

# 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/IB2017/052464

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 G06Q20/38 G06F21/62

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

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**Box No. I Basis of the opinion**

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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:

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**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**

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1. Statement

|                               |             |                    |
|-------------------------------|-------------|--------------------|
| Novelty (N)                   | Yes: Claims | <u>4-14, 17-19</u> |
|                               | No: Claims  | <u>1-3, 15, 16</u> |
| Inventive step (IS)           | Yes: Claims |                    |
|                               | No: Claims  | <u>1-19</u>        |
| Industrial applicability (IA) | Yes: Claims | <u>1-19</u>        |
|                               | No: Claims  |                    |

2. Citations and explanations

see separate sheet

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**Box No. VIII Certain observations on the international application**

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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

**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 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
- D2 Anonymous: "Multisignature - Bitcoin Wiki",  
5 January 2016 (2016-01-05), XP055361302,  
Retrieved from the Internet:  
URL:<https://en.bitcoin.it/w/index.php?title=Multisignature&oldid=59815>  
[retrieved on 2017-04-03]
- D3 Anonymous: "Smart contract - Wikipedia, the free encyclopedia",  
24 July 2015 (2015-07-24), XP055242294,  
Retrieved from the Internet:  
URL:[https://en.wikipedia.org/w/index.php?title=Smart\\_contract&oldid=672866135](https://en.wikipedia.org/w/index.php?title=Smart_contract&oldid=672866135)  
[retrieved on 2016-01-18]
- D4 Ian Allison: "Ethereum-based Slock.it reveals first ever lock opened with money",  
<http://www.ibtimes.co.uk>, 17 December 2015 (2015-12-17), XP055387314,  
Retrieved from the Internet:  
URL:<http://www.ibtimes.co.uk/ethereum-based-slock-reveals-first-ever-lock-opened-money-1527014>  
[retrieved on 2017-07-03]

2 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

- 2.1 D1 discloses (D1 cited in parentheses) a **computer-implemented control method comprising the steps of:**  
**providing a locking script in a first blockchain transaction, the locking script comprising at least one instruction arranged to process at least one Boolean input;** (Section "Spending conditions (encumbrances)":  
"Transaction outputs associate a specific amount (in satoshis) to a specific encumbrance or locking script that defines the condition that must be met to spend that amount")  
**providing a further blockchain transaction having an unlocking script;**  
**processing at least one input signal to provide at least one Boolean input;**  
**using the at least one Boolean input to execute the locking and unlocking scripts of the first and further blockchain transactions.**  
(Section "Bitcoin Transactions": "In bitcoin terms, "spending" is signing a transaction that transfers value from a previous transaction over to a new owner identified by a bitcoin address. Transactions move value from transaction inputs to transaction outputs. An input is where the coin value is coming from, usually a previous transaction's output. ... Outputs from one transaction can be used as inputs in a new transaction")
- 2.2 The same objection applies, by correspondence, to independent claim 15.
- 2.3 Claim 16 is also not new, see sections "Pay-to-script-hash (P2SH)" and "Appendix A: Transaction Script Language Operators, Constants, and Symbols"
- 3 Dependent claims 2-14, and 17-19 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step.
- 3.1 In particular, D2 discloses examples of logic gates implemented on the bitcoin blockchain using multisignature (multisig). Explicit examples feature "OR" ("1-of-2: Husband and wife petty cash account"), "AND" ("2-of-2"), transactions conditioned on other transaction ("2-of-3: Buyer-seller escrow"). Further, using this known method the skilled person would configure other contract rules that fit to the circumstances without thereby altering the technical details of the method.

- 3.2 Further, D4 discloses controlling IoT devices, such as smart door locks, by monitoring the blockchain for occurrence of predefined conditions.

**Re Item VIII**

**Certain observations on the international application**

- 4 The application does not meet the requirements of Article 6 PCT, because claims 10, 11, and 18 are not clear.
- 4.1 The limitation of the subject matter towards the gate being OR conflicts with the limitation towards the gate being XOR.
- 4.2 The limitation of claim 11 is in conflict with the subject matter of claim 10.
- 4.3 Accordingly, the limitation of claim 18 is in conflict with the subject matter of claim 17.