second maintenance location). This may reduce the efficiency of maintenance at this maintenance location. Therefore, it is desired to reduce a decrease in efficiency of vehicle maintenance at the first maintenance location and the second maintenance location.

[0004] The present disclosure provides a server that can reduce a decrease in efficiency of vehicle maintenance at a first maintenance location and a second maintenance location.

[0005] A server configured to manage each of a plurality of vehicles according to a first aspect of the present disclosure includes a processor. The processor is configured to communicate with each of the vehicles, a first maintenance location, and a second maintenance location. Each of the vehicles includes a vehicle body and an on-board control device attached to the vehicle body. The on-board control device is configured to perform either or both of driving assistance control and autonomous driving control of the vehicle body. The first maintenance location is a location where maintenance of the vehicle body is able to be performed. The second maintenance location is a location where maintenance of the on-board control device is able to be performed. The processor is configured to acquire state information on a state of each of the vehicles. The processor is configured to decide assignment of maintenance of the vehicle to either or both of the first maintenance location and the second maintenance location, based on the state information. The processor is configured to acquire first schedule information of the first maintenance location and second schedule information of the second maintenance location. The processor is be configured to plan a schedule for the maintenance of the vehicle at either or both of the first maintenance location and the second maintenance location, based on the state information and either or both of the first schedule information and the second schedule information. The state information includes information on a state of the on-board control device. The first maintenance location includes a first dealership of the vehicle where control maintenance of the on-board control device is not able to be performed but replacement of a part of the on-board control device is able to be performed. The second maintenance location includes a first maintenance center where the control maintenance of the on-board control device and the replacement of a part of the on-board control device are able to be performed.

The processor is configured to plan a schedule for maintenance of the on-board control device at the first dealership and the first maintenance center, based on the state information including the information on the state of the on-board control device and either or both of the first schedule information and the second schedule information.

[0006] In the server according to the above aspect, as described above, the processor decides assignment of maintenance of the vehicle to either or both of the first maintenance location and the second maintenance location, based on the state information of the vehicle. The maintenance destination is thus automatically decided by the processor. As a result, since the maintenance destination is not selected by users, the possibility can be reduced that selection of the maintenance destination may be concentrated on either the first maintenance location or the second maintenance location due to some factor (e.g., the difference in name recognition between the first maintenance location and the second maintenance location). This configuration can thus reduce a decrease in efficiency of vehicle maintenance at the first maintenance location and the second maintenance location.

[0007] In the server according to the first aspect of the present disclosure, since the schedule for maintenance is planned by the processor, the user does not need to plan a schedule for maintenance (decide maintenance time). This can save the user's time and effort.

[0008] In the server according to the first aspect of the present disclosure, the state information may include abnormality information of the vehicle. The processor may be configured to decide a length of time of the maintenance of the vehicle at either or both of the first maintenance location and the second maintenance location according to a type of an abnormality in the vehicle. The type of the abnormality may be based on the abnormality information. With this configuration, the length of time of the maintenance can be appropriately set for each kind of maintenance according to the type of abnormality. As a result, the maintenance can be more reliably completed within a scheduled time.

[0009] In the server according to the first aspect of the present disclosure, the processor may be configured to decide a time slot for the maintenance of the vehicle at either or both of the first maintenance location and the second maintenance location, based on the type of the abnormality and either or both of the first schedule information and the second schedule information. With this configuration, the user does not need to decide a time slot for maintenance. This can further save the user's time and effort.

[0010] In the server according to the first aspect of the present disclosure, the state information may include information indicating that a part of the vehicle needs to be replaced. The type of the abnormality may include a kind of the part that needs to be replaced. The processor may be configured to decide the length of time of the maintenance of the vehicle according to the kind of the part. The time required for maintenance varies depending on the kind of the part. For example, maintenance of an important part of the vehicle takes a

relatively long time. Therefore, since the length of time of the maintenance is decided according to the kind of the part, the possibility that the time required for the maintenance may become longer than the scheduled maintenance time can be easily reduced.

[0011] In the server according to the first aspect of the present disclosure, the state information may include information indicating that a part of the vehicle needs to be replaced. The type of the abnormality may include a position where the part that needs to be replaced is located in the vehicle. The processor may be configured to decide the length of time of the maintenance of the vehicle according to the position. The time required for maintenance varies depending on the position of the part. For example, maintenance of a part located near an important part of the vehicle takes a relatively long time. Therefore, since the length of time of the maintenance is decided according to the position of the part, the possibility that the time required for the maintenance may become longer than the scheduled maintenance time can further be reduced.

[0012] In the server according to the first aspect of the present disclosure, since the schedule for maintenance of the on-board control device is planned by the processor, the possibility that selection of the maintenance destination may be concentrated on the first dealership (or the first maintenance center) can be effectively reduced as compared to the case where users decide the maintenance destination.

CLAIMS

1. A server configured to manage each of a plurality of vehicles, the server characterized by comprising a processor configured to:

communicate with each of the vehicles, a first maintenance location, and a second maintenance location, each of the vehicles including a vehicle body and an on-board control device attached to the vehicle body, the on-board control device being configured to perform either or both of driving assistance control and autonomous driving control of the vehicle body, the first maintenance location being a location where maintenance of the vehicle body is able to be performed, the second maintenance location being a location where maintenance of the on-board control device is able to be performed;

acquire state information on a state of each of the vehicles; and

decide assignment of maintenance of the vehicle to either or both of the first maintenance location and the second maintenance location, based on the state information,

wherein the processor is further configured to:

acquire first schedule information of the first maintenance location and second schedule information of the second maintenance location; and

plan a schedule for the maintenance of the vehicle at either or both of the first maintenance location and the second maintenance location, based on the state information and either or both of the first schedule information and the second schedule information; and

wherein:

the state information includes information on a state of the on-board control device;

the first maintenance location includes a first dealership of the vehicle where control maintenance of the on-board control device is not able to be performed but replacement of a part of the on-board control device is able to be performed;

the second maintenance location includes a first maintenance center where the control maintenance of the on-board control device and the replacement of a part of the on-board control device are able to be performed; and

the processor is configured to plan a schedule for maintenance of the on-board control device at the first dealership and the first maintenance center, based on the state information including the information on the state of the on-board control device and either or both of the first schedule information and the second schedule information.

2. The server according to claim 1, wherein:

the state information includes abnormality information of the vehicle; and

the processor is configured to decide a length of time of the maintenance of the vehicle at either or both of the first maintenance location and the second maintenance location according to a type of an abnormality in the vehicle, the type of the abnormality being based on the abnormality information.

3. The server according to claim 2, wherein the processor is configured to decide a time slot for the maintenance of the vehicle at either or both of the first maintenance location and the second maintenance location, based on the type of the abnormality and either or both of the first schedule information and the second schedule information.

4. The server according to claim 2 or 3, wherein

the state information includes information indicating that a part of the vehicle needs to be replaced,

the type of the abnormality includes a kind of the part that needs to be replaced, and

the processor is configured to decide the length of time of the maintenance of the vehicle according to the kind of the part.

5. The server according to any one of claims 2 to 4, wherein:

the state information includes information indicating that a part of the vehicle needs to be replaced;

the type of the abnormality includes a position where the part that needs to be replaced is located in the vehicle; and

the processor is configured to decide the length of time of the maintenance of the vehicle according to the position.

6. The server according to any one of claims 1 to 5, wherein:

the state information includes information indicating that a part of the on-board control device needs to be replaced;

the first schedule information includes information indicating whether the part is able to be replaced with the part that is in stock at the first dealership; and

the processor is configured to

decide that the part is to be replaced at the first dealership when determination is made that the first dealership has enough stock of the part based on the first schedule information, and

decide that the part is to be replaced at the first maintenance center when determination is made that the first dealership does not have enough stock of the part based on the first schedule information.

7. The server according to any one of claims 1 to 6, wherein:

detachment of the on-board control device is also able to be performed at the first dealership;

the state information includes information indicating a control abnormality in the on-board control device;

the first schedule information includes information on availability of the first dealership; and

the processor is configured to

decide that the on-board control device is to be detached from the vehicle at the first dealership and the control maintenance of the detached on-board control device is to be performed at the first maintenance center, when determination is made that the first dealership is not busy based on the first schedule information, and

decide that the control maintenance of the on-board control device is to be performed at the first maintenance center without detaching the on-board control device from the vehicle at the first dealership, when determination is made that the first dealership is busy based on the first schedule information.

8. The server according to any one of claims 1 to 7, wherein:

the state information includes the information on the state of the on-board control device and information on a state of the vehicle body;

the first maintenance location includes a second dealership of the vehicle where the maintenance of the vehicle body is able to be performed;

the second maintenance location includes a second maintenance center where the control maintenance of the on-board control device is able to be performed; and

the processor is configured to decide that the maintenance of the vehicle body is to be performed at the second dealership when determination is made that the vehicle body is abnormal based on the state information.

9. The server according to claim 8, wherein the processor is configured to decide that the maintenance of the vehicle is to be performed at the second dealership when determination is made that the on-board control device is abnormal and the vehicle body is abnormal but the vehicle is drivable based on the state information.

10. The server according to any one of claims 1 to 9, wherein:

the state information includes the information on the state of the on-board control device and the information on the state of the vehicle body; and

the processor is configured to

acquire the information on the state of the vehicle body directly from each of the vehicles, and

acquire the information on the state of the on-board control device of each of the vehicles via a management server configured to communicate with each of the vehicles.

11. The server according to any one of claims 1 to 10, wherein

the state information includes a maintenance request signal that requests maintenance of an abnormal portion of the vehicle, and

the processor is configured to acquire the maintenance request signal from each of the vehicles.