CLAIMS

1. A transport facility, comprising:

a plurality of transport vehicles configured to transport articles; and

a control system configured to control the plurality of transport vehicles, the control system being configured to perform, when a target article among the articles is transported from a transport source to a transport destination through a relay using two of the plurality of transport vehicles,

a transport vehicle determination process of determining a first transport vehicle to transport the target article from the transport source to the relay and a second transport vehicle to transport the target article from the relay to the transport destination,

a path determination process of determining a first movement path for the first transport vehicle to move from a current position of the first transport vehicle to the relay through the transport source and a second movement path for the second transport vehicle to move from a current position of the second transport vehicle to the transport destination through the relay,

an initial prediction process of deriving, based on the first movement path, an arrival prediction time as an initial prediction time, the arrival prediction time being a prediction time at which the target article arrives at a receiving position at which the second transport vehicle receives the target article in the relay,

an update prediction process of obtaining a checkpoint pass time at which the target article passes a checkpoint set at least at one position along the first movement path and deriving an updated prediction time being the arrival prediction time updated based on the checkpoint pass time, and

a receiving movement process of causing, based on the initial prediction time before the updated prediction time is derived and based on the updated prediction time after the updated prediction time is derived, the second transport vehicle to arrive at the receiving position at a prediction time at which the target article arrives at the receiving position,

wherein in the receiving movement process, the control system starts to cause the second transport vehicle to move earlier than initially predicted in response to the updated prediction time being earlier than the initial prediction time.

2. The transport facility according to claim 1, wherein

in the receiving movement process, the control system starts to cause the second transport vehicle to move later than initially predicted in response to the updated

prediction time being later than the initial prediction time.

3. The transport facility according to claim 2, wherein

in the receiving movement process,

the control system derives a duration taken for the second transport vehicle to arrive at the receiving position based on a path from a current position of the second transport vehicle to the relay included in the second movement path, and

the control system causes, in response to the updated prediction time being derived before a current time reaches a time preceding the initial prediction time by the duration, the second transport vehicle to move toward the receiving position based on the current time reaching a time preceding the updated prediction time by the duration.

4. The transport facility according to claim 3, wherein

in the receiving movement process,

the control system causes, in response to the current time reaching the time preceding the initial prediction time by the duration before the updated prediction time is derived, the second transport vehicle to move toward the receiving position based on the current time reaching the time preceding the initial prediction time by the duration.

5. The transport facility according to any one of claims 1 to 4, wherein

the relay is a transporter configured to transport the target article from a transfer position at which the target article is transferred from the first transport vehicle to the receiving position,

the control system derives the initial prediction time based on a movement time for the first transport vehicle to move from a current position of the first transport vehicle on the first movement path to the transfer position and a transport time for the target article to be transported from the transfer position to the receiving position with the transporter, and

the control system derives the updated prediction time based on the checkpoint pass time, a movement time for the first transport vehicle to move from the checkpoint to the transfer position on the first movement path, and a transport time for the target article to be transported from the transfer position to the receiving position with the transporter.

6. The transport facility according to any one of claims 1 to 4, wherein

the first transport vehicle transports the target article in a first area,

the second transport vehicle transports the target article in a second area,

the relay is an inter-area transporter configured to transport the target article between the first area and the second area,

the control system includes a first controller configured to control the plurality of transport vehicles in the first area, a second controller configured to control the plurality of transport vehicles in the second area, and a central controller configured to control the first controller and the second controller,

the first controller obtains pass time information indicating the checkpoint pass time and transmits the pass time information to the central controller,

the central controller performs the update prediction process and provides the derived updated prediction time to the second controller, and

the second controller performs the receiving movement process based on the provided updated prediction time.

7. A transport facility, comprising:

a plurality of transport vehicles configured to transport articles; and

a control system configured to control the plurality of transport vehicles, the control system being configured to perform, when a target article among the articles is transported from a transport source to a transport destination through a relay using two of the plurality of transport vehicles,

a transport vehicle determination process of determining a first transport vehicle to transport the target article from the transport source to the relay and a second transport vehicle to transport the target article from the relay to the transport destination,

a path determination process of determining a first movement path for the first transport vehicle to move from a current position of the first transport vehicle to the relay through the transport source and a second movement path for the second transport vehicle to move from a current position of the second transport vehicle to the transport destination through the relay,

an initial prediction process of deriving, based on the first movement path, an arrival prediction time as an initial prediction time, the arrival prediction time being a prediction time at which the target article arrives at a receiving position at which the second transport vehicle receives the target article in the relay,

an update prediction process of obtaining a checkpoint pass time at which the target article passes a checkpoint set at least at one position along the first movement path and deriving an updated prediction time being the arrival prediction time updated based on the checkpoint pass time, and

a receiving movement process of causing, based on the initial prediction time

before the updated prediction time is derived and based on the updated prediction time after the updated prediction time is derived, the second transport vehicle to arrive at the receiving position at a prediction time at which the target article arrives at the receiving position,

wherein the relay is a transporter configured to transport the target article from a transfer position at which the target article is transferred from the first transport vehicle to the receiving position,

the control system derives the initial prediction time based on a movement time for the first transport vehicle to move from a current position of the first transport vehicle on the first movement path to the transfer position and a transport time for the target article to be transported from the transfer position to the receiving position with the transporter, and

the control system derives the updated prediction time based on the checkpoint pass time, a movement time for the first transport vehicle to move from the checkpoint to the transfer position on the first movement path, and a transport time for the target article to be transported from the transfer position to the receiving position with the transporter.

8. A transport facility, comprising:

a plurality of transport vehicles configured to transport articles; and

a control system configured to control the plurality of transport vehicles, the control system being configured to perform, when a target article among the articles is transported from a transport source to a transport destination through a relay using two of the plurality of transport vehicles,

a transport vehicle determination process of determining a first transport vehicle to transport the target article from the transport source to the relay and a second transport vehicle to transport the target article from the relay to the transport destination,

a path determination process of determining a first movement path for the first transport vehicle to move from a current position of the first transport vehicle to the relay through the transport source and a second movement path for the second transport vehicle to move from a current position of the second transport vehicle to the transport destination through the relay,

an initial prediction process of deriving, based on the first movement path, an arrival prediction time as an initial prediction time, the arrival prediction time being a prediction time at which the target article arrives at a receiving position at which the second transport vehicle receives the target article in the relay,

an update prediction process of obtaining a checkpoint pass time at which the

target article passes a checkpoint set at least at one position along the first movement path and deriving an updated prediction time being the arrival prediction time updated based on the checkpoint pass time, and

a receiving movement process of causing, based on the initial prediction time before the updated prediction time is derived and based on the updated prediction time after the updated prediction time is derived, the second transport vehicle to arrive at the receiving position at a prediction time at which the target article arrives at the receiving position,

wherein the first transport vehicle transports the target article in a first area,

the second transport vehicle transports the target article in a second area,

the relay is an inter-area transporter configured to transport the target article between the first area and the second area,

the control system includes a first controller configured to control the plurality of transport vehicles in the first area, a second controller configured to control the plurality of transport vehicles in the second area, and a central controller configured to control the first controller and the second controller,

the first controller obtains pass time information indicating the checkpoint pass time and transmits the pass time information to the central controller,

the central controller performs the update prediction process and provides the derived updated prediction time to the second controller, and

the second controller performs the receiving movement process based on the provided updated prediction time.