DESCRIPTION

Title of Invention

INFORMATION PROVIDING DEVICE

Technical Field

[0001] This disclosure relates to an information providing device that displays the operational statuses of a plurality of operators in a call center.

Background Art

[0002] In the related art, an information providing device of the above-mentioned type that displays on the screen the operation status of the operator together with the seat layout in the call center is known (e.g., see PTL 1). With such a configuration, the user of the information providing device (typically, the supervisor of the operator) can easily recognize the task status of the operator and the like.

Citation List

Patent Literature

[0003]

PTL 1

Japanese Patent Publication No. 5090001

Summary of Invention

Technical Problem

[0004] In the information providing device, the user may want to recognize (overview) the operation status of multiple operators at a time, or may want to recognize details of the operation status of some operators.

[0005] An object of the present disclosure is to provide an information providing device that allows the user to recognize the task statuses of a plurality of operators and the detailed task statuses of some operators.

Solution to Problem

[0006] This disclosure relates to an information providing device including a first information generating section configured to generate a first image representing a layout of seats of a plurality of operators at a first magnification, the first image being an image in which a schematic task status of each of the plurality of operators is represented by a first object group, and each of the seats is configured with the first object group; a second information generating section configured to generate a second image representing the layout at a second magnification greater than the first magnification, the second image being an image in which a detailed task status of each of the plurality of operators is represented by a second object group, and each of the seats is configured with the second object group; and a display section configured to display the first image and the second image.

Advantageous Effects of Invention

[0007] According to the present disclosure, it is possible to provide an information providing device that allows the user to recognize the task statuses of a plurality of operators and the detailed task statuses of some operators.

Brief Description of Drawings

[0008]

FIG. 1 is a diagram illustrating a configuration example of a call center system provided with an information providing device of the present disclosure;

FIG. 2 is a diagram illustrating a detailed configuration of the information providing device of FIG. 1;

FIG. 3A is a schematic diagram illustrating an image of level 1;

FIG. 3B is a schematic diagram illustrating a first object group that can be used in the image of level 1;

FIG. 3C is a schematic diagram illustrating a first example of a second object group that can be used in an image of level 2;

FIG. 3D is a schematic diagram illustrating a second example of the second object group that can be used in the image of level 2;

FIG. 3E is a schematic diagram illustrating a third example of the second object group that can be used in the image of level 2;

FIG. 3F is a schematic diagram illustrating a first example of a third object group that can be used in an image of level 3;

FIG. 3G is a schematic diagram illustrating a second example of the third object group that can be used in the image of level 3;

FIG. 3H is a schematic diagram illustrating a second example of the third object group that can be used in an image of level 4;

FIG. 3I is a schematic diagram illustrating an object group that can be used in a widget image (busy);

FIG. 3J is a schematic diagram illustrating a field that is opened when a predetermined object of FIG. 3I is designated;

FIG. 3K is a schematic diagram illustrating an example of an object group that can be used in a widget image (not busy);

FIG. 4A is a flow diagram illustrating a first part of an operation of the control device;

FIG. 4B is a flow diagram illustrating a second part of the operation of the control

device; and

FIG. 4C is a flow diagram illustrating a third part of the operation of the control device.

Description of Embodiments

[0009] A call center system including an information providing device of an embodiment of the present disclosure is described below in detail.

[0010]

1. Definition

Table 1 shows meanings of acronyms and abbreviations used in this embodiment.

[0011]

[Table 1]

Table 1: Meaning of acronyms, etc.

Acronyms, etc.	Meaning
IM	Instant Message
IP	Internet Protocol
LAN	Local Area Network
PBX	Private Branch eXchange
ID	Identifier
SV	SuperVisor
GUI	Graphical User Interface

[0012]

2. System Configuration

In FIG. 1, call center system 100 generally includes outside line network (public line) 200, internal line network 300, call management network 400, and IM network 500.

[0013] Outside line network 200 is, for example, a digital IP network or the like, and is a

communication network connected to an IP terminal (not illustrated) that is used by the customer of a call center.

[0014] Internal line network 300 is a part of a communication network such as LAN constructed in a call center. Internal line network 300 includes first to nth operator desktop machines 310_1 to 310_N, network machine 320, and a PBX device 330.

[0015] Each of operator desktop machines 310_1 to 310_N is, for example, a combination of a multifunctional IP telephone, a headset, and a personal computer, and is installed and used at a seat (or more specifically on a desktop) of an operator in charge of customer service in a call center. The multifunctional IP telephone of each of operator desktop machines 310_1 to 310_N is connected to PBX device 330 through network machine 320.

[0016] In addition, each multifunctional IP telephone has basic functions of receiving a call from a customer, making a call to a customer, disconnecting a call, putting on hold a voice call with the customer, and the like and functions for log in and log out of each operator using his or her ID and password.

[0017] In addition, each multifunctional IP telephone includes a status button capable of outputting various agent statuses. The status button includes a call button for providing a notification of help to a supervisor (SV). While the present disclosure exemplifies the agent statuses listed in Table 2 other than the help, known statuses at the time of the filing of the present application may also be used. For example, the agent status is included in an IP packet and sent to network machine 320 such that the status is transmitted to agent status management server 450 together with the ID and the internal line number of the logged-in operator.

[0018]

[Table 2]

Table 2: Agent Status

Name	Description
Standby	Operator can accept customer service
Busy (Outside line)	Operator is servicing customer
Hold	Voice call with customer being put on hold
Busy (Internal line)	Operator is on internal line call
ACW	Processing or recording service after completion of customer service
AUX	Being away from seat
Log In	Log in to multifunctional IP telephone
Log In	Log out of multifunctional IP telephone

[0019] Each headset, which is connected to a multifunctional IP telephone of the same desktop, converts the spoken content of the operator into an electric signal and outputs it to the multifunctional IP telephone, and converts the electric signal output from the multifunctional IP telephone into the spoken content of the customer and outputs it to the operator as voice.

[0020] As with the multi-functional IP telephone, the personal computer can be logged in using the ID and password of each operator. Mainly, the personal computer searches for information required for customer service in response to an operator' operation. In addition, with a known instant messaging function, the personal computer sends an instant message entered by an operator to IM network 500 to transmit it at least to information providing device 460 described later. The personal computer further receives instant messages of the SV transmitted from at least information providing device 460. As described later, the instant messages are displayed in chronological order at least on the

screen of information providing device 460.

[0021] Network machine 320 is a relaying device for transferring IP packets including voice calls (exchanges) between an operator and a customer between PBX device 330 and the multi-functional IP telephone of each of operator desktop machines 310_1 to 310_N. Network machine 320 is, for example, a switching hub or a router. Note that, with a function of port mirroring or the like, network machine 320 sends, to call management network 400, a copy of the IP packet to be transferred.

[0022] PBX device 330 is a private branch exchanging machine and is connected to outside line network 200. PBX device 330 receives an IP packet destined for the multifunctional IP telephone of each of operator desktop machines 310_1 to 310_N from outside line network 200 and transfers it to network machine 320. In addition, PBX device 330 receives an IP packet destined for an IP telephone (not illustrated) connected to outside line network 200 from network machine 320 and transfers it to outside line network 200.

[0023] Internal line network 300 having the above-described configuration constitutes a part of the IP telephone network and transmits the IP packet of the voice calls with a large number of customers performed in the call center while transferring, to call management network 400, a copy of the IP packet to be transmitted.

[0024] Call management network 400 is part of a communication network constructed in a call center, for example. Call management network 400 includes call recording server 410, call management server 420, voice recognition server 430, emotion analysis server 440, agent status management server 450, and information providing device 460.

[0025] The network configuration of call management network 400 (i.e., the connection relationship between the devices 410 to 460) is not limited to that illustrated in FIG. 1. Call management network 400 may be configured in a known topology (ring type, star type, bus type, etc.).

[0026] Call recording server 410 is connected to network machine 320 of internal line network 300. Call recording server 410 receives the IP packet transmitted from network machine 320, extracts the voice information of the call from the received IP packet and records it in an internal line call storage device. Specifically, call recording server 410 records voice information of the voice call transmitted through the IP telephone network for each service provided by the operator. At this time, it is preferable that call identification information, speaker identification information, and time information be added as the control information of each voice information. The call identification information is information for identifying a call. The speaker identification information is information for identifying the speaker (IP telephone) of the spoken voice included in the voice information. The time information is information indicating the time corresponding to the voice information. The control information may be acquired from the header part of the IP packet or from the payload part of the IP packet.

[0027] Call management server 420 acquires the call start timing by receiving a call start notification acquired from call recording server 410. Then, call management server 420 controls the operation timing of each of call recording server 410, voice recognition server 430, emotion analysis server 440, and information providing device 460 on the basis of the acquired call start timing.

[0028] In response to the recognition start request acquired from call management server 420, voice recognition server 430 transmits, to call recording server 410, a voice transmission request targeted for the same voice information as the recognition start request. Then, voice recognition server 430 performs a voice recognition process on the voice information returned from call recording server 410, generates text data as a result of the voice recognition process, and stores it in the internal text storage device. At this time, it is preferable that the call identification information, the speaker identification information, and the time information be added as the control information of each text data

as described above.

[0029] In response to a request for transmitting voice information from information providing device 460, call recording server 410 can provide voice information of calls transmitted through the IP telephone network to voice recognition server 430, emotion analysis server 440, and information providing device 460 in streaming. Voice recognition server 430 can provide the text information that is the voice recognition result for the voice information to information providing device 460 in streaming in response to a request for transmitting the text information from information providing device 460.

[0030] For details of call recording server 410, call management server 420, and voice recognition server 430, refer to Japanese Patent Publication No. 5860085 of the same applicant as the present application.

[0031] Emotion analysis server 440 acquires the call start timing by receiving a call start notification acquired from call recording server 410. Then, emotion analysis server 440 transmits, to call recording server 410, a voice transmission request targeted for the voice information of the customer same as the call start notification. Then, on the basis of the voice information of the customer returned from call recording server 410, emotion analysis server 440 chronologically analyzes the emotion of the customer receiving the service, and chronologically transmits the information indicating the rates of the calmness, anger, pleasure and sadness of the customer to information providing device 460 for each operator (i.e., the operator's ID) for example. Here, known techniques may be adopted as the emotion analysis process on the basis of the voice information.

[0032] Agent status management server 450 receives, in a form of an IP packet, the agent status and the operator's ID of each multifunctional IP telephone through network machine 320. Agent status management server 450 stores the agent status for each operator's ID in chronological order in an internal agent status storage device, and manages the total number of today’s calls, the number of inbound calls, the number of outbound calls, and/or

the number of calls of each time zone, the number of inbound calls, and the number of outbound calls, for example. When the agent status of the operator is changed, agent status management server 450 further transmits, to information providing device 460, the changed agent status together with the operator's ID. In addition, in response to a request from information providing device 460, agent status management server 450 transmits the task content (total number of today's calls) of a designated operator.

[0033] IM network 500 is also a part of a communication network constructed in a call center, for example. IM network 500 includes the personal computer and information providing device 460 that constitute each of operator desktop machines 310_1 to 310_N. A previously known IM client is installed in each personal computer and information providing device 460, and simple messages can be exchanged therebetween in real time through IM network 500.

[0034]

3. Configuration of Information Providing Device

Information providing device 460 is a computer device, and generally includes operation input machine 461, communication device 463, storage device 465, control device 467, display device 469, and voice output device 4611 as illustrated in FIG. 2. Communication device 463, storage device 465 and control device 467 may be housed in the same housing.

[0035] Operation input machine 461 is, for example, a mouse and keyboard, and is wirelessly or wirelessly connected to control device 467. Operation input machine 461 converts the operation performed with the hand of the user (typically, SV) into a specific electrical signal (hereinafter, referred to as operation signal) and outputs it to control device 467. In this disclosure, the mouse outputs the signal of the position of the cursor on the screen of display device 469 as an example of the operation signal. In addition, the keyboard outputs a signal indicating a key operated by the user as another example of the

operation signal.

[0036] Under the control of control device 467, communication device 463 receives voice information from call recording server 410, text information from voice recognition server 430, an agent status from agent status management server 450, and an instant message from each of operator desktop machines 310_1 to 310_N.

[0037] Under the control of control device 467, communication device 463 transmits a transmission request of predetermined voice information to call recording server 410 and transmits a transmission request of predetermined text information to voice recognition server 430.

[0038] Storage device 465 stores various objects required for image generation at control device 467.

[0039] Control device 467 includes a microcomputer or the like for performing a pre-stored program, and generates the image described below such that the user can easily understand the task statuses of a plurality of operators in the call center and the detailed task statuses of some operators. This image indicates the seat layout of the operators in the call center at a designated magnification. In addition, in this image, the task status of each operator is represented by an object group of a predetermined number, and each seat is configured with the same object group.

[0040]

4.Image Generated by Control Device 467

In the present disclosure, exemplary four-level magnification is defined. Specifically, level 1 is assigned to the smallest magnification. At level 1, each seat is configured with the smallest number of objects. Level 2 is assigned to the second smallest magnification. At level 2, each seat is configured with the second smallest number of objects. Thereafter, as the level increases, the magnification increases and the number of objects constituting each seat increases. Level 4 is the highest level in this

disclosure.

[0041] The image of each level is configured with at least a first layer and a second layer. In the first layer, mainly, a plurality of seats are disposed with an object group of a predetermined number. A GUI such as a slider for designation of the magnification by the user is also disposed in the first layer. A GUI such as a scroll bar for moving the display area of the seat layout is also disposed in the first layer. In addition, the display area of the seat layout may be movable through dragging with a mouse.

[0042] In the second layer, a pop-up image or a widget image (detailed later) is disposed.

[0043] Next, a configuration example of the image of level 1 generated by control device 467 is described with reference to FIG. 3A.

In FIG. 3A, image ILV1 of level 1 represents the seat layout in the call center at the smallest magnification. Thus, image ILV1 of level 1 indicates all seats (e.g., N seats) ST_1 to ST_N in the call center. Alternatively, image ILV1 of level 1 may indicate all seats managed by one SV in the call center. In addition, as is apparent from the above description, slider SL is also provided on the outer edge of image ILV1. Note that in FIG. 3A, a state where pop-up image IPU and widget image IWG are disposed in the second layer is illustrated, and therefore some seats ST are hidden behind the pop-up image IPU and widget image IWG.

[0044] In addition, in image ILV1, each of seats ST_1 to ST_N is configured with first object group GLV1 including basically three objects OBJ1 to OBJ3 as illustrated in FIG. 3B.

[0045] Object OBJ1 is an icon representing an operator at seat ST_i (i is any of 1 to N) of interest.

[0046] Object OBJ2 indicates whether the multifunctional IP-phone of seat ST_i of interest is busy or not, for example. In FIG. 3A, object OBJ2 represents that the handset is not on-hook, and indicates that the multifunctional IP-phone is busy. When the handset is

on-hook, object OBJ2 indicates that the multifunctional IP telephone is not busy. Object OBJ2 may represent other statuses of the operator (see Table 2) as well as whether the multi-function IP telephone is busy.

[0047] Object OBJ3 is an icon (in this disclosure, an icon of a pin) that can be designated by the user with a mouse. When this icon is designated, control device 467 generates widget image IWG indicating the detailed task content of the operator of the seat ST_i of interest and disposes widget image IWG at a predetermined location in the second layer.

[0048] Each of seats ST_1 to ST_N may additionally include object OBJ4 disposed on object OBJ1. Object OBJ4 indicates the number of instant messages from the SV and the unread/read of the message, for example. The number of instant messages is represented as number. Unread/read is represented by different colors.

[0049] Next, an image of level 2 generated by control device 467 is described.

Although not illustrated in the drawing, the image of level 2 represents the seat layout in the call center with the second smallest magnification. Therefore, the image of level 2 may not completely include all seats in the call center or all seats managed by one SV, in a single screen. In this case, the above-described scroll bar is disposed at the periphery of the image of level 2. By operating it, all seats can be displayed. The same applies to the images of levels 3 and 4.

[0050] In addition, in the image of level 2, each of seats ST_1 to ST_N can be displayed in a larger size, and a larger number of objects can be displayed than in level 1. As such, each of seats ST_1 to ST_N is configured with second object group GLV2 including objects OBJ5 to OBJ11 in addition to objects OBJ1 to OBJ4 described above as illustrated in the FIGS. 3C to 3E. For convenience, object OBJ4 is not illustrated in FIGS. 3C to 3E.

[0051] Objects OBJ5 to OBJ7 are used when object OBJ2 indicates busy.

[0052] Specifically, object OBJ5 represents a call duration.

[0053] In addition, object OBJ6 indicates whether the current call is an inbound call or an

outbound call. In the example of FIG. 3C, object OBJ6 indicates an inbound call.

[0054] In addition, object OBJ7 indicates whether the operator of interest is currently on an outside line call or an internal line call. In the example of FIG. 3C, the seventh object OBJ7 indicates an outside line call.

[0055] In addition, object OBJ8 indicates the name and the membership of the operator of interest.

[0056] In addition, object OBJ9 indicates the telephone number of the person currently talking to the operator of interest.

[0057] In addition, object OBJ10 is an alert representing that 10 minutes or more have passed after the start of the call, as illustrated in FIG. 3D, for example. In this disclosure, object OBJ10 is used in place of object OBJ9 when 10 minutes or more have elapsed after the start of the call.

[0058] In addition, object OBJ11 represents that the call button has been pressed by the operator of interest (i.e., help) as illustrated in FIG. 3E. In this disclosure, there are two types of object OBJ11. One is an icon with an exclamation mark inside the triangle, which is used in place of object OBJ2, and the other is an icon with the word "URGENT" and the elapsed time after the press of the call button, which is used in place of object OBJ9. Note that when the SV serves for help, a checkmark is displayed next to the other object OBJ11.

[0059] Note that objects OBJ5 to OBJ10 (except for object OBJ8) are not used when the operator is not talking.

[0060] Next, an image of level 3 generated by control device 467 is described.

Although not illustrated in the drawing, the image of level 3 represents the seat layout at the third smallest magnification.

[0061] In addition, in the image of level 3, each of seats ST_1 to ST_N can be displayed in a larger size, and a larger number of objects can be displayed than in level 2. As such, each

of seats ST_1 to ST_N is configured with third object group GLV3 including objects OBJ12 to OBJ14 in addition to objects OBJ1 to OBJ11 described above as illustrated in FIG. 3F.

[0062] Object OBJ12 indicates the number of unread instant messages. In this disclosure, object OBJ12 is used in place of object OBJ1 when there is an unread instant message.

[0063] Object OBJ13 is an alert displayed when the customer currently serviced by the operator of interest is angry. Object OBJ13 may be an alert that is displayed when a numerical value indicating an emotion, other than anger, of the customer exceeds a predetermined threshold.

[0064] Object OBJ14 is an alert indicating the start time (call start time) of the customer service of the operator of interest.

[0065] In addition, in the image of level 3, when the line is not busy, each of seats ST_1 to ST_N is configured with third object group GLV3 including objects OBJ15 to OBJ17 in addition to the above-described objects OBJ1 to OBJ3, OBJ5, OBJ8 as third object group GLV3 as illustrated in FIG. 3G.

[0066] Objects OBJ15, OBJ16, and OBJ17 are the number of inbound calls, the number of outbound calls and the total number of today's calls of the operator of interest.

[0067] Next, an image of level 4 generated by control device 467 is described.

Although not illustrated in the drawing, the image of level 4 represents the seat layout at the greatest magnification.

[0068] In the image of level 4, each of seats ST_1 to ST_N can be displayed in a larger size, and therefore a larger number of objects can be disposed than in level 3. As such, when the line is busy, each of seats ST_1 to ST_N is configured with fourth object group GLV4 including objects OBJ18 to OBJ19 in addition to the above-described objects OBJ1 to OBJ14 as illustrated in FIG. 3H.

[0069] Object OBJ18 indicates a tag that is attached to text information and/or voice

information of a conversation that indicates the content of the service for the customer such that it can be retrieved later.

[0070] Objects OBJ19 indicates the calmness, anger, pleasure, and sadness of the customer receiving the service in a form of a bar graph or the like.

[0071] In addition, object OBJ19 can be designated by the user with a mouse. When object OBJ19 is designated, a field that can display the most recent several speech recognition results in a form similar to a pull-down menu.

[0072] Note that the above-described pop-up image IPU is generated by control device 467 and disposed on the second layer when the user designates a seat in the image of each level by mouse-over or click. In this disclosure, the content of the pop-up image IPU is the same as that of the fourth object group GLV4 of level 4. The pop-up image IPU is deleted from the second layer when designation of the seat using mouse-over or click in the image of each level is completed. In this manner, the user can recognize the details of the operation of the operator at seat ST_i designated by mouse-over(see FIG. 3A).

[0073] In addition, the above-described widget image IWG is generated by control device 467 and disposed on the second layer when object OBJ3 in the image of each level is designated with a mouse (see FIG. 3A).

[0074] In the present disclosure, widget image IWG allows for recognition of the most detailed task contents relating to an operator, and when the line is busy, widget image IWG is configured with object group GWG1 including objects OBJ20 to OBJ24 in addition to objects OBJ1, OBJ2, OBJ8 to OBJ14, and OBJ18 as illustrated in FIG. 3I. Note that objects OBJ2 and OBJ12 are not illustrated in FIG. 3I.

[0075] Object OBJ20 is similar to object OBJ9 in that it indicates the telephone number of the person currently talking to the operator of interest, except that when object OBJ20 is designated with a mouse, a field capable of graphically and chronologically displaying a simple flow of the operator's customer service is opened in a form similar to a pull-down

menu. In the present disclosure, as a simple flow of customer service, the start time and the end time of the customer service, the start time and the end time of the hold of the outside line call, and the start time and the end time of the internal line call are displayed. Further, in this disclosure, a button for starting the playback of voice information about an outside line call or an internal line call of interest is also displayed.

[0076] Object OBJ21 indicates a history of detected filter and alert. When object OBJ21 is designated, a field that allows for chronological display of details of the detected filter and alert is opened in a form similar to a pull-down menu as illustrated in FIG. 3J. In this disclosure, the history of the detected filter is a tag string automatically detected through speech recognition from spoken voice or a tag string added by hand. The alert history is an alert that has been displayed in the past (objects OBJ10, OBJ13 and OBJ14).

[0077] Object OBJ22 is similar to object OBJ19 in that it indicates the rates of the calmness, anger, pleasure, and sadness of the customer receiving the service in a form of a bar graph or the like, but when object OBJ22 is designated with a mouse, a field capable of displaying text information representing exchange with the operator is opened in a form similar to a pull-down menu as illustrated in FIG. 3J. In addition, when the icon button next to the text information is pressed, a corresponding recorded sound is played. This control is obvious from steps S029 to S033 illustrated in FIG. 4B described later.

[0078] Object OBJ23 indicates an instant message. When this OBJ23 is designated with a mouse, a field capable displaying exchange of instant messages with the SV is opened in a form similar to a pull-down menu as illustrated in FIG. 3J, for example.

[0079] Object OBJ24 is a button for closing widget image IWG.

[0080] When the line is not busy, widget image IWG is configured with object group GWG2 including object OBJ25 in addition to objects OBJ1, OBJ2, OBJ8, OBJ15 to OBJ17, OBJ23 and OBJ24 as illustrated in FIG. 3K.

[0081] Object OBJ25 indicates the latest operation status of the operator of interest (busy,

standby, ACW, AUX, etc.). Specifically, when object OBJ25 is designated with a mouse, a field capable of displaying a bar graph indicating the operator's operation status, a bar graph indicating the number of calls and the like is opened in a form similar to a pull-down menu.

[0082]

5. Operation of Control Device

First, all objects are stored in storage device 465 in a state where the object used for each magnification level is defined.

In addition, an icon is registered to storage device 465 for each ID of the operator. It is preferable that the icon is selected in accordance with the preference of the operator.

[0083] In addition, a base of the image representing the seat layout of the call center is created. Regarding the base image, it suffices that the layout of the seats (i.e., operator desktop machines 310_1 to 310_N) is prepared for each level, for example. Each seat is associated with the internal line number or the operator ID of each of operator desktop machines 310_1 to 310_N. In addition, in each base image, an object representing a door, foliage plant or the like may be disposed. Each base image is also stored in storage device 465.

[0084] When information providing device 460 is activated, control device 467 performs the process illustrated in FIGS. 4A and 4B. First, control device 467 checks the present magnification level (step S001 in FIG. 4A). The present level may be defined by default, or may be the level set immediately before the last power-off of information providing device 460, for example.

[0085] Next, control device 467 reads out the base image corresponding to the present level from storage device 465 (step S003), then acquires, from agent status management server 450 through communication device 463, the login status and the agent status required for image generation corresponding to the present level for each of operator

desktop machines 310_1 to 310_N, and stores them in storage device 465 (step S005).

[0086] When the present level is level 1, whether the corresponding multi-function IP telephone is busy is acquired as an agent status as one of the required information in step S005. Further, control device 467 acquires the number of unread messages, using an instant messaging function.

[0087] When the present level is level 2, the following agent statuses are acquired in addition to the agent status of level 1.

Call duration of the corresponding multi-function IP telephone

Call type (i.e., inbound call or outbound call)

Line call type (i.e., on outside line call or internal line call)

Phone number of person at other end of line

Call starting time

Whether the call button is pressed

[0088] When the present level is level 3, the following agent statuses are acquired in addition to the agent status of levels 1 and 2.

Total number of calls

Number of inbound calls

Number of outbound calls

[0089] When the present level is level 4, the agent statuses of levels 1 to 3 are acquired.

[0090] In addition, when the present level is level 4 (YES in step S007), control device 467 acquires the tag given for the present customer service in each multi-function IP telephone from call recording server 410, voice recognition server 430, and the like through communication device 463 (step S009). This tag may be stored in storage device 465 in the case where the user performs the input operation by operating operation input machine 461. In this case, control device 467 may acquire a tag from storage device 465.

[0091] Subsequent to step S009, control device 467 further acquires text information

indicating the most recent several voice recognition results of the present customer service in each multi-function IP telephone from voice recognition server 430 and the like through communication device 463 (step S011).

[0092] Subsequent to step S011, control device 467 further acquires information (i.e., rates of calmness, anger, pleasure and sadness) indicating the emotion of the person on the other end of the line of each multifunctional IP-phone from emotion analysis server 440 and the like through communication device 463 (step S013).

[0093] When it is determined as NO in step S007, or after step S013, the image of the present level can be generated. Therefore, control device 467 functions as a first information generating section or a second information generating section, and uses information collected from agent status management server 450 and the like to generate an image illustrated in any of FIGS. 3B to 3H for each seat ST_i as a first image or a second image, and dispose the image in the first layer. Thereafter, control device 467 displays the image on display device 469 (step S015).

[0094] Subsequent to step S015, control device 467 determines whether the position signal output from operation input machine 461 selects any seat ST_i in the image being displayed on display device 469 (step S017).

[0095] When it is determined as YES in step S017, control device 467 functions as a third information generating section, generates pop-up image IPU (see FIG. 3H) which is an example of the third image in the same manner as the generation of the image of level 4, disposes it around seat ST_i selected in the image of the present level and in the second layer, and then displays it on display device 469 (step S019).

[0096] When it is determined as NO in step S017, or after completion of step S019, control device 467 determines whether the position signal output from operation input machine 461 selects object OBJ3 in any seat ST_i in the image being displayed on display device 469. That is, control device 467 determines whether to generate widget image

IWG (Step S021 in FIG. 4B).

[0097] When it is determined as YES in step S021, control device 467 functions as the third information generating section, generates widget image IWG (see FIG. 3I and FIG. 3K), which is another example of the third image after acquiring required information (i.e., the agent status and alerts) in the same manner as in the generation of the image of each level, disposes it at a predetermined position in the image at the present level and in the second layer, and then displays it on display device 469 (step S023).

[0098] After completion of step S023, control device 467 determines whether object OBJ20 has been clicked (i.e., selected) in widget image IWG that is being displayed. That is, control device 467 determines whether to display a simple flow of customer service (step S025).

[0099] When it is determined as YES in step S025, control device 467 functions as the third information generating section, acquires the required agent status from agent status management server 450, and then opens a field graphically and chronologically displaying a simple flow of the customer service of the operator in the multi-function IP telephone of interest in the widget image IWG that is being displayed (step S027). As described above, in this field, the start time and the end time of the customer service, the start time and the end time of the hold of the outside line call, and the start time and the end time of the internal line call are displayed as the simple flow of customer service. In this disclosure, a button for starting playback of voice information about an outside line call or an internal line of interest is also displayed.

[0100] When it is determined as NO in step S025, or after completion of step S027, control device 467 determines whether the button in the field of the object OBJ20 that is being displayed has been clicked (i.e., selected) by operation input machine 461. In other words, control device 467 determines whether streaming distribution of audio information is required (step S029).

[0101] When it is determined as YES in step S029, control device 467 requests, through communication device 463, streaming of the voice information of the customer service that has been started from the start time on the corresponding multi-function IP telephone by designating the internal line number and the start time of the customer service to call recording server 410 (step S031).

[0102] When receiving the streaming of the voice information through communication device 463, control device 467 functions as a playback control section and outputs the received voice information as a voice from the voice output device 4611 (step S033).

[0103] When it is determined as NO in step S029 or after the completion of step S033, control device 467 determines whether object OBJ22 that is being displayed has been clicked (i.e., selected) by operation input machine 461. In other words, control device 467 determines whether the display of the speech recognition result is required (step S035 of FIG. 4C).

[0104] When it is determined as YES in step S035, control device 467 requests, through communication device 463, the text information of the customer service that has been started from the start time in the corresponding multi-function IP telephone by designating, through voice recognition server 430, the internal line number and the start time of the customer service and the like (step S037).

[0105] When receiving the text information through communication device 463, control device 467 functions as the third information generating section, adds the received text information to a predetermined field of widget image IWG as an example and the third image, and then displays it on display device 469 (step S039). In steps S035 to S039, control device 467 may receive not only the text information but also the voice information of the corresponding customer service. In this case, when the icon button provided next to each text information is pressed, the corresponding recorded sound is played.

[0106] Also when objects OBJ21, OBJ23 and OBJ25 that are being displayed are clicked,

control device 467 may chronologically display the details of the detected filter and alert, exchange of the instant message with the SV, the latest operating status of the operator of interest, and the like.

[0107] When it is determined as NO in step S021, or when it is determined as NO in step S035, or, after completion of step S039, control device 467 determines whether the magnification level has been changed by the user from the operated amount of slider SL in the image of the present level (step S041).

[0108] When it is determined as NO in step S041, the processes after step S003 are repeated while keeping the level at the previous level, whereas when it is determined as YES in step S041, the level after the change is stored and thereafter the processes after step S003 are repeated based on the changed level (step S043).

[0109]

6. Operation and Effect of Information Providing Device

As described above, the image generated by the present information providing device 460 indicates the seat layout of the operators in the call center with a designated magnification. In addition, in this image, the task status of each operator is represented by an object group of a predetermined number, and each seat is configured with the same object group. Here, the greater the magnification, the greater the number of objects to be used for indicating the seats. As such, when the user (typically, the SV) sets a small magnification, the task statuses of a plurality of operators can be overviewed, whereas when a large magnification is set, the user can recognize the detailed task statuses of some operators.

[0110]

7. Additional Notes

In the disclosure, call recording server 410, call management server 420, voice recognition server 430, emotion analysis server 440, agent status management server 450

and information providing device 460 have been described as physically independent devices in call management network 400. However, this is not limitative, and at least one of call recording server 410, call management server 420, voice recognition server 430, emotion analysis server 440, and agent status management server 450 may be incorporated into information providing device 460. In addition, at least one of call recording server 410, call management server 420, voice recognition server 430, emotion analysis server 440, and agent status management server 450 may be incorporated in the other.

[0111] While the magnification level is set by the user by operating operation input machine 461 in the above disclosure. However, this is not limitative, and the magnification level may be automatically set.

Industrial Applicability

[0112] With the information providing device according to the present disclosure, the user can recognize the task statuses of a plurality of operators and a detailed task statuses of some operators, and the information providing device according to the present disclosure can be installed in a call center or the like.

Reference Signs List

[0113]

460 Information providing device

461 Operation input machine

463 Communication device

465 Storage device

467 Control device

469 Display device

4611 Voice output device

CLAIMS

Claim 1 An information providing device comprising:

a first information generating section configured to generate a first image representing a layout of seats of a plurality of operators at a first magnification, the first image being an image in which a schematic task status of each of the plurality of operators is represented by a first object group, and each of the seats is configured with the first object group;

a second information generating section configured to generate a second image representing the layout at a second magnification greater than the first magnification, the second image being an image in which a detailed task status of each of the plurality of operators is represented by a second object group, and each of the seats is configured with the second object group; and

a display section configured to display the first image and the second image.

Claim 2 The information providing device according to claim 1, further comprising a third information generating section configured to generate a third image when a seat is selected in the first image or the second image that is being displayed on the display section, the third image being an image in which a further detailed task status of a corresponding operator is represented by a third object group,

wherein the display section displays the third image on the first image or the second image that is being displayed on the display section.

Claim 3 The information providing device according to claim 2, further comprising a playback control section configured to playback voice information representing a voice call between a corresponding operator and a customer when a predetermined object of the third image is selected.

Claim 4 The information providing device according to claim 2, wherein when a predetermined object of the third image is selected in a case where text information representing an exchange between each of the plurality of operators and a customer is stored in a text storage device, the third information generating section acquires, from the text storage device, text information representing a voice call between a corresponding operator and a customer in a form of characters, and adds the text information to the third image.

Claim 5 The information providing device according to any one of claims 2 to 4,

wherein the third information includes a pop-up image and a widget image;

wherein the pop-up image is displayed while a seat in the first image or the second image is designated; and

wherein the widget image is displayed after a predetermined object in the first image or the second image is designated until a predetermined object in the widget image is designated.

Claim 6 The information providing device according to any one of claims 2 to 5, wherein in the third image, a customer service of a corresponding operator is graphically and chronologically indicated.