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(54) **COMMUNICATION TERMINAL, COMMUNICATION SYSTEM, AND CONTROL METHOD**

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H04M 1/00 (2006.01)

(52) **U.S. Cl.** **455/556.1**; 455/426; 455/566

(58) **Field of Classification Search** 455/566, 455/414.1, 95, 415, 405, 406, 411
See application file for complete search history.

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JP	2001-186240		7/2001
JP	2002-9930		1/2002
JP	2003-78592		3/2003

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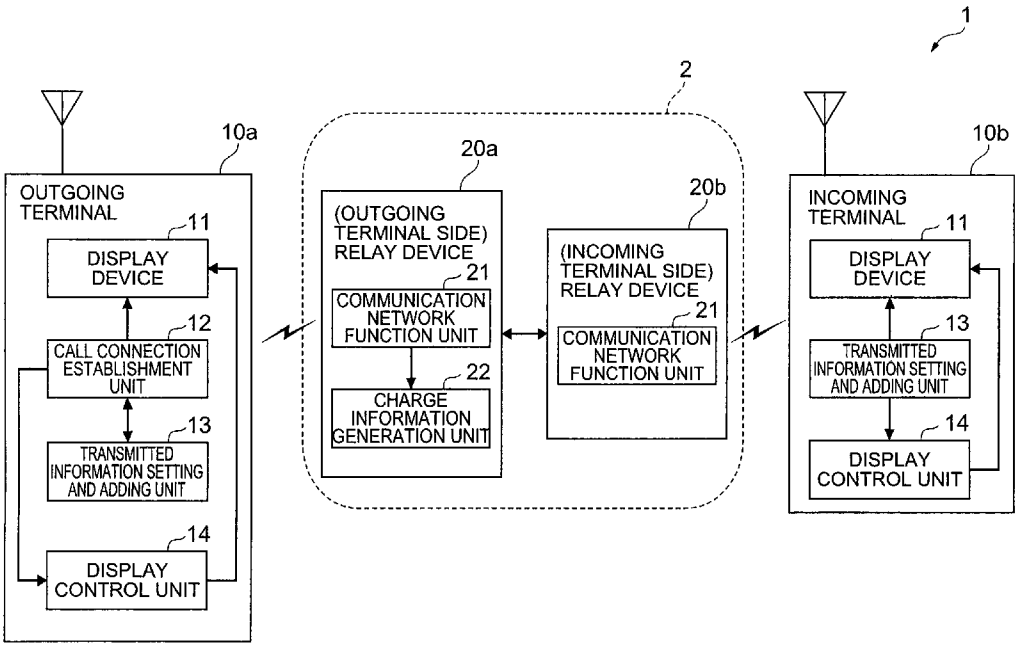
(57) **ABSTRACT**

It is an object of the present invention to improve the convenience for users by enabling messages during call out from the user of the communication terminal on the outgoing side to the user of a communication terminal on the incoming side, which are transmitted from the communication terminal on the outgoing side, to be checked by the user of the communication terminal on the outgoing side when calling out. The outgoing terminal **10***a* includes a display device **11**, a call connection establishment unit **12** that transmits call out signals for calling out to the incoming terminal **10***b*, a transmitted information setting and adding unit **13** that adds display information that is displayed in the incoming terminal **10***b* to the call out signal, and a display control unit **14** that displays on the display device **11** the display information added to the call out signal when the call out signal is transmitted.

6 Claims, 4 Drawing Sheets



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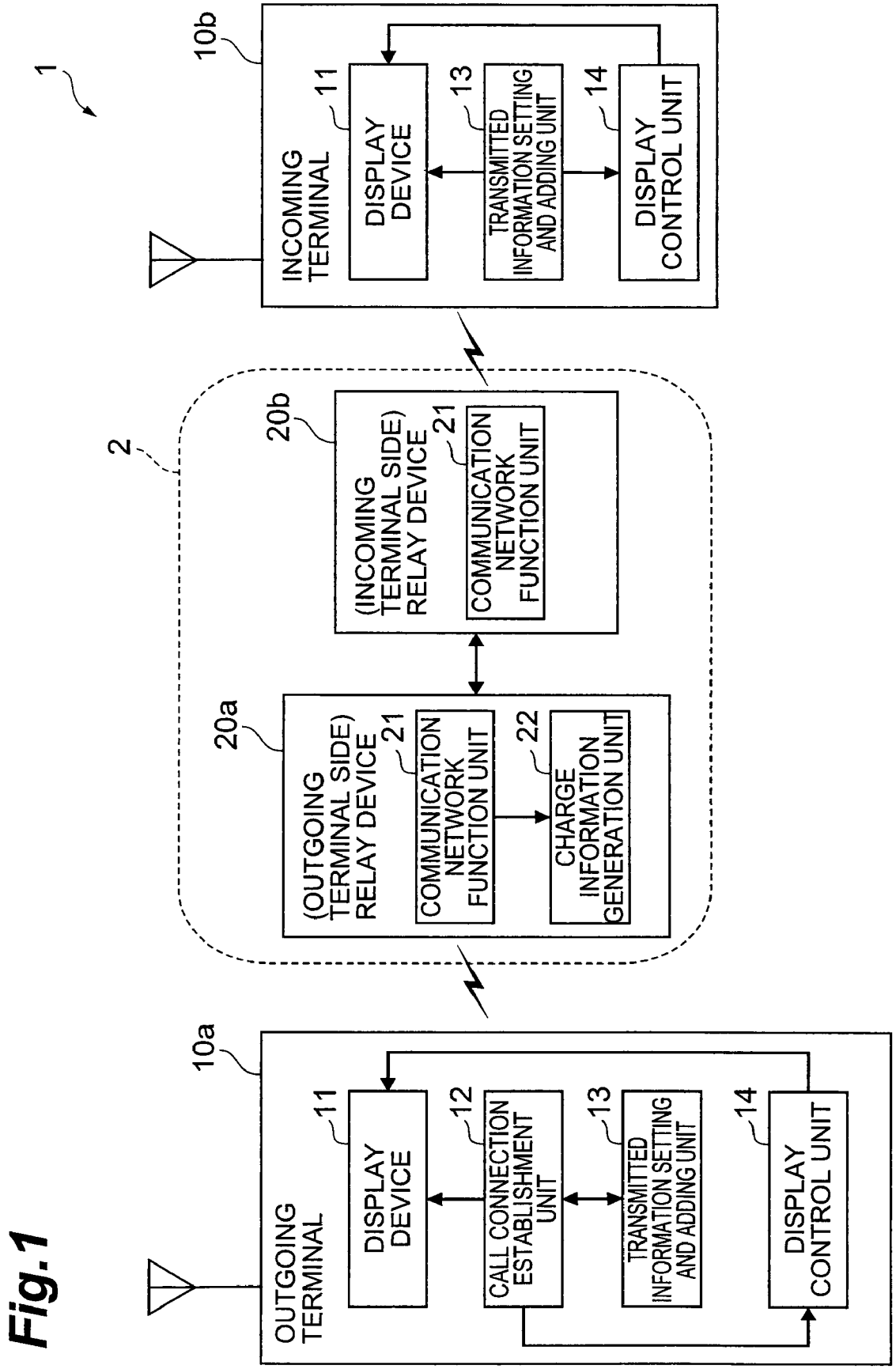
1
10b
INCOMING TERMINAL
11
DISPLAY DEVICE
13
TRANSMITTED INFORMATION SETTING AND ADDING UNIT
14
DISPLAY CONTROL UNIT
2
20b
(INCOMING TERMINAL SIDE) RELAY DEVICE
21
COMMUNICATION NETWORK FUNCTION UNIT
20a
(OUTGOING TERMINAL SIDE) RELAY DEVICE
21
COMMUNICATION NETWORK FUNCTION UNIT
22
CHARGE INFORMATION GENERATION UNIT
10a
OUTGOING TERMINAL
11
DISPLAY DEVICE
12
CALL CONNECTION ESTABLISHMENT UNIT
13
TRANSMITTED INFORMATION SETTING AND ADDING UNIT
14
DISPLAY CONTROL UNIT

Fig.1

Fig.2

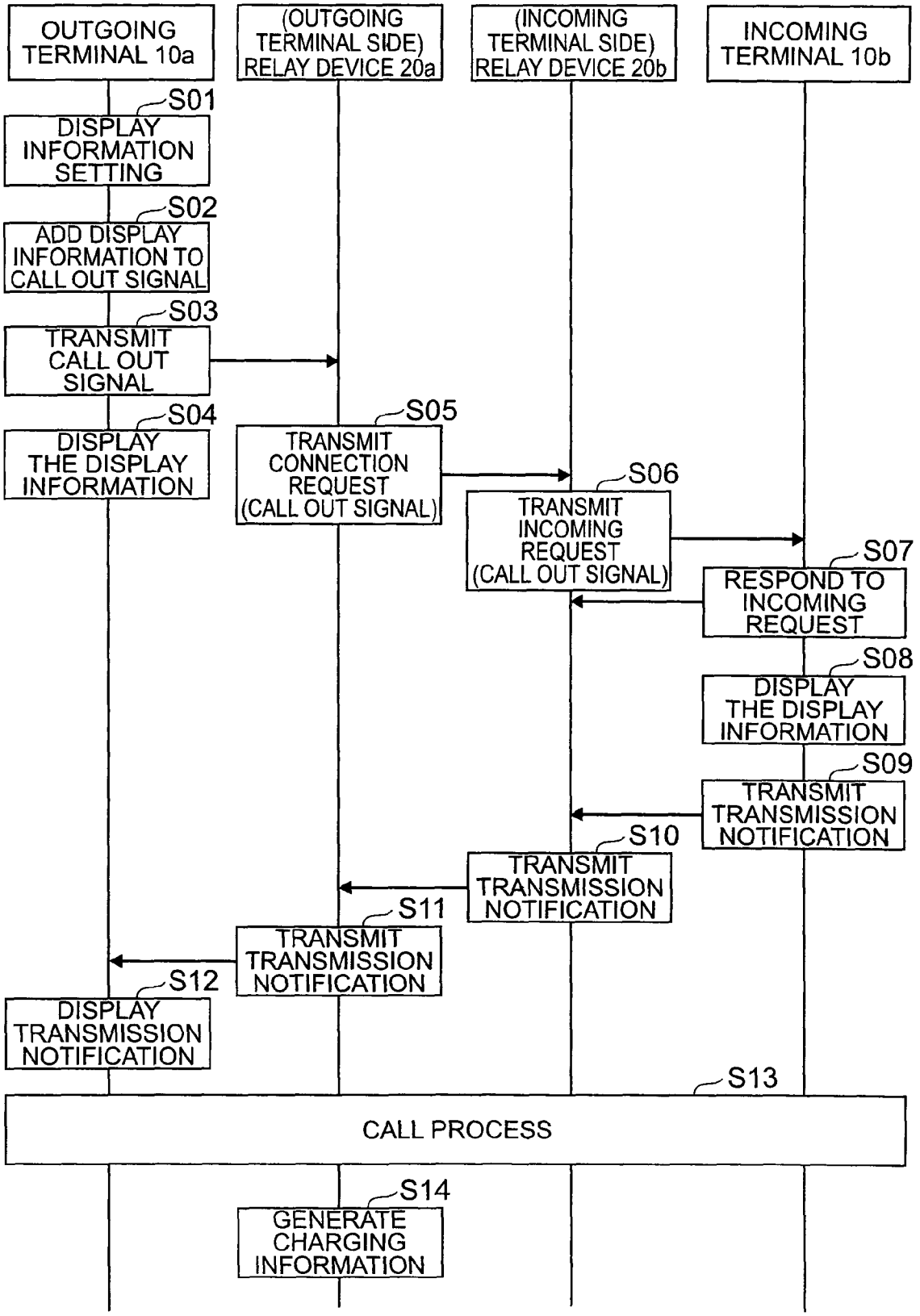
OUTGOING TERMINAL 10a
(OUTGOING TERMINAL SIDE) RELAY DEVICE 20a
(INCOMING TERMINAL SIDE) RELAY DEVICE 20b
INCOMING TERMINAL 10b
S01
DISPLAY INFORMATION SETTING
S02
ADD DISPLAY INFORMATION TO CALL OUT SIGNAL
S03
TRANSMIT CALL OUT SIGNAL
S04
DISPLAY THE DISPLAY INFORMATION
S05
TRANSMIT CONNECTION REQUEST (CALL OUT SIGNAL)
S06
TRANSMIT INCOMING REQUEST (CALL OUT SIGNAL)
S07
RESPOND TO INCOMING REQUEST
S08
DISPLAY THE DISPLAY INFORMATION
S09
TRANSMIT TRANSMISSION NOTIFICATION
S10
TRANSMIT TRANSMISSION NOTIFICATION
S11
TRANSMIT TRANSMISSION NOTIFICATION
S12
DISPLAY TRANSMISSION NOTIFICATION
S13
CALL PROCESS
S14
GENERATE CHARGING INFORMATION

Fig.3

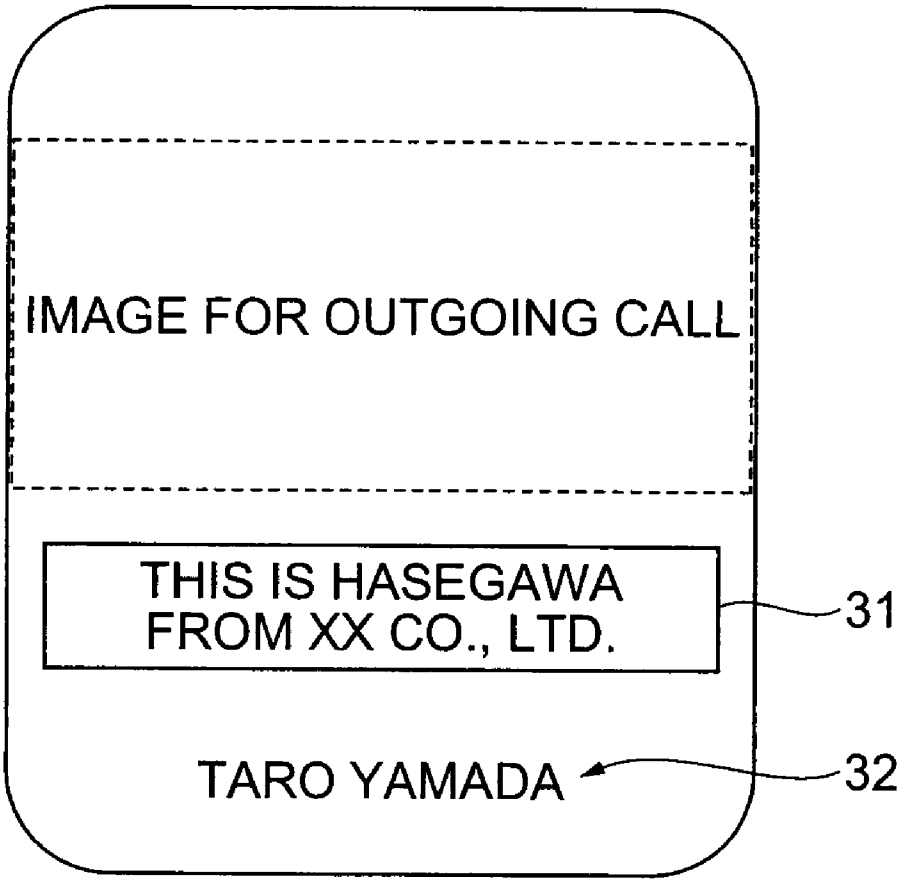
IMAGE FOR OUTGOING CALL
THIS IS HASEGAWA
FROM XX CO., LTD.
31
TARO YAMADA
32

Fig.4

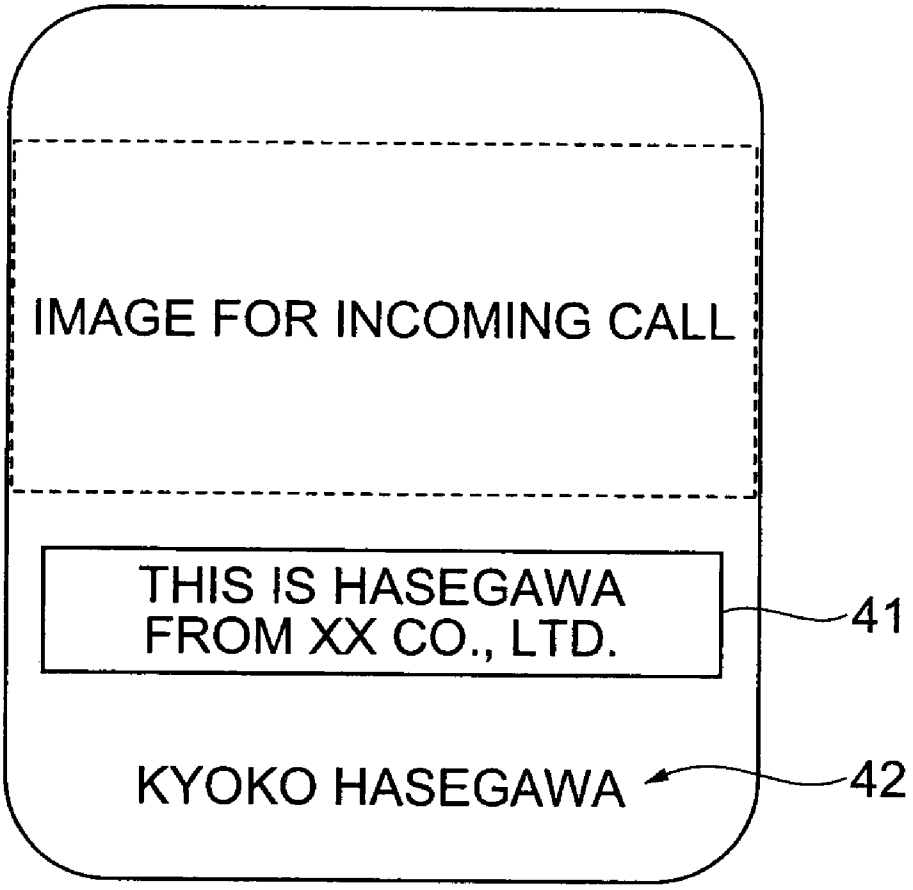
IMAGE FOR INCOMING CALL
THIS IS HASEGAWA
FROM XX CO., LTD.
41
KYOKO HASEGAWA
42

COMMUNICATION TERMINAL, COMMUNICATION SYSTEM, AND CONTROL METHOD

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a communication terminal and communication system, and a control method for the communication terminal and communication system.

2. Related Background of the Invention

Conventionally, in communications systems for mobile phones and the like, technology has been invented so that when calling out display data such as text data or similar is added to the call out signal, and this display data is displayed by the receiving terminal that receives the call out signal. This content is for example, as disclosed in Japanese Patent Application Laid-open No. 2003-78592. In this way, the user of the communication terminal on the incoming side can receive a simple message from the user on the outgoing side, before the connection is established.

SUMMARY OF THE INVENTION

However, in the above system, it is not possible for the user of the communication terminal on the outgoing side to check what display data is displayed in the communication terminal on the incoming side, when the outgoing process is being carried out.

The present invention solves this problem point. It is an object of the present invention to provide a communication terminal, communication system, and control method in which a message transmitted from a communication terminal on the outgoing side by the user of the communication terminal on the outgoing side to the user of a communication terminal on the incoming side when calling out can be checked by the user of the communication terminal on the outgoing side when calling out, thereby improving the convenience for the user.

The communication terminal according to the present invention is a communication terminal having a display device, comprising: transmission means for transmitting a call out signal for calling out to a communication terminal of a communication party; adding means for adding display information, that is displayed in the communication terminal of the communication party, to the call out signal transmitted by the transmission means; and display control means for displaying the display information added to the call out signal by the adding means on the display device, when the call out signal is transmitted by the transmission means.

In the communication terminal according to the present invention, when the call out signal is transmitted, the display information displayed in the communication terminal of the communication party is also displayed in its own terminal. The user of the communication terminal according to the present invention can confirm the message (display information) transmitted from its own terminal (the outgoing side communication terminal) to the user of the incoming side communication terminal when calling out, by referring to the display of the communication terminal according to the present invention. In this way, according to the communication terminal of the present invention, a user can confirm what message has been transmitted to the communication party while calling out, so the convenience of the user can be improved.

Preferably the communication terminal further comprises receiving means for receiving a transmission notification

transmitted from the communication terminal of the communication party in accordance with the call out signal transmitted by the transmission means, the transmission notification indicating that the communication terminal of the communication party has received the display information added to the call out signal. With this configuration, termination of the display of the display information in its own terminal can be carried out at a suitable timing in terms of the use of the communication terminal by the user. Also, the user of the communication terminal on the outgoing side can confirm whether the display information has been displayed in the communication terminal on the incoming side. Therefore, according to this configuration the convenience of the user can be improved.

Preferably the communication system for communicating with the communication terminal of the communication party is a third generation mobile communication system, and the adding means adds the display information to the call out signal by including the display information in a locking shift codeset of the call out signal. According to this configuration, the present invention can be simply and reliably implemented in a third generation mobile communication system.

The communication system according to the present invention is a communication system that includes a plurality of communication terminals each having a display device, and a charge information generation device that generates charging information for charging the transmission by the communication terminals, wherein the communication terminal comprises: transmission means for transmitting a call out signal for calling out to a communication terminal of a communication party; adding means for adding display information, that is displayed in the communication terminal of the communication party, to the call out signal transmitted by the transmission means; display control means for displaying the display information added to the call out signal by the adding means on the display device, when the call out signal is transmitted by the transmission means; and receiving means for receiving a transmission notification transmitted from the communication terminal of the communication party in accordance with the call out signal transmitted by the transmission means, the transmission notification indicating that the communication terminal of the communication party has received the display information added to the call out signal, and the charge information generation device detects the transmission of the transmission notification to the communication terminal, and generates charging information on the transmission of the display information. In the communication system according to the present invention, in a communication terminal, when a call out signal is transmitted, the display information displayed in the communication terminal of the communication party is also displayed in one's own device, and charging information associated with the transmission of the display information is generated. In this way, according to the communication system of the present invention, the convenience of the user can be improved, and in addition control of the charging associated with the transmission of the display information is simplified.

Besides being described as a communication terminal or a communication system as above, the present invention may also be described as a control method for a communication terminal or a communication system as described below. This differs only in category, but the invention is substantially the same, so the operation and effect is the same.

A control method according to the present invention is a control method for a communication terminal having a display device, comprising: a transmitting step of transmitting a call out signal for calling out to a communication terminal of

a communication party; an adding step of adding display information that is displayed in the communication terminal of the communication party to the call out signal transmitted in the transmitting step; and a display control step of displaying on the display device the display information added to the call out signal in the adding step, when the call out signal is transmitted in the transmitting step.

A control method according to the present invention is a control method in a communication system that includes a plurality of communication terminals each having a display device, and a charge information generation device that generates charging information for charging the transmission by the communication terminals, wherein the communication terminals carry out: a transmitting step of transmitting a call out signal for calling out to a communication terminal of a communication party; an adding step of adding display information that is displayed in the communication terminal of the communication party to the call out signal transmitted in the transmitting step; a display control step of displaying on the display device the display information added to the call out signal in the adding step, when the call out signal is transmitted in the transmitting step; and a receiving step of receiving a transmission notification transmitted from the communication terminal of the communication party in accordance with the call out signal transmitted in the transmitting step, the transmission notification indicating that the communication terminal of the communication party has received the display information added to the call out signal, and the charge information generation device carries out: a charge information generating step of generating charging information on the transmission of the display information by detecting the transmission of the transmission notification to the communication terminal.

In the present invention, when the call out signal is transmitted, the display information displayed in the communication terminal of the communication party is also displayed in its own terminal. The user can confirm the message (display information) transmitted from its own terminal (the outgoing side communication terminal) to the user of the incoming side communication terminal when calling out, by referring to the display. In this way, according to the present invention, a user can confirm what message has been transmitted to the communication party while calling out, so the convenience of the user can be improved.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a diagram showing the configuration of the communication terminal and communication system according to an embodiment of the present invention;

FIG. **2** is a sequence diagram showing a process (control method) implemented in the communication terminal and communication system according to an embodiment of the present invention;

FIG. **3** is a diagram showing the display on the display device of the outgoing terminal when calling out;

FIG. **4** is a diagram showing the display on the display device of the incoming terminal when the outgoing terminal is calling out;

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following is a detailed explanation together with the drawings of the preferred embodiments of the communication terminal, communication system, and control method according to the present invention. In the explanation of the drawings, the same element is given the same reference numeral, and duplication of explanations is omitted.

FIG. **1** shows the configuration of a communication terminal **10** (general term for a communication terminal **10***a*, **10***b*), and a communication system **1** that includes a plurality of communication terminals **10**. The communication system **1** includes a communication network **2** in addition to the communication terminals **10**. The communication network **2** includes a plurality of relay devices (LMMS) **20** (a general term for relay device **20***a*, **20***b*). In the present embodiment, the communication terminals **10** are mobile phones capable of mobile communication, and the communication network **2** is a mobile communication network. In other words, the communication system **1** is a mobile communication system. Each communication terminal **10** is used by its respective user, and users can converse with each other by connecting with another communication terminal **10** via the communication network **2**. FIG. **1** only shows two communication terminals **10**, but the communication system **1** includes many communication terminals **10**. In the present embodiment, the communication terminal **10***a* is taken to be the terminal on the outgoing side (outgoing terminal), and the communication terminal **10***b* is taken to be the terminal on the incoming side (incoming terminal).

The outgoing terminal **10***a* can include display information in the transmitted call out signal when calling and connecting. The display information is displayed in the incoming terminal **10***b* that receives the call out signal. The display information is explained in more detail later.

The communication terminal **10** specifically includes a central processing unit (CPU), a memory, an antenna, and other mobile communication modules. As a result of the operation of these modules the communication terminal has each of the functions explained below. As shown in FIG. **1**, the communication terminal **10** includes a display device **11**, a call connection establishment unit **12**, a transmitted information setting and adding unit **13**, and a display control unit **14**. In the communication terminal **10***b*, the transmitted information setting and adding unit **13** is not necessarily provided in the communication terminal **10**. Also, in addition the communication terminal **10** has various means for achieving the function as a mobile phone, but explanation of these functions is omitted.

The display device **11** is a device that displays information regarding communication and the like in the communication terminal **10**. The display device **11** is realized using for example a liquid crystal display or similar. The display device **11** is controlled by the display control unit **14** or similar. Also, the information displayed on the display device **11** is transmitted from the display control unit **14** and other constituent elements.

The call connection establishment unit **12** is a part that undertakes the function of calling and establishing a connection for communication. Specifically, the call connection establishment unit **12** includes a function as a transmission means for transmitting a call out signal for calling out to the communication terminal **10** of the communication party. Also, the call connection establishment unit **12** includes a function as call connection establishment means for establishing call connections, that receives call out signals transmitted to its own terminal **10** by another communication terminal **10**. Also, the call connection establishment unit **12** includes a function as receiving means for receiving transmission notifications transmitted from the communication terminal **10** of the communication party, in response to call out signals transmitted from its own terminal **10**. The transmission notifications indicate that display information

included with the call out signals have been received by the communication terminal **10** of the communication party.

The call out signal is transmitted from the outgoing terminal **10***a* to the incoming terminal **10***b* when a call is requested (by the operation of the user, or similar), as stated above. The call out signal includes information on the telephone numbers of the outgoing terminal **10***a* and the incoming terminal **10***b* (information to specify the outgoing terminal **10***a* and the incoming terminal **10***b*).

The transmitted information setting and adding unit **13** is adding means for adding display information that is displayed in the communication terminal **10** of the communication party to the call out signal transmitted by the call connection establishment unit **12**. The display information is used for the user of the outgoing terminal **10***a* to notify the user of the incoming terminal **10***b* of the purpose of the call, or for the transmitter to inform the receiver of who the transmitter is, and so on. In other words, the display information is used when the user of the outgoing terminal **10***a* wants to transmit any kind of message to the user of the incoming terminal **10***b* when making the call. The user of the incoming terminal **10***b* can decide whether to answer the call by referring to the display information displayed in the incoming terminal **10***b*.

Specifically, the display information corresponds to, for example, text data with a determined number of characters. At this time, the maximum number of characters in the text data may be set to, for example, 10 characters, in accordance with the specification for the field in which the display information is included in the call out signal, the communication terminal **10**, the communication system **1**, and so on. In this case, the information is stored in advance in the transmitted information setting and adding unit **13**.

If the communication system **1** is a third generation mobile communication system, the transmitted information setting and adding unit **13** preferably adds the display information to the call out signal by including the display information in the locking shift codeset **7** of the call out signal. The locking shift codeset is specified as a field in the call out signal in the standard for third generation mobile communication systems. In the standard for third generation mobile communication systems, there is no requirement regarding how the locking shift codeset is used, so in the present embodiment display information is included in the locking shift codeset.

In third generation mobile communication systems, the display information may also be included in the facility in the call out signal. However, compared with an information length of 30 octets in the facility, the locking shift codeset has a maximum of 255 octets. Therefore the capacity for future expansion is superior in the locking shift codeset, and it can be freely used by the operator. From this point of view therefore, it is preferable to use the locking shift codeset as the field to include the display information in the call out signal.

Also, the transmitted information setting and adding unit **13** has setting means for setting what kind of display information to add to the call out signal for transmission. Setting the display information is carried out in advance by input from the user, or similar. The display information may also be input by the user when calling out. A plurality of candidate display information for addition to a call out signal may be registered in advance in the transmitted information setting and adding unit **13**, from which the user can select. In this case, the number of candidate display information items that can be registered in advance may be 10 or more. Transmission information set in this way is added to the call out signal by the transmitted information setting and adding unit **13** when calling out.

The display control unit **14** is a part that undertakes the function of transmitting information to be displayed on the display device **11**, and controlling the display. Specifically, the display control unit **14** includes a function as display control means for displaying on the display device **11** (of its own terminal **10**) the display information included in the call out signal by the transmitted information setting and adding unit **13**, when a call out signal is transmitted by the call connection establishment unit **12** of its own terminal **10**. The display control unit **14** detects the transmission of call out signals, by receiving notifications that a call out signal has been transmitted by the call connection establishment unit **12**. Also, display control is carried out by receiving display information from the call connection establishment unit **12**, and transmitting the display information to the display device **11**. Also, the display control unit **14** carries out control to terminate the display of the display information in the call out signal when a transmission notification is received from the call connection establishment unit **12**. Also, the display control unit **14** performs display on the display device **11** in accordance with the transmission notifications. This control is also carried out in the same way as control of the above display.

Further, the display control unit **14** includes a function as display control means for reading display information from a call out signal received by the call connection establishment unit **12** (transmitted from another communication terminal **10**) and displaying on the display device **11** (of its own terminal **10**) the display information that has been read. This display control is also carried out in the same way as control of the above display.

The above is an explanation of the configuration of each function of the communication terminal **10**. Next, the relay device **20** is explained. A plurality of relay devices **20** are mutually connected to form the communication network **2**. Each individual relay device **20** includes equipment for circuit control, and so on. Also, the relay device **20** includes a charge information generation device that generates charging information for the communication charges of the communication terminal **10**. In FIG. **1** only two relay devices **20** are shown, but normally the communication network **2** includes many relay devices **20**. Here, the relay device **20***a* is taken to be the relay device **20** in the communication network **2** near the outgoing terminal **10***a*, and the relay device **20***b* is taken to be the relay device **20** in the communication network **2** near the incoming terminal **10***b*. As shown in FIG. **1**, the relay device **20** includes a communication network function unit **21** and a charge information generation unit **22**. In FIG. **1**, the charge information generation unit **22** in the relay device **20***b* near the incoming terminal **10***b* is not needed for explanation, so it is not shown on the drawing.

The communication network function unit **21** is a part that undertakes transmitting and receiving call out signals and other functions of the communication network **2** necessary for communication of the communication terminals **10**. The charge information generation unit **22** is charge information generation means for generating charging information in connection with transmission of display information. The charge information generation unit **22** detects that transmission notifications transmitted from incoming communication terminals **10** that have received display information as described above have been transmitted to the outgoing communication terminal **10**. When the communication network function unit **21** has transmitted a transmission notification, the charge information generation means **22** receives a notification of this fact from the communication network function unit **21**. Also, at this time in addition the charge information genera-

tion unit **22** acquires from the communication network function unit **21** information that is necessary for generating charging information (information for identifying the outgoing terminal **10***a*, information on the amount of data that is subject to charge, and so on). The charge information generation unit **22** then generates charging information for the outgoing terminal **10***a* corresponding to the amount of data.

Next, a process (control method) implemented in the communication terminal **10** and communication system **1** according to the present embodiment is explained, using the sequence diagram in FIG. **2**. This process is the process that is carried out when the outgoing terminal **10***a* including a message (display information) when calling out to the incoming terminal **10***b*. It is assumed that input by the user for setting the display information and so on, specifying the call out destination which is the incoming terminal **10***b*, and the operation of calling out have already been completed.

First, in the outgoing terminal **10***a*, the transmitted information setting and adding unit **13** carries out setting of display information (S**01**). This setting is carried out by, for example, receiving the input and selections of the user as described above. Specifically, text data such as "This is Hasegawa from xx Co., Ltd." for example is set as display information. Next, the transmitted information setting and adding unit **13** adds the set display information to the call out signal (S**02**, adding step). Next, in the outgoing terminal **10***a*, the call connection establishment unit **12** transmits a call up signal addressed for the incoming terminal **10***b* to the communication network **2** (the relay device **20***a* near the outgoing terminal **10***a*) (S**03**, transmission step). This transmission is carried out via base stations (not shown on the drawings) or similar that are included in the communication network **2**.

When the call out signal is transmitted, in the outgoing terminal **10***a* the display control unit **14** displays on the display device **11** the display information added to the call out signal. The display device **11** is controlled by the display control unit **14** to display the display information (S**04**, display control step). FIG. **3** shows an example of the display on the display device **11** of the outgoing terminal **10***a* at this time. As shown in FIG. **3**, the text data that is the display information is displayed in a predetermined area **31** of the display portion of the display device **11**. Also, as shown in FIG. **3**, a display **32** that identifies the user of the incoming terminal **10***b* may also be displayed together with this display. The user of the outgoing terminal **10***a* can confirm the content of the display displayed in the incoming terminal **10***b* when calling, by referring to the display information displayed.

When the call out signal is transmitted, in the relay device **20***a* the communication network function unit **21** receives the call out signal. The communication network function unit **21** looks up the information or similar indicating the telephone number of the incoming terminal **10***b* included in the call out signal, identifies the relay device **20***b* that is to be connected to, and transmits a connection request to the relay device **20***b*, based on the call out signal (S**05**). At this time the display information included in the call out signal is also transmitted.

Next, at the relay device **20***b*, the communication network function unit **21** receives the connection request from the relay device **20***a*. The communication network function unit **21** looks up the information or similar indicating the telephone number of the incoming terminal **10***b* included in the call out signal, identifies the incoming terminal **10***b* to which an incoming request is to be sent, and transmits an incoming request to the incoming terminal **10***b* (S**06**). This incoming request is transmitted as an incoming request from the outgoing terminal **10***a*. At this time the display information included in the call out signal is also transmitted. Also, this transmission is carried out via base stations (not shown in the drawings) included in the communication network **2**.

When the incoming request is transmitted, at the incoming terminal **10***b*, the call connection establishment unit **12** receives the incoming request. Next, the call connection establishment unit **12** sends a response in respect of the incoming request to the relay device **20***b* (S**07**), and the call process is carried out with respect to the incoming terminal **10***b*.

Next, in the incoming terminal **10***b*, the display control unit **14** receives the display information included in the incoming request from the call connection establishment unit **12**, and displays the display information on the display device **11**. The display device **11** is controlled by the display control unit **14** to display the display information (S**08**). This display is displayed while the call process is being carried out. FIG. **4** shows an example of the display on the display device **11** of the incoming terminal **10***b* at this time. As shown in FIG. **4**, the text data that is the display information is displayed in a predetermined area **41** of the display portion of the display device **11**. Also, as shown in FIG. **4**, a display **42** that identifies the user of the outgoing terminal **10***a* may also be displayed together with this display. The user of the incoming terminal **10***b* can confirm the call out message of the user of the outgoing terminal **10***a*, by referring to the display information displayed. If the call is answered, normally the incoming history is recorded in the incoming terminal **10***b*, but the display information is not necessarily recorded in the incoming history.

Next, in the incoming terminal **10***b*, the call connection establishment unit **12** transmits a transmission notification addressed to the outgoing terminal **10***a*, indicating that the display information has been received, to the communication network **2** (the relay device **20***b* near the incoming terminal **10***b*) (S**09**).

In the present embodiment, the incoming terminal **10***b* can receive display information, but if the incoming terminal **10***b* cannot receive display information, the transmission notification is not sent. Cases where display information cannot be received include the case when the incoming terminal **10***b* does not have the function of displaying display information added to the call out signal. Also, there is the case where the incoming terminal **10***b* is not set to display the display information added to the call out signal. Also, there is the case where the incoming request itself based on the call out signal cannot be received, because the incoming terminal **10***b* is outside the reception area.

When the transmission notification is transmitted by the incoming terminal **10***b*, in the relay device **20***b* the communication network function unit **21** receives the transmission notification, and transmits the transmission notification to the relay device **20***a* (S**10**). In the relay device **20***a* the communication network function unit **21** receives the transmission notification, and transmits the transmission notification to the outgoing terminal **10***a* (S**11**).

In the incoming terminal **10***a*, the call connection establishment unit **12** receives the transmission notification. When the transmission notification is received, in the outgoing terminal **10***a*, the display control unit **14** terminates the display of the display information on the display device **11**, and displays a display corresponding to the transmission notification (S**12**, receiving step, display control step). The display corresponding to the transmission notification is a display indicating that the display information has been displayed in the incoming terminal **10***b*. The user of the outgoing terminal

10*a* can refer to the display, and reliably confirm that the display information has been displayed in the incoming terminal **10***b*.

Also, in the outgoing terminal **10***a*, if the transmission notification has not been received within a predetermined period of time after transmission of the call out signal, it is determined that the display information has not been transmitted to the incoming terminal **10***b*. In this case, in the outgoing terminal **10***a*, the display control unit **14** displays a message on the display device **11** that the display information has not been displayed in the incoming terminal **10***b*. This display may be a simple pictorial display.

When the above process is completed, a ring back tone process is carried out between the outgoing terminal **10***a* and the incoming terminal **10***b* (S**13**). Then the call is carried out between the outgoing terminal **10***a* and the incoming terminal **10***b*.

Then in the relay device **20***a* near the outgoing terminal **10***a*, the charge information generation unit **22** detects that a transmission notification has been transmitted to the outgoing terminal **10***a*, and generates the charging information for the transmission of the display information (S**14**, charge information generating step). The user of the outgoing terminal **10***a* is charged based on the generated charging information.

As stated above, in the present embodiment, in the outgoing terminal **10***a*, when an outgoing signal is transmitted, the display information displayed in the incoming terminal **10***b* is also displayed in the outgoing terminal **10***a*. By referring to the display, the user can confirm the message transmitted from the outgoing terminal **10***a* to the user of the incoming terminal **10***b* when calling out. In this way, according to the present embodiment, a user can confirm what message has been sent to the communication party when calling out, so it is possible to improve the convenience of the user.

Also, as stated above, if the termination of display of the display information in the outgoing terminal **10***a* is triggered by receipt of the transmission notification, the termination of the display of the display information can be carried out at a timing that is desirable for the use of the communication terminal **10** by the user. Also, by carrying out the display in accordance with the transmission notification, the user of the outgoing terminal **10***a* can confirm whether the display information has been displayed in the incoming terminal **10***b*. In this way, the convenience of the user can be improved.

If the communication system **1** is a third generation mobile communication system, and if the display information is included in the locking shift codeset of the call out signal, the present invention can simply and reliably be implemented in a third generation mobile communication system.

Also, if, as in the present embodiment, the charging information is generated in the relay device **20***a* after the transmission notification has been transmitted to the outgoing terminal **10***a*, the convenience of the user can be improved, and also control of charging associated with the transmission of display information is simplified. Also, the charging information is generated only when the display information is displayed in the incoming terminal **10***b* (charging information is not generated when the display information is not displayed). Therefore, it is possible to charge appropriately.

The embodiment as described above can also be implemented when the call and connection between the outgoing terminal **10***a* and the incoming terminal **10***b* is established through roaming. Also, the present embodiment can be implemented with videophone systems. Also, in the present embodiment the communication system was a mobile communication system **1**. However, other systems may be used, for example a cable telephone system.

Also, in the present embodiment, the display information is displayed unconditionally in the incoming terminal **10***b* to which the display information was transmitted. However, it is possible for the display information to be not displayed, depending on the setting. In this case, incoming requests from the outgoing terminal **10***a* can be set to not display in accordance with whether the telephone number of the outgoing terminal **10***a* is displayed or not, or whether the outgoing terminal **10***a* associated with the incoming request is registered in the memory of the incoming terminal **10***b* or not.

What is claimed is:

1. A mobile communication terminal having a display device, comprising: transmission means for transmitting a call out signal for calling out to a mobile communication terminal of a communication party; adding means for adding display information, that is displayed in the mobile communication terminal of the communication party, to the call out signal transmitted by the transmission means; display control means for displaying the display information added to the call out signal by the adding means on the display device, when the call out signal is transmitted by the transmission means; and receiving means for receiving a transmission notification transmitted from the mobile communication terminal of the communication party in accordance with the call out signal transmitted by the transmission means, the transmission notification indicating that the mobile communication terminal of the communication party has received the display information added to the call out signal, charging information being generated on a transmission of the display information by a detection of a transmission of the transmission notification to the mobile communication terminal, wherein the display control means terminates a display of the display information and displays on the display device a display according to the transmission notification when the transmission notification is received from the receiving means.

2. The mobile communication terminal according to claim **1**, wherein a communication system for communicating with the mobile communication terminal of the communication party is a third generation mobile communication system, and the adding means adds the display information to the call out signal by including the display information in a locking shift codeset of the call out signal.

3. A communication system that includes

a plurality of mobile communication terminals each having a display device, and

a charge information generation device that generates charging information for charging a transmission by the mobile communication terminals,

one of the plurality of mobile communication terminal terminals including

transmission means for transmitting a call out signal for calling out to a mobile communication terminal of a communication party;

adding means for adding display information, that is displayed in the mobile communication terminal of the communication party, to the call out signal transmitted by the transmission means;

display control means for displaying the display information added to the call out signal by the adding means on the display device, when the call out signal is transmitted by the transmission means;

receiving means for receiving a transmission notification transmitted from the mobile communication terminal of the communication party in accordance with the call out signal transmitted by the transmission means, the transmission notification indicating that the mobile communication terminal of the communi-

cation party has received the display information added to the call out signal, wherein

the display control means terminates a display of the display information and displays on the display device of the one of the plurality of mobile communication devices a display according to the transmission notification when the transmission notification is received from the receiving means, and

the charge information generation device detects the transmission of the transmission notification to the one of the plurality of mobile communication terminals, and generates the charging information on the transmission of the display information.

4. A control method for a mobile communication terminal having a display device, comprising: transmitting a call out signal for calling out to a mobile communication terminal of a communication party; adding display information that is displayed in the mobile communication terminal of the communication party to the call out signal transmitted in the transmitting; displaying on the display device the display information added to the call out signal in the adding, when the call out signal is transmitted in the transmitting; receiving a transmission notification transmitted from the mobile communication terminal of the communication party in accordance with the call out signal transmitted in the transmitting, the transmission notification indicating that the mobile communication terminal of the communication party has received the display information added to the call out signal, charging information being generated on a transmission of the display information by a detection of a transmission of the transmission notification to the mobile communication terminal; and terminating a display of the display information and displaying on the display device a display according to the transmission notification when the transmission notification is received in the receiving.

5. A control method in a communication system that includes a plurality of mobile communication terminals each having a display device, and a charge information generation device that generates charging information for charging a transmission by the mobile communication terminals, wherein

the mobile communication terminals carry out the method comprising:

transmitting a call out signal for calling out to a mobile communication terminal of a communication party;

adding display information that is displayed in the mobile communication terminal of the communication party to the call out signal transmitted in the transmitting;

displaying on the display device the display information added to the call out signal in the adding, when the call out signal is transmitted in the transmitting;

receiving a transmission notification transmitted from the mobile communication terminal of the communication party in accordance with the call out signal transmitted in the transmitting, the transmission notification indicating that the mobile communication terminal of the communication party has received the display information added to the call out signal; and

terminating a display of the display information and displaying on the display device a display according to the transmission notification when the transmission notification is received in the receiving, and

the charging information generation device carries out the method comprising:

generating the charging information on the transmission of the display information by detecting the transmission of the transmission notification to one of the mobile communication terminals that carried out the method.

6. A mobile communication terminal having a display device, comprising: a transmission unit configured to transmit a call out signal for calling out to a mobile communication terminal of a communication party; an adding unit configured to add display information, that is displayed in the mobile communication terminal of the communication party, to the call out signal transmitted by the transmission unit; a display unit configured to display the display information added to the call out signal by the adding unit on the display device, when the call out signal is transmitted by the transmission unit; and a call connection establishment unit configured to receive a transmission notification transmitted from the mobile communication terminal of the communication party in accordance with the call out signal transmitted by the transmission unit, the transmission notification indicating that the mobile communication terminal of the communication party has received the display information added to the call out signal, charging information being generated on a transmission of the display information by a detection of a transmission of the transmission notification to the mobile communication terminal, wherein the display unit is further configured to terminate a display of the display information and displays on the display device a display according to the transmission notification when the transmission notification is received from the call connection establishment unit.

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