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### Customer service supporting device, self-service terminal, and method

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#### Abstract

A customer service supporting device includes a communication interface configured to communicate with a self-service terminal in a store and an operator terminal in a location different from the store, and a processor configured to, upon receipt of a customer service request from the self-service terminal, acquire screen data corresponding to a screen that is displayed by the self-service terminal when the customer service request is issued, and control the communication interface to transmit the screen data to the operator terminal and cause the operator terminal to display the screen.

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**Inventors:** Okuma; Yumiko (Tokyo, JP), Tsunoda; Mayuko (Yokohama Kanagawa, JP), Koganezawa; Hikaru (Kawasaki Kanagawa, JP), Nakamura; Junji (Tokyo, JP), Nobutoki; Tetuhiro (Tokyo, JP)

**Applicant:** Toshiba Tec Kabushiki Kaisha (Tokyo, JP)

**Family ID:** 1000008765464

**Assignee:** Toshiba Tec Kabushiki Kaisha (Tokyo, JP)

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*Primary Examiner:* Labaze; Edwyn

*Attorney, Agent or Firm:* Kim & Stewart LLP

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**Background/Summary**

**CROSS-REFERENCE TO RELATED APPLICATION**

(1) This application is based upon and claims the benefit of priority from Japanese Patent Application No. 2023-068568, filed Apr. 19, 2023, the entire contents of which are incorporated herein by reference.

**FIELD**

(2) Embodiments described herein relate generally to a customer service supporting device, a self-service terminal, and a method.

**BACKGROUND**

(3) In recent years, an increasing number of stores selling commodities or providing services are equipped with self-service terminals, which are operable by customers to make payment for the sold commodities or the provided services, to achieve automatic operation or labor saving. However, since the self-service terminals are operated by customers, it is necessary to respond to inquiries from customers having trouble operating the self-service terminals. Therefore, employees need to be stationed in the stores to respond to the inquiries, and providing the self-service terminals does not actually lead to self-service operation levels or labor saving that might be expected.

(4) Such a problem can be solved by introducing a remote customer service system that makes it possible to provide customer service from a remote location through a monitor. However, in order to introduce the remote customer service system, a monitor for customer service is required separately from a self-service terminal. Also, unless a person providing customer service from the remote location can recognize operations that are difficult for the customers, it is not possible to provide highly satisfactory customer service.

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## Description

### BRIEF DESCRIPTION OF THE DRAWINGS

- (1) FIG. 1 is a block diagram showing a schematic configuration of a remote customer service system according to an embodiment.
- (2) FIG. 2 is a diagram showing an example of transition of screens displayed on a display device of a self-service terminal.
- (3) FIG. 3 is a block diagram showing a circuit configuration of the self-service terminal.
- (4) FIG. 4 is a block diagram showing a circuit configuration of an operator terminal.
- (5) FIG. 5 is a block diagram showing a circuit configuration of a remote customer service supporting server.
- (6) FIG. 6 is a schematic diagram showing a structure of data stored in a terminal-specific file.
- (7) FIG. 7 is a block diagram showing functional configurations of processors of the self-service terminal, the remote customer service supporting server, and the operator terminal.
- (8) FIG. 8 shows an example of a screen displayed on a touch panel of the self-service terminal.
- (9) FIG. 9 shows an example of a screen displayed on the touch panel of the self-service terminal.
- (10) FIG. 10 shows an example of a screen displayed on the touch panel of the self-service terminal.
- (11) FIG. 11 is a flowchart showing information processing executed by the processor of the self-service terminal.
- (12) FIG. 12 is a flowchart showing information processing executed by the processor of the remote customer service supporting server.
- (13) FIG. 13 is a flowchart showing information processing executed by the processor of the operator terminal.
- (14) FIG. 14 shows an example of a screen displayed on a display of the operator terminal.

### DETAILED DESCRIPTION

- (15) An aspect of this disclosure makes it possible to provide a customer service supporting device that can provide highly satisfactory remote customer service to a customer having trouble operating a self-service terminal without using a monitor for customer service and a self-service terminal supported by the customer service supporting device.
- (16) According to an aspect of this disclosure, a customer service supporting device includes a communication interface configured to communicate with a self-service terminal in a store and an operator terminal in a location different from the store, and a processor configured to, upon receipt of a customer service request from the self-service terminal, acquire screen data corresponding to a screen that is displayed by the self-service terminal when the customer service request is issued, and control the communication interface to transmit the screen data to the operator terminal and cause the operator terminal to display the screen.
- (17) Schematic Description of Remote Customer Service System
- (18) FIG. 1 is a block diagram showing a schematic configuration of a remote customer service system 1 according to an embodiment. The remote customer service system 1 includes self-service terminals 10, an operator terminal 20, and a remote customer service supporting server 30. The self-service terminals 10 are provided in a store where the remote customer service system 1 is

introduced.

(19) The store sells commodities or provides services. For example, the store is a self-service checkout type retail store where a customer collects commodities to be purchased from commodities displayed on a sales floor and operates a self-service POS terminal placed on a checkout counter (a cash register) by himself or herself to pay a price. The store may be a self-service order type restaurant where a customer operates a self-service order terminal placed on a dining table by himself or herself to order a menu item and pay a price thereof. The store may be a facility, such as a karaoke room, a conference room, a guest room, or a fitness club, that is rented out to a customer and in which the customer operates a self-service reception terminal placed on a reception counter by himself or herself to check in when entering the store and to check out when leaving the store. The store may be a rental shop where an article, such as an automobile, a bicycle, or clothing, is rented out to a customer, and the customer operates a self-service reception terminal placed on a reception counter by himself or herself to check out and return the article and make payment.

(20) The self-service POS terminal, the self-service order terminal, and the self-service reception terminal described above are examples of the self-service terminals **10**. In the present embodiment, it is assumed that each self-service terminal **10** is a self-service reception terminal provided in a karaoke store in which a customer himself/herself performs a check-in operation when entering the store and performs a checkout operation when leaving the store. The self-service terminals **10** are provided in each of chain stores. The number of self-service terminals **10** provided in each store is not limited to any specific value. Each store may be provided with one self-service terminal **10** or two or more self-service terminals **10**.

(21) As shown in FIG. 1, in the remote customer service system **1**, the self-service terminals **10**, the operator terminal **20**, and the remote customer service supporting server **30** are connected to each other via a communication network **40**. The communication network **40** enables two-way data communication among the self-service terminals **10**, the operator terminal **20**, and the remote customer service supporting server **30**. The communication network **40** enables a voice call between an operator of each self-service terminal **10** and an operator of the operator terminal **20**. For example, a wide area network, such as the Internet, or a mobile communication network is adopted as the communication network **40**.

(22) As described above, the self-service terminal **10** is provided in a karaoke store in which a customer himself/herself performs a check-in operation when entering the store and performs a checkout operation when leaving the store. Therefore, the operator of the self-service terminal **10** is a karaoke room user who visits the karaoke store. On the other hand, the operator terminal **20** is provided in an office in a remote location away from the karaoke store. In the office, there is an employee who is responsible for remotely serving customers who visit the karaoke store. Hereinafter, the employee is referred to as a customer service person. That is, the operator of the operator terminal **20** is a customer service person.

(23) The remote customer service supporting server **30** is an example of a customer service supporting device that supports remote customer service performed by the customer service person for a customer who operates the self-service terminal **10**. The remote customer service supporting server **30** may provide services related to remote customer service in an on-premises environment, or may provide services related to remote customer service in a cloud computing environment.

(24) The remote customer service supporting server **30** manages a store database **31**, a member database (or customer database) **32**, and a screen database **33**. The store database **31**, the member database **32**, and the screen database **33** may be stored in a storage device provided in the remote customer service supporting server **30** or may be stored in an external storage device connected to the remote customer service supporting server **30**.

(25) The store database **31** is a collection of store data records generated for each karaoke store. In each store data record, store information, such as a store name and a location, is associated with a

store ID that is store identification information for identifying the karaoke store.

(26) The member database **32** is a collection of member data records generated for respective customers who are registered as members of the karaoke store. In each member data record, member information, such as name, age, gender, and use history, is associated with a member ID that is member identification information (or customer identification information) for identifying the corresponding member (or customer).

(27) The screen database **33** is a collection of screen data records generated for respective screens to be displayed on a display device of the self-service terminal **10**. In each screen data record, screen information, such as the name of a screen and a default image, is associated with a screen ID that is screen identification information (or image identification information) for identifying the screen. The default image is displayed on the screen when no input operation has been performed by a customer who is the operator of the self-service terminal **10**.

(28) Here, an example of transition of screens displayed on the display device of the self-service terminal **10** will be described with reference to a schematic diagram of FIG. 2.

(29) The self-service terminal **10** is an information terminal that processes check-in to the store and checkout from the store. When the self-service terminal **10** is in an idle state, a start screen Aa identified by a screen ID "0001" is displayed on the display device. The start screen Aa includes a reception button for selecting check-in and a checkout button for selecting checkout. A customer who checks in touches the reception button. A customer who checks out touches the checkout button.

(30) When the reception button is touched, the self-service terminal **10** enters a check-in mode. When entering the check-in mode, the screen of the display device transitions to a member registration screen Ba identified by a screen ID "1001". The member registration screen Bb is a screen for a customer who is registered as a member to input member information such as a member ID. The member registration screen Bb is also a screen for a customer who is not registered as a member to input information necessary for member registration. When the member information or the information necessary for the member registration is input on the member registration screen Bb, the screen of the display device transitions to a number-of-persons input screen Bb identified by a screen ID "1002". The number-of-persons input screen Bb is a screen for a customer to input the number of persons who use a karaoke room. When the number of persons is input on the number-of-persons input screen Bb, the screen of the display device transitions to a price list screen Bc identified by a screen ID "1003". The price list screen Bc is a screen on which a price list, which include prices that vary depending on conditions such as karaoke courses and karaoke rooms, is displayed. After checking the price list, the customer touches an acceptance button. When the acceptance button is touched, the screen of the display device transitions to a course selection screen Bd identified by a screen ID "1004". The course selection screen Bd is a screen for selecting a karaoke course. The karaoke store provides multiple karaoke courses that differ in, for example, whether an all-you-can-drink option is provided and a usage time. When a course selected by the customer is input on the course selection screen Bd, the screen of the display device transitions to a room selection screen Be identified by a screen ID "1005". The room selection screen Be is a screen for selecting a karaoke room. The karaoke store, for example, provides multiple karaoke rooms with different room sizes, acoustic facilities, lighting facilities, and the like. When a karaoke room selected by the customer is input on the room selection screen Be, the screen of the display device transitions to a reception check screen Bf identified by a screen ID "1006". The reception check screen Bf displays the number of persons, the karaoke room, and use information for the karaoke room, which are received from the number-of-persons input screen Bb, the course selection screen Bd, and the room selection screen Be, and the price corresponding to the use information. After checking items of the reception check screen Bf, the customer touches an acceptance button. After the acceptance button is touched, the screen of the display device transitions to a reception end screen Bg identified by a screen ID "1007". The reception end screen

Bg is a screen indicating that the check-in is finished.

(31) On the other hand, when the checkout button on the start screen Aa is touched, the self-service terminal **10** enters a checkout mode. When entering the checkout mode, the screen of the display device transitions to a slip input screen Ca identified by a screen ID “2001”. The slip input screen Ca is a screen for a customer to input a slip number of a checkout slip issued when checking in. When the slip number of the checkout slip is input on the slip input screen Ca, the screen of the display device transitions to a coupon input screen Cb identified by a screen ID “2002”. The coupon input screen Cb is a screen for a customer to input information related to a coupon. A customer who has a coupon or the like inputs information regarding the coupon at this time. A customer who does not have a coupon or the like touches a skip button. After the information related to the coupon is input or the skip button is touched, the screen of the display device transitions to a checkout check screen Cc identified by a screen ID “2003”. The checkout check screen Cc displays information for checkout such as a payment amount. After checking the information on the checkout, the customer touches an acceptance button. When the acceptance button is touched, the screen of the display device transitions to a payment method screen Cd identified by a screen ID “2004”. The payment method screen Cd is a screen for selecting a price payment method such as cash, a credit card, an electronic money card, or code payment. After the payment method selected by the customer is input on the payment method screen Cd, the screen of the display device transitions to a payment reception screen Ce identified by a screen ID “2005”. The payment reception screen Ce is a screen for receiving a payment of a price by the payment method selected by the customer. When the payment of the price is completed, the screen of the display device transitions to a payment end screen Cf identified by a screen ID “2006”. The payment end screen Cf is a screen indicating that the checkout is finished.

(32) The transition of screens is not limited to that shown in FIG. 2. Other screens may be interposed between the above screens, or some of the screens may be omitted. Each of the number-of-persons input screen Bc, the course selection screen Bd, and the room selection screen Be may be comprised of two or more screens that are switched in response to inputs. Each screen in the check-in mode and the checkout mode may include a return button that causes the screen to return to the previous screen and a stop button that causes the screen to return to the start screen Aa.

#### Description of Configuration of Self-service Terminal

(33) FIG. 3 is a block diagram showing a circuit configuration of the self-service terminal **10**. The self-service terminal **10** includes a processor **101**, a main memory **102**, an auxiliary storage device **103**, a clock **104**, a communication interface (I/F) **105**, a touch panel **106**, a camera **107**, a printer **108**, a microphone **109**, a speaker **110**, a change machine interface (I/F) **111**, a device interface (I/F) **112**, and a system transmission line **113**. The system transmission line **113** includes an address bus, a data bus, a control signal line, and the like. The system transmission line **113** connects the processor **101** and other components to each other and transmits data signals exchanged therebetween.

(34) In the self-service terminal **10**, the processor **101**, the main memory **102**, the auxiliary storage device **103**, the clock **104**, and the communication interface **105** are connected to each other via the system transmission line **113** to implement a computer. In the self-service terminal **10**, the touch panel **106**, the camera **107**, the printer **108**, the microphone **109**, the speaker **110**, the change machine interface **111**, and the device interface **112** are connected to the system transmission line **113** and are controlled by the computer to implement the functions of the self-service terminal **10**.

(35) The processor **101** corresponds to a central unit of the computer. The processor **101** controls the other components according to an operating system or application programs in order to implement various functions of the self-service terminal **10**. The processor **101** is, for example, a central processing unit (CPU). The processor **101** is a multicore processor including a plurality of processor cores and capable of executing a plurality of processes in parallel.

(36) The main memory **102** corresponds to a main storage unit of the computer. The main memory

**102** includes a nonvolatile memory area and a volatile memory area. The main memory **102** stores the operating system or the application programs in the nonvolatile memory area. The main memory **102** may store, in the nonvolatile or volatile memory area, data necessary for the processor **101** to execute processes for controlling the other components. In the main memory **102**, the volatile memory area is used as a work area where data is rewritten as appropriate by the processor **101**. The nonvolatile memory area is, for example, a read-only memory (ROM). The volatile memory area is, for example, a random access memory (RAM).

(37) The auxiliary storage device **103** corresponds to an auxiliary storage unit of the computer. For example, an electric erasable programmable read-only memory (EEPROM), a hard disk drive (HDD), or a solid state drive (SSD) may be used as the auxiliary storage device **103**. The auxiliary storage device **103** stores data used by the processor **101** to perform various processes, data generated by the processes performed by the processor **101**, and the like. The auxiliary storage device **103** may store the application programs described above.

(38) The clock **104** measures date and time. The processor **101** uses the date and time measured by the clock **104** as the present date and time.

(39) The communication interface **105** enables data communication with the remote customer service supporting server **30** connected via the communication network **40**. The communication interface **105** also establishes a voice call with the operator terminal **20** via the communication network **40**.

(40) The touch panel **106** functions as a display device and an input device of the self-service terminal **10**. The camera **107** is an imaging device that captures an image of a customer who operates the self-service terminal **10**. The camera **107** is also a reading device that reads a bar code or the like printed on a checkout slip. The printer **108** is a printing device that prints checkout slip data and the like on recording paper. The microphone **109** and the speaker **110** are used for voice communication between a customer service person, who is the operator of the operator terminal **20** with which a voice call is established, and a customer, who is the operator of the self-service terminal **10**. The change machine interface **111** is an interface with an automatic change machine **51** used for cash payment. The device interface **112** is an interface with a cashless payment terminal **52** used for cashless payment such as credit card payment, electronic money payment, or code payment.

#### Description of Configuration of Operator Terminal

(41) FIG. 4 is a block diagram showing a circuit configuration of the operator terminal **20**. The operator terminal **20** includes a processor **201**, a main memory **202**, an auxiliary storage device **203**, a clock **204**, a communication interface (I/F) **205**, a display **206**, an input device **207**, a microphone **208**, a speaker **209**, an informing device **210**, and a system transmission line **211**. The system transmission line **211** includes an address bus, a data bus, a control signal line, and the like. The system transmission line **211** connects the processor **201** and other components to each other and transmits data signals exchanged therebetween.

(42) In the operator terminal **20**, the processor **201**, the main memory **202**, the auxiliary storage device **203**, the clock **204**, and the communication interface **205** are connected to each other via the system transmission line **211** to implement a computer. In the operator terminal **20**, the display **206**, the input device **207**, the microphone **208**, the speaker **209**, and the informing device **210** are connected to the system transmission line **211** and are controlled by the computer to implement the functions of the operator terminal **20**.

(43) The processor **201** corresponds to a central unit of the computer. The processor **201** controls the other components according to an operating system or application programs in order to implement various functions of the operator terminal **20**. The processor **201** is, for example, a CPU. The processor **201** is a multicore processor including a plurality of processor cores and capable of executing a plurality of processes in parallel.

(44) The main memory **202** corresponds to a main storage unit of the computer. The main memory

**202** includes a nonvolatile memory area and a volatile memory area. The main memory **202** stores the operating system or the application programs in the nonvolatile memory area. The main memory **202** may store, in the nonvolatile or volatile memory area, data necessary for the processor **201** to execute processes for controlling the other components. In the main memory **202**, the volatile memory area is used as a work area where data is rewritten as appropriate by the processor **201**. The nonvolatile memory area is, for example, a ROM. The volatile memory area is, for example, a RAM.

(45) The auxiliary storage device **203** corresponds to an auxiliary storage unit of the computer. For example, an EEPROM, an HDD, or an SSD may be used as the auxiliary storage device **203**. The auxiliary storage device **203** stores data used by the processor **201** to perform various processes, data generated by the processes performed by the processor **201**, and the like. The auxiliary storage device **203** may also store the application programs described above.

(46) The clock **204** measures date and time. The processor **201** uses the date and time measured by the clock **204** as the present date and time.

(47) The communication interface **205** enables data communication with the remote customer service supporting server **30** connected via the communication network **40**. The communication interface **205** also establishes a voice call with the self-service terminal **10** via the communication network **40**.

(48) The display **206** functions as a display device of the operator terminal **20**. The input device **207** is a pointing device such as a mouse. The input device **207** may also be a keyboard, a touch pad, or the like. The microphone **208** and the speaker **209** are used for voice communication between a customer, who is the operator of the self-service terminal **10** with which a voice call is established, and a customer service person, who is the operator of the operator terminal **20**. The informing device **210** notifies the customer service person that a request for remote customer service has been received by, for example, sounding a buzzer, turning on a light source, or causing a light source to blink.

#### Description of Configuration of Remote Customer Service Supporting Server

(49) FIG. 5 is a block diagram showing a circuit configuration of the remote customer service supporting server **30**. The remote customer service supporting server **30** includes a processor **301**, a main memory **302**, an auxiliary storage device **303**, a clock **304**, a communication interface (I/F) **305**, and a system transmission line **306**. The system transmission line **306** includes an address bus, a data bus, a control signal line, and the like. The system transmission line **306** connects the processor **301** and other components to each other and transmits data signals exchanged therebetween.

(50) In the remote customer service supporting server **30**, the processor **301**, the main memory **302**, the auxiliary storage device **303**, the clock **304**, and the communication interface **305** are connected to each other via the system transmission line **306** to implement a computer. The functions of the remote customer service supporting server **30** can be implemented by the computer.

(51) The processor **301** corresponds to a central unit of the computer. The processor **301** controls the other components according to an operating system or application programs in order to implement various functions of the remote customer service supporting server **30**. The processor **301** is, for example, a CPU. The processor **301** is a multicore processor including a plurality of processor cores and capable of executing a plurality of processes in parallel.

(52) The main memory **302** corresponds to a main storage unit of the computer. The main memory **302** includes a nonvolatile memory area and a volatile memory area. The main memory **302** stores the operating system or the application programs in the nonvolatile memory area. The main memory **302** may store, in the nonvolatile or volatile memory area, data necessary for the processor **301** to execute processes for controlling the other components. In the main memory **302**, the volatile memory area is used as a work area where data is rewritten as appropriate by the processor **301**. The nonvolatile memory area is, for example, a ROM. The volatile memory area is, for



example, a RAM.

(53) The auxiliary storage device **303** corresponds to an auxiliary storage unit of the computer. For example, an EEPROM, an HDD, or an SSD may be used as the auxiliary storage device **303**. The auxiliary storage device **303** stores data used by the processor **301** to perform various processes, data generated by the processes performed by the processor **301**, and the like. The auxiliary storage device **303** may also store the application programs described above.

(54) The clock **304** measures date and time. The processor **301** uses the date and time measured by the clock **304** as the present date and time.

(55) The communication interface **305** enables data communication with the self-service terminal **10** and the operator terminal **20** that are connected via the communication network **40**.

(56) In the remote customer service supporting server **30** having the configuration described above, a part of a storage area of the auxiliary storage device **303** is used as a storage area for a terminal-specific file **60**. The terminal-specific file **60** is created for each self-service terminal **10** connected via the communication network **40** and is stored in the auxiliary storage device **303**. The storage area for the terminal-specific file **60** may be the volatile memory area in the main memory **302**.

(57) FIG. **6** is a schematic diagram showing a structure of data stored in the terminal-specific file **60**. As shown in FIG. **6**, the terminal-specific file **60** stores a terminal ID, a store ID, store information, a member ID, member information, a screen ID, and screen data. The terminal ID is terminal identification information assigned to each self-service terminal **10** to identify the self-service terminal **10**. The store ID is store identification information for identifying a store where the self-service terminal **10** is provided. Each self-service terminal **10** stores the terminal ID and the store ID in the nonvolatile memory area of the main memory **102**. Alternatively, each self-service terminal **10** may store the terminal ID and the store ID in the auxiliary storage device **303**. The store information is information about a store and is recorded in the store database **31** in association with the store ID. The member ID is member identification information for identifying a member registered in the self-service terminal **10**. The member information is information related to a member as recorded in the member database **32** in association with the member ID. The screen ID is screen identification information for identifying a screen displayed on the touch panel **106**, which is a display device of the self-service terminal **10**. The screen data is data of a screen identified by the screen ID. The screen data may be information related to a screen as recorded in the screen database **33** or a still image captured by the self-service terminal **10**.

#### Description of Functions of Remote Customer Service System

(58) FIG. **7** is a block diagram showing functional configurations of the processor **101** of the self-service terminal **10**, the processor **301** of the remote customer service supporting server **30**, and the processor **201** of the operator terminal **20**. As shown in FIG. **7**, the processor **101** of the self-service terminal **10** includes, as functional units, a detection unit **71**, an image acquisition unit **72**, an inquiry unit **73**, a first output unit **74**, a first connection unit **75**, and a display unit **76**. The processor **301** of the remote customer service supporting server **30** includes, as functional units, a reception unit **81**, a recognition unit **82**, and a notification unit **83**. The processor **201** of the operator terminal **20** includes, as functional units, an informing unit **91**, a response unit **92**, a second output unit **93**, and a second connection unit **94**.

(59) In the self-service terminal **10**, the detection unit **71** has a function of detecting a customer service request input via an input device (i.e., the touch panel **106**) by a customer who operates the self-service terminal **10**. The image acquisition unit **72** has a function of acquiring information related to an image that is displayed on the display device, that is, the touch panel **106**, of the self-service terminal **10** when the customer service request is detected by the detection unit **71**. The inquiry unit **73** has a function of sending, to the customer service supporting device, that is, the remote customer service supporting server **30**, an inquiry about whether to permit the customer service request. That is, the processor **101** controls the communication interface **105** to send the inquiry to the remote customer service supporting server **30**. The first output unit **74** has a function

of outputting information related to the image acquired by the image acquisition unit **72** to the remote customer service supporting server **30**. That is, the processor **101** controls the communication interface **105** to send the information related to the image to the remote customer service supporting server **30**. The first connection unit **75** has a function of establishing a voice call with the operator terminal **20** used by the operator in charge of customer service when a response to permit the customer service request is received from the remote customer service supporting server **30** in response to the inquiry made by the inquiry unit **73**. That is, the processor **101** controls the communication interface **105** to establish a voice call with the operator terminal **20**. The display unit **76** has a function of superimposing, on an image displayed on the display device, a window image that displays, in a window frame, the operator of the operator terminal **20** with which the voice call has been established. That is, the processor **101** controls the display device, i.e., the touch panel **106**, to display the window image.

(60) The functions of the detection unit **71**, the image acquisition unit **72**, the inquiry unit **73**, the first output unit **74**, the first connection unit **75**, and the display unit **76** described above are implemented by the processor **101** of the self-service terminal **10** by performing information processing according to a self-service terminal program. The self-service terminal program is a type of application software installed in the main memory **102** or the auxiliary storage device **103** of the self-service terminal **10**. The method for installing the self-service terminal program in the main memory **102** or the auxiliary storage device **103** is not particularly limited. The self-service terminal program may be recorded on a removable recording medium or distributed by communication via a network and installed in the main memory **102** or the auxiliary storage device **103**. Any recording medium, such as a CD-ROM or a memory card, may be used as the removable recording medium as long as the recording medium can store a program and can be read by a device.

(61) In the remote customer service supporting server **30**, the reception unit **81** has a function of receiving a customer service request from the self-service terminal **10** being operated by a customer. That is, the processor **301** controls the communication interface **305** to receive a customer service request from the self-service terminal **10**. The recognition unit **82** has a function of recognizing, based on the customer service request, a still image that is displayed on the touch panel **106** of the self-service terminal **10** at a time point when the customer service request is received by the reception unit **81**. The notification unit **83** has a function of transmitting the still image recognized by the recognition unit **82** to the operator terminal **20**. That is, the processor **301** controls the communication interface **305** to transmit the still image to the operator terminal **20**.

(62) The functions of the reception unit **81**, the recognition unit **82**, and the notification unit **83** described above are implemented by the processor **301** of the remote customer service supporting server **30** by performing information processing according to a customer service supporting program. The customer service supporting program is a type of application software installed in the main memory **302** or the auxiliary storage device **303** of the remote customer service supporting server **30**. The method for installing the customer service supporting program in the main memory **302** or the auxiliary storage device **303** is not particularly limited. The customer service supporting program may be recorded on a removable recording medium or distributed by communication via a network and installed in the main memory **302** or the auxiliary storage device **303**. Any recording medium, such as a CD-ROM or a memory card, may be used as the removable recording medium as long as the recording medium can store a program and can be read by a device.

(63) In the operator terminal **20**, the informing unit **91** has a function of notifying a customer service person, who is an operator of the operator terminal **20**, that a customer service request has been received from a customer who operates the self-service terminal **10**. The response unit **92** has a function of outputting, to the remote customer service supporting server **30**, a response indicating that the customer service person has agreed to provide customer service in response to the customer service request. The second output unit **93** has a function of outputting information related to the

self-service terminal **10** when the customer service request is received. The second output unit **93** outputs, for example, information about a store. The second output unit **93** outputs, for example, information related to a member. The second connection unit **94** has a function of establishing a voice call with the self-service terminal **10** from which the customer service request is received. (64) The functions of the informing unit **91**, the response unit **92**, the second output unit **93**, and the second connection unit **94** described above are implemented by the processor **201** of the operator terminal **20** by performing information processing according to an operator terminal program. The operator terminal program is a type of application software installed in the main memory **202** or the auxiliary storage device **203** of the operator terminal **20**. The method for installing the operator terminal program in the main memory **202** or the auxiliary storage device **203** is not particularly limited. The operator terminal program may be recorded on a removable recording medium or distributed by communication via a network and installed in the main memory **202** or the auxiliary storage device **203**. Any recording medium, such as a CD-ROM or a memory card, may be used as the removable recording medium as long as the recording medium can store a program and can be read by a device.

(65) FIGS. **8** to **10** are examples of screens displayed on the touch panel **106** of the self-service terminal **10**. FIG. **11** is a flowchart showing information processing performed by the processor **101** of the self-service terminal **10**. FIG. **12** is a flowchart showing information processing performed by the processor **301** of the remote customer service supporting server **30**. FIG. **13** is a flowchart showing information processing performed by the processor **201** of the operator terminal **20**. FIG. **14** is an example of a screen displayed on the display **206** of the operator terminal **20**. Below, functions of the remote customer service system **1** will be described with reference to the drawings. The information processing described below is an example. The information processing may be changed as appropriate as long as the same effect can be achieved. Also, screen layouts and the like may be changed as appropriate.

(66) FIG. **8** is an example of the number-of-persons input screen Bb displayed on the touch panel **106** in the check-in mode. As shown in FIG. **8**, the number-of-persons input screen Bb is divided into a region for inputting the number of persons who use the karaoke room, a region for checking whether minors are included, a region for inputting the number of minors in each age group, and a region for checking whether to drink alcohol. The number-of-persons input screen Bb also includes an OK button which is an acceptance button, a stop button, and a return button. After finishing inputting necessary items on the number-of-persons input screen Bb, the customer touches the OK button. The customer who desires to return to the previous screen, that is, the member registration screen Ba, touches the return button. The customer who desires to stop the check-in touches the stop button.

(67) An activation button **700** for requesting remote customer service is disposed on the number-of-persons input screen Bb having the configuration described above. The activation button **700** is a software key. The activation button **700** is an example of an operation element operated by a customer who desires to make an inquiry to a store clerk about the screen operation. The screen on which the activation button **700** is disposed is not limited to the number-of-persons input screen Bb. The activation button **700** may be provided on all of the start screen Aa, the screens Ba to Bg in the check-in mode, and the screens Ca to Cf in the checkout mode. If it is considered that there is no inquiry about the operation of the start screen Aa, the activation button **700** may not be provided on the start screen Aa. Similarly, if it is assumed that there is no inquiry about the operations of the reception end screen Bg and the payment end screen Cf, the activation button **700** may not be provided on the reception end screen Bg and the payment end screen Cf.

(68) As shown in FIG. **11**, in ACT **1**, the processor **101** of the self-service terminal **10** waits for the activation button **700** to be touched. When the activation button **700** is touched, the processor **101** recognizes that a customer service request has been received from the customer who operates the self-service terminal **10**. The processor **101** proceeds to ACT **2**. In ACT **2**, the processor **101**

acquires the screen ID of the screen currently being displayed on the touch panel **106**. For example, when the activation button **700** disposed on the number-of-persons input screen Bb shown in FIG. **8** is touched, the processor **101** acquires the screen ID “1002”.

(69) When the process of ACT **2** is finished, the processor **101** proceeds to ACT **3**. In ACT **3**, the processor **101** determines whether member registration has been performed. When the member registration has been performed according to an operation input on the member registration screen Ba, the processor **101** proceeds to ACT **4**. In ACT **4**, the processor **101** acquires the member ID input by the member registration. On the other hand, when the member registration has not been performed, the processor **101** skips the process of ACT **4**.

(70) When the process of ACT **4** is finished or skipped, the processor **101** proceeds to ACT **5**. In ACT **5**, the processor **101** controls the communication interface **105** to transmit an inquiry event (or a customer service request). As a result, the inquiry event is transmitted from the communication interface **105**. The inquiry event is transmitted to the remote customer service supporting server **30** via the communication network **40**. The inquiry event includes the terminal ID and the store ID that are set in the self-service terminal **10** and the screen ID acquired in the process of ACT **2**. When the member ID is acquired in ACT **4**, the member ID is also included.

(71) Here, the processor **101** of the self-service terminal **10** implements the function of the detection unit **71** by performing the process of ACT **1** in FIG. **11**. The processor **101** implements the function of the image acquisition unit **72** by performing the process of ACT **2**. The processor **101** implements the functions of the inquiry unit **73** and the first output unit **74** by performing the process of ACT **5**.

(72) As shown in FIG. **12**, in ACT **21**, the processor **301** of the remote customer service supporting server **30** waits for the inquiry event (or the customer service request). When the inquiry event is received via the communication interface **305**, the processor **301** proceeds to ACT **22**. In ACT **22**, the processor **301** acquires the terminal ID from the inquiry event. In ACT **23**, the processor **301** creates the terminal-specific file **60** including the terminal ID, and stores the terminal-specific file **60** in the auxiliary storage device **303**.

(73) After finishing the process of ACT **23**, the processor **301** proceeds to ACT **24**. In ACT **24**, the processor **301** acquires the store ID from the inquiry event. In ACT **25**, the processor **301** searches the store database **31**, acquires store information from a store data record including the store ID, and writes the store information in the terminal-specific file **60**. In ACT **26**, the processor **301** acquires the screen ID from the inquiry event. Then, in ACT **27**, the processor **301** searches the screen database **33**, acquires screen information from a screen data record including the screen ID, and writes the screen information in the terminal-specific file **60**.

(74) In ACT **28**, the processor **301** determines whether a member ID is included in the inquiry event. When the member ID is included, the processor **301** proceeds to ACT **29**. In ACT **29**, the processor **301** searches the member database **32**, acquires member information from a member data record including the member ID, and writes the member information in the terminal-specific file **60**. When the member ID is not included in the inquiry event, the processor **301** skips the process of ACT **29**.

(75) When the process of ACT **29** is finished or skipped, the processor **301** proceeds to ACT **30**. In ACT **30**, the processor **301** controls the communication interface **305** to transmit a customer service request notification event. As a result, the customer service request notification event is transmitted via the communication interface **305**. The customer service request notification event is transmitted to the operator terminal **20** via the communication network **40**. The customer service request notification event includes the terminal ID, the store information, and the screen information, which are stored in the terminal-specific file **60**. When the member information is stored in the terminal-specific file **60**, the member information is also included in the customer service request notification event.

(76) Here, the processor **301** of the remote customer service supporting server **30** implements the

function of the reception unit **81** by performing the process of ACT **21** in FIG. **12**. The processor **301** implements the function of the recognition unit **82** by performing the processes of ACT **26** and ACT **27**. The processor **301** implements the function of the notification unit **83** by performing the process of ACT **30**.

(77) As shown in FIG. **13**, in ACT **51**, the processor **201** of the operator terminal **20** waits for the customer service request notification event. When the customer service request notification event is received via the communication interface **205**, the processor **201** proceeds to ACT **52**. In ACT **52**, the processor **201** activates the informing device **210**. As a result, the informing device **210** notifies the operator that a remote customer service request has been received by, for example, sounding a buzzer, turning on a light source, or causing a light source to blink. After confirming the notification, the customer service person operates the input device **207** to input an instruction to start remote customer service.

(78) After activating the informing device **210**, the processor **201** proceeds to ACT **53**. In ACT **53**, the processor **201** waits for the instruction to start the remote customer service. Upon detecting that the start of the remote customer service is instructed by an input signal from the input device **207**, the processor **201** proceeds to ACT **54**. In ACT **54**, the processor **201** controls the communication interface **205** to transmit a customer service start response command. As a result, the customer service start response command is transmitted from the communication interface **205**. The customer service start response command is transmitted to the remote customer service supporting server **30** via the communication network **40**.

(79) After controlling the transmission of the customer service start response command, the processor **201** acquires the store information from the customer service request notification event in ACT **55**. In ACT **56**, the processor **201** acquires the screen information from the customer service request notification event. Further, in ACT **57**, the processor **201** determines whether member information is included in the customer service request notification event. When the member information is included in the customer service request notification event, the processor **201** acquires the member information in ACT **58**. When the member information is not included in the customer service request notification event, the processor **201** skips the process of ACT **58**.

(80) When the process of ACT **58** is finished or skipped, the processor **201** proceeds to ACT **59**. In ACT **59**, the processor **201** displays the customer service screen Da (see FIG. **14**) on the display **206**. In ACT **60**, the processor **201** turns on a voice call with the self-service terminal **10** identified by the terminal ID included in the customer service request notification event.

(81) FIG. **14** is a display example of the customer service screen Da. The customer service screen Da is displayed when the customer touches the activation button **700** in a state where the number-of-persons input screen Bb (see FIG. **8**) is displayed on the touch panel **106** of the self-service terminal **10**. As shown in FIG. **14**, a default image of the number-of-persons input screen Bb is displayed on the customer service screen Da. A store name **901** included in the store information is displayed on the customer service screen Da. Therefore, from the customer service screen Da, the customer service person can easily recognize the store being used by the customer and the screen being displayed on the self-service terminal **10** when the remote customer service is requested.

(82) A member information button **902** is displayed on the customer service screen Da. The member information button **902** is displayed when the member information is acquired in ACT **58** in FIG. **13**. When the member information is not acquired, the member information button **902** is not displayed or grayed out. When the customer service person operates the input device **207** and touches the member information button **902**, the member information including, for example, name, age, gender, and use history is displayed on the display **206**. Therefore, the customer service person can easily recognize the profile and the use history of the customer who has requested the remote customer service.

(83) Here, the processor **201** of the operator terminal **20** implements the function of the informing unit **91** by performing the process of ACT **52** in FIG. **13**. The processor **201** implements the

function of the response unit **92** by performing the processes of ACT **53** and ACT **54**. The processor **201** implements the function of the second output unit **93** by performing the processes of ACT **55** to ACT **59**. The processor **201** implements the function of the second connection unit **94** by performing the process of ACT **60**.

(84) Referring back to FIG. **12**, after transmitting the customer service request notification event, the processor **301** of the remote customer service supporting server **30** proceeds to ACT **31**. In ACT **31**, the processor **301** determines whether the customer service start response command has been received. When the customer service start response command has not been received, the processor **301** proceeds to ACT **32**. In ACT **32**, the processor **301** determines whether the elapsed time after the transmission of the customer service request notification event has reached a predetermined time-out period. When the elapsed time has not reached the time-out period, the processor **301** returns to ACT **31**. In this manner, in ACT **31** and ACT **32**, the processor **301** waits until the customer service start response command is received or the time-out period elapses.

(85) Even when a request for remote customer service is informed in the office where the operator terminal **20** is provided, the person in charge of customer service may not be able to respond immediately. The operator terminal **20** may be down. In such a case, the time-out period elapses. When the time-out period elapses, the processor **301** proceeds from ACT **32** to ACT **33**. In ACT **33**, the processor **301** controls the communication interface **305** to transmit a negative response command. As a result, the negative response command is transmitted from the communication interface **305**. The negative response command is transmitted via the communication network **40** to the self-service terminal **10**, which is the source of the inquiry event. After controlling the transmission of the negative response command, the processor **301** ends the information processing shown in the flowchart of FIG. **12**.

(86) On the other hand, when the customer service start response command is received within the time-out period, the processor **301** proceeds from ACT **31** to ACT **34**. In ACT **34**, the processor **301** controls the communication interface **205** to transmit a positive response command. As a result, the positive response command is transmitted from the communication interface **305**. The positive response command is transmitted via the communication network **40** to the self-service terminal **10**, which is the source of the inquiry event.

(87) Referring back to FIG. **11**, after transmitting the inquiry event, the processor **101** of the self-service terminal **10** enters a standby state to wait for the positive response command in ACT **6**. When the negative response command is received via the communication interface **105** in the standby state, the processor **101** determines that an error has occurred and ends the remote customer service. For example, the processor **101** displays, on the touch panel **106**, a message “The operator is not available right now. Please wait for a while and then press the activation button”, and ends the information processing shown in the flowchart of FIG. **11**.

(88) On the other hand, when the positive response command is received via the communication interface **105**, the processor **101** proceeds to ACT **7**. In ACT **7**, the processor **101** turns on a voice call. As a result, the voice call between the operator terminal **20**, which has turned on the voice call in ACT **60** in FIG. **13**, and the self-service terminal **10** is established, and voice communication is enabled between the customer service person, who is the operator of the operator terminal **20**, and the customer, who is the operator of the self-service terminal **10**.

(89) Here, the processor **101** of the self-service terminal **10** implements the function of the first connection unit **75** by performing the process of ACT **7** in FIG. **11**.

(90) After establishing the voice call with the operator terminal **20**, the processor **11** of the self-service terminal **10** proceeds to ACT **8**. In ACT **8**, the processor **11** superimposes a window image **800** (see FIG. **9**) on the screen displayed on the touch panel **106**.

(91) FIG. **9** is a diagram showing an example in which the window image **800** is superimposed on the number-of-persons input screen Bb. The window image **800** displays an image of the customer service person within a window frame **801**. The image of the customer service person may be an

image including the actual face of the customer service person providing the customer service or may be an image of an avatar representing the customer service person. The window image **800** includes a size change icon **802** and an end button **803**. The size change icon **802** is an operation element for changing the size of the window frame **801** or the window image **800**. The end button **803** is an operation element touched by the customer when ending the remote customer service. (92) FIG. **9** shows the window image **800** when the size of the window frame **801** is maximum. In this case, a part of the information displayed on the number-of-persons input screen Bb is hidden by the window image **800**. Therefore, the customer operates the size change icon **802** to reduce the window frame **801** as shown in FIG. **10**. By reducing the window frame **801**, the information hidden by the window image **800** becomes visible. When the window frame **801** is reduced, the end button **803** is not displayed. Therefore, in order to end the remote customer service, the customer operates the size change icon **802** to enlarge the window frame **801** as shown in FIG. **9**. Then, the customer may touch the end button **803**. The window image **800** can also be moved to any position on the screen by a drag operation.

(93) Here, the processor **101** of the self-service terminal **10** implements the function of the display unit **76** by performing the process of ACT **8** in FIG. **11**.

(94) Referring back to FIG. **11**, after displaying the window image **800**, the processor **101** of the self-service terminal **10** proceeds to ACT **9**. In ACT **9**, the processor **101** determines whether the end button **803** has been touched. When the end button **803** has not been touched, the processor **101** proceeds to ACT **10**. In ACT **10**, the processor **101** determines whether the transition of screens on the touch panel **106** has occurred. When the transition of screens on the touch panel **106** has not occurred, the processor **101** returns to ACT **9**. In this manner, in ACT **9** and ACT **10**, the processor **101** waits until the end button **803** is touched or a screen transition occurs.

(95) For example, when the customer finishes inputting the number of persons and the like on the number-of-persons input screen Bb and touches the OK button, the screen of the touch panel **106** transitions to the price list screen Bc. When the screen transition occurs in this manner, the processor **101** proceeds from ACT **10** to ACT **11**. In ACT **11**, the processor **101** acquires the screen ID of the screen displayed on the touch panel **106**. In ACT **12**, the processor **101** captures the screen. Then, in ACT **13**, the processor **101** controls the communication interface **105** to transmit screen data of the captured screen. As a result, the screen data is transmitted via the communication interface **105**. The screen data is transmitted to the remote customer service supporting server **30** via the communication network **40**. The screen data includes the terminal ID and the screen ID. After controlling the transmission of the screen data, the processor **101** returns to the standby state in ACT **9** and ACT **10**.

(96) When the end button **803** is touched in the standby state in ACT **9** and ACT **10**, the processor **101** proceeds from ACT **9** to ACT **14**. In ACT **14**, the processor **101** controls the communication interface **105** to transmit an end event. As a result, the end event is transmitted from the communication interface **105**. The end event is transmitted to the remote customer service supporting server **30** via the communication network **40**. The end event includes the terminal ID and the store ID that are set in the self-service terminal **10**.

(97) After controlling the transmission of the end event, the processor **101** proceeds to ACT **15**. In ACT **15**, the processor **101** turns off the voice call. As a result, the voice call with the operator terminal **20** is terminated. In ACT **16**, the processor **101** deletes the window image **800** from the screen displayed on the touch panel **106**. With this operation, the processor **101** ends the information processing shown in the flowchart of FIG. **11**.

(98) Referring back to FIG. **12**, after transmitting the positive response in ACT **34**, the processor **301** of the remote customer service supporting server **30** proceeds to ACT **35**. In ACT **35**, the processor **301** determines whether screen data has been received from the self-service terminal **10**. When screen data has not been received, the processor **301** proceeds to ACT **36**. In ACT **36**, the processor **301** determines whether an end event has been received from the self-service terminal

**10.** When the end event has not been received, the processor **301** returns to ACT **35**. In this manner, in ACT **35** and ACT **36**, the processor **301** waits until the screen data or the end event is received from the self-service terminal **10**.

(99) When the screen data is received via the communication interface **305** in the standby state in ACT **35** and ACT **36**, the processor **301** proceeds from ACT **35** to ACT **37**. In ACT **37**, the processor **301** acquires the terminal ID from the screen data. In ACT **38**, the processor **301** updates the screen ID and the screen data in the terminal-specific file **60** including the terminal ID with the screen ID and the screen data received from the self-service terminal **10**. In ACT **39**, the processor **301** controls transmission of a screen update notification event. As a result, the screen update notification event is transmitted via the communication interface **305**. The screen update notification event is transmitted to the operator terminal **20** via the communication network **40**. The screen update notification event includes the terminal ID and the screen data stored in the terminal-specific file **60**. After controlling the transmission of the screen update notification event, the processor **301** returns to the standby state in ACT **35** and ACT **36**.

(100) When the end event is received from the self-service terminal **10** in the standby state in ACT **35** and ACT **36**, the processor **301** proceeds from ACT **36** to ACT **40**. In ACT **40**, the processor **301** controls the transmission of a customer service end notification event. As a result, the customer service end notification event is transmitted via the communication interface **305**. The customer service end notification event is transmitted to the operator terminal **20** via the communication network **40**. The customer service end notification event includes the terminal ID stored in the terminal-specific file **60**. After controlling the transmission of the customer service end notification event, the processor **301** proceeds to ACT **41**. In ACT **41**, the processor **301** deletes the terminal-specific file **60** that includes the terminal ID included in the end event. The processor **301** ends the information processing shown in the flowchart of FIG. **12**.

(101) Referring back to FIG. **13**, after establishing the voice call with the self-service terminal **10** in ACT **60**, the processor **201** of the operator terminal **20** proceeds to ACT **61**. In ACT **61**, the processor **201** determines whether the customer service end notification event has been received. If the customer service end notification event has not been received, the processor **201**, in ACT **62**, determines whether the screen update event has been received. When the screen update event has not been received, the processor **201** returns to ACT **61**. In this manner, in ACT **61** and ACT **62**, the processor **201** waits until the customer service end notification event or the screen update event is received.

(102) When the screen update event is received in the standby state in ACT **61** and ACT **62**, the processor **201** proceeds from ACT **62** to ACT **63**. In ACT **63**, the processor **201** acquires the screen data from the screen update event. Then, in ACT **64**, the processor **201** updates the image on the customer service screen **Da** with an image represented by the screen data acquired from the screen update event. As a result, the still image captured by the self-service terminal **10** is displayed on the customer service screen **Da**.

(103) After updating the image on the customer service screen **Da**, the processor **201** returns to the standby state in ACT **61** and ACT **62**. Therefore, each time a still image is captured by the self-service terminal **10**, the image on the customer service screen **Da** is updated with the captured still image.

(104) When the customer service end event is received in the standby state in ACT **61** and ACT **62**, the processor **201** proceeds from ACT **61** to ACT **65**. In ACT **65**, the processor **201** turns off the voice call with the self-service terminal **10** having the terminal ID included in the customer service end event. In ACT **66**, the processor **201** deletes the customer service screen **Da**. The processor **201** ends the information processing shown in the flowchart of FIG. **13**.

Description of Effects of Remote Customer Service System

(105) According to the remote customer service system **1** that functions as described above, when a customer operating the self-service terminal **10** desires to make an inquiry to the store clerk about,



for example, the operation of the number-of-persons input screen Bb, the customer touches the activation button **700** displayed on the number-of-persons input screen Bb. As a result, an inquiry event is transmitted from the self-service terminal **10** to the remote customer service supporting server **30**. The inquiry event includes the terminal ID and the store ID that are set in the self-service terminal **10** and the screen ID of the number-of-persons input screen Bb. When the customer is a member, the member ID is also included in the inquiry event.

(106) In the remote customer service supporting server **30**, after the inquiry event is received, the terminal-specific file **60** including the terminal ID of the self-service terminal **10** is created. Then, a customer service request notification event is transmitted from the remote customer service supporting server **30** to the operator terminal **20**. The customer service request notification event includes the terminal ID, the store information related to the store identified by the store ID, and the default image of the number-of-persons input screen Bb identified by the screen ID. When the member ID is included in the inquiry event, the member information related to the member identified by the member ID is also included in the customer service request notification event. The store information, the default image, and the member information are stored in the terminal-specific file **60**.

(107) In the operator terminal **20**, after the customer service request notification event is received, the informing device **210** is activated. This enables the customer service person to know that a remote customer service has been received. The customer service person inputs an instruction to start remote customer service. Then, a customer service start response command is transmitted from the operator terminal **20** to the remote customer service supporting server **30**. Furthermore, a positive response command is transmitted from the remote customer service supporting server **30** to the self-service terminal **10**. Then, a voice call is established between the self-service terminal **10** and the operator terminal **20**. As a result, the customer service person can provide remote customer service by voice communication with the customer. During the voice communication, the window image **800** is displayed on the touch panel **106** of the self-service terminal **10**. In the window image **800**, the image of the customer service person is displayed. This configuration makes it possible to eliminate the need for a monitor for customer service.

(108) The window frame **801** of the window image **800** can be reduced, and the window image **800** can be moved to any place on the screen. Therefore, it is possible to easily prevent important information on the screen displayed on the touch panel **106** of the self-service terminal **10** from being hidden by the window image **800**.

(109) In the operator terminal **20** in which the start of the remote customer service is instructed, the customer service screen Da is displayed on the display **206**. The store information and the default image, which are stored in the terminal-specific file **60**, are displayed on the customer service screen Da. Therefore, based on the information on the customer service screen Da, the customer service person can determine the store from which the remote customer service is requested and the screen being viewed by the customer when requesting the remote customer service. When the customer service person touches the member information button **902**, the member information stored in the terminal-specific file **60** is displayed on the customer service screen Da. Therefore, the customer service person can provide customer service while referring to, for example, customer history and can provide accurate remote customer service with high customer satisfaction.

(110) When the screen on the touch panel **106** transitions from the number-of-persons input screen Bb to the price list screen Bc, for example, the price list screen Bc is captured by the self-service terminal **10**, and the screen data of the captured price list screen Bc is transmitted to the remote customer service supporting server **30**. As a result, the image of the number-of-persons input screen Bb displayed on the customer service screen Da on the operator terminal **20** is changed to the image of the price list screen Bc. Therefore, the customer service person can know that the screen is updated as a result of a correct operation performed by the customer.

(111) Here, the image displayed on the operator terminal **20** is a still image captured when the

screen is updated on the self-service terminal **10**. Therefore, compared to a case where the operator terminal **20** remotely accesses the self-service terminal **10** to capture the image displayed on the touch panel **106** and displays the captured image on the acquisition display **206**, the amount of screen data transmitted and received via the communication network **40** is small. In addition, as for the default image, only the screen ID is transmitted from the self-service terminal **10**, and the screen data is not transmitted. This makes it possible to further reduce the communication volume.

Other Embodiments

(112) In ACT **2** in FIG. **11**, the processor **101** of the self-service terminal **10** may capture a still image of a screen displayed on the touch panel **106** and include the still image in an inquiry event instead of acquiring a screen ID. Also, data transmitted to the remote customer service supporting server **30** in ACT **13** in FIG. **11** may be only the screen ID acquired in ACT **11**. That is, it is not necessary to transmit a still image obtained by capturing a screen. In this case, the processor **301** of the remote customer service supporting server **30** searches the screen database **33** in ACT **38** in FIG. **12**, acquires screen information corresponding to the received screen ID, and updates screen data in the terminal-specific file **60**. Then, the processor **301** transmits a screen update notification event including the terminal ID and the screen data that are stored in the terminal-specific file **60** to the operator terminal **20**. In this way, every time the screen displayed on the self-service terminal **10** transitions to another screen, the display **206** of the operator terminal **20** displays a default image of the another screen.

(113) Even with such a configuration, the customer service person can recognize the screen displayed on the self-service terminal **10** and can provide appropriate remote customer service. With this embodiment, since screen data is not transmitted from the self-service terminal **10**, the communication volume can be further reduced. In addition, there is an advantage that the screen capturing function of the self-service terminal **10** can be omitted.

(114) The activation button **700** may not be a software key superposed on the screen. For example, when the self-service terminal **10** is provided with a keyboard as an input device, a predetermined key in the keyboard may be used by a customer to make an inquiry to a store clerk about screen operations.

(115) It may also be possible to determine whether the customer is having trouble operating the self-service terminal **10** by processing an image of the customer captured by the camera **107** with artificial intelligence (AI), and the processor **101** may transmit an inquiry command when it is determined that the customer is having trouble operating the self-service terminal **10**.

(116) The member information button **902** may display a member name included in the member information. This enables the customer service person to identify a customer who has requested remote customer service by just seeing the customer service screen **Da** without touching the member information button **902**.

(117) The self-service terminals **10** connected to the communication network **40** are not necessarily used for one type of business, such as karaoke stores. For example, self-service terminals used for different types of businesses, such as karaoke stores and car rental stores, may be connected to the communication network **40** so that the customer service person can provide remote customer service not only for self-service terminals provided in karaoke stores but also for self-service terminals provided in car rental stores.

(118) While certain embodiments have been described, the embodiments have been presented by way of example only, and are not intended to limit the scope of the disclosure. Indeed, the novel embodiments described herein may be embodied in a variety of other forms; furthermore, various omissions, substitutions, changes, and combinations in the form of the embodiments described herein may be made without departing from the spirit of the disclosure. The accompanying claims and their equivalents are intended to cover such forms or modifications as would fall within the scope and spirit of the disclosure.

## Claims

1. A customer service supporting device of a store, comprising: a communication interface configured to communicate with a self-service terminal and an operator terminal; and a processor configured to: upon receipt of a customer service request including customer identification information for identifying a customer from the self-service terminal, acquire; customer information associated with the customer identification information and first screen data corresponding to a first screen that is displayed by the self-service terminal when the customer service request is issued, control the communication interface to transmit the first screen data and the customer information to the operator terminal and cause the operator terminal to display the first screen together with a graphical user interface (GUI) object for displaying the customer information, acquire second screen data corresponding to a second screen that is displayed by the self-service terminal in response to an input operation through the first screen, and control the communication interface to transmit the second screen data to the operator terminal and cause the operator terminal to transition from the first screen to the second screen while maintaining the GUI object for displaying the customer information.
2. The customer service supporting device according to claim 1, wherein the processor is configured to acquire, as the first screen data, an image of the first screen that is captured by the self-service terminal when the customer service request is issued.
3. The customer service supporting device according to claim 1, wherein the processor is configured to acquire the first screen data based on image identification information included in the customer service request and identifying the first screen that is displayed by the self-service terminal when the customer service request is issued.
4. The customer service supporting device according to claim 1, wherein the processor is configured to control the communication interface to transmit, to the operator terminal, the first screen data and the customer information together with store information about the store.
5. The customer service supporting device according to claim 4, wherein the customer service request includes store identification information for identifying the store, and the processor is configured to search a store database based on the store identification information to acquire the store information about the store.
6. The customer service supporting device according to claim 1, wherein the processor is configured to search a customer database using the customer identification information to acquire the customer information about the customer.
7. The customer service supporting device according to claim 1, wherein the processor is configured to control the communication interface to transmit, to the operator terminal, the first screen data and the customer information together with terminal identification information for identifying the self-service terminal.
8. A method performed by a customer service supporting device of a store, wherein the customer service supporting device is connected via a communication network to a self-service terminal and an operator terminal, the method comprising: receiving a customer service request including customer identification information for identifying a customer from the self-service terminal; acquiring customer information associated with the customer identification information; acquiring first screen data corresponding to a first screen that is displayed by the self-service terminal when the customer service request is issued; transmitting the first screen data and the customer information to the operator terminal and causing the operator terminal to display the first screen together with a graphical user interface (GUI) object for displaying the customer information; acquiring second screen data corresponding to a second screen that is displayed by the self-service terminal in response to an input operation through the first screen; and transmitting the second screen data to the operator terminal and causing the operator terminal to transition from the first

screen to the second screen while maintaining the GUI object for displaying the customer information.

9. The method according to claim 8, wherein the first screen data is an image of the first screen that is captured by the self-service terminal when the customer service request is issued.

10. The method according to claim 8, wherein the first screen data is acquired based on image identification information included in the customer service request and identifying the first screen that is displayed by the self-service terminal when the customer service request is issued.

11. The method according to claim 8, wherein the first screen data and the customer information are transmitted to the operator terminal together with store information about the store.

12. The method according to claim 11, further comprising: searching a store database using store identification information included in the customer service request to acquire the store information about the store.

13. The method according to claim 8, further comprising: searching a customer database using the customer identification information included in the customer service request to acquire the customer information about the customer.

14. The method according to claim 8, wherein the first screen data and the customer information are transmitted to the operator terminal together with terminal identification information for identifying the self-service terminal.

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