

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/IB2021/055250

International filing date (day/month/year)
15.06.2021

Priority date (day/month/year)
17.06.2020

International Patent Classification (IPC) or both national classification and IPC
INV. H04L29/08 H04L9/32 H04L29/06

Applicant
BITCORP S.R.L.

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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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 English, 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>1-13</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	<u>1-13</u>
	No: Claims	
Industrial applicability (IA)	Yes: Claims	<u>1-13</u>
	No: Claims	

2. Citations and explanations

see separate sheet

1 The applicant has requested to have the present application processed under PCT Direct (PCT Guidelines B-IV, 1.2.1). Account taken of the applicant's comments submitted with the PCT Direct letter of 15-06-2021, received on 24-07-2021, this Authority considers that the claims meet the requirements of the PCT for the following reasons:

2 **Re Item V**

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

2.1 Reference is made to the following documents:

D1 US 2019/334697 A1 (WINSLOW MATTHEW [US] ET AL) 31
October 2019 (2019-10-31) cited in the application

D2 DAN BONEH JOSEPH BONNEAU BENEDIKT BUNZBEN FISCH:
"Reliable Delay functions" advances in Cryptology",
CRYPTO,
vol. 10991, 2018, XP002801992,
cited in the application

2.2 Claim 1:

2.2.1 D1 is regarded as being the prior art closest to the subject-matter of independent claim 1, and discloses (references apply to this document):

A method of communication between nodes of a telecommunications network, each node maintaining a copy of a distributed ledger,

(§0006)

the method comprising that each sending node of a plurality of data packets, for each data packet to be transmitted, executes the steps of:

- a. identifying a receiver node to which to transmit said data packet,*
- b. generating the data packet to be delivered to a recipient node,*
- c. transmitting to the receiver node the data packet,*
- d. issuing a request to the nodes of the telecommunication network to record said data packet transmission on the distributed ledger,*

(§0006, §0021, §0061-0062, §0027)

and when a data packet is received, the method requires that each receiver node, other than the recipient node of the data packet, repeat at least the steps a., and c.,

(if intermediate nodes forward a message, the same steps are taken)

and wherein each node of the telecommunication network performs the steps of:

e. generating recursively a data block of the distributed ledger, each data block being identified by a progressive count number

(this is considered to be implicitly disclosed by the feature "blockchain" of D1, e.g., in §0006)

and by a hash value calculated through an hashing algorithm that entails the sequential execution of a predetermined number of operations,

(§0035)

and

f. recording the transmission of the data packet in the data block for which the hash value is being calculated at the time of the issuing of the request to record the data packet transmission,

(since in a blockchain, the hash value of a block is based also on the content of this block, the transmission is by necessity recorded in the block for which the hash value is calculated at that moment, as previous blocks have already been completed)

~~*characterized in that the recipient node of the plurality of data packets performs the step of:*~~

~~*- ordering the data packets received based on the position in the distributed ledger of the data block in which the transmission of each data packet by the sending node is recorded.*~~

2.2.2 The subject-matter of claim1 therefore differs from this known D1 in that

the recipient node of the plurality of data packets performs the step of:

- ordering the data packets received based on the position in the distributed ledger of the data block in which the transmission of each data packet by the sending node is recorded,

and is therefore new (Article 33(2) PCT).

2.2.3 The technical effect achieved by these distinguishing features is to provide a reliable manner to order data packets independent of the protocol or content of the packets.

- 2.2.4 The problem to be solved by the present invention may be regarded as how to provide a reliable manner to order data packets independent of the protocol or content of the packets.
- 2.2.5 The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons: Nowhere in D1 is packet (re-)ordering mentioned as a potential problem, or are any mechanisms related to packet (re-)ordering discussed. The purpose of using the blockchain in D1 for storing packet transmission is rather to increase network security, and to monitor the health and data integrity of the network.
The skilled person thus would have no hint as to how to solve the technical problem. The particular solution of using the blockchain in order to determine a packet order is thus not considered to be obvious to the skilled person, and therefore to fulfil the requirements of Art. 33(3) PCT.
- 2.3 Claim 13: The argument made w.r.t. claim 1, see point 2.2, is applied, mutatis mutandis, to corresponding apparatus claim 13, the subject-matter of which is therefore also considered to fulfil the requirements of Art. 33(2) and Art. 33(3) PCT.
- 2.4 Claims 2-12 are dependent on one or more independent claims whose subject-matter is considered as being new and inventive, as discussed above, and as such said dependent claims also meet the requirements of the PCT with respect to novelty and inventive step.