

CLAIMS

1. A computer-implemented method for registering subscribable states in blockchain, comprising:

obtaining a request for registering a workflow comprising one or more states;

generating a blockchain contract comprising the workflow; and

deploying the blockchain contract in a blockchain, wherein the deployed blockchain contract is executable to update a current state of the workflow among the one or more states.

2. The method of claim 1, further comprising:

obtaining from a subscriber a request for subscribing to notification of one of the one or more states; and

establishing an association between the subscriber and the one state.

3. The method of any of claims 1-2, further comprising:

obtaining information in one or more blocks of the blockchain to determine the current state.

4. The method of claim 3, further comprising:

updating a locally-maintained state machine based on the determined current state;

determining that the updated state machine corresponds to the one state; and

transmitting a notification message to the subscriber to the one state.

5. The method of claim 4, wherein:

the notification message comprises: a message indicating the one state that is current and a result returned from completion of a preceding state among the one or more states.

6. The method of any of claims 4-5, wherein:

the locally-maintained state machine comprises one or more local states respectively mapped to the one or more states of the workflow registered in the blockchain.

7. The method of claim 6, wherein:

the one or more local states are configured in a cyclic trigger flow; and

the cyclic trigger flow starts with a starting local state of the one or more local states, passes through each of the one or more local states once in one direction till an ending local state, and returns to the starting local state.

8. The method of claim 7, wherein:

the one or more states are configured in another cyclic trigger flow;

the another cyclic trigger flow starts with a starting state of the one or more states, passes through each of the one or more states once in one direction till an ending state, and returns to the starting state;

each of the one or more states is triggered by completion of a preceding state in the another cyclic trigger flow;

the starting local state is mapped to the starting state; and

the method further comprises executing the blockchain contract to initiate the current state to be the starting state.

9. The method of any of claims 8, further comprising:

obtaining a request for deactivating the one state; and

in response to the request for deactivating the one state:

generating a blockchain transaction for shortcutting the one state from the another cyclic trigger flow, and transmitting the generated blockchain transaction to one or more blockchain nodes to add to the blockchain; and

shortcutting a local state mapped to the one state from the cyclic trigger flow.

10. The method of claim 9, further comprising:

obtaining a request for reactivating the one state; and

in response to the request for reactivating the one state:

generating a blockchain transaction for restoring the one state in the another cyclic trigger flow, and transmitting the generated blockchain transaction to one or more blockchain nodes to add to the blockchain; and

restoring the local state mapped to the one state in the cyclic trigger flow.

11. The method of any of claims 1-10, wherein:

each of the one or more states is configurable by a subscriber to one or more sub-states to comprise the one or more sub-states; and

the method further comprises: establishing an association between the subscriber and the one or more sub-states for transmitting notifications associated with the one or more sub-states to the subscriber.

12. The method of claim 11, wherein:

the one or more sub-states form a cyclic trigger flow;
the one or more states are public to all subscribers to the one or more states; and
the one or more sub-states are private to the subscriber to the one or more sub-states.

13. The method of any of claims 1-12, wherein:

obtaining the request for registering the one or more states corresponding to the workflow comprises: obtaining from an administrator of the workflow the request for registering the one or more states corresponding to the workflow; and
the blockchain comprises a consortium blockchain.

14. The method of any of claims 1-13, wherein:

obtaining the request for registering the one or more states corresponding to the workflow comprises: obtaining a request for registering a state group comprising the one or more states corresponding to the workflow.

15. The method of claim 14, further comprising:

obtaining a request for ceasing notification of the state group; and
in response to the request for ceasing notification of the state group, ceasing notification of the state group to one or more subscribers subscribing to the state group.

16. The method of claim 15, further comprising:

obtaining a request for resuming notification of the state group; and
in response to the request for resuming notification of the state group, resuming notification of the state group to one or more subscribers subscribing to the state group.

17. A system for registering subscribable states in blockchain, 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 the method of any of claims 1 to 16.

18. An apparatus for registering subscribable states in blockchain, comprising a plurality of modules for performing the method of any of claims 1 to 16.

19. A non-transitory computer-readable medium having stored therein instructions that, when executed by a processor of a device, cause the device to perform the method of any of claims 1 to 16.