

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/IB2017/056696

International filing date (day/month/year)
27.10.2017

Priority date (day/month/year)
28.10.2016

International Patent Classification (IPC) or both national classification and IPC
INV. G06F9/44

Applicant
NCHAIN HOLDINGS 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

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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>1-16</u>
	No: Claims	
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

Re Item V

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

Used documents

1. Reference is made to the following document:

D1 Peter Todd: "Building Blocks of the State Machine Approach to Consensus", 20 June 2016 (2016-06-20), XP055440889, Retrieved from the Internet:URL:<https://petertodd.org/2016/state-machine-consensus-building-blocks>[retrieved on 2018-01-15]

2. The skilled person is aware of document D1 because it shares the same technical field with the present application, namely *state machines resp. automata implemented by block chain technology*.

Patentability

3. It is not possible to derive from the wording of **claim 1** a technical effect required to identify an inventive step in the sense of Art. 33(3) PCT because a mere association of an undefined portion of data does not appear to cause such an effect.

4. It appears that **claim 13** is silent about the nature of the input signal which causes the generation of a block chain transaction. Furthermore, this claim is silent about *how* the DFA is represented and in particular, *how* states are identified by the identifiers included in the locking scripts. Therefore it is not possible to derive technical effect required to identify an inventive step in the sense of Art. 33(3) PCT.

5. The above objections apply also to **claim 15**.

Dependent claims

6. Concerning **claims 2-12**, it appears that due to the lack of definition of the portion of data it is not possible to define a technical effect and also the

specification of the portion of data in **claims 4 and 7** does not appear to improve this situation because it is not defined how the specified data are used.

7. It appears that the state transition table for the DFA of **claim 14** could be a basis to overcome previous issues if combined with a clear definition of the data used and the operations performed on said data.

8. For the above reasons the present set of claims does not appear to involve an inventive step in the sense of Art. 33(3) PCT.

Concluding remarks

9. In case the applicant considers to file a new set of claims, the applicant is requested to point out and discuss in his letter of reply any difference that would distinguish the subject-matter of the present application from what is disclosed in the available prior art. In particular, the applicant is requested to identify the technical problem that exists in the closest prior art, describe how the applicant's invention solves this problem, and provide some argument for why this solution would not be obvious to the skilled person.

10. Care should be taken that the new set of claims is supported by the description to comply with Art. 34(2) (b) PCT, i.e. the amendments do not go beyond the disclosure in the international application as filed. Therefore, the applicant is requested to provide references to corresponding originally disclosed passages in the description for each amended or new technical feature of every amended claim *whereby each amendment and the corresponding supporting passage are to be mapped one to one*. Furthermore, to applicant is requested to submit a marked up copy of the amended set of claims clearly identifying the amendments. Failure to do so may result in undiscovered supporting passages and consequently, the corresponding amendments have to be regarded violating Art. 34(2) (b) PCT.