

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**
(PCT Rule 43*bis*.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/IB2017/052465

International filing date (day/month/year)
28.04.2017

Priority date (day/month/year)
29.04.2016

International Patent Classification (IPC) or both national classification and IPC
INV. G06Q20/36 G06F21/30 G06Q10/06 H04W4/00

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 43*bis*.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 66.1*bis*(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>1-14</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-14</u>
Industrial applicability (IA)	Yes: Claims	<u>1-14</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

1 Reference is made to the following documents:

- D1 US 2015/379510 A1 (SMITH STANLEY BENJAMIN [US]) 31 December 2015 (2015-12-31)
- D2 WO 2015/144971 A1 (NOKIA TECHNOLOGIES OY [FI]) 1 October 2015 (2015-10-01)
- D3 US 2016/098723 A1 (FEENEY PATRICK JOSEPH [US]) 7 April 2016 (2016-04-07)
- D4 Andreas M. Antonopoulos: "Mastering Bitcoin - Unlocking Digital Cryptocurrencies"
In: "Mastering bitcoin : [unlocking digital cryptocurrencies]", 20 December 2014 (2014-12-20), O'Reilly Media, Beijing Cambridge Farnham Köln Sebastopol Tokyo, XP055306939, ISBN: 978-1-4493-7404-4
- D5 Michael Crosby ET AL: "BlockChain Technology Beyond Bitcoin",
, 16 October 2015 (2015-10-16), XP055363520,
Retrieved from the Internet:
URL:<http://scet.berkeley.edu/wp-content/uploads/BlockchainPaper.pdf>
[retrieved on 2017-04-10]
- D6 PASQUALE FORTE ET AL: "Beyond Bitcoin - Part I: A critical look at blockchain-based systems",
INTERNATIONAL ASSOCIATION FOR CRYPTOLOGIC RESEARCH,,
vol. 20151202:213043, 1 December 2015 (2015-12-01), pages 1-34,
XP061019757,
[retrieved on 2015-12-01]
- D7 Sanjay Panikkar: "ADEPT: An IoT Practitioner Perspective DRAFT COPY FOR ADVANCE REVIEW II. Key Objectives for Proof of Concept",

, 7 January 2015 (2015-01-07), XP055282419,

Retrieved from the Internet:

URL:https://ia802601.us.archive.org/4/items/pdfy-esMcC00dKmdo53-_/IBM_ADEPT_Practitioner_Perspective_-_Pre_Publication_Draft_-_7_Jan_2015.pdf

[retrieved on 2016-06-21]

cited in the application

2 The present application does not meet the criteria of Article 33(3) PCT, because the subject-matter of claims 1-14 does not involve an inventive step.

2.1 Document D1 is regarded as being the prior art closest to the subject-matter of claim 1, and discloses a computer-implemented control system for controlling a device (par. 19-21, 50, 51), the system comprising: a device configured for communication with a network and having an IP address and a public-private key cryptographic key pair associated with the device (par. 12, 14, 20, 21, 64, 76-80, 83, 85, 92 and fig. 2); a software-implemented control component arranged to monitor the state of a blockchain network and/or transmit blockchain transactions to the blockchain network (par. 19; wherein the control component is arranged to access for download and installation the set of instructions from a stored location which is separate to the device and a set of instructions arranged for execution by the control component to control the functionality of the device (par. 19-21, 83-84, 90, claims 7-8).

The subject-matter of claim 1 therefore differs from this known system in that the set of instructions is stored in a Distributed Hash Table (DHT) which is accessed by the control component, wherein the location of the DHT is indicated or provided using metadata provided within a blockchain transaction.

The problem to be solved by the present invention may therefore be regarded as providing storage for the set of instructions.

The solution proposed in claim 1 of the present application cannot be considered as involving an inventive step, given that the use of a Distributed Hash Table accessible through keys embedded in the blockchain transactions

is well known from the prior art (see D3, par. 59; see also D6, p. 4, 2.1.2 and p. 5, 2.2) and it would be obvious to the skilled person to apply it, for its normal purpose of storing data, within the blockchain-based system of D1.

Thus, the subject-matter of claim 1 does not involve an inventive step in the sense of Article 33(3) PCT.

- 2.2 The same reasoning applies, *mutatis mutandis*, to the subject-matter of the corresponding independent claim 8, which therefore is also considered not inventive (Article 33(3) PCT).
- 2.3 The additional features defined in dependent claims 2-7 and 9-14 are either known from the cited prior art (e.g. the additional features of claims 2 and 9, see D1, par. 19-21) or relate to implementation details and/or represent straightforward possibilities which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill. None of these additional features in combination with the features of any claim to which the above-mentioned dependent claims refer, meets the requirements of the PCT with respect to inventive step (Article 33(3)PCT).