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INFORMATION MANAGEMENT DEVICE

Abstract

An information management device for installation in a vehicle includes data processing hardware, storage, and a user interface. A switch module determines whether to operate each of a user consent acquisition module, a correction module, and a deletion module in accordance with a jurisdiction where the vehicle is located. The user consent acquisition module stores a privacy setting in the storage in association with the jurisdiction in which the vehicle is located. The correction module corrects a stored privacy information item in accordance with a correction request. The deletion module deletes a stored privacy information item in accordance with a deletion request.

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS [0001] This application is based upon and claims the benefit of priority from Japanese Patent Application No. 2024-022078, filed on Feb. 16, 2024, the entire contents of which are incorporated herein by reference.

BACKGROUND
1. Field
[0002] The following description relates to an information management device for installation in a vehicle.
2. Description of Related Art
[0003] Japanese Laid-Open Patent Publication No. 2021-170016 discloses an information management device installed in a vehicle. The information management device inquires of a user of the vehicle as to whether the user will permit storage of privacy information regarding the user in a persistent storage device. The privacy information includes, for example, the name of the user, the credit card number, the position information of the user, or the speed of the vehicle.
[0004] When the user permits storage of the privacy information in the storage device, the information management device stores the privacy information in the persistent storage device. When the user refuses storage of the privacy information in the persistent storage device, the information management device uses the privacy information regarding the user by unloading the privacy information to volatile memory. In such a case, the privacy information regarding the user will not be stored in the persistent storage device.
[0005] The privacy regulation that is in effect may differ from one jurisdiction to another. A jurisdiction is, for example, a country, a state, or a province. For example, some jurisdictions may require user consent to store privacy information items in a persistent storage device, and other jurisdictions do not require such user consent.
[0006] Accordingly, functionalities for adequately protecting the privacy information may vary depending on the privacy regulation in different jurisdictions. As a result, when a vehicle moves to a jurisdiction with a different privacy regulation, the privacy information may not be protected adequately.
SUMMARY
[0007] This Summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This Summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended to be used as an aid in determining the scope of the claimed subject matter.
[0008] In one general aspect, an information management device for installation in a vehicle includes data processing hardware, storage configured to communicate with the data processing hardware, and a user interface configured to communicate with the data processing hardware. The data processing hardware includes a user consent acquisition module, a correction module, a deletion module, and a switch module. The user consent acquisition module is configured to set on the user interface a display for accepting a privacy setting that indicates whether to permit storage of one or more privacy information items in the storage from a user. The user consent acquisition module is configured to receive the privacy setting from the user interface, and store the privacy setting in the storage in association with a jurisdiction in which the vehicle is located. The correction module is configured to set on the user interface a display for accepting a correction request to correct a privacy information item stored in the storage among the one or more privacy information items. The correction module is configured to receive the correction request from the user interface, and correct the stored privacy information item in accordance with the correction request. The deletion module is configured to set on the user interface a display for accepting a

deletion request to delete a privacy information item stored in the storage among the one or more privacy information items. The deletion module is configured to receive the deletion request from the user interface, and delete the stored privacy information item in accordance with the deletion request. The switch module is configured to determine whether to operate each of the user consent acquisition module, the correction module, and the deletion module in accordance with the jurisdiction in which the vehicle is located at a time point at which a drive system of the vehicle is turned on.
[0009] Other features and aspects will be apparent from the following detailed description, the drawings, and the claims.

Description

BRIEF DESCRIPTION OF THE DRAWINGS
[0010] FIG. **1** is a diagram illustrating an information management device according to an embodiment mounted on a vehicle.
[0011] FIG. **2** is a diagram illustrating an example of a screen display in the user interface.
[0012] FIG. **3** is a flowchart showing a process executed by the information management device shown in FIG. **1**.
[0013] FIG. **4** is a flowchart showing the module operation determination process shown in FIG. **3**.
[0014] FIG. **5** is a flow chart illustrating a process for complying with the privacy regulations of a jurisdiction that requires repeatedly querying users for privacy settings.
[0015] FIG. **6** is a flowchart illustrating a process for obtaining privacy settings for jurisdictions adjacent to the jurisdiction in which the vehicle is currently located.
[0016] Throughout the drawings and the detailed description, the same reference numerals refer to the same elements. The drawings may not be to scale, and the relative size, proportions, and depiction of elements in the drawings may be exaggerated for clarity, illustration, and convenience.
DETAILED DESCRIPTION
[0017] This description provides a comprehensive understanding of the methods, apparatuses, and/or systems described. Modifications and equivalents of the methods, apparatuses, and/or systems described are apparent to one of ordinary skill in the art. Sequences of operations are exemplary, and may be changed as apparent to one of ordinary skill in the art, with the exception of operations necessarily occurring in a certain order. Descriptions of functions and constructions that are well known to one of ordinary skill in the art may be omitted.
[0018] Exemplary embodiments may have different forms, and are not limited to the examples described. However, the examples described are thorough and complete, and convey the full scope of the disclosure to one of ordinary skill in the art.
[0019] In this specification, “at least one of A and B” should be understood to mean “only A, only B, or both A and B.”
[0020] An information management device in accordance with an embodiment will now be described with reference to the drawings.
Configuration of Information Management Device **100**
[0021] A configuration of an information management device **10** mounted on a vehicle **100** will be described with reference to FIG. **1**. The information management device **10** includes data processing hardware **20**, a storage **30**, and a user interface **40**. Each of the storage **30** and the user interface **40** is configured to communicate with the data processing hardware **20**.
[0022] The vehicle **100** includes an ignition switch **31**. The data processing hardware **20** includes a drive system module **28**. When the user presses the ignition switch **31**, the drive system module **28** turns on the drive system **50** of the vehicle **100**. Accordingly, the switch module **24**, the present jurisdiction determination module **25**, the storage module **26**, and the control module **27** are turned

on. Details of these modules included in the data processing hardware **20** will be described later.
[0023] A global positioning system (GPS) sensor **32** is provided in the vehicle **100**. The present jurisdiction determination module **25** determines the jurisdiction in which the vehicle **100** is located based on the location information of the vehicle **100** acquired via the GPS sensor **32**. The present jurisdiction determination module **25** provides information indicating the jurisdiction in which the vehicle **100** is located to the switch module **24**. The jurisdiction is, for example, a country, a state, or a province. A plurality of countries may constitute one jurisdiction.
[0024] The switch module **24** determines whether to operate the privacy protection module group in accordance with the jurisdiction in which the vehicle **100** is located when the drive system **50** of the vehicle **100** is turned on. The privacy protection module group includes a user consent acquisition module **21**, a correction module **22**, and a deletion module **23**. The privacy protection module group will be described later. The process of determining whether to operate the privacy protection module group is the module operation determination process shown in step S**314** of FIG. **3** and FIG. **4**. As will be described later with reference to step S**310** in FIG. **3**, the switch module **24** also executes the module operation determination process immediately after switching from the restriction mode to the normal mode. As will be described later with reference to step S**316** in FIG. **3**, the restriction mode is a mode that is set when the position of the vehicle **100** cannot be acquired. The normal mode is a mode set when the position of the vehicle **100** can be acquired, as will be described later with reference to step S**302** in FIG. **3**. As will be described later with reference to step S**312** in FIG. **3**, the switch module **24** also executes the module operation determination process when the jurisdiction in which the vehicle **100** is currently located is different from the jurisdiction in which the vehicle **100** was previously determined to be located.
[0025] A data communication module (DCM) **33** is provided in the vehicle **100**. The DCM **33** can communicate with a device outside the vehicle **100**. As described above, the switch module **24** executes the module operation determination process in accordance with the jurisdiction in which the vehicle **100** is located at the time when the drive system **50** of the vehicle **100** is turned on. The module operation determination process executed by the switch module **24** can be changed via the DCM **33**. For example, for a certain jurisdiction, a mode in which only the user consent acquisition module **21** is operated can be changed to a mode in which all of the privacy protection module group is operated. The update tool **34** may be provided in the vehicle **100**. The module operation determination process can be changed by connecting the update tool **34** to the vehicle **100** by wire.
[0026] A user interface **40** is provided in the vehicle **100**. The user interface **40** is, for example, a touch display that receives an input from a user.
[0027] The privacy protection modules included in the data processing hardware **20** will be described in detail below.
[0028] The user consent acquisition module **21** sets on the user interface **40** a display for accepting privacy settings from the user. The privacy setting indicates whether one or more privacy information items are permitted to be stored in the storage **30**. The user consent acquisition module **21** receives the privacy setting from the user interface **40**. The user consent acquisition module **21** stores the privacy setting in the storage **30** in association with the jurisdiction in which the vehicle **100** is located. The privacy settings are stored in the storage **30** via the storage module **26**.
[0029] The correction module **22** sets on the user interface **40** a display for receiving a correction request. The correction request is a request for correcting one privacy information item stored in the storage **30** among one or more privacy information items. The correction module **22** receives a correction request from the user interface **40**. The correction module **22** corrects the stored one privacy information item according to the correction request. The stored one privacy information item is corrected via the storage module **26**.
[0030] The deletion module **23** sets on the user interface **40** a display for receiving a deletion request. The deletion request is a request to delete one privacy information item stored in the storage **30** among one or more privacy information items. The deletion module **23** receives a

deletion request from the user interface **40**. The deletion module **23** deletes the stored one privacy information item according to the deletion request. The deletion of one stored privacy information item is performed via the storage module **26**.

[0031] As described above, the data processing hardware **20** includes the control module **27**. The control module **27** requests the storage module **26** to store the privacy information item in the storage **30** according to the privacy setting.

Example of Screen Display **200** in User Interface **40**

[0032] An example of a screen display **200** in the user interface **40** will be described with reference to FIG. **2**. The screen display **200** in the user interface **40** includes four privacy information items. These four privacy information items are surrounded by a dash-dot line **202** in FIG. **2**. The four privacy information items are the name, the credit card number, the position information of the vehicle **100**, and the speed of the vehicle **100**. The one or more privacy information items displayed on the user interface **40** may vary from jurisdiction to jurisdiction.

[0033] The screen display **200** in the user interface **40** indicates the presence or absence of consent to each of the four privacy information items. The display of the presence or absence of agreement is surrounded by a one dot chain line **204** in FIG. **2**. In the example shown in FIG. **2**, the user agrees to store the name, the credit card number, and the speed of the vehicle **100** in the storage **30**. The user does not agree to store the position information of the vehicle **100** in the storage **30**. In the example illustrated in FIG. **2**, the presence or absence of consent is indicated for each of the four privacy information items. Alternatively, the presence or absence of consent may be collectively indicated for all the privacy information items.

[0034] In the example shown in FIG. **2**, the user consent acquisition module **21** is operating. In some jurisdictions, the user consent acquisition module **21** may not be running. In other words, whether to operate the user consent acquisition module **21** is determined for each jurisdiction. When the user consent acquisition module **21** is operated, which one or more privacy information items are to be inquired of the user about collection permission is determined for each jurisdiction.

[0035] In the example illustrated in FIG. **2**, the deletion module **23** is not operating. One or more privacy information items may be undeletable or may be automatically deleted. For example, when the vehicle **100** moves from the first jurisdiction to the second jurisdiction, one or more privacy information items associated with the first jurisdiction may be automatically deleted. Unlike the example shown in FIG. **2**, when the deletion module **23** is operating, one to four deletion buttons may be displayed in the area surrounded by the alternate long and short dash line **206** in Fig. That is, whether to operate the deletion module **23** is determined for each jurisdiction. When the deletion module **23** is operated, it is determined which of one or more privacy information items can be deleted by the user.

[0036] In the example shown in FIG. **2**, the correction module **22** is in operation. In the example shown in FIG. **2**, the name and the credit card number can be corrected. On the other hand, the position information of the vehicle **100** and the speed of the vehicle **100** cannot be corrected. In an area surrounded by a one dot chain line **208** in FIG. **2**, a correction button for correcting the name and a correction button for correcting the credit card number are displayed. In the example shown in FIG. **2**, only the privacy information item manually input by the user can be corrected, whereas the privacy information item automatically input cannot be corrected. In some jurisdictions, all privacy information items may be correctable. That is, depending on the jurisdiction, correction is possible regardless of whether the user has made an input. In some jurisdictions, the correction module **22** may not be activated. In this way, whether to operate the correction module **22** is determined for each jurisdiction. When the correction module **22** is operated, it is determined which of one or more privacy information items can be corrected by the user.

Outline of Processing Executed by Information Management Device **10**

[0037] An overview of a process executed by the information management device **10** will be described with reference to FIG. **3**.

[0038] The information management device **10** repeatedly executes the processing shown in FIG. **3** at a predetermined cycle at all times during the operation of the drive system **50**. The information management device **10** attempts to acquire the position of the vehicle **100** in step S**300**. Next, the information management device **10** proceeds to step S**302**. In step S**302**, the information management device **10** determines whether the position of the vehicle **100** have been acquired. If a negative determination is made in step S**302** (S**302**: NO), the information management device **10** proceeds to step S**316**. In step S**316**, the information management device **10** sets the restriction mode. That is, when the position of the vehicle **100** cannot be acquired, the switch module **24** transitions to the restriction mode. The restriction mode is a mode in which the operation of one or more of the user consent acquisition module **21**, the correction module **22**, and the deletion module **23** is stopped regardless of jurisdiction. For example, in the restriction mode, the information management device **10** according to the present embodiment stops the operation of all of the user consent acquisition module **21**, the correction module **22**, and the deletion module **23** regardless of the jurisdiction.

[0039] If a positive determination is made in step S**302** (S**302**: YES), the information management device **10** proceeds to step S**304**. In step S**304**, the information management device **10** sets the normal mode. The normal mode is a mode in which the restriction mode is not imposed. Next, the information management device **10** proceeds to step S**306**.

[0040] In step S**306**, the information management device **10** determines the jurisdiction in which the vehicle **100** is currently located based on the position of the vehicle **100**. Next, the information management device **10** proceeds to step S**308**. In step S**308**, the information management device **10** determines whether it is immediately after the ignition switch **31** is turned on. If a positive determination is made in step S**308** (S**308**: YES), the information management device **10** proceeds to step S**314**. If a negative determination is made in step S**308** (S**308**: NO), the information management device **10** proceeds to step S**310**. In step S**310**, the information management device **10** determines whether the switch module **24** has just switched from the restriction mode to the normal mode. If a positive determination is made in step S**310** (S**310**: YES), the information management device **10** proceeds to step S**314**. If a negative determination is made in step S**310** (S**310**: NO), the information management device **10** proceeds to step S**312**. In step S**312**, the information management device **10** determines whether the jurisdiction in which the vehicle **100** is currently located is different from the jurisdiction in which the vehicle **100** was previously determined to be located. If a positive determination is made in step S**312** (S**312**: YES), the information management device **10** proceeds to step S**314**.

[0041] In step S**314**, the information management device **10** executes a module operation determination process to be described later with reference to FIG. **4**.

[0042] When a negative determination is made in step S**312** (S**312**: NO), the information management device **10** ends the process illustrated in FIG. **3**. The information management device **10** also ends the process illustrated in FIG. **3** when step S**314** or step S**316** is completed.

Module Operation Determination Process

[0043] The module operation determination process in step S**314** of FIG. **3** will be described with reference to FIG. **4**. As shown in step S**306** of FIG. **3**, the information management device **10** grasps the jurisdiction where the vehicle **100** is currently located. In step S**400**, the information management device **10** determines whether the module operation information related to the jurisdiction where the vehicle **100** is currently located has been stored in the storage **30**. The module operation information is information indicating whether to operate the privacy protection module group. If a negative determination is made in step S**400** (S**400**: NO), the information management device **10** proceeds to step S**424**. In step S**424**, the information management device **10** attempts to acquire the module operation information related to the jurisdiction where the vehicle **100** is currently located. For example, the information management device **10** requests the module operation information from a data center installed in a jurisdiction where the vehicle **100** is

currently located. Next, the information management device **10** proceeds to step S**426**. In step S**426**, the information management device **10** determines whether the module operation information related to the jurisdiction in which the vehicle **100** is currently located has been acquired. If a positive determination is made in step S**426** (S**426**: YES), the information management device **10** proceeds to step S**402**. If a negative determination is made in step S**426** (S**426**: NO), the information management device **10** proceeds to step S**428**. In step S**428**, the information management device **10** disables all of the user consent acquisition module **21**, the correction module **22**, and the deletion module **23**.

[0044] If a positive determination is made in step S**400** (S**400**: YES), the information management device **10** proceeds to step S**402**. The module operation information related to the jurisdiction in which the vehicle **100** is currently located indicates whether to operate the user consent acquisition module **21** in the jurisdiction in which the vehicle **100** is currently located. In step S**402**, the information management device **10** determines whether to operate the user consent acquisition module **21**. If a positive determination is made in step S**402** (S**402**: YES), the information management device **10** proceeds to step S**404**. In step S**404**, the information management device **10** operates the user consent acquisition module **21**. Next, the information management device **10** proceeds to step S**406**. In step S**406**, the information management device **10** determines whether the privacy setting related to the jurisdiction in which the vehicle **100** is currently located has been stored in the storage **30**. If a positive determination is made in step S**406** (S**406**: YES), the information management device **10** proceeds to step S**412**. If a negative determination is made in step S**406** (S**406**: NO), the information management device **10** proceeds to step S**408**. In step S**408**, the information management device **10** acquires the privacy setting by making an inquiry to the user.

[0045] If a negative determination is made in step S**402** (S**402**: NO), the information management device **10** proceeds to step S**410**. In step S**410**, the information management device **10** prohibits the operation of the user consent acquisition module **21**. The information management device **10** also proceeds to step S**408** when step S**410** or step S**412** is completed.

[0046] The module operation information related to the jurisdiction in which the vehicle **100** is currently located indicates whether to operate the correction module **22** in the jurisdiction in which the vehicle **100** is currently located. In step S**412**, the information management device **10** determines whether to operate the correction module **22**. If a positive determination is made in step S**412** (S**412**: YES), the information management device **10** proceeds to step S**414**. In step S**414**, the information management device **10** operates the correction module **22**.

[0047] If a negative determination is made in step S**412** (S**412**: NO), the information management device **10** proceeds to step S**416**. In step S**416**, the information management device **10** prohibits the operation of the correction module **22**. When the correction module **22** is in operation, the information management device **10** prohibits the operation and stops the operation of the correction module **22**.

[0048] When step S**414** or step S**416** is completed, the information management device **10** proceeds to step S**418**.

[0049] The module operation information related to the jurisdiction in which the vehicle **100** is currently located indicates whether to operate the deletion module **23** in the jurisdiction in which the vehicle **100** is currently located. In step S**418**, the information management device **10** determines whether to operate the deletion module **23**. If a positive determination is made in step S**418** (S**418**: YES), the information management device **10** proceeds to step S**420**. In step S**420**, the information management device **10** operates the correction module **22**.

[0050] If a negative determination is made in step S**418** (S**418**: NO), the information management device **10** proceeds to step S**422**. In step S**422**, the information management device **10** prohibits the operation of the deletion module **23**. When the deletion module **23** is in operation, the information management device **10** prohibits the operation and stops the operation of the deletion module **23**.

[0051] When step S**420**, step S**422**, or step S**428** is completed, the information management device **10** ends the flow of FIG. **4**.

Process for Repeatedly Inquiring of User About Privacy Settings

[0052] Referring to FIG. **5**, a process for complying with a privacy regulation in a jurisdiction that requires repeatedly querying a user for privacy settings will be described. The process shown in FIG. **5** is repeatedly executed when the process shown in FIG. **4** is not executed and the normal mode is set.

[0053] In step S**500**, the information management device **10** determines whether it is necessary to periodically inquire of the user about the privacy setting in the jurisdiction where the vehicle **100** is currently located. That is, the information management device **10** determines whether the laws and regulations in the jurisdiction in which the vehicle **100** is currently located prescribe that the privacy setting be periodically confirmed by the user. For example, the module operation information includes information indicating whether it is necessary to periodically inquire of the user about the privacy setting.

[0054] If a positive determination is made in step S**500** (S**500**: YES), the information management device **10** proceeds to step S**502**. In step S**502**, the information management device **10** determines whether a predetermined period has elapsed from the previous query. If a positive determination is made in step S**502** (S**502**: YES), the information management device **10** proceeds to step S**504**.

[0055] In step S**504**, the information management device **10** acquires the privacy setting by inquiring of the user.

[0056] When completing the step S**504**, the information management device **10** ends the flow of FIG. **5**. When a negative determination is made in step S**500** (S**500**: NO), the information management device **10** also ends the flow of FIG. **5**. When a negative determination is made in step S**502** (S**502**: NO), the information management device **10** also ends the flow of FIG. **5**.

[0057] Privacy Setting for Jurisdictions Adjacent to Jurisdiction Where Vehicle **100** Is Currently Located

[0058] With reference to FIG. **6**, a process for acquiring the privacy setting related to the jurisdiction adjacent to the jurisdiction where the vehicle **100** is currently located will be described. The information management device **10** repeatedly executes the process of FIG. **6** when the normal mode is set.

[0059] In step S**600**, the information management device **10** determines whether the vehicle **100** is within a predetermined range from the boundary of a jurisdiction adjacent to the jurisdiction in which the vehicle **100** is currently located. When a negative determination is made in step S**600** (S**600**: NO), the information management device **10** repeats step S**600**. If a positive determination is made in step S**600** (S**600**: YES), the information management device **10** proceeds to step S**602**.

[0060] In step S**602**, the information management device **10** determines whether the module operation information of the jurisdiction adjacent to the jurisdiction where the vehicle **100** is currently located has been stored in the storage **30**. If a positive determination is made in step S**602** (S**602**: YES), the information management device **10** proceeds to step S**608**. If a negative determination is made in step S**602** (S**602**: NO), the information management device **10** proceeds to step S**604**. In step S**604**, the information management device **10** attempts to acquire module operation information of a jurisdiction adjacent to the jurisdiction in which the vehicle **100** is currently located. Next, the information management device **10** proceeds to step S**606**. In step S**606**, the information management device **10** determines whether the module operation information of the jurisdiction adjacent to the jurisdiction where the vehicle **100** is currently located can be acquired. If a positive determination is made in step S**606** (S**606**: YES), the information management device **10** proceeds to step S**608**. When a negative determination is made in step S**606** (S**606**: NO), the information management device **10** ends the flow of FIG. **6**.

[0061] The module operation information of the jurisdiction adjacent to the jurisdiction where the vehicle **100** is currently located includes information indicating whether the user consent

acquisition module **21** is operated in the adjacent jurisdiction. In step S**608**, the information management device **10** determines whether to operate the user consent acquisition module **21** in a jurisdiction adjacent to the jurisdiction where the vehicle **100** is currently located. When a negative determination is made in step S**608** (S**608**: NO), the information management device **10** ends the flow of FIG. **6**. If a positive determination is made in step S**608** (S**608**: YES), the information management device **10** proceeds to step S**610**. In step S**610**, the information management device **10** determines whether the privacy setting related to the jurisdiction adjacent to the jurisdiction in which the vehicle **100** is currently located has been stored in the storage **30**. When a positive determination is made in step S**610** (S**610**: YES), the information management device **10** ends the flow of FIG. **6**. If a negative determination is made in step S**610** (S**610**: NO), the information management device **10** proceeds to step S**612**. In step S**612**, the information management device **10** acquires the privacy setting related to the jurisdiction adjacent to the jurisdiction in which the vehicle **100** is currently located by inquiring of the user. When completing the step S**612**, the information management device **10** ends the flow of FIG. **6**.

Operation of the Present Embodiment

[0062] According to step S**306** in FIG. **3**, the information management device **10** repeatedly determines the jurisdiction in which the vehicle **100** is currently located while the drive system **50** is on. The module operation information of the jurisdiction in which the vehicle **100** is currently located is information indicating whether to operate the privacy protection module group. The privacy protection module group includes a user consent acquisition module **21**, a correction module **22**, and a deletion module **23**. When an affirmative determination is made in step S**308**, step S**310**, or step S**312**, the module operation determination process shown in step S**314** and FIG. **4** is executed. In particular, according to steps S**308** and S**314**, this process is performed in accordance with the jurisdiction in which the vehicle **100** is located at the time when the drive system **50** of the vehicle **100** is turned on. In the module operation determination process, as shown in steps S**402** to S**422**, it is determined whether the privacy protection module group is operated.

[0063] According to step S**310** and step S**314** in FIG. **3**, the following can be said. When the position of the vehicle **100** can be acquired, the switch module **24** performs the following process. That is, the switch module **24** determines whether to operate each of the user consent acquisition module **21**, the correction module **22**, and the deletion module **23** in accordance with the jurisdiction in which the vehicle **100** is located.

[0064] According to step S**312** and step S**314** in FIG. **3**, the following can be said. The switch module **24** may cause the vehicle **100** to move from the first jurisdiction to the second jurisdiction during operation of the drive system **50** of the vehicle **100**. In this case, the switch module **24** determines whether to operate each of the user consent acquisition module **21**, the correction module **22**, and the deletion module **23** in accordance with the second jurisdiction.

[0065] According to steps S**402** to S**406**, the following can be said. When the vehicle **100** is located in the jurisdiction where the user consent acquisition module **21** is operated, the information management device **10** operates the user consent acquisition module **21**. When the privacy setting associated with the jurisdiction is stored in the storage **30**, the user consent acquisition module **21** does not inquire of the user about the privacy setting. That is, the user consent acquisition module **21** does not sets on the user interface **40** the display for accepting the privacy setting from the user.

[0066] According to FIG. **5**, the following can be said. The laws and regulations in the jurisdiction in which the vehicle **100** is currently located may stipulate that the user be periodically asked whether to allow the privacy information item to be stored in the storage **30**. In such a case, even when the privacy setting associated with the jurisdiction is stored in the storage **30**, the user consent acquisition module **21** periodically inquires of the user about the privacy setting. That is, the user consent acquisition module **21** sets on the user interface **40** a display for receiving the privacy setting from the user.

Advantages of the Present Embodiment

[0067] (1) The information management device **10** for installation in the vehicle **100** includes the data processing hardware **20**. The information management device **10** includes the storage **30** configured to communicate with the data processing hardware **20**. The information management device **10** includes the user interface **40** configured to communicate with the data processing hardware **20**. The data processing hardware **20** includes the user consent acquisition module **21**. The user consent acquisition module **21** sets on the user interface **40** a display for accepting a privacy setting that indicates whether to permit storage of one or more privacy information items in the storage **30** from the user. The user consent acquisition module **21** receives the privacy setting from the user interface **40**. The user consent acquisition module **21** stores the privacy setting in the storage **30** in association with the jurisdiction in which the vehicle **100** is located. The data processing hardware **20** includes the correction module **22**. The correction module **22** sets on the user interface **40** a display for accepting a correction request to correct a privacy information item stored in the storage **30** among the one or more privacy information items. The correction module **22** receives the correction request from the user interface **40**. The correction module **22** corrects the stored privacy information item in accordance with the correction request. The data processing hardware **20** includes the deletion module **23**. The deletion module **23** sets on the user interface **40** a display for accepting a deletion request to delete of a privacy information item stored in the storage **30** among the one or more privacy information items. The deletion module **23** receives the deletion request from the user interface **40**. The deletion module **23** deletes the stored privacy information item in accordance with the deletion request. The data processing hardware **20** includes the switch module **24**. The switch module **24** determines whether to operate each of the user consent acquisition module **21**, the correction module **22**, and the deletion module **23**. This determination is performed in accordance with the jurisdiction in which the vehicle **100** is located at a time point at which the drive system **50** of the vehicle **100** is turned on.

[0068] With the above configuration, the switch module **24** determines whether to operate each of the user consent acquisition module **21**, the correction module **22**, and the deletion module **23** in accordance with the jurisdiction. This operates the necessary modules in accordance with the privacy regulation in different jurisdictions. Therefore, the above configuration adequately protects the privacy information in accordance with the privacy regulation in different jurisdictions.

[0069] (2) The vehicle **100** may be located in a first jurisdiction in which the user consent acquisition module **21** is operated. Even in such a case, when the privacy setting associated with the first jurisdiction is stored in the storage **30**, the inquiry about the privacy setting will not be conducted. Specifically, the user consent acquisition module **21** does not set on the user interface **40** the display for accepting the privacy setting from the user.

[0070] With the above configuration, when the privacy setting associated with the first jurisdiction is stored, the user consent acquisition module **21** does not inquire of the user about the privacy setting. Thus, the user will not be bothered by the inquiry about the privacy setting.

[0071] (3) The regulation in a first jurisdiction may stipulate that the user be periodically checked whether the user permits storage of the privacy information items in the storage **30**. In such a case, even when the privacy setting associated with the first jurisdiction is stored in the storage **30**, the inquiry about the privacy setting will be conducted. Specifically, the user consent acquisition module **21** periodically sets on the user interface **40** the display for receiving the privacy setting from the user.

[0072] The above configuration adequately protects the privacy information in accordance with the privacy regulation of a jurisdiction that stipulates that the user be repeatedly inquired of about the privacy setting.

[0073] (4) The position of the vehicle **100** may not be obtained. In such a case, the switch module **24** shifts to the restriction mode that stops the operation of one or more of the user consent acquisition module **21**, the correction module **22**, and the deletion module **23**, regardless of the jurisdiction. When the position of the vehicle **100** becomes obtainable, the switch module **24** shifts

to the normal mode. When the switch module **24** shifts to the normal mode, the switch module **24** performs the following determination. Specifically, the switch module **24** determines whether to operate each of the user consent acquisition module **21**, the correction module **22**, and the deletion module **23** in accordance with the jurisdiction in which the vehicle **100** is located.

[0074] In a situation in which the position of the vehicle **100** cannot be obtained, the operation of one or more of the user consent acquisition module **21**, the correction module **22**, and the deletion module **23** is stopped. When the position of the vehicle **100** becomes obtainable, the switch module **24** determines whether to operate each module in accordance with the jurisdiction in which the vehicle **100** is located. In this manner, when the position of the vehicle **100** becomes obtainable, the processes related to the privacy information may be executed again in accordance with the privacy regulation of the jurisdiction in which the vehicle **100** is located.

[0075] (5) The vehicle **100** may move from a first jurisdiction to a second jurisdiction during operation of the drive system **50** of the vehicle **100**. In such a case, the switch module **24** determines whether to operate each of the user consent acquisition module **21**, the correction module **22**, and the deletion module **23** in accordance with the second jurisdiction.

[0076] During operation of the drive system **50** of the vehicle **100**, the vehicle **100** may move from a first jurisdiction to a second jurisdiction in which the privacy regulation differs from that of the first jurisdiction. The above configuration adequately protects the privacy information in accordance with the privacy regulation of the second jurisdiction.

Modified Examples

[0077] The above embodiment may be modified as described below. The present embodiment and the following modifications can be combined as long as the combined modifications remain technically consistent with each other.

[0078] In the above embodiment, the privacy settings are stored in the storage **30** via the storage module **26**. The stored one privacy information item is corrected via the storage module **26**. The deletion of one stored privacy information item is performed via the storage module **26**. However, the storage, correction, and deletion may be performed without using the storage module **26**.

[0079] At least one of step S**310** and step S**312** in FIG. **3** may be omitted.

[0080] In the above-described embodiment, the restriction mode is a mode in which the operation of one or more of the user consent acquisition module **21**, the correction module **22**, and the deletion module **23** is stopped. However, such a configuration is merely an example. The restriction mode may be a mode in which it is determined whether to operate the privacy protection module group based on the module operation information of the jurisdiction in which the vehicle **100** is located immediately before the restriction mode is entered.

[0081] In the above-described embodiment, the information management device **10** prohibits all of the user consent acquisition module **21**, the correction module **22**, and the deletion module **23** from operating in step S**428**. However, such a configuration is merely an example. For example, the information management device **10** may prohibit the operation of one or more of the user consent acquisition module **21**, the correction module **22**, and the deletion module **23**.

[0082] In the above embodiment, in step S**400**, the information management device **10** determines whether the module operation information related to the jurisdiction in which the vehicle **100** is currently located has been stored. For example, a mode is possible in which the module operation information related to all jurisdictions is stored in the storage **30** in advance. In such a case, steps S**400**, S**424**, S**426**, and S**428** may be omitted.

[0083] The processing of FIG. **5** can be omitted.

[0084] The process of FIG. **6** can be omitted.

[0085] Various changes in form and details may be made to the examples above without departing from the spirit and scope of the claims and their equivalents. The examples are for the sake of description only, and not for purposes of limitation. Descriptions of features in each example are to be considered as being applicable to similar features or aspects in other examples. Suitable results

may be achieved if sequences are performed in a different order, and/or if components in a described system, architecture, device, or circuit are combined differently, and/or replaced or supplemented by other components or their equivalents. The scope of the disclosure is not defined by the detailed description, but by the claims and their equivalents. All variations within the scope of the claims and their equivalents are included in the disclosure.

Claims

1. An information management device for installation in a vehicle, the information management device comprising: data processing hardware; storage configured to communicate with the data processing hardware; and a user interface configured to communicate with the data processing hardware, wherein the data processing hardware includes: a user consent acquisition module configured to set on the user interface a display for accepting a privacy setting that indicates whether to permit storage of one or more privacy information items in the storage from a user, receive the privacy setting from the user interface, and store the privacy setting in the storage in association with a jurisdiction in which the vehicle is located; a correction module configured to set on the user interface a display for accepting a correction request to correct a privacy information item stored in the storage among the one or more privacy information items, receive the correction request from the user interface, and correct the stored privacy information item in accordance with the correction request; a deletion module configured to set on the user interface a display for accepting a deletion request to delete a privacy information item stored in the storage among the one or more privacy information items, receive the deletion request from the user interface, and delete the stored privacy information item in accordance with the deletion request; and a switch module configured to determine whether to operate each of the user consent acquisition module, the correction module, and the deletion module in accordance with the jurisdiction in which the vehicle is located at a time point at which a drive system of the vehicle is turned on.
2. The information management device according to claim 1, wherein, even when the vehicle is located in a first jurisdiction in which the user consent acquisition module is operated, if the privacy setting associated with the first jurisdiction is stored in the storage, the user consent acquisition module does not set on the user interface the display for accepting the privacy setting from the user.
3. The information management device according to claim 2, wherein, when a regulation in the first jurisdiction stipulates that the user be periodically checked whether the user permits storage of the one or more privacy information items in the storage, the user consent acquisition module periodically sets on the user interface the display for accepting the privacy setting from the user even if the privacy setting associated with the first jurisdiction is stored in the storage.
4. The information management device according to claim 1, wherein: when a position of the vehicle cannot be obtained, the switch module is configured to shift to a restriction mode that stops operation of one or more of the user consent acquisition module, the correction module, and the deletion module, regardless of the jurisdiction; and when the position of the vehicle becomes obtainable, the switch module is configured to determine whether to operate each of the user consent acquisition module, the correction module, and the deletion module in accordance with the jurisdiction in which the vehicle is located.
5. The information management device according to claim 1, wherein, when the vehicle moves from a first jurisdiction to a second jurisdiction during operation of the drive system of the vehicle, the switch module is configured to determine whether to operate each of the user consent acquisition module, the correction module, and the deletion module in accordance with the second jurisdiction.