

CLAIMS

1. A computer-implemented method for logistics management, the method comprising:

~~identifying a first smart contract stored in a blockchain, the smart contract corresponding to a logistic process, the logistic process including a plurality of sections;~~

at a node of a blockchain network:

identifying a first smart contract stored in a blockchain of the blockchain network, the first smart contract corresponding to a logistics process of transportation of a product, the first smart contract identifying the logistics process with a plurality of sections representing respective logistics transactions in the logistics process that are different from one another, for each section of the plurality of sections, respectively, the first smart contract identifying a section identifier and a participation qualification for a user to perform the respective logistics transaction of the section and to provide transaction information on the respective logistics transaction into the blockchain, each participation qualification including a qualification verified by the blockchain network, the plurality of sections including a first section representing a first logistics transaction of shipping the product by a transportation carrier and a second section representing a second logistics transaction of delivering the product to a transportation carrier, a first participation qualification for the first section being different from a second participation qualification for the second section, the first logistics transaction being later than the second logistics transaction in the logistics process;

receiving a first set of information with respect to ~~a first section of the plurality of sections~~the first logistics transaction of the first section from a first user, the first set of information including a first section identifier and first transaction information of shipping the product;

automatically verifying the first set of information ~~based on~~by executing the first smart contract;~~and, the verifying including:~~

analyzing whether the first section identifier belongs to the first section of the plurality of sections of the logistics process;

analyzing whether the first user is a transportation carrier that meets the first participation qualification of the first section identified by the first smart contract;
and

analyzing whether transaction information on the second logistics transaction of delivering the product to a transportation carrier has been stored in the blockchain;

adding the first set of information into the blockchain ~~based on a result of the verifying in~~ response to that the first section identifier belongs to the first section, the first user is a transportation carrier that meets the first participation qualification of the first section, and the transaction information on the second logistics transaction has been stored in the blockchain;

rejecting the first set of information from being added into the blockchain in response to at least one of that the first section identifier does not belong to the first section, that the first user is not a transportation carrier that meets the first participation qualification of the first section, or that the transaction information on the second logistics transaction has not been stored in the blockchain; and

monitoring execution of the logistics process of transporting the product based on information stored in the blockchain.

2. The method of claim 1, wherein the verifying the first set of information based on the first smart contract includes one or more of:

~~verifying whether an identification of a user complies with the smart contract; and~~

verifying whether the first set of information includes an ~~identifier~~identification of the first ~~section~~user that complies with the first smart contract.

3. The method of claim 1, wherein the first smart contract ~~assigns a section identifier to each of the plurality of sections of the logistic process.~~

~~4. The method of claim 1, wherein the first smart contract~~ includes a user qualification for ~~providing a user to provide~~ transaction information with respect to a section of the plurality of sections of the ~~logistic process~~logistics process based on a certified business scope of the user.

~~54.~~ The method of claim ~~43~~, wherein the user qualification includes a certificate issued by a certificate authority outside a blockchain platform of the blockchain network supporting the blockchain.

~~65.~~ The method of claim ~~43~~, wherein the user qualification includes that a consumer user is registered with a certificate authority.

~~76.~~ The method of claim 1, further comprising determining a consensus algorithm based on the first smart contract, wherein the verifying the first set of information follows the consensus algorithm.

~~87.~~ The method of claim 1, further comprising providing a software module to the first user for processing the first set of information at a device of the first user based on the first smart contract.

~~98.~~ A system of logistics management, comprising:
one or more processors; and
one or more computer-readable memories coupled to the one or more processors and having instructions stored thereon that are executable by the one or more processors to perform acts including:

~~identifying a first smart contract stored in a blockchain, the smart contract corresponding to a logistic process, the logistic process including a plurality of sections;~~

identifying a first smart contract stored in a blockchain of a blockchain network, the first smart contract corresponding to a logistics process of transportation of a product the first smart contract identifying the logistics process with a plurality of sections representing respective logistics transactions in the logistics process that are different from one another, for each section of the plurality of sections, respectively, the first smart contract identifying a section identifier and a participation qualification for a user to perform the respective logistics transaction of the section and to provide transaction information on the respective logistics transaction into the blockchain, each participation qualification including a qualification verified by the blockchain network, the plurality of sections including a first section representing a first logistics transaction of shipping the product by a transportation carrier and a second section representing a second logistics transaction of delivering the product to a transportation carrier, a first participation qualification for the first section being different from a second participation qualification for the second section, the first logistics transaction being later than the second logistics transaction in the logistics process;

receiving, at a first node of the blockchain network, a first set of information from a first user with respect to a first section of the plurality of sections the first section, the first set of information including a first section identifier and first transaction information of shipping the product;

automatically verifying, at the first node, the first set of information based on the by executing the first smart contract, the verifying including:

analyzing whether the first section identifier belongs to the first section of the plurality of sections of the logistics process;

analyzing whether the first user is a transportation carrier that meets the first participation qualification of the first section identified by the first smart contract;
and

analyzing whether transaction information on the second logistics transaction of delivering the product to a transportation carrier has been stored in the blockchain;

adding the first set of information into the blockchain ~~based on a result of the verifying in response to that the first section identifier belongs to the first section, the first user is a transportation carrier that meets the first participation qualification of the first section, and the transaction information on the second logistics transaction has been stored in the~~ blockchain;

~~40~~rejecting the first set of information from being added into the blockchain in response to at least one of that the first section identifier does not belong to the first section, that the first user is not a transportation carrier that meets the first participation qualification of the first section, or that the transaction information on the second logistics transaction has not be been stored in the blockchain; and

monitoring execution of the logistics process of transporting the product based on information stored in the blockchain.

9. The system of claim ~~98~~, wherein the verifying the first set of information based on the smart contract includes one or more of:
~~verifying whether an identification of a user complies with the smart contract; and~~
verifying whether the first set of information includes an ~~identifier~~identification of the first ~~section~~user that complies with the first smart contract.

~~110. The system of claim 9, wherein the first smart contract assigns a section identifier to each of the plurality of sections of the logistic process.~~

~~12. The system of claim 98,~~ wherein the first smart contract includes a user qualification for providing transaction information with respect to a section of the plurality of sections of the ~~logistic process~~logistics process based on a certified business scope of the user.

~~13~~11. The system of claim ~~12~~10, wherein the user qualification includes a certificate issued by a certificate authority outside a blockchain platform ~~supporting of~~ the blockchain network.

~~14~~12. The system of claim ~~12~~10, wherein the user qualification includes that a consumer user is registered with a certificate authority.

~~15~~13. The system of claim ~~9~~8, where the acts include determining a consensus algorithm based on the first smart contract, and the verifying the first set of information follows the consensus algorithm.

~~14.~~ ~~16.~~ The system of claim ~~9~~8, where the acts include providing a software module to the first user for processing the first set of information at a device of the first user based on the first smart contract.

~~17.~~ ~~15.~~ An apparatus for logistics management, the apparatus implementing a node of a blockchain network and comprising a plurality of units for performing one or more processors and one or more computer-readable memories coupled to the one or more processors, the one or more computer-readable memories having instructions stored thereon that are executable by the one or more processors to perform acts including:

identifying a first smart contract stored in a blockchain, the smart contract corresponding to a logistic process, the logistic process including a plurality of sections;

identifying a first smart contract stored in a blockchain of the blockchain network, the smart contract corresponding to a logistics process of transportation of a product, the smart contract identifying the logistics process with a plurality of sections representing logistics transactions in the logistics process that are different from one another, for each section of the

plurality of sections, respectively, the first smart contract identifying a section identifier and a participation qualification for a user to perform the respective logistics transaction of the section and to provide transaction information on the respective logistics transaction into the blockchain, each participation qualification including a qualification verified by the blockchain network, the smart contract identifying a sequential order among the plurality of sections in conducting the respective transactions, the plurality of sections including a first section representing a first logistics transaction of shipping the product by a transportation carrier and a second section representing a second logistics transaction of delivering the product to a transportation carrier, a first participation qualification for the first section being different from a second participation qualification for the second section, the first section being later in the sequential order than the second section;

receiving a first set of information ~~from a first user~~ with respect to a ~~first section of the plurality of sections~~ transaction in the first section, the first set of information including a first section identifier and first transaction information of shipping the product;

automatically verifying the first set of information ~~based on by executing~~ the smart contract; ~~and,~~ the verifying including:

analyzing whether the first section identifier belongs to the first section of the plurality of sections of the logistics process,

analyzing whether the first user is a transportation carrier that meets the first participation qualification of the first section identified by the first smart contract, and

determining whether transaction information on the second logistics transaction of delivering the product to a transportation carrier has been stored in the blockchain;

adding the first set of information into the blockchain ~~based on a result of the verifying in response to that the first section identifier belongs to the first section, the first user is a transportation carrier that meets the first participation qualification of the first section, and the transaction information on the second logistics transaction has been stored in the blockchain;~~

rejecting the first set of information from being added into the blockchain in response to at least one of that the first section identifier does not belong to the first section, that the first user is not a transportation carrier that meets the first participation qualification of the

first section, or that the transaction information on the second logistics transaction has not been stored in the blockchain; and

monitoring execution of the logistics process of transporting the product based on information stored in the blockchain.

~~18.~~ 16. The apparatus of claim ~~17~~15, wherein the verifying the first set of information based on the first smart contract includes one or more of:

~~verifying whether an identification of a user complies with the smart contract; and~~

verifying whether the first set of information includes an ~~identifier~~identification of the first ~~section~~user that complies with the first smart contract.

~~19~~17. The apparatus of claim 16, wherein the ~~verifying determines whether the~~
identification of the user is consistent with the identifier of the first section.

~~18.~~ 17 The apparatus of claim 15, wherein the first smart contract includes a user qualification for providing transaction information with respect to a section of the plurality of sections of the ~~logistic process~~logistics process based on a certified business scope of the user.

~~20~~19. The apparatus of claim 18, wherein the ~~verifying determines whether the~~
~~identification~~user qualification includes a certificate issued by a certificate authority outside a
blockchain platform of the ~~user is consistent with the identifier~~blockchain network.

20. The apparatus of claim 15, where the acts include providing a software module to the first ~~section~~user for processing the first set of information at a device of the first
user based on the first smart contract.