

TITLE OF THE INVENTION

CHANGE MANAGEMENT ANALYSIS METHOD, CHANGE MANAGEMENT ANALYSIS
APPARATUS, AND CHANGE MANAGEMENT ANALYSIS PROGRAM

The present invention relates to a change management
5 analysis method, a change management analysis apparatus, and a
change management analysis program, and specifically to a
technique which allows rapidly and efficiently providing a user
with information on influence caused by change in installation
layout in a room entry/exit management system.

10

A room entry/exit management system plays a core role in
physical security of security measures in companies and
organizations. Before the introduction of such a room entry/exit
management system, a physical lock was placed at an entrance of
15 a building, a door of a room, or the like and a key for opening
the lock was managed by an administrative department, a guard
station, or the like. In many of such cases, a person to
enter/leave the building or room signed a register to borrow or
return the key. On the other hand, after the introduction of the
20 room entry/exit management system, accesses by persons are
controlled in accordance with the following methods with an
authentication device being provided at places such as an entrance
of a building and a door of a room, and with a noncontact IC card
or the like being distributed in advance to each person to
25 enter/leave the building or room.

- A numeric keypad input device is provided, and the door is unlocked when a predetermined secret code is inputted.

- A noncontact IC card reader is provided, and the door is unlocked when a predetermined IC card is swiped over the card
5 reader.

- A biometrics (e.g., fingerprint, vein, face, iris, or voiceprint) sensor is provided, and the door is unlocked when predetermined biometrics is presented.

- An intercom is prepared, and a secretary in the room
10 presses an unlocking button to unlock the door when he/she determines by conversation that a person to enter the room is an authorized person.

Such a room entry/exit management system is installed in accordance with the layout of a building or room and a required
15 security level. While the layout of a building or room differs among companies or organizations, the room entry/exit management system can be installed flexibly in accordance with such various layouts. In addition, depending on the security level of a building or room to be protected, various authentication means
20 is applicable. For example, in some cases, authentication means using a secret code such as a PIN number is sufficient, and in other some cases, strict authentication means such as biometrics authentication is employed.

As such a room entry/exit management technique, for example,
25 a room entry/exit management method (see JP-A 2000-259968) for

the purpose of managing room entry/exit in various room entry/exit routes according to a room entry/exit status is proposed which includes determining whether or not to allow room entry/exit by performing authentication at each of a plurality of multiple card
5 readers using a combination of an ID code assigned to each card and an unlocking flag that is set for at least one of each card and each card reader and dynamically changing a setting state of the unlocking flag according to the room entry/exit status of a card holder.

10 A system such as a room entry/exit management system (see JP-A 2003-44891) is also proposed which includes a processing apparatus configured to determine, from a room layout file in which an identification location where each identification device is installed is in advance associated with another identification
15 location which is accessible directly from the identification location; a room file registering therein a predetermined room where each user is supposed to stay; an identification information file storing therein measured identification information actually measured by an identification device and missing
20 identification information of an identification device having failed in measurement (i.e., failed to acquire normally-obtainable identification information due to card read error, tailgating, or the like in the room entry/exit management system); and a presence state file storing therein the latest
25 identification location of the user, whether or not the latest

identification location is accessible directly from the first previous identification location with reference to the room layout file and to set an identification device, which has failed in measurement and is located on the user's travel route estimated
5 based on the room layout file, in the missing identification information only if the latest identification location is inaccessible directly, and configured to, if the latest identification location is other than the predetermined room and if a predetermined period of time passes since the last
10 identification, estimate that the predetermined room is the latest identification location and to set, in the missing identification information, the identification device of the latest identification location which has failed in measurement.

15 SUMMARY

However, when a room entry/exit management system is designed in such a manner that an installation layout has a highly flexible configuration and the system is to be entirely or partly changed, it is difficult for a user to know a location, a range,
20 a content and the like to be influenced by the change.

For example, in a situation where room entry/exit management is currently performed for only one floor in a building will be changed to room entry/exit management of all floors in the building, it is difficult for a user to rapidly and efficiently
25 know a range of change management of management privileges and

the like in a room entry/exit management system while taking into consideration the fact that building tenants are different from one floor to another, i.e., a range of room entry/exit management privilege is different from one floor to another.

5 Further, in a case where a card reader which has been used for room entry/exit management is changed into a biometrics authentication device for security enhancement, it is difficult for a user to rapidly and efficiently know which device should be changed and how.

10 Further, in a case where one or some of devices in the room entry/exit management system goes out of order, it is difficult for a user to rapidly and efficiently know information on how the system will be influenced and how large an influenced range will be, and which device should be suspended in a case repair is needed,
15 and the like.

 In other words, in a case where an installation layout in the room entry/exit management system is configured with a high flexibility, a user is not rapidly and efficiently provided with information that a user should know.

20 Disclosed in this specification is a technique which allows a user to be rapidly and efficiently provided with information on influence caused by a change in installation layout in a room entry/exit management system.

25 A change management analysis method disclosed herein causes

an information processing apparatus, which is configured to analyze influence caused by change management of a room entry/exit management system, to execute the following processes. Specifically, the information processing apparatus performs
5 reading layout information from a storage unit, the layout information indicating a layout of devices included in a room entry/exit management system in a predetermined area.

Further, the information processing apparatus performs the process of displaying the layout information on an output unit
10 and receiving a change scenario from an input unit, the change scenario including a change location and change content in a configuration of the room entry/exit management system in a layout thereof.

Further, the information processing apparatus performs the
15 process of displaying a change configuration plan on the output unit, the change configuration plan being created in such a manner that, in a case where the change scenario indicates one of addition and change of one of a device and a function, a candidate device having a function satisfying a requirement of the change content
20 is identified by matching the change content against a product information table in which information on a function of a device that can be included in the room entry/exit management system is stored, and one of addition of the candidate device to the change location in the layout and replacement of an existing device with
25 the candidate device in the change location is displayed, and in

a case where the change scenario indicates deletion of one of a device and a function, a device at the change location in the layout is deleted.

Further, the information processing apparatus performs the
5 process of, with respect to the change configuration plan, receiving specification of an operation condition from the input unit, applying the operation condition to information on the function of the device in the product information table, simulating a behavior for a case where the device is run under
10 the operation condition, and outputting a simulation result in the displayed change configuration plan.

The disclosed change management analysis apparatus is an information processing apparatus configured to analyze an influence caused by a change in a room entry/exit management
15 system and the change management analysis apparatus includes: a configuration information input part configured to read layout information from a storage unit, the layout information indicating a layout of devices included in a room entry/exit management system in a predetermined area; a change scenario input
20 part configured to display the layout information on an output unit and to receive a change scenario from an input unit, the change scenario including change location information and change content in a configuration of the room entry/exit management system in a layout thereof; an influenced location analysis part configured
25 to display a change configuration plan on the output unit, the

change configuration plan being created in such a manner that, in a case where the change scenario indicates one of addition and change of one of a device and a function, a candidate device having a function satisfying a requirement of the change content is
5 identified by matching the change content against a product information table in which information on a function of a device usable in the room entry/exit management system is stored, and one of addition of the candidate device to the change location in the layout and replacement of an existing device with the
10 candidate device in the change location is displayed, and in a case where the change scenario indicates deletion of one of a device or a function, a device at the change location in the layout is deleted; and an operation simulation part configured to receive, with respect to the change configuration plan, specification of
15 an operation condition from the input unit, to apply the operation condition on information on the functions of the devices in the product information table, simulate a behavior for a case where the devices are run under the operation condition and to output a simulation result in the displayed change configuration plan.

20 The disclosed change management analysis program causes an information processing apparatus, which is configured to analyze an influence caused by change management of a room entry/exit management system, to perform: reading layout information from a storage unit, the layout information indicating a layout of
25 devices included in a room entry/exit management system in a

predetermined area; displaying the layout information on an output unit and receiving, a change scenario from an input unit, the change scenario including change location information and change content in a configuration of the room entry/exit management system in a layout thereof; displaying a change configuration plan on the output unit, the change configuration plan being created in such a manner that, in a case where the change scenario indicates one of addition and change of one of a device and a function, a candidate device having a function satisfying a requirement of the change content is identified by matching the change content against a product information table in which information on a function of a device that can be included in the room entry/exit management system is stored, and one of addition of the candidate device to the change location in the layout and replacement of an existing device in the change location is displayed, and in a case where the change scenario indicates deletion of one of a device and a function, a device at the change location in the layout is deleted; and with respect to the change configuration plan, receiving specification of an operation condition from the input unit, applying the operation condition to the information on the function of the device in the product information table, simulating a behavior for a case where the device is run under the operation condition, and outputting a simulation result in the displayed change configuration plan.

According to the disclosure, information on influence caused by a change in installation layout in a room entry/exit management system can be provided to a user rapidly and efficiently.

5

These and other benefits are described throughout the present specification. A further understanding of the nature and advantages of the invention may be realized by reference to the remaining portions of the specification and the attached
10 drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a diagram illustrating an example of a network configuration including a change management analysis apparatus
15 according to a first embodiment.

Fig. 2 is a block diagram illustrating an example of an internal structure of the change management analysis apparatus.

Fig. 3 is a diagram illustrating a table structure example
1 according to the present embodiment.

20 Fig. 4 is a diagram illustrating a table structure example
2 according to the present embodiment.

Fig. 5 is a flowchart illustrating an example of a processing procedure of a change management analysis method according to the present embodiment.

25 Fig. 6 is a flowchart illustrating a screen interface

example 1 according to the present embodiment.

Fig. 7 is a flowchart illustrating a screen interface example 2 according to the present embodiment.

Fig. 8 is a flowchart illustrating a screen interface
5 example 3 according to the present embodiment.

Fig. 9 is a flowchart illustrating a screen interface example according to a second embodiment.

Fig. 10 is a flowchart illustrating a screen interface example according to a third embodiment.

10 Fig. 11 is a flowchart illustrating a screen interface example according to a fourth embodiment.

Fig. 12 is a flowchart illustrating a screen interface example according to a fifth embodiment.

15 DETAILED DESCRIPTION OF THE EMBODIMENTS

---Embodiment 1---

Hereinbelow, one embodiment will be described with reference to the drawings as needed. Fig. 1 is a diagram illustrating an entire system including a change management
20 analysis apparatus 1. The change management analysis apparatus 1 is an apparatus configured to analyze influence and the like to be exerted on a room entry/exit management system 10, which is installed in a building such as a company, when the configuration of the room entry/exit management system 10 is
25 changed, for example. An information processing apparatus such

as a PC is assumed as an example of the change management analysis apparatus 1.

The change management analysis apparatus 1 is a terminal to be operated by a change management administrator 30 such as
5 an administrator of the room entry/exit management system 10 or a sales representative who makes a proposal to the administrator on a change of the room entry/exit management system 10. This terminal is preferably portable since it often helps greatly in sales activity related to the room entry/exit management system
10 10. It is assumed that the change management analysis apparatus 1 is coupled to the room entry/exit management system 10 via a communication line 41, and is coupled to the Internet 20 via a communication line 40. Needless to say, any type of network and any communication protocol may be employed.

15 The room entry/exit management system 10 is an existing computer system having a configuration information table 11, a schedule table 12, and an authentication information table 13. The room entry/exit management system 10 instructs a door open/close mechanism, a locking key/ unlocking key, and the like
20 to appropriately restrict persons to enter/leave a building or room, by using these tables 11 to 13.

Further, it is assumed that, on the Internet 20, a change scenario table 21, an operation scenario table 22 and a product information table 23 are managed by a development vendor and a
25 maintenance vendor of the room entry/exit management system 10.

Furthermore, a map information table 24 is a table in which map data concerning a building or the like to be managed by the room entry/exit management system 10 is stored, and is map information available on the Internet 20. Naturally, a copy of these tables 5 21 to 24 may be regularly or irregularly stored and managed by a storage unit 203 of the change management analysis apparatus 1. The tables 21 to 24 may be located anywhere as long as the change management analysis apparatus 1 can access these tables.

Fig. 2 is a block diagram illustrating an internal structure 10 of the change management analysis apparatus 1. Next, a configuration and functions of the change management analysis apparatus 1 will be described. The change management analysis apparatus 1 has a hardware configuration including: a CPU (central processing unit) 201 configured to control the apparatus and calculate/process data; a memory 202 configured to store data and 15 programs temporarily, and to and from which the CPU 201 can write and read them directly; a nonvolatile storage unit 203 configured to store data and programs in such a manner that they would not be deleted upon power-off; a communication unit 204 configured 20 to perform communication with the communication line 40 and the communication line 41 in a wired or a wireless manner; an output unit 205 configured to display a result of data calculation/processing on a display for the change management administrator 30; and an input unit 206 configured to receive 25 keyboard input or mouse input from the change management

administrator 30. These are units that the change management analysis apparatus 1 should naturally have as an information processing apparatus, and are coupled to one another via a bus 207.

5 For example, in the storage unit 203, a configuration information input part 2, a change scenario input part 3, an influenced location analysis part 4, and an operation simulation part 5 are stored as programs. Necessary functions are implemented by causing the CPU 201 to read and execute these
10 programs.

 Hereinbelow, description will be given of the functional parts of the change management analysis apparatus 1 implemented by the programs. The change management analysis apparatus 1 includes the configuration information input part 2 configured
15 to read layout information of devices, which are included in the room entry/exit management system 10 in a predetermined area, from the room entry/exit management system 10 (or from the storage unit 203 in which necessary data of the room entry/exit management system 10 has been stored). The configuration information input
20 part 2 in this example accesses the room entry/exit management system 10 via the communication line 41 to read the configuration information table 11, the schedule table 12, and the authentication information table 13, and reads the map information table 24 via the Internet 20. On the basis of these
25 pieces of information, the configuration information input part

2 creates layout information by arranging icons or the like of the devices for room entry/exit management on a map indicating a room entry/exit management area.

It is to be noted that, the configuration information input
5 part 2 may be configured to update the product information table 23 upon receiving a request to add information concerning a device or function to the product information table 23 from the input unit 206 or another device coupled to the configuration information input part 2 through the communication line 40 or 41,
10 or the like.

The change management analysis apparatus 1 also includes the change scenario input part 3 configured to display the layout information on the output unit 205 and to receive, from the input unit 206, a change scenario including a change location and change
15 content in the configuration of the room entry/exit management system 10 in the layout thereof.

It is to be noted that, the change scenario input part 3 is preferably configured to receive the change scenario by causing a list of location information included in the layout information
20 to be displayed on the output unit 205 in a selectable manner, such as a pull-down menu, and receiving a choice of the change location from the list of location information, and by causing a list of change content stored in advance in the storage unit 203 to be displayed on the output unit 205 in a selectable manner,
25 such as a pull-down menu, and receiving a choice of the change

content from the list of change content.

Here, in the storage unit 203 is stored the change scenario table 21 containing the list of location information used in receiving the choice of change location and the list of change content used in receiving the choice of the change content. In this case, the change scenario input part 3 is preferably configured to update the change scenario table 21 upon receiving a request to add location information to the location information list in the change scenario table 21 or a request to add a change content to the change content list in the change scenario table 21 from another device coupled to the change scenario input part 3 through the input unit 206, or the communication line 40 or 41.

The change management analysis apparatus 1 also includes the influenced location analysis part 4 configured to display a change configuration plan on the output unit 205. The change configuration plan is created in such a manner that, in a case where the change scenario indicates addition or change of a device or function, a candidate device having a function satisfying a requirement of the change content is identified by matching the change content against the product information table 23 in which information on functions of devices usable in the room entry/exit management system 10 is stored, and the candidate device is displayed additionally or in place of an existing device in the change location in the layout, and in a case where the change scenario indicates deletion of a device or a function, a device

at the change location in the layout is deleted.

Note that, the influenced location analysis part 4 may be configured to cause a plurality of change configuration plans to be displayed on the output unit 205, the plurality of change
5 configuration plans satisfying the request of the change scenario and being created in such a manner that, in a case where the change scenario indicates addition or change of a device or function, a plurality of candidate devices, each of which having a function satisfying the requirement of the change content, are identified
10 by matching the change content against the product information table 23, and, for each candidate device, addition of the candidate device to the change location in the layout or replacement of an existing device with the candidate device in the change location is displayed. For example, assume that a
15 sales representative performing sales activity on a change of the room entry/exit management system 10 makes a system proposal for his/her customer with the change management analysis apparatus 1 being brought along him/her. In such a situation, it is generally preferable to provide a plurality of change
20 configuration plans to the customer and let the customer choose from among these plans rather than providing only one change configuration plan.

Further, the influenced location analysis part 4 is preferably configured to read, from the product information table
25 23, data on costs required for adding, changing, or deleting for

a device that is a target for each of addition, change, or deletion indicated by each of the change configuration plans, to calculate a quoted price by summing of the required costs for the change configuration plan, and to output a result in the display of the change configuration plan. For example, when a group of devices is additionally introduced, the influenced location analysis part 4 calculates a quoted price by extracting costs required for adding the respective devices from the product information table 23 and summing these costs. The same applies to other operations.

10 The change management analysis apparatus 1 also includes the operation simulation part 5 configured to receive, with respect to change configuration plan, specification of an operation condition from the input unit 206, to apply the operation condition to information on functions of devices in the product information table 23, to simulate a behavior for a case where the device is run under the operation condition, and to output the simulation result in the displayed change configuration plan. The operation condition may be, for example, a condition where 1000 employees enter/leave a room per hour 15 (=condition on operation content) at a certain gate (=condition on location). In this case, the operation simulation part 5 extracts, from the product information table 23, information on a function of a device for room entry/exit management installed at the "certain gate," such as process time "1 second" required 20 per authentication. Then, in the case of processing "room

entry/exit of 3000 persons per hour," it will be determined that the operation condition can be satisfied based on calculation of " $60 \times 60 / 1$ " = 3600 persons > 3000 persons, or required process time will be calculated as " $3000 / 1$ " = 3000 seconds = 50 minutes.

5 Note that, the operation simulation part 5 is preferably configured to highlight, in the display of each configuration plan, information on at least one of a location and a range to be influenced by addition, replacement, or deletion of a device based on the change scenario or by stopping or replacement of a device
10 determined by the simulation under the predetermined operation condition, and a content under influence. For example, in addition to the change of the display of an existing device to that of a new device due to the replacement or the like of devices, this process makes the relevant location easy to recognize
15 visually. For example, the device after the change may be displayed in such a manner that the lines of the device is thicker than those of the other devices, the color or pattern of the device is different from those of the other devices, or a text or icon for notification of the change is arranged.

20 Further, the operation simulation part 5 is preferably configured to perform a simulation for each of the change configuration plans, output a simulation result for each of the change configuration plans in the displayed change configuration plan, receive, from the input unit 206, specification of one of
25 the change configuration plans that is determined as being optimum

by an operator, and display the specified change configuration plan on the output unit 205 as an optimum plan.

Further, the operation simulation part 5 is preferably configured to receive specification of the operation condition
5 by displaying a list of location information contained in the layout information in a selectable manner, such a pull-down menu, for example, and to receive a choice on the location of the operation condition from the list of location information, and by displaying a list of change content stored in advance in the
10 storage unit 203 in a selectable manner, such as a pull-down menu, for example, and to receive a choice of the operation content of the operation condition from the list of operation content.

Further, the operation simulation part 5 is preferably configured to hold, in the storage unit 203, an operation scenario
15 table 22 containing therein the list of location information for receiving a choice of the change location among the operation conditions and the list of operation content. In this case, the operation simulation part 5 is preferably configured to perform updating of the operation scenario table 22 upon receiving a
20 request to add location information to the list of location information in the operation scenario table 22 or a request to add an operation content to the operation content list in the operation scenario table 22 from the input unit 206 or another device coupled to the operation simulation part 5 through the
25 communication line 40 or 41.

---Table Structure Example 1---

Next, referring to Fig. 3, description will be given of an example of data structures of the configuration information table 11, the schedule table 12, and the authentication information table 13 which are held by the room entry/exit management system 10. The configuration information table 11 is a collection of records in which installed location information 311 of a device in the room entry/exit management system 10, such as a management server, a controller, a card reader (CR), or an electronic key (EK), installed device information 312 such as a type and version of the installed device, and coupled device information 313 that is information on upper-layer and lower-layer devices coupled to the installed device are associated with each other. The installed location information 311 may include items such as, for example: "MAP" indicating corresponding map and coordinates in the map information table 24; "FLOOR NUMBER" indicating which floor in the building the device is located at; "BLOCK" that is information indicating which block in the floor the device is located in; "DOOR" that is information specifying the location of a door; and "INTENDED USE" indicating the intended use of the device.

The schedule table 12 has a data structure including a plurality of sheets and each of the sheets includes running information 321 indicating a running schedule of the room entry/exit management system 10 for each year, month, day, day

of week, and time frame.

The authentication information table 13 contains authentication information for each block, for example, and has data in a table structure including a plurality of lines each of which including relevant block information 331, administrator ID information 332 and access person ID information 333. The access person ID information 333 is information on a person who can enter/leave a room in the corresponding block.

---Table Structure Example 2---

10 Next, based on Fig. 4, description will be given of an example of data structures of the change scenario table 21, the operation scenario table 22, and the product information table 23 which are accessible by the change management analysis apparatus 1 via the Internet 20. The change scenario table 21
15 has data in a table structure including a plurality of lines each of which including change pattern information 411 and change handling information 412. Note that, the change pattern information 411 in the change scenario table 21 includes change location information ("location" in the drawing) and change
20 content information.

The change location information may indicate "building A, 1F in zone xx," for example, and the change content information may indicate "addition of door and card reader," for example. The change contents may include addition of door, change of device,
25 collaboration with another system, and optional request, for

example. Further, the change handling information 412 may contain a result obtained in such a manner that the influenced location analysis part 4 matches the change content against the product information table 23 to identify a candidate device that
5 includes a function satisfying the request of the change content.

The operation scenario table 22 has data in a table structure including a plurality of lines each of which including operation pattern information 421 and operation simulation information 422. The operation pattern information may include a condition on
10 "location" for specifying a door, a gate, and the like, and a condition on operation content such as "passage rush." The simulation content corresponding to the condition on operation content, such as "1000 employees enter/leave a room per hour," is set in the operation simulation information 422.

15 Note that, in the operation scenario table 22, the list of operation contents may include: passage rush which is an option for estimating a situation observed when entry/exit processing is performed frequently; log storage period which is an option for estimating a resource needed to store logs for a predetermined
20 period; log display time which is an option for estimating time required for collecting logs from another device via a network and display the logs; network usage rate which is an option for estimating a network usage rate at the time of performing a predetermined process; card ID distribution which is an option
25 for estimating time required for distributing a user ID list to

a controller of a card reader; failure handling which is an option for estimating a device required to be stopped or replaced due to the failure of another device or function; change of holiday which is an option for estimating the running state of a device
5 in the case of running the device corresponding to holidays different among divisions or areas; personnel reshuffle which is an option for estimating the running state of a device in the case of running the device corresponding to change in the number of persons to be processed caused by the personnel reshuffle; and
10 change of administrator which is an option for estimating the running state of a device in the case of changing the entry/exit management privilege different from one tenant to another.

The product information table 23 contains information on devices applicable to the room entry/exit management system 10,
15 and has data in a table structure including a plurality of lines each of which including device type information 431, a supportable change content 431a, coupled device information 432, option function information 433, and price information 434. The device type information 431 includes information on the ID or name and
20 version of a device, for example. Further, the supportable change content 431a contains information describing, for example, a function of the device that can support a change content of the change scenario table 21. Further, the coupled device information 432 includes information on devices coupled to the
25 device. Further, the option function information 433 includes

information on an option function which can be included in the device. Further, the price information 434 includes information on a cost needed to introduce the device.

---Process Flow Example---

5 Based on the functions of the change management analysis apparatus 1 and the tables usable by the change management analysis apparatus 1 which have been described thus far, a process procedure of a change management analysis method according to the present embodiment will be described with reference to Figs. 5
10 to 9. Fig. 5 is a flowchart illustrating the process procedure of the change management analysis method according to the present embodiment. In the present embodiment, the change management administrator 30 boots the change management analysis apparatus 1 that is an information processing apparatus, and starts a change
15 management analysis process, for example.

 In this case, the configuration information input part 2 first accesses the room entry/exit management system 10 via the communication line 41 to read the configuration information table 11, the schedule table 12, and the authentication information
20 table 13, and reads the map information table 24 via the Internet 20 (Step 501).

 On the basis of the information read in Step 501, the configuration information input part 2 also creates layout information by arranging icons and the like of devices for room
25 entry/exit management on a map (i.e., map data acquired from the

map information table 24), which indicates a room entry/exit management area, at positions specified by the location information 311 of each of the devices (such as coordinate values on the map), and outputs the layout information to the output unit 5 205 (Step 502). Thereby, the change management administrator 30 can check what is the layout for the room entry/exit management system 10, i.e., how the devices are arranged, and edit the layout. In other words, the configuration information input part 2 receives the layout editing work, which is made by the change 10 management administrator 30, through the layout information displayed on the output unit 205.

Fig. 6 illustrates an example of a screen interface 600 in the layout editing in an upper part of the figure labeled (a). The screen interface 600 includes a button group 601 for editing 15 related components and an installation layout drawing area 602. In the example illustrated in (a) of Fig. 6, in a floor having "BLOCK 1" and "BLOCK 2", "DOOR 1" is arranged at a doorway of "BLOCK 1" whereas "DOOR 2" is arranged at a doorway of "BLOCK 2". In addition, "DOOR 1" includes an electronic key "EK 1". Moreover, 20 a card reader "CR 1", which is used when a person enters "BLOCK 1", and a card reader "CR 2", which is used when a person leaves the "BLOCK 1", are installed at the "door 1". The "EK 1", "CR 1", and "CR 2" are coupled to "CONTROLLER 1" with serial cables. "CONTROLLER 1" is coupled to a "MANAGEMENT SERVER 1" with a LAN 25 cable.

Note that, in a case where the installed location information 311 of the configuration information table 11 is insufficient to create such layout, the configuration information input part 2 may read the installed device information 312 and display it on the output unit 205, and the change management administrator 30 may specify installation locations and coupling methods of these devices through the input unit 206.

Subsequently, the change scenario input part 3 receives, from the input unit 206, input of the change scenario including the change location and change content in the configuration, on the layout displayed on the output unit 205 as described above (Step 503). Note that, the change scenario input part 3 may update the change scenario table 21 upon receiving a request to add location information to the list of location information in the change scenario table 21 or a request to add a change content to the list of change content in the change scenario table 21 from the input unit 206 or another device coupled via the communication line 40 or 41. Such process leads to an increase in numbers of options available to a user.

Fig. 6 illustrates, in its lower part (b), an example of a screen interface 610 in the input of the change scenario in Step 503. The screen interface 610 includes a button group 611 for scenario input and an installation layout specifying area 612. In the example illustrated in part (b) of Fig. 6, "ADDITION OF DOOR" is clicked from among the button group 611 for scenario input.

In this event, the change scenario input part 3 displays the list of change location by a pull-down menu or the like, and the change management administrator 30 selects a doorway of the "BLOCK 2", for example. In response to this selection, the change scenario
5 input part 3 reads icon data of the "DOOR 2" and draws it at the specified position. Then, in a case where the "DOOR 2" is clicked, the change scenario input part 3 performs a drawing process of surrounding the "DOOR 2" with a rectangle 613 in the specifying area 612. Then, if the rectangle 613 is clicked, the change
10 scenario input part 3 makes the change content list of the device pop up, for example, and receives specification of the change content, such as "addition of EK," "addition of CR" for room entry, or "addition of CR" for room exit, from the list.

Next, when the change scenario indicates addition or change
15 of a device or function, the influenced location analysis part 4 identifies an applicable product, i.e., a candidate device, which includes a function satisfying the request of the change content, by matching the change content against the product information table 23 (Step 504). Further, the influenced
20 location analysis part 4 creates a change configuration plan and outputs it on the output unit 205 in such a manner that the candidate device is displayed additionally or in place of an existing device in the change location in the layout (Step 505). Note that, when the change scenario indicates deletion of a device
25 or function, the influenced location analysis part 4 displays as

a change configuration plan the layout information on the output unit 205 in such a manner that the candidate device in the change location in the layout is deleted.

Fig. 7, in its parts (c-1) and (c-2), and Fig. 8, in its part (c-3), illustrate examples of screen interfaces 700, 710, and 800, respectively, for the change configuration plan. The screen interface 700 includes a tab list 701 illustrating a list of change configuration plans, a changed layout drawing area 702, and a quotation button 703. The example illustrated in part (c-1) of Fig. 7 has, as a change configuration plan 1, a layout in which "EK 2", "CR 3" and "CR 4" are newly installed at "DOOR 2", "CONTROLLER 2" is newly installed to be coupled via serial to these components, and the "CONTROLLER 2" is coupled via LAN to the already-installed "MANAGEMENT SERVER 1." In this example, the newly-installed "EK 2," "CR 3," "CR 4," and "CONTROLLER 2" are influenced locations, and are thus highlighted with a thick line, for example. The same applies to the other examples.

The example illustrated in part (c-2) of Fig. 7 has, as a change configuration plan 2, a layout in which the already-installed "CONTROLLER 1" is changed to "CONTROLLER 3", "EK 2", "CR 3", and "CR 4" are newly installed at "DOOR 2", these components are serially coupled to the newly-installed "CONTROLLER 3", and the newly-installed "CONTROLLER 3" is coupled via LAN to the already-installed "MANAGEMENT SERVER 1".

The example illustrated in part (c-3) of Fig. 8 has, as a

change configuration plan 3, an installation layout in which the already-installed "CONTROLLER 1" is changed to "CONTROLLER 4", "EK 2", "CR 3" and "CR 4" are newly installed at "DOOR 2", these components are serially coupled to the newly-installed
5 "CONTROLLER 4", and a web browser manages room entry/exit instead of the already-installed "MANAGEMENT SERVER 1".

In other words, parts(c-1) and (c-2) of Fig. 7 and part (c-3) of Fig. 8 illustrate a situation where, in response to an instruction to add the "EK", "CR" for room entry, and "CR" for
10 room exit, the influenced location analysis part 4 searches, in order to add such devices, the product information table 23 for a specification of a controller needed to run the devices, and thereby found three types of controllers, "CONTROLLER 2", "CONTROLLER 3" and "CONTROLLER 4". Since the number of devices
15 controllable by each of the "CONTROLLER 3" and "CONTROLLER 4" is twice as large as the number of devices controllable by each of the "CONTROLLER 1" and "CONTROLLER 2" according to the specifications of these controllers, the existing "CONTROLLER 1" and "CONTROLLER 2" can be replaced with either "CONTROLLER 3" or
20 "CONTROLLER 4". Thus, the layouts illustrated in part (c-2) of Fig. 7 and part (c-3) of Fig. 8 are achieved.

For example, assume that a sales representative performing sales activity on a change of the room entry/exit management system 10, i.e., the change management administrator 30, makes
25 a system proposal at his/her customer's place with the change

management analysis apparatus 1 being carried along. In such a situation, generally, rather than providing only one change configuration plan, it is more advantageous to provide a plurality of change configuration plans to the customer, as illustrated in parts (c-1) and (c-2) of Fig. 7 and part (c-3) of Fig. 8, and let the customer choose from among these, because this helps the customer select a plan and allows the sales representative to propose a system by making a comparison between one system with another and thus to get a contract more easily.

10 Note that, when the quotation button 703 is pressed on the screen interface for the change configuration plan, such as one in part (c-1) of Fig. 7, the influenced location analysis part 4 calculates and displays a quoted price in the case of changing the layout to the layout of the corresponding change configuration plan. In this process, the influenced location analysis part 4 reads, from the product information table 23, data on costs required for adding, changing, or deleting each addition, change, or deletion target device indicated in the corresponding change configuration plan, and calculates a quoted price by summing the
15 required costs for the change configuration plan. The influenced location analysis part 4 preferably outputs information on the calculated quoted price in the display of the change configuration plan.

20 Subsequently, the operation simulation part 5 receives specification of an operation condition for the change

configuration plan from the input unit 206, simulates a behavior in which the devices are run under the operation condition applied to information on functions of devices in the product information table 23, and outputs the simulation result in the display of the
 5 change configuration plan (Step 506).

The operation condition may be a condition of "passage rush," i.e., a condition where 1000 employees enter/leave a room per hour (condition on operation content) at a certain door (condition on location), for example. In this case, the operation
 10 simulation part 5 extracts, from the product information table 23, information on a function of the card reader "CR 4" for example installed at "DOOR 2" for example, such as process time "1 second" required per authentication. Then, in the case of processing "3000 room entry/exit per hour," it is determined that the
 15 operation condition can be satisfied based on calculation of $60 \times 60 / 1 = 3600$ persons > 3000 persons, or required process time is calculated as $3000 / 1 = 3000$ seconds = 50 minutes. Such results are outputted in the display of the change configuration plan.

20 Fig. 8 illustrates, in part (d), an example of a screen interface 810 in the operation simulation. The screen interface 810 includes a button group 811 used for input of the operation content of the operation condition and a drawing area 812 for the input of the location condition of the operation condition and
 25 the checking of a result. In the example illustrated part (d)

in Fig. 8, it is assumed that "LOG STORAGE PERIOD" of the button group 811 is clicked as the operation content, and "DOOR 1" is specified in the drawing area 812. In response to this, the operation simulation part 5 receives, through the input unit 206, specification of the length of the log storage period and room entry/exit frequency, as operation simulation information corresponding to the operation content, "LOG STORAGE PERIOD". In addition, the operation simulation part 5 displays, in the display of the "door 1," information such as "Room entry/exit logs need to be stored for one year (length of storage period). How many GB of storage is needed if 10 persons pass per day (room entry/exit frequency)?" as the operation simulation information. Naturally, the operation simulation part 5 performs simulation of Step 506 in accordance with the above operation condition.

Likewise, assume that "PASSAGE RUSH" of the button group 811 is clicked as the operation content, and "DOOR 2" is specified in the drawing area 812. In response to this, the operation simulation part 5 receives, through the input unit 206, specification of a rush time frame and room entry/exit frequency, as operation simulation information corresponding to the operation content, "PASSAGE RUSH". In addition, the operation simulation part 5 displays, in the display of "DOOR 2", information such as "How long does each employee wait if 1000 employees pass (room entry/exit frequency) in one hour in the morning (rush time frame)?" as the operation simulation

information. Naturally, the operation simulation part 5 performs simulation of Step 506 in accordance with the above operation condition.

The change management administrator 30 views the operation
5 simulation result of the change configuration plan under the predetermined operation condition, determines whether or not the change configuration plan has any problem, and inputs the determination result through the input unit 206. In response to the determination result, the operation simulation part 5
10 determines its content (Step 507). If the determination result indicates that there is no problem (Step 507: no problem), the operation simulation part 5 sets the change configuration plan as an optimum plan and outputs the plan through means which can be accumulated, such as through electronic files or paper
15 documents (Step 508). On the other hand, if the determination result indicates that there is a problem (Step 507: problem), the operation simulation part 5 returns the process back to Step 505, performs simulation of another change configuration plan under a certain operation condition, and checks whether the plan has
20 any problem again.

Note that, the operation simulation part 5 preferably highlights, in the display of each configuration plan, information on at least one of a location and range to be influenced by addition, replacement, or deletion of a device based on the
25 change scenario or by stopping or replacement of a device

determined by the simulation under a predetermined operation condition, and an influenced content thereof. For example, in addition to the change of the display of an existing device to that of a new device due to the replacement of devices or the like, 5 this processing makes the location related to the change easy to recognize visually. For example, the device after the change may be displayed in such a manner that the line of the device is made thicker than those of the other devices, the color or pattern of the device is made different from those of the other devices, or 10 a text or icon for notification of the change is arranged.

Further, the operation simulation part 5 preferably stores the operation scenario table 22 in the storage unit 203 and the operation scenario table 22 contains the list of location information for receiving a choice of the location among the 15 operation conditions and the list of operation content. In this case, the operation simulation part 5 preferably executes the step of updating the operation scenario table 22 upon receiving a request to add location information to the location information list in the operation scenario table 22 or a request to add an 20 operation content to the operation content list in the operation scenario table 22 from another device coupled to the operation simulation part 5 through the input unit 206 or the communication line 40 or 41.

---Embodiment 2---

25 Described in Embodiment 2 is a case where an authentication

method is changed as the change of the room entry/exit management system 10. In Example 2, the configuration of the change management analysis apparatus 1, the data structures of the tables and the like, and the flowchart are the same as those of Embodiment 5 1. Moreover, the installation layout editing screen (Fig. 6) and the operation simulation screen (Fig. 8, part (d)) as the screen interfaces are also the same as those of Embodiment 1.

Fig. 9 illustrates, with respect to Embodiment 2, in part (b), an example of a screen interface 900 for the input of the 10 change scenario, and illustrates, in part (c), an example of a screen interface 910 for the checking of the change configuration plan. The screen interface 900 shows a case where, as the change scenario, an authentication device at a doorway of "DOOR 1" is changed from a card reader to a biometric information reader. In 15 this case, the change management administrator 30 clicks "CHANGE OF DEVICE" of a button group 901 for scenario input, clicks "DOOR 1" in a layout specifying area 902, and then inputs information to "change to biometric information reader". The influenced location analysis part 4 selects a candidate device in accordance 20 with such specification of the change scenario, as in the case of Embodiment 1.

In the screen interface 910, an installation layout in the case of changing a card reader "CR 1" to "BIOMETRIC READER 1" is displayed in a drawing area 911 as a change configuration plan 25 specified by the influenced location analysis part 4. Here, the

installation layout is displayed in which a "MANAGEMENT SERVER 2", "CONTROLLER 2" and "BIOMETRIC READER 1" are newly installed, the newly-installed "CONTROLLER 2" is coupled via serial to the already-installed "EK 1" and "CR 2" and the newly-installed
5 "BIOMETRIC READER 1", and the newly-installed "CONTROLLER 2" is coupled via LAN to the newly-installed "MANAGEMENT SERVER 2."

By checking the screen interface 910, the change management administrator 30 can rapidly and easily know which device in the current installation layout should be changed and how.

10 ---Embodiment 3---

Described in Embodiment 3 is a case of collaborating with a monitoring camera as the change of the room entry/exit management system 10. In Embodiment 3, the configuration of the change management analysis apparatus 1, the data structures of
15 the tables and the like, and the flowchart are the similar to those of Embodiment 1. Moreover, the installation layout editing screen (Fig. 6) and the operation simulation screen (Fig. 8, part (d)) as the screen interfaces are also the similar to as those of Embodiment 1.

20 Fig. 10 illustrates, with respect to Embodiment 3, in part (b), an example of a screen interface 1000 for the input of the change scenario, and Fig. 10 illustrates, in part (c), an example of a screen interface 1010 for the checking of the change configuration plan. The screen interface 1000 shows a case where,
25 as the change scenario, tailgating needs to be prevented at a

doorway of "DOOR 1". In this case, the change management administrator 30 clicks an "OPTIONAL REQUEST" button of a button group 1001 for scenario input, clicks the "DOOR 1" in a layout specifying area 1002, and then inputs information that
5 "tailgating needs to be prevented." The influenced location analysis part 4 selects a candidate device in accordance with such specification of the change scenario, as in the case of Embodiment 1.

In the screen interface 1010, an installation layout is
10 displayed in a drawing area 1011 as a change configuration plan specified by the influenced location analysis part 4. The installation layout indicates that a "MONITORING CAMERA 1" is newly installed, the newly-installed "MONITORING CAMERA 1" is coupled via serial to the already-installed "CONTROLLER 1," and
15 "CHANGE OF SETTING" may be made by the "CONTROLLER 1." The detailed content of the change of setting is managed in the storage unit 203 of the change management analysis apparatus 1 in association with the display area for "change of setting" 1012. When the change management administrator 30 clicks "change of
20 setting" 1012, the change management analysis apparatus 1 displays setting content information on the output unit 205.

By checking the screen interface 1010, the change management administrator 30 can rapidly and easily know what kind of device should be newly installed and where in the current
25 installation layout, and how the setting needs to be changed for

such change.

---Embodiment 4---

Described in Embodiment 4 is a case of analyzing a range to be influenced when a card reader goes out of order, as the operation simulation of the room entry/exit management system 10. In Embodiment 4, the configuration of the change management analysis apparatus 1, the data structures of the tables and the like, and the flowchart are similar to those of Embodiment 1. Moreover, the layout editing screen (Fig. 6), the change scenario input screen (Fig. 6, part (b)), and the change configuration plan checking screens (Fig. 7, parts (c-1) and (c-2), and Fig. 8, part (c-3)) as the screen interfaces are also similar to those of Embodiment 1.

Fig. 11 illustrates, in parts (d-1) and (d-2), examples of screen interfaces 1100 and 1110, respectively, for the operation simulation. The screen interface 1100 shows a result of simulating the first change configuration plan (Fig. 7, part (c-1)). It is assumed that, in this screen, the change management administrator 30 clicks a "FAILURE HANDLING" button of a button group 1101 used for the input of the operation condition, and clicks a display area for the "CR 1", and that the operation simulation part 5 reads, from the product information table 23, information on "CONTROLLER 1" controlling "CR 1", and the information states that the controller itself and devices controlled by the controller need to be stopped for changing the

card reader coupled to the controller due to the failure of the card reader, for example. In this case, the operation simulation part 5 displays, near the display of "controller 1", "EK 1" and "CR 2", information that these devices need to be stopped for changing "CR 1" due to its failure, i.e., "NEED STOPPING" (corresponding to the display of an influenced content). Note that, in the example illustrated in the drawing, nothing is displayed for "EK 2", "CR 3" and "CR 4" located near a doorway of "DOOR 2" because no influence is to be exerted thereon.

10 The screen interface 1110 shows a result of simulating the second change configuration plan (Fig. 7, part (c-2)). Assume that, in this screen, the change management administrator 30 clicks the "FAILURE HANDLING" button and clicks a display area for "CR 1" as in the case of the above example, and that the operation simulation part 5 reads, from the product information table 23, information on "CONTROLLER 3" controlling "CR 1", and the information states that the controller itself and devices controlled by the controller need to be stopped for changing the card reader coupled to the controller due to the failure of the card reader, for example. In this case, the operation simulation part 5 displays, near the display of "CONTROLLER 3", "EK 1", "CR 2", "EK 2", "CR 3" and "CR 4", information that these devices need to be stopped for changing "CR 1" due to its failure, i.e., "NEED STOPPING" (corresponding to the display of an influenced content).

25

By comparing the screen interfaces 1100 and 1110 with each other, the change management administrator 30 can rapidly and easily know which position is to be influenced and what kind of influence is to be exerted when CR 1 goes out of order according to each of the first and second change configuration plans.

---Embodiment 5---

Described in Embodiment 5 is a case of simulating a situation where card IDs are distributed to all the controllers, as the operation simulation of the room entry/exit management system 10. In Embodiment 5, the configuration of the change management analysis apparatus 1, the data structures of the tables and the like, and the flowchart are similar to those of Embodiment 1. Moreover, the layout editing screen (Fig. 6(a)), the change scenario input screen (Fig. 6, part (b)), and the change configuration plan checking screens (Fig. 7, parts (c-1) and (c-2), and Fig. 8, part (c-3)) as the screen interfaces are also similar to those of Embodiment 1.

Fig. 12 illustrates, in part (d), an example of a screen interface 1200 for the operation simulation. Assume that, in the screen interface 1200, the change management administrator 30 clicks a "CARD ID DISTRIBUTION" button of a button group 1201 used for the input of the operation condition, and inputs operation simulation information in a drawing area 1202 for the input of the operation condition and the checking of the result. Then, the operation simulation part 5 extracts, from the product

information table 23, information on communication functions (such as data communication amount per unit time) respectively included in "MANAGEMENT SERVER 1" being a distribution source of card IDs and "CONTROLLER 3", "CONTROLLER 4" and "CONTROLLER 5" being a distribution target thereof, for example. Then, in the case of distributing card IDs for "1000 persons", the operation simulation part 5 divides a card ID data size per person $\times$ the number of IDs to be distributed to each controller by the lower one of the communication functions of the management server 1 and the controller to calculate time needed to distribute the card IDs, and displays the calculation result in the drawing area 1202. In addition to the time needed for distribution, the load to be imposed on LAN (i.e., medium for coupling the server 1 and each controller to each other) during the distribution may be calculated. For the calculation of such load, for example, the ratio of the total communication amount between the server 1 and each controller to the value of the bandwidth of LAN described in the product information table 23 may be calculated.

By checking the screen interface 1200, the change management administrator 30 can rapidly and easily know a simulation result of card ID distribution in the changed installation layout.

Although the embodiments have been described in detail, it is not limited to these embodiments, and various changes are possible within the gist of the present invention.

According to the above embodiments, information on influence caused by change in installation layout in a room entry/exit management system may be provided to a user rapidly and efficiently.

5 The description of this specification clarifies at least the following points. Specifically, in the change management analysis method, the information processing apparatus may highlight, in the displayed change configuration plan, information on at least one of a location and a range to be
10 influenced by one of addition, replacement, and deletion of the device based on the change scenario or by one of stopping and replacement of the device determined by the simulation under the predetermined operation condition, and an influenced content thereof.

15 Further, in the change management analysis method, the information processing apparatus may perform the processes of: in a case where the change scenario indicates one of addition and change of one of a device or a function, identifying a plurality of candidate devices, each of which having a function satisfying
20 the requirement of the change content, by matching the change content against the product information table, and displaying, on the output unit, a plurality of change configuration plans satisfying the change scenario which are created in such a manner that each one of addition of the candidate device to the change
25 location in the layout and replacement of an existing device with

the candidate device in the change location is displayed, performing the simulation for each of the change configuration plans and outputting a simulation result for each of the change configuration plans in the display of the change configuration plan; and receiving, from the input unit, specification of one of the change configuration plans that is determined as being optimum by an operator, and displaying the specified change configuration plan on the output unit as an optimum plan.

Further, in the change management analysis method, the information processing apparatus may perform the process of reading, from the product information table, data on costs required for adding, changing, or deleting for a device that is a target for each of addition, change and deletion indicated by each of the change configuration plans, calculating a quoted price by summing the respective required costs for the change configuration plans, and outputting a result in the displayed change configuration plan.

Further, in the change management analysis method, the information processing apparatus may perform the processes of: receiving the change scenario by displaying a list of location information contained in the layout information in a selectable manner and receiving a choice of the change location from the list of location information, and by displaying a list of change content stored in advance in the storage unit in a selectable manner and receiving a choice of the change content from the list

of change content; and receiving specification of the operation condition by displaying a list of location information contained in the layout information in a selectable manner and receiving a choice of a location among the operation conditions from the
5 list of location information, and by displaying a operation content list stored in advance in the storage unit in a selectable manner and receiving a choice of an operation content among the operation conditions from the list of operation content.

Further, in the change management analysis method, the
10 information processing apparatus may hold, in the storage unit, a change scenario table storing therein the location information list for receiving selection on the change location and the change content list for receiving selection on the change content, and execute the step of updating the change scenario table upon
15 receiving a request to add location information to the location information list in the change scenario table or a request to add a change content to the change content list in the change scenario table from another device coupled to the information processing apparatus through the input unit or a network.

20 Further, in the change management analysis method, the information processing apparatus may perform the process of updating the product information table upon receiving a request to add information on one of a device and a function to the product information table from one of the input unit and another device
25 coupled to the information processing apparatus through the

network.

Further, in the change management analysis method, the information processing apparatus may store an operation scenario table in the storage unit, the operation scenario table containing
5 the list of location information for receiving a choice of the location among the operation conditions and the list of operation content, and performs the process of updating the operation scenario table upon receiving a request to add location information to the list of location information in the operation
10 scenario table or a request to add an operation content to the list of operation content in the operation scenario table from one of the input unit and another device coupled to the information processing apparatus through the network.

Note that, the information processing apparatus may store,
15 in the change scenario table in the storage unit, at least one of addition of door, change of device, collaboration with another system, and optional request, as the list of change content, and display the list of change content including at least one option of addition of door, change of device, collaboration with another
20 system, and optional request to receive selection on the change content from the list.

Further, the information processing apparatus may store, in the operation scenario table in the storage unit: passage rush which is an option for estimating a situation observed when
25 entry/exit processing is performed frequently; log storage period

which is an option for estimating a resource needed to store logs for a predetermined period; log display time which is an option for estimating time needed to collect logs from another device via a network and display the logs; network usage rate which is
5 an option for estimating a network usage rate at the time of performing predetermined processing; card ID distribution which is an option for estimating time needed to distribute a user ID list to a controller of a card reader; failure handling which is an option for estimating a device required to be stopped or
10 replaced due to the failure of another device or function; change of holiday which is an option for estimating the running state of a device in the case of running the device corresponding to holidays different among divisions or areas; personnel reshuffle which is an option for estimating the running state of a device
15 in the case of running the device corresponding to change in the number of persons to be processed caused by the personnel reshuffle; and change of administrator which is an option for estimating the running state of a device in the case of changing the entry/exit management privilege different from one tenant to
20 another, as the list of operation content.

In this case, the information processing apparatus preferably displays the operation content list including at least one option of passage rush, log storage period, log display time, network usage rate, card ID distribution, failure handling,
25 change of holiday, personnel reshuffle, and change of

administrator to receive selection on the operation content from the list.

5 The specification and drawings are, accordingly, to be regarded in an illustrative rather than a restrictive sense. It will, however, be evident that various modifications and changes may be made thereto without departing from the spirit and scope of the invention(s) as set forth in the claims.

WE CLAIM

1. A change management analysis method to be performed by an information processing apparatus configured to analyze an influence caused by a change in a room entry/exit management
5 system, the method comprising:

reading layout information from a storage unit, the layout information indicating a layout of devices included in a room entry/exit management system in a predetermined area;

displaying the layout information on an output unit and
10 receiving a change scenario from an input unit, the change scenario including change location information and change content of a configuration of the room entry/exit management system in a layout thereof;

displaying a change configuration plan on the output unit,
15 the change configuration plan being created in such a manner that, in a case where the change scenario indicates one of addition and change of one of a device and a function, a candidate device having a function satisfying a requirement of the change content is identified by matching the change content against a product
20 information table in which information on a function of a device that can be included in the room entry/exit management system is stored, and one of addition of the candidate device to the change location in the layout and replacement of an existing device with the candidate device in the change location is displayed, and in
25 a case where the change scenario indicates deletion of one of a

device and a function, a device at the change location in the layout is deleted; and

with respect to the change configuration plan, receiving specification of an operation condition from the input unit, applying the operation condition to information on the function of the device in the product information table, simulating a behavior for a case where the device is run under the operation condition, and outputting a simulation result in the displayed change configuration plan.

10

2. The change management analysis method according to claim 1, further comprising:

highlighting, in the displayed change configuration plan, information on at least one of a location and a range to be influenced by one of addition, replacement, and deletion of the device based on the change scenario or by one of stopping and replacement of the device determined by the simulation under the predetermined operation condition, and an influenced content thereof.

15
20

3. The change management analysis method according to any one of claims 1 and 2, further comprising:

in a case where the change scenario indicates one of addition and change of one of a device or a function, identifying a plurality of candidate devices, each of which having a function satisfying

25

the requirement of the change content, by matching the change content against the product information table, and displaying, on the output unit, a plurality of change configuration plans satisfying the change scenario which are created in such a manner
5 that each one of addition of the candidate device to the change location in the layout and replacement of an existing device with the candidate device in the change location is displayed,

performing the simulation for each of the change configuration plans and outputting a simulation result for each
10 of the change configuration plans in the display of the change configuration plan; and

receiving, from the input unit, specification of one of the change configuration plans that is determined as being optimum by an operator, and displaying the specified change configuration
15 plan on the output unit as an optimum plan.

4. The change management analysis method according to claim 3, further comprising:

reading, from the product information table, data on costs
20 required for adding, changing, or deleting for a device that is a target for each of addition, change and deletion indicated by each of the change configuration plans, calculating a quoted price by summing the respective required costs for the change configuration plans, and outputting a result in the displayed
25 change configuration plan.

5. The change management analysis method according to any one of claims 1 to 4, further comprising:

receiving the change scenario by displaying a list of
5 location information contained in the layout information in a selectable manner and receiving a choice of the change location from the list of location information, and by displaying a list of change content stored in advance in the storage unit in a selectable manner and receiving a choice of the change content
10 from the list of change content; and

receiving specification of the operation condition by displaying a list of location information contained in the layout information in a selectable manner and receiving a choice of a location among the operation conditions from the list of location
15 information, and by displaying a operation content list stored in advance in the storage unit in a selectable manner and receiving a choice of an operation content among the operation conditions from the list of operation content.

20 6. The change management analysis method according to claim 5,

wherein the information processing apparatus stores a change scenario table in the storage unit, the change scenario table containing the list of location information that receives
25 a choice of the change location and the list of change content

that receives a choice of the change content, and

the method further comprising:

updating the change scenario table upon receiving a request
to add location information to the list of location information
5 in the change scenario table or a request to add a change content
to the list of change content in the change scenario table from
one of the input unit and another device coupled to the information
processing apparatus through a network.

10 7. The change management analysis method according to any one
of claims 5 and 6, further comprising:

updating the product information table upon receiving a
request to add information on one of a device and a function to
the product information table from one of the input unit and
15 another device coupled to the information processing apparatus
through the network.

8. The change management analysis method according to any one
of claims 5 to 7,

20 wherein the information processing apparatus stores an
operation scenario table in the storage unit, the operation
scenario table containing the list of location information for
receiving a choice of the location among the operation conditions
and the list of operation content,

25 the method further comprising:

updating the operation scenario table upon receiving a request to add location information to the list of location information in the operation scenario table or a request to add an operation content to the list of operation content in the operation scenario table from one of the input unit and another device coupled to the information processing apparatus through the network.

9. A change management analysis apparatus that is an information processing apparatus configured to analyze an influence caused by a change in a room entry/exit management system, the change management analysis apparatus comprising:

a configuration information input part configured to read layout information from a storage unit, the layout information indicating a layout of devices included in a room entry/exit management system in a predetermined area;

a change scenario input part configured to display the layout information on an output unit and to receive a change scenario from an input unit, the change scenario including change location information and change content in a configuration of the room entry/exit management system in a layout thereof;

an influenced location analysis part configured to display a change configuration plan on the output unit, the change configuration plan being created in such a manner that, in a case where the change scenario indicates one of addition and change

of one of a device and a function, a candidate device having a function satisfying a requirement of the change content is identified by matching the change content against a product information table in which information on a function of a device
5 usable in the room entry/exit management system is stored, and one of addition of the candidate device to the change location in the layout and replacement of an existing device with the candidate device in the change location is displayed, and in a case where the change scenario indicates deletion of one of a
10 device or a function, a device at the change location in the layout is deleted; and

an operation simulation part configured to receive, with respect to the change configuration plan, specification of an operation condition from the input unit, to apply the operation
15 condition on information on the functions of the devices in the product information table, simulate a behavior for a case where the devices are run under the operation condition and to output a simulation result in the displayed change configuration plan.

20 10. A change management analysis program causing an information processing apparatus, which is configured to analyze an influence caused by change management of a room entry/exit management system, to perform:

reading layout information from a storage unit, the layout
25 information indicating a layout of devices included in a room

entry/exit management system in a predetermined area;

displaying the layout information on an output unit and receiving, a change scenario from an input unit, the change scenario including change location information and change content
5 in a configuration of the room entry/exit management system in a layout thereof;

displaying a change configuration plan on the output unit, the change configuration plan being created in such a manner that, in a case where the change scenario indicates one of addition and
10 change of one of a device and a function, a candidate device having a function satisfying a requirement of the change content is identified by matching the change content against a product information table in which information on a function of a device that can be included in the room entry/exit management system is
15 stored, and one of addition of the candidate device to the change location in the layout and replacement of an existing device in the change location is displayed, and in a case where the change scenario indicates deletion of one of a device and a function, a device at the change location in the layout is deleted; and

20 with respect to the change configuration plan, receiving specification of an operation condition from the input unit, applying the operation condition to the information on the function of the device in the product information table, simulating a behavior for a case where the device is run under
25 the operation condition, and outputting a simulation result in

the displayed change configuration plan.