

DESCRIPTION

Title of Invention

WORK MANAGEMENT METHOD, SYSTEM, AND PROGRAM

Technical Field

5 [0001] The technique of the present disclosure relates to a management technique for inspection work of a pipe, a device, or the like installed in a plant facility.

Background Art

10 [0002] For example, in a facility such as a petroleum plant, a large number of facilities and devices, installation and connection parts of pipes for connecting these devices to each other, fixing parts for fixing the devices at predetermined positions, or the like are used. In these devices and the like, a predetermined procedure is set for
15 work such as installation, connection processing between pipes, and fixing processing. Further, inspection work is performed in assembly and maintenance work of the devices and the like. In the inspection work, an order, inspection contents of the inspection work, scheduling of the inspection
20 work, and the like are set for each device respectively, and safety and reliability of the plant are ensured by the inspection processing.

[0003] For such work in a plant, there is known a plant maintenance work management system that automatically creates
25 a schedule and a report document by inputting necessary information (for example, Patent Literature 1). It is known to perform authentication processing of entrance and exit of a facility by an identification tag carried by a worker and to distinguish a work process or to collect time information for
30 performing the processing by using a mobile terminal carried by the worker (for example, Patent Literature 2). There is known a server or a site terminal carried by a worker that allows time information of a work process to be grasped by giving a time stamp (for example, Patent Literature 3). There

is known a system that performs progress management based on a setting input of a confirmed content with respect to a confirmation item when performing reliable maintenance and inspection by a plurality of persons meeting and confirming based on a check list (for example, Patent Literature 4). In addition, there is known a construction information management in which an administrator PC, a site terminal, a confirmer PC, and the like are connected to a management network, a confirmation work related to construction is performed based on data acquired from the administrator PC, the confirmer PC confirms the authenticity of the data acquired from the administrator terminal by collating the data against records stored on the management network, and the authentication processing is performed in data transmission and reception (for example, Patent Literature 5).

Citation List

Patent Literature

[0004] Patent Literature 1: JP H8-129414 A
Patent Literature 2: JP 2011-227811 A
Patent Literature 3: JP 2017-157879 A
Patent Literature 4: JP 2004-227307 A
Patent Literature 5: JP 6540873 B2

Summary of Invention

Technical Problem

[0005] Meanwhile, in a plant facility, for example, after an inspection work is performed by a site supervisor or management processing staff of a construction company that has performed work of assembly or maintenance management processing, an inspection work is performed by a management staff of an owner company of the plant facility. As described above, in the plant facility, importance is placed on ensuring safety by thoroughly checking water leakage from pipes,

malfunction of devices, and other defects in sanitary management or the like of the facility.

[0006] However, since the plant facility includes a large number of devices, pipes, etc. and a large number of

5 inspection items are set for the devices, an enormous amount of time is required for the inspection processing of the plant. During the inspection processing, the plant facility cannot be operated. In addition, there is a problem in that the inspection processing needs to be performed by both the
10 construction company and the owner company and a considerable amount of time is required.

[0007] The inventor of the technique of the present disclosure has found that it is possible to shorten the operation stop period of the plant facility while securing the
15 quality of the inspection processing by visualizing the progress state and the delay state of the inspection work and making it possible to easily confirm necessary information such as work items.

[0008] With respect to such problems, the configurations
20 disclosed in Patent Literatures 1 to 5 cannot solve the problems.

[0009] Thus, it is an object of the technique of the present disclosure to make it possible to easily grasp a stage, a degree of progress, and the like of an inspection
25 work on the basis of the above problem and the above findings, thereby speeding up the inspection work and ensuring safety by making the inspection items to be complied with.

Solution to Problem

30 [0010] To achieve the above-described object, one aspect of a work management method of the present disclosure is a work management method by a plurality of administrators, wherein a computer executes processes including: a process of acquiring a device information of a device and an

identification information of a first administrator and a second administrator who access a code information set in the device which is a work target; a process of reading a work information associated with the device information; a process
5 of acquiring, from a terminal device of the first administrator, a confirmation information indicating whether or not a work of the first administrator is suitable for a work item included in the work information, generating a progress information of the work item and a notification
10 information for the second administrator in a case where the confirmation information indicates a confirmation result of being suitable, the notification information for the second administrator indicating that a duty of work has shifted to the second administrator; a process of transmitting, to a
15 terminal device of the second administrator, the notification information indicating that the duty of work has shifted, generating a management screen including the notification information for the second administrator and the progress information, and displaying an elapsed time which has elapsed
20 since the duty of work shifts to the second administrator on the management screen; a process of acquiring, from the terminal device of the second administrator, a confirmation information indicating whether or not a work of the second administrator is suitable for the work item, and updating a
25 work process for a next work item included in the work information and generating a notification information for the first administrator indicating that the duty of work has shifted to the first administrator in a case where the confirmation information indicates a confirmation result of
30 being suitable; a process of updating the progress information of a work with the confirmation information of the first administrator and the second administrator; and a process of generating the management screen which is updated based on the notification information for the first administrator, the

notification information for the second administrator, and the progress information.

[0011] The above-described work management method further includes: a process of reading the confirmation information from the second administrator to generate a notification information for the first administrator including an instruction of (1) returning a work process of the work item to the first administrator when the confirmation result indicates unsuitability and generate a notification information for the first administrator including an instruction of (2) proceeding to a work process updated for a next work item when the confirmation result indicates suitability.

[0012] The above-described work management method further includes: a process of acquiring, from a timer, an elapsed time that has elapsed after notification of the notification information for the first administrator and an elapsed time that has elapsed after notification of the notification information for the second administrator; and a process of displaying, on the management screen, an elapsed time information together with the notification information for the first administrator and the notification information for the second administrator.

[0013] The above-described work management method further includes: a process of reading a work schedule information associated with the work information for each of the devices; a process of comparing the work schedule information with the progress information to generate a comparison result; and a process of displaying the comparison result on the management screen.

[0014] The above-described work management method further includes: a process of assigning a scheduled deadline of a work to each of a plurality of categories into which a part or all of work processes included in the work information are

classified; and a process of notifying the first administrator and the second administrator of the scheduled deadline.

[0015] The above-described work management method further includes: a process of accessing a database which manages the identification information and authenticating the identification information which is acquired based on a registration information registered in the database; and a process of regulating an access from an administrator who is not authenticated based on an authentication result.

[0016] To achieve the above-described object, one aspect of a work management system of the present disclosure includes: a device that is a work target; terminal devices that are used by a first administrator and a second administrator who monitor a work progress; a database that stores a device information set in the device, a work information associated with the device information, and an identification information of the first administrator and the second administrator; and a server that accesses the terminal devices or the database, reads the device information and the work information, generates a progress information of a work item included in the work information and a notification information for the second administrator, the notification information for the second administrator indicating that a duty of work has shifted to the second administrator, in a case where a confirmation information, which is acquired from the terminal device of the first administrator and indicates whether or not a work of the first administrator is suitable for the work item, indicates a confirmation result of being suitable based on the confirmation information, transmits, to the terminal device of the second administrator, the notification information indicating that the duty of work has shifted, generates a management screen including the notification information for the second administrator and the progress information, displays an elapsed time which has

elapsed since the duty of work shifts to the second administrator on the management screen, acquires, from the terminal device of the second administrator, a confirmation information indicating whether or not a work of the second administrator is suitable for the work item, updates a work process for a next work item included in the work information while generating a notification information for the first administrator indicating that the duty of work has shifted to the first administrator in a case where the confirmation information indicates a confirmation result of being suitable, updates the progress information of a work with the confirmation information of the first administrator and the second administrator, and generates the management screen which is updated based on the notification information for the first administrator, the notification information for the second administrator, and the progress information.

[0017] To achieve the above-described object, one aspect of a work management program of the present disclosure causes a computer to realize: a function of reading a device information and an identification information of a first administrator and a second administrator who access a code information set in a device which is a work target; a function of reading a work information associated with the device information; a function of acquiring, from a terminal device of the first administrator, a confirmation information indicating whether or not a work of the first administrator is suitable for a work item included in the work information, generating a progress information of the work item and a notification information for the second administrator in a case where the confirmation information indicates a confirmation result of being suitable, the notification information for the second administrator indicating that a duty of work has shifted to the second administrator; a function of transmitting, to a terminal device of the second

administrator, the notification information indicating that the duty of work has shifted, generating a management screen including the notification information for the second administrator and the progress information, and displaying an
5 elapsed time which has elapsed since the duty of work shifts to the second administrator on the management screen; a function of acquiring, from the terminal device of the second administrator, a confirmation information indicating whether or not a work of the second administrator is suitable for the
10 work item, and updating a work process for a next work item included in the work information and generating a notification information for the first administrator indicating that the duty of work has shifted to the first administrator in a case where the confirmation information indicates a confirmation
15 result of being suitable; a function of updating the progress information of a work with the confirmation information of the first administrator and the second administrator; and a function of generating the management screen which is updated based on the notification information for the first
20 administrator, the notification information for the second administrator, and the progress information.

Advantageous Effects of Invention

[0018] According to the present invention, any one of the
25 following effects can be obtained.

(1) The progress state of the inspection work can be easily grasped.

(2) By clearly indicating the time that has elapsed since the start of the work, it is possible to cause the
30 administrator who should perform the inspection processing to recognize the delay state.

(3) It is possible to prevent an extension of a construction period by displaying information such as a progress state and an elapsed time of work for each device to

prompt the administrator to execute inspection processing.

(4) Since the notification information is output to the administrator who should perform the inspection work, the confirmation processing of the work stage is facilitated.

5 [0019] Other objects, features, and advantages of the technique of the present disclosure will become more apparent with reference to the accompanying drawings and embodiments.

Brief Description of Drawings

10 [0020] Fig. 1 is a flowchart showing an example of work management processing according to a first embodiment.

Fig. 2 is a diagram showing a configuration example of a work management system.

15 Fig. 3 is a diagram showing an example of a device information database.

Fig. 4 is a diagram showing an example of a work information database.

Fig. 5 is a diagram showing an example of a management screen.

20 Fig. 6 is a diagram showing a configuration example of a work management system according to a second embodiment.

Fig. 7 is a diagram showing functional units of a management server.

25 Fig. 8 is a diagram showing an example of a control unit of a management server.

Fig. 9 is a diagram showing an example of a work schedule database.

Fig. 10 is a diagram showing an example of a management screen.

30 Fig. 11 is a diagram showing an example of an inspection work screen.

Fig. 12 is a diagram showing an example of a process condition input screen.

Fig. 13 is a sequence diagram of work management

processing.

Fig. 14 is a flowchart showing an example of work management processing.

Fig. 15 is a diagram showing a configuration example of a work management system according to an example.

Fig. 16 is a flowchart showing an example of work management processing.

Mode(s) for Carrying out the Invention

10 [0021] [First Embodiment]

Fig. 1 shows the work management processing according to the first embodiment. The processing shown in Fig. 1 is an example of a work management method and a work management program of the present invention, and the present invention is not limited to the processing content and the processing procedure.

For example, as shown in Fig. 1, the work management processing includes a process of acquiring administrator identification information and device information (S101), a process of reading device work information (S102), a process of acquiring confirmation information by first administrator (S103), a process of generating notification information (S104), a process of acquiring confirmation information by second administrator (S105), a process of updating work process (S106), a process of generating notification information (S107), a process of generating progress information (S108), and a process of generating management screen (S109).

[0022] Process of acquiring administrator identification information and device information (S101): in a work management system 2, for example, a management server 4 that performs generation and notification processing, etc. of progress information of the work state acquires identification information of the first administrator and the second

administrator and device information of inspection targets.
The first administrator and the second administrator are
examples of persons in charge of the inspection work on the
device, and include two or more persons who perform inspection
5 processing at different timings. The first administrator and
the second administrator are persons belonging to different
organizations, for example, a person in charge of a
construction company for plant assembly or the like and a
person in charge of an owner company of a plant facility. The
10 management server 4 includes an administrator database which
is not shown, and may acquire an ID (IDentification),
biometric authentication information, and the like of each
administrator to perform authentication processing. This
authentication processing may continuously use information
15 acquired, for example, at the time of entering and exiting the
plant, at the time of inspecting another device, or at the
time of inspecting the same device in a previous process, or
may be performed each time inspection processing is executed.

In addition, the device information includes information
20 for specifying a device on which inspection processing is
executed by the administrator, the work time information
thereof, and the like.

The management server 4 may be in a standby state until
confirmation information which is an inspection result is
25 notified from each respective administrator after the device
information which is a target of the inspection processing is
read.

[0023] Process of reading device work information (S102):
the management server 4 reads work information such as a work
30 process set for each inspection item for the device designated
by the administrator. The work information includes inspection
items and information such as the inspection contents thereof
and the instruments used for the inspection work.

Process of acquiring confirmation information by first

administrator (S103): the first administrator first performs the inspection processing of the device for each inspection work item. In the inspection processing, confirmation information including an inspection result performed by the administrator using visual observation, a measurement tool, photographing by a camera, or the like, or a determination result determined by the inspection result, etc. is input to a terminal device 6-1 carried by the first administrator. The management server 4 acquires the confirmation information from the terminal device 6-1, for example.

[0024] Process of generating notification information (S104): when the management server 4 acquires the confirmation information by the first administrator, the management server 4 generates notification information notifying that the inspection work has shifted to the second administrator. As the notification information, for example, information notifying a work phase may be displayed on a work management screen, or an e-mail or a notification screen may be notified to a terminal device 6-2 of the second administrator.

Process of acquiring confirmation information by second administrator (S105): the management server 4 acquires confirmation information input to the terminal device 6-2 by the second administrator.

[0025] Process of updating work process (S106): the management server 4 updates the work process according to the suitability of the inspection work item currently being executed based on the content of the confirmation information input by the second administrator. For example, when the result of the confirmation information by the second

administrator is appropriate, the management server 4 updates the work process so as to shift to the next inspection work item included in the work information. For example, when the result of the confirmation information is inappropriate, the management server 4 continues the current inspection work item

and shifts the work phase to the first administrator side again. On the first administrator side, for example, in addition to performing the inspection work again, repair, assembly, and maintenance work performed again, etc. are performed by a person in charge of construction.

[0026] Process of generating notification information (S107): the management server 4 generates notification information having the effect that the work phase shifts to the first administrator side based on the determination result in the update processing of the work process. The notification information includes, for example, instruction information indicating whether to continue the work process or proceed to the next work process. For example, the management server 4 may display an image indicating that the work phase has shifted on the work management screen, or may notify the terminal device 6-1 of the first administrator of an e-mail or other notification screen.

[0027] Process of generating progress information (S108): the management server 4 calculates the progress information of the work up to the present time by using the work information set for each device, for example. The management server 4 may generate a graph indicating the calculated value or the degree of progress with respect to the progress information and display the graph on the management screen.

[0028] Process of generating management screen (S109): the management server 4 generates a management screen including display information indicating the work phase determined based on the confirmation information acquired from the terminal devices 6-1, 6-2, work progress information, device names, and the like, notifies the terminal devices 6-1, 6-2 of the management screen, and displays the management screen on a monitor to which the management server 4 is connected, other external display means, etc.

[0029] <Work Management System 2>

Fig. 2 shows a configuration of a work management system. The configuration shown in Fig. 2 is an example, and the present invention is not limited to this configuration.

In the work management system 2, for example, as shown in Fig. 2, the management server 4 and the terminal devices 6-1, 6-2 carried by the first and second administrators can communicate with each other via a network 8.

[0030] The management server 4 is configured of a computer, and executes collection of confirmation information of inspection work by an administrator, generation processing of notification information for notifying a progress status of work and a work phase, and the like.

The management server 4 acquires, for example, identification information for specifying an administrator. The identification information is acquired by, for example, an authentication device that performs authentication using biometric information of the administrators, a reader that reads two-dimensional codes 12-1, 12-2, etc. stored in ID cards 10-1, 10-2 carried by the administrators, or an input terminal to which IDs or passwords, etc. assigned to the administrators are input.

[0031] The work management system 2 further includes a device 14 which is a work target and an ID tag 16 installed in the device 14. The ID tag 16 is provided with a two-dimensional code 18 storing, for example, device information and work information associated with the device information. The administrators read the two-dimensional code 18 with the terminal devices 6-1, 6-2 at the start of the inspection work, thereby acquiring the device information and the work information necessary for the inspection work.

[0032] The terminal devices 6-1, 6-2 perform data communication with the management server 4, receive notification information indicating at least the status of the inspection work phase and the inspection process, and transmit

confirmation information including the inspection result to the management server 4. Examples of the terminal devices 6-1, 6-2 include a mobile phone, a mobile PC (Personal Computer), and a dedicated terminal device used for inspection work, etc.

5 [0033] The network 8 is an example of a means for performing data communication between the management server 4 and the terminal devices 6-1, 6-2 of the administrators in a wired or wireless manner, for example. As the network 8, for example, a public line may be used, or a private line or the
10 like which is limited to be accessible only in the plant may be used.

[0034] <About Device Information Database (DB) 20>

Fig. 3 shows an example of a device information database.

The device information database 20 may store, for
15 example, information of the device which is the target of inspection processing and is installed in the plant, and may function as a workspace for processing data included in progress information of inspection work and confirmation information of an inspection result by any administrator to
20 generate notification information and a management screen.

For example, as shown in Fig. 3, the device information database 20 includes device information files 20-1, 20-2, ... 20-X for each plant. Each of the device information files 20-1, 20-2, ... 20-X includes a device name section 21, a
25 position information section 22, a date section 23, a work time section 24, a work content section 25, and a work status section 26.

[0035] The device name section 21 stores information such as a name, an identification symbol, and a product number for
30 specifying the device 14 which is an inspection target.

The position information section 22 stores, for example, information indicating an installation area of the device 14 in the plant, coordinate information, and the like. For example, the position information allows the administrator to

recognize the installation location of the device 14 and specifies the work location of the inspection processing.

[0036] The date section 23 stores information for specifying, for example, a date on which inspection work is performed or a date on which assembly or maintenance inspection processing is performed. Thus, the date section 23 may store not only the information on the past work performance for the device but also the scheduled execution date of the next inspection work, etc.

The work time section 24 stores, for example, time information of past inspection work, scheduled time information of the next inspection work, and the like. The work time section 24 includes, for example, a start time section 24-1 storing the time at which the inspection processing is started and an elapsed time section 24-2 storing the elapsed time from the start of the work.

Inspection work items included in a work information database 30 (Fig. 4) are stored in the work content section 25.

The work status section 26 stores work process information such as inspection items completed up to the present time.

[0037] <About Work Information Database 30>

Fig. 4 shows an example of a work information database.

The work information database 30 is an information source including inspection item information set for each device, etc. and functions as a workspace for storing confirmation information input by each administrator. For example, as shown in Fig. 4, the work information database 30 includes work information files 30-1, 30-2, ... 30-X for each device which is an inspection target. Each of the work information files 30-1, 30-2, ... 30-X includes, for example, a device name section 31, a process number section 32, a category section 33, an item section 34, a confirmation content section 35, a

comment section 36, confirmation information sections 37, 38, and a determination section 39.

[0038] The device name section 31 stores a name, an ID number, and the like of a device to be confirmed for work.

5 The device name section 31 corresponds to a device name, an ID number, or the like included in information obtained by reading the two-dimensional code 18 of the ID tag 16 by the terminal devices 6-1, 6-2 of the administrators. The information of the device name section 31 is associated with
10 the device name section 21 of the device information database 20.

[0039] The process number section 32 stores numbers indicating the inspection man-hours and the inspection order. The inspection work is executed in the order shown in the
15 process number section 32.

 The category section 33 stores information obtained by classifying inspection items based on, for example, conditions such as items related to the content of the confirmation work or a work schedule. Here, the work items are classified into
20 six categories of A to F, for example. This category may be preset for each device, for example, or classification processing may be automatically performed based on classification conditions set in the management server 4, schedule information, or the like. This category is notified
25 to the first administrator and the second administrator through the work information database 30. The number of categories is not limited to 6, and the items may be classified into 4, 5, or other categories for each device to be worked on.

30 [0040] The item section 34 stores information indicating inspection contents for the device. The administrator performs inspection processing on the states of the parts and devices indicated in the item section 34.

 The confirmation content section 35 stores the content to

be executed in the confirmation work, the tool used in the confirmation work, the specific content of the confirmation work such as the confirmation method and procedure, and the like.

5 [0041] The comment section 36 stores matters to be notified to other administrators, information for urging the next administrator to perform a work, and the like in the result of the work confirmation by the administrator. The matters to be notified includes, for example, a reason for the
10 determination, instruction information for other administrators, and the like when it is determined that the work content is unsuitable as a result of the inspection processing.

[0042] The confirmation information sections 37, 38 store
15 confirmation information including the check result of the inspection processing performed by the first administrator or the second administrator, the date on which the check processing is performed, the name of the administrator, and the like.

20 [0043] The determination section 39 stores a result of the inspection processing. The determination section 39 stores information indicating whether the confirmation information of the first administrator and the second administrator is "OK" indicating that the work content is acceptable or the
25 confirmation information of any administrator is "NG" indicating that the work content is unsuitable.

[0044] <About Management Screen 50>

Fig. 5 shows an example of a management screen.

The management screen 50 (50-1, 50-2, 50-3) is an example
30 of a display screen including notification information for notifying an administrator of a work phase, confirmation information from each administrator, update of a work process, and a progress status of the inspection processing, and displays information according to the progress status of the

inspection processing.

The management screen 50 includes, for example, a device name section 51, a status section 52, a process section 53, a message section 54, and a category/progress section 55.

5 [0045] The device name section 51 stores a name, an ID number, and the like of a device which is the target of inspection processing.

The status section 52 stores the state information of the inspection work with respect to the process time limit of the
10 inspection processing set for each device. In the status section 52, for example, when the inspection work is delayed, "schedule delay" or the like is displayed.

[0046] The process section 53 stores information such as the total inspection man-hours set in the work information
15 database 30, the current work man-hours, etc.

The message section 54 stores message information to be notified to the administrator. This message information is an example of notification information of the present disclosure, and information is displayed to notify which administrator has
20 an inspection work phase. The message section 54 includes, for example, a first administrator section 54-1 and a second administrator section 54-2, and besides a method of inputting character information to the administrator side that has shifted to the inspection work phase, a method for prompting
25 the administrator side in charge to execute and complete the inspection work may be used. Further, in the message section 54, for example, a "comment", which indicates that the check by the second administrator gives a result of being unsuitable and indicates the content of the result, is displayed, and an
30 elapsed time from the start of the inspection work phase is displayed. As the "comment", for example, the same information as the information entered in the comment section 36 of each of the work information files 30-1, 30-2, ... 30-X may be stored, or a link to the comment section 36 may be set to read

the information stored in the comment section 36.

[0047] The category/progress section 55 stores information obtained by graphing the ratio information of the current work man-hours to the work man-hours set for the device. The

5 category/progress section 55 indicates, for example, which category of work A to F is the current work by displaying the portion to which the tip of the displayed bar graph reaches, and also indicates the progress of the work by the length of the bar graph and the number displayed. In the bar graph, the
10 displacement amount of the tip portion at the time of completion of the work varies depending on the number of man-hours in the category. In this bar graph, for example, when there are 4 man-hours in a category A and 6 man-hours in a category B, the amount of change in the bar graph when 1 man-
15 hour is completed is 1.5 times greater in the category A than in the category B.

[0048] For example, as shown in A of Fig. 5, the management screen 50-1 shows a case where the inspection processing of the first administrator is shifted to the
20 inspection processing of the second administrator. That is, when the management server 4 acquires the confirmation information indicating that the inspection result is acceptable from the first administrator, the management server 4 displays the elapsed time in the field on the second
25 administrator section 54-2 side of the message section 54, thereby displaying that the inspection work phase has shifted to the second administrator. At this time, the management server 4 manages the elapsed time displayed in the message section 54, and when the elapsed time exceeds a predetermined
30 value, the management server 4 may notify the terminal device 6-2 of the second administrator of a message such as an e-mail or an automatic response.

[0049] For example, as shown in B of Fig. 5, the management screen 50-2 shows a case where the inspection

processing of the second administrator is shifted to the inspection processing of the first administrator and the confirmation information by the second administrator indicates unsuitability. In this case, the management server 4 causes the second administrator section 54-2 side to display a "comment" indicating the result of the confirmation processing, the reason therefor, and the like, and causes the field of the first administrator section 54-1 side to display the elapsed time, thereby displaying that the inspection work phase has shifted to the first administrator.

[0050] For example, as shown in C of Fig. 5, the management screen 50-3 shows a case where the inspection processing of the second administrator is shifted to the inspection processing of the first administrator and the confirmation information by the second administrator indicates suitability. In this case, the management server 4 displays the elapsed time in the field on the first administrator section 54-1 side to indicate that the inspection work phase has shifted to the first administrator, and updates the increase in the man-hour information of the process section 53 and the length of the graph of the category/progress section 55.

[0051] <Effects of First Embodiment>

According to such a configuration, the following effects can be obtained.

(1) By displaying information such as the progress of the work process, notification of the inspection work phase to the administrator, and the number of steps on the management screen 50, it becomes easy to confirm the progress state of the work.

(2) By clearly indicating the time that has elapsed since the shift of the inspection work phase, it is possible to cause the administrator who should perform the inspection processing to recognize the delay state.

(3) It is possible to prevent an extension of a construction period by displaying information such as a progress state and an elapsed time of work for each device to prompt the administrator to execute inspection processing.

5 (4) Since the notification information is output to the administrator who should perform the inspection work, the confirmation processing of the work stage is facilitated.

[0052] [Second Embodiment]

10 Fig. 6 shows a configuration example of a work management system according to a second embodiment. The configuration shown in Fig. 6 is an example, and the present invention is not limited to this configuration. In Fig. 6, the same components as those shown in Fig. 2 are denoted by the same reference signs.

15 The work management system 60 performs management processing of inspection work for a plant facility 70 including a plurality of devices 70A to 70G. This work management system 60 includes, for example, a management server 4, terminal devices 6-1, 6-2 carried by the first
20 administrator and the second administrator, and ID tags 16 installed in the plurality of devices 70A to 70G. The ID tag 16 is provided with a two-dimensional code 18 storing, for example, device information and work information associated with the device information. In such management processing for
25 the plant facility 70, inspection processing may be performed by one or a plurality of administrators, for example. The management server 4 may perform the generation processing of the management screen by associating the authentication information of each administrator with the ID information or
30 the like of the device of which each administrator is in charge.

[0053] Fig. 7 shows a functional configuration example of the management server.

The management server 4 acquires information such as

authentication information, confirmation information, and device information of which the administrator is in charge from the terminal devices 6-1, 6-2, and performs a generation processing for a progress status and a management screen based on the information. For example, as shown in Fig. 7, the management server 4 includes a confirmation information acquisition function unit 80, a progress information generation function unit 82, a comparison function unit 84, and a management screen generation function unit 86.

[0054] The confirmation information acquisition function unit 80 acquires confirmation information, comments, and other information input by the administrator from the terminal devices 6-1, 6-2, and stores the acquired information in association with device information, for example.

The progress information generation function unit 82 calculates the progress of the work for each device by using the confirmation information, the work information, and the like in order to grasp the progress status of the inspection processing by the administrator. In addition, the progress information generation function unit 82 may update the device information database 20 or the work information database 30 by using a calculated result or the like.

[0055] The comparison function unit 84 is an example of a functional unit that calculates the status of the current inspection processing with respect to the condition of the number of working days set for each device. The management server 4 includes, for example, a work schedule database 110 (Fig. 9), and schedule conditions such as a work start date and a work completion date are set for each device. The comparison function unit 84 compares, for example, the schedule conditions set for the inspection man-hours of each device or for each inspection classification with the processes which have been completed up to now or are currently underway, and determines whether or not the inspection

processing is delayed. In addition to the determination of the schedule conditions set for each device, the comparison function unit 84 may compare the schedule conditions set for each plant including a plurality of devices with the

5 processing of the entire plant to generate status information.

[0056] The management screen generation function unit 86 is a functional unit that generates a management screen including the inspection processing for each plant based on information such as confirmation information acquired by another functional unit, generated progress information, a
10 comparison result, and the like.

[0057] <About Hardware Configuration Example of Management Server 4>

Fig. 8 shows a hardware configuration example of the
15 management server.

The control unit 90 is configured by a computer having a communication function. The control unit 90 includes, for example, a processor 92, a storage unit 94, a communication unit 96, a timer 98, and an input/output unit (I/O) 100.

20 [0058] The processor 92 executes an OS (operating system) stored in the storage unit 94, and executes information processing for realizing various programs such as a work management program including authentication processing of an administrator, reading of work information, acquisition
25 processing of confirmation information from the administrator, generation of notification information, update of a work process, generation processing of a management screen, and the like. Then, the management server 4 causes the first administrator and the second administrator to speed up the
30 inspection processing, and performs the work management processing that allows the first administrator and the second administrator to visually recognize the inspection state.

[0059] The storage unit 94 includes a storage element such as a ROM (Read-Only Memory), a RAM (Random-Access Memory), and

is an example of a recording medium. The storage unit 94 stores, for example, an OS, a work management program, an administrator DB 109 in which authentication information of an administrator who performs inspection processing is stored, the device information DB 20, the work information DB 30, and the work schedule DB 110 including schedule condition information of inspection processing.

[0060] The communication unit 96 is a functional unit for transmitting and receiving information such as audio data and image data to and from, for example, an external database, the terminal devices 6-1, 6-2 of the administrators, other instruments, etc. by wireless communication or wired connection.

The timer 98 is an example of a means for measuring elapsed time, and may be a clock built in the management server 4, or may be a software watch or the like based on a clock program executed by the processor 92.

[0061] The I/O 100 is connected to an identification information input unit 106 which is external or other devices and the terminal devices 6-1, 6-2, under the control of the processor 92.

An information presentation unit 102 is an example of a means for displaying a management screen including notification information, process information, progress of work, and the like, and confirmation information of inspection processing, and is configured of an information presentation device such as an LCD (Liquid Crystal Display).

An operation input unit 104 is an example of a means for inputting setting conditions for the management server 4 and authentication information such as an ID number of an administrator, and includes an operation means such as a keyboard or a touch panel.

[0062] <Work Schedule DB 110>

Fig. 9 shows an example of the work schedule DB.

The work schedule DB 110 stores, for example, schedule information for work such as inspection processing.

The work schedule DB 110 includes, for example, a date information section 112, a device name section 114, and a process section 116.

[0063] In the process section 116, the number of work days and the work time from process A to process F are displayed in a graph for the devices which are inspection targets specified in the device name section 114. The number of days and the scheduled date for each process may be assigned by, for example, the work management program of the management server 4 or another work process creation program which is not shown.

The administrator may adjust the work schedule for each device indicated in the work schedule DB 110 and may execute the inspection processing based on the work man-hours of the entire plant including the plurality of devices.

[0064] <About Management Screen 120>

Fig. 10 shows an example of a management screen according to the second embodiment.

The management screen 120 stores the confirmation information of the inspection processing of the entire plant facility using confirmation information of a plurality of devices of which the same or a plurality of different administrators are in charge.

The management screen 120 includes a plant name section 1211, a process section 1212, and a status section 1213 as a plant section 121 in which, for example, information on a plant is stored. Further, the management screen 120 includes, for example, a device name section 1221, a status section 1222, a process section 1223, a message section 1224, and a category/progress section 1225 as a device section 122 in which information on devices installed in the plant is stored.

[0065] In the plant name section 1211, names, ID numbers, and the like for distinguishing plant facilities are

displayed.

The process section 1212 stores device information and work information of each device constituting the plant.

The status section 1213, for example, stores information indicating the progress status of the inspection processing for the schedule conditions set for the entire plant. The status of the plant is greatly affected by, for example, a delay in the inspection processing of any one of the devices, which may result in a schedule delay.

[0066] In the device name section 1221, the status section 1222, the process section 1223, the message section 1224, and the progress section 1225, for example, the same contents as those of the management screen 50 described above may be displayed.

The message section 1224 here includes, for example, a message section 1224-1 of the first administrator and a message section 1224-2 of the second administrator. The message section 1224-1 of the first administrator and the message section 1224-2 of the second administrator may be switched to a work reminder message as an alert display, for example, on the basis of a threshold condition of an elapsed time which is not shown when the time that has elapsed since the shift of the work phase exceeds the threshold condition. In addition, an alert notification may be given to the terminal devices 6-1, 6-2 or other mobile phones, etc. of the administrators who perform the next confirmation processing by using an e-mail or a call function.

[0067] <Display Screens of Terminal Devices 6-1, 6-2 of Administrators>

Fig. 11 shows an example of an inspection work screen.

For example, as shown in Fig. 11, an inspection work screen 130 is displayed on the display units of the terminal devices 6-1, 6-2 of the administrators. The inspection work screen 130 includes, for example, a name section 132 for

specifying a plant or a device, and an inspection list 134 generated based on the work information files 30-1, 30-2,... 30-X. The inspection list 134 includes an input unit 136 to which one or both of the first administrator and the second administrator input information. For example, information such as a checked date, a determination result, and a comment to another administrator can be input to the input unit 136. In addition, the terminal devices 6-1, 6-2, for example, may activate a camera or the like or access a measurement instrument or the like which is not shown on the basis of information such as the confirmation content or category of the current work process. Thus, for example, when the item is to be managed visually by the administrator, the terminal devices 6-1, 6-2 can activate the camera to image the item in order to leave the content visually confirmed by the administrator as an evidence. In addition, the terminal devices 6-1, 6-2, for example, may collect corresponding data from a measurement device designated to acquire a record of a measurement value or a tendency thereof, etc. in the case of an item such as a record of a measurement value.

[0068] <About Process Condition Input Screen 140>

Fig. 12 shows an example of a process condition input screen.

The process condition input screen 140 is an example of condition information for setting a work schedule of the device or the entire plant, for example, and may be set in the management server 4 in advance.

The process condition input screen 140 includes, for example, a schedule condition section 144 for each device installed in the plant.

[0069] The schedule condition section 144 is constituted of a device name section 144-1 and a category/schedule section 144-2, and a schedule condition for each inspection classification classified together with a start date for each

device is input to the schedule condition section 144.

The management server 4 may generate the work schedule database 110 based on, for example, a schedule condition input to the process condition input screen 140 or a preset condition.

[0070] <About Work Management Processing>

Fig. 13 shows a sequence of work management processing. Fig. 14 shows an example of work management processing. The processing procedures and processing contents shown in Figs.

13, 14 are an example, and the present invention is not limited to such a configuration. In the work management system 2, the management server 4 operates in cooperation with the terminal device 6-1 of the first administrator and the terminal device 6-2 of the second administrator.

[0071] When the terminal device 6-1 of the first administrator confirms the completion of the work based on a work completion notification from a worker who performs the assembling or maintenance work (S201), the administrator accesses the terminal device 6-1 and reads the identification information of the administrator upon entering the work plant (S202). The identification information may be acquired from an ID card 10-1, etc. of the worker. When the terminal device 6-1 acquires the identification information, the terminal device 6-1 notifies the management server 4 side of the identification information.

[0072] The terminal device 6-2 of the second administrator is activated at a predetermined timing, acquires the identification information of the administrator, and transmits the identification information to the management server 4 (S203).

When the management server 4 acquires identification information from each administrator, the management server 4 performs the authentication processing (S204).

[0073] When the terminal device 6-1 reads device

information (S205) and reads work information (S206) from the ID tag 16 or the like installed in the devices 70A to 70G, and performs inspection processing on designated methods and items, the terminal device 6-1 inputs the confirmation information to the inspection list 134 and transmits the confirmation information to the management server 4 side (S207).

[0074] When the management server 4 reads the device information and the work information that are being inspected by the terminal device 6-1 (S208), the management server 4 acquires the confirmation information from the terminal device 6-1 (S209). Upon acquisition of the confirmation information, the management server 4 generates notification information (S210), and indicates the notification information to the terminal device 6-2. The notification information may be displayed in the message section 1224 of the management screen 120, for example.

[0075] When the terminal device 6-2 confirms the notification information, the administrator moves to the device which is the inspection target, and the terminal device 6-2 reads the ID tag 16 or the like to read the device information and the work information, and then inputs the confirmation information to the inspection list 134 to notify the management server 4 side of the confirmation information (S211).

[0076] The management server 4 generates the progress information based on the confirmation information by both administrators (S212), and generates the management screen 120 (S213).

[0077] For example, as shown in Fig. 14, when the inspection processing including the acquisition of the confirmation processing from the first administrator side is performed (S301), the management server 4 acquires the confirmation information from the second administrator side

(S302). The management server 4 refers to the confirmation information from the second administrator, for example, and determines whether or not the work is suitable based on the result of the inspection (S303). When the work is suitable
 5 (YES in S303), the management server 4 proceeds to the next process and generates notification information for the first administrator (S304). In addition, when the management server 4 refers to the work schedule DB 110 (Fig. 9) and confirms whether or not a delay has occurred in comparison with the
 10 current process (S305), the management server 4 generates the management screen 120 in which the notification information, the status of the work, the process information, and the like are updated (S306).

[0078] When the confirmation information indicates that
 15 the work is unsuitable (NO in S303), the management server 4 generates notification information for returning the work process to the first administrator side (S307). Thus, confirmation of the delay state (S305) and generation processing of the management screen 120 including the
 20 notification information of the return of the work process (S306) are performed.

[0079] The management server 4 determines whether or not all the processes have been completed (S308), and when all the processes have been completed (YES in S308), the management
 25 server 4 terminates the inspection processing. When the work process is returned or a next process remains (NO in S308), the work phase shifts to S301.

[0080] <Effects of Second Embodiment>

According to this configuration, the following effects
 30 can be obtained.

(1) Effects similar to those of the first embodiment can be obtained.

(2) In the inspection processing, the administrator acquires the device information and the work information based

on the ID tag 16 installed in the devices 70A to 70G which are inspection targets, so that the administrator can actually visually confirm the devices, and thus, reliability of the inspection processing can be ensured.

5 [0081] (3) Since it is possible to confirm the inspection processing state of the entire plant including a plurality of devices on the management screen 120, it is possible to easily grasp the degree of progress of the inspection processing, the bias of the inspection work with respect to some devices, and
10 the like.

(4) Further, in a case where it is possible to grasp a bias in the progress of the inspection work among the devices, it is possible to take measures such as resetting of the inspection processing plan, and replenishment or rearrangement
15 of personnel of the administrator, and it is possible to formulate the delay avoidance processing of the inspection processing.

(5) In the inspection processing, imaging by the camera, collection of measurement data of measurement devices, and the
20 like are performed, and thus, when water leakage, a failure of a device, or the like occurs in the plant, it is still possible to compare and confirm a state at the time of inspection, and it is possible to improve reliability of the work management processing.

25

Examples

[0082] Next, an example of the work management system of the present invention will be described.

Fig. 15 shows a configuration example of the work
30 management system according to the example. In Fig. 15, the same portions as those in Fig. 6, Fig. 7, and Fig. 8 are denoted by the same reference signs.

In the work management system 60 according to this example, the object is that the administrator goes to the

position of the device 14 which is a management target to directly perform work management processing by visual observation, contact with a hand or the like, or using an inspection jig. Specifically, the work management system 60

5 has a function of authenticating the identification information of the administrator collected at the time of acquiring the device data in order to prevent a person other than the administrator registered in advance from acting as a proxy for the management work and prevent an unknown third
10 party from managing the work.

[0083] The management server 4 includes, for example, the administrator DB 109 and an authentication processing unit 150 as shown in Fig. 15.

The administrator DB 109 is formed, for example, in the
15 storage unit 94 (Fig. 8), and the names, the identification numbers, the held qualification information, and the like of the employees of the construction company who have received the management work of the plant and the employees on the plant owner side are registered in the administrator DB 109.

20 The authentication processing unit 150 is an example of a functional unit that executes authentication processing between identification information input at the time of management processing and the name or identification information of an employee in the administrator DB 109, for
25 example. The authentication processing unit 150 functions when the processor 92 of the management server 4 executes arithmetic processing of the management processing program.

[0084] Thus, in the work management system 60, for example, when the registered administrator accesses the two-
30 dimensional code 18 of the ID tag 16 installed in the device 14 using the terminal devices 6-1, 6-2, the identification information and the confirmation information are transmitted to the management server 4 at the time of connection with the management server 4. At this time, the terminal devices 6-1,

6-2 also transmit the confirmation information input for the inspection management together with the identification information. In addition, the work management system 2 receives access from a terminal device 6-X of a third party who is not registered, and authenticates regular administrators or the terminal devices 6-1, 6-2 of the administrators when they are registered as an administrator in the administrator DB 109. Since the terminal devices 6-1, 6-2 are terminals used by the administrators registered in the administrator DB 109, the terminal devices 6-1, 6-2 can acquire information such as device information and work information. On the other hand, when the unspecified terminal device 6-X accesses the ID tag 16 in the device 14 which is the management target, for example, the identification information or the work information still cannot be obtained.

[0085] In the management server 4, for example, when the identification information and the confirmation information which is the inspection result are transmitted by the accesses from the terminal devices 6-1, 6-2 of regular administrators, since the administrators are registered as regular administrators, the management screen 120 and the like are received.

Further, in the management server 4, an authentication result including a reason for authentication, etc. is issued in response to an inquiry from the terminal device 6-X which is not registered.

[0086] <About Work Management Processing>

Fig. 16 shows an example of work management processing according to the example.

The work management processing includes, for example, acquisition of administrator identification information and device information (S401), access to the administrator DB 109 of the plant (S402), authentication processing of the administrator (S403), acquisition of confirmation information

from the administrator and generation of notification information (S404), alert notification (S405), update of the work process (S406), generation of progress information (S407), and generation of management screen (S408).

5 [0087] Acquisition of administrator identification information and device information (S401): the management server 4 acquires the identification information of the first administrator and the second administrator and the device information of the inspection target.

10 Access to the administrator DB 109 of the plant (S402): the management server 4 reads the administrator DB 109 which is in the storage unit 94.

Authentication processing of the administrator (S403): the management server 4 collates the identification
15 information of the accessing terminal devices 6-1, 6-2, and 6-X with the administrator DB 109 to perform determination processing on whether or not the administrator is appropriate.

[0088] Acquisition of confirmation information from the administrator and generation of notification information
20 (S404): when the person is determined to be a registered administrator (YES in S403), the management server 4 acquires confirmation information from the terminal devices 6-1, 6-2 and generates notification information.

Alert notification (S405): when the management server 4
25 determines that the accessing person is not the administrator (NO in S403), the management server 4 generates alert information for the terminal device 6-X to warn and prompt a regular administrator to perform the work, and notifies the terminal device 6-X side of the generated alert information.

30 Thus, the management server 4 restricts access from the terminal device 6-X together with the alert notification.

[0089] Then, the management server 4 collects the confirmation information for each work process with the terminal devices 6-1, 6-2 of the regular administrators, and

executes update processing of the work process (S406),
generation processing of progress information (S407), and
generation processing of management screen (S408). The
processing from S406 to S408 may be performed in the same
5 manner as the processing from S103 to S109 (Fig. 1), for
example.

[0090] <Effects of Examples>

According to such a configuration, the following effects
can be expected.

10 (1) Effects similar to those of the above-described
embodiments are obtained.

(2) Since it is necessary to acquire the management
information directly from the device 14, the administrator can
reach the installation position of the device 14, and the
15 reliability of the management work is improved.

(3) Since only the authenticated administrator can
perform the management processing, the security of the plant
can be improved.

[Modification]

20 [0091] Modifications of the above-described embodiments or
examples are listed below.

[0092] (1) In the above-described embodiments, the work
management screens 50, 120 show the cases where the display
fields of the category/progress sections 55, 1225 are arranged
25 at equal intervals and the increase amount of the bar graph is
changed according to the progress of the work man-hours,
however, the present invention is not limited to this. The
size of the display field of the category/progress sections
55, 1225 may be changed depending on the number of man-hours
30 in the category, for example. In this case, in the bar graphs
of the category/progress sections 55, 1225, the change amount
with respect to the completion of one process may be equalized
regardless of the difference in the category.

[0093] (2) In addition, the category/progress sections 55,

1225 are not limited to the case where each of the bar graphs indicates a progress with respect to all the processes, and each of the bar graphs may indicate the progress for each category. In this case, in the category/progress sections 55, 1225, for example, the progress may be indicated by lighting up, blinking, etc. to show whether one of the categories A to F currently being managed is being performed. Thus, it is possible to clearly indicate the degree of progress of the process which is being executed or confirmed in the category indicated by lighting up or blinking.

[0094] As described above, the most preferable embodiment and the like of the technique of the present disclosure have been described. The technique of the present disclosure is not limited to the above description. Various modifications and changes can be made by those skilled in the art based on the gist described in the claims or disclosed in the mode(s) for carrying out the invention. It is needless to say that such modifications and changes are included in the scope of the technique of the present disclosure.

Reference Signs List

[0095] 2, 60 Work management system
 4 Management server
 6-1, 6-2, 6-X Terminal device
 8 Network
 10-1, 10-2 ID card
 12-1, 12-2, 18 Two-dimensional code
 14, 70A to 70G Device
 16 ID tag
 20 Device information database
 20-1, 20-2, 20-X Device information file
 21, 31, 51, 114, 1221, 144-1 Device name section
 22 Position information section
 23 Date section

	24	Work time section
	24-1	Start time section
	24-3	Elapsed time section
	25	Work content section
5	26	Work status section
	30	Work information database
	30-1, 30-2, ... 30-X	Work information file
	32	Process number section
	33	Category section
10	34	Item section
	35	Confirmation content section
	36	Comment section
	37, 38	Confirmation information section
	39	Determination section
15	50, 50-1, 50-2, 50-3, 120	Management screen
	52, 1222	Status section
	53, 1223	Process section
	54	Message section
	54-1	First administrator section
20	54-2	Second administrator section
	55	Category/progress section
	70	Plant facility
	80	Confirmation information acquisition function unit
	82	Progress information generation function unit
25	84	Comparison function unit
	86	Management screen generation function unit
	90	Control unit
	92	Processor
	94	Storage unit
30	96	Communication unit
	98	Timer
	100	Input/output unit (I/O)
	102	Information presentation unit
	104	Operation input unit

- 106 Identification information input unit
- 109 Administrator DB
- 110 Work schedule database
- 112 Date information section
- 5 116, 1212 Process section
 - 121 Plant section
 - 122 Device section
 - 1211 Plant name section
 - 1213 Status section
- 10 1224 Message section
 - 1224-1 Message section of first administrator
 - 1224-2 Message section of second administrator
- 1225 Category/progress section
- 130 Inspection work screen
- 15 132 Name section
- 134 Inspection list
- 136 Input unit
- 140 Process condition input screen
- 144 Schedule condition section
- 20 144-2 Category/schedule section
- 150 Authentication processing unit

CLAIMS

1. A work management method by a plurality of administrators, wherein a computer executes processes comprising:

5 a process of acquiring a device information of a device and an identification information of a first administrator and a second administrator who access a code information set in the device which is a work target;

10 a process of reading a work information associated with the device information;

a process of acquiring, from a terminal device of the first administrator, a confirmation information indicating whether or not a work of the first administrator is suitable for a work item included in the work information, generating a
15 progress information of the work item and a notification information for the second administrator in a case where the confirmation information indicates a confirmation result of being suitable, the notification information for the second administrator indicating that a duty of work has shifted to
20 the second administrator;

a process of transmitting, to a terminal device of the second administrator, the notification information indicating that the duty of work has shifted, generating a management screen including the notification information for the second
25 administrator and the progress information, and displaying an elapsed time which has elapsed since the duty of work shifts to the second administrator on the management screen;

a process of acquiring, from the terminal device of the second administrator, a confirmation information indicating
30 whether or not a work of the second administrator is suitable for the work item, and updating a work process for a next work item included in the work information and generating a notification information for the first administrator indicating that the duty of work has shifted to the first

administrator in a case where the confirmation information indicates a confirmation result of being suitable;

a process of updating the progress information of a work with the confirmation information of the first administrator and the second administrator; and

a process of generating the management screen which is updated based on the notification information for the first administrator, the notification information for the second administrator, and the progress information.

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

a process of reading the confirmation information from the second administrator to generate a notification information for the first administrator including an instruction of (1) returning a work process of the work item to the first administrator when the confirmation result indicates unsuitability and generate a notification information for the first administrator including an instruction of (2) proceeding to a work process updated for a next work item when the confirmation result indicates suitability.

3. The work management method according to claim 1 or claim 2, further comprising:

a process of acquiring, from a timer, an elapsed time that has elapsed after notification of the notification information for the first administrator and an elapsed time that has elapsed after notification of the notification information for the second administrator; and

a process of displaying, on the management screen, an elapsed time information together with the notification information for the first administrator and the notification information for the second administrator.

4. The work management method according to any one of claims 1 to 3, further comprising:

a process of reading a work schedule information associated with the work information for each of the devices;

a process of comparing the work schedule information with the progress information to generate a comparison result; and

5 a process of displaying the comparison result on the management screen.

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

10 a process of assigning a scheduled deadline of a work to each of a plurality of categories into which a part or all of work processes included in the work information are classified; and

a process of notifying the first administrator and the second administrator of the scheduled deadline.

15 6. The work management method according to any one of claims 1 to 5, further comprising:

20 a process of accessing a database which manages the identification information and authenticating the identification information which is acquired based on a registration information registered in the database; and

a process of regulating an access from an administrator who is not authenticated based on an authentication result.

7. A work management system comprising:

25 a device that is a work target;
terminal devices that are used by a first administrator and a second administrator who monitor a work progress;

a database that stores a device information set in the device, a work information associated with the device information, and an identification information of the first
30 administrator and the second administrator; and

a server that accesses the terminal devices or the database, reads the device information and the work information, generates a progress information of a work item included in the work information and a notification

information for the second administrator, the notification information for the second administrator indicating that a duty of work has shifted to the second administrator, in a case where a confirmation information, which is acquired from the terminal device of the first administrator and indicates whether or not a work of the first administrator is suitable for the work item, indicates a confirmation result of being suitable based on the confirmation information, transmits, to the terminal device of the second administrator, the notification information indicating that the duty of work has shifted, generates a management screen including the notification information for the second administrator and the progress information, displays an elapsed time which has elapsed since the duty of work shifts to the second administrator on the management screen, acquires, from the terminal device of the second administrator, a confirmation information indicating whether or not a work of the second administrator is suitable for the work item, updates a work process for a next work item included in the work information while generating a notification information for the first administrator indicating that the duty of work has shifted to the first administrator in a case where the confirmation information indicates a confirmation result of being suitable, updates the progress information of a work with the confirmation information of the first administrator and the second administrator, and generates the management screen which is updated based on the notification information for the first administrator, the notification information for the second administrator, and the progress information.

8. A work management program for causing a computer to realize:

a function of reading a device information and an identification information of a first administrator and a second administrator who access a code information set in a

device which is a work target;

a function of reading a work information associated with the device information;

5 a function of acquiring, from a terminal device of the first administrator, a confirmation information indicating whether or not a work of the first administrator is suitable for a work item included in the work information, generating a progress information of the work item and a notification information for the second administrator in a case where the
10 confirmation information indicates a confirmation result of being suitable, the notification information for the second administrator indicating that a duty of work has shifted to the second administrator;

a function of transmitting, to a terminal device of the
15 second administrator, the notification information indicating that the duty of work has shifted, generating a management screen including the notification information for the second administrator and the progress information, and displaying an elapsed time which has elapsed since the duty of work shifts
20 to the second administrator on the management screen;

a function of acquiring, from the terminal device of the second administrator, a confirmation information indicating whether or not a work of the second administrator is suitable for the work item, and updating a work process for a next work
25 item included in the work information and generating a notification information for the first administrator indicating that the duty of work has shifted to the first administrator in a case where the confirmation information indicates a confirmation result of being suitable;

30 a function of updating the progress information of a work with the confirmation information of the first administrator and the second administrator; and

a function of generating the management screen which is updated based on the notification information for the first

administrator, the notification information for the second administrator, and the progress information.