

TRANSLATION CERTIFICATION

Date: June 27, 2025

To whom it may concern:

This is to certify that the attached translation is an accurate representation of the documents received by this office. The translation was completed from:

- Japanese

To:

- English (USA)

The documents are designated as:

- JP2003-208375A

Emily Paras, Project Manager in this company, attests to the following, under penalty of perjury:

"To the best of my knowledge, the aforementioned documents are a true, full and accurate translation of the specified documents."



Signature of Emily Paras

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IPR2025-01308; Samsung
Ex. 1006 - Page 1

(19) Japan Patent Office (JP)

(12) Japanese Unexamined Patent
Application Publication (A)

(11) Japanese Unexamined Patent
Application Publication Number

2003-208375 (P2003-208375A)

(43) Publication date: July 25, 2003

(51) Int. CL. ⁷ Classification Symbol	FI	Theme Code (Reference)
G06F 13/00 520	G06F 13/00	520F 5K067
550		550L
17/60 302	17/60	302E
332		332
506		506

Request for examination: Not yet requested Number of claims: 130 OL (Total of 49 pages) Continued on the last page

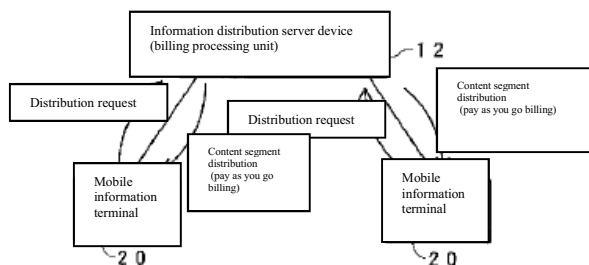
(21) Application number	2002-3042 (P2002-3042)	(71) Applicant	000002185 Sony Corporation 6-7-35 Kita-Shinagawa, Shinagawa-ku, Tokyo
(22) Date of application	January 10, 2002	(72) Inventor	Toru Sasaki c/o Sony Corporation, 6-7-35 Kita-Shinagawa, Shinagawa-ku, Tokyo
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		F Term (reference)	5K067 AA34 BB04 BB21 DD11 DD17 DD51 FF02 FF23 HH22 HH23 HH24 KK13 KK15

(54) [Title of the Invention] Information distribution system, personal digital assistant, information distribution server device and information distribution method

(57) [Abstract]

[Problem] To provide a system that divides content into portions according to the free memory capacity of the content area of a personal digital assistant, distributes the content from a distribution server to the personal digital assistant, and realizes appropriate billing processing according to various aspects of the distribution.

[Solution Means] A personal digital assistant transmits an information distribution request to an information distribution server device, which comprises distribution request source identification information, distribution information identification information for identifying the information requested to be distributed, and the current free space in the memory area of the data memory for storing the distribution data. The information distribution server device divides the distribution information specified by the distribution information identification information from the personal digital assistant so as to fit the free space, generates a transmission information category for the personal digital assistant, and transmits it to the personal digital assistant. Charges are based on a pay-per-use basis according to the information capacity of the transmission information category.



[Claims]

[Claim 1] An information distribution system comprising:
an information distribution server device,
a personal digital assistant, and
a terminal distribution server device connected to the information distribution server device through a first communication path and connected to the personal digital assistant through a second communication path, which holds distribution information acquired from the information distribution server device through the first communication path and distributes the information to the personal digital assistant through the second communication path;
wherein the information distribution server device is equipped with:
a means for transmitting distribution information to the terminal distribution server device, and
a billing processing means for performing a billing step for the distribution information to the terminal distribution server device by transmitting the distribution information to the terminal distribution server device;
the personal digital assistant is equipped with:
a data storage means equipped with a storage area for storing distribution data from the terminal distribution server device; and
an information distribution request transmission means for transmitting at least distribution request source identification information, distribution information identification information for identifying information requested to be distributed, and the free space of the storage area of the data storage means at that time to the terminal distribution server device to request information distribution; and
the terminal distribution server device is equipped with:
a distribution information storage unit that stores distribution information received from the information distribution server device through the first communication path;
a distribution information generation means that extracts distribution information specified by the distribution information identification information coming from the personal digital assistant from the distribution information storage unit, divides the information so as to fit the free space of the personal digital assistant, and generates a transmission information segment for the personal digital assistant; and
a means for distributing the transmission information segment generated by the distribution information generation means to the personal digital assistant.
[Claim 2] The information distribution system according to Claim 1,
wherein the terminal distribution server device is equipped with a delimiter information storage means for storing delimiter information for identifying delimiter positions of the distributed transmission information segments in association with the distribution request source identification information, and
the distribution information generation means of the terminal distribution server device generates a transmission information segment for the current transmission data to the personal digital assistant based on the delimiter information stored in the delimiter information storage means and the free space of the personal digital assistant.
[Claim 3] The information distribution system according to Claim 1,

wherein the personal digital assistant also transmits, at the time of the distribution request, to the terminal distribution server device, delimiter information for identifying the previous delimiter position of the distribution information identified by the distribution information identification information, and
the distribution information generation means of the terminal distribution server device generates a transmission information segment of the distribution data requested for distribution to the personal digital assistant this time based on the delimiter information and the free space of the personal digital assistant.
[Claim 4] The information distribution system according to Claim 1, Claim 2 or Claim 3,
wherein the distribution request source identification information is terminal identification information of the personal digital assistant.
[Claim 5] The information distribution system according to Claim 1, Claim 2 or Claim 3,
wherein the distribution request source identification information is user identification information.
[Claim 6] The information distribution system according to Claim 1, Claim 2 or Claim 3,
wherein the terminal distribution server device is equipped with:
a means for transmitting information for confirming the delimiter of the transmission information segment generated by the distribution information generation means to the personal digital assistant; and
a control means for, when a request to change the delimiter is received from the personal digital assistant, causing the distribution information generation means to regenerate the transmission information segment so that the delimiter corresponds to the delimiter change request from the personal digital assistant; and
the personal digital assistant is equipped with:
a means for receiving information for confirming the delimiter of the transmission information segment from the terminal distribution server device and playing the information to allow the user to confirm the delimiter;
a change request receiving means for receiving a request to change the delimiter by the user; and
a means for transmitting the change request to the terminal distribution server device, when the change request receiving means receives the request to change the delimiter.
[Claim 7] The information distribution system according to Claim 1, Claim 2 or Claim 3,
wherein the information distribution request transmission means of the personal digital assistant transmits information about the display screen of the terminal to the terminal distribution server device when making the information distribution request, and
the distribution information generation means of the terminal distribution server device comprises a means for processing the transmission information classification based on the information about the display screen of the personal digital assistant so that it is compatible with the display screen of the personal digital assistant.
[Claim 8] The information distribution system according to Claim 1, Claim 2 or Claim 3,
wherein the terminal distribution server device is equipped with a means for performing authentication as to whether or

not to perform information distribution based on the terminal identification information or user identification information and/or password information of the personal digital assistant.

[Claim 9] The information distribution system according to Claim 1, Claim 2 or Claim 3, wherein the communication path between the terminal distribution server device and the personal digital assistant is formed by a wired or wireless local area network.

[Claim 10] The information distribution system according to Claim 1, Claim 2 or Claim 3, wherein the communication path between the terminal distribution server device and the personal digital assistant includes a wireless or wired telephone network.

[Claim 11] An information distribution system consisting of an information distribution server device, a personal digital assistant, and a terminal distribution server device connected to the information distribution server device through a first communication path and connected to the personal digital assistant through a second communication path, which holds distribution information acquired from the information distribution server device through the first communication path and executes distribution to the personal digital assistant through the second communication path; wherein the information distribution server device is equipped with a means for transmitting distribution information to the terminal distribution server device; the personal digital assistant is equipped with a data storage means having a storage area for storing distribution data from the terminal distribution server device, and an information distribution request transmission means for transmitting at least distribution request source identification information, distribution information identification information for identifying information to be requested to be distributed, and free space at the time of the storage area of the data storage means to the terminal distribution server device to request information distribution; and the terminal distribution server device is equipped with:

a means for receiving from the personal digital assistant at least distribution request source identification information, distribution information identification information for identifying the information requested to be distributed, and information on the free space of the personal digital assistant, and receiving an information distribution request from the personal digital assistant;

a distribution information generation means for dividing the distribution information specified by the distribution information identification information so as to fit the free space of the personal digital assistant, and generating a transmission information segment for the personal digital assistant;

a means for distributing the transmission information segment generated by the distribution information generation means to the personal digital assistant; and a billing information storage means for storing the information capacity of the transmission information segment distributed to the personal digital assistant for billing processing.

[Claim 12] The information distribution system according to Claim 11,

wherein the terminal distribution server device is equipped with a delimiter information storage means for storing delimiter information for identifying the delimiter position

of the distributed transmission information segment in association with the distribution request source identification information, and

the distribution information generation means of the terminal distribution server device generates a transmission information segment for the requested distribution data to the personal digital assistant based on the delimiter information stored in the delimiter information storage means and the free space of the personal digital assistant.

[Claim 13] The information distribution system according to Claim 11,

wherein the personal digital assistant also transmits, at the time of the distribution request, to the terminal distribution server device, delimiter information for identifying the previous delimiter position of the distribution information identified by the distribution information identification information, and

the distribution information generation means of the terminal distribution server device generates a transmission information segment of the distribution data requested to be transmitted to the personal digital assistant this time based on the delimiter

information and the free space of the personal digital assistant.

[Claim 14] The information distribution system according to Claim 11, Claim 12 or Claim 13,

wherein the information distribution from the information distribution server device to the terminal distribution server device is free of charge.

[Claim 15] The information distribution system according to Claim 11, Claim 12 or Claim 13,

wherein the billing server device is provided which accesses the terminal distribution server device at any timing or at a predetermined timing, obtains the information capacity of the transmission information category stored in the billing information storage means from the terminal distribution server device, and performs billing processing.

[Claim 16] The information distribution system according to Claim 11, Claim 12 or Claim 13,

wherein the distribution request source identification information is terminal identification information of the personal digital assistant, the billing information storage means stores the information capacity of the transmission information category for each distribution request source identified by the distribution request source identification information, and the billing server performs billing processing for each distribution request source.

[Claim 17] The information distribution system according to Claim 11, Claim 12 or Claim 13,

wherein the distribution request source identification information is user identification information, and the information capacity of the transmission information category is stored in the billing information storage means for each distribution request source identified by the distribution request source identification information, and the billing step in the billing server is performed for each distribution request source.

[Claim 18] The information distribution system according to Claim 11, Claim 12 or Claim 13,

wherein the communication path between the terminal distribution server device and the personal digital assistant is formed by a wired or wireless local area network; and

a billing server device is provided that accesses the terminal distribution server device at any timing or at a predetermined timing, obtains the volume of the stored information of the transmission information category from the terminal distribution server device, and performs billing processing for the unit of the local area network to which the terminal distribution server device is connected.

[Claim 19] The information distribution system according to Claim 11, Claim 12 or Claim 13,

wherein the information distribution request transmission means of the personal digital assistant transmits information about the display screen of the terminal to the terminal distribution server device when making the information distribution request, and

the distribution information generation means of the terminal distribution server device comprises a means for processing the transmission information category based on the information about the display screen of the personal digital assistant so as to conform to the display screen of the personal digital assistant.

[Claim 20] The information distribution system according to Claim 19,

wherein the billing information storage means of the terminal distribution server device also stores information about the display screen of the personal digital assistant in association with the distribution request source identification information, and

a billing server device is provided that accesses the terminal distribution server device at any timing or at a predetermined timing, acquires from the terminal distribution server device the information capacity of the transmission information category for each distribution request source identification information stored in the billing information storage means and information about the display screen of the personal digital assistant, and performs billing processing for the distribution request source identified by the distribution request source identification information based on the acquired information.

[Claim 21] The information distribution system according to Claim 11, Claim 12 or Claim 13,

wherein the terminal distribution server device is provided with a means for authenticating whether or not to distribute information based on the terminal identification information or user identification information and/or password information of the personal digital assistant.

[Claim 22] An information distribution system consisting of: an information distribution server device;

a personal digital assistant; and

a terminal distribution server device connected to the information distribution server device through a first communication path and connected to the personal digital assistant through a second communication path, for holding distribution information acquired from the information distribution server device through the first communication path and for distributing the information to the personal digital assistant through the second communication path;

wherein the information distribution server device is equipped with a means for transmitting distribution information to the terminal distribution server device;

the personal digital assistant is equipped with:

a data storage means having a storage area for storing distribution data from the terminal distribution server device,

an information distribution request transmission means for transmitting at least distribution request source identification information, distribution information identification information for identifying the information requested to be distributed, and the free space of the storage area of the data storage means at that time to the terminal distribution server device to request information distribution; and the terminal distribution server device comprises:

a distribution information generation means for dividing the distribution information specified by the distribution information identification information from the personal digital assistant so as to fit the free space of the personal digital assistant, and generating a transmission information segment for the personal digital assistant;

a means for distributing the transmission information segment generated by the distribution information generation means to the personal digital assistant; and

a notification means for notifying a billing server device of the information capacity of the transmission information segment distributed to the personal digital assistant through a specified communication path for billing processing.

[Claim 23] The information distribution system according to Claim 22,

wherein the notification means of the terminal distribution server device notifies the billing server device of the information capacity of the transmission information category each time the distribution information is distributed to the personal digital assistant.

[Claim 24] The information distribution system according to Claim 22,

wherein the terminal distribution server device is equipped with a means for storing the information capacity of the transmission information segment for each of the distribution information identification information for each of the distribution request source identification information for a predetermined period or for a predetermined number of distributions, and

the notification means notifies the billing server device of the stored information capacity after the predetermined period or after the predetermined number of distributions.

[Claim 25] The information distribution system according to Claim 22,

wherein the terminal distribution server device is equipped with a delimiter information storage means for storing delimiter information for identifying delimiter positions of the distributed transmission information segments in association with the distribution request source identification information, and

the distribution information generation means of the terminal distribution server device generates a transmission information segment for the current transmission data to the personal digital assistant based on the delimiter information stored in the delimiter information storage means and the free space of the personal digital assistant.

[Claim 26] The information distribution system according to Claim 22,

wherein the personal digital assistant also transmits, at the time of the distribution request, to the terminal distribution server device, delimiter information for identifying the previous delimiter position of the distribution information identified by the distribution information identification information, and

the distribution information generation means of the terminal distribution server device generates a transmission information segment of the distribution data requested for distribution to the personal digital assistant this time based on the delimiter information and the free space of the personal digital assistant.

[Claim 27] The information distribution system according to Claim 22, Claim 25 or Claim 26, wherein the distribution of the information from the information distribution server device to the terminal distribution server device is free of charge.

[Claim 28] The information distribution system according to Claim 22, Claim 25 or Claim 26, wherein the distribution request source identification information is terminal identification information of the personal digital assistant.

[Claim 29] The information distribution system according to Claim 22, Claim 25 or Claim 26, wherein the distribution request source identification information is user identification information.

[Claim 30] The information distribution system according to Claim 22, Claim 25 or Claim 26, wherein the terminal distribution server device comprises: a means for transmitting information for confirming the delimiter of the transmission information segment generated by the distribution information generation means to the personal digital assistant, and a control means for causing the distribution information generation means to regenerate the transmission information segment so that the delimiter corresponds to the delimiter change request from the personal digital assistant when a delimiter change request is received from the personal digital assistant; and

the personal digital assistant is equipped with:

a means for receiving information for confirming the delimiter of the transmission information segment from the terminal distribution server device, and playing the information to allow the user to confirm the delimiter, a change request receiving means for receiving a request from the user to change the delimiter, and a means for transmitting the change request to the terminal distribution server device when the change request receiving means receives the request to change the delimiter.

[Claim 31] The information distribution system according to Claim 22, Claim 25 or Claim 26, wherein the communication path between the terminal distribution server device and the personal digital assistant is formed by a wired or wireless local area network, and the billing server device processes billing based on an integrated value calculated by accumulating the capacity of the information of the transmission information category in units of the local area network to which the terminal distribution server device is connected.

[Claim 32] The information distribution system according to Claim 22, Claim 25 or Claim 26, wherein the information distribution request transmission means of the personal digital assistant transmits information about the display screen of the terminal to the terminal distribution server device when the information distribution request is made, and

the distribution information generation means of the terminal distribution server device comprises a means for

processing the transmission information category to match the display screen of the personal digital assistant based on the information about the display screen of the personal digital assistant.

[Claim 33] The information distribution system according to Claim 32,

wherein the notification means of the terminal distribution server device also notifies the billing server device of information regarding the display screen of the personal digital assistant in association with the distribution request source identification information, and

the billing server device performs billing processing for the distribution request source identified by the distribution request source identification information based on the information capacity of the transmission information category for each distribution request source identification information and information regarding the display screen of the personal digital assistant.

[Claim 34] The information distribution system according to Claim 22, Claim 25 or Claim 26,

wherein the terminal distribution server device is provided with a means for authenticating whether or not to distribute information based on the terminal identification information or user identification information and/or password information of the personal digital assistant.

[Claim 35] An information distribution system consisting of a personal digital assistant and an information distribution server device connected to the personal digital assistant via a communication path,

wherein the personal digital assistant comprises:

a data storage means having a storage area for storing distribution data from the information distribution server device; and

an information distribution request transmission means for transmitting at least distribution request source identification information, distribution information identification information for identifying information requested for distribution, and free space in the storage area of the data storage means at the relevant time to the information distribution server device to make an information distribution request; and

the information distribution server device is equipped with: a means for receiving at least distribution request source identification information, distribution information identification information for identifying the information requested to be distributed, and information on the free space of the personal digital assistant from the personal digital assistant, and receiving an information distribution request from the personal digital assistant; a distribution information generation means for generating a transmission information segment to be transmitted to the personal digital assistant this time from the free space of the personal digital assistant for the distribution information specified by the distribution information identification information;

a means for distributing the transmission information segment generated by the distribution information generation means to the personal digital assistant; and

a billing processing means for billing the distribution request source identified by the distribution request source identification information based on the information capacity of the transmission information segment distributed to the personal digital assistant.

[Claim 36] An information distribution system consisting of a personal digital assistant, and an information distribution server device connected to the personal digital assistant via a communication path, and a billing server device; wherein the personal digital assistant is equipped with: a data storage means having a storage area for storing distribution data from the information distribution server device; and an information distribution request transmission means for transmitting at least distribution request source identification information, distribution information identification information for identifying information for which distribution is requested, and the current free space of the storage area for storing the distribution data in the data storage means to the information distribution server device to make an information distribution request; the information distribution server device is equipped with: a means for receiving from the personal digital assistant at least distribution request source identification information, distribution information identification information for identifying the information requested to be distributed, and information on the free space of the personal digital assistant, and receiving an information distribution request from the personal digital assistant; a distribution information generation means for generating a transmission information segment to be transmitted to the personal digital assistant from the free space of the personal digital assistant for the distribution information specified by the distribution information identification information; a means for distributing the transmission information segment generated by the distribution information generation means to the personal digital assistant; and a billing information storage means for storing the information capacity of the transmission information segment distributed to the personal digital assistant in association with the distribution request source identification information for billing processing; and the billing server device is equipped with: a means for accessing the information distribution server device at any timing or at a predetermined timing; and a means for acquiring from the information distribution server device the information capacity of the transmission information category stored in the billing information storage means of the information distribution server device, and performing billing processing for the distribution request source identified by the distribution request source identification information.

[Claim 37] An information distribution system consisting of a personal digital assistant, an information distribution server device connected to the personal digital assistant via a communication path, and a billing server device; wherein the personal digital is equipped with: a data storage means having a storage area for storing distribution data from the information distribution server device; and an information distribution request transmission means for transmitting at least distribution request source identification information, distribution information identification information for identifying information for which distribution is requested, and the current free space of the storage area for storing the distribution data in the data

storage means to the information distribution server device to make an information distribution request; the information distribution server device is equipped with: a means for receiving at least distribution request source identification information, distribution information identification information for identifying information requested to be distributed, and information on the free space of the personal digital assistant from the personal digital assistant, and receiving an information distribution request from the personal digital assistant; a distribution information generation means for generating a transmission information segment to be transmitted to the personal digital assistant from the free space of the personal digital assistant for the distribution information specified by the distribution information identification information; a means for distributing the transmission information segment generated by the distribution information generation means to the personal digital assistant; a billing information storage means for storing the information capacity of the transmission information segment distributed to the personal digital assistant in association with the distribution request source identification information for billing processing; and a means for notifying the billing server device of the information capacity of the transmission information segment for each distribution request source identification information stored in the billing information storage means; and the billing server device is provided with a means for performing billing processing for the distribution request source identified by the distribution request source identification information based on the information capacity of the transmission information category notified from the information distribution server device.

[Claim 38] The information distribution system according to Claim 35, Claim 36 or Claim 37, wherein the information distribution server device includes a delimiter information storage means for storing delimiter information for identifying delimiter positions of the distributed transmission information segments in association with the distribution request source identification information, and the distribution information generation means of the information distribution server device generates a transmission information segment for the current transmission data to the personal digital assistant based on the delimiter information stored in the delimiter information storage means and the free space of the personal digital assistant.

[Claim 39] The information distribution system according to Claim 35, Claim 36 or Claim 37, wherein the personal digital assistant also transmits to the information distribution server device, at the time of the distribution request, delimiter information for identifying the previous delimiter position of the distribution information identified by the distribution information identification information; and the distribution information generation means of the information distribution server device generates a transmission information segment for the current transmission of the distribution data requested to be distributed to the personal digital assistant based on the

delimiter information and the free space of the personal digital assistant.

[Claim 40] The information distribution system according to Claim 35, Claim 36 or Claim 37, wherein the distribution request source identification information is terminal identification information of the personal digital assistant.

[Claim 41] The information distribution system according to Claim 35, Claim 36 or Claim 37, wherein the distribution request source identification information is user identification information.

[Claim 42] The information distribution system according to Claim 35, Claim 36 or Claim 37, wherein the information distribution server device is equipped with:

a means for transmitting information for confirming the delimiter of the transmission information segment generated by the distribution information generation means to the personal digital assistant, and

a control means for causing the distribution information generation means to regenerate the transmission information segment so that the delimiter corresponds to the delimiter change request from the personal digital assistant when a delimiter change request is received from the personal digital assistant; and

the personal digital assistant is equipped with:

a means for receiving information for confirming the delimiter of the transmission information segment from the information distribution server device and playing the information to allow the user to confirm the delimiter;

a change request receiving means for receiving a request from the user to change the delimiter;

a means for transmitting the change request to the information distribution server device when the change request receiving means receives the request to change the delimiter.

[Claim 43] The information distribution system according to Claim 35, Claim 36 or Claim 37,

wherein the information distribution request transmission means of the personal digital assistant transmits information about the display screen of the terminal to the information distribution server device when the information distribution request is made, and

the distribution information generation means of the information distribution server device comprises a means for processing the transmission information classification to fit the display screen of the personal digital assistant based on the information about the display screen of the personal digital assistant.

[Claim 44] The information distribution system according to Claim 35,

wherein the information distribution request transmission means of the personal digital assistant transmits information about the display screen of the terminal to the information distribution server device when the information distribution request is made; and

the distribution information generation means of the information distribution server device comprises a means for processing the transmission information classification to conform to the display screen of the personal digital assistant based on the information about the display screen of the personal digital assistant, and the billing processing means

performs billing processing while also taking into consideration the information about the display screen of the personal digital assistant.

[Claim 45] The information distribution system according to Claim 36,

wherein the information distribution request transmission means of the personal digital assistant transmits information about the display screen of the terminal to the information distribution server device when the information distribution request is made;

the distribution information generation means of the information distribution server device comprises a means for processing the transmission information category to fit the display screen of the personal digital assistant based on information about the display screen of the personal digital assistant; and

the billing information storage means also stores information about the display screen of the personal digital assistant in correspondence with the distribution request source identification information, and the billing server device performs billing processing for the distribution request source identification information based on the information capacity of the transmission information category as well as the information about the display screen of the personal digital assistant.

[Claim 46] The information distribution system according to Claim 37,

wherein the information distribution request transmission means of the personal digital assistant transmits information about the display screen of its own terminal to the information distribution server device when making the information distribution request;

The distribution information generation means of the information distribution server device comprises a means for processing the transmission information category to fit the display screen of the personal digital assistant based on information about the display screen of the personal digital assistant; and

the billing information storage means also stores information about the display screen of the personal digital assistant in correspondence with the distribution request source identification information, the notification means notifies the billing server device of information about the display screen of the personal digital assistant in addition to the information capacity of the transmission information category in correspondence with the distribution request source identification information, and the billing server device performs billing for the distribution request source identification information based on information about the display screen of the personal digital assistant in addition to the information capacity of the transmission information category.

[Claim 47] The information distribution system according to Claim 35, Claim 36 or Claim 37,

wherein the information distribution server device is equipped with a means for performing authentication as to whether or not to distribute information based on the terminal identification information or user identification information and/or password information of the personal digital assistant.

[Claim 48] The information distribution system according to Claim 37,

wherein the notification means of the information distribution server device notifies the billing server device each time the information distribution is performed or on a predetermined date.

[Claim 49] An information distribution system consisting of a personal digital assistant and an information distribution server device connected to the personal digital assistant via a communication path;

wherein the personal digital assistant is equipped with:

a data storage means equipped with a storage area for storing distribution data from the information distribution server device; and

an information distribution request transmission means for transmitting at least distribution request source identification information, distribution information identification information for identifying information requested for distribution, and free space at the time of the storage area for storing the distribution data of the data storage means to the information distribution server device to make an information distribution request; and

the information distribution server device is equipped with: a means for receiving from the personal digital assistant at least distribution request source identification information, distribution information identification information for identifying information requested for distribution, and information on the free space of the personal digital assistant, and receiving an information distribution request from the personal digital assistant;

a distribution information generation means for generating a transmission information segment to be transmitted to the personal digital assistant this time from the free space of the personal digital assistant for distribution information specified by the distribution information identification information;

a means for distributing the transmission information segment generated by the distribution information generation means to the personal digital assistant; and

a billing processing means for billing a distribution request source identified by the distribution request source identification information only once for distribution information having the same distribution information identification information, regardless of the number of distribution requests from the personal digital assistant.

[Claim 50] The information distribution system according to Claim 49,

wherein the information distribution server device is equipped with a delimiter information storage means for storing delimiter information for identifying the delimiter position of the distributed transmission information segment in association with the distribution request source identification information, and

the distribution information generation means of the information distribution server device generates a transmission information segment for the requested distribution data to the personal digital assistant based on the delimiter information stored in the delimiter information storage means and the free space.

[Claim 51] The information distribution system according to Claim 49,

wherein the personal digital assistant, when making the distribution request, also transmits to the information distribution server device delimiter information for

identifying the previous delimiter position for the distribution information identified by the distribution information identification information, and

the distribution information generation means of the information distribution server device generates a transmission information segment for the current transmission of the distribution data requested for distribution to the personal digital assistant based on the delimiter information and the free space of the personal digital assistant.

[Claim 52] The information distribution system according to Claim 49,

wherein the distribution request source identification information is terminal identification information of the personal digital assistant.

[Claim 53] The information distribution system according to Claim 49,

wherein the distribution request source identification information is user identification information.

[Claim 54] The information distribution system according to Claim 49, Claim 50 or Claim 51,

wherein the information distribution server device is equipped with:

a means for transmitting information for confirming the delimiter of the transmission information segment generated by the distribution information generation means to the personal digital assistant; and

a control means for, when a request to change the delimiter is received from the personal digital assistant, causing the distribution information generation means to regenerate the transmission information segment so that the delimiter corresponds to the delimiter change request from the personal digital assistant; and

the personal digital assistant comprises:

a means for receiving information for confirming the delimiter of the transmission information segment from the information distribution server device and reproducing the information to allow the user to confirm the delimiter;

a change request receiving means for receiving a request to change the delimiter by the user; and

a means for transmitting the change request to the information distribution server device when the change request receiving means receives the request to change the delimiter.

[Claim 55] The information distribution system according to Claim 49, Claim 50 or Claim 51,

wherein the information distribution request transmission means of the personal digital assistant transmits information about the display screen of the terminal to the terminal distribution server device when making the information distribution request,

and

the distribution information generation means of the information distribution server device includes a means for processing the transmitted information classification to match the display screen of the personal digital assistant based on the information about the display screen of the personal digital assistant.

[Claim 56] The information distribution system according to Claim 55,

wherein the billing processing means of the information distribution server device performs billing processing for the

distribution request source for the distribution information identified by the distribution information identification information, taking into consideration information on the display screen of the personal digital assistant.

[Claim 57] The information distribution system according to Claim 49, Claim 50 or Claim 51,

wherein the information distribution server device is provided with a means for authenticating whether or not to distribute information based on the terminal identification information or user identification information and/or password information of the personal digital assistant.

[Claim 58] An information distribution method in an information distribution system consisting of an information distribution server device, a personal digital assistant, and a terminal distribution server device connected to the information distribution server device through a first communication path and connected to the personal digital assistant through a second communication path, which holds distribution information acquired from the information distribution server device through the first communication path and distributes the information to the personal digital assistant through the second communication path;

wherein the information distribution server device is equipped with a step for transmitting distribution information to the terminal distribution server device, and a billing step for billing the terminal distribution server device for the distribution information by transmitting the distribution information to the terminal distribution server device;

the personal digital assistant is equipped with an information distribution request transmission step of transmitting at least distribution request source identification information, distribution information identification information for identifying information requested for distribution, and free space at the time of the storage area of a data storage means having a storage area for storing distribution data from the terminal distribution server device to the terminal distribution server device to request information distribution;

the terminal distribution server device is equipped with a step of receiving distribution information from the information distribution server device through the first communication path and storing the information in a distribution information storage unit, a distribution information generation step of extracting distribution information specified by the distribution information identification information from the personal digital assistant from the distribution information storage unit, dividing the information so as to fit the free space of the personal digital assistant, and generating a transmission information segment for the personal digital assistant, and a step of distributing the transmission information segment generated in the distribution information generation step to the personal digital assistant; and

no charge is made for information distribution in response to a distribution request from the personal digital assistant to the terminal distribution server device.

[Claim 59] The information distribution method according to Claim 58,

wherein the terminal distribution server device includes a delimiter information storage step for storing delimiter information for identifying the delimiter position of the

transmitted information segment that has been transmitted in association with the transmission request source identification information, and

the transmission information generation step of the terminal distribution server device generates a transmission information segment for the requested transmission data to the personal digital assistant based on the delimiter information stored in the delimiter information storage step and the free space of the personal digital assistant.

[Claim 60] The information distribution method according to Claim 58,

wherein the personal digital assistant also transmits, at the time of the distribution request, delimiter information for identifying the previous delimiter position of the distribution information identified by the distribution information identification information to the terminal distribution server device, and

in the distribution information generation step of the terminal distribution server device, a transmission information segment of the distribution data requested for distribution to the personal digital assistant this time is generated based on the delimiter information and the free space of the personal digital assistant.

[Claim 61] The information distribution method according to Claim 58, Claim 59 or Claim 60,

wherein the distribution request source identification information is terminal identification information of the personal digital assistant.

[Claim 62] The information distribution method according to Claim 58, Claim 59 or Claim 60,

wherein the distribution request source identification information is user identification information.

[Claim 63] The information distribution method according to Claim 58, Claim 59 or Claim 60,

wherein the terminal distribution server device is equipped with:

a step of transmitting information for confirming the delimiter of the transmission information segment generated in the distribution information generation step to the personal digital assistant, and

a distribution information regeneration step of regenerating the transmission information segment so that the delimiter corresponds to the delimiter change request from the personal digital assistant when a delimiter change request is received from the personal digital assistant; and

the personal digital assistant is equipped with:

a step of receiving information for confirming the delimiter of the transmission information segment from the terminal distribution server device and playing the information to allow the user to confirm the delimiter,

a change request receiving step of receiving a request to change the delimiter from the user, and

a step of transmitting the change request to the terminal distribution server device when the change request receiving step receives the request to change the delimiter.

[Claim 64] The information distribution method according to Claim 58, Claim 59 or Claim 60,

wherein the information distribution request transmission step of the personal digital assistant transmits information about the display screen of the terminal to the terminal distribution server device when the information distribution request is made, and the distribution information generation

step of the terminal distribution server device comprises a step of processing the transmission information classification to match the display screen of the personal digital assistant based on the information about the display screen of the personal digital assistant.

[Claim 65] The information distribution method according to Claim 58, Claim 59 or Claim 60,

wherein the terminal distribution server device is equipped with a step of authenticating whether or not to distribute information based on the terminal identification information or user identification information and/or password information of the personal digital assistant.

[Claim 66] The information distribution method according to Claim 58, Claim 59 or Claim 60,

wherein the communication path between the terminal distribution server device and the personal digital assistant is formed by a wired or wireless local area network.

[Claim 67] The information distribution method according to Claim 58, Claim 59 or Claim 60,

wherein the communication path between the terminal distribution server device and the personal digital assistant includes a wireless or wired telephone network.

[Claim 68] An information distribution method in an information distribution system consisting of an information distribution server device, a personal digital assistant, and a terminal distribution server device connected to the information distribution server device through a first communication path and connected to the personal digital assistant through a second communication path, which holds distribution information acquired from the information distribution server device through the first communication path and distributes the information to the personal digital assistant through the second communication path;

wherein the information distribution server device is equipped with a step of transmitting distribution information to the terminal distribution server device;

the personal digital assistant is equipped with an information distribution request transmission step of transmitting at least distribution request source identification information, distribution information identification information for identifying information requested to be distributed, and the free space at the time of the storage area of a data storage means having a storage area for storing distribution data from the terminal distribution server device to the terminal distribution server device to request information distribution; and

the terminal distribution server device is equipped with:

a step of receiving at least distribution request source identification information, distribution information identification information for identifying the information requested to be distributed, and information on the free space of the personal digital assistant from the personal digital assistant, and receiving an information distribution request from the personal digital assistant;

a distribution information generation step of dividing the distribution information specified by the distribution information identification information so as to fit the free space, and generating a transmission information segment for the personal digital assistant;

a step of distributing the transmission information segment generated in the distribution information generation step to the personal digital assistant; and

a billing information storing step of storing the information capacity of the transmission information segment distributed to the personal digital assistant for billing processing.

[Claim 69] The information distribution method according to Claim 68,

wherein the terminal distribution server device includes a delimiter information storage step for storing delimiter information for identifying the delimiter position of the transmitted information segment that has been transmitted in association with the transmission request source identification information, and

the transmission information generation step of the terminal distribution server device generates a transmission information segment for the requested transmission data to the personal digital assistant based on the delimiter information stored in the delimiter information storage step and the free space of the personal digital assistant.

[Claim 70] The information distribution method according to Claim 68,

wherein The personal digital assistant also transmits, at the time of the distribution request, delimiter information for identifying the previous delimiter position of the distribution information identified by the distribution information identification information to the terminal distribution server device, and

in the distribution information generation step of the terminal distribution server device, a transmission information segment of the distribution data requested for distribution to the personal digital assistant this time is generated based on the delimiter information and the free space of the personal digital assistant.

[Claim 71] The information distribution method according to Claim 68, Claim 69 or Claim 70,

wherein the information distribution from the information distribution server device to the terminal distribution server device is free of charge.

[Claim 72] The information distribution method according to Claim 68, Claim 69 or Claim 70,

wherein the information distribution system is provided with a billing server device, and the billing server device is provided with a step of accessing the terminal distribution server device at any timing or at a predetermined timing, and

a step of acquiring from the terminal distribution server device the information capacity of the transmission information category stored in the billing information storage step of the terminal distribution server device and performing billing processing.

[Claim 73] The information distribution method according to Claim 68, Claim 69 or Claim 70, wherein the distribution request source identification information is terminal identification information of the personal digital assistant, the information capacity of the transmission information category is stored in the billing information storage means for each distribution request source identified by the distribution request source identification information, and the billing step in the billing server is performed for each distribution request source.

[Claim 74] The information distribution method according to Claim 68, Claim 69 or Claim 70,

wherein the distribution request source identification information is user identification information,

the billing information storage means stores the information capacity of the transmission information category for each distribution request source identified by the distribution request source identification information, and the billing step in the billing server is performed for each distribution request source.

[Claim 75] The information distribution method according to Claim 68, Claim 69 or Claim 70, wherein the communication path between the terminal distribution server device and the personal digital assistant is formed by a wired or wireless local area network, and the information distribution system includes a billing server device, and the billing server device is equipped with a step of accessing the terminal distribution server device at any timing or at a predetermined timing, and a step of acquiring the volume of the information of the stored transmission information category from the terminal distribution server device and performing billing processing for the unit of the local area network to which the terminal distribution server device is connected.

[Claim 76] The information distribution method according to Claim 68, Claim 69 or Claim 70, wherein in the information distribution request transmission step of the personal digital assistant, when making the information distribution request, information on the display screen of the terminal itself is sent to the terminal distribution server device, and the distribution information generation step of the terminal distribution server device comprises a step of processing the transmission information category to fit the display screen of the personal digital assistant based on the information on the display screen of the personal digital assistant.

[Claim 77] The information distribution method according to Claim 76, wherein in the billing information storage step of the terminal distribution server device, information on the display screen of the personal digital assistant is also stored in association with the distribution request source identification information; the information distribution system comprises a billing server device; and the billing server device is equipped with a step of accessing the terminal distribution server device at any timing or at a predetermined timing, and a step of acquiring from the terminal distribution server device the information capacity of the transmission information category for each distribution request source identification information and information on the display screen of the personal digital assistant stored in the billing information storage step of the terminal distribution server device, and performing billing processing for the distribution request source identified by the distribution request source identification information based on the acquired information.

[Claim 78] The information distribution method according to Claim 68, Claim 69 or Claim 70, wherein the terminal distribution server device performs an authentication step to determine whether or not to perform information distribution based on the terminal identification information or user identification information and/or password information of the personal digital assistant.

[Claim 79] An information distribution method in an information distribution system consisting of:

an information distribution server device, a personal digital assistant, and a terminal distribution server device connected to the information distribution server device through a first communication path and connected to the personal digital assistant through a second communication path, which holds distribution information acquired from the information distribution server device through the first communication path and distributes the information to the personal digital assistant through the second communication path; wherein the information distribution server device is equipped with a step for transmitting distribution information to the terminal distribution server device; the personal digital assistant is equipped with an information distribution request transmission step of transmitting at least distribution request source identification information, distribution information identification information for identifying information requested to be distributed, and the free space at the time of the storage area of a data storage means having a storage area for storing distribution data from the terminal distribution server device to the terminal distribution server device to request information distribution; and

the terminal distribution server device is equipped with: a step of receiving at least distribution request source identification information, distribution information identification information for identifying the information requested to be distributed, and information on the free space of the personal digital assistant from the personal digital assistant, and receiving an information distribution request from the personal digital assistant; a distribution information generation step of dividing the distribution information specified by the distribution information identification information from the personal digital assistant so as to fit the free space of the personal digital assistant, and generating a transmission information segment for the personal digital assistant; a distribution step of distributing the transmission information segment generated in the distribution information generation step to the personal digital assistant; and a notification step of notifying a billing server device of the information capacity of the transmission information segment distributed to the personal digital assistant through a specified communication path for billing processing.

[Claim 80] The information distribution method according to Claim 79, wherein the notification step of the terminal distribution server device notifies the billing server device of the information capacity of the transmission information category every time the distribution information is distributed to the personal digital assistant.

[Claim 81] The information distribution method according to Claim 79, wherein the terminal distribution server device is equipped with a means for storing the information capacity of the transmission information category for each of the distribution information identification information for each of the distribution request source identification information

for a predetermined period or for a predetermined number of distributions, and

the notification means notifies the billing server device of the stored information capacity after the predetermined period or after the predetermined number of distributions.

[Claim 82] The information distribution method according to Claim 79,

wherein the terminal distribution server device is equipped with a delimiter information storage step for storing delimiter information for identifying the delimiter position of the transmitted information segment that has been transmitted in association with the transmission request source identification information, and

the transmission information generation step of the terminal distribution server device generates a transmission information segment for the requested transmission data to the personal digital assistant based on the delimiter information stored in the delimiter information storage step and the free space of the personal digital assistant.

[Claim 83] The information distribution method according to Claim 79,

wherein the personal digital assistant also transmits, to the terminal distribution server device, delimiter information for identifying the previous delimiter position of the distribution information identified by the distribution information identification information when making the distribution request, and

the distribution information generation step of the terminal distribution server device generates a transmission information segment of the distribution data requested for distribution to the personal digital assistant this time based on the delimiter information and the free space.

[Claim 84] The information distribution method according to Claim 79, Claim 82 or Claim 83,

wherein the information distribution from the information distribution server device to the terminal distribution server device is free of charge.

[Claim 85] The information distribution method according to Claim 79, Claim 82 or Claim 83,

wherein the distribution request source identification information is terminal identification information of the personal digital assistant.

[Claim 86] The information distribution method according to Claim 79, Claim 82 or Claim 83,

wherein the distribution request source identification information is user identification information.

[Claim 87] The information distribution method according to Claim 79, Claim 82 or Claim 83,

wherein the terminal distribution server device is equipped with:

a step of transmitting information for confirming the delimiter of the transmission information segment generated by the distribution information generation means to the personal digital assistant, and

a step of regenerating the transmission information segment so that the delimiter corresponds to the delimiter change request from the personal digital assistant when a delimiter change request is received from the personal digital assistant; and

the personal digital assistant is equipped with:

a step of receiving information for confirming the delimiter of the transmission information segment from the terminal

distribution server device and reproducing the information to allow the user to confirm the delimiter;

a change request acceptance step of accepting the change request from the user; and

a step of transmitting the change request to the terminal distribution server device when the change request to change the delimiter is accepted in the change request acceptance step.

[Claim 88] The information distribution method according to Claim 79, Claim 82 or Claim 83,

wherein the communication path between the terminal distribution server device and the personal digital assistant is formed by a wired or wireless local area network, and the billing server device processes billing based on an integrated value obtained by accumulating the capacity of the information of the transmission information category in units of the local area network to which the terminal distribution server device is connected.

[Claim 89] The information distribution method according to Claim 79, Claim 82 or Claim 83,

wherein the information distribution request transmission step of the personal digital assistant transmits information about the display screen of the terminal to the terminal distribution server device when the information distribution request is made, and

the distribution information generation step of the terminal distribution server device comprises a step of processing the transmission information category to match the display screen of the personal digital assistant based on the information about the display screen of the personal digital assistant.

[Claim 90] The information distribution method according to Claim 89,

wherein the notification step of the terminal distribution server device also notifies the billing server device of information regarding the display screen of the personal digital assistant in association with the distribution request source identification information, and

the billing server device performs billing processing for the distribution request source identified by the distribution request source identification information based on the information capacity of the transmission information category for each distribution request source identification information and information regarding the display screen of the personal digital assistant.

[Claim 91] The information distribution method according to Claim 79, Claim 82 or Claim 83,

wherein the terminal distribution server device is provided with a step of authenticating whether or not to distribute information based on the terminal identification information or user identification information and/or password information of the personal digital assistant.

[Claim 92] An information distribution method consisting of a personal digital assistant and an information distribution server device connected to the personal digital assistant via a communication path;

wherein personal digital assistant is equipped with:

an information distribution request transmission step of transmitting at least distribution request source identification information, distribution information identification information for identifying the information requested to be distributed, and the free space at the time of the storage area

of a data storage means having a storage area for storing distribution data from the information distribution server device to the information distribution server device to request information distribution; and

the information distribution server device is equipped with: a step of receiving at least distribution request source identification information, distribution information identification information for identifying the information requested to be distributed, and information on the free space of the personal digital assistant from the personal digital assistant, and receiving an information distribution request from the personal digital assistant;

a distribution information generation step of generating a transmission information segment to be transmitted to the personal digital assistant from the free space of the personal digital assistant for the distribution information specified by the distribution information identification information;

a step of distributing the transmission information segment generated in the distribution information generation step to the personal digital assistant; and

a billing step of billing the distribution request source identified by the distribution request source identification information based on the information capacity of the transmission information segment distributed to the personal digital assistant.

[Claim 93] An information distribution method consisting of a personal digital assistant, an information distribution server device connected to the personal digital assistant via a communication path, and a billing server device, wherein the personal digital assistant is equipped with: an information distribution request transmission step of transmitting to the information distribution server device at least distribution request source identification information, distribution information identification information for identifying information requested for distribution, and free space at the time of the storage area of a data storage means having a storage area for storing distribution data from the information distribution server device;

The information distribution server device is equipped with: a step of receiving at least a distribution request source identification information, distribution information identification information for identifying the information requested to be distributed, and information on the free space of the personal digital assistant from the personal digital assistant, and receiving an information distribution request from the personal digital assistant;

a distribution information generation step of generating a transmission information segment to be transmitted to the personal digital assistant from the free space of the personal digital assistant for the distribution information specified by the distribution information identification information;

a step of transmitting the transmission information segment generated in the distribution information generation step to the personal digital assistant; and

a billing information storage step of storing the information capacity of the transmission information segment distributed to the personal digital assistant in association with the distribution request source identification information for billing processing; and

the billing server device is equipped with:

a step of accessing the information distribution server device at any timing or at a predetermined timing, and

a step of acquiring from the information distribution server device the information capacity of the transmission information category stored in the billing information storage step of the information distribution server device, and performing billing processing for the distribution request source identified by the distribution request source identification information.

[Claim 94] An information distribution method consisting of a personal digital assistant, an information distribution server device connected to the personal digital assistant via a communication path, and a billing server device, wherein the personal digital assistant is equipped with an information distribution request transmission step of transmitting at least distribution request source identification information, distribution information identification information for identifying information requested to be distributed, and free space at the time of the storage area of a data storage means having a storage area for storing distribution data from the information distribution server device to the information distribution server device to request information distribution;

The information distribution server device is equipped with: a step of receiving at least a distribution request source identification information, distribution information identification information for identifying the information requested to be distributed, and information on the free space of the personal digital assistant from the personal digital assistant, and receiving an information distribution request from the personal digital assistant;

a distribution information generation step of generating a transmission information segment to be transmitted to the personal digital assistant from the free space of the personal digital assistant for the distribution information specified by the distribution information identification information;

a step of distributing the transmission information segment generated in the distribution information generation step to the personal digital assistant;

a billing information storage step of storing the information capacity of the transmission information segment distributed to the personal digital assistant in association with the distribution request source identification information for billing processing; and

a step of notifying the billing server device of the information capacity of the transmission information segment for each distribution request source identification information stored in the billing information storage step; and the billing server device is provided with a step of performing billing processing for the distribution request source identified by the distribution request source identification information based on the information capacity of the transmission information category notified from the information distribution server device.

[Claim 95] The information distribution method according to Claim 92, Claim 93 or Claim 94,

wherein the information distribution server device is equipped with a delimiter information storage step for storing delimiter information for identifying the delimiter position of the transmitted information segment that has been transmitted in association with the transmission request source identification information, and

the transmission information generation step of the information distribution server device generates a

transmission information segment for the requested transmission data to the personal digital assistant based on the delimiter information stored in the delimiter information storage step and the free space of the personal digital assistant.

[Claim 96] The information distribution method according to Claim 92, Claim 93 or Claim 94, wherein the personal digital assistant also transmits, at the time of the distribution request, to the information distribution server device, delimiter information for identifying the previous delimiter position of the distribution information identified by the distribution information identification information, and the distribution information generation step of the information distribution server device generates a transmission information segment of the distribution data requested for distribution to the personal digital assistant this time based on the delimiter information and the free space of the personal digital assistant.

[Claim 97] The information distribution method according to Claim 92, Claim 93 or Claim 94, wherein the distribution request source identification information is terminal identification information of the personal digital assistant.

[Claim 98] The information distribution method according to Claim 92, Claim 93 or Claim 94, wherein the distribution request source identification information is user identification information.

[Claim 99] The information distribution method according to Claim 92, Claim 93 or Claim 94, wherein the information distribution server device is equipped with:

a step of transmitting information for confirming the delimiter of the transmission information segment generated in the distribution information generation step to the personal digital assistant, and
a step of regenerating the transmission information segment so that the delimiter corresponds to the delimiter change request from the personal digital assistant when a delimiter change request is received from the personal digital assistant; and

The personal digital assistant is equipped with:

a step of receiving information for confirming the delimiter of the transmission information segment from the information distribution server device and playing the information to allow the user to confirm the delimiter,
a change request receiving step of receiving a request to change the delimiter from the user, and
a step of transmitting the change request to the information distribution server device when the change request receiving step receives the request to change the delimiter.

[Claim 100] The information distribution method according to Claim 92, Claim 93 or Claim 94, wherein the information distribution request transmission step of the personal digital assistant transmits information about the display screen of the terminal to the information distribution server device when the information distribution request is made, and

the distribution information generation step of the information distribution server device comprises a step of processing the transmission information classification to fit the display screen of the personal digital assistant based on

the information about the display screen of the personal digital assistant

[Claim 101] The information distribution method according to Claim 92,

wherein the information distribution request transmission step of the personal digital assistant transmits information about the display screen of the terminal to the information distribution server device when the information distribution request is made,

the distribution information generation step of the information distribution server device comprises a step of processing the transmission information category to fit the display screen of the personal digital assistant based on information about the display screen of the personal digital assistant, and the billing processing step performs billing processing while also taking into consideration the information about the display screen of the personal digital assistant.

[Claim 102] The information distribution method according to Claim 93,

wherein the information distribution request transmission step of the personal digital assistant transmits information about the display screen of the terminal to the information distribution server device when the information distribution request is made,

the distribution information generation step of the information distribution server device comprises a step of processing the transmission information category to match the display screen of the personal digital assistant based on the information about the display screen of the personal digital assistant,

the billing information storage step also stores the information about the display screen of the personal digital assistant in correspondence with the distribution request source identification information, and

the billing server device performs billing processing for the distribution request source identification information based on the information capacity of the transmission information category as well as the information about the display screen of the personal digital assistant.

[Claim 103] The information distribution method according to Claim 94,

wherein the information distribution request transmission step of the personal digital assistant transmits information about the display screen of the terminal to the information distribution server device when making the information distribution request,

the distribution information generation step of the information distribution server device comprises a step of processing the transmission information category to match the display screen of the personal digital assistant based on the information about the display screen of the personal digital assistant, the billing information storage step also stores information about the display screen of the personal digital assistant in correspondence with the distribution request source identification information,

the notification step notifies the billing server device of information about the display screen of the personal digital assistant in addition to the information capacity of the transmission information category in correspondence with the distribution request source identification information, and

the billing server device performs billing for the distribution request source identification information based on the information about the display screen of the personal digital assistant in addition to the information capacity of the transmission information category.

[Claim 104] The information distribution method according to Claim 92, Claim 93 or Claim 94,

Wherein the information distribution server device is provided with a step of authenticating whether or not to distribute information based on the terminal identification information or user identification information and/or password information of the personal digital assistant.

[Claim 105] The information distribution method according to Claim 94,

wherein the notification means of the information distribution server device notifies the billing server device each time the information distribution is performed or on a predetermined date.

[Claim 106] An information distribution method consisting of a personal digital assistant and an information distribution server device connected to the personal digital assistant via a communication path,

wherein the personal digital assistant is equipped with an information distribution request transmission step of transmitting to the information distribution server device at least distribution request source identification information, distribution information identification information for identifying information requested for distribution, and free space at the time of the storage area of a data storage means having a storage area for storing distribution data from the information distribution server device, to make an information distribution request; and

the information distribution server device is equipped with: a step of receiving at least distribution request source identification information, distribution information identification information for identifying the information requested to be distributed, and information on the free space of the personal digital assistant from the personal digital assistant, and receiving an information distribution request from the personal digital assistant;

a distribution information generation step of generating a transmission information segment to be transmitted to the personal digital assistant from the free space of the personal digital assistant for the distribution information specified by the distribution information identification information;

a step of distributing the transmission information segment generated in the distribution information generation step to the personal digital assistant; and

a billing step of billing the distribution request source identified by the distribution request source identification information only once for distribution information having the same distribution information identification information, regardless of the number of distribution requests from the personal digital assistant.

[Claim 107] The information distribution method according to Claim 106,

wherein the information distribution server device is equipped with a delimiter information storage step for storing delimiter information for identifying the delimiter position of the distributed transmission information segment in association with the distribution request source identification information,

and

the distribution information generation step of the information distribution server device generates a transmission information segment for the requested distribution data to the personal digital assistant this time based on the delimiter information stored in the delimiter information storage step and the free space.

[Claim 108] The information distribution method according to Claim 106,

wherein the personal digital assistant, when making the distribution request, also transmits to the information distribution server device delimiter information for identifying the previous delimiter position for the distribution information identified by the distribution information identification information; and

the distribution information generation step of the information distribution server device generates a transmission information segment for the current transmission of the distribution data requested for distribution to the personal digital assistant based on the delimiter information and the free space of the personal digital assistant.

[Claim 109] The information distribution method according to Claim 106,

wherein the distribution request source identification information is terminal identification information of the personal digital assistant.

[Claim 110] The information distribution method according to Claim 106,

wherein the distribution request source identification information is user identification information.

[Claim 111] The information distribution method according to Claim 106, Claim 107 or Claim 108,

wherein the information distribution server device is equipped with:

a step of transmitting information for confirming the delimiter of the transmission information delimiter generated in the distribution information generation step to the personal digital assistant; and

a step of regenerating the transmission information delimiter so that the delimiter corresponds to the delimiter change request from the personal digital assistant when a delimiter change request is received from the personal digital assistant; and

the personal digital assistant is equipped with:

a step of receiving information for confirming the delimiter of the transmission information segment from the information distribution server device and reproducing the information to allow the user to confirm the delimiter;

a change request receiving step of receiving a request to change the delimiter from the user; and

a step of transmitting a change request to the information distribution server device when the change request receiving step receives the request to change the delimiter.

[Claim 112] The information distribution method according to Claim 106, Claim 107 or Claim 108,

wherein the information distribution request transmission step of the personal digital assistant transmits information about the display screen of the terminal to the terminal distribution server device when the information distribution request is made, and

the distribution information generation step of the information distribution server device comprises a step of processing the transmission information classification to conform to the display screen of the personal digital assistant based on the information about the display screen of the personal digital assistant.

[Claim 113] The information distribution method according to Claim 112,

wherein the billing step process of the information distribution server device performs billing step for the distribution request source for the distribution information identified by the distribution information identification information, taking into account the information on the display screen of the personal digital assistant.

[Claim 114] The information distribution method according to Claim 106, Claim 107 or Claim 108,

wherein the information distribution server device is equipped with a step of authenticating whether or not to distribute information based on the terminal identification information or user identification information and/or password information of the personal digital assistant.

[Claim 115] A terminal distribution server device connected to an information distribution server device through a first communication path and connected to a personal digital assistant through a second communication path, which holds distribution information acquired from the information distribution server device through the first communication path and executes distribution to the personal digital assistant through the second communication path; wherein the terminal distribution server device is equipped with:

a means for receiving from the personal digital assistant at least distribution request source identification information, distribution information identification information for identifying the information requested to be distributed, and information on the free space at the time of the storage area for storing the distribution data of the personal digital assistant, and receiving an information distribution request from the personal digital assistant;

a distribution information generation means for dividing the distribution information specified by the distribution information identification information so as to fit the free space, and generating a transmission information segment for the personal digital assistant;

a means for distributing the transmission information segment generated by the distribution information generation means to the personal digital assistant; and

a billing information storage means for storing the information capacity of the transmission information segment distributed to the personal digital assistant in association with the distribution request source identification information for billing processing.

[Claim 116] The terminal distribution server device according to Claim 115,

wherein the terminal distribution server device is equipped with a delimiter information storage means for storing delimiter information for identifying the delimiter position of the distributed transmission information segment in association with the distribution request source identification information, and

the distribution information generation means of the terminal distribution server device generates a transmission information segment for the requested distribution data to the personal digital assistant this time based on the delimiter information stored in the delimiter information storage means and the free space.

[Claim 117] The terminal distribution server device according to Claim 115,

wherein the personal digital assistant also transmits, at the time of the distribution request, delimiter information for identifying the previous delimiter position for the distribution information identified by the distribution information identification information; and

the distribution information generation means generates a transmission information segment for the current distribution data requested for distribution to the personal digital assistant based on the delimiter information and the free space.

[Claim 118] The terminal distribution server device according to Claim 106, equipped with:

a means for transmitting information for confirming the delimiter of the transmission information delimiter generated by the distribution information generation means to the personal digital assistant, and

a control means for causing the distribution information generation means to regenerate the transmission information delimiter so that the delimiter corresponds to the delimiter change request from the personal digital assistant when a delimiter change request is received from the personal digital assistant.

[Claim 119] The terminal distribution server device according to Claim 106,

wherein, when the information distribution request is made, information on the display screen of the terminal is also sent from the personal digital assistant,

the distribution information generation means comprises a means for processing the transmission information category so as to conform to the display screen of the personal digital assistant based on information on the display screen of the personal digital assistant, and

the billing information storage means stores information on the display screen of the personal digital assistant in association with the distribution request source identification information.

[Claim 120] The terminal distribution server device according to Claim 115,

equipped with a means for transmitting, to the billing server device, the information capacity of the transmission information segment for each of the distribution request source identification information stored in the billing information storage means when accessed from the billing server device.

[Claim 121] The terminal distribution server device according to Claim 115,

equipped with a means for transmitting, when accessed from a billing server device, information on the information capacity of the transmission information category for each of the distribution request source identification information stored in the billing information storage means and information on the display screen of the personal digital assistant to the billing server device.

[Claim 122] An information distribution server device connected to a personal digital assistant via a communication path, equipped with:

a means for receiving from the personal digital assistant at least distribution request source identification information, distribution information identification information for identifying the information requested to be distributed, and information on the current free space of a memory area for storing the distribution data of the personal digital assistant, and receiving an information distribution request from the personal digital assistant;

a distribution information generation means for dividing the distribution information specified by the distribution information identification information so as to fit the free space, and generating a transmission information segment for the personal digital assistant;

a means for distributing the transmission information segment generated by the distribution information generation means to the personal digital assistant; and

a billing processing means for processing a bill for the distribution request source identified by the distribution request source identification information, based on the information capacity of the transmission information segment distributed to the personal digital assistant.

[Claim 123] An information distribution server device connected to a personal digital assistant through a communication path, equipped with:

a means for receiving from the personal digital assistant at least distribution request source identification information, distribution information identification information for identifying the information requested to be distributed, and information on the free space at the time of the storage area for storing the distribution data of the personal digital assistant, and receiving an information distribution request from the personal digital assistant;

a distribution information generation means for dividing the distribution information specified by the distribution information identification information so as to fit the free space and generating a transmission information segment for the personal digital assistant;

a means for distributing the transmission information segment generated by the distribution information generation means to the personal digital assistant;

a billing information storage means for storing the information capacity of the transmission information segment distributed to the personal digital assistant in association with the distribution request source identification information for billing processing; and

a means for notifying a billing server device of the information capacity of the transmission information segment for each distribution request source identification information stored in the billing information storage means.

[Claim 124] The information distribution server device according to Claim 122 or Claim 123,

wherein the information distribution server device is equipped with a delimiter information storage means for storing delimiter information for identifying the delimiter position of the distributed transmission information segment in association with the distribution request source identification information, and

the distribution information generation means of the information distribution server device generates a transmission information segment for the requested distribution data to the personal digital assistant this time based on the delimiter information stored in the delimiter information storage means and the available capacity.

[Claim 125] The information distribution server device according to Claim 122 or Claim 123,

wherein the personal digital assistant also transmits, at the time of the distribution request, delimiter information for identifying the previous delimiter position for the distribution information identified by the distribution information identification information, and

the distribution information generation means generates a transmission information segment for the current distribution data requested for distribution to the personal digital assistant based on the delimiter information and the free space.

[Claim 126] The information distribution server device according to Claim 122 or Claim 123, equipped with:

a means for transmitting information for confirming the delimiter of the transmission information delimiter generated by the distribution information generation means to the personal digital assistant, and

a control means for causing the distribution information generation means to regenerate the transmission information delimiter so that the delimiter corresponds to the delimiter change request from the personal digital assistant when a delimiter change request is received from the personal digital assistant.

[Claim 127] The information distribution server device according to Claim 122,

Wherein, when the information distribution request is made, information about the display screen of the personal digital assistant is sent, and

the distribution information generation means comprises a means for processing the transmission information classification based on the information about the display screen of the personal digital assistant so that it fits the display screen of the personal digital assistant.

[Claim 128] The information distribution server device according to Claim 127,

wherein the billing processing means also takes into consideration information about the display screen of the personal digital assistant when performing billing processing.

[Claim 129] The information distribution server device according to Claim 123,

wherein, when the information distribution request is made, information about the display screen of the personal digital assistant is sent, and

the distribution information generation means comprises a means for processing the transmission information category to fit the display screen of the personal digital assistant based on the information about the display screen of the personal digital assistant.

[Claim 130] The information distribution server device according to Claim 129,

wherein the billing information storage means also stores information about the display screen of the personal digital assistant in association with the distribution request source identification information, and

is equipped with a means for transmitting, when the billing server device accesses the billing server device, the information capacity of the transmission information category for each distribution request source identification information stored in the billing information storage means and information about the display screen of the personal digital assistant.

[Detailed Description of the Invention]

[0001] [Technical Field of the Invention] This invention relates to a system and method for distributing various content information from an information distribution server device to a personal digital assistant with a small memory capacity, and in particular to the billing step for the information distribution. In this specification, content refers to the stored contents such as text, video, and audio stored in memory; this information is referred to as "content information."

[0002]

[Prior Art] Personal digital assistants, also known as PDAs (Personal Digital Assistants), are capable of storing data such as schedules and address books (telephone directories), and can also download news, novels and other creative works, paintings, photographs, music, and the like from a Web server device via the Internet, import them into the built-in memory, and read and use them whenever necessary, making them very convenient.

[0003] However, in such a system in which various content information is distributed to information terminals from an information distribution server device such as a Web server, the capacity of the built-in memory of the personal digital assistant is not so large, so that depending on the content, it may not be possible to store all of it in the built-in memory of the personal digital assistant.

[0004] Therefore, when distributing information from an information distribution server device to a personal digital assistant, memory capacity must be taken into consideration. Conventionally, for example, the memory capacity of the personal digital assistant is taken into consideration to determine an upper limit on the data capacity of the content expected to be distributed, and only content that falls within that range is distributed.

[0005]

[Problem to be Solved by the Invention] However, limiting the distribution information to content with a relatively small capacity in this way narrows the range of distribution information, making it practically impossible to distribute content that requires a large storage capacity, such as electronic newspapers, paintings, and photographs, which have a relatively large capacity.

[0006] In addition, even if the personal digital assistant has enough memory capacity to download the limited small content, such as short stories, as mentioned above, a novel with illustrations, for example, will exceed that capacity and cannot be distributed.

[0007] Furthermore, in the case of a PDA, the areas occupied by the OS (Operating System) and programs for realizing information that should be constantly stored, such as the schedule and address book, and the PDA functions, are protected from being overwritten by downloaded information.

[0008] Moreover, since schedule and address book information is added and deleted, the storage area for the

distributed content (hereinafter this storage area is called the content area) is not constant, but changes from time to time; at one time it may be possible to store all the downloaded data, but at another time it may only be possible to store a portion of the downloaded data.

[0009] Additionally, if the content area and other data areas are managed separately, the total capacity of the content area will be known to the PDA, regardless of the increase or decrease in the other data areas.

[0010] However, even in this case, if other content has already been stored in the content area and the user does not want to erase that content yet, the free memory capacity of the content area that can be freely stored at that time is not constant, but changes from time to time. Therefore, as in the above case, a situation may occur where all downloaded data can be stored at one time, but only a portion of the downloaded data can be stored at another time.

[0011] The inventor therefore came up with the idea of dividing the content into portions according to the free memory capacity of the content area of the personal digital assistant, and distributing the divided content from the distribution server to the personal digital assistant. In such case, various modes of content distribution to the personal digital assistant are possible; the question then arises as to how to charge for the information distribution.

[0012] In light of the above, the object of this invention is to provide a system and method that can realize appropriate billing processing according to various modes of distribution when dividing the content into portions according to the free memory capacity of the content area of the personal digital assistant and distributing the divided content from the distribution server to the personal digital assistant.

[0013]

[Means for Solving the Problem] In order to solve the above problem, the information distribution system according to the invention of Claim 1 is an information distribution system comprising: an information distribution server device, a personal digital assistant, and a terminal distribution server device connected to the information distribution server device through a first communication path and connected to the personal digital assistant through a second communication path, which holds distribution information acquired from the information distribution server device through the first communication path and distributes the information to the personal digital assistant through the second communication path; wherein the information distribution server device is equipped with: a means for transmitting distribution information to the terminal distribution server device, and

a billing processing means for performing a billing step for the distribution information to the terminal distribution server device by transmitting the distribution information to the terminal distribution server device; the personal digital assistant is equipped with: a data storage means equipped with a storage area for storing distribution data from the terminal distribution server device; and an information distribution request transmission means for transmitting at least distribution request source identification information, distribution information identification information for identifying information requested to be distributed, and the free space of the storage area of the data storage means at that time to the terminal distribution server device to request

information distribution; and the terminal distribution server device is equipped with: a distribution information storage unit that stores distribution information received from the information distribution server device through the first communication path; a distribution information generation means that extracts distribution information specified by the distribution information identification information coming from the personal digital assistant from the distribution information storage unit, divides the information so as to fit the free space of the personal digital assistant, and generates a transmission information segment for the personal digital assistant; and a means for distributing the transmission information segment generated by the distribution information generation means to the personal digital assistant.

[0014] In the information distribution system according to the invention of Claim 1, the information distribution server device transmits to the terminal distribution server device distribution information that can be distributed to the personal digital assistant. At this time, the information distribution server device performs billing for the distribution information distributed to the terminal distribution server device. Since the distribution information storage segment of the terminal distribution server device has a large capacity, all distribution information is passed from the information distribution server device to the terminal distribution server device. In other words, when distributing from the information distribution server device to the terminal distribution server device, one piece of content is distributed without being segmented, and billing is performed on a content basis.

[0015] Then, the terminal distribution server device distributes information to the personal digital assistant by dividing the content so that it fits the available capacity at that time in the storage area for storing distribution data in the data storage means. Therefore, in the personal digital assistant, the distribution information is securely stored in the distribution data area of the data storage means, and can be made available to the user.

[0016] In this case, no charge is incurred for distribution from the terminal distribution server device to the personal digital assistant. In other words, the user of the personal digital assistant can receive distribution information from the terminal distribution server device as much as the free memory capacity of the personal digital assistant allows, and use it any number of times free of charge. Furthermore, the number of personal digital assistants or users that can be connected to the terminal distribution server device is not an issue.

[0017] This aspect of the distribution system is suitable, for example, for cases where the distribution information from the distribution information server device is an electronic newspaper, the terminal distribution server device is a server device at home or work, and distribution is made to a plurality of users from the terminal distribution server device.

[0018] The invention of Claim 2 is characterized in that, in the information distribution system described in Claim 1, the terminal distribution server device is equipped with a delimiter information storage means for storing delimiter information for identifying the delimiter position of the distributed transmission information segment in association with the distribution request source identification

information, and the distribution information generation means of the terminal distribution server device generates a transmission information segment of the requested distribution data to the personal digital assistant based on the delimiter information stored in the delimiter information storage means and the free space of the personal digital assistant.

[0019] According to the invention of Claim 2, the terminal distribution server device stores the delimiter information of the transmission information segment distributed to the personal digital assistant at that time in association with distribution request source identification information such as the terminal identification information or user identification information of the personal digital assistant. Therefore, the next time there is an information distribution request for the same content from the same personal digital assistant or the same user, it becomes possible to distribute the information from that delimiter information.

[0020] According to the invention of Claim 2, the distribution information stored in the distribution information storage segment of the terminal distribution server device can be downloaded to the personal digital assistant by the personal digital assistant by requesting distribution from the personal digital assistant, and used in units of the free memory capacity of the personal digital assistant. In addition, since there is no charge for downloading from the terminal distribution server device to the personal digital assistant, the user can make full use of the distribution information.

[0021] The invention of Claim 3 is characterized in that, in the information distribution system of Claim 1, the personal digital assistant also transmits delimiter information for identifying the previous delimiter position for the distribution information identified by the distribution information identification information to the terminal distribution server device when making the distribution request, and the distribution information generation means of the terminal distribution server device generates a transmission information segment for the current distribution data requested to be distributed to the personal digital assistant based on the delimiter information and the free space of the personal digital assistant.

[0022] According to the invention of Claim 3, the personal digital assistant also transmits delimiter information for identifying the previous delimiter position for the distribution information identified by the distribution information identification information to the terminal distribution server device when making the distribution request. The terminal distribution server device then generates a current transmission information segment from the delimiter information from the personal digital assistant and distributes the information to the personal digital assistant.

[0023] Therefore, according to the invention of Claim 3, the distribution information stored in the distribution information storage unit of the terminal distribution server device can be downloaded to the personal digital assistant in units of the free memory capacity of the personal digital assistant by requesting distribution from the personal digital assistant, and used. Moreover, since no charge is made for downloading from the terminal distribution server device to

the personal digital assistant, the user can make full use of the distribution information.

[0024] The information distribution system according to the invention of Claim 11 is an information distribution system consisting of an information distribution server device, a personal digital assistant, and a terminal distribution server device connected to the information distribution server device through a first communication path and connected to the personal digital assistant through a second communication path, which holds distribution information acquired from the information distribution server device through the first communication path and executes distribution to the personal digital assistant through the second communication path; wherein the information distribution server device is equipped with a means for transmitting distribution information to the terminal distribution server device; the personal digital assistant is equipped with a data storage means having a storage area for storing distribution data from the terminal distribution server device, and an information distribution request transmission means for transmitting at least distribution request source identification information, distribution information identification information for identifying information to be requested to be distributed, and free space at the time of the storage area of the data storage means to the terminal distribution server device to request information distribution; and the terminal distribution server device is equipped with: a means for receiving from the personal digital assistant at least distribution request source identification information, distribution information identification information for identifying the information requested to be distributed, and information on the free space of the personal digital assistant, and receiving an information distribution request from the personal digital assistant; a distribution information generation means for dividing the distribution information specified by the distribution information identification information so as to fit the free space of the personal digital assistant, and generating a transmission information segment for the personal digital assistant; a means for distributing the transmission information segment generated by the distribution information generation means to the personal digital assistant; and a billing information storage means for storing the information capacity of the transmission information segment distributed to the personal digital assistant for billing processing.

[0025] In the information distribution system according to the invention of Claim 11, the information distribution server device transmits distribution information that can be distributed to a mobile information terminal to the terminal distribution server device, but at this time, the information distribution server device does not perform billing for the distribution information distributed to the terminal distribution server device. Alternatively, the information may be distributed at a low price.

[0026] Further, as with the invention of Claim 1, the terminal distribution server device distributes information to a mobile information terminal by dividing the content into transmission information categories that match the available capacity at that time of the storage area for storing the distribution data of the data storage means.

[0027] In the invention of Claim 11, the user is charged according to the information capacity of the transmission information category. In other words, the user is charged according to the information capacity used. For this reason, in the invention of Claim 11, the information capacity of the transmission information category is stored in the billing information storage means in association with the distribution request source identification information.

[0028] The stored billing information is notified to the billing server device by the terminal distribution server device in response to access from the billing server device, for example as in Claim 15, and is used by the billing server device for billing processing.

[0029] In the case of the invention of Claim 11, the user is charged according to the amount of information downloaded to the personal digital assistant and used, making the charges very reasonable.

[0030] The information distribution system according to the invention of Claim 22 is an information distribution system consisting of: an information distribution server device; a personal digital assistant; and a terminal distribution server device connected to the information distribution server device through a first communication path and connected to the personal digital assistant through a second communication path, for holding distribution information acquired from the information distribution server device through the first communication path and for distributing the information to the personal digital assistant through the second communication path; wherein the information distribution server device is equipped with a means for transmitting distribution information to the terminal distribution server device; the personal digital assistant is equipped with: a data storage means having a storage area for storing distribution data from the terminal distribution server device, an information distribution request transmission means for transmitting at least distribution request source identification information, distribution information identification information for identifying the information requested to be distributed, and the free space of the storage area of the data storage means at that time to the terminal distribution server device to request information distribution; and the terminal distribution server device comprises: a distribution information generation means for dividing the distribution information specified by the distribution information identification information from the personal digital assistant so as to fit the free space of the personal digital assistant, and generating a transmission information segment for the personal digital assistant; a means for distributing the transmission information segment generated by the distribution information generation means to the personal digital assistant; and a notification means for notifying a billing server device of the information capacity of the transmission information segment distributed to the personal digital assistant through a specified communication path for billing processing.

[0031] In the information distribution system according to the invention of Claim 22, the information distribution server device also transmits distribution information that can be distributed to the personal digital assistant to the terminal distribution server device, but at this time, the information distribution server device does not perform billing for the distribution information distributed to the terminal

distribution server device. Alternatively, distribution may be performed at a low price.

[0032] Further, the terminal distribution server device distributes information to the personal digital assistant by dividing the content into transmission information segments that fit the available capacity at that time in the storage area for storing the distribution data of the data storage means.

[0033] In the invention of Claim 22, when information is distributed to the personal digital assistant, the billing server device is notified of the information capacity of the transmission information segment, and the billing server device charges according to the information capacity of the transmission information segment. In other words, the user is charged according to the information capacity used.

[0034] In the case of the invention of Claim 22, as in the invention of Claim 11, the user is charged according to the amount of information downloaded to the personal digital assistant and used, making the charges very reasonable.

[0035] The inventions of Claims 11 and 22 above assume that the distributed content is an electronic newspaper. The electronic newspaper is distributed free of charge, but when the electronic newspaper is downloaded to a personal digital assistant in order to read it, a charge is imposed according to the amount of information downloaded, making it possible to construct a billing system that is satisfactory to readers of the electronic newspaper.

[0036] Further, the invention of Claim 35 is characterized by an information distribution system consisting of a personal digital assistant and an information distribution server device connected to the personal digital assistant via a communication path, wherein the personal digital assistant comprises: a data storage means having a storage area for storing distribution data from the information distribution server device; and an information distribution request transmission means for transmitting at least distribution request source identification information, distribution information identification information for identifying information requested for distribution, and free space in the storage area of the data storage means at the relevant time to the information distribution server device to make an information distribution request; and the information distribution server device is equipped with: a means for receiving at least distribution request source identification information, distribution information identification information for identifying the information requested to be distributed, and information on the free space of the personal digital assistant from the personal digital assistant, and receiving an information distribution request from the personal digital assistant; a distribution information generation means for generating a transmission information segment to be transmitted to the personal digital assistant this time from the free space of the personal digital assistant for the distribution information specified by the distribution information identification information; a means for distributing the transmission information segment generated by the distribution information generation means to the personal digital assistant; and a billing processing means for billing the distribution request source identified by the distribution request source identification information based on the information capacity of the transmission information segment distributed to the personal digital assistant.

[0037] In the invention of Claim 35 with the above configuration, the personal digital assistant directly accesses the information distribution server device and makes a distribution request along with the free memory capacity of its own terminal. In response to this distribution request, the information distribution server device generates a transmission information segment according to the free memory capacity of the personal digital assistant for the distribution information specified by the distribution information identification information, and executes the distribution. After the distribution is executed, the information distribution server device performs a billing step for the distribution requester based on the information capacity of the distributed transmission information segment. [0038] According to the invention of Claim 35, for example, the personal digital assistant is able to access the information distribution server device as a Web server via the Internet and receive the desired content divided into transmission information segments according to the free capacity of the personal digital assistant. Moreover, in this case, the charge is made according to the capacity of the distributed transmission information segment, so that the charge is reasonable for the user.

[0039]

[Embodiment of the invention] Below, an embodiment of the information distribution system according to the present invention will be explained with reference to the drawings.

[0040] [First embodiment]

[Outline of the information distribution system] FIG. 2 is a diagram showing the overall outline of the first embodiment of the information distribution system. In this first embodiment, the terminal distribution server device is a so-called PC home server device 1, which is made up of a personal computer 1. The personal digital assistant is a PDA 2, which may be equipped by each family member. The information distribution server device is a Web server device 3 on the Internet.

[0041] In this embodiment, the PC home server device 1 and the PDA 2 are connected by a LAN (Local Area Network) within the home. The LAN can of course be configured as a wired LAN, but in this embodiment, as described later, a communication module such as Bluetooth (registered trademark) is used to configure a wireless LAN.

[0042] The PDA 2 can also be connected to a mobile phone terminal 8 via a communication adapter 7, and can access the PC home server device 1 via the mobile phone network 6 and the public telephone network 4 using the mobile phone terminal 8. This allows a user who has gone outside the LAN with the PDA 2 to access the PC home server device 1 from wherever they are.

[0043] In this embodiment, the PDA 2 that can access the PC home server device 1 is registered in advance with the PC home server device 1 and managed. That is, the PDA 2 accesses the PC home server device 1 in advance, and user identification information for identifying each family member and/or terminal identification information such as the serial number of the PDA 2 are registered as authentication data for the PDA 2. A PIN may also be registered if necessary.

[0044] After registration, when the PC home server device 1 is accessed by the PDA 2, it performs authentication based on authentication data such as registered user identification

information, terminal identification information, and PIN number, and executes information distribution as described below only for PDAs 2 that have been authenticated.

[0045] Moreover, depending on the configuration of the wireless LAN, when the LAN is configured, the devices may be registered and closed within the LAN. In such a LAN configuration, the above-mentioned authentication step for access from the PDA 2 within the LAN in the PC home server device 1 is not necessary. However, when the PDA 2 uses a mobile phone terminal to access the PC home server device 1 from a location outside the LAN, the PC home server device always performs authentication based on authentication data such as registered user identification information, terminal identification information, and PIN number.

[0046] The information distribution server device 3 and the PC home server device 1 are connected via the Internet 5 and the public telephone network 4.

[0047] FIG. 1 is a diagram for explaining information distribution and billing in this first embodiment.

[0048] The information distribution server device 3 distributes content information periodically or upon request from the PC home server device 1. The information distribution server device 1 charges for this content distribution on a per-content basis.

[0049] As a form in which the information distribution server device 3 distributes periodically, there is a form in which the operating company of the information distribution server device 3 and the owner of the PC home server device 1 or the LAN enter into a distribution contract and distributes content based on that distribution contract. An example of this is the distribution of electronic newspapers.

[0050] The information distribution server device 3 charges the PC home server device 1 or the owner of the LAN for each content.

[0051] The PC home server device 1 is equipped with a distribution information database, and stores and holds content information such as electronic newspapers obtained from the information distribution server 3 via the Internet 5, and content information read from a CD-ROM (Compact Disc-Read Only Memory) or a DVD (Digital Virtual Disc) in the distribution information database.

[0052] Then, the PDA2 transmits to the PC home server device 1 a content distribution request that comprises at least the identification information of the content requested for distribution, that is, distribution information identification information (hereinafter referred to as content identification information), distribution request source identification information for identifying the distribution request source, and the free memory capacity of the memory area that receives the distribution information.

[0053] As the distribution request source identification information, device-specific terminal identification information such as the serial number of the PDA2 or user identification information for identifying the user of the PDA2 can be used. In the following example, device-specific terminal identification information such as the serial number of the PDA2 is used as the distribution request source identification information.

[0054] When the PC home server device 1 receives a content distribution request from the PDA2 as a personal digital assistant, it authenticates the PDA2 as described above, and

then distributes the content information specified by the content identification information included in the distribution request to the requesting PDA2.

[0055] In this case, in this embodiment, the PC home server device 1 extracts the free memory capacity of the memory area of the PDA 2 that receives the distribution information from the distribution request, generates a transmission information segment, which is distribution information of a capacity that matches the free capacity, from the information of the content specified by the content identification information, and transmits the generated transmission information segment to the PDA 2.

[0056] At this time, when the content specified by the content identification information comprised in the distribution request is being distributed to the PDA 2 for the first time, the PC home server device 1 generates the transmission information segment from the information at the beginning of the content. However, when the content specified by the content identification information comprised in the distribution request has been distributed to the PDA 2 before, the PC home server device 1 distributes the continuation to the PDA 2.

[0057] For this reason, as described later, in this first embodiment, the PC home server device 1 stores in memory previous delimiter information for identifying the last part of the transmission information segment previously transmitted for each content for each distribution request source identification information. The PC home server device 1 then reads from the memory the previous delimiter information of the content specified by the content identification information included in the distribution request, generates the current transmission information segment from the delimiter position indicated by the previous delimiter information, and distributes it to the PDA 2.

[0058] In this first embodiment, no charge is incurred for the delivery of each transmission information segment from the PC home server device 1 to the PDA 2.

[0059] Furthermore, in this first embodiment, the user is able to check the transmission information segment generated by the PC home server device 1 on the PDA 2 side and request the PC home server device 1 to regenerate the transmission information segment. This is to take into consideration cases where the user wants a transmission information segment that comprises the last part of the previous transmission information segment because the user wants to reread the last part of the previous transmission information segment, or where the part connected to the previous transmission information segment is not necessarily required.

[0060] Furthermore, in this embodiment, the delivery request from the PDA 2 comprises information on the display of the PDA 2, such as an LCD (Liquid Crystal Display) (hereinafter referred to as display information). This display information comprises, for example, the number of vertical and horizontal pixels on the display screen, and the bit depth (for example, 8 bits of color for 256-color display, or 4 bits of gray for 16-level grayscale display). This display information enables PC home server device 1 to know the image size that can be displayed on one screen.

[0061] By notifying PC home server device 1 of this display information, it can convert images such as digital photographs and illustrations contained in articles in an

electronic newspaper into an appropriate format and distribute them.

[0062] For example, if the photo data stored in PC home server device 1 is uncompressed data of 640 x 480 dots and 16-bit color, and the display of PDA 2 is 320 x 240 dots and 4-bit grayscale, then PC home server device 1 will convert the data of the transmission information segment to be distributed into an image format suitable for the display of PDA 2, and in some cases will also compress it before distributing it. At this time, PC home server device 1 will perform calculations to generate the transmission information segment according to the free memory capacity of PDA 2, based on the volume of this converted image data.

[0063] Of course, the PC home server device 1 may distribute the data as is without performing image conversion processing, and the PDA 2 may convert and display the data to suit its display. However, storing unconverted image data in the PDA 2, which has a small memory capacity, is not efficient, and the time required for data transmission is also long. Therefore, as in this embodiment, it is preferable to distribute the data after performing image conversion processing on the PC home server device 1 side.

[0064] The PC home server device 1 extracts information about the display of the PDA 2 from the distribution request, and if the distribution information is display information, it also converts the information to be distributed into information that matches the display capabilities of the PDA 2 that made the distribution request, and transmits it.

[0065] [Configuration of PC home server device 1 as an example of a terminal distribution server device] FIG. 3 shows an example of the configuration of PC home server device 1, it is configured by connecting, to a system bus 100, a CPU (Central Processing Unit) 101, a ROM (Read Only Memory) 102, a RAM (Random Access Memory) 103, a display controller 104 that connects a display 105, a multi-disc drive device 106 for driving disks 10 such as CD-ROMs and DVDs, a distribution content database 107 for storing information on the content to be distributed, a telephone network interface 108 for connecting to the public telephone network 4, an interface 109 for connecting a wireless LAN communication module 110 (such as Bluetooth (registered trademark)), a distribution data storage unit 111, a previous break information control memory unit 112, an image conversion processing unit 113 and a screen information memory 114.

[0066] As described above, the distribution content database 107 stores content information downloaded by the PC home server device 1 from the information distribution server device 3 via the Internet 5 for a fee, and content information read from the disc 10 via the multi-disc drive device 106, in correspondence with the content identification information.

[0067] The discs 10 comprise those purchased at a store, as well as those sent periodically or at any time by disc providers with which the PC home server device 1 has a paid disc distribution contract.

[0068] The screen information memory 114 stores screen information such as a menu screen of distributable content, which is sent to the PDA 2 that has made the distribution request when the PC home server device 1 receives a distribution request from the PDA 2 connected by wireless LAN through the communication module 110.

[0069] The image conversion processing unit 113 is a processing unit that converts the transmission data to match the display capabilities, etc., based on the display information included in the distribution request from the PDA 2, as described above.

[0070] The ROM 102 stores a program that allows the CPU 101 to execute a series of information distribution processing procedures described later. This program also comprises a program for generating a transmission information segment based on the above-mentioned free memory capacity information included in the distribution request from the PDA 2.

[0071] The generation of the transmission information segment is a step that determines the part of the content that fits within the free memory capacity of the PDA 2 from the current previous delimiter position. For example, if the content is an electronic document consisting of character text information, it is not desirable to divide the document in the middle of the text, so the document is divided by periods, paragraphs, articles, chapters, etc. For example, it is desirable to divide the document by article for an electronic newspaper, and by paragraphs, chapters, etc. for a novel.

[0072] If delimiter information is assigned in advance by numbers or the like for each article, paragraph, chapter, etc., the information such as numbers can be managed as the delimiter information. However, when there is no delimiter information such as numbers, the information of the last paragraph, chapter, or the last few lines of the transmission information segment is used as the delimiter information.

[0073] In this embodiment, since the delimiter is performed as described above, even if the free memory capacity included in the distribution request from the PDA 2 is the same, the capacity of each transmission information segment differs depending on the content of the distribution information sent at that time. In addition, the generation calculation of this transmission information segment is recalculated every time a distribution request is made, but it is not necessary to obtain the delimiter information for the entire content each time.

[0074] For example, in the case of a novel, when a user finishes reading a page, he or she will usually want the next page to be delivered, or the previous page to go back and reread. Therefore, the PC home server device 1 as an information distribution server device is required to be able to calculate and update the delimiter information for about one or two pages relative to the current delimiter (previous delimiter).

[0075] In addition, if the segmented content comprises images or other content that requires a large capacity and it is difficult to fit them into the available capacity, a description of the image or a pictogram indicating that an image was present at that position may be inserted in place of the image.

[0076] The distribution data storage unit 111 is a buffer memory that stores the data of the generated transmission information segment. As described later, the transmission information segment may be modified and regenerated after it has been generated. In this case, the generated transmission information segment is stored in the distribution data storage unit 111, and the last determined transmission information segment is read out from the

distribution data storage unit 111 and transmitted to the PDA 2.

[0077] Under the control of the CPU 101, the previous break information control memory unit 112 stores and manages, for each terminal identification information of each PDA 2, the delimiter information for the transmission information segment last distributed for each content previously distributed to the PDA 2 as the previous delimiter information.

[0078] In response to a distribution request for content previously requested for distribution, the CPU 101 generates the current transmission information segment by referring to the previous delimiter information in the previous break information control memory unit 112. The CPU 101 is able to determine that content for which there is no previous delimiter information in the previous break information control memory unit 112 is content for which no distribution request has been received in the past. In such case, the CPU 101 determines that the requested content has been requested for distribution for the first time, and generates the current transmission information segment from the beginning.

[0079] [Configuration of a PDA as an example of a personal digital assistant] FIG. 4 shows an example of the configuration of a PDA 2 as an example of a personal digital assistant. The PDA 2 in the present example is configured by connecting, to a system bus 200, a CPU 201, a ROM 202, a RAM 203, a display controller 204 for connecting a display 205 such as an LCD (Liquid Crystal Display), a key interface unit 207 for connecting a key input unit 206, a tablet interface unit 209 for connecting a tablet 208 for pen input, an interface 211 for connecting a wireless LAN communication module (such as Bluetooth (registered trademark)) 210, an audio interface unit 213 for supplying an audio output signal to a speaker 212, a data memory 214, and a communication adapter interface 215 to which a communication adapter 7 is connected.

[0080] The ROM 202 of the PDA 2 stores a program for realizing a function to access the PC home server device 1 through the wireless LAN using the communication module 210 and transmit a distribution request.

[0081] The data memory 214 is provided with a system data area and a user data area, and the user data area stores user data such as schedule data, address book data, and telephone directory data. In the present example, the user data area of the data memory 214, except for the area in which the above user data is stored, is used as a content area for content information received from the PC home server device 1.

[0082] For this reason, in the present example, as the amount of user data such as schedule data increases, the content area decreases relatively. Therefore, even if the capacity of the user data area in the initial state is known to this PDA 2, the capacity of the content area at the time of making a distribution request is unknown to the user and the server device.

[0083] In the present example, the PDA 2 always monitors and keeps track of the free capacity of the content area in the data memory 214. When transmitting a distribution request to the PC home server device 1, the distribution request comprises information on the free capacity of the content area at that time.

[0084] Further, the data memory 214 can also be a semiconductor memory such as a memory card that is

inserted and connected to the PDA 2 from the outside. Moreover, the data storage means is not limited to semiconductor memory, and can be a removable storage means such as an FD (floppy (registered trademark) disk) or MD (mini disk), or even a hard disk device.

[0085] [Configuration of information distribution server device] FIG. 5 shows an example of the configuration of the information distribution server device 3. In the present example, the information distribution server device 3 is configured by connecting to a system bus 300 a CPU 301, a ROM 302, a RAM 303, an Internet interface 304 for connecting to the Internet 5, a distribution content database 305 for storing content information to be distributed to the PC home server device 1, which is a terminal distribution server device, a timer 306, a terminal distribution server control memory unit 307 for managing distribution to the PC home server device 1, which is a terminal distribution server device, and an accounting processing unit 308.

[0086] The timer 306 measures the timing, for example, when regular distribution is performed. The terminal distribution server control memory unit 307 stores and manages the identification information and the billing settlement method for the PC home server device 1 as a terminal distribution server device that has a distribution contract with the control company of this information distribution server 3.

[0087] The terminal distribution server control memory unit 307 also manages the history of content distribution to the PC home server device 1 as a terminal distribution server device, and schedules for what, when, and to which terminal distribution server device to distribute.

[0088] The accounting processing unit 308 charges for each content each time content is distributed to the PC home server device 1 as a terminal distribution server device. The distribution content database 305 stores the content information and the billing unit price. The accounting processing unit 308 performs billing for the distributed content using the billing unit price in the distribution content database 305 based on the control information of the PC home server device 1 registered in the terminal distribution server control memory unit 307.

[0089] [Content distribution operation from information distribution server device to terminal distribution server device] FIG. 6 is a flowchart for explaining an example of content distribution operation from an information distribution server device to the PC home server device 1 as a terminal distribution server device. This example is an example of operation in which content such as electronic newspapers is distributed periodically to all terminal distribution server devices registered in the terminal distribution server control memory unit 307.

[0090] First, the CPU 301 of the information distribution server device 3 waits for the timing to distribute content such as an electronic newspaper (step S101). When it is determined that the distribution timing has arrived, the CPU 301 reads the content information to be distributed from the distribution content database 305 and distributes it to the PC home server device 1 as a terminal distribution server device (step S102). Then, after the distribution is completed, the CPU 301 performs billing processing for the distributed content for the terminal distribution server device that has completed the distribution (step S103).

[0091] Next, the CPU 301 determines whether distribution to all terminal distribution server devices to which the content should be distributed and that are registered in the terminal distribution server control memory unit 307 has been completed (step S104). If it is determined that distribution to all terminal distribution server devices has not been completed, the CPU 301 selects the next terminal distribution server device to which distribution should be performed (step S105), returns to step S102, and performs content distribution and billing processing from step S102 onward.

[0092] If it is determined in step S104 that distribution to all terminal distribution server devices has been completed, the CPU 301 returns to step S101 and waits for the next distribution timing.

[0093] [Description of the operation of content information distribution from the PC home server device 1]

[Operation of PDA 2] FIGS. 7 and 8 are flowcharts for explaining the processing operation of the PDA 2 when a distribution request is issued to the PC home server device 1 and the requested content information is received. The processing of this flowchart is mainly performed by the CPU 201 of the PDA 2. The following explanation assumes that the content to be distributed is an electronic newspaper, an electronic novel, or the like.

[0094] When the user instructs the PDA2 to access the PC home server device1 using a touch pen or the like, the distribution request step of the PDA2 starts from the start of FIG. 7, and the CPU201 accesses the PC home server device1 using the communication module 110 (step S201). At the time of this access, as described above, in this embodiment, the terminal identification information or user identification information stored in the ROM202 or RAM203 is read and sent as information for authentication. For authentication, the user may be prompted to input a PIN number, and the PIN number entered in response to this may be used.

[0095] Then, the CPU201 determines whether or not the PC home server device1 has been connected based on the information from the communication module 210 (step S202), and if the connection has not been established, an error message is displayed on the display 205 (step S203), and this processing routine ends.

[0096] When it is determined in step S202 that the PDA 2 is connected to the PC home server device 1, the PDA 2 that has accessed is authenticated based on the terminal identification information, user identification information, or password (step S204). If the PDA 2 is not authenticated, an error message to that effect is displayed on the display 205 (step S203), and this processing routine is terminated.

[0097] When the authentication is OK in step S204, a menu screen for services such as downloading is sent from the PC home server device 1, and this menu screen is received and displayed on the display 205 (step S205). Then, it is determined on the menu screen whether or not a distribution service has been selected by the user (step S206), and if a service other than a distribution service is selected, the processing routine for the selected service is started (step S207).

[0098] When it is determined in step S206 that a distribution service has been selected, a request input for the distribution service is sent to the PC home server device 1 (step S208).

Then, a list screen of distributable contents is sent from the PC home server device 1, which the PDA 2 receives and displays on the screen of the display 205 (step S209).

[0099] FIG. 9 shows an example of the screen display on the display 205 at this time. That is, on the screen 21 of the display 205 of the PDA 2, a list screen 22 of distributable contents, which in the present example includes "electronic newspapers," "electronic novels," "CD comics," and the like, is displayed as distributable contents. As described above, electronic newspapers are imported into the PC home server device 1 via the Internet, for example, every day, and stored in the distribution content database 107. In the electronic newspapers, different content identification information is assigned to each piece of information each day. Therefore, the content identification information changes with each passing day.

[0100] Information on electronic novels and CD comics is imported from the disk through the multi-disk drive device 106 and stored in the distribution content database 107. In electronic novels, content identification information is assigned to each novel. In the case of CD comics, content identification information is assigned to each information unit from one CD or each performance.

[0101] The user selects the content he or she wishes to request for distribution through this list screen of distributable content, and the PDA 2 accepts the selection input of the distribution content (step S210). It is determined whether the content selected by the user was previously selected and whether a portion of it is stored in the content area of the data memory 214 (step S211). This determination is made by referring to the content identification information of the information stored in the content area of the data memory 214.

[0102] When it is determined in step S211 that a content part of which is stored in the content area of the data memory 214 has been selected, it is determined that the user is requesting the continuation of the previously requested content, and the content information specified by the content identification information present in the content area of the data memory 214 is erased from the content area of the data memory 214 (step S212). The PDA 2 then recognizes the free memory capacity of the content area after erasure.

[0103] This is because when a continuation is requested, the content part before the continuation is no longer necessary, and it is also desirable to increase the free memory capacity of the content area of the data memory 214 as much as possible.

[0104] Following step S212, or when it is determined in step S211 that the selected content is not stored in the content area of the data memory 214, the content identification information (content ID), the terminal identification information (terminal ID), the free memory capacity of the content area of the data memory 214 at that time, and information about the display 214 are sent to the PC home server device 1 for a content distribution request (step S213).

[0105] As described below, the PC home server device 1 generates a transmission information segment for the current transmission (hereinafter, the transmission information segment of the content is referred to as the content segment) that is information delimited to fit the free memory capacity from the previous delimiter information (or from the beginning in the case of new content) for the content

specified by the content identification information and converted to fit the display 214 based on the display information. Then, the PC home server device 1 transmits, for example, one or several lines of information at the beginning of the generated content segment to the PDA 2 as delimiter confirmation information to inquire of the user who requested the distribution whether the information from this delimiter is acceptable.

[0106] Then, the PDA 2 receives the delimiter confirmation information at the beginning of the content segment currently being transmitted from the PC home server device 1 and displays it on the display 214 (step S221 in FIG. 8).

[0107] FIG. 10 shows an example of the display on the screen 21 of the display 214 at this time. That is, the display 214 displays a display screen 23 for delimiter confirmation information, and also displays an up key 24, a down key 25, a delimiter change key 26, and a decision key 27 as touch-type software keys.

[0108] Here, the up key 24 is used to request that the delimiter start position be moved to a position earlier than the current state, and the down key 25 is used to request that the delimiter start position be moved to a position later than the current state. However, in the present example, simply touching the up key 24 or down key 25 with a pen does not actually request a delimiter from the position of the delimiter requested to be changed, but rather means a request to review the area before and after the delimiter start position. When making an actual request to change the delimiter, the delimiter change key 6 is also touched with a pen.

[0109] Reviewing the area before and after the delimiter start position is useful when the user wants to confirm whether the delimiter position is correct. It is also considered that there may be cases where the user wants to request the current content segment including the area near the last part previously distributed, or where the user wants to skip several paragraphs from the previous delimiter part, or in the case of an electronic newspaper, where the user wants to skip the next article and request the article after that.

[0110] Then, as a result of reviewing the area before and after the delimiter start position, if the user recognizes that the content segment from the delimiter start position at that time is OK, the user presses the Enter key 27 twice.

[0111] The reason why the Enter key 27 is pressed twice in this manner is that, in the present example, during review, the display screen 23 for delimiter confirmation information may display a delimiter start position different from the delimiter start position of the actual content segment.

[0112] Taking this into consideration, in this embodiment, when the Enter key 27 is pressed once, the display screen 23 for delimiter confirmation information on the display 214 displays the delimiter start position of the content segment as the actual transmission information segment stored in the RAM 203, and also asks whether the delimiter start position of the content segment is OK. By operating the Enter key 27 again in response to this inquiry, a request to start distribution of the content segment is made. This prevents a content segment with a delimiter different from the one the user intended from being distributed.

[0113] Based on the above, the CPU 201 of the PDA 2 first determines whether the Enter key 27 has been pressed with a pen or the like (step S222). If it determines that the Enter key 27 has not been pressed, it determines whether the Up

key 24 or the Down key 25 has been pressed with a pen or the like (step S223). If it determines that the Up key 24 or the Down key 25 has not been pressed with a pen or the like, it returns to step S222.

[0114] Furthermore, if it determines in step S223 that the Up key 24 or the Down key 25 has been pressed with a pen or the like, it requests the PC home server device 1 for the previous or next delimiter candidate (step S224).

[0115] When the PC home server device 1 receives the previous or next delimiter candidate, it transmits delimiter confirmation information for the previous or next delimiter candidate consisting of a paragraph, chapter, or article. The PDA 2 then receives the delimiter confirmation information for the delimiter candidate and displays it on the display screen 23 of the display 214 for delimiter confirmation information in the same manner as in FIG. 10 (step S225).

[0116] Next, it is determined whether the delimiter change key 26 has been pressed with a pen or the like (step S226), and if it is determined that it has not been pressed, the step returns to step S222. If it is determined in step S226 that the delimiter change key 26 has been pressed, a request for the content segment of the delimiter at the delimiter candidate requested to be changed is sent to the PC home server device 1 (step S227). Then, the step returns to step S221.

[0117] When the PC home server device 1 receives a request for a content segment with a delimiter based on the delimiter candidate requested for change, it regenerates the content segment to be sent this time as requested and transmits it to the PDA 2. The PDA 2 receives it in step S221 and displays it on the display screen 23 for delimiter confirmation information on the display 214.

[0118] When it is determined in step S222 that the enter key 27 has been pressed, the beginning of the content segment at the time the enter key 27 was pressed is displayed as delimiter confirmation information on the display screen 23 for delimiter confirmation information on the display 214. A message "Is this delimiter OK?" is added to this screen (step S228).

[0119] In response to this, if the user is OK with the delimiter, he or she presses the enter key 27 again. If it is not that delimiter, the user operates the up key 24 or down key 25.

[0120] Then, the CPU 201 of the PDA 2 judges whether the decision key 27 has been pressed again (step S229). If it is judged that it has not been pressed again, the step proceeds to step S223, where it is judged whether the up key 24 or down key 25 has been pressed. If it is judged that the up key 24 or down key 25 has been pressed, the step for changing the delimiter from step S224 onwards is carried out as described above.

[0121] If it is judged in step S229 that the decision key 27 has been pressed again, the CPU 201 transmits a request to start distribution of the content segment for the selected content to the PC home server device 1 (step S230). In response, the content segment is sent from the PC home server device 1, so the PDA 2 receives the content segment and stores it in the content area of the data memory 214 in association with its content identification information (step S231).

[0122] Then, it waits for the content segment to be received, and when it confirms that it is received (step S232), it transmits a reception completion notification to the PC home server device 1 (step S233), and then disconnects the

wireless communication line (step S234), terminating this processing routine.

[0123] The above is an explanation of the distribution request in the case of a wireless LAN, but even if a mobile phone terminal 8 is attached to the PDA 2 via a communication adapter 7, and the PDA 2 accesses the PC home server device 1 through the mobile phone terminal 8 via the telephone networks 6 and 4, it is possible to make a distribution request and receive the distributed content by performing the same operation and processing as described above.

[0124] [Operation of PC home server device 1] Next, the processing operation of PC home server device 1 corresponding to the above-mentioned distribution request operation of PDA 2 will be described with reference to the flowcharts of FIG. 11 and FIG. 12. The processing of each step of this flowchart is mainly performed by the CPU 101 of PC home server device 1.

[0125] First, PC home server device 1 waits for access from PDA 2 (step S301), and when it receives access from PDA 2, it authenticates the accessing PDA in the same manner as in the first embodiment described above (step S302). Then, if the accessing PDA is not registered in PC home server device 1 and cannot be authenticated, it transmits "authentication NG" to the PDA (step S303).

[0126] If it is determined in step S302 that authentication has been successful, the CPU 101 reads out the service menu screen from the screen information memory 114 and transmits it to the PDA 2 (step S304). Then it is determined whether or not a request for a distribution service has been received from the PDA 2 (step S305), and if the request is for a service other than the distribution service, the step proceeds to a routine for executing the requested other service (step S306).

[0127] When it is determined in step S305 that a request for a distribution service has been received from the PDA2, the screen information of the distribution service, i.e., a list screen of distribution contents, is read from the screen information memory 114 and sent to the PDA2 (step S307).

[0128] As described above, based on this screen information of the distribution service, the user selects the content requested for distribution on the PDA2, and transmits the identification information (content ID) of the selected content, the terminal identification information (terminal ID) of the PDA2, the free memory capacity of the content area, and the display information of the PDA2, so that the PC home server device 1 receives this information (step S308).

[0129] Then, the CPU 101 of the PC home server device 1 searches the contents stored in the previous break information control memory unit 112 for previous delimiter information for the same distribution request source identification information and the same content identification information using the received content identification information and distribution request source identification information, in the present example, the terminal identification information of the PDA 2 (step S309), and determines whether the previous delimiter information was found as a result of the search (step S310).

[0130] If the previous delimiter information is not found in step S310, it is recognized that the content specified by the content identification information included in the distribution request from the PDA is the first one selected,

and the beginning of the content specified by the content identification information is set to the previous delimiter (step S311). Then, the step proceeds to the next step S312. Also, in step S310, if the previous delimiter information for the same distribution requester identification information and the same content identification information is found, the step proceeds to step S312 without going through step S311.

[0131] In this step S312, the distribution content database 107 is searched for the content specified by the content identification information received in step S308, and the content segment for the current transmission is calculated from the searched content based on the free memory capacity of the content area received in step S308 and the previous delimiter information, and the data of the calculated content segment is stored in the distribution data storage unit 111.

[0132] When calculating this content segment, the CPU 101 refers to the display information from the PDA 2 and processes the data using the image conversion processing unit 113 so that it matches the display capabilities of the display of the requesting PDA 20. The content segment data after the data processing is stored in the distribution data memory 112. The CPU 101 calculates and generates the content segment so that the capacity of the content segment after this data processing does not exceed the free memory capacity obtained from the PDA 2.

[0133] Then, once the content segment to be transmitted this time has been determined, the information of the beginning part of the content segment to be transmitted this time is transmitted to the PDA 2 as delimiter confirmation information (step S321 in FIG. 12).

[0134] Then, it is determined whether or not a distribution start request has been received from the PDA 2 (step S322). If it is determined that a distribution start request has not been received from the PDA 2, it is determined whether or not a request for a previous or subsequent delimiter candidate has been received (step S323). If a request for a previous or subsequent delimiter candidate has not been received, the step returns to step S322 and monitoring for the reception of a distribution start request.

[0135] When a request for a previous or next delimiter candidate is received, the CPU 101 changes the beginning of the content segment generated in step S312 to the position of the requested previous or next delimiter candidate, as described above. As described above, the previous or next delimiter candidate is determined in units of paragraphs, chapters, articles, etc.

[0136] Then, the information on the requested previous or next delimiter candidate is sent to the PDA 2 that made the request (step S324). Next, it is determined whether a delimiter change request has been sent from the PDA 2 (step S325). If a delimiter change request has not been received from the PDA 2 in step S325, the step returns to step S322 and monitors for the reception of a distribution start request.

[0137] Also, when a delimiter change request is received from the PDA2 in step S325, the content segment for the current transmission is recalculated and regenerated so that the delimiter position is as requested, and the content for the current transmission in the distribution data storage unit 111 is overwritten and stored (step S326). Then, the step returns to step S322.

[0138] When it is determined in step S322 that a distribution start request has been received, the CPU 101 reads the content segment data from the distribution data memory 111 and transmits it to the PDA2 via the communication module 110 (step S327). Then, the transmission of the content segment data is continued until a reception completion notification is received from the PDA2 (step S328), and when a receipt completion notification is received from the PDA2, the wireless communication line via the communication module 110 is disconnected (step S329).

[0139] Then, the last part of the content segment to be sent this time, for example a paragraph, chapter, article, or one to several lines, is stored as the previous delimiter information in the previous delimiter information control memory 112 in correspondence with the terminal identification information and content identification information of the PDA 2 (step S330). This completes the distribution processing routine in the PC home server device 1.

[0140] As described above, according to the first embodiment, for the content distributed from the information distribution server device 3 to the PC home server device 1 as a terminal distribution server device, the distribution from the information distribution server device 3 to the PC home server device 1 is charged on a content unit basis, and thereafter, the distribution of each content segment from the PC home server device 1 to the personal digital assistant is not charged, so that for the distribution of electronic newspapers, for example, the billing step can be performed in the same way as for paper newspaper delivery.

[0141] Moreover, according to this first embodiment, the PDA 2 as a personal digital assistant receives the distribution of content such as electronic newspapers in a content segment according to its free memory capacity, so even if the free memory capacity of the PDA 2 is small at the time of the distribution request, and even if the user does not know the free memory capacity, the user can check the delimiter display of the content he/she wants to distribute and press the "Enter key," and a content segment of an appropriate capacity for the free capacity will be distributed and read.

[0142] Furthermore, the PC home server device 1 stores and manages the delimiter information in association with the content identification information and the distribution requester identification information such as the terminal identification information of the PDA 2 and the user identification information, and when the PDA 2 requests the continuation of the content that has been distributed before, the PC home server device 1 distributes the continuation of the content to the PDA 2. Therefore, the user of the PDA 2 can receive all the information distributed, even if the content as a whole is larger than the free memory capacity, without worrying about charges.

[0143] Furthermore, even if schedule data or the like is added to the PDA 2 and the content area of the data memory 214 becomes relatively smaller, the PDA 2 notifies the PC home server device 1 of the free capacity at the time of requesting distribution, so that the PC home server device 1 distributes content segments divided into appropriate capacities according to the free memory capacity of the PDA 2, and the problem of the distribution data not being able to be stored in the content area of the PDA 2 does not occur.

[0144] Furthermore, in this embodiment, display information of the PDA2 is transmitted to the PC home server device1, and distribution information suitable for the display capabilities of the PDA2 is obtained from the PC home server device1. Therefore, the PDA2 does not need to convert the received distribution information to information suitable for the display capabilities of its own display, which reduces the burden on the PDA2 and simplifies the configuration.

[0145] In this way, in the first embodiment, the content downloaded from the information distribution server device is stored as a database in a personal computer in the home, and family members can use the personal digital assistant to read out only the necessary amount as needed. In this case, the user is charged only for the content distribution from the information distribution server device, and not for the distribution from the PC home server device to the personal digital assistant, so the user who requests distribution using the personal digital assistant can request distribution any number of times, receive the content for each content segment, and use it without worrying about the charge.

[0146] Moreover, in this embodiment, the user of the personal digital assistant is able to view information that has been appropriately converted according to the screen size of each terminal.

[0147] As described above, in this first embodiment, not only is information distributed through a home LAN using a communication module, but the PC home server device 1 is configured to be able to receive access from the personal digital assistant through a mobile phone network, so that the PDA serving as the personal digital assistant can be taken outside, and a mobile phone terminal or the like can be connected to the PDA, and the PC home server device 1 can be accessed from outside the home through the mobile phone network, which is very convenient.

[0148] In addition, a continuation key may be provided on the content delimiter confirmation screen shown in FIG. 10, and when the user operates the continuation key, the content segment of the continuation part of the content with the same identification information that was in the content area of the data memory 214 may be immediately distributed to the PDA 2.

[0149] In the above embodiment, the PDA transmits terminal identification information as distribution request source identification information when authenticating the accessing PDA and when making a distribution request in the PC home server device 1. If the serial number stored in the ROM 202 of each PDA at the time of manufacture is used as this terminal identification information, the server device can recognize the display capabilities of the display of the PDA terminal by storing this serial number and information about the display of the PDA terminal as a terminal information database. Therefore, in this case, it is not necessary to transmit display information from the PDA 2 to the PC home server device when making a distribution request.

[0150] In the above embodiment, the terminal identification information of the PDA 2 is transmitted to the PC home server device 1 as distribution request source identification information when making a distribution request. However, as described above, the user identification information may

be transmitted to the PC home server device 1 instead of the terminal identification information.

[0151] When transmitting terminal identification information to the PC home server device as distribution request source identification information when making a distribution request, it is desirable to specify the user for each PDA terminal.

[0152] In contrast, when transmitting user identification information to the PC home server device as distribution request identification information when making a distribution request, even if the user changes PDA terminal, the user can request distribution of content information that was previously requested from the middle of the content information. In other words, it is possible to imagine a case where the same user makes a content distribution request from a plurality of terminals (personal digital assistant, mobile phone, in-vehicle device, etc.), and it is also possible to imagine a case where a plurality of users (family members, colleagues at work, school, etc.) make distribution requests addressed to themselves from a single PDA terminal.

[0153] Also, the user of the PDA may select either the terminal identification information or the user identification information as the distribution request source identification information according to the usage form, and transmit it to the PC home server device.

[0154] In the above embodiment, Bluetooth (registered trademark) is used as the communication module, but other transmission and reception means using radio waves, for example, transmission and reception means using AM/FM/TV bands, may be used; not limited to this, IrDA communication means using infrared rays or communication means using light may also be used. Of course, the PC home server device and the PDA may be connected by wire.

[0155] In addition, the personal digital assistant is not limited to a PDA, and the terminal distribution server device is not limited to one configured with a personal computer, and can be applied to all cases where a LAN is configured with various distribution server devices and various personal digital assistants at home or work, for example.

[0156] Also, for example, a so-called set-top box for receiving digital broadcasts or cable television can be used as a terminal distribution server device. In such case, paid content obtained from data broadcasts, etc. can be stored as a database and distributed. The personal digital assistant is not limited to a PDA, and various terminals having a content storage area and a display screen, such as a pager or a mobile phone terminal, can be used.

[0157] Moreover, the above example has been described as a case where the PC home server device 1 is installed in a home, but it goes without saying that it can be used for a specific group, such as a workplace.

[0158] Additionally, in the above example, the charge for content distribution from the information distribution server device to the PC home server device as a terminal distribution server device can also be considered as a charge for the LAN unit including the terminal distribution server device. That is, in the case of the first embodiment, the person obligated to pay the charge may be the owner of the PC home server device 1, the LAN administrator, or the user of the personal digital assistant.

[0159] [Second embodiment] The second embodiment differs from the first embodiment in the method of billing.

That is, in the second embodiment, as shown in FIG. 13, content distribution from the information distribution server device 3 to the PC home server device 1 as a terminal distribution server device is performed without billing or at a low price. Instead, distribution from the PC home server device 1 to the personal digital assistant 2 employs a pay-per-use billing system that charges according to the volume of information distributed.

[0160] Therefore, in this second embodiment, the PC home server device 1 stores information on the distribution request from the personal digital assistant and the information capacity of the content segment distributed in response to that distribution request, including it in the distribution history information. The PC home server device 1 then notifies the billing server device 9 of the distribution history information, including the information capacity of the saved content segment. The billing server device 9 calculates an integrated value of the information capacity of the distributed information from the distribution history information, and performs billing processing according to the integrated information capacity.

[0161] Also, the PC home server device 1 may of course integrate the information capacity of the content segment that was distributed, and notify the billing server device 9 of the integrated information capacity. In such case, the billing server device 9 does not need to integrate the information capacity of the content segment that was distributed.

[0162] In this case, the notification from the PC home server device 1 to the billing server device 9 may be made voluntarily by the PC home server device 1; in this second embodiment, for example, at the end of each month, the billing server device 9 periodically accesses the PC home server device 1, and in response to the access, the PC home server device 1 notifies the billing server device 9 of the accumulated information capacity.

[0163] Furthermore, charges may be imposed on a per personal digital assistant or per user basis, or on a group basis including access from a LAN or mobile phone network centered on the terminal distribution server device.

[0164] When the charge is imposed for each personal digital assistant or each user, the PC home server device 1 as a terminal distribution server device stores the distribution information capacity of the content segment in association with the distribution request source identification information that can identify the personal digital assistant or user, and notifies the billing server device 9 of the distribution information capacity of the content segment together with the distribution request source identification information.

[0165] When the charge is imposed for each group that includes access from a LAN or a mobile phone network centered on the terminal distribution server device, in the present example, the identification information of the PC home server device 1 as a terminal distribution server device is registered in the billing server device 9, and the billing server device is notified of the distribution information capacity of the content segment in association with the identification information of the PC home server device 1.

[0166] In the following example, charges will be imposed on a group basis, including access from a LAN or mobile phone network centered on a terminal distribution server device.

[0167] [Example of the configuration of a PC home server device in the second embodiment] FIG. 14 shows an example of the configuration of a PC home server device 1 in this second embodiment, which is configured by connecting a distribution history memory 115 to the system bus 100 in addition to the configuration of the PC home server device 1 in the first embodiment shown in FIG. 3.

[0168] This distribution history memory 115 stores the distribution history for each PDA 2 as a personal digital assistant. This distribution history includes the information capacity of each content segment that was distributed. In this embodiment, the distribution history also includes the display information of each PDA 2.

[0169] The ROM 102 of the PC home server device 1 as the terminal distribution server device of this second embodiment contains not only a program for distribution requests, but also a program for implementing the function of transmitting information stored in the distribution history memory 115 to the billing server device 9 in response to an access from the billing server device 9.

[0170] [Example of the configuration of the PDA and information distribution server device in the second embodiment] The PDA 2 as an example of the personal digital assistant in this second embodiment is configured exactly the same as that in the first embodiment shown in FIG. 4, so it is not shown here.

[0171] The configuration of the information distribution server device 3 in this second embodiment is the same as that of the information distribution server device in the first embodiment, except that it does not have the billing processing unit 308 in FIG. 5.

[0172] [Content distribution operation in the second embodiment] The operation of the PDA 2 as a personal digital assistant when a distribution request is made in this second embodiment is the same as that in the first embodiment shown in FIGS. 7 and 8, so a description thereof will be omitted here.

[0173] The content distribution operation by the information distribution server device 3 to the PC home server device as a terminal distribution server device in this second embodiment is almost the same as that in the first embodiment, except that there is no accounting step operation in step S103 in FIG. 6, so a description thereof will be omitted here.

[0174] The operation of the PC home server device 1 in this second embodiment when a distribution request is received from the PDA 2 is exactly the same as that shown in FIG. 11. In this second embodiment, as shown in FIG. 15, the PC home server device 1 stores the end of the currently transmitted content segment as the "previous delimiter" in step S330, and then stores the capacity of the content segment distributed to the PDA 2 and the display information of the recipient PDA 2 in association with the content identification information of the distributed content in the distribution history memory 115 (step S331).

[0175] If a charge is imposed for each personal digital assistant or each user, in step S331, the capacity of the content segment, the display information of the recipient PDA 2, and the content identification information of the distributed content are associated with each other in association with the distribution requester identification

information that identifies each personal digital assistant or user, and are stored in the distribution history memory 115.

[0176] As described above, in the present example, the billing server device 9 accesses the PC home server device 1 at a specific time such as the end of the month, retrieves information from the distribution history memory 115, and performs billing processing.

[0177] FIG. 16 is a flowchart for explaining the processing operation of the billing server device 9.

[0178] The billing server device 9 waits for connection to the PC home server device 1 until the time for payment approaches (steps S401 and S402). Then, when it detects that the time for payment is approaching (step S402), it notifies the PC home server device 1 that the time for payment is approaching by e-mail or the like, as described above (step S403).

[0179] Then, when it is time to settle the bill (step S404), the device connects to PC home server device 1 by remote access (step S405) and prepares to receive data (step S406). During this preparation, a search is performed for the bill payer and the billing method for the accessed PC home server device 1.

[0180] Then, as described above, the data stored in the distribution history memory 115 is transferred from PC home server device 1, and all of this data is received (steps S407 and S408). In the present example, charges are imposed on a group basis centered on PC home server device 1, so the distribution history information is transmitted from PC home server device 1 along with the identification information of PC home server device 1.

[0181] If a charge is imposed for each personal digital assistant or user, the capacity of the content segment, the display information of the PDA2 of the distribution destination, and the content identification information of the distributed content are associated with each other in relation to the distribution request source identification information as described above, and are stored in memory 115 as a distribution history, so there is no need to notify the distribution request source identification information separately.

[0182] When data reception is completed, the distribution information capacity of each content unit is calculated based on the content identification information and the distribution history of each content unit (step S409). At this time, the display information of the PDA2 is referenced, and the distribution information capacity is weighted according to the display capacity, and the accumulation is performed.

[0183] For example, in the case of the information capacity of the content segment distributed to a PDA2 with a black and white display, the weighting coefficient k_b is set to $k_b = 0.7$, and the information capacity is multiplied by k and then accumulated. Furthermore, in the case of the information capacity of a content segment distributed to a PDA2 with a color display, the weighting coefficient k_c is set to $k_c = 1.0$, and the information capacity is multiplied by k and then integrated. Otherwise, the weighting coefficient k is set to be larger for distribution to a PDA2 with a higher resolution display, and the higher the display capability of the PDA, the heavier the weighting that is given to the distributed information capacity.

[0184] Then, the billing fee for the group centered on the PC home server device 1 is calculated based on the capacity unit

price for each content from the distribution capacity per content unit calculated by accumulating (step S410).

[0185] Once the calculation of the billing fee is completed, an invoice is issued to the person obligated to pay the billing fee (step S411). This invoice can also be issued by email or mail. The user who receives this invoice pays the fee, for example, by automatic transfer from a bank account or a credit company account. In some cases, the account number is registered in advance with the billing server device 9, and automatic withdrawal is performed.

[0186] Then, the payment from the person obligated to pay the billing fee is confirmed (step S412), and when the payment is confirmed, a receipt is issued (step S413). On the other hand, if the input from the person obligated to pay the billing fee cannot be confirmed, the payment deadline is waited for (step S414) and payment is urged (step S415).

[0187] Next, the operation of the PC home server device 1 that receives the remote access from the billing server device 9 will be described with reference to the flowchart in FIG. 18. [0188] First, the PC home server device 1 waits for a remote data transfer request from the billing server device 9 (step S501). Then, when the PC home server device 1 confirms that a remote data transfer request from the billing server device 9 has been received, the PC home server device 1 connects to the billing server device 9 (step S502). Then, the PC home server device 1 reads the delivery history data from the delivery history memory 115 and transmits it to the billing server device 9 together with the identification information of the PC home server device (step S503).

[0189] Then, the PC home server device 1 waits for the delivery history data to be transmitted to the billing server device 9 to be completed (step S504), and deletes the delivery history data (step S505). In addition, the delivery history data is not deleted immediately at this point, but the delivery history for the portion notified this time may be saved until the next time, and then deleted after the next notification. In this way, even if some kind of failure occurs in the billing step based on the distribution history data in the billing server device 9, the current amount can be obtained by accessing the PC home server device 1 as the terminal distribution server device again, and the billing calculation can be redone.

[0190] According to the second embodiment described above, distribution from the information distribution server device 3 to the PC home server device 1 is free or at a low cost, and distribution from the PC home server device 1 to the personal digital assistant is charged according to the amount of information distributed, so that the user is charged only for the amount used, and reasonable billing can be achieved.

[0191] In addition, in this second embodiment, the charge for the information capacity is changed according to the display capabilities of the personal digital assistant, so that in this respect, it is possible to charge rationally for both the user and the distributor.

[0192] [Another example of billing step in the second embodiment] In the second embodiment described above, the billing server device 9 remotely accesses the PC home server device 1 to retrieve the distribution history data and perform the billing step. However, the billing history data may be transmitted to the billing server device 9 by

accessing the billing server device 9 from the PC home server device 1.

[0193] FIG. 19 shows a flowchart for explaining the main part of the operation of the PC home server device 1 in this case.

[0194] In the modified version of the second embodiment, the operation of the PC home server device 1 when it receives a distribution request from the PDA 2 is exactly the same as that shown in FIG. 11, but as shown in FIG. 19, the operation after saving the end of the content segment of the current transmission in step S330 as the "previous delimiter" is different.

[0195] That is, after step S330, the PC home server device 1 accesses the billing server device 9 (step S341). Then, the billing server device 9 is notified of the information capacity of the content segment to be transmitted this time, together with the content identification information and the identification information of the PC home server device 1 (step S342). After this notification is completed, the communication path to the billing server device 9 is disconnected (step S343).

[0196] FIG. 20 is a flowchart for explaining the operation of the billing server device 9 that receives the notification from the PC home server device 1.

[0197] The billing server device 9 first waits for access from the PC home server device 1 as a terminal distribution server device (step S601). Next, it receives the information capacity of the content segment to be transmitted this time, which is transmitted together with the content identification information and the identification information of the PC home server device (step S602).

[0198] Next, based on the information volume of the received content segment transmitted this time, the billing step is performed for the accessed PC home server device 1 by referencing the billing unit price of the content (step S603). Then, the communication path with the PC home server device is disconnected (step S604), and the step ends.

[0199] In the example of FIG. 19, the PC home server device 1 accesses the billing server device each time a content segment is distributed to the personal digital assistant, and notifies the billing server device of the information volume of the distributed content segment, but it is also possible to notify the billing server device of a predetermined period of time or a plurality of times all at once.

[0200] In the above example, the person obligated to pay the bill calculated by the billing server device 9 can be the owner of the PC home server device 1 or the administrator of the LAN, so that the billing target in the second embodiment can be a group consisting of all personal digital assistants who access the PC home server device 1 from the LAN or telephone network and receive distribution. This makes it possible to perform billing processing for distribution not only for homes but also for specific groups such as workplaces.

[0201] [Third embodiment] The above-described embodiment is a case in which the PC home server device as a terminal distribution server device and the personal digital assistant are connected by a LAN, and information on a website on the Internet is received by the personal digital assistant via the PC home server device. In contrast, the embodiment described below is a case in which the Web server device on the website is an information distribution

server device, and the personal digital assistant receives information distribution directly from the Web server device via the Internet.

[0202] Therefore, in the third embodiment, charges are imposed on each personal digital assistant or each user, and the information distribution server device identifies them by the distribution request source identification information transmitted from the personal digital assistant when a distribution request is made.

[0203] In this third embodiment, the personal digital assistant also uses a PDA, but access to the Web server device from the PDA via the Internet is made through a mobile phone terminal connected to the PDA via a communication adapter.

[0204] FIG. 20 is a configuration diagram showing an overview of the entire third embodiment of the information distribution system. In this third embodiment, the information distribution server device is composed of a Web server device 12 connected to the Internet 5. The personal digital assistant is a PDA 20, and a mobile phone terminal 30 can be connected to it via a communication adapter 31.

[0205] The access from the PDA 20 to the Web server device 12 for requesting information distribution is made through the mobile phone terminal 30 connected via the communication adapter 31, via a wireless communication network, in the present example, a mobile phone network and the Internet.

[0206] In the third embodiment, a user who wishes to receive information distribution services from the Web server device 12 registers himself/herself with the Web server device 12 in advance. In this user registration, registration is made using the terminal identification information or user identification information of the PDA 20, as in the case of registering a PDA with the PC home server device in the first embodiment. In addition, a password may be used instead of the terminal identification information or user identification information, or in addition to these identification information.

[0207] Furthermore, in the case of this third embodiment, when a user registers with the Web server device 12 as an information distribution server device, a payment method for the fee, such as bank transfer, automatic withdrawal from a savings account, or payment by credit card, is registered. The Web server device 12 uses the above-mentioned registration information to authenticate the accessing user.

[0208] In addition, in this second embodiment, the device-specific terminal identification information such as the serial number of the PDA 2 is used as the distribution request source identification information for identifying the distribution request source to be transmitted to the server device 12 when a distribution request is made from the PDA 20. When the terminal identification information is used as the authentication information, the distribution request information does not need to include the terminal identification information. However, in the present example, the user identification information is used as the authentication information, and the distribution request information includes the terminal identification information as the distribution request source identification information.

[0209] In this third embodiment, the Web server device 12 as the information distribution server device does not have a previous delimiter information memory because storing the content identification information and the previous delimiter

information in association with each personal digital assistant that accesses it would require a huge storage capacity because the number of users making distribution requests is unspecified. Instead, the personal digital assistant transmits the previous delimiter information for the content to be requested to be distributed to the Web server device 12. Other configurations are almost the same as those in the first embodiment.

[0210] FIG. 22 is a diagram for explaining the method of billing for distribution in this third embodiment. In this third embodiment, when the personal digital assistant 20 requests distribution from the information distribution server device 12, the information distribution server device 12 transmits the requested content information, divided into content segments with capacities according to the free memory capacity of the personal digital assistant.

[0211] The information distribution server device 12 is equipped with a billing processing unit, which processes billing according to the information capacity of the content segment distributed to the personal digital assistant 20. In other words, in this third embodiment, the billing processing unit of the information distribution server device 12 also processes pay-per-use billing in the same way as in the second embodiment.

[0212] According to this third embodiment, when a personal digital assistant receives content distribution from a web server, the personal digital assistant can receive content distribution for each content segment in an amount that corresponds to the free memory capacity of the personal digital assistant, and charges are made according to the information capacity of each content segment received, resulting in very reasonable charges.

[0213] [Configuration of Web server device 12] FIG. 23 shows the configuration of the Web server device 12 in the present example, which is configured by connecting to a system bus 120 a CPU 121, a ROM 122, a RAM 123, an Internet interface 124 for connecting to the Internet 5, a distribution content database 125 for storing content information to be distributed, a distribution data storage unit 126, a distribution history control memory unit 127, an image conversion processing unit 128, a screen information memory 129, and an accounting processing unit 130.

[0214] The distribution content database 125 stores content information provided by a content provider and content information prepared independently by the operating company of the distribution server device 12, in association with the content identification information.

[0215] In this third embodiment, the content information stored in the distribution content database 125 is, for example, an electronic newspaper or an electronic novel, and is divided into units such as periods, paragraphs, articles, and chapters, and numbers are assigned to each delimiter unit in advance to facilitate delimiter control. The delimiter units to which numbers are assigned also become delimiter candidates.

[0216] The distribution data storage unit 126 is a buffer memory that stores the data of the generated transmission information segment, as in the case of the first embodiment described above. As will be described later, the transmission information segment may be modified and regenerated after it has been generated. In this case, the generated transmission information segment (content segment) is

stored in the distribution data storage unit 126, and the last determined transmission information segment is read out from the distribution data storage unit 126 and transmitted to the PDA 20.

[0217] The distribution history control memory unit 127 stores user registration information and the history of content distribution to the registered user. However, since the distribution history control memory unit 127 only needs to be used to perform billing processing for the user, in the present example, as described above, the previous delimiter information is not included in the history information.

[0218] The image conversion processing unit 128 is a processing unit that converts transmission data to suit the display capabilities, etc., based on the display information included in the distribution request from the PDA 20, as described above.

[0219] The screen information memory 129 stores screen information of an Internet homepage consisting of a menu screen of distributable contents, etc., to be transmitted to the accessing PDA.

[0220] The billing processing unit 130, under the control of the CPU 121, performs billing processing based on a pay-per-use system as described above for content distribution to the distribution request source indicated by the distribution request source identification information from the personal digital assistant 20 that made the distribution request.

[0221] The ROM 122 stores a program for the CPU 121 to execute a series of information distribution processing procedures described later, and a program for the billing processing executed by the billing processing unit 130. The programs in the ROM 122 also include a program for generating a transmission information segment based on the free memory capacity and previous delimiter information included in the distribution request from the PDA 20.

[0222] [Configuration of the PDA 20 as an example of a personal digital assistant] FIG. 24 shows an example of the configuration of the PDA 20 as an example of a personal digital assistant. The PDA 20 in the present example does not have the communication module 210 and interface 211 of the PDA 2 shown in FIG. 4, but is connected to a communication adapter interface 215 to which the communication adapter 31 is connected. In addition, the PDA 20 in this embodiment has a previous delimiter information storage unit 216 connected to the system bus 200. The rest of the configuration is the same as the PDA 2 shown in FIG. 4.

[0223] The previous delimiter information storage unit 216 stores the delimiter information of the last content portion of the content previously requested to be distributed by the PDA 20. As described above, in this third embodiment, the distribution content stored in the distribution content database 125 of the information distribution server device 12 is assigned a number in advance for each delimiter that is a delimiter candidate, and the number for that delimiter is stored as the delimiter information.

[0224] As in the previous embodiment, the last line or several lines of the content segment may be saved as the delimiter information, but this consumes a relatively large amount of memory capacity. In contrast, when numbers are assigned for each delimiter, as in the above example, very little memory capacity is required.

[0225] [Explanation of Content Information Distribution Operation]

[PDA 20 Operation] FIGS. 25 and 26 are flowcharts for explaining the processing operation of the PDA 20 when issuing a distribution request to the information distribution server device 12 and receiving the requested content information. The processing of this flowchart is mainly performed by the CPU 201 of the PDA 20. Note that the following explanation assumes that the content to be distributed is an electronic newspaper, an electronic novel, or the like.

[0226] When a user uses the PDA 20 to access the information distribution server device 12, as shown in FIG. 21, he or she attaches a communication adapter 31 to the PDA 20 and a mobile phone terminal 30 to the communication adapter 31.

[0227] Then, when an instruction to access the information distribution server device 12 is given on the PDA 20 by using a touch pen or the like, the distribution request step of the PDA 20 starts from the start in FIG. 25, and the CPU 201 accesses the information distribution server device 12 through the communication adapter 31 and the mobile phone terminal 30 (step S701). At the time of this access, as described above, in this embodiment, the terminal identification information or user identification information stored in the ROM 202 or RAM 203 is read and transmitted as information for authentication. Moreover, for authentication, as described above, the user may be prompted to input a PIN number, and the PIN number input in response may be used instead of or in addition to the identification information.

[0228] Then, the CPU 201 determines whether or not it is connected to the information distribution server device 12 (step S702), and if it is not connected, displays an error message on the display 205 (step S704), and ends this processing routine.

[0229] If it is determined in step S702 that it is connected to the information distribution server device 12, it authenticates the accessing PDA 20 based on the terminal identification information, user identification information, or password (step S703), and if it is not authenticated, displays an error message to that effect on the display 205 (step S704), and ends this processing routine.

[0230] If the authentication is OK in step S703, a menu screen for services such as downloading is transmitted from the information distribution server device 12, and the PDA 20 receives the menu screen and displays it on the display 205 (step S705). Then, it is determined whether or not a distribution service has been selected by the user on the menu screen (step S706), and if a service other than a distribution service has been selected, the step proceeds to a processing routine for the selected service (step S707).

[0231] If it is determined in step S706 that a distribution service has been selected, a request input for the distribution service is transmitted to the information distribution server device 12 (step S708). Then, a list screen of distributable contents is transmitted from the information distribution server device 12, and the PDA 20 receives it and displays the list screen of distributable contents similar to that shown in FIG. 6 on the screen of the display 205 (step S709).

[0232] The user selects the content to be requested through this list screen of distributable contents, and the PDA 20

accepts the selection input of the distribution content (step S710). It is determined whether or not the content selected by the user was previously selected and a part of it is stored in the content area of the data memory 214 (step S711). This determination is made by referring to the content identification information of the information stored in the content area of the data memory 214 or the memory contents of the previous delimiter information storage unit 216.

[0233] If it is determined in step S711 that a content part of which is stored in the content area of the data memory 214 has been selected, it is determined that the user is requesting the continuation of the content previously requested to be distributed, and the content information specified by the content identification information pre-transmitted in the content area of the data memory 214 is erased from the content area of the data memory 214 (step S712). The PDA 20 then recognizes the free memory capacity of the content area after erasure.

[0234] This is because when a continuation is requested, the content part before the continuation is no longer necessary, and it is also desirable to increase the free memory capacity of the content area of the data memory 214 as much as possible.

[0235] Following step S712, or when it is determined in step S711 that the selected content is not stored in the content area of the data memory 214, the content identification information (content ID), the terminal identification information (terminal ID), the free memory capacity of the content area of the data memory 214 at that time, the previous delimiter information, and information on the display 214 (hereinafter referred to as display information) are transmitted to the information distribution server device 12 for content distribution request (step S713).

[0236] Here, when it is determined in step S711 that the same content exists in the memory, the previous delimiter information for the content is read from the previous delimiter information storage unit 216 and transmitted to the information distribution server device 12. Also, when it is determined in step S711 that no content of the same type exists in the memory, this is the first time that the content is requested for distribution, so the number "0000," which indicates the beginning of the content, is transmitted to the information distribution server device 12 as the previous delimiter information.

[0237] As described below, the information distribution server device 12 generates a transmission information segment (content segment) for the current transmission, which is information delimited from the previous delimiter information (or from the beginning in the case of new content) for the content specified by the content identification information to fit the free memory capacity and converted to fit the display 214 based on the display information, for example. Then, the information distribution server device 12 transmits to the PDA 20 information from the beginning of the generated content segment, for example one or several lines, as delimiter confirmation information.

[0238] The PDA 20 receives the delimiter confirmation information at the beginning of the currently transmitted content segment from the information distribution server device 12 and displays it on the display 214 (step S721 in FIG. 26). The screen displayed at this time is similar to that shown in FIG. 10, as in the second embodiment. That is, the

display 214 displays the delimiter confirmation information display screen 23, and also displays the up key 24, down key 25, delimiter change key 26, and enter key 27 as touch-type software keys. The functions and usage of these keys 24, 25, 26, and 27 are exactly the same as in the first embodiment.

[0239] The CPU 201 of the PDA 20 first determines whether the enter key 27 has been pressed with a pen or the like (step S722). If it is determined that the decision key 27 has not been pressed, it is determined whether the up key 24 or the down key 25 has been pressed with a pen or the like (step S723). Then, if it is determined that the up key 24 or the down key 25 has not been pressed with a pen or the like, the step returns to step S722.

[0240] Also, if it is determined in step S723 that the up key 24 or the down key 25 has been pressed with a pen or the like, a request is made to the information distribution server device 12 for the previous or next delimiter candidate (step S724).

[0241] When the information distribution server device 12 receives this previous or next delimiter candidate, it transmits delimiter confirmation information for the previous or next delimiter candidate consisting of a paragraph, chapter, or article unit. Then, the PDA 20 receives the delimiter confirmation information of the delimiter candidate and displays it on the display screen 23 of the display 214 in the same manner as in FIG. 10 (step S725).

[0242] Next, it is determined whether the delimiter change key 26 has been pressed with a pen or the like (step S726), and if it is determined that it has not been pressed, the step returns to step S722. If it is determined in step S726 that the delimiter change key 26 has been pressed, a request for the content segment of the delimiter at the delimiter candidate for which the change has been requested is transmitted to the information distribution server device 12 (step S727). Then, the step returns to step S721.

[0243] When the information distribution server device 12 receives the request for the content segment of the delimiter at the delimiter candidate for which the change has been requested, it regenerates the content segment to be transmitted this time as requested and transmits it to the PDA 20. The PDA 20 receives this in step S721 and displays it on the display screen 23 of the display 214 for delimiter confirmation information.

[0244] If it is determined in step S722 that the Enter key 27 has been pressed, the head portion of the content segment at the time the Enter key 27 was pressed is displayed as delimiter confirmation information on the display screen 23 of the display 214 for delimiter confirmation information. A message "Is this delimiter OK?" is added to this screen (step S728).

[0245] In response to this, if the user is OK with the delimiter, he or she presses the Enter key 27 again. If the delimiter is not the desired one, the user operates the up key 24 or down key 25.

[0246] The CPU 201 of the PDA 20 then determines whether the Enter key 27 has been pressed again (step S729). If it is determined that the key has not been pressed again, the step proceeds to step S723, where it is determined whether the up key 24 or the down key 25 has been pressed. If it is determined that the up key 24 or the down key 25 has been

pressed, the step for changing the delimiter from step S724 onward is carried out as described above.

[0247] If it is determined in step S729 that the enter key 27 has been pressed again, the CPU 201 transmits a request to start distribution of the content segment for the selected content to the information distribution server device 12 (step S730). In response, the information distribution server device 12 transmits the content segment, and the PDA 20 receives the content segment and stores it in the content area of the data memory 214 in association with its content identification information (step S731).

[0248] Then, the step waits for the completion of reception of the content segment, and when the completion of reception is confirmed (step S732), a reception completion notification is transmitted to the information distribution server device 12 (step S733), and then the wireless communication line is disconnected (step S734). Then, the delimiter information such as the number of the current content segment is stored as the previous delimiter information in the previous delimiter information storage unit 216 in association with the content identification information (step S735). Then, this processing routine ends.

[0249] [Operation of the information distribution server device 12] Next, the processing operation of the information distribution server device 12 corresponding to the above distribution request operation of the PDA 20 will be described with reference to the flowcharts of FIGS. 27 and 28. The processing of each step of this flowchart is mainly performed by the CPU 121 of the information distribution server device 12.

[0250] Information distribution server device 12 first waits for access from PDA 20 (step S801), and when it receives access from PDA 20, it authenticates the accessing PDA (step S802). Then, if the accessing PDA is not registered in information distribution server device 12 and cannot be authenticated, it transmits "authentication NG" to the PDA (step S803).

[0251] If it is determined in step S802 that authentication has been successful, CPU 121 reads out the service menu screen from screen information memory 129 and transmits it to PDA 20 (step S804). Then, it is determined whether a distribution service request has been received from PDA 20 (step S805), and if it is a request for a service other than the distribution service, it proceeds to a routine for executing the requested other service (step S806).

[0252] When it is determined in step S805 that a request for a distribution service has been received from the PDA 20, the screen information of the distribution service, i.e., a list screen of distribution contents, is read from the screen information memory 129 and transmitted to the PDA 20 (step S807).

[0253] As described above, the user selects the content requested for distribution on the PDA 20 based on the screen information of the distribution service, and transmits the identification information (content ID) of the selected content, delimiter information for the selected content, terminal identification information (terminal ID) of the PDA 20, free memory capacity of the content area, and display information of the PDA 20, so that the information is received by the information distribution server device 12 (step S808).

[0254] Then, the CPU 121 of the information distribution server device 12 uses the received content identification information to search the distribution content database 125 and identify the content requested for distribution (step S809). Next, it is determined from the previous delimiter information received whether the previous delimiter is at the beginning of the content (step S810).

[0255] If it is determined that the previous delimiter is at the beginning of the content, it is recognized that the content specified by the content identification information is the first one selected from the PDA identified by the terminal identification information, and the beginning of the content specified by the content identification information is set as the previous delimiter (step S811). Then, the step proceeds to the next step S812. Also, if it is determined in step S810 that the previous delimiter information is not at the beginning of the content, the step proceeds to step S812 without passing through step S811.

[0256] In this step S812, the content segment to be transmitted this time is calculated from the content searched in step S809 based on the free memory capacity of the content area received in step S808 and the previous delimiter information, and the data of the calculated content segment is stored in the distribution data storage unit 126.

[0257] When calculating this content segment, the CPU 121 refers to the display information from the PDA 20 and processes the data using the image conversion processing unit 128 so that it matches the display capabilities of the display of the requesting PDA 20. The data of the content segment after this data processing are stored in the distribution data memory 126. The CPU 121 calculates and generates the content segment so that the capacity of the content segment after this data processing does not exceed the free memory capacity obtained from the PDA 20.

[0258] Then, when the content segment to be transmitted this time is obtained, the information of the beginning part of the content segment to be transmitted this time, for example, one or several lines, is transmitted to the PDA 20 as the delimiter confirmation information (step S821 in FIG. 28).

[0259] Then, it is determined whether or not a distribution start request has been received from the PDA 20 (step S822). If it is determined that a distribution start request has not been received from the PDA 20, it is determined whether a request for a previous or next delimiter candidate has been received (step S823). If a request for a previous or next delimiter candidate has not been received, the step returns to step S822 and monitors for the reception of a distribution start request.

[0260] Also, if a request for a previous or next delimiter candidate is received, the CPU 121 changes the beginning of the content segment generated in step S832 to the position of the requested previous or next delimiter candidate, as described above. As described above, the previous or next delimiter candidate is determined in units of paragraphs, chapters, articles, etc.

[0261] Then, confirmation information for the requested previous or next delimiter candidate is transmitted to the PDA 20 that made the request (step S824). Next, it is determined whether a delimiter change request has been transmitted from the PDA 20 (step S825). If a delimiter change request is not received from the PDA 20 in step S825,

the step returns to step S822 and monitors for the reception of a distribution start request.

[0262] Also, if a delimiter change request is received from the PDA 20 in step S825, the content segment for the currently transmitted content is recalculated and regenerated so that the delimiter position is the requested change, and the content for the currently transmitted content is overwritten and stored in the distribution data storage unit 126 (step S826). Then, the step returns to step S822.

[0263] If a distribution start request is received in step S822, the CPU 121 reads the content segment data from the distribution data memory 126 and transmits it to the PDA 20 (step S827). Then, the transmission of the content segment data is continued until a reception completion notification is received from the PDA 20 (step S828), and when a reception completion notification is received from the PDA 20, the wireless communication line is disconnected (step S829).

[0264] Then, the information capacity of the transmitted content segment is calculated and stored in the distribution history control memory unit 127 as a distribution history for each content in association with the distribution request source identification information (step S830). Next, the billing processing unit 130 executes billing processing for the distribution request source that made the distribution request from the personal digital assistant 20 based on the information capacity of the content segment calculated (step S831). Thereafter, the distribution processing routine in the information distribution server device 12 is terminated.

[0265] In this third embodiment, content is distributed from the information distribution server device 12 to the personal digital assistant 20 for each content segment with an information capacity according to the free memory capacity of the personal digital assistant, so that the same effect as in the first embodiment can be obtained with respect to information distribution.

[0266] In addition, in this third embodiment, the information distribution can be received by accessing the information distribution server device 12 via a mobile phone network and the Internet, so that content can be received even when the user is out, such as on the way to work.

[0267] In addition, according to this third embodiment, charges for content distribution are made according to the information capacity of each content segment that is distributed, so charges are reasonable for both the user and the distribution company.

[0268] [Another example of billing step in the third embodiment] In the above description, the information distribution server device is provided with a billing processing unit, which performs pay-per-use billing step according to the information capacity of the content segment. However, as shown in FIG. 29, a billing server device 13 can be provided separately from the information distribution server device 12, and the billing server device 13 can be configured to perform billing step by notifying the billing server device 12 of information capacity information for billing.

[0269] FIG. 30 is a flowchart for explaining the operation of the main parts of the information distribution server device in the present example. This flowchart corresponds to the part of FIG. 28 described above, and the difference between FIG. 30 and FIG. 28 is that step S832 is provided instead of step S831 in FIG. 28.

[0270] That is, in step S831 of FIG. 28, the billing step was performed according to the information capacity of the content segment, but in step S831 of the example of FIG. 30, the information distribution server device 12 notifies the billing server device 13 of the information capacity of the distributed content segment together with the distribution request source identification information from the personal digital assistant that requested the distribution. The billing server device 13 performs billing step for the distribution request source based on the notified information capacity of the content segment.

[0271] Similar to the above-mentioned embodiment, the information capacity of the content segment may be notified to the billing server device 13 not for each distribution of the content segment, but for a predetermined number of times of the content segment, or for a predetermined period of time.

[0272] In such case, the information distribution server device 12 may accumulate the information capacity of the distribution information of the content segment for the plurality of times, or for the content segment for the predetermined period, and notify the billing server device 13 of the accumulation result.

[0273] [Another example of the billing step of the third embodiment] Fig. 31 is a conceptual diagram for explaining the billing method of the present example. As shown in this conceptual diagram, the billing method of the present example does not adopt a pay-per-view system for content distribution, but charges on a per-content basis when the personal digital assistant requests the same content for the first time and the content is distributed. Then, no charges are imposed for subsequent distribution requests from the personal digital assistant for the same content.

[0274] This billing method of the present example is suitable for cases where, in this invention where distribution of content segments is the premise, when a request for distribution of a certain content requires all information up to the end of the content.

[0275] Fig. 32 is a flow chart for explaining the operation of the main parts of the information distribution server device in the present example. This flowchart corresponds to the part of FIG. 28 described above, and FIG. 32 differs from FIG. 28 in that steps S833 and S834 are provided instead of steps S830 and S831 of FIG. 28.

[0276] That is, in the example of FIG. 32, after the line is disconnected in step S829, in step S833 it is determined whether the distribution of the content segment for the content is the first distribution of the content to the personal digital assistant. If it is determined that it is the first distribution, then billing is performed on a content unit basis. If it is determined in step S833 that it is not the first distribution, then in step S834, since content billing has already been performed during the previous distribution, step S834 is bypassed and this processing routine is terminated without billing for the content segment at that time.

[0277] In the present example, compared to pay-per-use billing, once billing has been performed on a content unit basis, no charge is incurred even if the entire content is downloaded a plurality of times on a content segment unit basis. Therefore, this is an effective billing method when you want to download and use the same content a plurality of times.

[0278] In the present example, a billing server device may be provided separately from the information distribution server device, and when it is determined in step S833 that this is the first distribution, a billing step for the content unit may be requested.

[0279] [Other Modifications] In the above-mentioned third embodiment, the personal digital assistant is provided with a previous delimiter information storage unit, and the previous delimiter information is stored in the previous delimiter information storage unit. However, if the following is done, the previous delimiter information storage unit of the personal digital assistant can be omitted.

[0280] That is, the content segment stored in the data memory 126 itself is stored with the paragraph number, chapter number, etc., and when a request is made to distribute the continuation of the content for which the content segment exists in the data memory 126, the last paragraph number or chapter number of the content segment in the data memory 126 is extracted as the previous delimiter information and transmitted to the server device.

[0281] In the third embodiment, as in the first and second embodiments, a delimiter information storage unit may be provided on the distribution server device side to manage the information. On the other hand, in the first and second embodiments, as in the third embodiment, the personal digital assistant may notify the server device of the delimiter information.

[0282] In the third embodiment, the personal digital assistant is not limited to a PDA, and various terminals having a content storage area and a display screen, such as a pager or a mobile phone terminal, may be used.

[0283] Also, in this third embodiment, when a distribution request is made, the terminal identification information of the personal digital assistant is transmitted to the information distribution server device 12 as the distribution request source identification information. However, by transmitting the user identification information to the information distribution server device 12 instead of the terminal identification information, the same effect as that described in the modified example of the first embodiment can be obtained. Also, the user of the personal digital assistant may select either the terminal identification information or the user identification information as the distribution request source identification information according to the mode of use, and transmit it to the distribution server device.

[0284] The communication protocol for communication between the personal digital assistant and the information distribution server device 12 may be a general-purpose one such as TCP/IP on the Internet, or may be one that actively utilizes characteristics that make it easy to identify the user, such as PPPoE (PPP over Ethernet (registered trademark)).

[0285] In the first, second and third embodiments, for example, if the content is an electronic newspaper and the current delimiter information points to the beginning of an article, it is possible that the user wishes to move to another article or another major category (social page, economic page, etc.), so a message inquiring about this may be transmitted to the personal digital assistant.

[0286] Furthermore, in each of the above embodiments, the distribution of content consisting of characters and images has been described, but it is of course also possible to distribute content consisting of audio information such as a

novel being recited or audio information such as comics. Also, audio information accompanied by information such as illustrations and images of the performers may be used.

[0287] In the above embodiments, all distribution information is distributed to the terminal distribution server device or personal digital assistant via a communication path, but recording media such as CD-ROMs may be distributed to users or administrators of the terminal distribution server device by mail, etc. In this case, there are two methods: distributing the recording media free of charge or at a low cost, and collecting the cost of the recording media, including the content usage fee, at the time of distribution. The method of billing for distribution to the personal digital assistant after storing the recording media in the distribution content database can be the same as in the above-mentioned embodiment.

[0288] In the case of a method in which content is distributed from the information distribution server device to the terminal distribution server device and then redistributed from the terminal distribution server device to the personal digital assistant, as in the first and second embodiments, when the memory capacity of the personal digital assistant becomes large, it is possible to distribute content units from the terminal distribution server device to the personal digital assistant, rather than distributing content segments by segment.

[0289] [Effects of the Invention] As explained above, according to this invention, even if the free memory capacity of the personal digital assistant is small when a distribution request is made, and even if the user does not know the free memory capacity, a content segment of a capacity appropriate to the free capacity is distributed, and the user can enjoy it.

[0290] Furthermore, the server device stores and manages the delimiter information in association with the distribution request source identification information, and when a request is made from the personal digital assistant for the continuation of previously distributed content, the continuation of that content is distributed to the personal digital assistant, so that the user of the personal digital assistant can receive all of the distributed information, even if the content has a capacity larger than the free memory capacity of the personal digital assistant.

[0291] Furthermore, even if the content area of the personal digital assistant's data memory becomes smaller, the personal digital assistant notifies the server device of the free capacity at the time of requesting distribution, so that the server device distributes content segments divided into appropriate capacities according to the free memory capacity of the personal digital assistant, and the problem of the distribution data not being able to be stored in the content area of the personal digital assistant does not occur.

[0292] Furthermore, in this invention, the information on the display screen of the personal digital assistant is transmitted to the server device, and distribution information suited to the display capabilities of the personal digital assistant is obtained from the server device 1. Therefore, the personal digital assistant does not need to convert the received distribution information into information suited to the display capabilities of its own display, which reduces the burden on the personal digital assistant and simplifies the configuration.

[0293] Moreover, according to this invention, when distributing the above-mentioned transmission information segment by segment to the personal digital assistant, appropriate charges can be made in various cases.

[0294] For example, in the case of the invention of Claim 1, a charge is made only when the information distribution server device distributes to the terminal distribution server device, and no charge is made for distribution from the terminal distribution server device to the personal digital assistant. Therefore, the user of the personal digital assistant can receive distribution information from the terminal distribution server device in units of the free memory capacity of the personal digital assistant, and can use the distribution information any number of times free of charge. In addition, there is an advantage in that the number of personal digital assistants or users that can be connected to the terminal distribution server device is not important.

[0295] This aspect of the distribution system is suitable, for example, when the distribution information from the distribution information server device is an electronic newspaper, the terminal distribution server device is a server device at home or work, and the information is distributed to a plurality of users from the terminal distribution server device.

[0296] Furthermore, in the case of the invention of Claim 11, no billing step is performed when distribution is made from the information distribution server device to the terminal distribution server device, or distribution is made at a low price. Then, for distribution from the terminal distribution server device to the personal digital assistant, billing is applied according to the information capacity of the transmission information segment that corresponds to the free memory capacity of the personal digital assistant. Therefore, since the user is charged according to the amount of information downloaded to the personal digital assistant and used, billing is very reasonable.

[0297] In addition, in the case of the invention according to Claim 35, a distribution request can be made directly from the personal digital assistant to the information distribution server device, and information can be distributed for each transmission information segment according to the free memory capacity of the personal digital assistant, as described above. And since billing is based on the information capacity of the transmission information segment, billing is very reasonable.

[Brief Description of the Drawings]

[FIG. 1] A diagram for explaining the relationship between distribution and billing in the first embodiment of the information distribution system according to the present invention.

[FIG. 2] A diagram for explaining the outline of the first embodiment of the information distribution system according to the present invention.

[FIG. 3] A block diagram showing an example of the configuration of a PC home server device as an example of a terminal distribution server device in the first embodiment.

[FIG. 4] A block diagram showing an example of the configuration of a PDA as an example of a personal digital assistant in the first embodiment.

[FIG. 5] A block diagram showing an example of the configuration of an information distribution server device in the first embodiment.

[FIG. 6] A diagram showing a flowchart for explaining the distribution operation of the information distribution server device in the first embodiment.

[FIG. 7] A diagram showing a part of a flowchart for explaining the distribution request operation of the personal digital assistant in the first embodiment.

[FIG. 8] A diagram showing a part of a flowchart for explaining the distribution request operation of the personal digital assistant in the first embodiment.

[FIG. 9] A diagram showing an example of a screen display during a distribution request operation of the personal digital assistant in the first embodiment.

[FIG. 10] A diagram showing an example of a screen display during a distribution request operation of the personal digital assistant in the first embodiment.

[FIG. 11] A diagram showing a part of a flowchart for explaining the distribution processing operation of the terminal distribution server device in the first embodiment.

[FIG. 12] A diagram showing a part of a flowchart for explaining the distribution processing operation of the terminal distribution server device in the first embodiment.

[FIG. 13] A diagram for explaining the relationship between distribution and billing in a second embodiment of an information distribution system according to the present invention.

[FIG. 14] A block diagram showing an example of the configuration of a PC home server device as an example of a terminal distribution server device in the second embodiment.

[FIG. 15] A diagram showing a part of a flowchart for explaining the distribution processing operation of the terminal distribution server device in the second embodiment.

[FIG. 16] A diagram showing a part of a flowchart for explaining the processing operation of the billing server device in the second embodiment.

[FIG. 17] A diagram showing a part of a flowchart for explaining the processing operation of the billing server device in the second embodiment.

[FIG. 18] A diagram showing a flowchart for explaining the notification processing to the billing server in a PC home server device as an example of a terminal distribution server device in the second embodiment.

[FIG. 19] A diagram showing a part of a flowchart for explaining the main part of the distribution request operation of a personal digital assistant in the second embodiment.

[FIG. 20] A diagram showing the operation during the billing processing of the billing server device in the second embodiment.

[FIG. 21] A diagram for explaining an overview of the third embodiment of the information distribution system according to the present invention.

[FIG. 22] A diagram for explaining a first example of the relationship between distribution and billing in the third embodiment of the information distribution system according to the present invention.

[FIG. 23] A block diagram showing an example of the configuration of a Web server device as an example of an information distribution server device in the third embodiment of the information distribution system according to the present invention.

[FIG. 24] A block diagram showing an example of the configuration of a PDA as an example of a personal digital assistant in the third embodiment of the information distribution system according to the present invention.

[FIG. 25] A diagram showing a part of a flowchart for explaining the distribution request operation of the personal digital assistant in the third embodiment of the information distribution system according to the present invention.

[FIG. 26] A diagram showing a flowchart for explaining the continuation of the distribution request operation of FIG. 25.

[FIG. 27] A diagram showing a part of a flowchart for explaining the distribution processing operation of the information distribution server device in the third embodiment of the information distribution system according to the present invention.

[FIG. 28] A diagram showing a flowchart for explaining the continuation of the distribution request operation of FIG. 27.

[FIG. 29] A diagram for explaining a second example of the relationship between distribution and billing in the third embodiment of the information distribution system according to the present invention.

[FIG. 30] A diagram showing a flowchart for explaining the main part of the operation of the information distribution server device in the second example of the relationship

between distribution and billing in the third embodiment of the information distribution system according to the present invention.

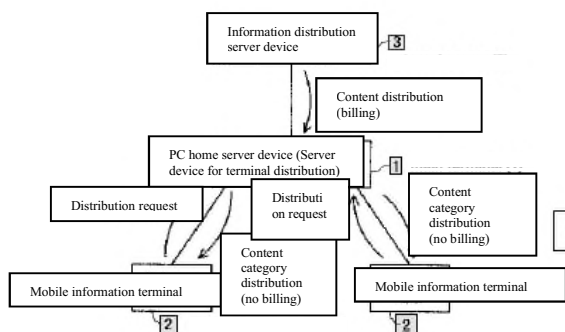
[FIG. 31] A diagram for explaining a third example of the relationship between distribution and billing in the third embodiment of the information distribution system according to the present invention.

[FIG. 32] A diagram for explaining a flow chart for explaining the main parts of the operation of an information distribution server device in a third example of the relationship between distribution and billing in the third embodiment of the information distribution system according to the present invention.

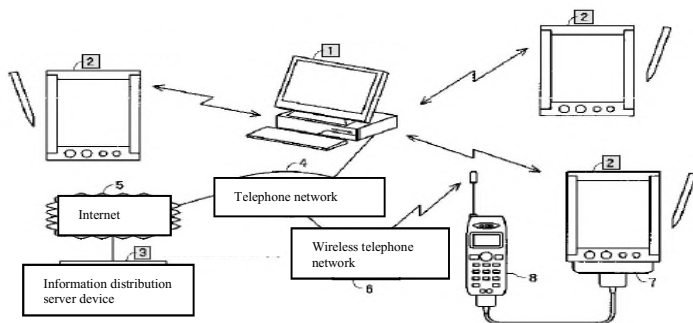
[Explanation of Symbols]

1...PC home server device (terminal distribution server device), 2, 20...PDA (personal digital assistant), 3...information distribution server device, 12...Web server device, 9, 13...billing server device, 20...PDA, 107...distribution content database, 111, 126...distribution data storage unit, 112...previous break information control memory unit, 113...image conversion processing unit, 214...data memory

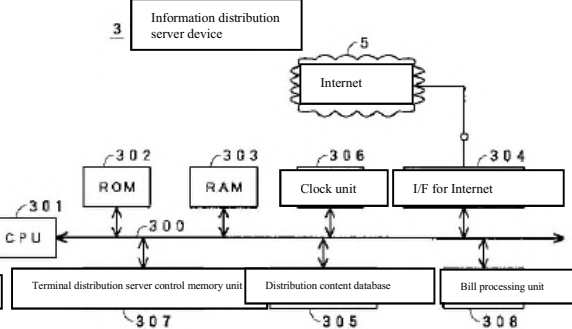
[FIG. 1]



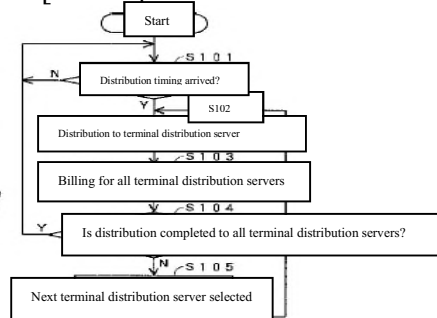
[FIG. 2]



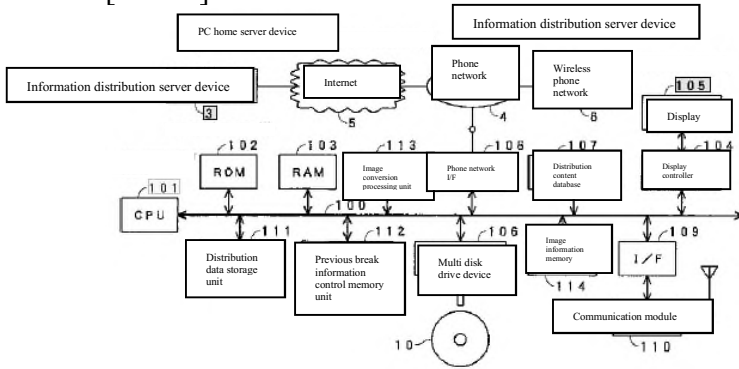
[FIG. 5]



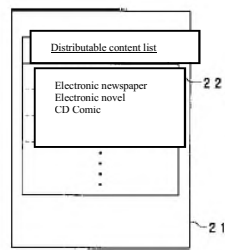
[FIG. 6]



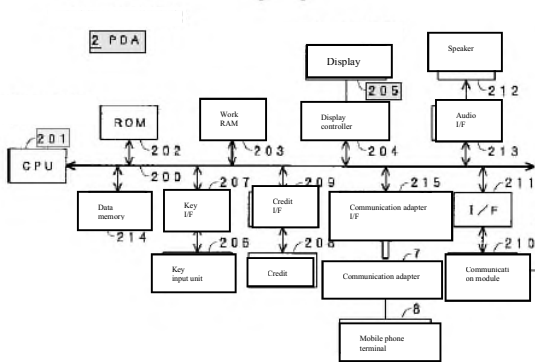
[FIG. 3]



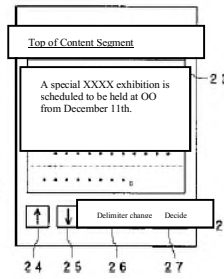
[FIG. 9]



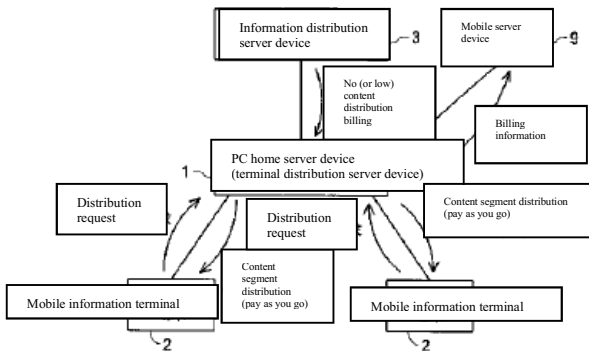
[FIG. 4]



[FIG. 10]

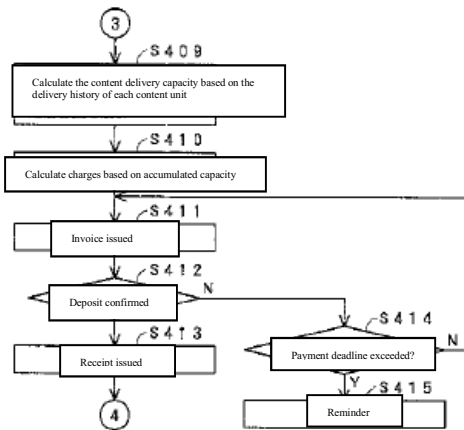


[FIG. 13]

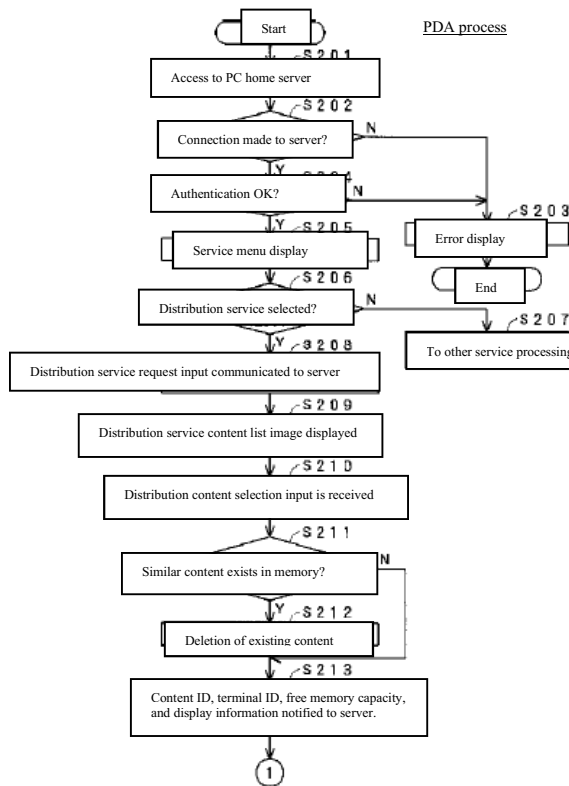


[FIG. 17]

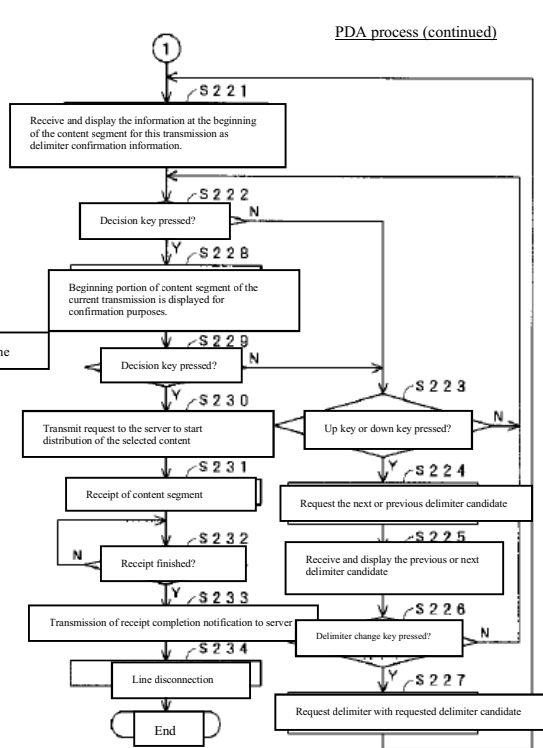
Billing server device (continued)



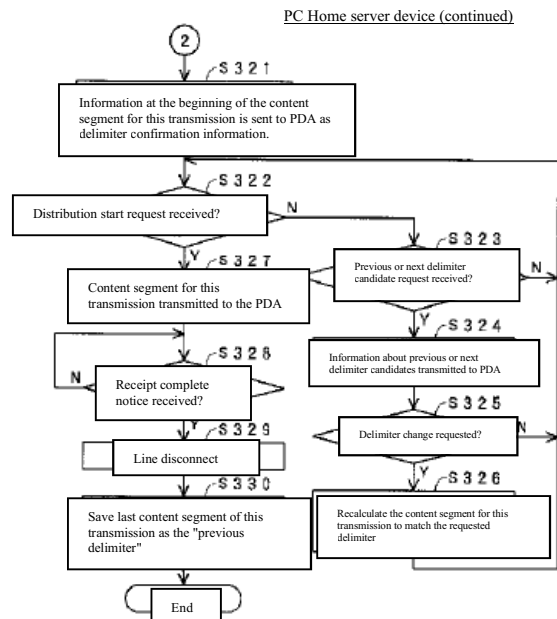
[FIG. 7]



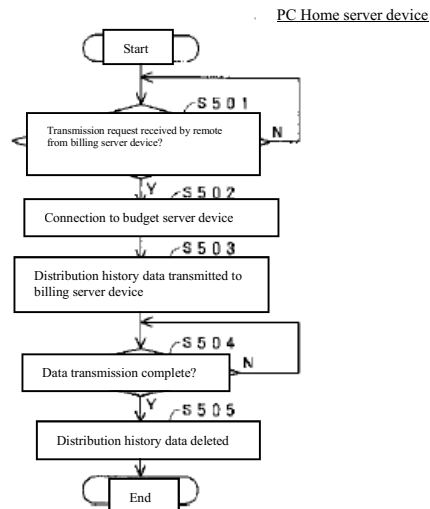
[FIG. 8]



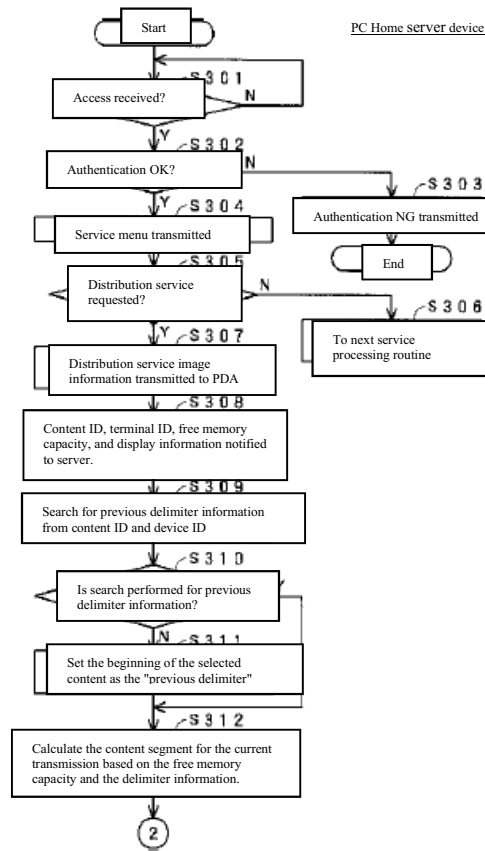
[FIG. 12]



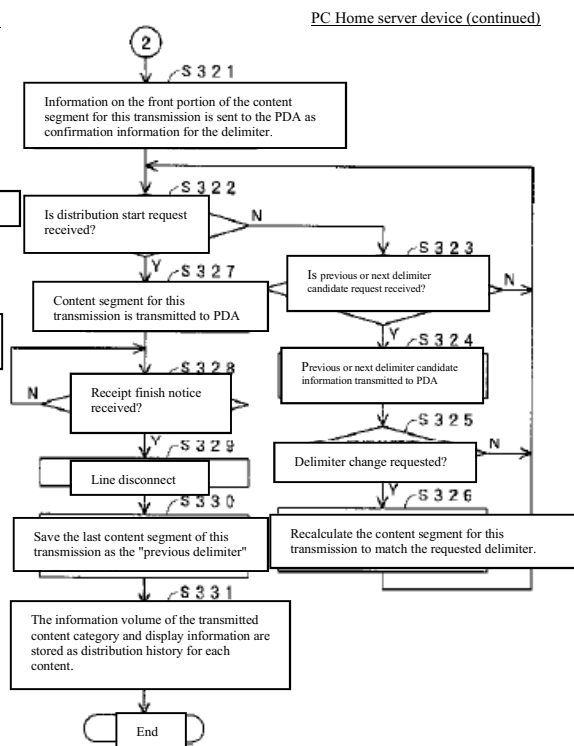
[FIG. 18]



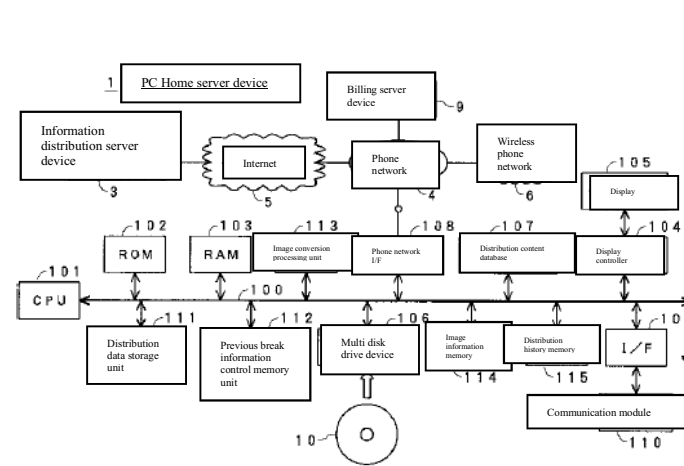
[FIG. 11]



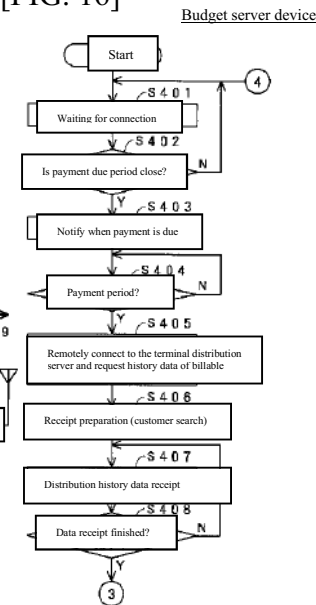
[FIG. 15]



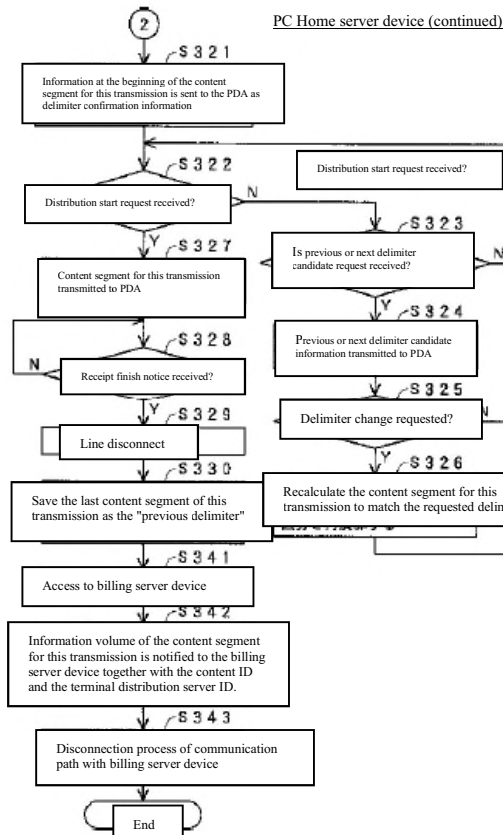
[FIG. 14]



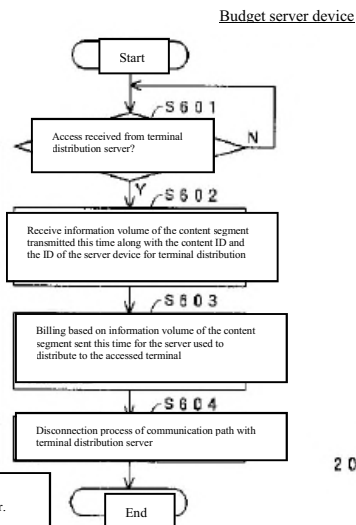
[FIG. 16]



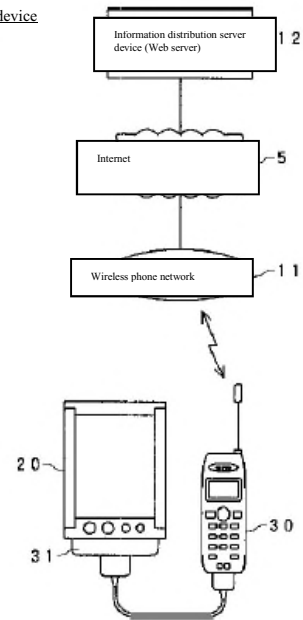
[FIG. 19]



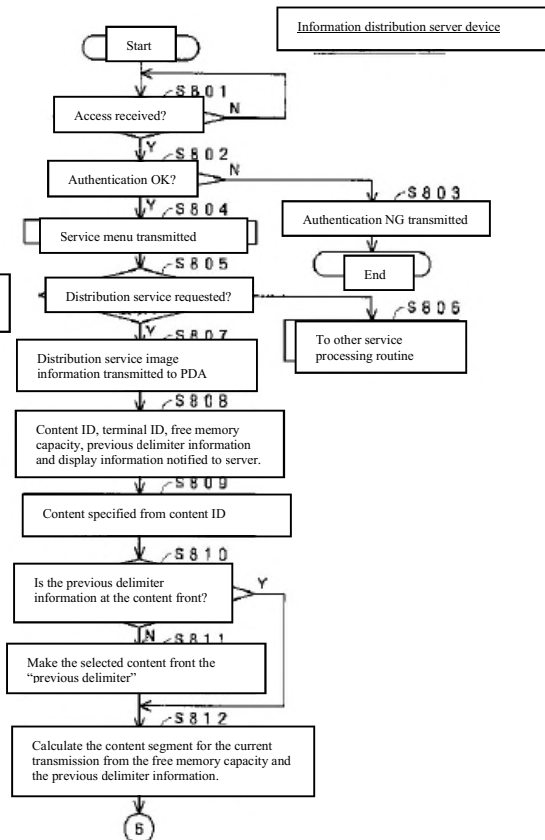
[FIG. 20]



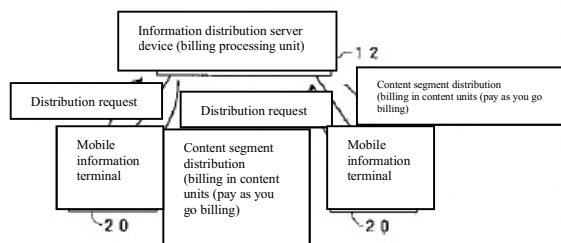
[FIG. 21]



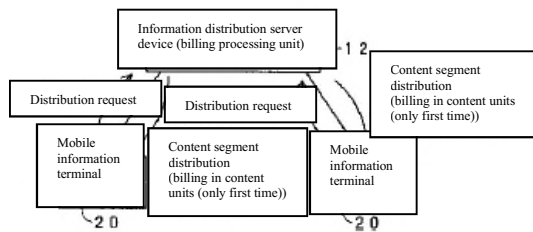
[FIG. 27]



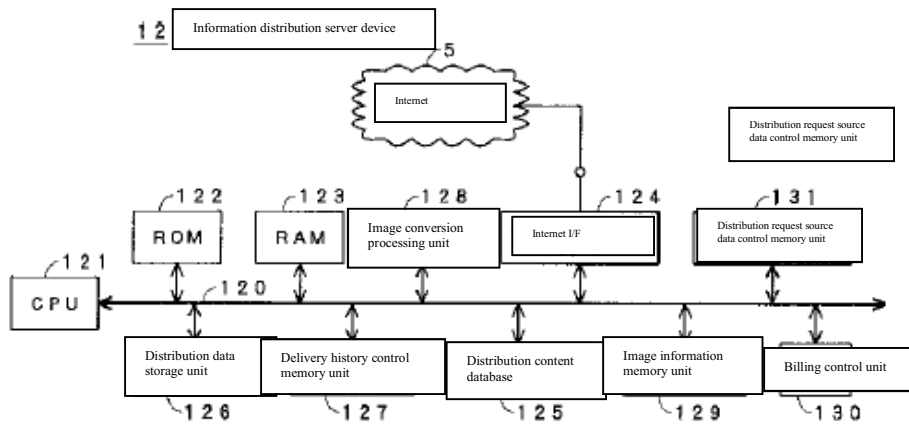
[FIG. 22]



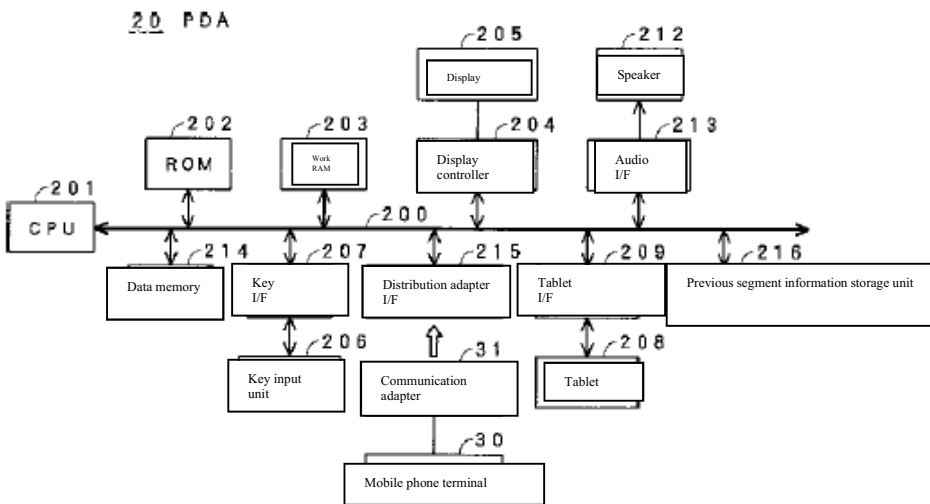
[FIG. 31]



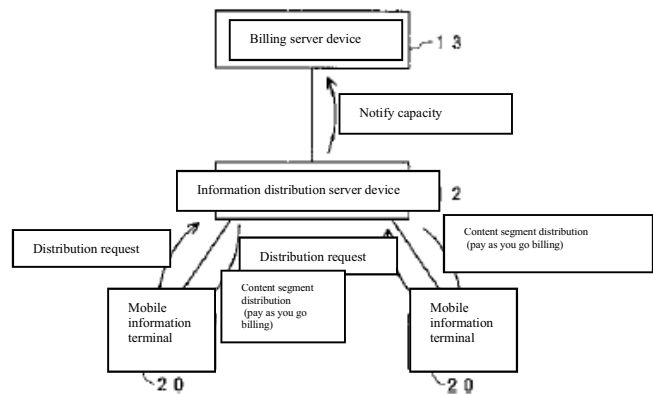
[FIG. 23]



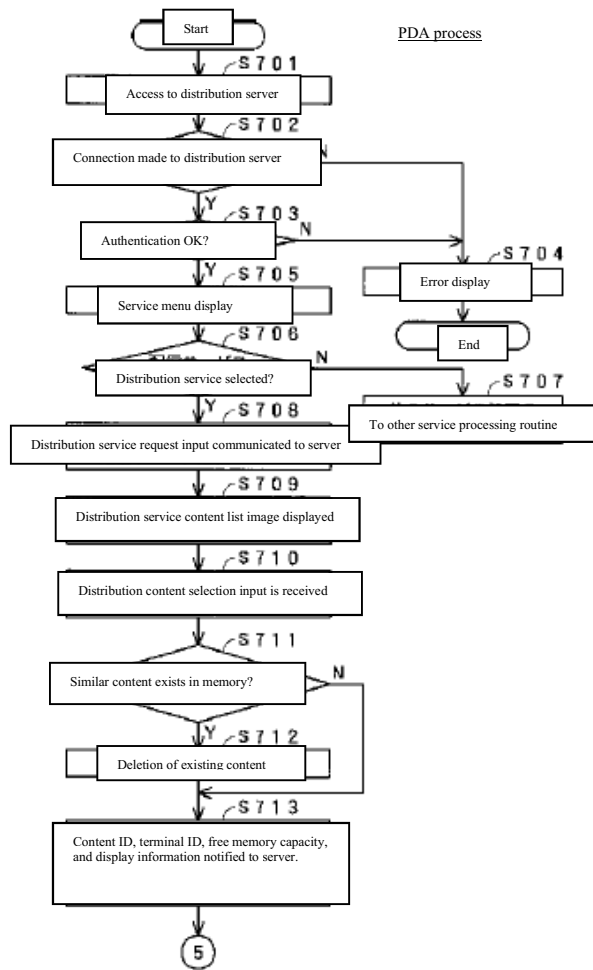
[FIG. 24]



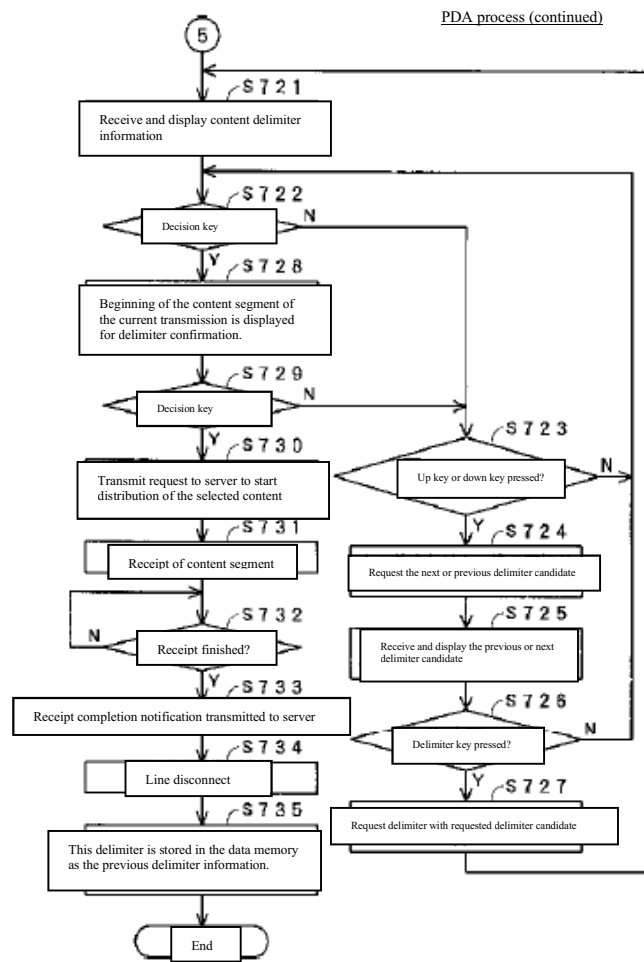
[FIG. 29]



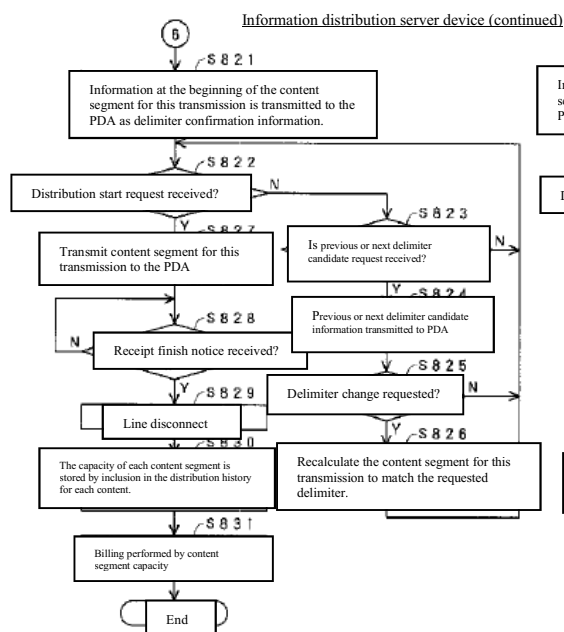
[FIG. 25]



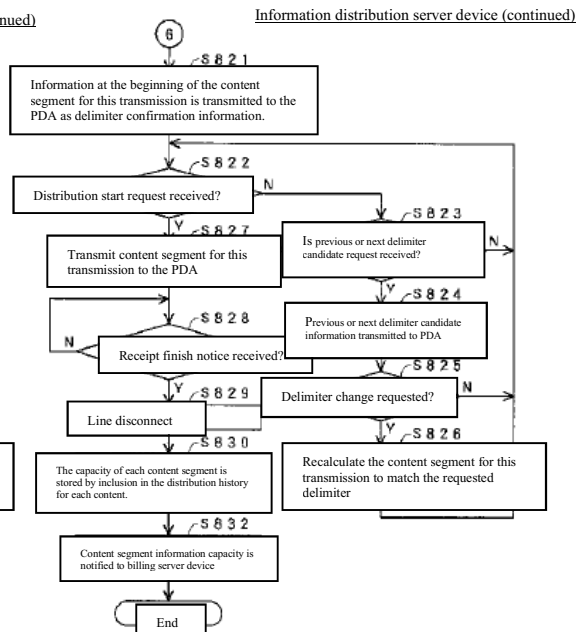
[FIG. 26]



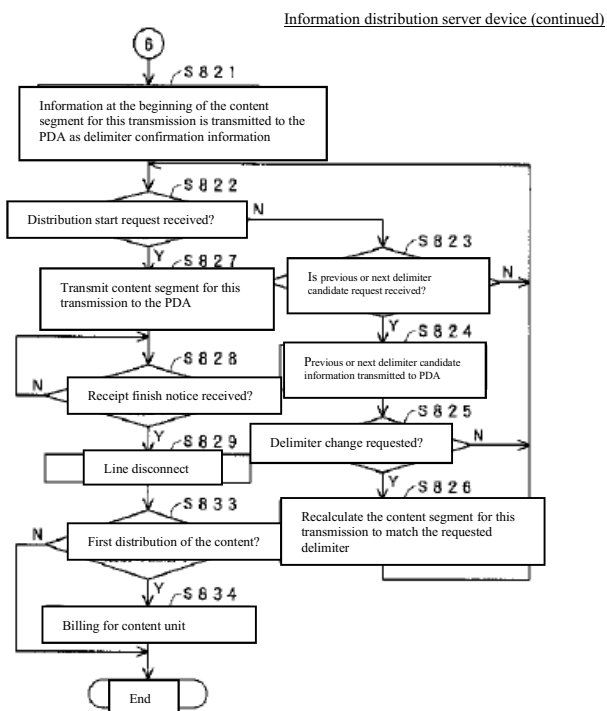
[FIG. 28]



[FIG. 30]



[FIG. 32]



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(51) Int. Cl.⁷

Classification Symbol

FI

Theme Code (Reference)

G 0 6 F 17/60

Z E C

G 0 6 F 17/60

Z E C

H 0 4 Q 7/38

H 0 4 B 7/26

1 0 9 M