

Examination Report

Application No.

10201907064T

Application filing date
31/07/2019

(Earliest) Priority Date

Examiner's Reference Number
IPOS/DY

1. This Examination Report is issued under Section 29(5) of the *Patents Act* with effect from 14/02/2014.

2. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of report with regard to novelty, inventive step and industrial applicability
- IV ☐ Unity of invention
- V ☒ Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Defects in the form or contents of the application
- VII ☐ Clarity, Clear and Complete Disclosure, and Support
- VIII ☐ Double patenting

3. The search report used was issued by the Intellectual Property Office of Singapore.

4. This report does not contain any unresolved objection.

Intellectual Property Office of Singapore
1 Paya Lebar Link #11-03
PLQ 1, Paya Lebar Quarter
Singapore 408533
E-mail address: operation@iposinternational.com

Date of Examination Report:
23/08/2019

Authorized Officer
Danny Yap Ming Ann (Mr)

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I. Basis of the report

1. This report has been drawn on the basis of:

☒ the application **as originally filed**.

2. ☐ This report has been established based on the exclusion of additional matter beyond the earlier application, as indicated in the supplemental box.

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the supplemental box.

4. Additional observations, if necessary:

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V. Reasoned statement with regard to novelty, inventive step or industrial applicability; Citation and explanation supporting such statement

Statement with regard to novelty, inventive step or industrial applicability

Novelty (N)	Claim(s)	1-13	YES
	Claim(s)	NONE	NO
Inventive Step (IS)	Claim(s)	1-13	YES
	Claim(s)	NONE	NO
Industrial applicability (IA)	Claim(s)	1-13	YES
	Claim(s)	NONE	NO

1. Citations

The following citations are referred to in this report. Full bibliographic details are provided in the Search Report:

- D1 – US 2019/0102736 A1
 - D2 – PEI X. ET AL., 2019
 - D3 – Enigma: Decentralized Computation Platform with Guaranteed Privacy
 - D4 – Project Ubin Phase 2 Report
 - D5 – WANG X. ET AL., 2018
 - D6 – A Proposal for a Decentralized Liquidity Savings Mechanism with Side Payments
 - D7 – CN 106127569 A
- (machine translation was used for the purpose of establishing the report)

D2 discloses a protocol under blockchain structure to achieve efficient MPC without a trusted third party. D3 discloses a peer-to-peer network, enabling different parties to jointly store and run computations on data while keeping the data completely private. D4 discloses the use of DLT for specific RTGS functionalities. D5 discloses an end-to-end inter-bank payment system prototype based on Hyperledger Fabric enterprise blockchain platform. D6 discloses a decentralized liquidity savings mechanism with side payments for implementation in an RTGS system. D7 discloses a clearing business buffer queue matchmaking method and device of an inter-bank payment system. D2-D7 are useful for background information only and will not be further discussed herein.

2. Novelty (Section 14 of the *Patents Act*)

Claims 1-13 appear to be novel because none of the cited prior art disclose all the features in any of the claims in a single document.

3. Inventive Step (Section 15 of the *Patents Act*)

Claims 1-13 appear to be inventive for the following reasons.

D1, the closest prior art, discloses the features of claim 1 as follows (features in strikethrough are not disclosed in D1):

A computer-implemented method for detecting deadlocks in a real-time gross settlement system (**D1: Transaction Netting system (TxN), para [0025]** – it is noted that the descriptions of “gridlock” in D1 at fig 2 para [0027] are not inconsistent with the description of “deadlock” in the present application at para [0050]), the method comprising:

- instructing a plurality of users of the real-time gross settlement system to independently calculate their respective liquidity information (**D1: scan request requesting that the entities report their obligations so the obligations can be settled if possible, the system determines whether netting transactions can settle**

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V. Reasoned statement with regard to novelty, inventive step or industrial applicability;

Citation and explanation supporting such statement

~~the obligations of that cycle, para [0032]), and to perform joint calculations for determining an aggregated total amount receivable in the real-time gross settlement system and an aggregated total amount payable in the real-time gross settlement system;~~

- receiving calculation results of the joint calculations from the plurality of users (**D1: entities to report their obligations so the obligations can be settled if possible, para [0032])** and calculating the aggregated total amount receivable and the aggregated total amount payable based on the received calculation results;
- verifying correctness of the liquidity information of the plurality of users (**D1: the notary ensures that each entity has an inventory that is greater than or equal to the quantity of the netting transactions for which it is a from-entity, para [0034])** based on the aggregated total amount receivable and the aggregated total amount payable; and
- after the correctness of the liquidity information of the plurality of users is verified, determining whether a deadlock exists in the real-time gross settlement system (**D1: compound transaction will not be executed if any entity has depleted its inventory, para [0034])**.

The difference between claim 1 and D1 lies in that the method of D1 does not disclose the use of joint calculations for the aggregated total amount receivable/payable. A skilled person would not find it obvious to include this feature from the teachings of D1 or by combining D1 with any of the other cited documents, none of which appears to disclose said feature. Therefore, claim 1 is considered to be inventive.

It follows that dependent claims 2-13 are also considered to be inventive.

4. Industrial Applicability (Section 16 of the *Patents Act*)

Claims 1-13 are industrially applicable.

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For clarification of the Patent Examiner's comments in this report, direct communication may be arranged with the Patent Examiner via email. For the procedure to initiate such communication, please refer to the Patents Formalities Manual (please click [here](#)), under the heading **"Direct Communication with the Patent Examiner"**.

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If the above hyperlink does not work, please copy and paste <http://goo.gl/1rRO7M> into your browser to access the survey.

Thank you.