

Claims

1. A computer implemented method for processing a financial transaction, the method comprising the steps of:
 - transmitting one or more documents pertaining to the financial transaction, from a first intermediary server in a centralised financial system to a first document store;
 - generating an enriched data record from the one or more documents, at the first intermediary server, and adding the enriched data record into a blockchain being a distributed ledger, from the first intermediary sever;
 - requesting generation of a token corresponding to the financial transaction to identify the one or more documents, to a token server, from the first intermediary server, via a messaging bus in the centralised financial system;
 - generating the token at the token server and adding the token into the blockchain from the token server in association with the enriched data record;
 - transmitting the token to the first intermediary server from the token server, via the messaging bus; and
 - transmitting the token from the first intermediary server to the first document store in association with the one or more documents.
2. The computer implemented method as claimed in claim 1, further comprising the step of sending a first financial message comprising the token, from the first intermediary server to a second intermediary server in the centralised financial system, indicative of making a payment to a second user.
3. The computer implemented method as claimed in claim 1, further comprising the steps of:
 - implementing a smart contract at the token server; and
 - adding the smart contract into the blockchain, from the token server.

4. The computer implemented method as claimed in claim 1, further comprising the steps of:
 - transmitting the token from the first intermediary server to a first digital device available with a first user;
 - providing the token to a second user, by the first user;
 - providing the token to a second intermediary server in the centralised financial system, from the second digital device;
 - transmitting the token to a second document store, from the second intermediary server; and
 - sending a second financial message comprising the token, from the second intermediary server to the first intermediary server, indicative of making a payment to the first user.
5. The computer implemented method as claimed in claim 1, wherein the step of generating the enriched data record comprises:
 - extracting a plurality of attributes from the one or more documents, at the first intermediary server; and
 - combining the plurality of attributes to generate the enriched data record, at the first intermediary server.
6. The computer implemented method as claimed in claim 1, wherein the step of generating the enriched data record comprises:
 - extracting a plurality of attributes from the one or more documents, at the first intermediary server;
 - de-identifying the plurality of attributes to obtain a plurality of de-identified attributes, at the first intermediary server; and
 - combining the plurality of de-identified attributes to generate the enriched data record, at the first intermediary server.
7. The computer implemented method as claimed in claim 1, wherein the step of generating the enriched data record comprises:
 - extracting a plurality of attributes from the one or more documents, at the first intermediary server;
 - hashing the plurality of attributes to generate a plurality of respective hashes, at the first intermediary server; and

combining the plurality of hashes to generate the enriched data record, at the first intermediary server.

8. The computer implemented method as claimed in claim 1, further comprising the step of assigning a payment risk rating to the token.

9. The computer implemented method as claimed in claim 1, further comprising the steps of:

transmitting one or more first requests, each comprising the token, from the first intermediary server to a second intermediary server in the centralised financial system, via the messaging bus;

receiving the one or more first requests at the second intermediary server and transmitting the one or more first requests and the token from the second intermediary server to a second document store;

generating one or more first responses, each comprising the token, corresponding to the respective one or more first requests, at the second intermediary server;

transmitting the one or more first responses from the second intermediary server to the first intermediary server, via the messaging bus;

hashing the one or more first requests and the one or more first responses at the second intermediary server to generate one or more first request hashes and one or more first response hashes, respectively;

adding the one or more first request hashes and the one or more first response hashes to the enriched data record in the blockchain, from the second intermediary server; and

receiving the one or more first responses at the first intermediary server and transmitting the one or more first responses to the first document store.

10. The computer implemented method as claimed in claim 9, further comprising the steps of:

hashing the one or more first responses at the first intermediary server to regenerate the one or more first response hashes; and

verifying the one or more first response hashes with the blockchain from the first intermediary server, using the token.

11. The computer implemented method as claimed in claim 9, wherein each one of the one or more first requests are:

encrypted with a second public key and signed with a first public key at the first intermediary server, before transmission to the second intermediary server; and

decrypted with a second private key at the second intermediary server after reception from the first intermediary server; and

wherein each one of the one or more first responses are:

encrypted with the first public key and signed with the second public key at the second intermediary server, before transmission to the first intermediary server; and

decrypted with a first private key at the first intermediary server after reception from the second intermediary server.

12. The computer implemented method as claimed in claim 9, wherein the one or more first responses comprise one or more second regulatory compliance documents pertaining to a second user.

13. The computer implemented method as claimed in claim 1, further comprising the steps of:

transmitting one or more second requests, each comprising the token, from a second intermediary server in the centralised financial system to the first intermediary server, via the messaging bus;

receiving the one or more second requests at the first intermediary server and transmitting the one or more second requests from the first intermediary server to the first document store;

generating one or more second responses, each comprising the token, corresponding to the respective one or more second requests, at the first intermediary server;

transmitting the one or more second responses from the first intermediary server to the second intermediary server, via the messaging bus;

hashing the one or more second requests and the one or more second responses at the first intermediary server to generate one or more

second request hashes and one or more second response hashes, respectively;

adding the one or more second request hashes and the one or more second response hashes to the enriched data record in the blockchain, from the first intermediary server; and

receiving the one or more second responses at the second intermediary server and transmitting the one or more second responses to the second document store.

14. The computer implemented method as claimed in claim 13, further comprising the steps of:

hashing the one or more second responses at the second intermediary server to regenerate the one or more second response hashes; and

verifying the one or more second response hashes with the blockchain from the second intermediary server, using the token.

15. The computer implemented method as claimed in claim 13, wherein each one of the one or more second requests are:

encrypted with a first public key and signed with a second public key at the second intermediary server, before transmission to the first intermediary server; and

decrypted with a first private key at the first intermediary server after reception from the second intermediary server; and

wherein each one of the one or more second responses are:

encrypted with the second public key and signed with the first public key at the first intermediary server, before transmission to the second intermediary server; and

decrypted with a second private key at the second intermediary server after reception from the first intermediary server.

16. The computer implemented method as claimed in claim 11 or 15, further comprising the steps of adding the first public key from the first intermediary server into the blockchain and adding the second public key from the second intermediary server into the blockchain.

17. The computer implemented method as claimed in claim 13, wherein the one or more second responses comprise one or more first regulatory compliance documents pertaining to a first user.

18. A system for processing a financial transaction, the system comprising:

- a first intermediary server in a centralised financial system, the first intermediary server being operably connected to a network and a first document store;

- a token server operably connected to the network;

- a messaging bus in the centralised financial system, the messaging bus being operably connected to the network; and

- a blockchain operably connected to the network, the blockchain being a distributed ledger;

- wherein the first intermediary server is configured to:

- transmit one or more documents pertaining to the financial transaction, to the first document store;

- generate an enriched data record from the one or more documents and add the enriched data record into the blockchain;

- request generation of a token corresponding to the financial transaction to identify the one or more documents, to the token server, via the messaging bus; and

- transmit the token to the first document store;

- wherein the token server is configured to:

- generate the token and add the token into the blockchain in association with the enriched data record; and

- transmit the token to the first intermediary server, via the messaging bus.

19. The system as claimed in claim 18, further comprising a second intermediary server in the centralised financial system, operably connected to the network and a second document store;

- wherein the first intermediary server is further configured to send a first financial message comprising the token, to the second intermediary server, indicative of making a payment to a second user.

20. The system as claimed in claim 18, wherein the token server is further configured to:

- implement a smart contract; and
- add the smart contract into the blockchain.

21. The system as claimed in claim 18, further comprising:

- a first digital device operably connected to the network;
- a second digital device operably connected to the network;
- a second intermediary server in the centralised financial system, the second intermediary server being operably connected to the network and a second document store;

- wherein the first intermediary server is further configured to:

- transmit the token to the first digital device;

- wherein the first digital device comprises a first memory and a first processor operably connected to the first memory, the first memory comprising a first computer program code, the first computer program code when executed by the first processor, instructs the first processor to:

- receive the token from the first intermediary server;

- provide the token to the second digital device;

- wherein the second digital device comprises a second memory and a second processor operably connected to the second memory, the second memory comprising a second computer program code, the second computer program code when executed by the second processor, instructs the second processor to:

- receive the token from the first digital device; and

- provide the token to the second intermediary server; and

- wherein the second intermediary server is configured to:

- receive the token from the second digital device;

- transmit the token to the second document store; and

- send a second financial message comprising the token, to the first intermediary server, indicative of making a payment to a first user.

22. The system as claimed in claim 18, wherein for generation of the enriched data record, the first intermediary server is configured to:

- extract a plurality of attributes from the one or more documents;
- and
- combine the plurality of attributes to generate the enriched data record.

23. The system as claimed in claim 18, wherein for generation of the enriched data record, the first intermediary server is configured to:

- extract a plurality of attributes from the one or more documents;
- de-identify the plurality of attributes to obtain a plurality of de-identified attributes; and
- combine the plurality of de-identified attributes to generate the enriched data record.

24. The system as claimed in claim 18, wherein for generation of the enriched data record, the first intermediary server is configured to:

- extract a plurality of attributes from the one or more documents;
- hash the plurality of attributes to generate a plurality of respective hashes; and
- combine the plurality of hashes to generate the enriched data record.

25. The system as claimed in claim 18, wherein the first intermediary server is further configured to assign a payment risk rating to the token.

26. The system as claimed in claim 18, further comprising:

- a second intermediary server in the centralised financial system, the second intermediary server being operably connected to the network and a second document store;

- wherein the first intermediary server is configured to:

- transmit one or more first requests, each comprising the token, to the second intermediary server, via the messaging bus;
- and

receive one or more first responses and transmit the one or more first responses to the first document store;
 wherein the second intermediary server is configured to:

receive the one or more first requests from the first intermediary server and transmit the one or more first requests and the token to the second document store;

generate the one or more first responses, each comprising the token, corresponding to the respective one or more first requests;

transmit the one or more first responses to the first intermediary server, via the messaging bus;

hash the one or more first requests and the one or more first responses to generate one or more first request hashes and one or more first response hashes, respectively; and

add the one or more first request hashes and the one or more first response hashes to the enriched data record in the blockchain.

27. The system as claimed in claim 26, wherein the first intermediary server is further configured to:

hash the one or more first responses to regenerate the one or more first response hashes; and

verify the one or more first response hashes with the blockchain, using the token.

28. The system as claimed in claim 26, wherein the first intermediary server is further configured to:

encrypt each one of the one or more first requests with a second public key and sign each one of the one or more first requests with a first public key, before transmission to the second intermediary server; and

decrypt each one of the one or more first responses with a first private key after reception from the second intermediary server;

wherein the second intermediary server is further configured to:

encrypt the each one of the one or more first responses with the first public key and sign the each one of the one or more first

responses with the second public key, before transmission to the first intermediary server; and

decrypt the each one of the one or more first requests with a second private key after reception from the first intermediary server.

29. The system as claimed in claim 26, wherein the one or more first responses comprise one or more second regulatory compliance documents pertaining to a second user.

30. The system as claimed in claim 18, further comprising:

a second intermediary server in the centralised financial system, the second intermediary server being connected to the network and a second document store;

wherein the second intermediary server is configured to:

transmit one or more second requests, each comprising the token, to the first intermediary server, via the messaging bus;

receive one or more second responses and transmit the one or more second responses to the second document store;

wherein the first intermediary server is further configured to:

receive the one or more second requests and transmit the one or more second requests to the first document store;

generate the one or more second responses, each comprising the token, corresponding to the respective one or more second requests;

transmit the one or more second responses to the second intermediary server, via the messaging bus;

hash the one or more second requests and the one or more second responses to generate one or more second request hashes and one or more second response hashes, respectively; and

add the one or more second request hashes and the one or more second response hashes to the enriched data record in the blockchain.

31. The system as claimed in claim 30, wherein the second intermediary server is further configured to:

hash the one or more second responses to regenerate the one or more second response hashes; and

verify the one or more second response hashes with the blockchain, using the token.

32. The system as claimed in claim 30, wherein the second intermediary server is further configured to:

encrypt each one of the one or more second requests with a first public key and sign each one of the one or more second requests with a second public key, before transmission to the first intermediary server; and

decrypt each one of the one or more second responses with a second private key after reception from the first intermediary server;

wherein the first intermediary server is further configured to:

encrypt the each one of the one or more second responses with the second public key and sign the each one of the one or more second responses with the first public key, before transmission to the second intermediary server; and

decrypt the each one of the one or more second requests with a first private key after reception from the second intermediary server.

33. The system as claimed in claim 28 or 32, wherein the first intermediary server is further configured to add the first public key into the blockchain and the second intermediary server is further configured to add the second public key into the blockchain.

34. The system as claimed in claim 30, wherein the one or more second responses comprise one or more first regulatory compliance documents pertaining to a first user.

35. A token server for facilitating processing of a financial transaction, operably connected to a network and configured to generate a token, add the token into a blockchain being a distributed ledger and transmit the token to a first intermediary server in a centralised financial system, via a messaging bus in the centralised financial system.

36. The token server as claimed in claim 35, further configured to:

implement a smart contract; and

add the smart contract into the blockchain

37. A first intermediary server for use in a centralised financial system to facilitate processing of a financial transaction, operably connected to a network and a first document store, and configured to:

transmit one or more documents pertaining to the financial transaction, to the first document store;

generate an enriched data record from the one or more documents and add the enriched data record into a blockchain being a distributed ledger;

request generation of a token corresponding to the financial transaction to identify the one or more documents, to a token server, via a messaging bus in the centralised financial system; and

transmit the token to the first document store.

38. The first intermediary server as claimed in claim 37, further configured to send a first financial message comprising the token, to a second intermediary server in the centralised financial system, indicative of making a payment to a second user.

39. The first intermediary server as claimed in claim 37, further configured to transmit the token to a first digital device.

40. The first intermediary server as claimed in claim 37, wherein for generation of the enriched data record, the first intermediary server is configured to:

extract a plurality of attributes from the one or more documents;

and

combine the plurality of attributes to generate the enriched data record.

41. The first intermediary server as claimed in claim 37, wherein for generation of the enriched data record, the first intermediary server is configured:

extract a plurality of attributes from the one or more documents;
de-identify the plurality of attributes to obtain a plurality of de-identified attributes; and
combine the plurality of de-identified attributes to generate the enriched data record.

42. The first intermediary server as claimed in claim 37, wherein for generation of the enriched data record, the first intermediary server is configured to:

extract a plurality of attributes from the one or more documents;
hash the plurality of attributes to generate a plurality of respective hashes; and
combine the plurality of hashes to generate the enriched data record.

43. The first intermediary server as claimed in claim 37, further configured to assign a payment risk rating to the token.

44. The first intermediary server as claimed in claim 37, further configured to:

transmit one or more first requests, each comprising the token, to a second intermediary server in the centralised financial system, via the messaging bus; and
receive one or more first responses from the second intermediary server and transmit the one or more first responses to the first document store.

45. The first intermediary server as claimed in claim 44, wherein the one or more first responses comprise one or more second regulatory compliance documents pertaining to a second user.

46. The first intermediary server as claimed in claim 44, further configured to:

hash the one or more first responses to regenerate one or more first response hashes; and
verify the one or more first response hashes with the blockchain, using the token.

47. The first intermediary server as claimed in claim 44, further configured to:

encrypt each one of the one or more first requests with a second public key and sign each one of the one or more first requests with a first public key, before transmission to the second intermediary server; and

decrypt each one of the one or more first responses with a first private key after reception from the second intermediary server.

48. The first intermediary server as claimed in claim 37, further configured to:

receive the one or more second requests from a second intermediary server in the centralised financial system and transmit the one or more second requests to the first document store;

generate one or more second responses, each comprising the token, corresponding to the respective one or more second requests;

transmit the one or more second responses to the second intermediary server, via the messaging bus;

hash the one or more second requests and the one or more second responses to generate one or more second request hashes and one or more second response hashes, respectively; and

add the one or more second request hashes and the one or more second response hashes to the enriched data record in the blockchain.

49. The first intermediary server as claimed in claim 48, wherein the first intermediary server is further configured to:

encrypt each one of the one or more second responses with a second public key and sign the each one of the one or more second responses with a first public key, before transmission to the second intermediary server; and

decrypt each one of the one or more second requests with a first private key after reception from the second intermediary server.

50. The first intermediary server as claimed in claims 47 or 49, further configured to add the first public key into the blockchain.

51. A second intermediary server for use in a centralised financial system to facilitate processing of a financial transaction, operably connected to a network and a second document store, and configured to:

- receive the token from the second digital device;
- transmit the token to the second document store; and
- send a second financial message comprising the token to a first intermediary server in the centralised financial system, indicative of making a payment to a first user.

52. A second intermediary server for use in a centralised financial system to facilitate processing of a financial transaction, operably connected to a network and a second document store, and configured to:

- receive one or more first requests, each comprising a token, from a first intermediary server in the centralised financial system and transmit the one or more first requests and the token to the second document store;

- generate the one or more first responses, each comprising the token, corresponding to the respective one or more first requests;

- transmit the one or more first responses to the first intermediary server, via a messaging bus in the centralised financial system;

- hash the one or more first requests and the one or more first responses to generate one or more first request hashes and one or more first response hashes, respectively; and

- add the one or more first request hashes and the one or more first response hashes to the enriched data record in a blockchain being a distributed ledger.

53. The second intermediary server as claimed in claim 52, further configured to:

- encrypt each one of the one or more first responses with a first public key and sign the each one of the one or more first responses with a second public key, before transmission to the first intermediary server; and

- decrypt each one of the one or more first requests with a second private key after reception from the first intermediary server.

54. A second intermediary server for use in a centralised financial system to facilitate processing of a financial transaction, operably connected to a network and a second document store, and configured to:

transmit one or more second requests, each comprising a token, to a first intermediary server in the centralised financial system, via a messaging bus in the centralised financial system; and

receive one or more second responses from the first intermediary server and transmit the one or more second responses to the second document store.

55. The second intermediary server as claimed in claim 54, further configured to:

hash the one or more second responses to regenerate one or more second response hashes; and

verify the one or more second response hashes with a blockchain being a distributed ledger, using the token.

56. The second intermediary server as claimed in claim 54, further configured to:

encrypt each one of the one or more second requests with a first public key and sign each one of the one or more second requests with a second public key, before transmission to the first intermediary server; and

decrypt each one of the one or more second responses with a second private key after reception from the first intermediary server.

57. The second intermediary server as claimed in claims 53 or 56, further configured to add the second public key into the blockchain.

58. The second intermediary server as claimed in claim 54, wherein the one or more second responses comprise one or more first regulatory compliance documents pertaining to a first user.