

SPECIFICATION

TITLE OF THE INVENTION

FACILITY-USER-INTERFACE DISTRIBUTING SYSTEM

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TECHNICAL FIELD

The present invention relates to an information processing technology. Particularly, the present invention relates to a technology that, to a user of a facility apparatus, etc. in real world, provides a user interface (UI), a function, and a service processing for usage thereof. Particularly, the present invention relates to a method of providing a service, etc. that uses a graphical user interface (GUI) in a user's mobile terminal.

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BACKGROUND ART

Conventionally, when interactions with the user or services to the user is performed in various public and private facilities, apparatuses, locations, etc., a method in which a dedicated terminal device (fixedly-located terminal or mobile terminal) for the usage of the facility, etc. by the user is prepared on an operator side of the facility has been employed. For example, the method is to rent the mobile terminal embedded with a dedicated software (program) therein to the user.

Moreover, in recent years, the mobile terminal (mobile-type information processing terminal device) and an input device and an output device (input/output means, UI) in the environment of the mobile terminal have been technically developed. For example, a smartphone, a tablet PC, etc. provided with a touch panel (touch display) in which the GUI can be configured have been widely used.

Moreover, a system that provides a service, etc. by using the UI of the dedicated mobile terminal has been marketed in a situation of the usage of the facility, etc. For example, when the user

receives the service of the facility or operates the apparatus in the facility, the service by using the GUI having interactivity utilizing images, moving images, sounds, etc. is provided. For example, there are an individual guiding system (guide system) in an art museum, etc. and an order system using a touch-panel menu list in a shop such as a bar (Izakaya in Japanese), etc.

As prior art examples related to the system, etc. that provides the service by using the UI of the mobile terminal as described above, Japanese Patent Application Laid-Open Publication No. 2005-316851 (Patent Document 1), Japanese Patent Application Laid-Open Publication No. H11-318680 (Patent Document 2), and others are cited. These conventional technologies can provide the service matching the state of the individual user by using the UI (function) of the mobile terminal.

Patent Document 1 ("Guide System" etc.) describes a guide system with which a visitor of a museum or an art museum can look around different exhibitions and art objects while finding out the relations among different exhibitions and art objects. Patent Document 1 describes that a guide-information generating device outputs the information related to the exhibitions to the mobile terminal of the user.

Patent Document 2 ("Order System") describes an order system with which a customer can easily make an order without directly communicating with a shop staff, and besides, accounting can be automated. Patent Document 2 describes the order system using a touch panel in a restaurant. The document describes that, when an ordering side (customer) inputs order data, the data is transferred to a displaying/checking means or an accounting means of a receiver side (shop).

Moreover, as examples of the prior art technology of distributing the software (program) to the mobile terminal, Japanese Patent Application Laid-Open Publication No. 2005-86426

(Patent Document 3) or others is cited. Patent Document 3 ("Mobile Information Terminal" etc.) describes a mobile information terminal in which an available software can be replaced at a current position and an adjacent position.

5 **PRIOR ART DOCUMENTS**

PATENT DOCUMENTS

Patent Document 1: Japanese Patent Application Laid-Open Publication No. 2005-316851

Patent Document 2: Japanese Patent Application Laid-Open
10 Publication No. H11-318680

Patent Document 3: Japanese Patent Application Laid-Open Publication No. 2005-86426

SUMMARY OF THE INVENTION

15 **PROBLEMS TO BE SOLVED BY THE INVENTION**

As described above, there is the method in which a device such as the dedicated mobile terminals for providing the service or others for using the facilities, the apparatus, etc. is prepared on the facility side. However, such a method has a problem of high cost
20 for introducing/maintaining the dedicated device, etc. for the facility operator side.

Moreover, in a facility having a large number of users, a facility having the short usage time per one user, or others, there is a possibility that the dedicated terminal cannot be introduced.
25 For example, in a case of a facility (vehicle) such as an elevator or an electric train, distribution of the mobile terminal to all users is not realistic in terms of cost performance, maintenance operation of the terminal, etc. For these reasons, the facilities, etc. that can provide the service using the dedicated mobile terminal
30 (its UI) are limited.

In consideration of the above description, a main object of the present invention is to achieve a low-cost system or others that

can provide the service, etc. for using the facility, etc. by using the user's mobile terminal (its UI) in various facilities, etc. Particularly, it is not required to introduce/maintain the dedicated device for the facility operator side, and therefore, 5 maintenance operational cost, etc. can be suppressed, so that a low-cost system can be achieved. In this manner, a situation (target) for which the above described service is available widely increases so as to include a facility, etc. that has not been conventionally able to provide the above-described service due to 10 the cost problem, etc., so that convenience of the user side, etc. is achieved.

MEANS FOR SOLVING THE PROBLEMS

In order to achieve the above-described object, a typical aspect of the present invention is a facility-UI distributing system 15 for providing a service to a user of a facility for using the facility or apparatus in the facility, and has a feature having the following configurations.

The present system has a distributing device that distributes a program for forming the UI for providing the service for using 20 the facility (in other words, a program for adding a function) (service software) to a mobile terminal of the user. The distributing device has: a communicating unit that communicates with the mobile terminal of the user and with the facility, the apparatus in the facility, or a facility operator; a managing unit 25 that stores and manages a predetermined area associated with the facility or the apparatus in the facility and a program associated with the area; an area determining unit that determines whether the mobile terminal of the user exists in the area or not; a distributing unit that distributes the program to the mobile terminal of the user 30 which exists in the area; and a service providing unit that receives information issued in accordance with an operation of the user for the UI formed by the program executed by the mobile terminal of the

user, and notifies the operator of the facility or the apparatus in the facility associated with the program of the information.

Moreover, for example, the service providing unit receives information of a service request issued in accordance with the operation of the user for the UI formed by the program executed by the mobile terminal of the user, notifies the operator of the facility or the apparatus in the facility associated with the program of the information of the service request or predetermined information associated with the service request, transmits information of a response for the service request to a program of the mobile terminal, and causes the UI to output the information.

Moreover, for example, the distributing device has a disabling unit that disables the function added by the UI formed by the program distributed to the mobile terminal, and the disabling unit performs a processing of disabling the program of the mobile terminal if the mobile terminal of the user does not exist in the area.

EFFECTS OF THE INVENTION

According to the typical aspect of the present invention, in various facilities, etc., a low-cost system which can provide a service for using the facilities, etc., by using a mobile terminal (its UI) of a user can be achieved. Particularly, it is not required to introduce/maintain a dedicated device, etc., for the facility operator side, and therefore, maintenance operational cost, etc. can be suppressed, so that the low-cost system can be achieved. This manner increases situations (targets) in which the above-described service is available so as to include the facilities, etc., which have not conventionally been able to provide the service as described above due to cost problems, etc., and therefore, convenience, etc. of the user side can be achieved.

BRIEF DESCRIPTIONS OF THE DRAWINGS

FIG. 1 is a diagram showing an overall outline configuration

of a system (facility-user-interface distributing system for a mobile terminal(s)) of a first embodiment of the present invention;

FIG. 2 is a diagram showing a functional block configuration example of the system of the first embodiment;

5 FIG. 3 is a diagram showing an operation, etc. of the system of the first embodiment;

FIG. 4 is a diagram showing an overall configuration of a system of a second embodiment of the present invention;

10 FIG. 5 is a diagram showing a configuration example of a facility (bus)/area of the system of the second embodiment;

FIG. 6 is a diagram showing a process flow of an area managing device of the second embodiment;

FIG. 7 is a diagram showing a process flow of a SSW distributing device of the second embodiment;

15 FIG. 8 is a diagram showing a process flow of a service providing device of the second embodiment;

FIG. 9 is a diagram showing an example of a GUI formed by a SSW of a mobile terminal of the second embodiment;

20 FIG. 10 is a diagram showing an overall configuration of a system of a third embodiment of the present invention;

FIG. 11 is a diagram showing an example of a GUI formed by a first SSW of a mobile terminal of the third embodiment;

FIG. 12 is a diagram showing an example of a GUI formed by a second SSW of the mobile terminal of the third embodiment;

25 FIG. 13 is a diagram showing an overall configuration of a system of a fourth embodiment of the present invention;

FIG. 14 is a diagram showing an example of a GUI formed by a first SSW of a mobile terminal of the fourth embodiment; and

30 FIG. 15 is a diagram showing an example of a GUI formed by a second SSW of the mobile terminal of the fourth embodiment.

BEST MODE FOR CARRYING OUT THE INVENTION

Hereinafter, embodiments of the present invention will be described in detail based on the accompanying drawings. Note that the same components are denoted by the same reference symbols throughout all the drawings for describing the embodiments, and the repetitive description thereof will be omitted.

<Outline and others>

As targeting a facility 300, etc. in the real world, a system (a facility-UI distributing system for a mobile terminal(s)) of the present embodiment (FIG. 1, etc.) provides a UI (GUI) and a service, etc. for using the facility 300 by using a mobile terminal 200 of a user U provided with a GUI function (for example, touch display). The user U enters/exits the facility 300, and receives the service, etc. of the facility 300. An area (facility available area) is set in accordance with the facility 300 (a site, etc.). The present system (facility-UI distributing device 100) determines (detects) the mobile terminal 200 of the user (U) who exists in the area (facility available area) associated with the facility 300. Then, to the mobile terminal 200 in the area, the present system (facility-UI distributing device 100) distributes a service software (abbreviated as SSW), which is a predetermined program, in accordance with the area (facility 300). The SSW is a program for forming a predetermined GUI for using the facility 300 (in other words, for adding a predetermined function(s)) in the mobile terminal 200. In the present system, data (D0) of the SSW in accordance with the service, etc. of the facility 300 is managed.

When the user U enters the area of the facility 300, the SSW is automatically distributed to the mobile terminal 200, and the GUI (facility UI 600) is formed/displayed by execution of the SSW 500 at the mobile terminal 200. Through the facility UI 600, the user U can perform an input operation for a request for receiving the service, etc. of the facility 300, an operation for using the apparatus (facility apparatus 310) in the facility 300, or others.

A predetermined operator (P) of the facility 300 or the facility apparatus 310 is notified of the input operation by the user U using the facility UI 600 through a processing of the SSW 500 of the mobile terminal 200 and a processing of the present system (facility-UI distributing device 100). In this manner, the user U can receive the service, etc. of the facility 300. Moreover, if the user U exits the area of the facility 300, the SSW 500 (facility UI 600) is automatically disabled.

The facility-UI distributing device 100 is placed in, for example, the facility 300. On the facility 300 side, it is not required to introduce the dedicated terminal, etc. and distribute the dedicated terminal to the user U, and therefore, a system, service, etc. can be achieved at low cost. Time and effort for managing the SSW or others are not required for the user U, and therefore, convenience, etc. of usage of the facility 300 can be obtained.

<First Embodiment>

A system (a facility-UI distributing system for a mobile terminal(s)) of a first embodiment of the present invention will be explained by using FIG. 1 to FIG. 3. In the first embodiment, a basic configuration as targeting an arbitrary facility 300 (a predetermined facility based on a contract or others) in the real world will be described. In a second embodiment and the following embodiments, note that configurations in application to a specific facility 300 will be described.

[System Configuration (1)]

FIG. 1 shows a configuration of the system (the facility-UI distributing system for the mobile terminal(s)) of the first embodiment. The present system (the facility-UI distributing system for the mobile terminal(s)) is configured to have a facility-UI distributing device 100, a mobile terminal 200 of a user U, and the facility (facility and area) 300. The present system

(facility-UI distributing device 100) is placed in, for example, the facility 300 by a facility operator P.

The mobile terminal 200 is an information processing terminal device which is generally marketed and has common standards such as a smartphone or a tablet PC owned by the user U.

The facility and area 300 are an arbitrary facility (predetermined facility based on a contract or others) and an area (facility available area) associated with the facility, and include the facility operator (P) and the facility apparatus 310. The facility operator P is a person in accordance with the facility 300, such as a person who is in the facility 300 and provides the service of the facility 300 or a person who is not in the facility 300 but manages the service thereof. The facility apparatus 310 is equipment in accordance with the facility 300, and provides a unique service and performs a mechanical operation.

The facility-UI distributing device 100 is configured to have an area determining unit 1, a SSW distributing unit (function addition unit) 2, a service providing unit (facility notification unit) 3, a communicating unit 4, a managing unit 5, a disabling unit 6, etc. The communicating unit 4 performs a communication processing with the mobile terminal 200 and the facility 300 by using predetermined standards (such as wireless or Web). Communication address information, etc. for the communication is set in the managing unit 5. The managing unit 5 stores/manages the information of the association between the facility and the area, the association between the facility (area) and SSW (function), etc. and SSW data (D0), etc.

The area determining unit 1 determines either of the existence (entering) of the mobile terminal 200 of the user U into the facility 300 (area) or the absence (exiting) thereof. The area determining unit 1 detects, for example, an ID (mobile-terminal ID) of the mobile terminal 200 or a position thereof. When the area determining unit

1 determines/detects that the mobile terminal 200 of the user U exists in the predetermined facility 300 (area), the SSW distributing unit (function addition unit) 2 distributes SSW (D0), which is associated with the facility (area) 300, to the mobile
5 terminal 200. In the mobile terminal 200 to which the SSW has been distributed, the SSW 500 is executed, and a predetermined facility UI (function) 600 is formed (added). Note that a confirmation/approval operation by the user U may mediate before execution of the SSW 500. By the execution of the SSW 500,
10 corresponding GUI information is displayed on, for example, a touch-display screen of the mobile terminal 200. The facility UI 600 enables the user U to perform a predetermined operation corresponding to a predetermined function (for example, a touch-input operation of a button for requesting a predetermined
15 facility service). When the user U performs the predetermined operation in the facility UI 600, the processing is performed by the SSW 500 in accordance with the operation, communication is made from the SSW 500 to the service providing unit 3, and information of a service request or others in accordance with the above-described
20 operation/processing is transmitted.

The service providing unit 3 accepts and receives the information of the above-described service request or others from the SSW 500 of the mobile terminal 200. The service providing unit 3 notifies the corresponding facility 300 (the facility operator
25 P and/or the facility apparatus 310) of at least either one of the information of the received service request or others and the information of making a request from the present system (service providing unit 3) to the facility 300, which has been generated in accordance with the information. The above-described notified
30 facility operator P and/or facility apparatus 310 can recognize the service request or others from the user U (mobile terminal 200), and therefore, can provide the requested service or others to the

user U.

The service providing unit 3, which has received the above-described service request or others, transmits a response for the above-described service request or others to the SSW 500 of the mobile terminal 200. The response includes, for example, information indicating that the above-described service request has been received and the facility 300 has been notified of the service request. In the SSW 500 of the mobile terminal 200, the above-described response result may be outputted to (displayed on) the facility UI 600. If a response for the above-described notification is issued from the facility 300 side to the present system (service providing unit 3), the response may be transmitted to the SSW 500 of the mobile terminal 200 and output to the facility UI 600.

A destination (the facility operator P, the facility apparatus 310) of the notification in the notification from the above-described service providing unit 3 to the facility 300 can be set in the managing unit 5. One or more specific facility operator(s) P may be notified, one or more specific facility apparatus(es) 310 may be notified, or both of them may be notified at the same time. When the facility operator(s) P is notified, for example, a mobile terminal or others owned by the facility operator P may be notified, or the notification may be information display output or audio output through another device in the facility. When the facility apparatus(es) 310 is notified, communication connection may be directly made to the facility apparatus 310 to transmit the notification information. The facility apparatus 310 may be configured to automatically execute a predetermined processing (a processing in accordance with the service provided in the facility) when the notification information is received. For example, in a case of a request for making an order in a restaurant, a processing of receiving the order is executed.

If the mobile terminal 200 of the user U, to which the function (facility UI 600) has been added by the above-described SSW 500, has exited the facility 300 (area), the area determining unit 1 determines/detects the absence (exiting) of the mobile terminal 200
5 in the area. In that case, in the present system, the function (facility UI 600), which is enabled by the SSW 500 of the mobile terminal 200, is disabled by the disabling unit 6. Conversely, in the present system, the above-described function (facility UI 600) is disabled outside the area by performing control to enable the
10 operation of the SSW 500 in the mobile terminal 200 only inside the predetermined area.

As the disabling means by the above-described disabling unit 6, for example, the SSW 500 temporarily stored in the mobile terminal 200 may be deleted or uninstalled, or the disablement may be achieved
15 by setting the usage authority or usage time limit of the SSW while the SSW data in the mobile terminal 200 remains. A technology for an existing program enabling/disabling may be applied.

Not only the area corresponding to the facility 300 (its spatial area) is set by the managing unit 5, but also a region of
20 circle centering any apparatus (for example, certain facility apparatus 310) or others in the facility 300 and expanding to a predetermined distance in periphery of the center may be set as the area. Similarly also in this case, the area determining unit 1 determines that the mobile terminal 200 of the user U has entered
25 or exited the area (moved closer to or moved away from the facility apparatus 310).

[System Configuration (2)]

FIG. 2 shows a more detailed configuration (functional block configuration) of the system of the first embodiment. The system
30 of the first embodiment of FIG. 2 is configured to have the facility-UI distributing device 100, the mobile terminal 200 of the user U, an RFID 400, and the target facility 300 (P, 310).

The facility-UI distributing device 100 is configured to have an area (facility available area) managing device 10, a SSW distributing device 20, and a service providing device 30. For example, all of the facility-UI distributing device 100 (10, 20, 30) are placed in the facility 300. Alternatively, a mode in which all of or a part of the facility-UI distributing device 100 (10, 20, 30) is placed outside the facility 300 (on a communication network or others) can be employed. Each device is configured of a computer such as a server, and each unit is configured of, for example, a software program processing. The devices and the units may be configured to be appropriately separated from/integrated with each other.

The user U owns the RFID (medium) 400 in addition to the mobile terminal 200. The RFID (medium) 400 may be owned separately from the mobile terminal 200, may be attached/connected to the mobile terminal 200, or may be embedded in the mobile terminal 200 itself. In the RFID 400, information such as a mobile terminal ID of the mobile terminal 200 is stored in a storage unit 401. The mobile terminal ID (terminal ID) is information made of a symbol(s), a number(s), or others by which the mobile terminal 200 of the individual user U can be uniquely specified. The terminal ID may be, for example, a phone number, an e-mail address, another communication address, or others. In the present system, it is assumed that the terminal ID functions as a communication address, and that the communication can be made (the communication connection or others can be established) with the mobile terminal 200 having the terminal ID by specifying the terminal ID.

The mobile terminal 200 has an originally-provided basic function 210 (including OS, GUI function, etc.), the SSW 500 distributed and executed by the present system, and the facility UI 600, which is a UI (function) formed by the SSW 500. The basic function 210 includes a control unit 201, a storage unit 202, a

communicating unit 203, an input/output I/F (interface) unit 204,
an inputting/outputting device 205, etc. The control unit 201
includes a CPU, etc., and the storage unit 202 includes a ROM, RAM,
etc. The communicating unit 203 is an interface unit which can
5 communicate with the side of the facility-UI distributing device
100 side, for example, wirelessly. The input/output I/F unit 204
is an interface unit of the inputting/outputting device 205 and is
a component of the GUI function. The inputting/outputting device
205 includes an input device such as a key(s) and an
10 inputting/outputting device such as a touch display.

The area managing device 10 is configured to have a
communicating unit 11, an ID detection unit 12, an ID-list
transmission unit 13, etc. The communicating unit 11 performs a
processing of communication with the SSW distributing device 20,
15 etc. The ID detection unit 12 performs a processing of detecting
the terminal ID of the mobile terminal 200 (RFID 400) which
enters/exits the area (for a correspondence relation between the
area determining unit 1 of FIG. 1 and an RFID reader 14 of FIG. 3).
The ID-list transmission unit 13 performs a processing of
20 transmitting a list of the terminal ID(s) (list of the terminal ID(s)
which has entered and exited) of the mobile terminal(s) 200 in the
area (facility 300) to the SSW distributing device 20 (or a
processing of notifying the SSW distributing device 20 of the list).

The SSW distributing device 20 is configured to have a
25 communicating unit 21, a terminal communicating unit 22, an SSW
storage unit 23, an ID-list reception unit 24, an SSW distributing
unit 25, etc. The communicating unit 21 performs a processing of
communicating with the area managing device 10, etc. The terminal
communicating unit 22 performs a processing of communicating with
30 the mobile terminal 200. The SSW storage unit 23 previously stores
SSW data (D0), etc. The ID-list reception unit 24 performs a
processing of receiving the list of the terminal ID(s) from the

ID-list transmission unit 13 of the area managing device 20. The SSW distributing unit 25 performs a processing of distributing the SSW data (D0) to the mobile terminal 200 in the area.

The service providing device 30 is configured to have a communicating unit 31, a terminal communicating unit 32, an SSW-information distributing unit 33, a facility notification unit 34, etc. The communicating unit 31 performs a processing of communicating with the SSW distributing device 20, etc. The terminal communicating unit 32 performs a processing of communicating with the mobile terminal 200. The SSW-information distributing unit 33 performs a processing of communicating with the SSW 500, accepting/receiving information such as the service request from the SSW 500, and transmitting the response, etc. to the SSW 500. The facility notification unit 34 performs a processing of notifying the facility 300 of the information as described above. Note that the service providing device 30 (SSW-information distributing unit 33) may be considered as a server program when the SSW 500 is considered as a client program.

The area managing device 10 manages the relation between the facility 300 and the area, detects the terminal ID of the mobile terminal 200 when this mobile terminal 20 enters/exits the area, and notifies the SSW distribution device 20 of the terminal ID. The SSW distribution device 10 receives the list of the mobile terminal ID(s) notified from the area managing device 10, and distributes the SSW to the mobile terminal(s) 200 which is positioned inside the area. When the service providing device 30 receives the service request or others from the SSW 500 (facility UI 600) of the mobile terminal 200, the service providing device 30 notifies the facility 300 (P, 310) of the requirement or others in accordance with the reception, and distributes the information of the response or others to the SSW 500 of the mobile terminal 200. In the notification, information of the terminal ID or others of the mobile terminal 200,

which has transmitted the request, may be notified together.

[System Configuration (3)]

FIG. 3 shows an operation, etc. of the system of the first embodiment. A component shown in FIG. 3 is provided in addition
5 to the configuration of FIG. 2. In the configuration of FIG. 3, the area managing device 10 is provided with the RFID reader 14 in accordance with the above-described ID detection unit 12, and an ID-list storage unit 15 which stores the above-described ID list (D3). A mobile-terminal ID (402) in the nearby RFID 400 can be read
10 by the RFID reader 14. The ID-list storage unit 15 stores the ID list (D3), which is a list of the terminal ID(s) inside the area. The above-described ID detection unit 12 stores the terminal ID(s) in the ID-list storage unit 15, and the above-described ID-list transmission unit 13 transmits the ID list (D3) of the ID-list
15 storage unit 15 to the SSW distribution device 20.

The SSW distribution device 20 stores the SSW data (D1) and a usage key (D2) in the above-described SSW storage unit 23. The SSW distribution device 20 may perform a processing of distributing the SSW usage key (D2) in addition to distribution of the
20 above-described SSW (D1) to the mobile terminal 200 positioned inside the area as needed (for example, at every certain period). The usage key (D2) is key information with a time limit used for controlling the enabling/disabling of the SSW (D1), and therefore, the SSW (D1) cannot be executed without the usage key (D2). The
25 mobile terminal 200 stores the distributed SSW (D1) and usage key (D2) in an SSW temporary storage unit 220.

Hereinafter, the operations are sequentially shown ("A1", etc. represent the operations). (A1) First, the RFID reader 14 of the area managing device 10 detects the RFID 400 of the mobile terminal
30 200 inside the area. Then, (A2) the terminal ID (402) inside the RFID 400 is read, and (A3) the information is stored in the ID list (D3) of the ID-list storage unit 15. (A4) The area managing device

10 transmits the information of the ID list (D3) to the SSW distribution device 20 (notifies the SSW distribution device 20 of the information).

(A5) The SSW distribution device 20 reads the SSW (D1) of the
5 SSW storage unit 23 and the corresponding usage key (D2) as needed
in order to distribute the SSW to the mobile terminal 200 inside
the area corresponding to the terminal ID of the received ID list,
and (A6) distributes the data (for example, D1 and D2) to the mobile
terminal 200 by the SSW distributing unit 25. The mobile terminal
10 200 stores the distributed data (for example, D1 and D2) in the SSW
temporary storage unit 220.

(A7) The mobile terminal 200 (the above-described basic
function 210) reads and executes the SSW (D1) of the SSW temporary
storage unit 220. The usage key (D2) is enabled to be executed if
15 there is the usage key (D2). The facility UI 600 is formed by
execution of the SSW 500. (A8) The user U performs a predetermined
input operation in the facility UI 600 in order to receive the service
of the facility 300 or others. (A9) The SSW 500 performs a processing
in accordance with the input operation, and transmits the
20 information of the service request or others to the SSW-information
distributing unit 33 of the service providing device 30. (A10) The
SSW-information distributing unit 33 receives the information of
the service request or others, and transmits the response indicating
the reception of the service request or others to the SSW 500. (A11)
25 Moreover, the SSW-information distributing unit 33 coordinates with
the facility notification unit 34, and notifies the predetermined
notification destination (P, 310) of the facility 300 of the
information the requirement or others in accordance with the service
request of A9. (A12) Further, the response for A11 from the facility
30 300 side may be transmitted to the service providing device 30 side
for the coordination with the response of A10.

<Second Embodiment>

Next, a system (a facility-UI distributing system for a mobile terminal) of the second embodiment of the present invention will be explained by using FIG. 4 to FIG. 6. The second embodiment is a case of application to a bus and a bus getting-on/off system as the target facility 300.

[System Configuration]

FIG. 4 shows a system configuration of the second embodiment. Basically, this is similar to the configuration (FIG. 2, FIG. 3, etc.) of the first embodiment, and the different part is the processing contents of the SSW (D1, 500A) in accordance with the bus which is a facility 300A and the bus getting-on/off system. A facility UI 600A formed by a SSW 500A becomes a bus UI. In the second embodiment, for example, all of the facility-UI distributing device 100 (10, 20, 30) is placed inside the bus which is the facility 300A. In the SSW storage unit 23 of the SSW distributing device 20, for example, the SSW (D1) and the setting information created by a bus operating company of the facility 300A, a service provider of the present system based on a contract with the bus operating company, or others are stored/managed.

[Facility (Bus)]

FIG. 5 shows the bus which is the facility 300A and the bus getting-on/off system. In the configuration of FIG. 5, the bus which is the facility 300A has: a bus crew (such as a bus driver) corresponding to the facility operator P; a user U who is a bus passenger (and the mobile terminal 200 with the RFID 400); a facility apparatus 310 placed inside the bus; RFID readers 14 (14-1, 14-2) provided so as to correspond to bus entrance and exit (5001, 5002), respectively; and the facility-UI distributing device 100 of FIG. 4 connected to the facility apparatus 310. A facility available area (shown as "R1") is the entire bus interior or an area including the interior.

The RFID readers 14 of the area managing device 10 are arranged

at positions such as the respective entrance and exit (5001, 5002) so as to detect the RFID 400 when the bus passenger has the RFID 400 and the mobile terminal 200 and enters/exits the area (bus).

In this bus getting-on/off system, the bus UI 600A is provided
5 by detecting the getting-on/off of the bus passenger (U) by using the RFID readers 14, and distributing the above-described SSW to the mobile terminal 200 of the passenger who are inside the bus (area R1). FIG. 9 shows a configuration example of the bus UI 600A. A screen of the bus UI 600A shown in FIG. 9 is an interface to inform
10 the bus crew (P) or the facility apparatus 310 of the willingness of the getting off from the bus.

The RFID 400 may be formed as, for example, a card medium with a payment function using electronic money. The bus passenger can make payment of a transportation fee in the bus using the card. The
15 mobile-terminal ID may be configured to be transmitted/received to/from the RFID reader 14 (area managing device 10) or the facility apparatus 310 coordinating therewith by RFID communication (near-field wireless communication) at the same time as the payment processing using the card. The facility apparatus 310 is a device
20 having functions such as a bus-driving-information/transportation-fee display function and a transportation-fee payment acceptance function.

If an input operation (such as touching a bus getting-off (stop) button (902) in FIG. 9) using the facility UI 600A of the
25 mobile terminal 200 is performed by the bus passenger, the SSW 500 transmits a corresponding request (request for the bus getting-off) to the service providing device 30 (33). When the service providing device 30 (34) receives the above-described request, the service providing device 30 (34) informs the crew (P) or the facility
30 apparatus 310 inside the bus of the fact that there is the bus passenger having the willingness of the bus getting off.

Moreover, in the present embodiment, as a service in

accordance with characteristics of the bus getting-on/off system, information such as a bus getting-off state is distributed to a plurality of passengers inside the bus by using the SSW. That is, when the service providing device 30 receives the request (the
5 willingness of the bus getting off) from the SSW 500A of the mobile terminal 200 of a certain passenger, the service providing device 30 notifies the SSW 500A of all of the mobile terminals 200 existing inside the bus of the information indicating the reception/acceptance of the request (that is, indicating that the
10 bus is to be stopped for the getting off at a next bus stop), and displays the corresponding information by using the facility UI 600A.

Moreover, this mechanism requires the above-described usage key (D2) for using the SSW 500 (bus UI 600A) in the mobile terminal
15 200. The mobile terminal 200 not having the valid usage key (D2) cannot form the bus UI 600A or cannot transmit a valid request to the service providing device 30. If the mobile terminal 200 is inside the bus (area), the usage key (D2) is, for example, automatically distributed at a certain interval. However, the
20 usage key (D2) becomes invalid after elapse of certain time. By controlling the enabling/disabling by using the usage key (D2), the passenger who has got off from the bus (the mobile terminal 200 of the user U who has exited the area) can be prevented from making a request to the bus from which the passenger has already got off
25 or others.

[Processing of Area Managing Device]

FIG. 6 shows a processing flow of the area managing device
10 of the second embodiment (S601, etc. show processing steps). In the start (S601) of the processing, the area managing device 10
30 activates the RFID reader 14 first. Then, by using the RFID reader 14, it is detected/determined whether the RFID 400 (the mobile terminal 200 of the bus passenger (U)) that has entered the facility

available area (bus) exists or not (S602). If the RFID 400 that has entered (been got on) the area (bus) exists (S602-Y), the area managing device 10 (RFID reader 14) acquires the mobile terminal ID from the RFID 400 and adds the information to the ID list (D3) (S603).

Moreover, by using the RFID reader 14, it is detected/determined whether the RFID 400 (the mobile terminal 200 of the bus passenger (U)) that has exited the area (bus) exists or not (S604). If the RFID 400 that has exited (been got off from) the area (bus) exists (S604-Y), the area managing device 10 acquires the mobile-terminal ID from the RFID 400 and deletes the information from the ID list (D3) (S605).

Then, the area managing device 10 notifies the SSW distributing device 20 of the terminal ID(s) of the ID list (D3) of the ID-list storage unit 15 (S606). The area managing device 10 ends the processing at this moment in a case of end of the processing, and the area managing device 10 waits in S608 and returns to the processing (S602) of the determination of the RFID in a case of not end of the processing (S607).

[Processing of SSW Distributing Device]

FIG. 7 shows a processing flow of the SSW distributing device 20 of the second embodiment. In start of the processing, the SSW distributing device 20 receives the ID list information (list of the terminal ID(s) inside the area) from the area managing device 10 (S701). If one or more terminal ID(s) are included in the list received in S701 (S702) (S702-Y), the SSW distributing device 20 selects one terminal ID, that has not communicated yet, from the list (S703), and communicates with the mobile terminal 200 corresponding to the terminal ID. If the mobile terminal 200 communicated in S703 does not have the SSW (if the SSW has not been distributed yet) (S704-N), the SSW distributing device 20 (SSW distributing unit 25) distributes the data (D1) of the SSW of the

SSW storage unit 23 to the mobile terminal 200 (S705). (S706) After S705, the SSW distributing device 20 distributes the usage key (D2), with which the SSW (D1) of S705 becomes available for a certain period, to the mobile terminal 200. Moreover, also when the SSW has already
5 been distributed in S704, a corresponding usage key is distributed in S705 (that is, the available state is continued/extended).

If there is the terminal ID that has not communicated yet in the list received in S701 (S707) (S707-Y), the SSW distributing device 20 subsequently returns to the processing (S703) of
10 communicating with the mobile terminal 200. The processing is similarly repeated, and, if communication with the mobile terminals 200 all of the terminal IDs included in the list has been performed (S707-N), the SSW distributing device 20 resets a status indicating whether communication has been performed with the mobile terminals
15 200 of the list or not (S708). After S708 or if the number of the terminal ID(s) is zero in S702, the SSW distributing device 20 determines whether to end the processing or not (S709), and, if the processing is not ended, the SSW distributing device 20 waits in S710 and returns to the initial processing (S701).

20 [Processing of Service Providing Device]

FIG. 8 shows a processing flow of the service providing device 30 of the second embodiment. In start of the processing, the service providing device 30 starts the reception of communication from the SSW 500 of the mobile terminal 200 (S801). If the above-described
25 request (such as the service request) is provided from the SSW 500 (S802-Y), the service providing device 30 notifies the bus crew (P) or the facility apparatus 310 of the requirement or information (such as the willingness of the bus getting off) corresponding to the request of S802 (S803). Then, the service providing device 30
30 notifies the SSW 500 of the mobile terminal 200 of a response indicating the acceptance of the request of S802 (S804). Moreover, if there is the SSW 500 of another mobile terminal 200 inside the

bus as described above, it notifies each SSW of a similar response. The service providing device 30 determines whether to end the processing or not (S805), and, if the processing is not ended, the service providing device 30 waits in S806 and returns to the initial processing (S801).

[UI Example]

FIG. 9 shows a state (screen example) of the facility (bus) UI 600A formed by the SSW 500A of the mobile terminal 200 in the second embodiment. A GUI as shown in the diagram is formed/displayed on a screen (901) of the touch display of the mobile terminal 200. The present screen (GUI) 901 displays a bus getting-off button 902, etc. The bus getting-off button 902 is shown. This bus getting-off button 902 is a button for informing the bus crew or the apparatus (310) of the willingness of the user U (passenger) for the bus getting off. This button is an example taken from a bus getting-off (stop) button, which is a physical interface of an actual bus.

On the mobile terminal 200 of the present example, a pointing device such as a touch display or a mouse is mounted as the input/output device 205. If the bus getting-off button 902 is pressed (touched or clicked) on the present screen 901, the SSW 500A transmits the above-described request to the service providing device 30.

Note that the present invention is not limited to only the provision of the GUI (function) that enables the operation for the bus getting on/off as described above but also can similarly achieve functions for the bus driving guide and the payment of transportation fee or others. Moreover, the present invention is not limited to the bus but also can be similarly applied to other vehicles.

<Third Embodiment>

Next, a system of a third embodiment of the present invention will be explained by using FIG. 10 to FIG. 12.

[System Configuration]

FIG. 10 shows a system configuration of the third embodiment. The third embodiment is a case of application to a floor-movement managing system inside a building (office building) as a target facility 300B. Particularly, this case is a case including an
5 elevator operating system 331 and a door opening/closing system 332 as the floor-movement managing system (correspondence relation with the facility apparatus 310) inside the building. An elevator operating system 311 manages operation of an elevator for movement between floors. The door opening/closing system 312 manages
10 opening/closing of each door of each floor. Moreover, although not shown in the drawing, a building manager or others is assumed as the above-described facility operator P. The facility available area is inside the building. The area includes particularly a first area (assumed to be R11) including the periphery of the elevator
15 managed by the elevator operating system 331 and a second area (assumed to be R12) including the periphery of each door of each floor managed by the door opening/closing system 332.

For example, all of the facility-UI distributing device 100 (10, 20, 30) is placed inside the facility 300B (building). In the
20 present system (facility-UI distributing device 100), an appropriate SSW in accordance with the position (area) of the user U (building user) inside the building is distributed. In this manner, a facility UI 600B (building UI) in accordance with the SSW is formed so as to effectively support movement of the user U inside the
25 building. A first SSW (SSW1) is distributed when the user U is in the first area R11, and a second SSW (SSW2) is distributed when the user U is in the second area R12. The facility UI 600B formed by the first SSW is a GUI which enables operation of the elevator operating system 311 in the first area R11. The facility UI 600B
30 formed by the second SSW is a GUI which enables operation of the door opening/closing system 312 in the second area R12.

Each of the SSWs (SSW1, SSW2) described above is managed in

the SSW storage unit 23 of the SSW distributing device 20. Note that the present embodiment is configured to distribute each SSW in accordance with the position (area) of the user U. However, as a simpler mode, for example, a mode in which the first and second
5 SSWs are distributed together to the user U who has entered the building may be employed. Moreover, a mode in which each GUI in accordance with the position (area) of the user U at that point is formed by integrating the SSWs of the distribution source into one and executing the one SSW in the mobile terminal 200 may be employed.
10 As a matter of course, the system may support only either the elevator operating system 311 or the door opening/closing system 312.

To the present system (the above-described managing unit 5), the configurations of the areas (R11, R12) inside the building, etc. are set. The SSW distributing device 20 stores/manages the SSW data
15 created by the building manager or others in the SSW storage unit 23. In the third embodiment, the data of the SSWs (SSW1, SSW2) corresponding to the areas (R11, R12) is managed.

The area managing device 10 has an in-area terminal determination unit 16. Moreover, the mobile terminal 200 of the
20 user U has an in-building positioning unit 430. The in-building positioning unit 430 is a positioning function to perform a processing of measuring (positioning) the position of the mobile terminal 200 inside the building. Note that the positioning function of the in-building positioning unit 430 may be achieved
25 by coordination with the system of the building, or that an equivalent positioning function may be provided on not the mobile terminal 200 side but the building (facility 300B) side.

The in-building positioning unit 430 on the mobile terminal 200 side notifies the in-area terminal determining unit 16 of the
30 area managing device 10 of the positional information of the mobile terminal 200 inside the building and the information including the terminal ID as similarly described above (operation B1). The

in-area terminal determining unit 16 uses the notification information of B1 to determine whether the position of the mobile terminal 200 corresponds to being in the predetermined areas (R11, R12). As a result of this determination, the SSW distributing device 5 20 is notified of the terminal ID(s) (list) of the mobile terminal(S) 200 inside the areas as similar to the above description. Since the third embodiment has the plurality of areas (R11, R12), it is also notified of the information indicating which area the mobile terminal is in.

10 Based on the information such as the terminal ID and the area from the area managing device 10, the SSW distributing device 20 distributes the appropriate SSW corresponding to the area, which the mobile terminal 200 is in, to the mobile terminal 200 having the terminal ID as similar to the above description (operation B2).
15 The mobile terminal 200 temporarily stores and executes (500B) the distributed SSW, thereby forming the facility UI 600B corresponding to the SSW 500B.

 A first GUI for operating the elevator operating system 331 (operation of the elevator) is formed by the first SSW. FIG. 11
20 shows a screen example of the first GUI. A second GUI for operating the door opening/closing system 332 (opening/closing of the door(s)) is formed by the second SSW. FIG. 12 shows a screen example of the second GUI.

 If the input operation to the above-described facility UI 600B
25 (screen) is performed by the user U, the SSW 500B transmits a corresponding request to the service providing device 30 as similar to the above description (operation B3). Then, the service providing device 30 notifies the facility 300B (311, 312) of information in accordance with the contents of the request from the
30 SSW 500B (operation B4). For example, in a case of the request (such as information of a floor number and the door opening/closing) from the first SSW, the service providing device 30 notifies the elevator

operating system 311 of this information (a corresponding control command). For example, in a case of the request (such as information of a password and unlocking for opening/closing the door) from the second SSW, the service providing device 30 notifies the door opening/closing system 312 of this information (a corresponding control command). Each of the systems (311, 312) operates in accordance with the notified information. In this manner, the user U can, for example, move by the elevator or pass through the door.

[UI Example]

FIG. 11 shows the first GUI (screen) formed by the first SSW of the mobile terminal 200. This present screen 1401 shows buttons (such as floor-number buttons 1402 and open/close 1403) for manipulating the operation of the elevator. The first SSW issues a request corresponding to the operation of the buttons.

FIG. 12 shows the second GUI (screen) formed by the second SSW of the mobile terminal 200. This present screen 1501 shows buttons (such as password inputting buttons 1502 and an unlocking button 1503) for manipulating the opening/closing of the door(s). The second SSW issues a request corresponding to the operation of the buttons.

[Processing Example]

A processing example of the facility-UI distributing device 100 (10, 20, 30) in the third embodiment will be described as follows.

First, the area managing device 10 starts the reception of the communication from the mobile terminal 200. When the area managing device 10 receives the positional information and the terminal ID transmitted from the in-building positioning unit 430 of the mobile terminal 200, and, if the position based on the positional information is inside the first area R11, the terminal ID is stored in the ID list (D3) as a first in-area terminal. Similarly, if the position based on the positional information is inside the second area R12, the terminal ID is stored in the ID list

(D3) as a second in-area terminal. If the position is not in both of the areas, the area managing device 10 deletes the received terminal ID from the list. Then, the area managing device 10 notifies the SSW distributing device 20 of the information such as the terminal ID and the area of the ID list (D3). If the processing is not to be interrupted at this moment, the area managing device 10 returns to the initial processing.

The SSW distributing device 20 receives the information such as the in-area terminal ID and the area from the area managing device 10 first. If there is a first in-area terminal, the SSW distributing device 20 distributes the first SSW (SSW1) to the mobile terminal 200. If there is a second in-area terminal, the SSW distributing device 20 distributes the second SSW (SSW2) to the mobile terminal 200. If the processing is not to be ended at this moment, the SSW distributing device 20 returns to the initial processing.

The service providing device 30 starts the reception of the communication from the SSW (SSW1, SSW2) distributed to the mobile terminal 200 first. If a request from the first SSW (SSW1) is provided, the service providing device 30 notifies the elevator operating system 311 of the information (control command) in accordance with the request, and transmits a response such as the acceptance of the request to the first SSW of the mobile terminal 200. Moreover, if a request from the second SSW (SSW2) is provided, the service providing device 30 notifies the door opening/closing system 312 of the information (control command) in accordance with the request, and notifies the second SSW of the mobile terminal 200 of the response such as the acceptance of the request. If the processing is not to be ended at this moment, the service providing device 30 returns to the initial state.

Note that the present invention is not only limited to the provision of the GUI (functions) that enables the operation of the movement inside the building as described above, but also can

similarly achieve a function for the guidance inside the building or others. Moreover, the present invention is not only limited to the building, but also similarly applicable to other construction.

<Fourth Embodiment>

5 Next, a system of a fourth embodiment of the present invention will be explained by using FIG. 13 to FIG. 15.

[System Configuration]

FIG. 13 shows a system configuration of the fourth embodiment. The fourth embodiment is a case of application to a shop such as a restaurant and an ordering system of the shop as a target facility 300C. The ordering system of this shop distributes a program (SSW) which enables an ordering service or others to the user U (mobile terminal 200) of the shop by using the present system (facility-UI distributing device 100). Inside the shop, an ordering system 340
10 (a correspondence relation with the above-described facility apparatus 310) is provided. Moreover, a facility operator P, a shop clerk, etc. are provided. In the present fourth embodiment, a plurality of shops which are target facilities 300C are provided. The plurality of shops are identified as T1, T2, etc. In the present
15 fourth embodiment, the SSW in accordance with each shop is distributed. For example, a first SSW (SSW1) for a first shop T1, a second SSW (SSW2) for a second shop T2, etc. are provided.

In the present fourth embodiment, the facility-UI distributing device 100 is provided so as to correspond to each
25 facility 300C (shop). For example, the facility-UI distributing devices 100 (10, 20, 30) are configured to be placed in each facility 300C (shop). Note that the facility-UI distributing devices 100 may be integrated into one. In that case, for example, the service providing device 30 is placed for each facility 300C (shop), and
30 the area managing device 10 and the SSW distributing device 20 are integrated into one to be provided on, for example, a communication network.

The mobile terminal 200 of the user U (shop user) has a GPS processing unit 440. The GPS processing unit 440 is a positioning function that measures the position of the mobile terminal 200 by using a publicly-known GPS. The present system has an in-shop terminal determining unit 17 in the area managing device 10. The in-shop terminal determining unit 17 acquires the positional information and the terminal ID from the GPS processing unit 440 of the mobile terminal 200 (operation C1). In accordance with the positional information of the user U (mobile terminal 200) measured by the GPS, the in-shop terminal determining unit 17 determines in which shop among a plurality of shops the user U (mobile terminal 200) exists. Then, in accordance with the positional information (the shop in which the user U exists), the SSW distributing device 20 selects the SSW to be distributed from the SSW prepared for each shop, and distributes the SSW to the mobile terminal 200 (operation C2).

A facility UI (shop UI) 600C corresponding to the SSW 500C is formed by executing (C) the SSW in the mobile terminal 200. That is, a GUI including a shop-clerk calling button, a dish ordering button, and/or others in accordance with the shop is displayed. In this manner, usage of the shop by the shop user (U) is effectively supported. FIG. 14 and FIG. 15 show configuration examples of the shop UI 600C of the mobile terminal 200. In the SSW distributing device 20, the SSW previously created by the shop (facility 300C) or others is registered. The registrable SSW is not particularly functionally limited, and a shop-clerk calling function, a food/drink ordering function, and others can be freely set by the shop as needed as shown in the GUI screen examples (FIG. 14, FIG. 15). Each of the registered SSWs (for example, SSW1, SSW2) is associated with the service providing device 30 of each shop.

The SSW 500C of the mobile terminal 200 issues a predetermined request to the corresponding service providing device 30 based on

the operation at the facility UI 600C (operation C3), and besides, the service providing device 30 notifies the corresponding ordering system 340 of the information (operation C4). In this manner, the user U can call the shop clerk or make the order.

5 [UI Examples]

FIG. 14 shows a case of the shop-clerk calling function as an example of a first GUI (screen). This present screen 2101 has a shop-clerk calling button 2102. When the user U presses the shop-clerk calling button 2102, the SSW 500C issues a request in
10 accordance with the operation. Then, through the present system, the request is transmitted to the shop clerk (P) or the ordering system 340.

FIG. 15 shows the case of the ordering function as an example of a second GUI (screen). This present screen 2201 has an order
15 button 2202 for each drink/food of a menu. If the user U presses the desired order button 2202, the SSW 500C issues a request in accordance with the operation. Then, through the present system, the request is transmitted to the shop clerk (P) or the ordering system 340.

20 [Processing Example]

A processing example of the facility-UI distributing device 100 (10, 20, 30) in the fourth embodiment will be described as follows. The processing example will be described in a case in which the first shop T1 has a first service providing device 30 and the second shop
25 T2 has a second service providing device 30.

The area managing device 10 starts the reception of the communication from the mobile terminal 200 first. When the area managing device 10 receives the positional information and terminal ID based on the GPS transmitted from the mobile terminal 200, and
30 if the received positional information is inside the first shop T1 (corresponding first area), the terminal ID is stored in the list (D3) as a terminal inside the first shop. Moreover, if the

positional information is inside the second shop T2 (corresponding first area), the terminal ID is stored in the list (D3) as a terminal inside the second shop. If the received positional information is not inside both of the shops, the area managing device 10 deletes
5 the terminal ID from the list (D3). Then, the area managing device 10 notifies the SSW distributing device 20 of the information such as the terminal ID and the shop of the list (D3). If the processing is not to be interrupted at this moment, the area managing device 10 returns to the initial processing.

10 The SSW distributing device 20 receives the information such as the in-shop terminal ID and the shop from the area managing device 20 first. For example, if the mobile terminal 200 is inside the first shop (T1), the SSW distributing device 20 distributes the first SSW (SSW1) to the mobile terminal 200. Similarly, if the mobile
15 terminal 200 is inside the second shop T2, the SSW distributing device 20 distributes the second SSW (SSW2). If the processing is not to be terminated at this moment, the SSW distributing device 20 returns to the initial processing.

The first service providing device 30 of the first shop T1
20 starts the reception of the communication from the first SSW, which has been distributed to the mobile terminal 200. If the request from the first SSW is issued based on an operation by the user U, the first service providing device 30 notifies the operator (P) or the ordering system 340 inside the first shop T1 of the information
25 in accordance with the request, and sends a response of the acceptance of the request or others to the first SSW of the mobile terminal 200. If the processing is not to be ended at this moment, the first service providing device 30 returns to the initial processing. The processing of the second service providing device
30 30 of the second shop T2 is also similar to this.

Note that the service providing device 30 and the ordering system 340 in the shop may be configured to be integrated. Moreover,

not only the shop-clerk calling and ordering functions of the shop as described above but also a shop guiding function or a fee payment function for products/services, etc. of the shop can be similarly achieved.

5 <Effects and others>

As explained above, according to each embodiment, the service, etc. for using the facility 300, etc. can be provided by using the mobile terminal 200 (its UI) of the user U in the various facilities 300, etc. Particularly, since the generally-marketed mobile
10 terminal 200 can be used, it is not required to introduce/maintain a dedicated device or others for the facility 300 side, and introduction/maintenance operational cost, etc. can be suppressed, and therefore, a low-cost system can be achieved. An additional value of the facility 300 can be increased by providing the
15 above-described service. In this manner, the situation (target) in which the above-described service can be provided/is available is increased so as to include the facility, etc. in which the above-described service conventionally could not have been provided due to cost problems, etc., so that convenience, etc. for the user
20 U side can be achieved. By providing the GUI which is understandable and easily operable to the user in the mobile terminal 200, the user can easily use the facility 300.

Furthermore, a role originally played by the device (for example, the facility apparatus 310) such as the input/output device
25 (button, lever, touch panel, etc.) which is required to be placed in the facility 300 can be played by the UI of the mobile terminal 200. Therefore, the above-described input/output device (facility apparatus 310) can be reduced, so that an apparatus space in the facility 300 can be reduced. Moreover, the degree of freedom of
30 designing can be increased by reducing limitation related to the designing in the facility 300. Moreover, in comparison with a conventional method in which the facility operator prepares and

distributes (rents) the dedicated mobile terminal to the facility user, stock management and theft countermeasure of the mobile terminal by the facility operator can be omitted.

Furthermore, in the present system, the contents of the
5 above-described service (corresponding UI/function) can be easily, for example, added, changed, and adjusted. In that case, only the SSW (distribution source) of the SSW distributing device 20 is required to be updated, and an operation of updating the programs of all the mobile terminals 200 or others can be omitted. The
10 facility operator P who introduces the present system can make a difference from other facilities by the content (function and design) of the SSW, and can increase the additional value of the facility 300.

In the foregoing, the invention made by the present inventors
15 has been concretely described based on the embodiments. However, it is needless to say that the present invention is not limited to the foregoing embodiments and various modifications and alterations can be made within the scope of the present invention. For example, in the present system, the UI formed/provided by the SSW is not
20 limited to the GUI (visual interface), but other means such as an audio interface may be used in combination.

INDUSTRIAL APPLICABILITY

The present invention is available in various facilities in the real world. For example, the present invention is available
25 in a vehicle such as a bus and a train, a building such as an office building, a public facility, a private shop, etc.

CLAIMS

1. A facility-user-interface distributing system, to a user of a facility, which provides a service for usage of the facility or
5 an apparatus in the facility, the system comprising:

a distributing device that distributes a program to a mobile terminal of the user, the program for forming a user interface for providing the service for the usage,

wherein the distributing device has:

10 a communicating unit which communicates with the mobile terminal of the user and with the facility, the apparatus in the facility, or an operator of the facility;

a managing unit which stores and manages a predetermined area and the program, the predetermined area associated with the facility
15 or the apparatus in the facility, the program associated with the area;

an area determining unit which determines whether the mobile terminal of the user exists inside the area or not;

a distributing unit which distributes the program to the
20 mobile terminal of the user existing inside the area; and

a service providing unit which receives information issued in accordance with an operation of the user for the user interface formed by the program executed by the mobile terminal of the user and which notifies the operator of the facility associated with the
25 program or notifies the apparatus in the facility of the information.

2. The facility-user-interface distributing system according to claim 1,

wherein the service providing unit receives information of
30 a service request issued in accordance with the operation of the user for the user interface formed by the program executed by the mobile terminal of the user, notifies the operator of the facility

associated with the program or notifies the apparatus in the facility of the information of the service request or predetermined information associated with the service request, transmits information of a response for the service request to the program of the mobile terminal, and causes the user interface to output the information therefrom.

3. The facility-user-interface distributing system according to claim 1,

wherein the distributing device has a disabling unit which disables the user interface formed by the program distributed to the mobile terminal, and

the disabling unit performs a processing of disabling the program of the mobile terminal if the mobile terminal of the user does not exist inside the area.

4. The facility-user-interface distributing system according to claim 3,

wherein the distributing device distributes key information with a valid time limit for enabling the program in accordance with the distribution of the program to the mobile terminal,

the disabling unit enables the program if the key information within the valid time limit is provided in the mobile terminal, and

the disabling unit disables the program if the key information within the valid time limit is not provided in the mobile terminal.

5. The facility-user-interface distributing system according to claim 1,

wherein the mobile terminal is provided with a touch display on which touch input and screen display can be performed, and

the mobile terminal displays graphical user interface information on a screen of the touch display as the user interface

formed by the program, and issues information to the facility in accordance with an operation of the touch input by the user for an element in the screen.

5 6. The facility-user-interface distributing system according to
claim 1,
 wherein the communicating unit has a function to communicate
with the operator of the facility,
 the managing unit sets the operator of the facility as a
10 destination of the notification, and
 the service providing unit notifies the operator of the
facility of information.

15 7. The facility-user-interface distributing system according to
claim 1,
 wherein the communicating unit has a function to communicate
with the apparatus in the facility,
 the managing unit sets the apparatus in the facility as a
destination of the notification,
20 the service providing unit notifies the apparatus in the
facility of information, and
 the apparatus in the facility performs a processing or an
operation in accordance with the information of the notification.

25 8. The facility-user-interface distributing system according to
claim 1,
 wherein the mobile terminal stores a terminal ID, or a medium
in which the terminal ID is embedded is connected to or embedded
in the mobile terminal, or the user has the medium in which the
30 terminal ID is embedded, and
 the area determining unit detects the terminal ID inside the
area, and stores the detected terminal ID in a list.

9. The facility-user-interface distributing system according to claim 8,

wherein the terminal ID is stored in an RFID medium,

5 the system has an RFID reader device placed in the area,
the RFID reader device reads the terminal ID of the RFID medium
which enters/exits the area, and

the area determining unit determines whether the mobile
terminal exists inside the area or not by using the terminal ID read
10 by the RFID reader device.

10. The facility-user-interface distributing system according to claim 1,

wherein the mobile terminal has a positioning function of
15 acquiring positional information of the mobile terminal by a GPS,
and

the area determining unit acquires the positional information
from the mobile terminal, and determines whether the mobile terminal
exists inside the area or not by using the positional information.
20

11. The facility-user-interface distributing system according to claim 1,

wherein the managing unit sets a predetermined area centering
a predetermined apparatus inside the facility so as to include
25 periphery of the predetermined apparatus as the area.

12. The facility-user-interface distributing system according to claim 1,

wherein, for information of a service request from a first
30 mobile terminal, if a plurality of mobile terminals exist inside
the area, the service providing unit transmits information of a
response for the service request to each program of the plurality

of mobile terminals, and causing the user interface to output the information therefrom.

13. The facility-user-interface distributing system according to claim 1,

wherein the managing unit manages two or more areas as the area associated with the facility, manages each program associated with each of the areas, forms a user interface which is different depending on each program, and sets a destination of the notification which is different depending on each program,

the area determining unit determines in which area the mobile terminal exists, and

the distributing unit distributes a program in accordance with the area, in which the mobile terminal exists, to the mobile terminal.

14. The facility-user-interface distributing system according to claim 1,

wherein the managing unit sets a plurality of areas associated with a plurality of facilities, respectively, manages each program associated with each of the areas, forms a user interface which is different depending on each program, and sets a destination of the notification which is different depending on each program,

the area determining unit determines in which area of which facility the mobile terminal exists,

the distributing unit distributes a program in accordance with the area of the facility, in which the mobile terminal exists, to the mobile terminal, and

the service providing unit is provided in each of the plurality of facilities, receives information from the program of the mobile terminal inside the area of the facility associated with the service providing unit, and notifies the operator of the facility or the

apparatus in the facility of the information.

15. The facility-user-interface distributing system according to claim 1,

5 wherein the distributing device is placed inside the facility.

16. The facility-user-interface distributing system according to claim 1,

10 wherein the distributing device is formed on a communication network outside the facility.

17. The facility-user-interface distributing system according to claim 1,

15 wherein the facility is a vehicle including a bus,
the operator of the facility is a crew of the vehicle,
the user is a passenger of the vehicle, and
the user interface formed by the program is a user interface which enables an operation related to getting on/off of the vehicle, drive guiding thereof, or payment of a transportation fee thereof.

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18. The facility-user-interface distributing system according to claim 1,

wherein the facility is a building including an office building,

25 the user is a moving person inside the building, and
the user interface formed by the program is a user interface which enables an operation related to movement in a place including an elevator and a door inside the building or guiding inside the building.

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19. The facility-user-interface distributing system according to claim 1,

wherein the facility is a shop where a product or a service is sold,

the operator of the facility is an operator or a shop clerk of the shop,

5 the user is a customer of the shop, and

the user interface formed by the program is a user interface which enables an operation related to calling of the shop clerk of the shop, ordering of the product or the service, or payment of a fee of the product or the service.