

WHAT IS CLAIMED IS:

1. A method comprising:

receiving, by a hub computer (120), a first user account identifier from a first service provider computer (106) in communication with a first user device (108), and in communication with a first blockchain network (104), the first service provider computer (106) thereafter transferring an amount of a first digital currency to a first smart contract on the first blockchain network (104);

receiving, by the hub computer (120), a second user account identifier from a second service provider computer (116) in communication with a second user device (118), and also a second blockchain network (114) containing a second smart contract, wherein the hub computer (120) invokes a deploy contract function of the first blockchain network (104) to deploy the first smart contract on the first blockchain network (104) and invokes a deploy contract function of the second blockchain network (114) to deploy the second smart contract on the second blockchain network (114) and wherein the hub computer (120) is separately in communication with the first blockchain network (104) and the second blockchain network (114), and the hub computer (120) is in communication with the first service provider computer (106) via a first interaction channel and the hub computer (120) is in communication with the second service provider computer (116) via a second interaction channel;

receiving, by the hub computer (120), a first amount of the first digital currency from the first service provider computer (106) via the first interaction channel; and

transferring, by the hub computer (120), a second amount of a second digital currency to the second service provider computer (116) via the second interaction channel,

wherein receiving, by the hub computer (120), a first amount of a first digital currency from the first service provider computer (106) via the first interaction channel, and transferring, by the hub computer (120), a second amount of a second digital currency to the second service provider computer (116) via the second interaction channel comprises:

receiving, by the hub computer (120), a sender promise from the first service provider computer (106) via the first interaction channel, wherein the sender promise comprises first parameters including a hash of a secret sent by the second user device (118) to the first user device (108) in an interaction proposal;

generating, by the hub computer (120), a server promise comprising second parameters; and

transmitting, by the hub computer (120), the server promise to the second user device (118) via the second service provider computer (116) via the second interaction channel,

wherein the method further comprises receiving, by the hub computer (120), the secret from the second service provider computer (116), wherein the hub computer (120) verifies the secret by hashing the secret and comparing the hashed secret to the previously received hash,

and wherein if the hashed secret matches the previously received hash, the method further comprises;

generating, by the hub computer (120), a receiver receipt comprising second parameters of the second smart contract;

transmitting, by the hub computer (120), the receiver receipt to the second user device (118) via the second service provider computer (116) through the second interaction channel;

transmitting, by the hub computer (120), the secret to the first service provider computer (106) through the first interaction channel, wherein the first service provider computer (106) generates a server receipt comprising first parameters of the first smart contract; and

receiving, by the hub computer (120), the server receipt from the first user device (108) via the first service provider computer (106) through the first interaction channel.

2. The method of claim 1, wherein the first smart contract implements the first interaction channel that connects the first user device (108) to the hub computer

(120) via the first service provider computer (106) and the second smart contract implements the second interaction channel that connects the second user device (118) to the hub computer (120) via the second service provider computer (116).

3. The method of claim 1, wherein the first smart contract and the second smart contract are associated with a plurality helper functions including one or more of a generate promise function, a verify promise function, a generate receipt function, a verify receipt function, or an update local state function.

4. The method of claim 1, wherein the first smart contract is deployed to the first blockchain network (104) by the hub computer (120), and wherein the second smart contract is deployed to the second blockchain network (114) by the hub computer (120).

5. The method of claim 1, wherein the first smart contract and the second smart contract comprise a contract status, wherein the contract status is an active status, a cooperative closing status, a unilateral closing status, or a closed status.

6. The method of any preceding claim, wherein a value of the second amount of the second digital currency is equivalent to a value of the first amount of the first digital currency.

7. The method of claim 1, wherein the first smart contract and the second smart contract comprise contract functions and protocols including one or more of an initialization function, a get parameters function, a get state function, a deposit function, an initialize close function, a withdraw function, and a claim protocol.

8. The method of claim 1, wherein the hub computer (120) receives the first amount of the first digital currency and transmits the second amount of the second digital currency without connection to either the first blockchain network (104) or the second blockchain network (114).

9. The method of any preceding claim, wherein a first service provider identifier is provided to the first service provider computer (106) by a first certificate authority computer and a second service provider identifier is provided to the second service provider computer (116) by a second certificate authority computer.

10. The method of any preceding claim, wherein the first digital currency is different from the second digital currency.

11. The method of any preceding claim, wherein the first user device (108) and the second user device (118) are mobile phones.

12. A hub computer (120) comprising:
a processor (1502); and
a non-transitory computer readable medium (1508) comprising instructions executable by the processor to perform operations including:
receiving, by the hub computer (120), a first user account identifier from a first service provider computer (106) in communication with a first user device (108), and also in communication with a first blockchain network (104), the first service provider computer (106) thereafter transferring an amount of digital currency to a first smart contract on the first blockchain network (104);
receiving, by the hub computer (120), a second user account identifier from a second service provider computer (116) in communication with a second user device (118), and also a second blockchain network (114) containing a second smart contract, wherein the hub computer (120) invokes a deploy contract function of the first blockchain network (104) to deploy the first smart contract on the first blockchain network (104) and invokes a deploy contract function of the second blockchain network (114) to deploy the second smart contract on the second blockchain network (114) and wherein the hub computer (120) is separately in communication with the first blockchain network (104) and the second blockchain network (114), and the hub computer (120) is in

communication with the first service provider computer (106) via a first interaction channel and the hub computer (120) is in communication with the second service provider computer (116) via a second interaction channel;

receiving, by the hub computer (120), a first amount of a first digital currency from the first service provider computer (120) via the first interaction channel; and

transferring, by the hub computer (120), a second amount of a second digital currency to the second service provider computer (116) via the second interaction channel,

wherein receiving, by the hub computer (120), a first amount of a first digital currency from the first service provider computer (106) via the first interaction channel, and transferring, by the hub computer (120), a second amount of a second digital currency to the second service provider computer (116) via the second interaction channel comprises:

receiving, by the hub computer (120), a sender promise from the first service provider computer (106) via the first interaction channel, wherein the sender promise comprises first parameters including a hash of a secret, the hash having been sent by the second user device (118) to the first user device (108) in an interaction proposal;

generating, by the hub computer (120), a server promise comprising second parameters; and

transmitting, by the hub computer (120), the server promise to the second user device (118) via the second service provider computer (116) via the second interaction channel,

wherein the non-transitory computer readable medium further comprises instructions executable by the processor (1502) to perform operations including

receiving, by the hub computer (120), the secret from the second service provider computer (116), wherein the hub computer (120) verifies the secret by hashing the secret and comparing the hashed secret to the previously received hash and if the hashed secret matches the

previously received hash, the hub computer (120) further performs the operations of;

- generating, by the hub computer (120), a receiver receipt comprising second parameters of the second smart contract;

- transmitting, by the hub computer (120), the receiver receipt to the second user device (118) via the second service provider computer (116) through the second interaction channel;

- transmitting, by the hub computer (120), the secret to the first service provider computer (106) through the first interaction channel, wherein the first service provider computer (106) generates a server receipt comprising first parameters of the first smart contract; and

- receiving, by the hub computer (120), the server receipt from the first user device (108) via the first service provider computer (106) through the first interaction channel.