not meet the requirements of Article 6 PCT, because claims 1 and 16 from one hand and claims 12 and 27 from the other are not clear.

Although claims 1 and 16 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter. The same applies to claims 12 and 27. The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.

ITEM V:

Statement with regard to novelty, inventive step or industrial applicability:

The present application does not meet the criteria of Article 33(3) PCT, because the subject-matter of claims 1-35 does not involve an inventive step. Furthermore, the subject-matter of claims 1-35 is also industrially applicable and thus, the present application complies with the requirements of Article 33(4) PCT.

1 Claim 1

- 1.1 Claim 1 comprises features which are considered by this Authority to be covered by the provisions of Rule 39.1(iii) and/or (vi) / 67.1(iii) and/or (vi) PCT. In the case of claims, comprising technical and non-technical aspects, only those features which contribute to the technical character of the invention are taken into account for the assessment of the inventive step.
- 1.2 The features of claim 1 are analysed as to whether they are technical or non-technical when taken in isolation. The technical aspects in claim 1 amount to a processor with I/O capabilities. The remaining aspects are non-technical when taken in isolation because the purpose of the non-technical aspects is to generate a data model/structure of abstract data that is understood to be of a cognitive nature from the remaining claims and the description (mathematical and administrative methods).
- 1.3 Features which are non-technical when taken in isolation may nevertheless contribute to the technical character of an invention if, in the context of the invention, they contribute to producing a technical effect serving a technical purpose.

- 1.4 In the present case, the remaining features identified as non-technical do not contribute to the technical character of the invention for the reasons following.
- 1.5 The subject-matter relates to the generation of a data model/structure. Information modelling is an intellectual activity considered to be devoid of technical character. When assessing data structures and data formats, a distinction is made between functional data and cognitive data. Functional data serve to control the operation of a device processing the data. They inherently comprise, or reflect, corresponding technical features of the device. Cognitive data, on the other hand, are those data whose content and meaning are only relevant to human users. Functional data contribute to producing a technical effect whereas cognitive data do not.
- 1.6 All the data handled by processor in claim 1 is highly abstract and does not represent a technical state and is understood from the remaining claims and the description to be non-technical (cardholder, an amount, a merchant, a meal type, etc.), and the underlying steps of generating the data structure (vector) do not go beyond mere data processing and do neither imply technical considerations.
- 1.7 Given the fact that the features of claim 1 are void of technical details, a general purpose computer system that can be configured to obtain, process and act upon cognitive data can also be considered as being the closest prior art for the subject matter claimed. D1 and D2 are showing in exemplary manner such system used for a similar purpose.
- 1.8 The examiner comes to the conclusion that any effect which would be derivable from the technical implementation on computing hardware is expected and well-known. In other words, the automation of the steps of processing cognitive data may only have a technical effect on hardware level which is corresponding to the normal physical interaction between software and hardware. No further technical effect going beyond said interaction could be found.
- 1.9 Thus, the aspects identified as non-technical do not, in the context of the invention, contribute to the technical character of the invention and therefore cannot support the presence of an inventive step.
- 1.10 In the case of claims comprising technical and non-technical aspects, a suitable starting point in the prior art is selected as the closest prior art based on the features contributing to the technical character of the invention. In the present

case, a notoriously known general-purpose computer system is taken as prior art. From such a notoriously known general-purpose computer system at least the following features are known:

- processing unit with I/O capabilities

- 1.11 Therefore, the only technical contribution which can be identified lies in the claimed implementation of the non-technical aspects outlined above in the notoriously known general-purpose computer system.
- 1.12 The implementation, at the level of detail as defined in claim 1, would have been straightforward for the skilled person since the claimed subject-matter does not comprise any implementation details other than the use for their intended purpose of the processors.
- 1.13 The subject-matter of claim 1 does not involve an inventive step and, therefore, does not fulfill the requirements of Article 33(3) PCT.

2 Claims 2 and 3

The subject-matter of claims 2 and 3 describe known aspects of a graph data structure (nodes, edges and directional edges) and do not imply an inventive step. The subject-matter of claims 2 and 3 does not involve an inventive step and, therefore, does not fulfill the requirements of Article 33(3) PCT.

3 Claims 4 and 5

The subject-matter of claims 4 and 5 relate to non-technical aspects defining the nature of the data as being cognitive and that cannot contribute to the technical character of the invention. The subject-matter of claims 4 and 5 does not involve an inventive step and, therefore, does not fulfill the requirements of Article 33(3) PCT.

4 Claims 6 and 7

The subject-matter of claims 6 and 7 relate to non-technical aspects (mathematical method) determining that a frequency of appearance is statistically significant and do not contribute to the technical character of the invention. The subject-matter of claims 6 and 7 does not involve an inventive step and, therefore, does not fulfill the requirements of Article 33(3) PCT.

5 Claims 8 and 9

The subject-matter of claims 8 and 9 relate to further obvious implementation of non-technical data processing for the purpose of generating and storing data structure and the same analysis for claim 1 applies. The subject-matter of claims 8 and 9 does not involve an inventive step and, therefore, does not fulfill the requirements of Article 33(3) PCT.

6 Claims 10 and 11

The subject-matter of claims 10 and 11 relate to known aspects to use predictive models (neural network) that are available to the person skilled in the art and do not involve an inventive step. The subject-matter of claims 10 and 11 does not involve an inventive step and, therefore, does not fulfill the requirements of Article 33(3) PCT.

7 Claims 12-15

The same analysis for the subject-matter of claims 1, 2, 6-8 applies for essentially the same reasons to the subject-matter of claims 12-15. Therefore, the subject-matter of claims 12-15 does not involve an inventive step and does not fulfill the requirements of Article 33(3) PCT.

8 Claims 16-35

The same analysis for the subject-matter of claims 1-15 applies for essentially the same reasons to the subject-matter of claims 16-35. Therefore, the subject-matter of claims 16-35 does not involve an inventive step and does not fulfill the requirements of Article 33(3) PCT.

ITEM VII:

The vague and imprecise statements in the description on paragraphs 1 and 113 implies that the subject-matter for which protection is sought may be different to that defined by the claims, thereby resulting in lack of clarity (Article 6 PCT) when used to interpret them.