according to the present invention includes: a plurality of image display devices that display a plurality of image contents transmitted from a ground communication device to a train; a communication device that is connected to an inter-vehicle communication path and an in-vehicle communication path and that relays information; and a central device that is connected to the communication device and ~~the~~ an on-vehicle communication device within a same vehicle by the in-vehicle communication path and that manages information transferred to a train. The central device includes: a first information storage unit where an image-contents-distribution management table in which identification information for uniquely identifying the respective image contents and the respective image contents are stored in a corresponding manner and the respective image contents are stored; and a first information control unit that determines one image display device that is to store therein image contents based on the image-contents-distribution management table, and distributes image contents stored in the first information storage unit to the one determined image display device. Each of the image display devices includes: a second information storage unit in which the image-contents-distribution management table and image contents distributed from the first information control unit are stored; and a second information control unit that determines a location where image contents are stored based on the image-contents-distribution management table and displays image contents read out from a determined location.

Advantageous Effects of Invention

[0014] According to the present invention, it is configured that respective image display devices transmit

determination unit 33 of the second information control unit 32, the storage location of the image contents 110 is determined based on the management table 100.

[0028] For example, when an image storage location described in the management table 100 is same as a device storing therein the management table 100, that is, when the image storage location is a data accumulation unit (a local storage) of the device itself, the second information control unit 32 reads out the image contents 110 stored in the local storage and displays the image contents 110 on the image display unit 34.

[0029] Meanwhile, when the image storage location described in the management table 100 is a device other than the device storing therein the management table 100, that is, when the image storage location is a data accumulation unit (a remote storage) of a device other than the device itself, the second information control unit 32 requests an information control unit of the corresponding device (for example, the first information control unit 23 of the central device 20) to transmit the image contents 110, and displays the image contents 110 transmitted in response to the transmission request on the image display unit 34.

[0030] FIG. 4 shows an example of the management table 100. In the management table 100, identification information for uniquely identifying the plurality of image contents 110 (for example, file names or image contents IDs shown in FIG. 4) and an image storage location are stored so as to correspond to serial numbers 1, 2, ..., n (n is an integer other than 0). For example, the storage locations of image contents with the IDs "001", "030", and "077" are the image display device 30-11. Similarly, the storage location of image contents with the ID "003" is the central

packet loss caused by noise and vibration in a vehicle can be reduced, and the throughput of the central device 20 can be improved.

[0038] Operations of the in-vehicle information distribution system will be explained below. First, an operation of the in-vehicle information distribution system when the management table 100 and the image contents 110 are not stored in the image display device 30 will be explained.

[0039] The management table 100 and the image contents 110 edited by the ground editing device 3 are received by the first information control unit 23 via the ground communication device 2, the on-vehicle communication device 1, and the communication unit 21, and are stored in the first information storage unit 24. The management table 100 is also transmitted to the image display device 30 incorporated in each vehicle, and is stored in the second information storage unit 35 of the image display device 30.

[0040] In an image-storage-state determination unit 25 of the first information control unit 23, an image storage location is confirmed in the order of the serial numbers in the management table 100. In the example of FIG. 4, it is determined that the image contents with ID "008" are stored in the image display device 30-21.

[0041] The image-distribution control unit 26 reads out, from the first information storage unit 24, the image contents 110 whose storage location has been specified by the image-storage-state determination unit 25, attaches a header indicating a transmission destination and the like to image data of the read image contents 110, and distributes the image data. In the second information control unit 32 of the image display device 30 having received this packet, the image data is extracted and

stored in the second information storage unit 35 as the image contents 110. With similar procedures, the image

or image data distributed from a remote storage is displayed, so that the S/W configuration of the image display unit 34 has been complicated. According to the in-vehicle information distribution system of the present embodiment, even when image data is read in from a local storage, an image-distribution control unit 36 that is identical to the image-distribution control unit 26 provided in the central device 20 is provided in the image display device 30, and the image display unit 34 can receive the image data from the image-distribution control unit 36. Therefore, it is not necessary to be conscious about whether the read source of the image data is a local storage or a remote storage, and thus the S/W configuration of the image display unit 34 can be simplified.

[0053] As another effect, when it is configured that image contents having transmitted from the central device 20 to each image display device 30 (for example, the image contents with the ID "001" shown in FIG. 4) are deleted from the first information storage unit 24 of the central device 20, the spare capacity of the first information storage unit 24 is increased, and thus the first information storage unit 24 can be used effectively.

[0054] It is also possible to configure that, in a group of image display devices incorporated in each vehicle, for example, the image display device 30-11 of the first car, the image display device 30-21 of the second car, and the like are designated as representative image ~~distribution~~ display devices, the management table 100 is stored only in the representative image display devices, and image data is transmitted based on the management table 100 only between the central device 20 and the representative image display devices. With this configuration, the processing load of the central device 20 is reduced as compared to a case of

transmitting image data between the central device 20 and a group of all the image display devices incorporated in each vehicle, and images displayed by a plurality of image display devices in the respective vehicles can be synchronized.

[0055] As explained above, according to the in-vehicle information distribution system of the first ~~present~~ embodiment, the central device 20 includes: the first information storage unit 24 where the management table 100 in which identification information for uniquely identifying the respective image contents 110 and the respective image contents 110 are stored in a corresponding manner and the respective image contents 110 are stored; and the first information control unit 23 that determines the image display device 30 that is to store therein the image contents 110 based on the management table 100, and distributes the image contents 110 stored in the first information control unit 23 to the determined image display device 30. Each image display device 30 includes: the second information storage unit 35 in which the management table 100 and the image contents 110 distributed from the first information control unit 23 are stored; and the second information control unit 32 that determines a location where the image contents 110 are stored based on the management table 100 and displays the image contents 110 read out from the determined location. With the above described configuration, problems of the system of the "image-display-device accumulation type" explained above can be solved, and it is possible to efficiently display image contents without causing cost increase and reliability degradation.

[0056] Second embodiment.

FIG. 7 is a configuration diagram of an in-vehicle

CLAIMS

1. An in-vehicle information distribution system comprising:

a plurality of image display devices that display a plurality of image contents transmitted from a ground communication device to a train;

a communication device that is connected to an inter-vehicle communication path and an in-vehicle communication path and that relays information; and

a central device that is connected to the communication device and ~~the~~ an on-vehicle communication device within a same vehicle by the in-vehicle communication path and that manages information transferred to a train, wherein

the central device includes:

a first information storage unit where an image-contents-distribution management table in which identification information for uniquely identifying the respective image contents and the respective image contents are stored in a corresponding manner and the respective image contents are stored; and

a first information control unit that determines one image display device that is to store therein image contents based on the image-contents-distribution management table, and distributes image contents stored in the first information storage unit to the one determined image display device, wherein

each of the image display devices includes:

a second information storage unit in which the image-contents-distribution management table and image contents distributed from the first information control unit are stored; and

a second information control unit that determines

communication device and ~~the~~ an on-vehicle communication device within a same vehicle by the in-vehicle communication path and that manages information transmitted to the train, wherein

the ground communication device includes a step of transmitting an image-contents-distribution management table in which identification information for uniquely identifying the respective image contents and the respective image contents are stored in a corresponding manner and the respective image contents to an on-vehicle communication device,

the central device includes

a step of storing therein the image-contents-distribution management table and the respective image contents that are received by the on-vehicle communication device,

a step of determining an image display device that is to store therein image contents based on the image-contents-distribution management table, and

a step of distributing image contents stored in the first image storage unit to a determined image display device, wherein

each of the image display device includes

a step of determining a location where image contents are stored based on the image-contents-distribution management table and

a step of displaying image contents read from a determined location.