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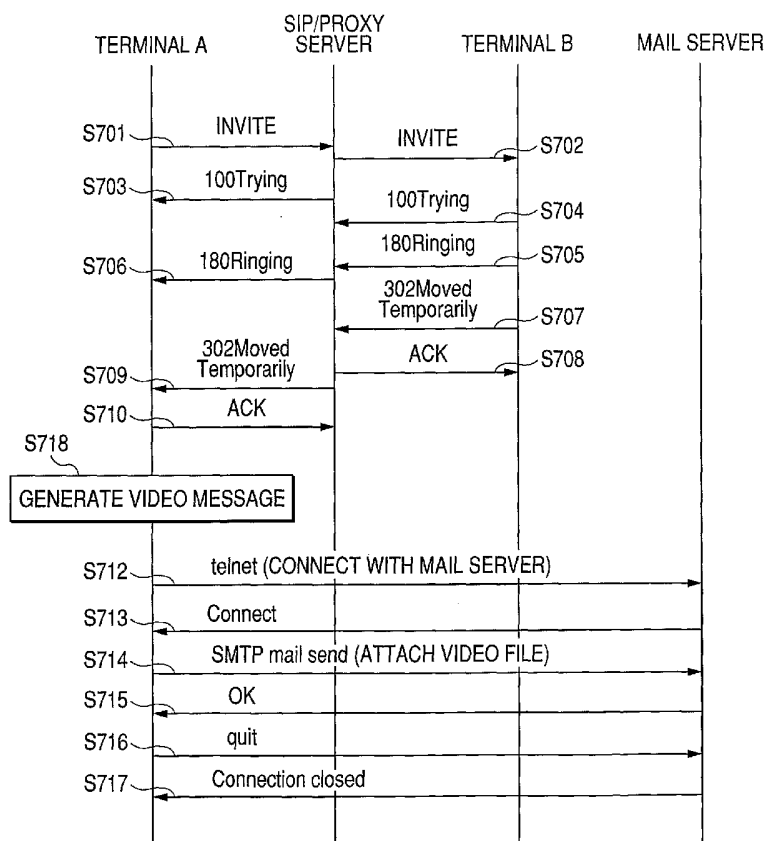
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(54) Title: TERMINAL DEVICE, AND CONTROL METHOD OF TERMINAL DEVICE



(57) Abstract: The present invention provides, in a telephone system, the device which enables to transmit and receive a business message of a high-quality voice or video with an excellent operation feeling in a case where a called side does not respond. To accomplish this, the partner terminal is called by the communication unit based on a telephone protocol (S702), and, when it is discriminated based on the telephone protocol that the called partner terminal does not respond (S709), the voice (or audio) data of the user is accumulated as the business message by using the receiver or the like of the user calling unit (S718). Then, the data indicating the business message is transmitted to the mail address of the partner terminal acquired through the telephone protocol (S714).



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DESCRIPTION

TERMINAL DEVICE, AND CONTROL METHOD OF TERMINAL
DEVICE

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TECHNICAL FIELD

The present invention relates to a terminal device which calls a partner terminal based on a protocol for an IP (Internet Protocol) telephone and executes at least voice communication to the called partner terminal, and a control method which is adapted to control the relevant terminal device.

BACKGROUND ART

15 In recent years, the Internet is rapidly widespread on a global mass scale. Thus, in view of the advantage of the Internet that communication charges can be remarkably decreased, an IP telephone is paid to attention. Here, the standard which is particularly important currently in the IP telephone is SIP (Session Initiation Protocol) which is indicated by ITU-T (International Telecommunication Union - Telecommunication) recommendation H.323 (<http://www.itu.int/>). For this reason, various types of devices corresponding to the IP telephone according to the above standard are proposed. Besides, an image communication technique as in

television conference or the like is conventionally diverted to a sizable percentage of the IP telephone, whereby a video call (so called a television telephone) including transmission/reception of moving
5 images can of course be executed by the IP telephone.

Here, one of the important things in the IP telephone technique is to achieve the various functions same as those in conventional PSTN (Public Switched Telephone Networks), and, at that time, to
10 achieve more satisfactory services by making the best use of the Internet.

Incidentally, the technique achieved by the conventional PSTN terminal includes telephone message recording (by an answering machine),
15 transmission/reception of a voice message, and the like. In this connection, for example, the conventional PSTN terminal on a reception side often records in a message recording means a voice message sent from the terminal on a calling side. Meanwhile,
20 in the IP telephone, the following techniques are proposed.

For example, in Japanese Patent Application Laid-Open No. 2001-309040, in a case where the IP telephone terminal calls an analog public telephone
25 terminal, if no response is sent from the public telephone terminal due to, e.g., absence of its user, a gateway saves the voice mail data to be transmitted

from the IP telephone terminal. Then, after elapsing a certain period of time, the IP telephone terminal again calls the relevant public telephone terminal by automatic dialing, and, when a response is sent
5 therefrom, the IP telephone terminal reads the saved voice mail data and transmits it thereto.

Besides, the SIP of which the standardization is advanced by IETF (Internet Engineering Task Force) is known as the standard technique which is suitable
10 for multimedia communication and has a high affinity to the Internet technique. In the current IP telephone system, the SIP is used to identify a partner station in case of data transmission. Here, in the SIP, as indicated by IETF - RFC3261, RFC3262,
15 RFC3263, RFC3264, RFC3265 and RFC3515 (<http://www.ietf.org/>), if there is no response from the partner terminal when the IP telephone terminal calls up the partner IP telephone terminal, it is known that a media session is established based on
20 the SIP of the IP telephone between the voice mail server and the calling terminal, and then a voice message is sent to the voice mail server.

Moreover, in a moving image communication technique, particularly in a television conference
25 technique, the technique for easily providing information to a person who does not take part in the conference as well as the technique for easing

temporal and locational restrictions is known. For example, the mail processing unit of a television conference device creates a video mail from voice and video signals, and, in response to the indication by
5 a user, the mail processing unit restores the voice and video signals from the relevant mail and outputs these signals respectively to a voice output device and a video output device. Moreover, in Japanese Patent Application Laid-Open No. 2000-115738, it is
10 proposed that absence of a user is first registered, a transfer destination information processing unit of the mail processor creates a transfer information table and registers the transfer destination of the absence-registered user, and a message transformation
15 processing unit transforms the file received from a message restoration processing unit or a telephone/facsimile processing unit to the type of file notified from the transfer destination information processing unit. By doing so, the
20 message capable of being received at the transfer destination is created and then transferred thereto.

Incidentally, in the conventional constitution as disclosed in Japanese Patent Application Laid-Open No. 2001-309040, since the called-side terminal is
25 the analog public telephone terminal, there is a high possibility that the terminal itself is locationally fixed. For this reason, a restriction occurs with

respect to the location where it can receive the voice message. Moreover, since timing for receiving the voice message at the called-side terminal depends on management by the gateway, there is a possibility
5 that the voice message cannot be received during a period that called operation is refused due to call (telephone call) or the like on the called side.

In addition, various voice message transmission methods are proposed by the SIP protocols (IETF -
10 RFC3261, RFC3262, RFC3263, RFC3264, RFC3265, RFC3515). In such circumstances, even in a case where line or call quality is not in a satisfactory condition due to a problem of distance, a problem of number of stages in a router, a problem of traffic, a problem
15 of packet loss and the like in the network connection pattern to be used by the IP telephone terminal, the standard voice message transmission dares to establish the media session between the terminal and the voice message server to transmit in real time the
20 voice of the calling side to the voice message server, and saves the transmitted voice on the voice message server. For this reason, there is a possibility that it is impossible to generate a high-quality voice message. Here, it should be noted that such a
25 problem affects the called side which receives the voice message. That is, there is a possibility that the called-side terminal listens the low-quality

voice message transmitted from the server in the state of lower line quality. Thus, there is fear that the voice quality in the voice message service is seriously lowered. Moreover, when the called-side
5 terminal receives the voice message, the SIP protocol is used. Thus, there is an inconvenience that the voice message cannot be reproduced in, for example, a mobile terminal or a personal computer which does not correspond to the SIP protocol or does not have an
10 account for IP telephone services.

Besides, the conventional constitution as disclosed in Japanese Patent Application Laid-Open No. 2000-115738 concerning the moving image communication is premised on a television conference system,
15 whereby it is possible to transmit voice and video files to a remote location. In this connection, even in a case where the above conventional constitution is interpreted enlargedly as a telephone terminal, if a called partner is absent, the procedure to transfer
20 these files to the partner is executed humanly. Thus, the above conventional constitution is not optimized as the constitution for increasing convenience of a terminal device.

25 DISCLOSURE OF THE INVENTION

Accordingly, an object of the present invention is to provide, in a telephone system of executing

transmission/reception of voice data or video data, a terminal device and a control method for the terminal device which can transmit/receive a business mail produced by high quality voice and/or video data
5 without losing the operation feeling of a conventional automatic answering telephone and requiring the use of an expensive terminal, in a case where a called side does not respond due to such a situation as absence or the like.

10 According to the present invention, the foregoing object is attained by providing a terminal device which executes at least voice communication to a partner terminal, comprising: a telephone calling unit adapted to execute a telephone calling sequence
15 for calling the partner terminal based on a telephone protocol; an accumulation unit adapted to, in a case where it is discriminated based on the telephone protocol that the called partner terminal does not respond, accumulate in the terminal device a business
20 message of a user; and a mail transmission unit adapted to transmit data indicating the business message to a mail address of the partner terminal by using an electronic mail protocol.

Other features and advantages of the present
25 invention will be apparent from the following description taken in conjunction with the accompanying drawings, in which like reference

characters designate the same or similar parts throughout the figures there.

BRIEF DESCRIPTION OF THE DRAWINGS

5 Fig. 1 is a block diagram showing the hardware constitution of a terminal device adopting the present invention (first embodiment);

 Fig. 2 is a block diagram showing the constitution of a display unit of the device in Fig.
10 1;

 Fig. 3 is a block diagram showing the constitution of a DRAM (Dynamic Random Access Memory) composing a storage unit in Fig. 1;

 Fig. 4 is an external view showing the
15 constitution of an operation unit of the device in Fig. 1;

 Fig. 5 is an outline view showing the form wherein the terminal device adopting the present invention is connected to the Internet;

20 Fig. 6 is a sequence view showing a standard calling control sequence of SIP in case of executing a call;

 Fig. 7 is a sequence view showing the control sequence executed by the terminal device adopting the
25 present invention and each of equipments on the network;

 Fig. 8 is a flowchart showing a control

procedure of a calling side terminal (terminal A) according to the present invention;

Fig. 9 is an explanation view showing an example of a UI (user interface) display screen of the calling side terminal (terminal A) according to the present invention;

Fig. 10 is a block diagram showing another hardware constitution of a terminal device adopting the present invention (second embodiment);

Fig. 11 is a block diagram showing the constitution of a DRAM composing a storage unit in Fig. 10;

Fig. 12 is an external view showing the constitution of an operation unit of the device in Fig. 10;

Fig. 13 is a sequence view showing the control sequence executed by the terminal device adopting the present invention and each of equipments on the network;

Fig. 14 is a flowchart showing a control procedure of a calling side terminal (terminal A) according to the present invention; and

Fig. 15 is an explanation view showing an example of a UI display screen of the calling side terminal (terminal A) according to the present invention.

BEST MODE FOR CARRYING OUT THE INVENTION

The preferred embodiments of the present invention will now be described in detail with reference to the drawings. Here, it should be noted that the relative arrangement of the components, the numerical expressions and numerical values set forth in these embodiments do not limit the scope of the present invention unless it is specifically stated otherwise.

10 (First Embodiment)

In the present embodiment, a constitutional example of a terminal device, which transmits a voice message as a business message by an E-mail in a case where a partner terminal does not respond although a calling according to a VoIP (Voice over Internet Protocol) has been executed, is shown.

Fig. 1 shows the constitution of the terminal device coping with an IP (Internet Protocol) telephone adopting the present invention. The shown terminal device can be constituted as a product such as an MFP (Multi Function Printer) which includes a telephone device or the image transmission and input/output functions, or as a mobile communication terminal (mobile phone) or the like.

25 In Fig. 1, numeral 101 denotes a central processing unit (CPU) which controls the entire device. Numeral 102 denotes a ROM (Read Only Memory)

which stores programs and data. Numeral 103 denotes a storage unit (DRAM; Dynamic Random Access Memory) which stores CPU work data, a codec (compression/decompression) work area, mail data, HTML (Hyper Text Markup Language) data, display data, printing data and other data. Numeral 104 denotes a non-volatile RAM (SRAM; Static Random Access Memory) which stores private data, telephone directory data and backup data for preserving various device constants.

Numeral 105 denotes a sensor group which includes a sensor for detecting the condition of a receiver as a telephone device, a sensor for detecting the size of recording sheets, a sensor for detecting width of an original to be read, a sensor for detecting presence/absence of the original and other sensors.

Numeral 106 denotes a display unit which realizes a UI (User Interface) of a telephone terminal together with an operation unit 108 composed of various keys and displays received contents data, the condition of the device or the like in color. The constitutional examples of the display unit 106 and the operation unit 108 will be described in detail in Fig. 4.

Numeral 107 denotes a codec (hereinafter, to be described as CODEC) which can execute at least the

encoding/decoding of voice data in the present embodiment. The CODEC 107 may be constituted that it can further execute the encoding/decoding of color or monochrome image data (a still image and an animation
5 as in the embodiment to be described later).

The terminal device in the present embodiment has an image communication function and has blocks used for inputting and outputting image data, denoted by numerals 109 and 111. The block 109 is a reading
10 unit composed of a reading element such as a CCD (Charge Coupled Device) or a CIS (Contact Image Sensor) used for scanning a color or monochrome image and a mechanism such as an original convey unit or the like. The block 111, which is a printing unit
15 having a printer function for printing the received image or text data, is constituted based on an arbitrary printing system such as an electrophotographic system or an inkjet system. It should be noted that the above image communication
20 function is not always required in the present embodiment and can be omitted in a case where the terminal device is constituted as the mobile communication terminal (mobile phone).

Numerals 112 denotes a communication unit for
25 communicating with external units connecting with a line 113. In the present embodiment, at least the connection with an interned and an IP communication

through the network connection of the Internet can be executed by the communication unit 112. Further, it may be constituted that a call and an image communication via a PSTN (Public Switched Telephone Network) can be executed through the communication unit 112. If the above-mentioned communication can be executed, the detailed constitution of the communication unit 112 is arbitrary. Connection with the Internet can be realized through the PSTN (including ISDN (Integrated Services Digital Network)) or through a broadband line such as an ADSL (Asymmetric Digital Subscriber Line), a FTTH (Fiber To The Home) or the like. For the purpose of connecting with such the Internet, the communication unit 112 requires a MODEM (Modulator/Demodulator) or a router coping with various communication lines. Otherwise, such the MODEM or the router is substituted for the external one, and only a LAN (CSMA/CD; Carrier Sense Multiple Access with Collision Detection (for example, Ethernet (brand name)) interface used for connecting with the network equipments may be provided in the terminal device. Internet communication and PSTN communication may be executed using the same communication line (for example, ISDN), or different lines for the Internet communication and the PSTN communication may be respectively used. Of course, a connecting system

with the line or the network may employ a mobile communication system utilizing a radio connection or the like. In this case, a line/network interface coping with the corresponded system is installed in
5 the communication unit 112.

Numerical 114 denotes a call unit, which includes devices such as a receiver, a speaker, a microphone and the like as a telephone device, is a block for realizing a voice MMI (Man Machine Interface) with a
10 user.

The above-explained blocks shown in Fig. 1 are mutually connected through a system bus 110.

Fig. 2 shows the circuit constitution of the display unit 106. The display unit 106 includes a
15 VRAM (Video RAM) 200 for storing display data and an LCD (Liquid Crystal Display) driver 201 for outputting the contents of the VRAM 200 to a dot matrix LCD 202.

Fig. 3 shows a memory map which indicates the
20 internal constitution of the DRAM 103 composing the storage unit. The DRAM 103 is constituted by a CPU work area 1031 used as a work area of the CPU 101, a CODEC work area 1032 used as a work area in case of executing the encoding/decoding, a mail data storage
25 area 1033 for storing mail data, an HTML data storage area 1034 for storing the received HTML data, a display data storage area 1035 for storing display

data, a printing data storage area 1036 for storing print data and an other data storage area 1037 for storing other data or used as a work area for an operation.

5 Fig. 4 shows the external constitution of the display unit 106 and the operation unit 108 in Fig. 1. Numeral 202 denotes an LCD which constitutes the display unit 106. The operation unit 108 includes ten keys 402 used for inputting a telephone number and the like, a menu key 403 used for setting the
10 function, four function keys 404 used for inputting various information, a set key 405 being a setting input key and a right and left/up and down directions key 406 used for moving a cursor on the display unit
15 106 (LCD 202).

Fig. 5 conceptually shows the network constitution in a case where the terminal device in Fig. 1 executes a communication through a network including the Internet.

20 In Fig. 5, a terminal (A) 503 and a terminal (B) 504 are connected to the Internet 500 by an IP connection. Between the two terminals, at least the calling side terminal (A) 503 is assumed to be composed of the terminal device shown in Fig. 1, and
25 the above-mentioned communication unit 112 is used for the IP connection.

An SIP/proxy server 501, which is connected

with the Internet, provides an SIP service. The SIP/proxy server 501 controls an SIP being a signal protocol used for executing a calling control in real time on the Internet. As mentioned above, the SIP is
5 characterized in that it is excellent in protocol extendability and affinity with another Internet service. Especially, as the telephone service, the SIP/proxy server 501 executes a control of SIP signaling standardized in RFC3261 (Request For
10 Comments 3261), the registration/certification of a user, a user management and the like.

A mail server 502, which is connected to the Internet 500 by the IP connection, has the function of SMTP (Simple Mail Transfer Protocol)/POP3 (Post
15 Office Protocol 3) standardized in the RFC 821 and has the constitution of a server for managing mails. Generally, the mail server 502 is provided by an Internet service provider or a company managing the network.

20 Further, an ENUM (Enumeration) DNS (Domain Name System) server 505 is also connected with the Internet 500 by the IP connection, and "registrar" associated with telephone numbers of end users and address information in a different communication and
25 the like are included. For example, in case of generating a call, an IP address or a mail address of a partner terminal can be obtained (resolved) from

the telephone number by accessing to the ENUM DNS server 505 on the basis of a predetermined protocol. It should be noted that the ENUM service and the DNS service are not always provided by a single server
5 (505) as in an example shown in Fig. 5.

Both of the terminals A and B (503 and 504) shown in Fig. 5, which have accounts of the IP telephone service on the Internet 500, can connect to the SIP/proxy server 501 connected with the Internet
10 and can function as a user agent of an end point of the IP telephone service.

Further, in the present embodiment, both of the terminals A and B have accounts of the mail service on the Internet, and it is assumed that the terminals
15 can utilize the mail transmission/reception service by connecting to the mail server 502 by the SMTP/POP3.

Fig. 6 shows a sequence of the session of the general SIP used in calling/called operations by an IP telephone. In Fig. 6, the communication state in
20 a case where the terminal A calls the terminal B is indicated. The details of an SIP message in Fig. 6 (or Fig. 7 described later) are described in the each RFC relevant to the aforementioned SIP.

Initially, the terminal A being an end point of
25 the IP telephone service transmits an INVITE message to the SIP/Proxy server (step S601). When the SIP/Proxy server 501 receives the INVITE, a calling

destination address to be called by the terminal A is specified from data included in the INVITE message, and the INVITE is transmitted to the terminal B being an end point (step S602).

5 Next, the SIP/Proxy server 501 transmits the 100Trying to the terminal A (step S603: Here, "100" denotes a discrimination or result code indicating a Trying message. Hereinafter, another message is denoted by the same description method).

10 Then, when the 180Ringing message is returned to the SIP/Proxy server 501 from the terminal B as a response (step S604), the message as the 180Ringing is transmitted to the terminal A (step S605). At this time, the terminal A is in a state of calling
15 the terminal B, and a ring back tone in calling is sent to the partner terminal from the call unit 114 at the terminal A in a state of the general terminal mode or control condition, and the terminal B is in a receiving state of ringing a call sound of the
20 telephone.

 Next, when the terminal B responds to the reception, the terminal B sends the 200OK (step S606), and the 200OK is transmitted to the terminal A being an end point at the calling side through the
25 SIP/Proxy server 501 (step S607). When the terminal A transmits the ACK (Acknowledgement) message as a response to the transmission of the 200OK (step S608),

the ACK is transmitted to the terminal B being an end point at the called side through the SIP/Proxy server 501 (step S609).

Subsequent to the above sequence, a media session is started (step S610) to become a call state between the end points. In the media session, a UDP (User Datagram Protocol) of not executing a flow control and the ACK (transmission acknowledgement) is used in a lower-layer. In an upper-layer, an encoded voice data communication is executed by using, for example, an RTP (Real-time Transport Protocol)/RTCP (Real-time Transport Control Protocol). Regulated methods G.711, G.726, G.729 and the like are prepared for the encoding/decoding of voice data, and an appropriate encoding/decoding method is selected according to a using band.

In a case where the call is terminated, as a sequence of terminating the media session of the call, the BYE/OK message is transmitted to the SIP/Proxy server 501 from the terminal A, and the same message is transmitted to the terminal B. Accordingly, the call between the terminal A and the terminal B is terminated (steps S611 to S614).

Fig. 7 shows a sequence in a case where the terminal B does not respond to the calling from the terminal A due to such the situation as absence or the like, in the present embodiment.

The calling sequence in steps S701 to S706 shown in Fig. 7 is similar to that in the steps S601 to S605 shown in Fig. 6, and, initially, an INVITE message is transmitted to the SIP/Proxy server 501 from the terminal A (step S701).

The SIP/Proxy server 501 receives the INVITE and further transmits the INVITE to the terminal B (step S702). Next, the SIP/Proxy server 501 transmits the 100Trying message to the terminal A (step S703). The terminal B receives the INVITE and transmits the 100Trying (step S704) and the 180Ringing subsequently to the SIP/Proxy server 501 (step 705). Next, the SIP/Proxy server 501 transmits the 180Ringing to the terminal A. At this time, the terminal A is in a state of calling the terminal B.

In Fig. 7, the terminal B does not respond to the calling from the terminal A due to such the situation as absence or the like. At this time, the terminal B executes a call by informing means such as a called sound or the like in order to call a user. However, in a case where the user at the terminal B side does not respond to the telephone call, the terminal B itself judges a fact that the user does not respond by the timeout. With respect to another means, as another method of judging the absence at the terminal B side, if there is no response for the calling form the terminal A, the terminal B itself

may make judgment even in a case where the terminal B is set in a telephone automatic answering mode.

In any case, when the user at the terminal B side does not respond to the telephone call, the terminal B transmits the 302Moved Temporarily message to the terminal A through the SIP/Proxy server 501 (step S707). In the present embodiment, the transmission is executed by including a contact URI (Uniform Resource Identifiers) of a mail server (for example, a mail server 502 shown in Fig. 5), by which the terminal B can receive mails, in a Contact header of this redirection response such as the 302Moved Temporarily. By referring to this Contact header, the terminal A can obtain an address, to which a voice message is transmitted later.

Then, the SIP/Proxy server 501 transmits the ACK to the terminal B (step S708) and subsequently transmits the 302Moved Temporarily to the terminal A (step S709). The terminal A receives the 302Moved Temporarily and transmits the ACK to the SIP/Proxy server 501 (step S710).

Thereafter, the voice message is generated in the terminal A (step S711).

In the terminal A, when the 302Moved Temporarily is received from the terminal B being an end point of the calling destination through the SIP/Proxy server 501 (step S709), it is judged that

the calling destination does not respond to the dialing, and subsequently the voice message is generated (step S711).

Generation of the voice message is to be realized to execute by the same operation feeling as that of a method of recording a message to a telephone receiver by a calling party in a case where a partner telephone device responds to the absence by an automatic answering telephone in a telephone device of a conventional analog line.

In case of recording the message, the voice of an operator is input by a telephone receiver included in the call unit 114 shown in Fig. 1 at the terminal A, and then the input voice data is encoded at the CODEC 107. In the voice encoding process, the CODEC work area 1032 in the DRAM 103 is used as an encoding work area. Then, the voice encoded data is once stored into the mail data storage area 1037 in the DRAM 103 as a voice file.

In the present embodiment, an example of generating message data by treating a business message as the voice data is indicated. However, as another method, the voice of the calling party is recognized by a technology of voice recognition and then the recognized voice data is transformed into character information, and the message data may be generated by treating the message of the calling

party as a mail of the character information. Since the voice recognition is the known technology, a detailed description thereof will be omitted. Even in the above case, there is no difference in a flow, in which the voice message data is transformed into a format capable of transmitting the information as a mail in the generation of the voice message shown in Fig. 7 (step S711).

As a merit in case of transmitting the voice message by transforming it into the character information, the message can be informed to the partner side as the character information even if the partner terminal does not have means of decoding voice data and reproducing the voice.

In a case where the partner terminal has a function capable of listening the character information as voice information again by the voice data synthesis, an effect of reducing the data amount on an information transmission route and decreasing the traffic is kept by transmitting the business message to the reception side terminal from the transmission side terminal with a form of the character information. Further, in the partner terminal at the transmission destination, such an effect capable of holding the voice message with the small memory size as compared with the size of the voice data can be kept.

Next, when the generation of the voice message is terminated, as shown in Fig. 7, the terminal A is connected with a TCP No. 25 port (SMTP port) of the mail server 502 by a telenet (step S712). When the connection with the mail server 502 is established, the Connect message is sent back from the mail server 502, and the connected state with the telenet is kept.

Next, a voice file of the voice message stored into the mail data storage area is transmitted to the mail server 502 (step S714). The voice file is encoded by a format regulated by the SMTP, for example, by a MIME (Multipurpose Internet Mail Extension) format and then attached to the inside of an E-mail text.

As indicated by an explanation in Fig. 5, both of the terminals A and B have accounts of the mail service on the Internet and can transmit/receive mails by connecting with the mail server 502 in Fig. 5 by the SMTP/POP3. Also, with respect to an address of the partner destination to which the voice message is transmitted, a mail address associated with the partner telephone number can be obtained by accessing to the ENUM DNS server 505. The voice message generated as mail data is to be transmitted to the mail address obtained as mentioned above.

In this case, even if a mail address of the terminal B is not previously registered in the

terminal A, if a mail address of the terminal B is registered in the ENUM DNS server 505, the voice message can be transmitted to the mail address of the terminal B. With respect to the mail address of the terminal B, since a user of the terminal B can designate an arbitrary mail address, the voice message can be transmitted to a terminal designated by a mail address other than the mail address of the terminal B.

10 As another method from a method of obtaining a mail address of the partner by accessing to the ENUM DNS server, the mail address of the partner is previously preserved in a memory of the own device associating with the telephone number, and a method of executing a transmission by treating the mail address as a transmission destination by obtaining the mail address in the own device from the telephone number in case of calling the telephone may be proper. In this case, as to a method of previously preserving the mail address of the partner in the memory of the own device associating with the telephone number, since it is equivalent to the constitution of the telephone directory registration of the conventional facsimile device, the mobile phone or the like, an explanation thereof will be omitted because of the known technology.

When the transmission/reception of the E-Mail

text to/from the mail address of the partner terminal resulted in success, the OK message is sent back from the mail server 502 (step S715). In this case, since the voice data is to be transmitted by the service
5 with the TCP/IP (Transmission Control Protocol/Internet Protocol) base not depending on a media session of a UDP/IP (User Datagram Protocol/Internet Protocol) base, the voice data can be surely transmitted with the same condition as that
10 when the data is encoded without generating the lack and the deformation, therefore the voice quality can be secured.

Next, the terminal A transmits the quite message (step S716) and the connection with the SMTP
15 and the mail server 502 is disconnected. When the response of the Connection closed message is received (step S717), the mail transmission is terminated.

Fig. 8 shows a state of a communication control which is to be executed by the terminal device (the
20 above-mentioned terminal A) shown in Fig. 1 so as to execute the general calling/called operation shown in Fig. 6 and a sequence in case of absence of the partner shown in Fig. 7. Fig. 8 shows a flow from a start of the dial transmission to the end of the call,
25 and the procedure shown in Fig. 8 is stored into, for example, the ROM 102 or the like as a control program of the CPU 101 shown in Fig. 1.

When the dial transmission is started in a step S801 shown in Fig. 8, a calling control of the SIP is executed so as to establish the call connection of the IP telephone in a step S802. As to the calling control of the SIP, it is executed as indicated in Figs. 6 to 7.

As shown in Fig. 7, in a case where the terminal A receives the 302Moved Temporarily (step S709) and it is judged that the partner terminal does not respond by the calling control of SIP, it is judged that the partner terminal is in a state of "NO" response in a step S803 to be advanced to an absence message generation UI (step S805).

As shown in Fig. 6, in a case where the terminal A receives the 200OK (step S607) and it is judged that the called side responds, a flow branches off in "YES" to advance to the in-call UI in a step S804. In this case, a media session is generated between the terminal A and the called side so as to be executed the call according to the VoIP.

In a case where the judgment in the step S803 is in a state of "NO" and the flow advances to the absence message generation UI of the step S805, the following process is executed.

In the absence message generation UI in the step S805, a calling party executes an operation to generate the voice message by using the display unit

106 and the operation unit 108 of the terminal device (terminal A). An example of the absence message generation UI (mainly, a screen display) will be described later.

5 In a step S806, it is judged whether or not the recording of the absence message is stopped by checking the state of an operation of the user at the operation unit 108 (refer to User Interface described later), and when the recording of the absence message
10 is stopped, the flow advances to a step S810 and the call is terminated. When the generation of the message is continued, the voice recording process and the encoding process are executed in a step S807. With respect to an input of the voice, the operator
15 voice is input by the telephone receiver in the call unit 114 shown in Fig. 1, and the voice data is encoded by the CODEC 107. The voice encoded data is once stored into the DRAM 103 as a voice file and further transformed into an E-mail format capable of
20 transmitting a mail, in a step S808. A process of formatting the E-mail is executed according to the regulation of the MIME format as mentioned before, and the voice data is attached to the E-mail text as an attachment file. In a step S809, the data
25 formatted into the E-mail text is transmitted to the mail server 502 using the SMTP. When the transmission of the E-mail text is terminated, an

operation sequence from the start of the dial transmission is terminated.

Fig. 9 shows an example of the user interface executed by using the display unit 106 and the operation unit 108 in the generation of the absence message to be executed in the step S805 shown in Fig. 8. Fig. 9 shows a display screen from a case where the partner terminal does not respond until the termination of transmitting the voice message extracted out of the operation sequence in Fig. 8.

In the calling control of SIP, as an initial screen in a case where the partner terminal does not respond, a character row display such as "No response to calling" is displayed on a central portion of the screen in order to indicate that the partner terminal does not respond as in a screen 901 shown in Fig. 9. In this screen 901, a partner abbreviated name, a partner telephone number and a partner mail address are displayed on a lower portion of the character row display. Information related to the partner terminal can be obtained from ENUM information regulated in the RFC 2916 through the SIP/Proxy server 501, and the terminal being a user agent can obtain from the server in the calling control of SIP. It should be noted that information to be displayed on the screen 901 is not limited to the above-mentioned information but, for example, other arbitrary information related

to the partner terminal can be displayed. On a lower portion of the screen 901, a button 901a used for instructing the stop of the current calling (or an automatically activated re-calling may be included) is displayed. The button 901a is selected by the right and left/up and down directions key 406 or the like, and an input operation (or, if the display unit 106 is a screen of touch panel system, a direct input is executed, or the input operation is executed by a pointing device such as a mouse) is executed by such a method of defining an input by the set key 405 (other buttons described later are similarly operated).

Subsequent to the screen 901, the display screen is changed to a screen 902 in accordance with the elapse of a predetermined time (or a predetermined operation in the operation unit 108), and the user is made to start the recording of the voice message using this screen. In this screen, a character row display such as "voice message recording starts subsequently" and "record message after beep" are displayed on a central portion of the screen, and a timing of recording the voice message is informed to the user. On a lower portion of the screen 902, buttons 902a, 902b and 902c are arranged. The button 902a is a dial stop button similar to the button 901a, the button 902b is a record stop button

and the button 902c is used for instructing a timing of the record end.

When the recording of voice is ended (time measurement for a predetermined recording time is ended or instructed by an operation of the button 902c), the display screen is changed to a screen 903 where it is displayed that the recorded voice message is transmitted to the partner terminal as an E-mail by the above-mentioned manner. On a lower portion of the screen 903, a button 903a for stopping the transmission of the corresponded E-mail is arranged.

As mentioned above, in a case where the calling partner does not respond, the voice message is recorded by using the user interface as shown in Fig. 9, and the message can be transmitted by the E-mail. Accordingly, the UI being one form of an automatic answering telephone of the IP telephone can be suitably realized with the operation feeling equivalent to or finer than that of the automatic answering telephone based on the conventional analog line.

As mentioned above, according to the present embodiment, in a case where the partner terminal does not respond in the IP telephone system, it becomes possible to realize the suitable operability without losing the operation feeling of the automatic answering telephone based on the conventional analog

line. Further, even in the terminal set in a state of the low QoS (Quality of Service) of the IP telephone system, since such the constitution wherein the voice message is once encoded and is transmitted
5 by a mail format is adopted, the voice message can be transmitted to the partner terminal with a state without lacking data. Therefore, even in a case where a mobile communication system is used for the connection with a network, the extremely favorable
10 constitution can be provided as a telephony application which can transmit a message recorded in the absence to the partner terminal without deteriorating quality of the voice.

(Second Embodiment)

15 In the above embodiment 1, a voice message is to be transmitted by an E-mail as a business mail in a case where a partner terminal does not respond even if a calling according to a VoIP (Voice over Internet Protocol) is executed. However, in the present
20 embodiment, an example of transmitting a video message by the E-Mail as the business mail will be indicated.

In the present embodiment, the drawings are the are same as those in the first embodiment. In this
25 connection, the constituent components which are the same as or correspond to those in the first embodiment are respectively denoted by the same (or

similar) numerals and symbols, and the detailed description thereof will be omitted. In the present embodiment, when the drawing which corresponds to that in the first embodiment does not exist, the
5 constitution shown in the drawing corresponding to that in the first embodiment can be utilized within a scope of not contradicting the constitution of the present embodiment.

Fig. 10, which corresponds to Fig. 1 in the
10 first embodiment, shows the constitution of a terminal device adopting the present invention. In Fig. 10, different points as compared with the constitution in Fig. 1 are that a CCD (Charge Coupled Device) 115 is added for the purpose of shooting an
15 animation (or a still image) and the CODEC 107 shown in Fig. 1 is replaced by an MPEG4 (Moving Picture coding Experts Group 4) CODEC 116 for executing the encoding/decoding of the animation. The CCD 115 is arranged so that an animation video of a user can be
20 shot as described later for the purpose of using the terminal device as a TV telephone especially.

With respect to other blocks, the constitution is the same as that in an explanation related to Fig. 1 in the first embodiment. The constitution of a
25 peripheral control system of the display unit 106 is the same as that shown in Fig. 2.

Fig. 11, which corresponds to Fig. 3 in the

first embodiment, is a memory map indicating the internal constitution of the DRAM 103, and a different point as compared with the constitution in Fig. 3 is that the CODEC work area 1032 in Fig. 3 is
5 replaced by a CODEC work area 1038 of the MPEG4 to be used as a work area in case of executing the encoding/decoding of the MPEG 4. The rest constitution is the same as that in Fig. 3.

Fig. 12, which corresponds to Fig. 4 in the first embodiment, shows the external constitution of the display unit 106 and the operation unit 108. A different point as compared with the constitution in Fig. 4 is that the CCD 115 shown in Fig. 1 is provided on an upper portion of an LCD 202. The CCD
15 115 is disposed so that a shooting lens can be turned toward a user in order that a face or the upper half of body of the user can be shot (the rotationally supported constitution is available so as to become possible the tilt or the pan).

20 In the present embodiment, the terminal device shown in Fig. 10 can be used in the network constitution where the SIP/Proxy server 501, the mail server 502 and the ENUM DNS server 505 are arranged as shown in Fig. 5 similar to the first embodiment.
25 Also in the present embodiment, at least the calling side terminal (A) 503 is assumed to be composed of the terminal device shown in Fig. 10, and the

aforementioned communication unit 112 is used for the IP connection.

Also in the present embodiment, the calling/called operation of the IP telephone is controlled by utilizing the SIP. The calling/called sequence of the IP telephone in the ordinary condition is indicated as shown in Fig. 6. However, the calling/called sequence of the IP telephone in case of the no-response because of absence of the partner is executed as shown in Fig. 13.

The sequence in Fig. 13 corresponds to that in Fig. 7 in the first embodiment. A different point as compared with the sequence in Fig. 7 is that the voice message generation executed in the step S711 shown in Fig. 3 in a case where the partner does not respond is replaced by the video message generation executed in a step S718. The other sequences are the same as those in Fig. 7 indicated by the same symbols.

Fig. 14, which corresponds to Fig. 8 in the first embodiment, indicates a state of a communication control executed by the terminal device (the above-mentioned terminal A) shown in Fig. 10 in order to execute the sequence in case of the ordinary calling/called operation shown in Fig. 6 and the sequence in case of absence of the partner shown in Fig. 13. Fig. 14 shows a flow from a start of the dial transmission until the end of the call, and a

procedure shown in Fig. 14 is stored into, for example, the ROM 102 or the like as a control program of the CPU 101 shown in Fig. 1.

In Fig. 14, the step numbers corresponding to the level of No. 800 used in Fig. 8 are respectively replaced by those corresponding to the level of No. 1800. As apparent from the comparison with Fig. 8, a different point is that the video message is transmitted by an E-mail in steps S1805 to S1809 instead of the voice message. The calling executed in steps S1801 to S1803 and the calling executed in a step S1804 (however, not only the voice calling but also so-called the TV telephone call, which is executed while exchanging an image of a user shot by the CCD 115, may be executed in this call) are controlled similar to the control in Fig. 8. Hereinafter, the generation of the video message executed in the steps S1805 to S1809 shown in Fig. 14 and a transmission by the E-mail will be explained.

Advancing to a video (absence) message generation UI in the step S1805 is executed in a case where judgment in the step S1803 is in the "NO" state due to the no-response because of absence in the partner terminal.

In the video message generation UI in the step S1805, a calling party executes an operation for generating the video (absence) message by using the

display unit 106, the operation unit 108 and the CCD 115 of the terminal device. An example of the video (absence) message generation UI (mainly, a screen display) will be described later.

5 In the step S1806, it is judged whether or not the recording of the video (absence) message is stopped by checking the state of an operation of the user at the operation unit 108 (refer to User Interface described later), and when the recording of
10 the video (absence) message is stopped, a flow advances to a step S1810 and the calling is terminated. When the message generation is continued, the message is recorded and encoded in the step S1807. An image input is executed by the CCD 115 shown in
15 Figs. 10 and 12, and a voice input is executed by the telephone receiver of the call unit 114 shown in Fig. 10 by inputting the voice of an operator. The image and the voice which were input are encoded into an animation format of MPEG4 by an MPEG4 CODEC 116.

20 The encoded data is once stored into the DRAM 103 as a video data file and further transformed into an E-mail format, which can be transmitted by the E-mail, in a step S1808. A process of formatting the E-mail is executed according to the regulation of the
25 MIME format as mentioned before, and the video data is attached to the E-mail text as an attachment file. In the step S1809, the data formatted into the E-mail

text is transmitted to the mail server 502 using the SMTP. When the transmission of the E-mail text is terminated, an operation sequence from the start of the dial transmission is terminated.

5 Fig. 15, which corresponds to Fig. 9 in the first embodiment, shows an example of a User Interface executed by using the display unit 106, the operation unit 108 and the CCD 115 in the generation of the video (absence) message (step S1805). Fig. 15
10 shows a display screen from a case where the partner terminal does not respond until the termination of transmitting the voice message extracted out of the above operation sequence.

 In the calling control of SIP, as an initial
15 screen in a case where the partner terminal does not respond, a character row display such as "No response to calling" is displayed on a central portion of the screen in order to indicate that the partner terminal does not respond as in a screen 1901 shown in Fig. 15.
20 In this screen 1901, a partner abbreviated name, a partner telephone number and a partner mail address are displayed on a lower portion of the character row display. Information related to the partner terminal can be obtained from ENUM information regulated in
25 the RFC 2916 through the SIP/Proxy server 501, and the terminal being a user agent can obtain from the server in the calling control of SIP. Similar to the

case in Fig. 9, information to be displayed on the screen 1901 is not limited to the above-mentioned information but, for example, other arbitrary information related to the partner terminal can be displayed. On a lower portion of the screen 1901, a button 1901a used for instructing the stop of the current calling (or automatically activated recalling may be included) is displayed. As to an operation method of the button 1901a or another button to be described later, the same constitution as that described in the first embodiment can be used.

Subsequent to the screen 1901, the display screen is changed to a screen 1902 in accordance with the elapse of a predetermined time (or a predetermined operation in the operation unit 108), and a prepare screen for starting the recording of the video message is displayed for several seconds (the screen 1902 in Fig. 15 indicates a state that 3 seconds up to the start of the recording of video), then after giving a prepare period of the recording to the user, the display screen is further changed to a screen 1903, where the recording of the video message is started. On a lower portion of the screen 1902, a button 1902a, which is similar to the button 1901a, for stopping an entire calling process and a button 1902b for stopping the recording of video are arranged.

In the screen 1903, a timing of recording the video message is informed to the user by displaying a character row of "video message is now recording" or generating the appropriate information sound or the like, thereafter an animation video of a face or the upper half of body of the user is shot by using the CCD 115 and also the voice is input by using the telephone receiver of the call unit 114. On a lower portion of the screen 1903, a button 1903a for stopping a calling process, a button 1903b for stopping the video recording and a button 1903c for instructing a timing of terminating the recording are arranged.

When the recording of the video message is ended (time measurement for a predetermined recording time is ended or instructed by an operation of the button 1903c), the display screen is changed to a screen 1904 where it is displayed that the recorded video (absence) message is transmitted to the partner terminal as an E-mail by the above-mentioned manner. On a lower portion of the screen 1904, a button 1904a for stopping the transmission of the corresponded E-mail is arranged.

As mentioned above, according to the present embodiment, in a case where the calling partner does not respond, the video (absence) message is recorded by using the user interface as shown in Fig. 15, and

the message can be transmitted by the E-mail.
Accordingly, the communication with the animation
video can be executed with the operation feeling
equivalent to or finer than that of the automatic
5 answering telephone based on the conventional analog
line.

Also, in the present embodiment, in a system of
the IP telephone terminal capable of executing the
communication with the animation video by equipping
10 the CCD or the like, when the partner terminal does
not respond, it become possible to execute the
message transmission for realizing the suitable
operability without losing the operation feeling of
the conventional automatic answering telephone based
15 on the analog line. Further, even in the terminal
set in a state of the low QoS (Quality of Service) of
the IP telephone system, since such the constitution
wherein the video message is once encoded and is
transmitted by a mail format is adopted, the voice
20 and animation messages can be transmitted to the
partner terminal with a sate without lacking data.
Therefore, even in a case where a mobile
communication system is used for the connection with
a network, the extremely favorable constitution can
25 be provided as a telephony application which can
transmit a message recorded in the absence to the
partner terminal without deteriorating quality of the

voice and the video. Generally, since the data size of the animation is larger than that of the voice only, especially in case of the animation, the present constitution is more effective as compared
5 with a case of the voice only.

As indicated in each of the embodiments, in a case where the partner terminal does not respond, according to the constitution of transmitting the voice message or the video message as the business
10 message by the E-mail, the high quality business message can be transmitted to the partner terminal, and the excellent operability equivalent to or finer than that of the conventional automatic answering telephone can be obtained at the terminal device of
15 the calling side. In the above-mentioned embodiments, although such the constitution of transmitting voice or animation data as the business message by the E-mail has been indicated, the business message to be transmitted to the absent partner terminal which does
20 not respond may be an arbitrary multimedia message. For example, instead of the animation data including the voice data as in the second embodiment, only the animation data, a still image or the combination of the still image and the user voice may be transmitted
25 by the E-mail, or arbitrary musical composition data (MIDI data or digitized music data) may be included in the voice data.

(Another Embodiment)

As above, although the embodiments of the present invention have been described in detail, the present invention is applicable to a system composed of plural equipments or to a device including single equipment. The present invention can be constituted as a product such as an MFP (Multi Function Printer) including a telephone device, an image communication function, an image input/output function or the like, or a mobile communication terminal (mobile phone or the like).

The present invention is accomplished also in a case where the program codes for realizing the functions of the above-mentioned embodiments are directly or remotely supplied to a system or a device and then the system or the device reads the supplied program code and executes the program codes. Therefore, the program codes themselves which are installed into a computer so as to realize the functions processes of the present invention are also included in the technical field of the present invention.

In this case, any program such as an object code, a program executed by the interpreter, script data to be supplied to an OS (Operating System) or the like is available if having the function of the program irrespective of a form of the program.

As a recording medium for supplying the program codes, it can be, for example, a floppy (registered trademark) disk, a hard disk, an optical disk, a magneto-optical disk, an MO, a CD-ROM, a CR-R, a CD-RW, a magnetic tape, a non-volatile memory card, a ROM, a DVD (DVD-ROM, DVD-R) or the like.

As another method of supplying the programs, the programs can be also supplied by downloading a computer program itself of the present invention or a compressed file including an automatic installation function to the recording medium such as a hard disk or the like from a homepage by connecting with the homepage on the Internet by using the browser of a client computer. Further, it is realized to supply the programs by dividing the program codes constituting the programs of the present invention into plural files and downloading the respective files from each different homepage. That is, a WWW server for downloading the program files used for realizing the functions processes of the present invention by a computer to plural users is also included in Claims of the present invention.

Further, it can be also realized to supply the programs by such a method, wherein the programs of the present invention are stored into a storage medium such as a CD-ROM or the like after encoding the programs and then the storage medium is

distributed to a user, and key information for solving the encoded program is downloaded from a homepage through the Internet for the user who clears a predetermined condition, thereafter the encoded
5 program is executed by using the key information to be installed in a computer.

Further, the computer executes the readout program, thereby realizing the functions of the above-mentioned embodiments, and the OS functioning
10 on the computer executes all the actual process or a part thereof on the basis of an instruction of the program, thereby also realizing the functions of the above-mentioned embodiments by such the process.

Still further, the program which was read from
15 the recording medium is once written in a memory provided in a function expansion board inserted in the computer or a function expansion unit connected to the computer, then a CPU or the like provided in the function expansion board or the function
20 expansion unit executes all the actual process or a part thereof on the basis of the instructions of such the program, thereby realizing the functions of the above-mentioned embodiments by such the process.

According to the above-mentioned constitution,
25 in a telephone system of executing the transmission/reception of voice data or video data, an excellent effect capable of transmitting a

business mail produced by the high quality voice
and/or video data without losing the operation
feeling of the conventional automatic answering
telephone and requiring the use of an expensive
5 terminal can be obtained in a case where a called
side does not respond due to such the situation as
absence or the like.

The present application claims priority from
Japanese Patent Application No. 2004-166624 which is
10 incorporated herein by reference.

As many apparently widely different embodiments
of the present invention can be made without
departing from the spirit and scope thereof, it is to
be understood that the invention is not limited to
15 the specific embodiments thereof except as defined in
the appended claims.

This application claims priority from Japanese
20 Patent Application No. 2004-166624 filed June 4, 2004,
which is hereby incorporated by reference herein.

CLAIMS

1. A terminal device which executes at least voice communication to a partner terminal, comprising:

5 a telephone calling unit adapted to execute a telephone calling sequence for calling the partner terminal based on a telephone protocol;

 an accumulation unit adapted to, in a case where it is discriminated based on the telephone
10 protocol that the called partner terminal does not respond, accumulate in said terminal device a business message of a user;

 an acquisition unit adapted to acquire a mail address of the partner terminal through the telephone
15 protocol; and

 a mail transmission unit adapted to transmit data indicating the business message to the mail address acquired by said acquisition unit, by using an electronic mail protocol.

20 2. A terminal device according to Claim 1, wherein the data indicating the business message includes voice data of the user.

 3. A terminal device according to Claim 1, further comprising a control unit adapted to stop the
25 telephone calling sequence and the business message accumulation process being executed, in response to a predetermined operation by the user.

4. A terminal device which executes at least voice communication to a partner terminal, comprising:

a telephone calling unit adapted to execute a
5 telephone calling sequence for calling the partner terminal based on a telephone protocol;

an accumulation unit adapted to, in a case where it is discriminated based on the telephone protocol that the called partner terminal does not
10 respond, accumulate in said terminal device a business message of a user, the business message including a video; and

a mail transmission unit adapted to transmit data indicating the business message to a mail
15 address of the partner terminal, by using an electronic mail protocol.

5. A terminal device according to Claim 4, further comprising an acquisition unit adapted to acquire the mail address of the partner terminal
20 through the telephone protocol.

6. A terminal device according to Claim 4, further comprising:

a storage unit adapted to store in said terminal device a mail address in relationship to a
25 telephone number; and

an acquisition unit adapted to acquire the mail address of the partner terminal from said storage

unit.

7. A terminal device according to Claim 4, further comprising a control unit adapted to stop the telephone calling sequence and the business message accumulation process being executed, in response to a
5 predetermined operation by the user..

8. A terminal device which executes at least voice communication to a partner terminal, comprising:

10 a telephone calling unit adapted to execute a telephone calling sequence for calling the partner terminal based on a telephone protocol;

an accumulation unit adapted to, in a case where it is discriminated based on the telephone
15 protocol that the called partner terminal does not respond, execute voice recognition for a message of a user, transform the voice-recognized message into character information to acquire a business message, and accumulate in said terminal device the acquired
20 business message; and

a mail transmission unit adapted to transmit data indicating the business message to a mail address of the partner terminal, by using an electronic mail protocol.

25 9. A terminal device according to Claim 8, further comprising an acquisition unit adapted to acquire the mail address of the partner terminal

through the telephone protocol.

10. A terminal device according to Claim 8,
further comprising:

a storage unit adapted to store in said
5 terminal device the mail address in relationship to a
telephone number; and

an acquisition unit adapted to acquire the mail
address of the partner terminal from said storage
unit.

10 11. A terminal device according to Claim 8,
further comprising a control unit adapted to stop the
telephone calling sequence and the message
accumulation process being executed, in response to a
predetermined operation by the user.

15 12. A control method for a terminal device
which executes at least voice communication to a
partner terminal, said method comprising:

a telephone calling step of executing a
telephone calling sequence for calling the partner
20 terminal based on a telephone protocol;

an accumulation step of, in a case where it is
discriminated based on the telephone protocol that
the called partner terminal does not respond,
accumulating in the terminal device a business
25 message of a user;

an acquisition step of acquiring a mail address
of the partner terminal through the telephone

protocol; and

5 a mail transmission step of transmitting data indicating the business message to the mail address acquired in said acquisition step, by using an electronic mail protocol.

13. A control method according to Claim 12, wherein the indicating the business message includes voice data of the user.

10 14. A control method according to Claim 12, further comprising a control step of stopping the telephone calling sequence and the business message accumulation process being executed, in response to a predetermined operation by the user.

15 15. A control method for a terminal device which executes at least voice communication to a partner terminal, said method comprising:

a telephone calling step of executing a telephone calling sequence for calling the partner terminal based on a telephone protocol;

20 an accumulation step of, in a case where it is discriminated based on the telephone protocol that the called partner terminal does not respond, accumulating in the terminal device a business message of a user, the business message including a video; and

a mail transmission step of transmitting data indicating the business message to a mail address of

the partner terminal, by using an electronic mail protocol.

16. A control method according to Claim 15, further comprising an acquisition step of acquiring
5 the mail address of the partner terminal through the telephone protocol.

17. A control method according to Claim 15, further comprising:

a storage step of storing in a memory of the
10 terminal device a mail address in relationship to a telephone number; and

an acquisition step of acquiring the mail
address of the partner terminal from the memory in
which the mail address was stored in said storage
15 step.

18. A control method according to Claim 15, further comprising a control step of stopping the
telephone calling sequence and the business message
accumulation process being executed, in response to a
20 predetermined operation by the user.

19. A control method for a terminal device which executes at least voice communication to a partner terminal, said method comprising:

a telephone calling step of executing a
25 telephone calling sequence for calling the partner terminal based on a telephone protocol;

an accumulation step of, in a case where it is

discriminated based on the telephone protocol that the called partner terminal does not respond, executing voice recognition for a message of a user, transforming the voice-recognized message into
5 character information to acquire a business message, and accumulating in the terminal device the acquired business message; and

a mail transmission step of transmitting data indicating the business message to a mail address of
10 the partner terminal, by using an electronic mail protocol.

20. A control method according to Claim 19, further comprising an acquisition step of acquiring the mail address of the partner terminal through the
15 telephone protocol.

21. A control method according to Claim 19, further comprising:

a storage step of storing in the terminal device the mail address in relationship to a
20 telephone number; and

an acquisition step of acquiring the mail address of the partner terminal from the memory in which the mail address was stored in said storage step.

25 22. A control method according to Claim 19, further comprising a control step of stopping the telephone calling sequence and the business message

accumulation process being executed, in response to a predetermined operation by the user.

23. A control program for a terminal device which executes at least voice communication to a partner terminal, said program comprising:

a telephone calling module of executing a telephone calling sequence for calling the partner terminal based on a telephone protocol;

an accumulation module of, in a case where it is discriminated based on the telephone protocol that the called partner terminal does not respond, accumulating in the terminal device a business message of a user;

an acquisition module of acquiring a mail address of the partner terminal through the telephone protocol; and

a mail transmission module of transmitting data indicating the business message to the mail address acquired by said acquisition module, by using an electronic mail protocol.

24. A control program for a terminal device which executes at least voice communication to a partner terminal, said program comprising:

a telephone calling module of executing a telephone calling sequence for calling the partner terminal based on a telephone protocol;

an accumulation module of, in a case where it

is discriminated based on the telephone protocol that the called partner terminal does not respond, accumulating in the terminal device a business message of a user, the business message including a
5 video; and

a mail transmission module of transmitting data indicating the business message to a mail address of the partner terminal, by using an electronic mail protocol.

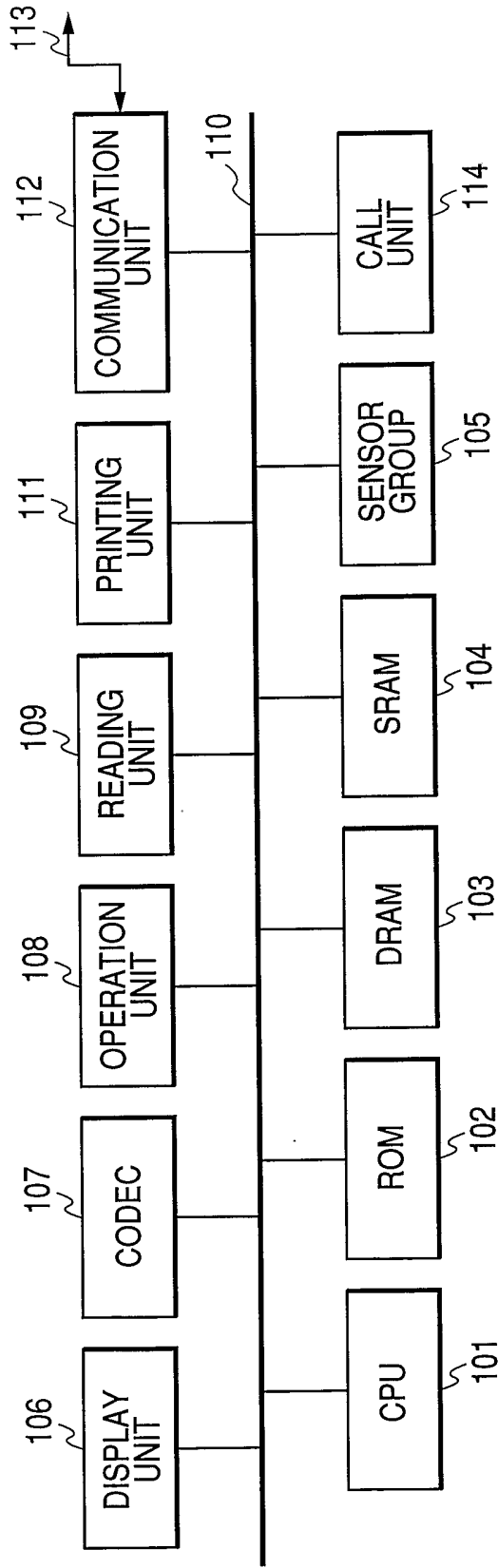
10 25. A control program for a terminal device which executes at least voice communication to a partner terminal, said program comprising:

a telephone calling module of executing a telephone calling sequence for calling the partner
15 terminal based on a telephone protocol;

an accumulation module of, in a case where it is discriminated based on the telephone protocol that the called partner terminal does not respond, executing voice recognition for a message of a user,
20 transforming the voice-recognized message into character information to acquire a business message, and accumulating in the terminal device the acquired business message; and

a mail transmission module of transmitting data
25 indicating the business message to a mail address of the partner terminal, by using an electronic mail protocol.

FIG. 1



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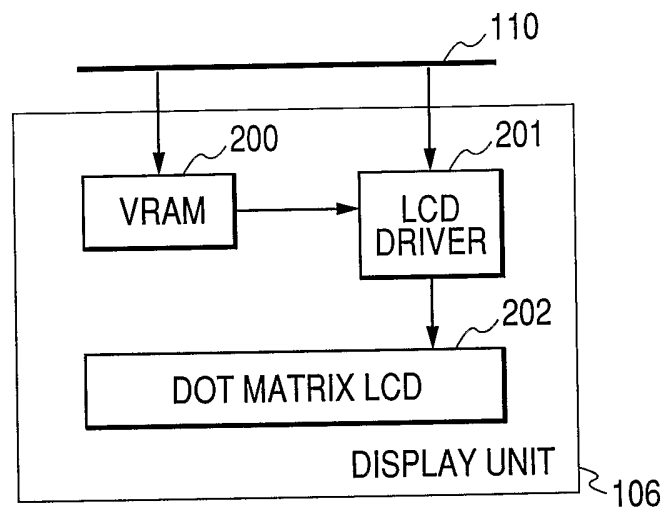
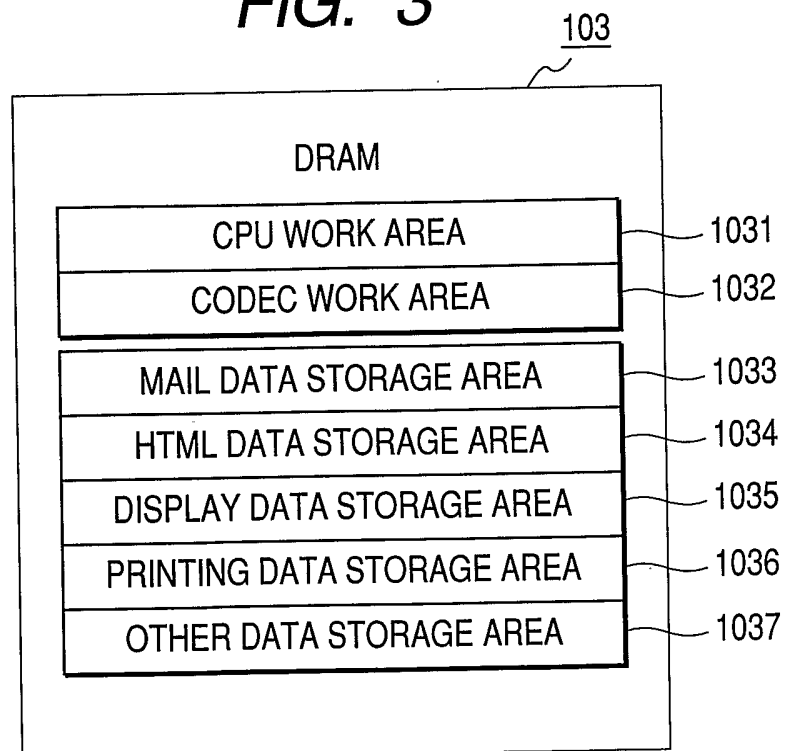
FIG. 2*FIG. 3*

FIG. 4

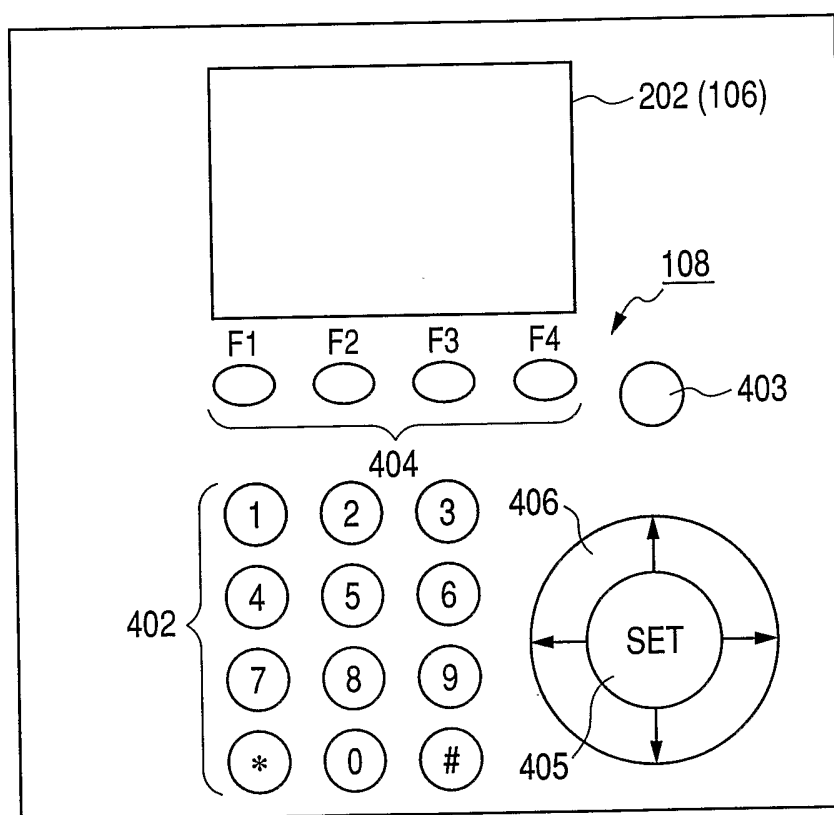
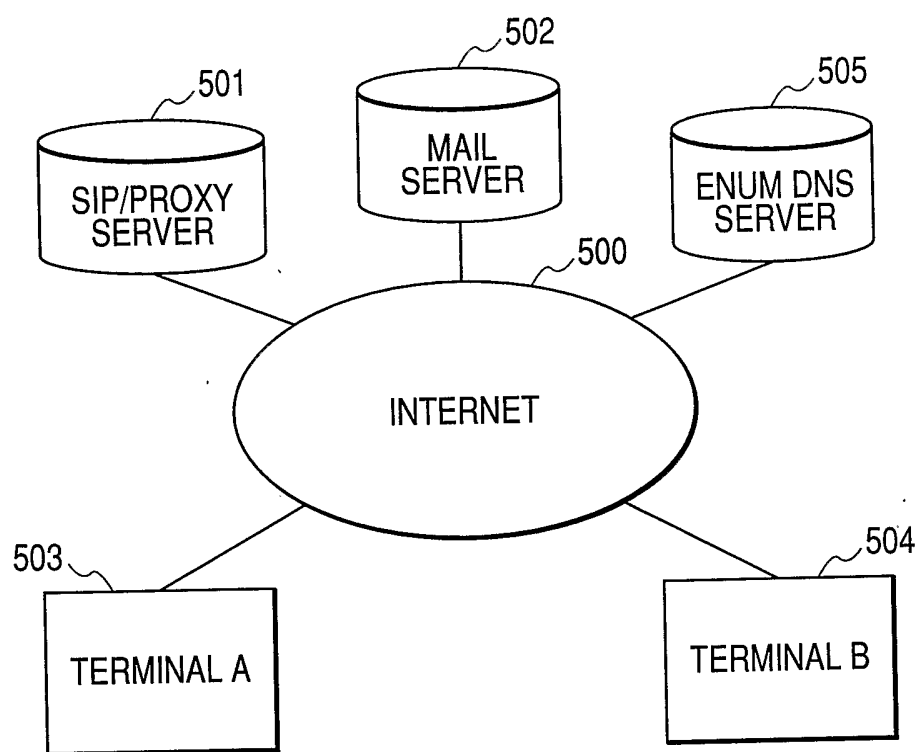
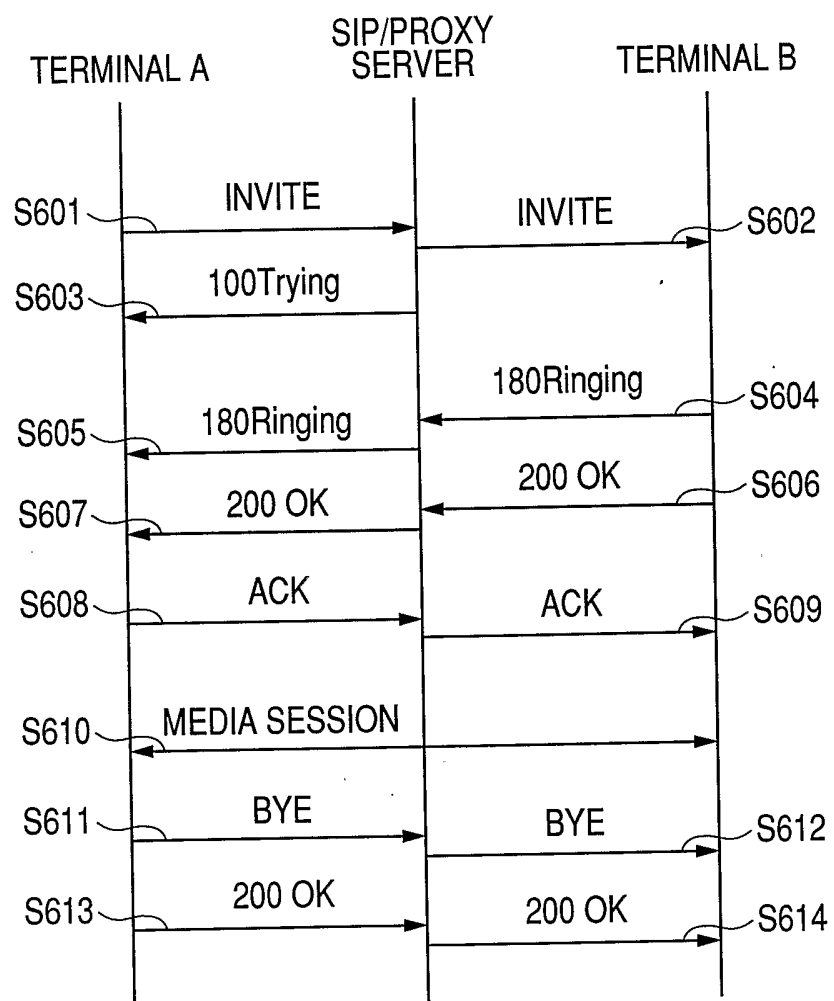


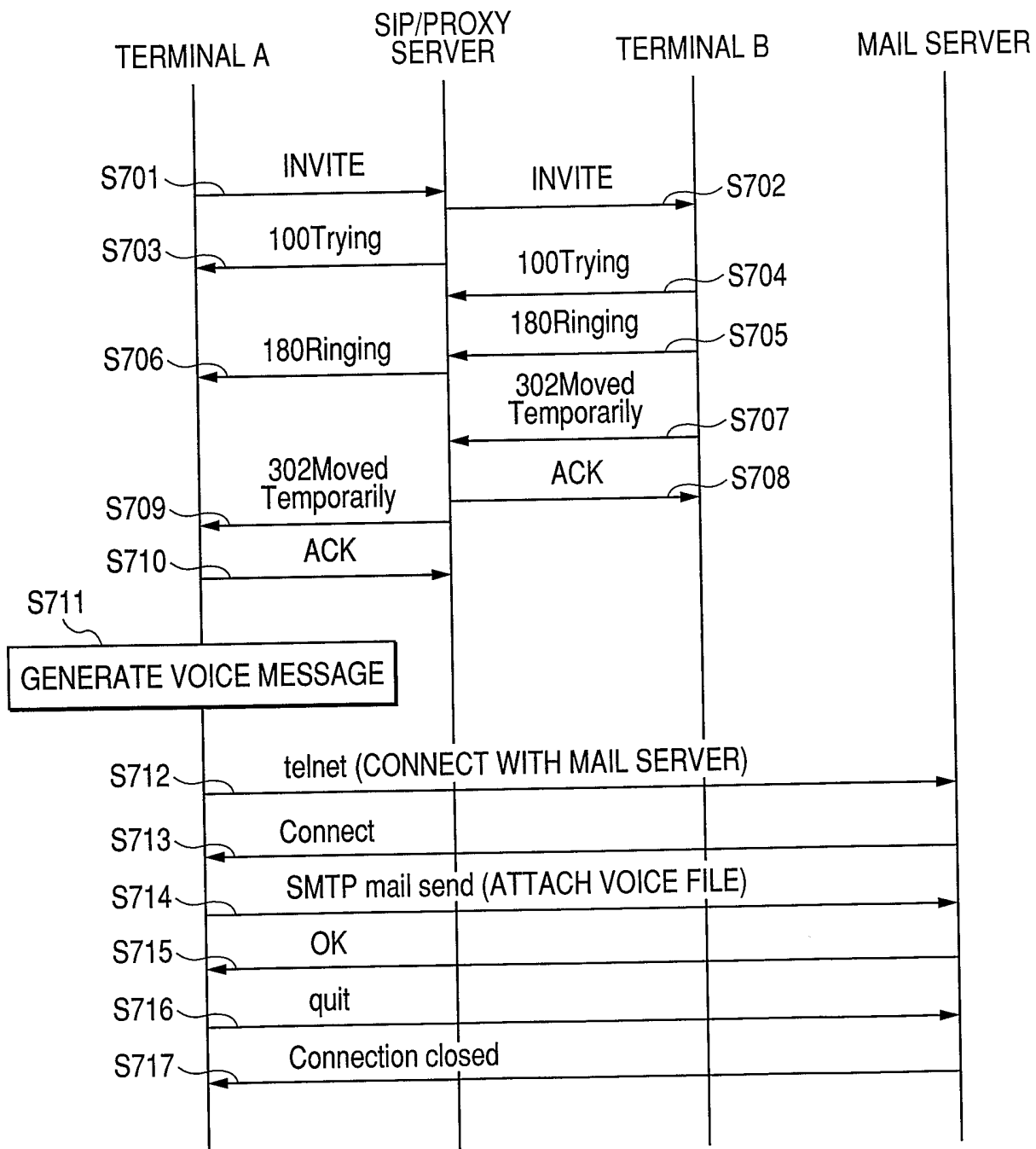
FIG. 5

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FIG. 6

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FIG. 7



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FIG. 8

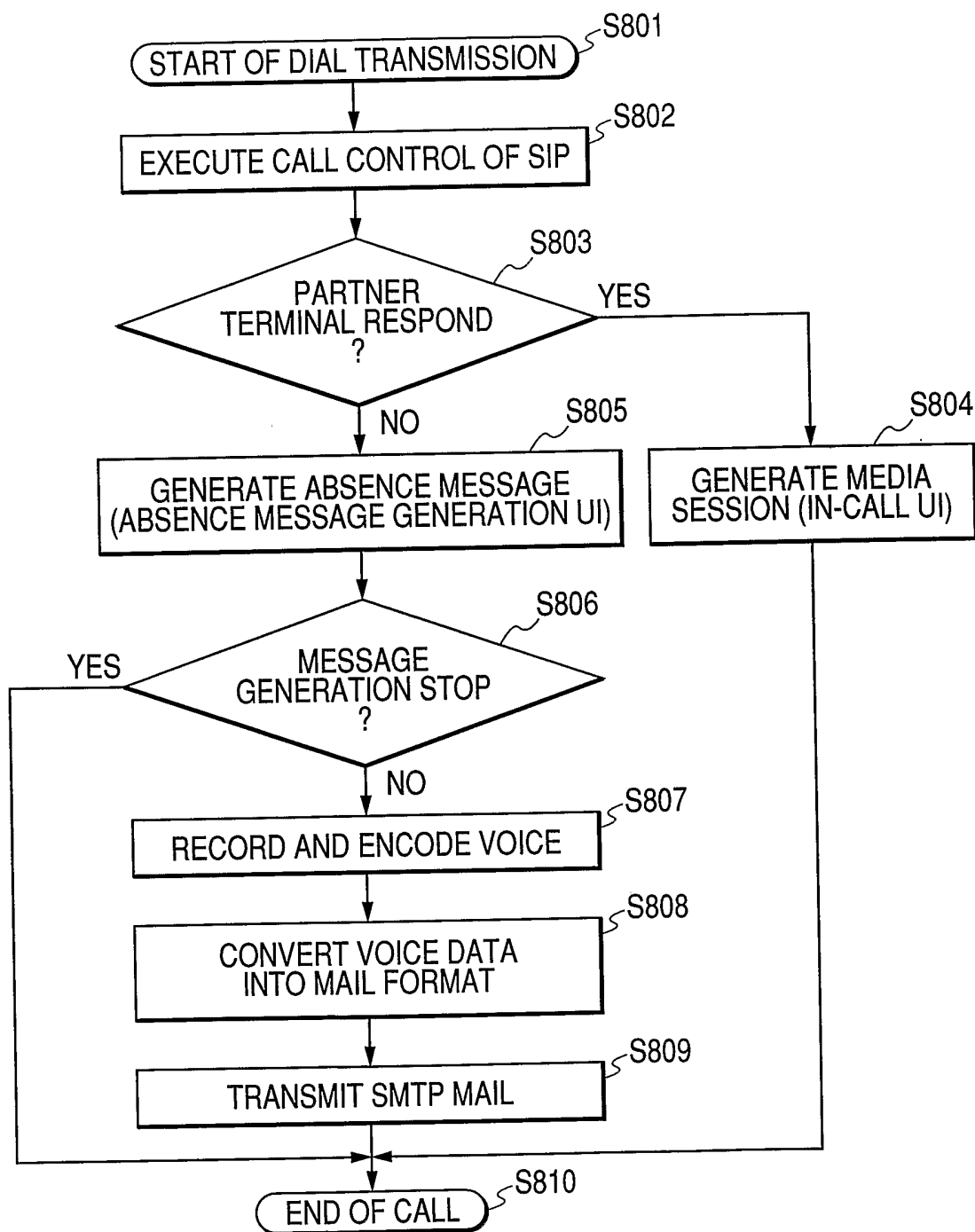


FIG. 9

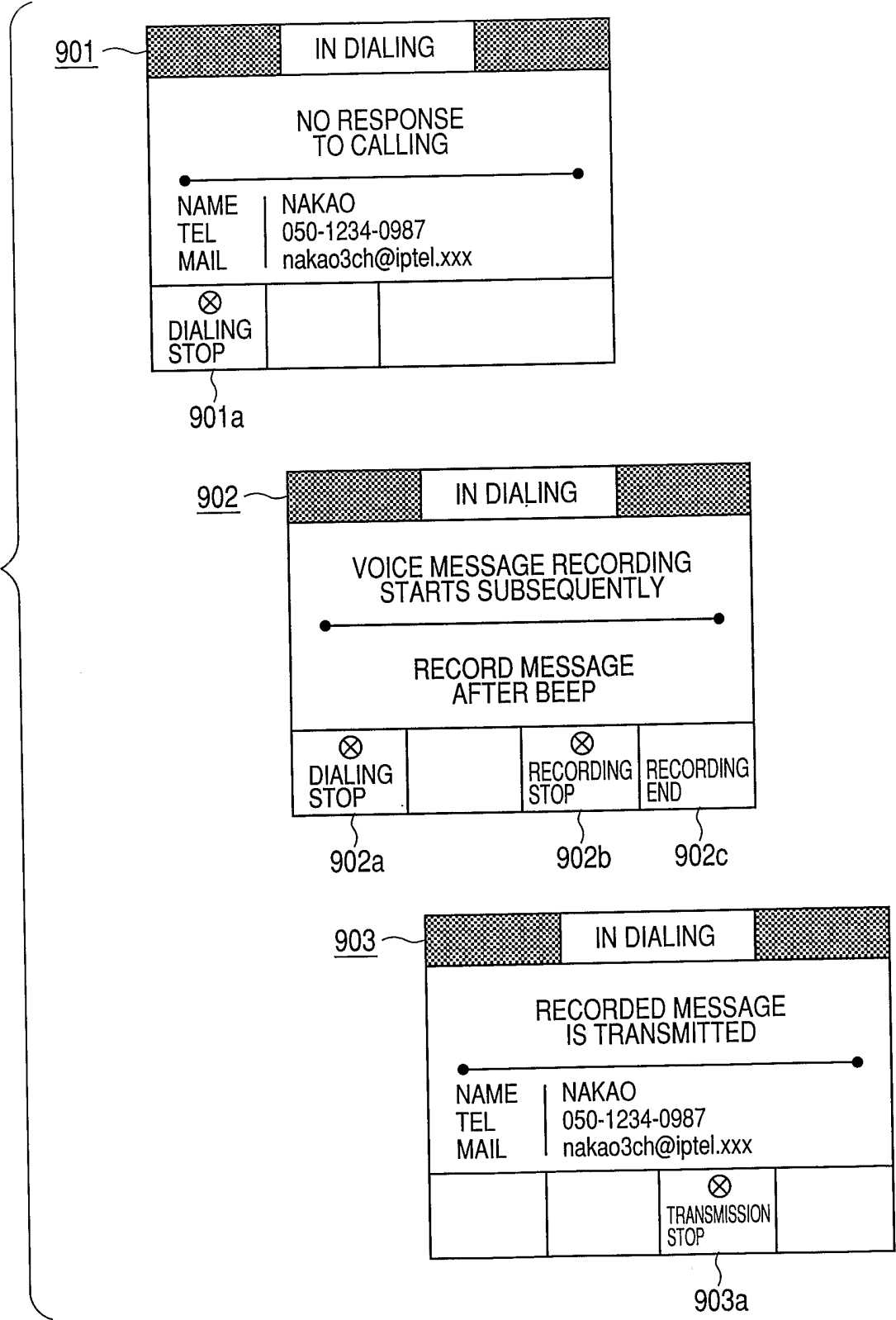
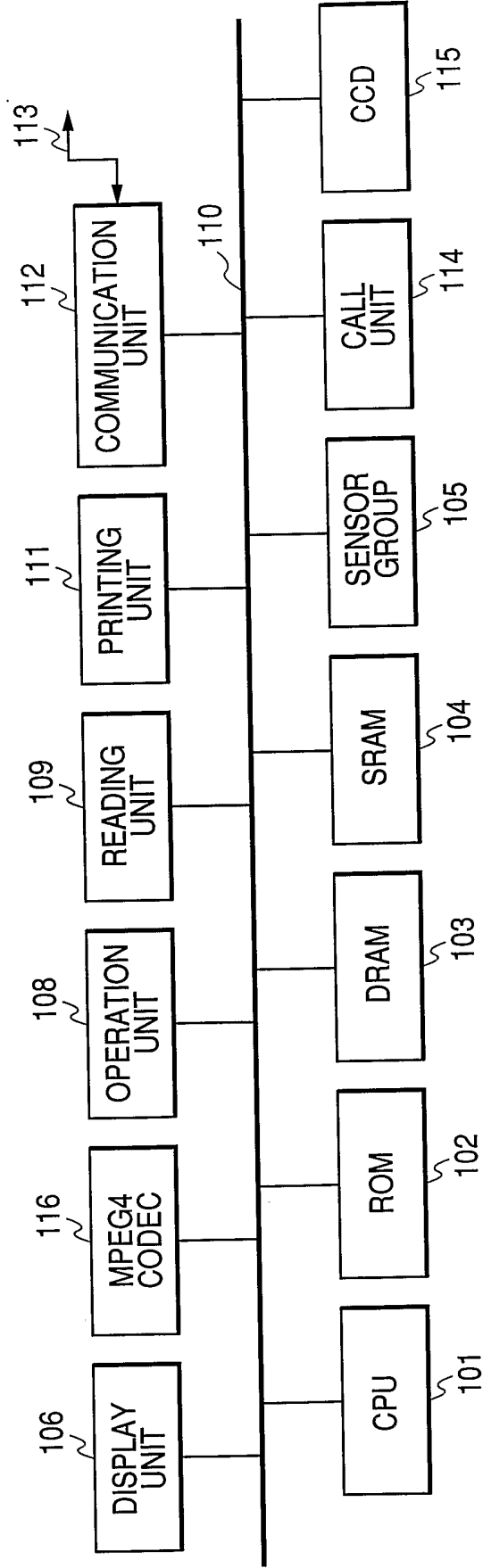
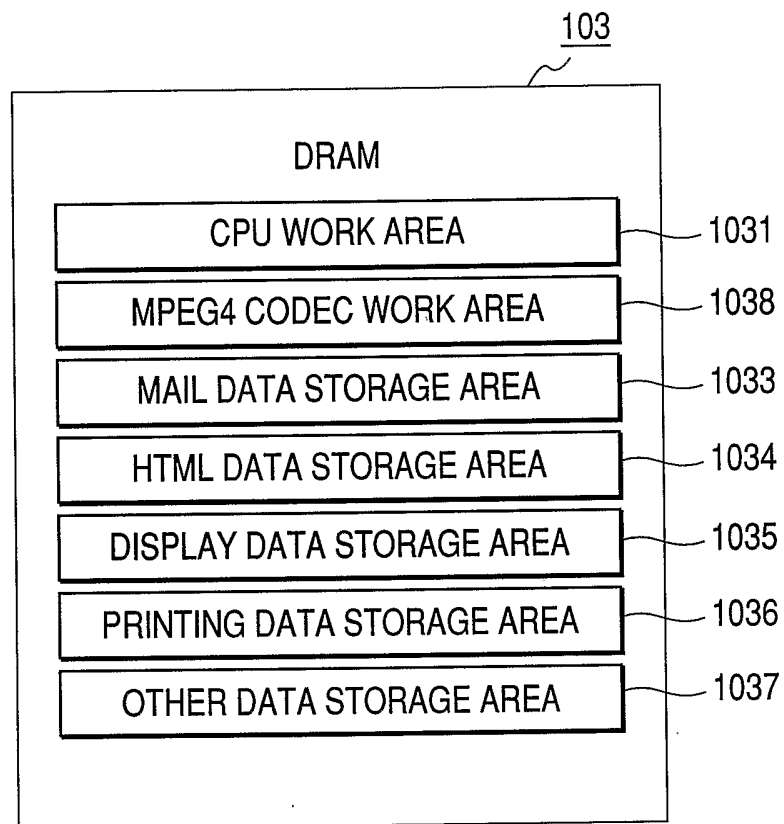


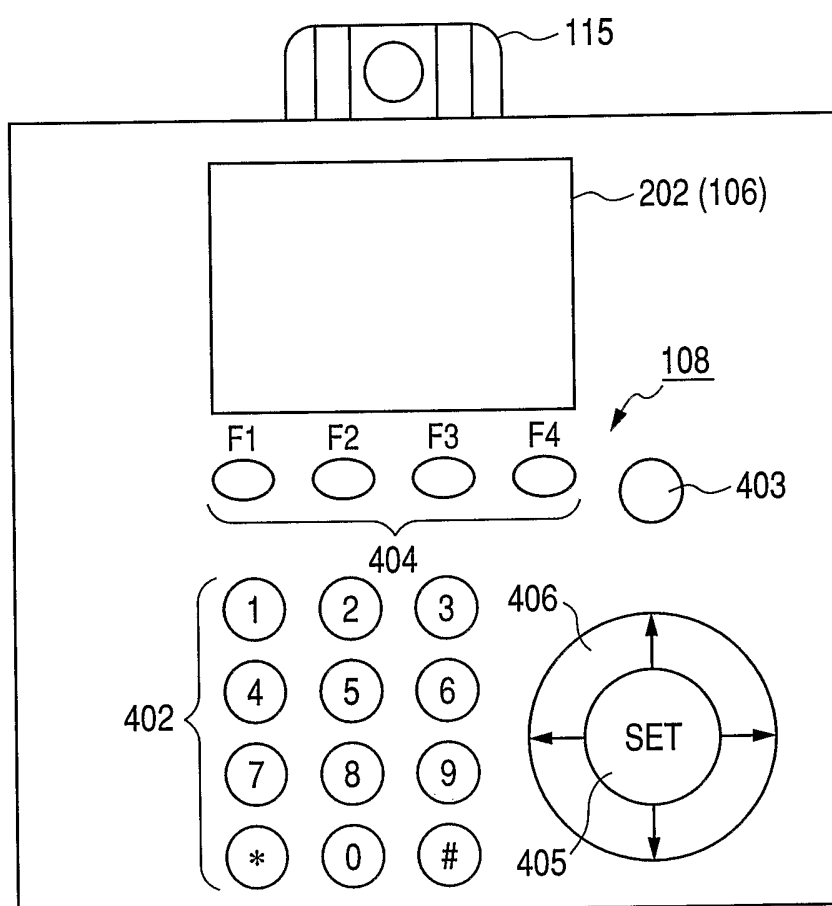
FIG. 10



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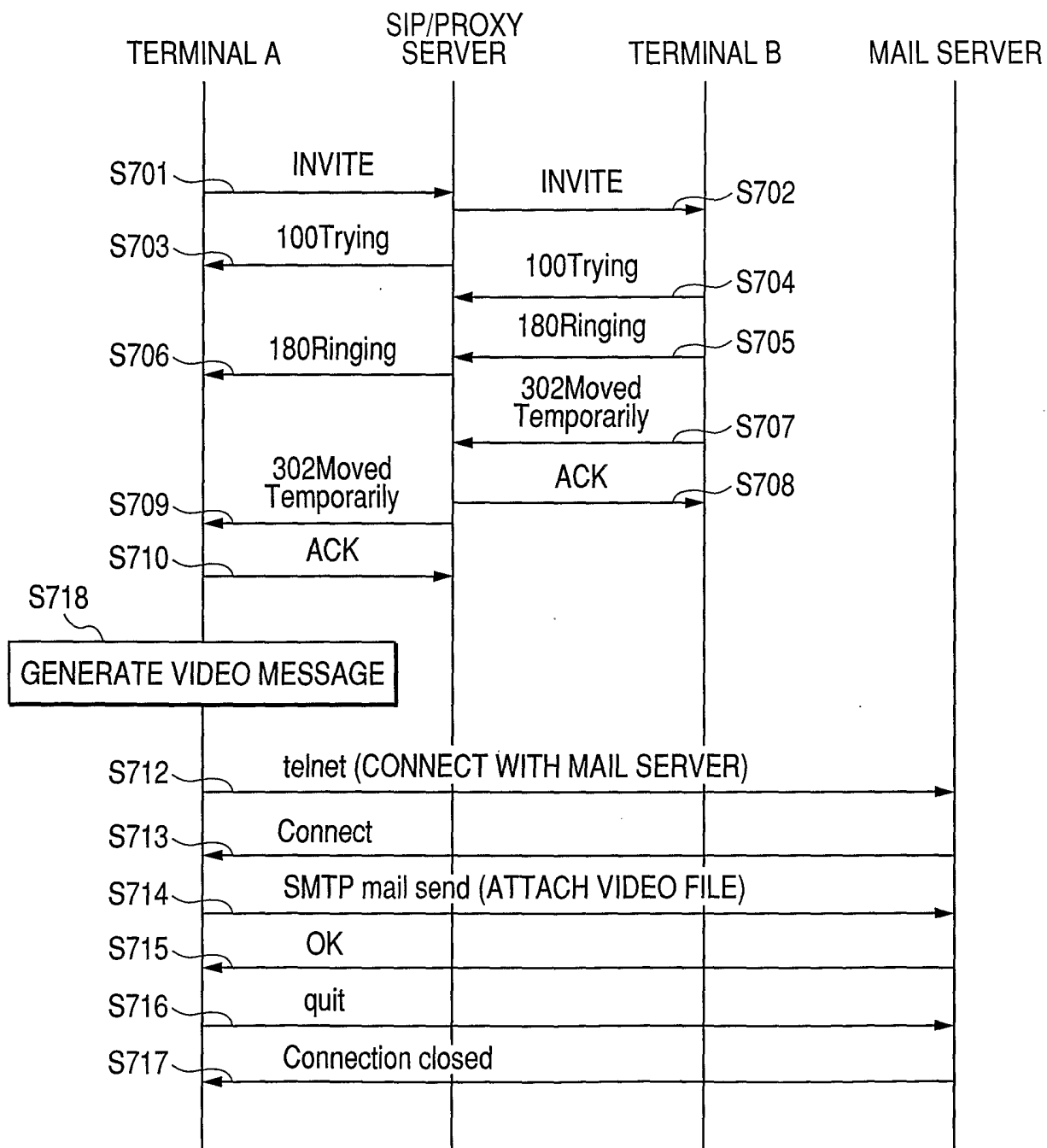
FIG. 11

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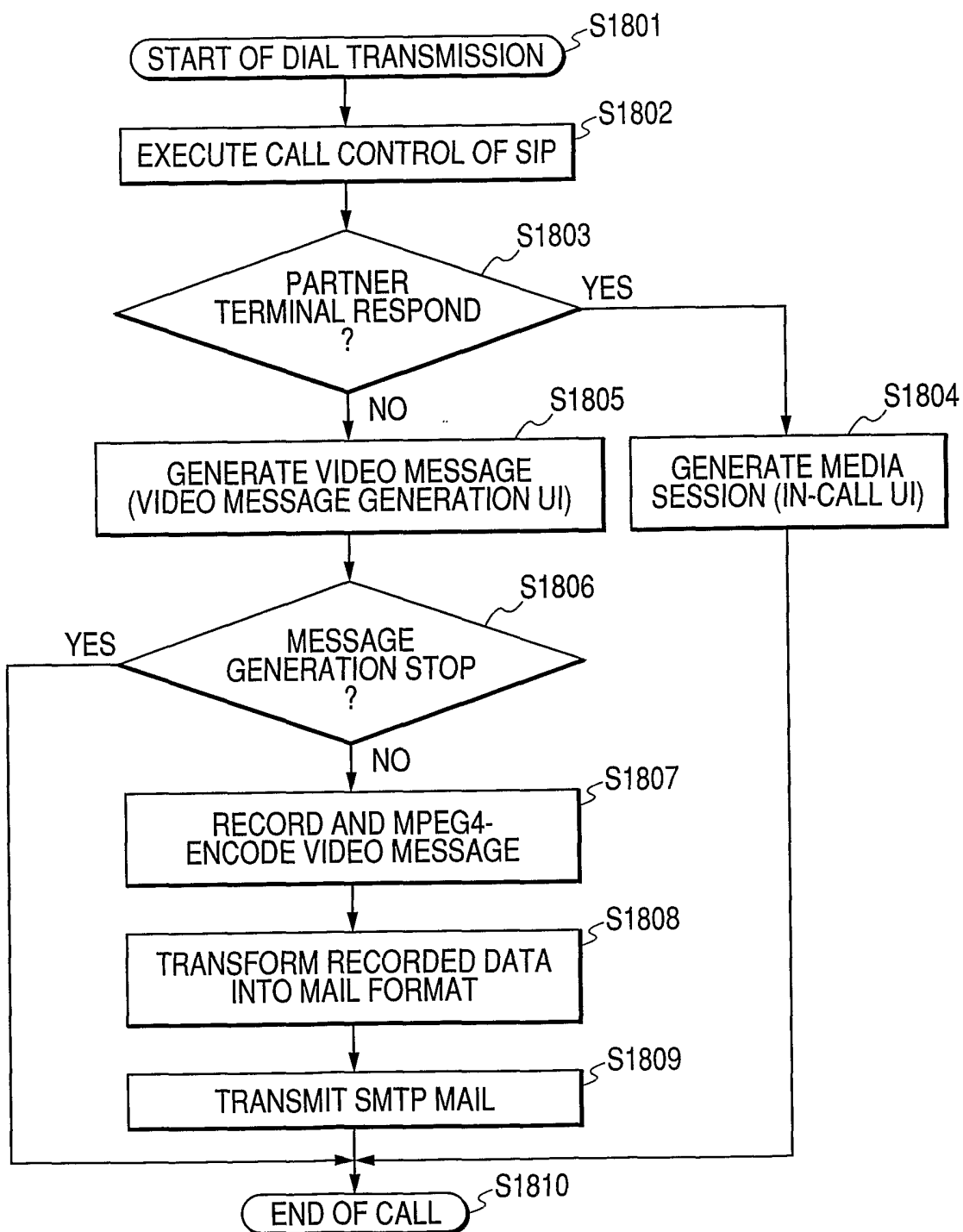
FIG. 12

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FIG. 13

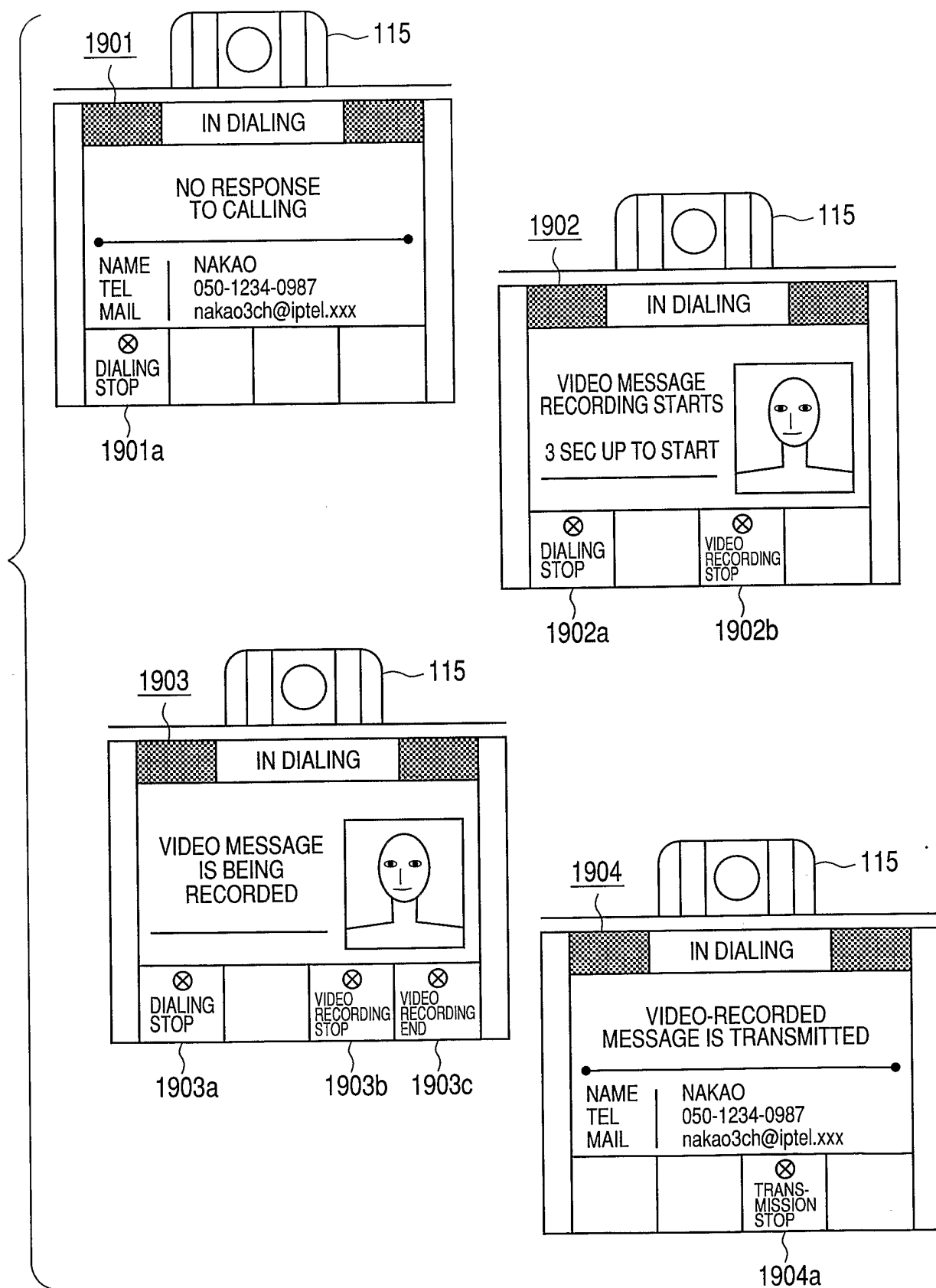


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FIG. 14

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FIG. 15



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2005/010310

A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl.⁷ H04M1/64, G06F13/00, H04M3/00, H04N7/14

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl.⁷ H04M1/64, G06F13/00, H04M3/00, H04N7/14

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Published examined utility model applications of Japan 1922-1996
 Published unexamined utility model applications of Japan 1971-2005
 Registered utility model specifications of Japan 1996-2005
 Published registered utility model applications of Japan 1994-2005

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2001-119471 A (NTT East Corp.) 2001.04.27, Fig. 1 (c), [0024], [0039] (Patent family None)	1-2, 12-13, 23
Y		3-11, 14-22, 24-25
Y	JP 2001-309040 A (NTT Communications) 2001.11.02, Steps (5)-(6) in [0019], Step (8) in [0021] (Patent family None)	3, 7, 11, 14, 18, 22
Y	JP 2000-115738 A (NTT Data Corp.) 2000.04.21, [0058], [0051] (Patent family None)	4-11, 15-22, 24-25
Y	JP 9-135298 A (Fujitsu Corp.) 1997.05.20, [0018], [0027] (Patent family None)	6, 10, 17, 21
A	JP 5-160895 A (A. W. New Hard) 1993.06.25, Abstract, [0016] (Patent family None)	1-25

☒ Further documents are listed in the continuation of Box C.☐ See patent family annex.

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Date of the actual completion of the international search

17.06.2005

Date of mailing of the international search report

05.7.2005

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International application No.

PCT/JP2005/010310

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2003/0016656 A1 (Net2Phone Inc.) 2003.01.23, [0006], [0019]-[0020], [0023], [0027] & WO 2003/09572 A1	1-25