

CLAIMS

What is claimed is:

1. A computer-implemented method, comprising:

5 executing, by a map-service provider, a first smart contract on a blockchain with a data collector, wherein the map-service provider and the data collector are computing devices participating in the blockchain;

 receiving, at the map-service provider, map data from the data collector;

 executing, by the map-service provider, a second smart contract on the blockchain
10 with a data-service provider, wherein the data-service provider is a computing device participating in the blockchain;

 transmitting the map data to the data-service provider for processing;

 executing, by the map-service provider, a third smart contract on the blockchain
15 with a data provider, wherein the data provider is a computing device participating in the blockchain;

 receiving, at the map-service provider, non-crowdsourced data from the data provider;

 transmitting the non-crowdsourced data to the data-service provider for
processing with the map data;

20 receiving a request for processed map data from a service user;

 retrieving, from the data-service provider, the processed map data that is generated from the map data and the non-crowdsourced data;

 executing, by the map-service provider, a fourth smart contract on the blockchain
with the service user; and

25 transmitting the processed map data to the service user in response to the request.

2. The computer-implemented method of claim 1, wherein the map-service provider provides automated data consumption or data authorization for the service user.

3. The computer-implemented method of claim 1, wherein transmitting the map data to the data-service provider for processing includes transmitting the map data to the data-service provider for normalizing the map data or discarding irregular data from the map data.

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4. The computer-implemented method of claim 1, wherein the blockchain is a consortium blockchain.

5. The computer-implemented method of claim 1, wherein the map data is collected
10 by the data collector using crowdsourcing.

6. A non-transitory, computer-readable medium storing one or more instructions executable by a computer system to perform operations comprising:

15 executing, by a map-service provider, a first smart contract on a blockchain with a data collector, wherein the map-service provider and the data collector are computing devices participating in the blockchain;

receiving, at the map-service provider, map data from the data collector;

20 executing, by the map-service provider, a second smart contract on the blockchain with a data-service provider, wherein the data-service provider is a computing device participating in the blockchain;

transmitting the map data to the data-service provider for processing;

executing, by the map-service provider, a third smart contract on the blockchain with a data provider, wherein the data provider is a computing device participating in the blockchain;

25 receiving, at the map-service provider, non-crowdsourced data from the data provider;

transmitting the non-crowdsourced data to the data-service provider for processing with the map data;

receiving a request for processed map data from a service user;

30 retrieving, from the data-service provider, the processed map data that is generated from the map data and the non-crowdsourced data;

executing, by the map-service provider, a fourth smart contract on the blockchain with the service user; and

transmitting the processed map data to the service user in response to the request.

5 7. The computer-readable medium of claim 6, wherein the map-service provider provides automated data consumption or data authorization for the service user.

8. The computer-readable medium of claim 6, wherein transmitting the map data to
10 the data-service provider for processing includes transmitting the map data to the data-service provider for normalizing the map data or discarding irregular data from the map data.

9. The computer-readable medium of claim 6, wherein the blockchain is a
15 consortium blockchain.

10. The computer-readable medium of claim 6, wherein the map data is collected by the data collector using crowdsourcing.

20 11. A computer-implemented system, comprising:

one or more computers; and

one or more computer memory devices interoperably coupled with the one or more computers and having tangible, non-transitory, machine-readable media storing one or more instructions that, when executed by the one or more computers, perform one or
25 more operations comprising:

executing, by a map-service provider, a first smart contract on a blockchain with a data collector, wherein the map-service provider and the data collector are computing devices participating in the blockchain;

receiving, at the map-service provider, map data from the data collector;

executing, by the map-service provider, a second smart contract on the blockchain with a data-service provider, wherein the data-service provider is a computing device participating in the blockchain;

transmitting the map data to the data-service provider for processing;

5 executing, by the map-service provider, a third smart contract on the blockchain with a data provider, wherein the data provider is a computing device participating in the blockchain;

receiving, at the map-service provider, non-crowdsourced data from the data provider;

10 transmitting the non-crowdsourced data to the data-service provider for processing with the map data;

receiving a request for processed map data from a service user;

retrieving, from the data-service provider, the processed map data that is generated from the map data and the non-crowdsourced data;

15 executing, by the map-service provider, a fourth smart contract on the blockchain with the service user; and

transmitting the processed map data to the service user in response to the request.

20 12. The system of claim 11, wherein the map-service provider provides automated data consumption or data authorization for the service user.

25 13. The system of claim 11, wherein transmitting the map data to the data-service provider for processing includes transmitting the map data to the data-service provider for normalizing the map data or discarding irregular data from the map data.

14. The system of claim 11, wherein the blockchain is a consortium blockchain.

30 15. The system of claim 11, wherein the map data is collected by the data collector using crowdsourcing.