



(11) **EP 2 452 860 B9**

(12) **CORRECTED EUROPEAN PATENT SPECIFICATION**

(15) Correction information:
Corrected version no 1 (W1 B1)
Corrections, see
Claims EN 10, 16

(48) Corrigendum issued on:
23.11.2016 Bulletin 2016/47

(45) Date of publication and mention
of the grant of the patent:
20.07.2016 Bulletin 2016/29

(21) Application number: **10796977.6**

(22) Date of filing: **04.06.2010**

(51) Int Cl.:
B61L 25/02 ^(2006.01) **H04N 7/173** ^(2006.01)
G09F 19/22 ^(2006.01) **H04N 21/262** ^(2011.01)
H04N 21/214 ^(2011.01) **H04N 21/845** ^(2011.01)
H04N 21/8547 ^(2011.01) **H04N 21/414** ^(2011.01)
H04N 21/81 ^(2011.01) **H04N 21/45** ^(2011.01)

(86) International application number:
PCT/JP2010/059551

(87) International publication number:
WO 2011/004666 (13.01.2011 Gazette 2011/02)

(54) **SYSTEM FOR DELIVERING CONTENTS CARRIED ON RAILROAD TRAIN AND METHOD FOR DISPLAYING RAILROAD TRAIN CONTENT INFORMATION**

SYSTEM ZUR LIEFERUNG VON INHALT IN EINEM SCHIENENZUG UND VERFAHREN ZUR ANZEIGE VON INHALTSINFORMATIONEN DES SCHIENENZUGS

SYSTÈME DE DISTRIBUTION DE CONTENU SUPPORTÉ SUR UN TRAIN ET PROCÉDÉ D AFFICHAGE D INFORMATIONS DE CONTENU DE TRAIN

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR

(30) Priority: **06.07.2009 JP 2009160122**

(43) Date of publication of application:
16.05.2012 Bulletin 2012/20

(73) Proprietor: **Mitsubishi Electric Corporation**
Tokyo 100-8310 (JP)

(72) Inventors:
• **TAKADA, Masahiro**
Tokyo 100-8310 (JP)

• **YAMAMURA, Tadashi**
Tokyo 100-8310 (JP)
• **SANO, Takaji**
Kobe-shi
Hyogo 652-0871 (JP)

(74) Representative: **Zech, Stefan Markus et al**
Meissner Bolte Patentanwälte
Rechtsanwälte Partnerschaft mbB
Postfach 86 06 24
81633 München (DE)

(56) References cited:
EP-A1- 1 845 725 EP-A1- 1 903 800
JP-A- 2003 099 670 JP-A- 2004 070 254
JP-A- 2006 293 595 JP-A- 2009 107 359

EP 2 452 860 B9

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

Field

[0001] The present invention relates to a train-mounted content delivery system that displays, on a display in a train, train content information including content information representing, as still images, information concerning services of the train such as next station guidance and transfer guidance (hereinafter referred to as "service image content") and content information representing, as moving images or still images, advertisement information for advertizing a product and the like and guidance information such as news, weather forecast, and stock information (hereinafter referred to as "advertisement/guidance image content") and a method of displaying the train content information.

Background

[0002] In trains in service in recent years, for the purpose of a more comfortable service and a more efficient and safe service, a digital transmission line is used for communication between car-mounted apparatuses of cars such as doors, air conditioners, brakes, motors, ATOs, SIVs, and automatic broadcast apparatuses and a train control apparatus for collecting, monitoring, and controlling train information. However, because a larger-capacity digital transmission line can be applied according to the network technology in recent years, delivery of video information and the like is also possible.

[0003] For the delivery of the video information and the like, there are an application in which a driver and a crew member collect and monitor video information from a fixed camera provided in a station platform and an application of passenger service such as delivery of information beneficial to passengers, for example, information concerning a train service such as destination guidance, next station guidance, stop guidance, and service information (arrival time change guidance), news, weather forecast, advertisements, and regional information (peculiar information around a stop).

[0004] In the system in the past of this type, when service image content is displayed, several seconds are necessary to read compressed content data and, at the same time, decompress the read data and expand the data in a memory, and display the data. Therefore, there is a problem in that there is a no-display period (hereinafter referred to as "blank") clearly noticed by human eyes at display switching time from a service image to a service image.

[0005] On the other hand, in a system disclosed in Patent Literature 1, a service image is expanded and prepared in advance before display and content switching of a display command is timed, whereby switching from a currently-displayed service image to the prepared service image is seamlessly performed. Document EP 1 903 800 A1 discloses another train-installed video informa-

tion delivery control display system.

Citation List

5 Patent Literature

[0006] Patent Literature 1: Japanese Patent Application Laid-Open No. 2005-57524

10 Summary

Technical Problem

[0007] However, in the system in the past disclosed in Patent Literature 1, although the blank that occurs during the switching of the service image display is taken into account, a blank that occurs during display switching from an advertisement/guidance image to a service image is not taken into account at all.

20 **[0008]** The present invention has been devised in view of the above and it is an object of the present invention to provide a train-mounted content delivery system and a method of displaying train content information that enable seamless display switching from an advertisement/guidance image to a service image and from the service image to the advertisement/guidance image.

Solution to Problem

30 **[0009]** In order to solve the above problem and in order to attain the above object, the subject matter according to claims 1 and 15 is proposed.

Advantageous Effects of Invention

35 **[0010]** According to the present invention, there is an effect that it is possible to provide a train-mounted content delivery system that enables seamless display switching from an advertisement/guidance image to a service image and from the service image to the advertisement/guidance image.

Brief Description of Drawings

45 **[0011]**

FIG. 1 is a diagram of the configuration of a train-mounted content delivery system according to a first embodiment of the present invention.

FIG. 2 is a diagram of detailed configurations of a train information apparatus, a video information delivery apparatus, and a display control apparatus that embody functions of the train-mounted delivery system according to the first embodiment.

FIG. 3 is a diagram for explaining the concept of display sequences and display contents in the first embodiment.

FIG. 4 is a sequence chart for explaining display con-

trol in the first embodiment.

FIG. 5 is a diagram of detailed configurations of a train information apparatus, a video information delivery apparatus, and a display control apparatus that embody functions of a train-mounted content delivery system according to a second embodiment.

FIG. 6 is a diagram for explaining the concept of display sequences and display contents in the second embodiment.

FIG. 7 is a sequence chart for explaining display control in the second embodiment.

Description of Embodiments

[0012] Train-mounted content delivery systems according to embodiments of the present invention are explained in detail with reference to the accompanying drawings. The present invention is not limited by details explained below.

First Embodiment.

[0013] FIG. 1 is a diagram of the configuration of a train-mounted content delivery system according to a first embodiment of the present invention. The train-mounted content delivery system according to the first embodiment includes, as shown in FIG. 1, a train information apparatus 1, a video information delivery apparatus 2, diverting apparatuses 3, display control apparatuses 4, and displays 5 and 6. In this train-mounted content delivery system, it is possible to appropriately switch and display service images including the same content and advertisement/guidance images including the same content on the displays 5 and 6. It is also possible to seamlessly perform switching from an advertisement/guidance image to a service image and switching from the service image to the advertisement/guidance image. These functions are realized by functions of a service image scheduler and an advertisement/guidance image scheduler (details are explained later) provided in the video information delivery apparatus 2. In FIG. 1, two displays connected to the display control apparatus 4 are shown as an example. However, one display or three or more displays can be connected. By adding the diverting apparatuses 3 connected in a row, it is also possible to increase a total number of displays mounted on a train without increasing the number of displays connected to the display control apparatus 4.

[0014] FIG. 2 is a diagram of detailed configurations of the train information apparatus 1, the video information delivery apparatus 2, and the display control apparatus 4 that embody the functions of the train-mounted content delivery system according to the first embodiment. In FIG. 2, the video information delivery apparatus 2 includes an advertisement/guidance image scheduler 21, a service image scheduler 22, and a storing unit (a first storing unit) 24. The display control apparatus 4 includes a display control unit 41, a storing unit (a second storing

unit) 42, and an advertisement/guidance image storing buffer 44. Advertisement/guidance image content 26, which is one of kinds of train content information, is stored in the storing unit 24 of the video information delivery apparatus 2. Service image content 46, which is one of kinds of train content information, is stored in the storing unit 42 of the display control apparatus 4. Functions of the advertisement/guidance image scheduler 21 and the service image scheduler 22 included in the video information delivery apparatus 2 and the display control unit 41 included in the display control apparatus 4 among these components are explained later. The advertisement/guidance image storing buffer 44 is a buffer for synchronizing display switching from a service image to an advertisement/guidance image and is different from a buffer (not shown) for temporarily accumulating the advertisement/guidance image content 26 from the video information delivery apparatus 2. When an advertisement/guidance image display command from the advertisement/guidance image scheduler 21 is output by this advertisement/guidance image storing buffer 44, an advertisement/guidance image to be displayed is quickly output to the displays 5 and 6.

[0015] On the other hand, the train information apparatus 1 stores, as train information necessary for generation of, in particular, the service image content 46 among the kinds of train content information, train identification information 10a including a train number for identifying a train, train position information 10b including kilometrage from the starting station and a traveling area of the train, train service information 10c including stop information and estimated arrival time, train present condition information 10d including arrival time and the number of passengers, and train command information 10e including a door opening and closing command and a stop command. These kinds of train information are information necessary for generation of service image information in the train-mounted content delivery system according to this embodiment such as, in particular, destination guidance, next station guidance, and stop guidance and is notified from the train information apparatus 1 to the video information delivery apparatus 2 and the display control apparatus 4 as appropriate.

[0016] FIG. 3 is a diagram for explaining the concept of display sequences and display contents according to the first embodiment. In the upper part of FIG. 3, display sequences 1 to 5 are shown as an example of display schedule data. In the lower part of FIG. 3, display contents repeatedly displayed in the display sequence 3 are shown as an example. The display sequence 3 includes service images 1 to 3, which are management targets of the service image scheduler 22, and advertisement/guidance images 1 to 3, which are management targets of the advertisement/guidance image scheduler 21. In the example shown in the figure, display sequences in the order of "service image 1", "service image 2", "advertisement/guidance image 1", "advertisement/guidance image 2", "advertisement/guidance image 3", and

"service image 3" are set.

[0017] In the display schedule data shown in FIG. 3, contents to be displayed, display times, and the like are described. The video information delivery apparatus 2 determines, based on train information (kilometrage information and train traveling speed information) from the train information apparatus 1, a shift among the display sequences. If the video information delivery apparatus does not determine a shift to the next sequence, a schedule in a display sequence is repeatedly displayed.

[0018] Display control in the first embodiment is explained with reference to FIG. 4. FIG. 4 is a sequence chart for explaining the display control in the first embodiment. The service image scheduler 22 manages overall display control in the train-mounted content delivery system. The advertisement/guidance image scheduler 21 operates according to an instruction of the service image scheduler 22. However, the advertisement/guidance image scheduler 21 performs management of advertisement/guidance image contents included in the display sequences and issuance of a display command concerning the advertisement/guidance image contents. The display control unit 41 performs display control for the displays 5 and 6.

[0019] In FIG. 4, the service image scheduler 22 outputs a service image generation command to the display control unit 41 of the display control apparatus 4 (sequence SQ11). The display control unit 41, which receives the service image generation command, performs preparation of a service image (step ST11). Because the service image is usually stored in a compressed format, the service image cannot be instantaneously displayed in that state. Therefore, in the processing at step ST11, processing for decompressing the compressed service image is executed. When the preparation for the service image is completed, the display control unit 41 notifies the service image scheduler 22 of the completion of the preparation (sequence SQ12). The service image scheduler 22, which receives the notification of the completion of the preparation, outputs a service image display command to the display control unit 41 (sequence SQ13). The display control unit 41, which receives the service image display command, displays the decompressed service image on the displays (step ST12). In this way, the processing at sequences SQ11 to SQ13 and the processing at steps ST11 and ST12 are processing for displaying the service image on the displays. It goes without saying that the service image generation command is issued when a service image that should be displayed before a service image to be processed is displayed.

[0020] Switching processing from service image display to advertisement/guidance image display is explained. As shown in the middle part of FIG. 4, first, advertisement/guidance image accumulation processing is performed (step ST21). In this advertisement/guidance image accumulation processing, advertisement/guidance image content to be displayed is accumulated in the advertisement/guidance image storing

buffer 44. When the accumulation of the advertisement/guidance image content is completed, the display control unit 41 notifies the advertisement/guidance image scheduler 21 of the completion of the preparation (sequence SQ21). The

advertisement/guidance image scheduler 21 notifies the service image scheduler 22 of the completion of the preparation (sequence SQ22). In the advertisement/guidance image accumulation processing at step ST21, all advertisement/guidance image contents that should be displayed do not need to be accumulated. This is because the advertisement/guidance image storing buffer 44 is truly a buffer provided to seamlessly perform switching from the advertisement/guidance image display to the service image display and switching from the service image display to the advertisement/guidance image display and a buffer that temporarily accumulates advertisement/guidance image content from the video information delivery apparatus 2 is separately present.

[0021] The service image scheduler 22 grasps switching timing from the service image display to the advertisement/guidance image display. The service image scheduler 22 issues an advertisement/guidance image display command to the advertisement/guidance image scheduler 21 at predetermined timing taking into account time until the a command reaches the display control unit 41 from the service image scheduler 22 through the advertisement/guidance image scheduler 21 (sequence SQ23). The advertisement/guidance image scheduler 21, which receives the advertisement/guidance image display command from the service image scheduler 22, issues an advertisement/guidance image display command to the display control unit 41 (sequence SQ24). The display control unit 41, which receives the advertisement/guidance image display command, starts advertisement/guidance image display (step ST22). In this way, switching processing from the service image display to the advertisement/guidance image display is seamlessly performed.

[0022] Switching processing from the advertisement/guidance display to the service image display is explained. As shown in the lower part of FIG. 4, first, a service image generation command is issued from the service image scheduler 22 to the display control unit 41 (sequence SQ31). The display control unit 41 performs, for example, processing for decompressing a compressed service image and performs preparation for a service image that should be displayed (step ST31). When the preparation of the service image is completed, the display control unit 41 notifies the service image scheduler 22 of the completion of the preparation (sequence SQ33). On the other hand, the advertisement/guidance image scheduler 21 notifies, in advance, the service image scheduler 22 of end time of a currently-displayed advertisement/guidance image (sequence SQ32). The service image scheduler 22 grasps switching timing from the advertisement/guidance image display to the service image display and issues a service image

display command to the display control unit 41 at predetermined timing taking into account time until a command reaches the display control unit 41 from the service image scheduler 22 (sequence SQ34). The display control unit 41, which receives the service image display command, starts the service image display (step ST32). In this way, the switching processing from the advertisement/guidance image display to the service image display is seamlessly performed.

[0023] It is likely that display time for the next sequence decreases because of the control explained above. In this case, if a service image incorporated at the end of a display sequence of a display schedule (in the example shown in FIG. 3, "service image 3") is set as, for example, information with low importance (e.g., information that does not cause dissatisfaction even if not present such as information in the station yard), information provision that does not give discomfort to a viewer can be performed.

[0024] As explained above, the train-mounted content delivery system according to the first embodiment includes the service image scheduler that manages service image contents included in a display schedule and the advertisement/guidance image scheduler that manages advertisement/guidance image contents included in the display schedule. Switching from a service image to an advertisement/guidance image in the displays is executed according to the control by the service image scheduler that receives notification of display preparation completion of the advertisement/guidance image from the advertisement/guidance image scheduler. Switching from the advertisement/guidance image to the service image is executed according to the control by the service image scheduler that receives notification of preparation completion of the service image from the display control unit and receives notification of display end time of a currently-displayed advertisement/guidance image from the advertisement/guidance image scheduler. Therefore, it is possible to perform seamless switching from the advertisement/guidance image to the service image and from the service image to the advertisement/guidance image.

[0025] In the first embodiment, the configuration in which the storing unit 42 that stores the service image content 46 and the advertisement/guidance image storing buffer 44 are provided in the display control apparatus 4 is explained. However, it is also possible to adopt a configuration in which the storing unit 42 and the advertisement/guidance image storing buffer 44 are provided in the video information delivery apparatus 2. In this case, the sequence shown in FIG. 4 is a sequence executed on the inside of the video information delivery apparatus 2. The display control unit 41 of the display control apparatus 4 only has to perform control for outputting information concerning an advertisement/guidance image and a service image, which is transmitted to the display control unit 41, to the displays 5 and 6.

Second Embodiment.

[0026] In the train-mounted content delivery system according to the first embodiment, the embodiment in which the same content is displayed on the two displays is explained. However, in a train-mounted content delivery system according to a second embodiment, an embodiment in which different contents are displayed on two displays is explained. The two displays are, for example, displays set side by side in a lintel section at an upper part of each car. The different contents mean that, for example, in some case, both contents displayed on the first and second displays are service images or advertisement/guidance images and, in another case, content displayed on the first display is a service image and content displayed on the second display is a service image and an advertisement/guidance image.

[0027] FIG. 5 is a diagram of detailed configurations of the train information apparatus 1, the video information delivery apparatus 2, and the display control apparatus 4 that embody functions of the train-mounted content delivery system according to the second embodiment. The second embodiment is different from the first embodiment shown in FIG. 2 only in that a left-side display control unit (a first display control unit) 41a and a right-side display control unit (a second display control unit) 41b for respectively controlling the display (the first display) 5, which is a left-side display, and the display 6, which is a right-side display, are provided in the display control apparatus 4. Other components are denoted by reference numerals and signs same as those in FIG. 2 and redundant explanation of the components is omitted.

[0028] FIG. 6 is a diagram for explaining the concept of display sequences and display contents according to the second embodiment. In the upper part of FIG. 6, display sequences 1 to 5 are shown as an example of display schedule data. In the middle part and the lower part of FIG. 6, display contents repeatedly displayed in the display sequence 3 are shown as an example. The display sequence 3 includes display contents displayed on the left-side display (the display 5) and display contents displayed on the right-side display (the display 6).

[0029] The display contents displayed on the left-side display include service images 1.1, 1.2, 3 to 6, and 7.1, which are management targets of the service image scheduler 22. In the example shown in the figure, display sequences in the order of "service image 1.1", "service image 2.1", "service image 3", "service image 4", "service image 5", "service image 6", and "service image 7.1" are set. On the other hand, the display contents displayed on the right-side display include service images 1.2, 2.2, and 7.2, which are management targets of the service image scheduler 22, and advertisement/guidance images 1 to 3, which are management targets of the advertisement/guidance image scheduler 21. In the example shown in the figure, display sequences in the order of "service image 1.2", "service image 2.2", "advertisement/guidance image 1", "advertisement/guidance im-

age 2", "advertisement/guidance image 3", and "service image 7.1" are set. "Service image 1.1" and "service image 1.2" are kinds of information related to each other. In some case, for example, "service image 1.1" is information concerning a stop and "service image 1.2" is door opening information (e.g., information indicating on which side doors are opened) and, in another case, for example, "service image 1.1" is information concerning next station guidance and "service image 1.2" is station yard information of the next station (e.g., information such as an elevator position and a stair position). In this embodiment, such kinds of information related to each other can be displayed on the left and right displays in synchronization with each other at the same timing.

[0030] In the display schedule data, content to be displayed, display time, and the like are described. The video information delivery apparatus 2 determines, based on train information (kilometrage information and train traveling speed information) from the train information apparatus 1, a shift among the display sequences. If the video information delivery apparatus does not determine a shift to the next sequence, a schedule in a display sequence is repeatedly displayed.

[0031] Display control in the second embodiment is explained with reference to FIG. 7. FIG. 7 is a sequence chart for explaining the display control in the second embodiment. The service image scheduler 22 manages overall display control in the train-mounted content delivery system. The advertisement/guidance image scheduler 21 operates according to an instruction of the service image scheduler 22. However, the advertisement/guidance image scheduler 21 performs management of advertisement/guidance image contents included in the display sequences and issuance of a display command concerning the advertisement/guidance image contents. The left-side display control unit 41a performs display control for the display 5. The right-side display control unit 41b performs display control for the display 6.

[0032] In FIG. 7, the service image scheduler 22 outputs a service image generation command to the left-side display control unit 41a and the right-side display control unit 41b of the display control apparatus 4 (sequence SQ101). The left-side display control unit 41a, which receives the service image generation command, performs preparation of a service image to be displayed on the left-side display (step ST101). The right-side display control unit 41b, which receives the service image generation command, performs preparation of a service image to be displayed on the right-side display (step ST102). Because the service images are usually stored in a compressed format, the service images cannot be instantaneously displayed in that state. Therefore, in the processing at steps ST101 and ST102, processing for decompressing the compressed service images is executed. When the preparations for the service images are completed, the left-side display control unit 41a and the right-side display control unit 41b notify the service image

scheduler 22 of the completion of the preparations (sequence SQ102). The service image scheduler 22, which receives the notification of the completion of the preparations, outputs a service image display command to the left-side display control unit 41a and the right-side display control unit 41b (sequence SQ103). The left-side display control unit 41a and the right-side display control unit 41b, which receive the service image display command at the same time, display the decompressed service images on the displays thereof (steps ST103 and ST104). In this way, the processing at sequences SQ101 to SQ103 and the processing at steps ST101 and ST104 are processing for displaying the service images on the displays. It goes without saying that the service image generation command is issued when a service image that should be displayed before a service image to be processed is displayed.

[0033] Switching processing from service image display to advertisement/guidance image display is explained. In this sequence, the advertisement/guidance image display is performed on the left-side display.

[0034] As shown in the middle part of FIG. 7, first, advertisement/guidance image accumulation processing is performed in the left-side display control unit 41a (step ST201). In this advertisement/guidance image accumulation processing, advertisement/guidance image content to be displayed is accumulated in the advertisement/guidance image storing buffer 44. When the accumulation of the advertisement/guidance image content is completed, the left-side display control unit 41a notifies the advertisement/guidance image scheduler 21 of the completion of the preparation (sequence SQ202). The advertisement/guidance image scheduler 21 notifies the service image scheduler 22 of the completion of the preparation (sequence SQ203). In the advertisement/guidance image accumulation processing at step ST201, as in the first embodiment, all advertisement/guidance image contents that should be displayed do not need to be accumulated.

[0035] On the other hand, almost simultaneously with the advertisement/guidance image accumulation processing at step ST201 being performed, a service image generation command is output from the service image scheduler 22 to the right-side display device control unit 41b (sequence SQ201). The right-side display control unit 41b performs preparation of a service image (step ST202) and, when the preparation is completed, notifies the service image scheduler 22 of the completion of the preparation (sequence SQ204).

[0036] The service image scheduler 22 grasps switching timing from the service image display to the advertisement/guidance image display in the left-side display control unit 41a. The service image scheduler 22 issues a service image display command to the right-side display control unit 41b at predetermined timing taking into account time until the a command reaches the left-side display control unit 41a from the service image scheduler 22 through the advertisement/guidance image scheduler

21 and such that the advertisement/guidance image display and the service image display are switched in the left-side display and the right-side display in synchronization with each other (sequence SQ205). The service image scheduler 22 issues an advertisement/guidance image display command to the advertisement/guidance image scheduler 21 at predetermined timing (sequence SQ206). The advertisement/guidance image scheduler 21, which receives the advertisement/guidance image display command from the service image scheduler 22, issues an advertisement/guidance image display command to the left-side display control unit 41a (sequence SQ207). The left-side display control unit 41a, which receives the advertisement/guidance image display command, starts advertisement/guidance image display (step ST203). The right-side display control unit 41b, which receives the service image display command at the same time, starts the service image display (step ST204). In this way, switching processing from the service image display to the advertisement/guidance image display and the synchronization processing of the service image display and the advertisement/guidance image display are seamlessly performed.

[0037] Switching processing from the advertisement/guidance image display to the service image display is explained. As shown in the lower part of FIG. 7, first, a service image generation command is issued from the service image scheduler 22 to the left-side display control unit 41a and the right-side display control unit 41b (sequence SQ301). The left-side display control unit 41a and the right-side display control unit 41b perform, for example, processing for decompressing a compressed service image and perform preparation for a service image that should be displayed (steps ST301 and ST302). When the preparation of the service image is completed, the left-side display control unit 41a and the right-side display control unit 41b notify the service image scheduler 22 of the completion of the preparation (sequence SQ303). On the other hand, the advertisement/guidance image scheduler 21 notifies, in advance, the service image scheduler 22 of end time of a currently-displayed advertisement/guidance image (sequence SQ302). The service image scheduler 22 grasps switching timing from the advertisement/guidance image display to the service image display and also grasps that the advertisement/guidance image is displayed on the left-side display and the service image is displayed on the right-side display at present. The service image scheduler 22 issues a service image display command to the left-side display control unit 41a and the right-side display control unit 41b at predetermined timing taking into account, for example, time until a command reaches the left-side display control unit 41a and the right-side display control unit 41b from the service image scheduler 22 and time when the advertisement/guidance image display ends (sequence SQ304). The left-side display control unit 41a and the right-side display control unit 41b, which receive the service image display command at the

same time, start the service image display (steps ST303 and ST304). In this way, the switching processing from the advertisement/guidance image display to the service image display and the synchronization processing of the service image display and the advertisement/guidance image display are seamlessly performed.

[0038] When the control explained above is performed, in display control by a normal display schedule, it is difficult to match end time of the service image display and end time of the advertisement/guidance image display. Therefore, it is desirable to adjust the end of the display of the service image displayed on the right-side display to the end of the display of the advertisement/guidance image simultaneously displayed on the left-side display and, in some case, for example, repeatedly display the service image and the advertisement/guidance image to display a service image without a sense of discomfort for a viewer.

[0039] It is likely that display time for the next sequence decreases because of the control explained above. In this case, if a service image incorporated at the end of a display sequence of a display schedule (in the example shown in FIG. 6, "service image 7.1") is set as, for example, information with low importance (e.g., information that does not cause dissatisfaction even if not present such as information in the station yard), information provision that does not give discomfort to a viewer can be performed.

[0040] As explained above, the train-mounted content delivery system according to the second embodiment includes the service image scheduler that manages service image contents included a display schedule and the advertisement/guidance image scheduler that manages advertisement/guidance image contents included in the display schedule. In the first display that displays both a service image and an advertisement/guidance image, switching from the service image to the advertisement/guidance image is executed according to the control by the service image scheduler that receives notification of display preparation completion of the advertisement/guidance image from the advertisement/guidance image scheduler. In the first display, switching from the advertisement/guidance image to the service image is executed according to the control by the service image scheduler that receives notification of preparation completion of the service image from the second display control unit and receives notification of display end time of a currently-displayed advertisement/guidance image from the advertisement/guidance image scheduler. Therefore, it is possible to perform seamless switching from the advertisement/guidance image to the service image and from the service image to the advertisement/guidance image.

[0041] In the first embodiment, the configuration in which the storing unit 42 that stores the service image content 46 and the advertisement/guidance image storing buffer 44 are provided in the display control apparatus 4 is explained. However, it is also possible to adopt a

configuration in which the storing unit 42 and the advertisement/guidance image storing buffer 44 are provided in the video information delivery apparatus 2. In this case, the sequence shown in FIG. 7 is a sequence executed on the inside of the video information delivery apparatus 2. The left-side display control unit 41a of the display control apparatus 4 only has to perform control for outputting information concerning an advertisement/guidance image and a service image, which is transmitted to the display 5, to the display 5. The right-side display control unit 41b only has to perform control for outputting information concerning a service image, which is transmitted to the display 6, to the display 6. The displays are explained as the left and right two screens. However, it is also possible to perform display switching processing and synchronization processing of the displays equal to or more than two screens.

Reference Signs List

[0042]

- 1 train information apparatus
- 2 video information delivery apparatus
- 3 diverting apparatus
- 4 display control apparatus
- 5 display (first display)
- 6 display (second display)
- 10a train identification information
- 10b train position information
- 10c train service information
- 10d train present condition information
- 10e train command information
- 21 advertisement/guidance image scheduler
- 22 service image scheduler
- 24, 42 storing units
- 26 advertisement/guidance image content
- 41 display control unit
- 41a left-side display control unit (first display control unit)
- 41b right-side display control unit (second display control unit)
- 44 advertisement/guidance image storing buffer
- 46 service image content

Claims

1. A train-mounted content delivery system that displays, on a display (5,6) in a train, train content information including advertisement/guidance image content and service image content (46) generated based on train information, the train-mounted content delivery system comprising:
 - a video information delivery apparatus (2) that performs management of a display schedule of the train content information, stores the adver-

tisement/guidance image content, and performs delivery control for the advertisement/guidance image content; and
 a plurality of display control apparatuses (4), each including a storing unit (42) that stores the service image content (46), temporarily accumulates the advertisement/guidance information content, which should be displayed, delivered from the video information delivery apparatus (2), and
 a display control unit (41) that performs preparation of service images and advertisement/guidance image accumulation processing and controls,
 based on the display schedule created by the video information delivery apparatus (2), display of a service image and an advertisement/guidance image that should be displayed on the display, wherein the video information delivery apparatus (2) includes:

- a service image scheduler (22) that manages the service image content (46) included in the display schedule; and
- an advertisement/guidance image scheduler (21) that manages the advertisement/guidance image content included in the display schedule,

characterized in that

switching from the service image to the advertisement/guidance image in the display is executed according to control by the service image scheduler (22) that receives notification of display preparation completion of the advertisement/guidance image (SQ22) from the advertisement/guidance image scheduler (21) in such a manner that the service image scheduler (22) is adapted to issue an advertisement/guidance image display command (SQ23) to the advertisement/guidance image scheduler (21), which issues an advertisement/guidance display command (SQ24) to the display control unit (41) in each of the display control apparatuses (4), at predetermined timing taking into account time until the command (SQ24) reaches the display control unit (41) in each of the display control apparatuses (4) from the service image scheduler (22) through the advertisement/guidance image scheduler (21), and that switching from the advertisement/guidance image to the service image in the display is executed according to control by the service image scheduler (22) that receives notification of end time of a currently-displayed advertisement/guidance image (SQ32) from the advertisement/guidance image scheduler (21) and notification of preparation completion (SQ33) from the display control unit

- (41) in each of the display control apparatuses (4) in such a manner that the service image scheduler (22) is adapted to issue a service image display command (SQ34) to the display control unit (41) in each of the display control apparatuses (4), at predetermined timing taking into account time until the command (SQ34) reaches the display control unit (41) in each of the display control apparatuses (4), from the service image scheduler (22).
2. The train-mounted content delivery system of claim 1, wherein the service image content is generated based on the train information.
 3. The train-mounted content delivery system according to claim 1 or 2, wherein the advertisement/guidance image content is accumulated in the display control apparatuses in advance prior to the display of the advertisement/guidance image on the display.
 4. The train-mounted content delivery system according to any one of claims 1 to 3, wherein the display schedule includes a plurality of display sequences, the display sequence including a sequence of service images and advertisement/guidance images to be displayed, and the video information delivery apparatus determines, based on the train information, a shift among the display sequences.
 5. The train-mounted content delivery system according to claim 4, wherein, when the video information delivery apparatus does not determine a shift to a next display sequence, a currently-displayed display sequence is repeatedly displayed.
 6. The train-mounted content delivery system according to any one of claims 1 to 5, wherein, when currently-displayed content is an advertisement/guidance image and content scheduled to be displayed next is a service image, switching from the advertisement/guidance image to the service image is performed after an end of the advertisement/guidance image.
 7. The train-mounted content delivery system according to claim 6, wherein when at least one advertisement/guidance image content and a plurality of service image contents are included as the train content information included in the display sequence, the display sequence including a sequence of service images and advertisement/guidance images to be displayed, a service image content having a low priority is incorporated as service image content displayed after display of the advertisement/guidance image content among the service image contents.
 8. The train-mounted content delivery system according to claim 1, wherein the display includes first (5) and second (6) displays, and the display control apparatuses are adapted to display the advertisement/guidance image and the service image that should be displayed on the first display and display of a service image that should be displayed on the second display.
 9. The train-mounted content delivery system according to claim 8, wherein the advertisement/guidance image content is accumulated in the display control apparatuses in advance prior to the display of the advertisement/guidance image on the first display.
 10. The train-mounted content delivery system according to any one of claims 8 or 9, wherein the display schedule includes a plurality of display sequences for each of the first and second displays, the display sequence including a sequence of service images and advertisement/guidance images to be displayed, and the video information delivery apparatus determines, based on the train information, a shift among the display sequences.
 11. The train-mounted content delivery system according to claim 10, wherein, when the video information delivery apparatus does not determine a shift to a next display sequence, a currently-displayed display sequence is repeatedly displayed.
 12. The train-mounted content delivery system according to any one of claims 8 to 11, wherein, in the first display, when currently-displayed content is an advertisement/guidance image and content scheduled to be displayed next is a service image, switching from the advertisement/guidance image to the service image is performed after an end of the advertisement/guidance image.
 13. The train-mounted content delivery system according to claim 12, wherein, when the display time of the advertisement/guidance image displayed on the first display is extended and the switching from the advertisement/guidance image to the service image is performed after the end of the advertisement/guidance image, an end of the display of the service image displayed on the second display according to the display of the advertisement/guidance image is adjusted to the end of the display of the advertisement/guidance image.
 14. The train-mounted content delivery system according to claim 12 or 13, wherein when at least one advertisement/guidance image content and a plurality of service image contents are included as the train content information included in the display sequence

for the first display, the display sequence including a sequence of service images and advertisement/guidance images to be displayed, a service image content having a low priority is incorporated as service image content displayed after display of the advertisement/guidance image content among the service image contents.

15. A method of displaying train content information applied to a train-mounted content delivery system including:

a service image scheduler (22) that manages service image content (46) generated based on train information among kinds of train content information that should be displayed on a display (5, 6) in a train;
 an advertisement/guidance image scheduler (21) that manages advertisement/guidance image content;
 a first storing unit that stores the advertisement/guidance image content;
 an advertisement/guidance image storing buffer that temporarily accumulates the advertisement/guidance image content, which should be displayed, prior to display of the advertisement/guidance image content;
 a second storing unit that stores the service image content (46); and
 a display control unit (41) that controls, based on a display schedule set in advance, display of a service image and an advertisement/guidance image that should be displayed on the display,

characterized in that

switching from the service image to the advertisement/guidance image in the display is executed according to control by the service image scheduler (22) that receives notification of display preparation completion of the advertisement/guidance image (SQ22) from the advertisement/guidance image scheduler (21) in such a manner that the service image scheduler (22) issues an advertisement/guidance image display command (SQ23) to the advertisement/guidance image scheduler (21), which issues an advertisement/guidance image command (SQ24) to the display control unit (41) in each of the display control apparatuses (4), at predetermined timing taking into account time until the command (SQ24) reaches the display control unit (41) in each of a plurality of display control apparatuses (4) from the service image scheduler (22) through the advertisement/guidance image scheduler (21), and that switching from the advertisement/guidance image to the service image in the display is executed according to control by the service image scheduler (22) that receives notification of end time of a currently displayed advertisement/guidance image (SQ32)

from the advertisement/guidance image scheduler (21) and notification of preparation completion (SQ33) from a display control unit (41) in each of the display control apparatuses (4) in such a manner that the service image scheduler (22) is adapted to issue a service image display command (SQ34) to the display control unit (41) in each of the display control apparatuses (4), at predetermined timing taking into account time until the command (SQ34) reaches the display control unit (41) in each of the display control apparatuses (4), from the service image scheduler (22).

16. The method of claim 15, displaying train content information applied to a train-mounted content delivery system including:

a service image scheduler that manages service image content generated based on train information among kinds of train content information that should be displayed wherein the display includes first (5) and second (6) displays, and the display control unit includes a first display control unit (41a) that controls, based on a display schedule set in advance, display of a service image and an advertisement/guidance image that should be displayed on the first display, and a second display control unit (41b) that controls display of a service image that should be displayed on the second display.

17. The method of displaying train content information according to claim 16, wherein when the train content information displayed on the first display and the train content information displayed on the second display are kinds of information related to each other, the kinds of train content information are displayed by synchronizing timings for displaying the kinds of train content information on the first and second displays each other.

Patentansprüche

1. Zuginstalliertes Inhaltsbereitstellungssystem (Content Delivery System), das auf einer Anzeige (5, 6) in einem Zug auf Grundlage von Zuginformationen generierte Werbungs-/Orientierungsbildinhalt und Servicebildinhalt (46) enthaltende Zugnutzinformationen anzeigt, wobei das zuginstallierte Inhaltsbereitstellungssystem umfasst:

eine Videoinformationsbereitstellungsvorrichtung (2), welche die Verwaltung eines Anzeigeplans der Zuginhaltinformationen durchführt, die den Werbungs-/Orientierungsbildinhalt speichert und eine Bereitstellungssteuerung für

den Werbungs-/Orientierungsbildinhalt durchführt; und

mehrere Anzeigesteuervorrichtungen (4), die jeweils eine Speichereinheit (42), welche den Dienstleitungsbildinhalt (46) speichert, den von der Videoinformationsbereitstellungsvorrichtung (2) bereitgestellten Werbungs-/Orientierungsbildinhalt, der angezeigt werden soll, temporär akkumuliert, und eine Anzeigesteuereinheit (41) enthalten, die eine Vorbereitung von Servicebildern und eine Werbungs-/Orientierungsbildakkumulierungsverarbeitung durchführt und auf Grundlage des durch die Videoinformationsbereitstellungsvorrichtung (2) erzeugten Anzeigepfades eine Anzeige eines Servicebilds und eines Werbungs-/Orientierungsbilds steuert, die auf der Anzeige angezeigt werden sollen, wobei die Videoinformationsbereitstellungsvorrichtung (2) enthält:

einen Servicebildplaner (22), der den im Anzeigepfad enthaltenen Servicebildinhalt (46) verwaltet; und

einen Werbungs-/Orientierungsbildplaner (21), der den im Anzeigepfad enthaltenen Werbungs-/Orientierungsbildinhalt verwaltet,

dadurch gekennzeichnet, dass

ein Umschalten vom Dienstleitungsbild zum Werbungs-/Orientierungsbild in der Anzeige entsprechend der Steuerung durch den Werbungs-/Orientierungsbildplaner (22), der eine Anzeigevorbereitungsabschlussmitteilung des Werbungs-/Orientierungsbilds (SQ22) vom Werbungs-/Orientierungsbildplaner (21) erhält, auf eine solche Weise erfolgt, dass der Servicebildplaner (22) dazu ausgebildet ist, einen Werbungs-/Orientierungsbildanzeigebefehl (SQ23) an den Werbungs-/Orientierungsbildplaner (21) auszugeben, der einen Werbungs-/Orientierungsbildanzeigebefehl (SQ24) an die Anzeigesteuereinheit (41) in jeder der Anzeigesteuervorrichtungen (4) zu einer vorbestimmten Zeitvorgabe unter Berücksichtigung der Zeit ausgibt, bis der Befehl (SQ24) die Anzeigesteuereinheit (41) in jeder der Anzeigesteuervorrichtungen (4) vom Dienstleitungsbildplaner (22) her über den Werbungs-/Orientierungsbildplaner (21) erreicht, und dass ein Umschalten vom Werbungs-/Orientierungsbild zum Servicebild in der Anzeige entsprechend der Steuerung durch den Servicebildplaner (22), der eine Endzeitmitteilung eines aktuell angezeigten Wer-

bungs-/Orientierungsbilds (SQ32) vom Werbungs-/Orientierungsbildplaner (21) her und eine Vorbereitungsabschlussmitteilung (SQ33) von der Anzeigesteuereinheit (41) in jeder der Anzeigesteuervorrichtungen (4) her erhält, auf eine solche Weise erfolgt, dass der Servicebildplaner (22) dazu ausgebildet ist, einen Servicebildanzeigebefehl (SQ34) an die Anzeigesteuereinheit (41) in jeder der Anzeigesteuervorrichtungen (4) zu einer vorbestimmten Zeitvorgabe unter Berücksichtigung der Zeit auszugeben, bis der Befehl (SQ34) die Anzeigesteuereinheit (41) in jeder der Anzeigesteuervorrichtungen (4) vom Servicebildplaner (22) her erreicht.

2. Zuginstalliertes Inhaltsbereitstellungssystem nach Anspruch 1, wobei der Servicebildinhalt auf Grundlage der Zuginformationen generiert wird.
3. Zuginstalliertes Inhaltsbereitstellungssystem nach Anspruch 1 oder 2, wobei der Werbungs-/Orientierungsbildinhalt vorab in den Anzeigesteuervorrichtungen vor der Anzeige des Werbungs-/Orientierungsbilds auf der Anzeige akkumuliert wird.
4. Zuginstalliertes Inhaltsbereitstellungssystem nach einem der Ansprüche 1 bis 3, wobei der Anzeigepfad mehrere Anzeigesequenzen enthält, die Anzeigesequenz eine Sequenz anzuzeigender Servicebilder und Werbungs-/Orientierungsbilder enthält, und die Videoinformationsbereitstellungsvorrichtung auf Grundlage der Zuginformationen einen Wechsel zwischen den Anzeigesequenzen bestimmt.
5. Zuginstalliertes Inhaltsbereitstellungssystem nach Anspruch 4, wobei, wenn die Videoinformationsbereitstellungsvorrichtung keinen Wechsel zu einer nächsten Anzeigesequenz bestimmt, die aktuell angezeigte Anzeigesequenz wiederholt angezeigt wird.
6. Zuginstalliertes Inhaltsbereitstellungssystem nach einem der Ansprüche 1 bis 5, wobei, wenn es sich bei dem aktuell angezeigten Inhalt um ein Werbungs-/Orientierungsbild und bei dem als nächstes anzuzeigenden Inhalt um ein Dienstleitungsbild handelt, ein Umschalten vom Werbungs-/Orientierungsbild zum Servicebild nach einem Ende des Werbungs-/Orientierungsbilds erfolgt.
7. Zuginstalliertes Inhaltsbereitstellungssystem nach Anspruch 6, wobei, wenn mindestens ein Werbungs-/Orientierungsbildinhalt und mehrere Servicebildinhalte als die in der Anzeigesequenz enthaltenen Zugnutzinformationen enthalten sind, wobei die Anzeigesequenz eine Sequenz anzuzeigender

- Servicebilder und Werbungs-/Orientierungsbilder enthält,
unter den Servicebildinhalten ein Servicebildinhalt mit einer niedrigen Priorität als Servicebildinhalt eingefügt wird, der nach einer Anzeige des Werbungs-/Orientierungsbildinhalts angezeigt wird.
8. Zuginstalliertes Inhaltsbereitstellungssystem nach Anspruch 1, wobei die Anzeige eine erste (5) und eine zweite (6) Anzeige enthält, und die Anzeigesteuervorrichtungen dazu angepasst sind, das Werbungs-/Orientierungsbild und das Servicebild anzuzeigen, die auf der ersten Anzeige angezeigt werden sollen, und ein Servicebild anzuzeigen, das auf der zweiten Anzeige angezeigt werden soll.
9. Zuginstalliertes Inhaltsbereitstellungssystem nach Anspruch 8, wobei der Werbungs-/Orientierungsbildinhalt vorab in den Anzeigesteuervorrichtungen vor der Anzeige des Werbungs-/Orientierungsbilds auf der ersten Anzeige akkumuliert wird.
10. Zuginstalliertes Inhaltsbereitstellungssystem nach einem der Ansprüche 8 oder 9, wobei der Anzeigeplan mehrere Anzeigesequenzen für jeweils die erste und zweite Anzeige enthält, die Anzeigesequenz eine Sequenz von anzuzeigenden Servicebildern und Werbungs-/Orientierungsbildern enthält, und die Videoinformationsbereitstellungsvorrichtung auf Grundlage der Zuginformationen einen Wechsel zwischen den Anzeigesequenzen bestimmt.
11. Zuginstalliertes Inhaltsbereitstellungssystem nach Anspruch 10, wobei, wenn die Videoinformationsbereitstellungsvorrichtung keinen Wechsel zu einer nächsten Anzeigesequenz bestimmt, die aktuell angezeigte Anzeigesequenz wiederholt angezeigt wird.
12. Zuginstalliertes Inhaltsbereitstellungssystem nach einem der Ansprüche 8 bis 11, wobei in der ersten Anzeige, wenn es sich bei dem aktuell angezeigten Inhalt um ein Werbungs-/Orientierungsbild und bei dem als nächstes anzuzeigenden geplanten Inhalt um ein Servicebild handelt, ein Umschalten vom Werbungs-/Orientierungsbild zum Servicebild nach einem Ende des Werbungs-/Orientierungsbilds erfolgt.
13. Zuginstalliertes Inhaltsbereitstellungssystem nach Anspruch 12, wobei, wenn die Anzeigezeit des auf der ersten Anzeige angezeigten Werbungs-/Orientierungsbilds verlängert ist und das Umschalten vom Werbungs-/Orientierungsbild zum Servicebild nach dem Ende des Werbungs-/Orientierungsbilds erfolgt, ein Ende der Anzeige des auf der zweiten Anzeige angezeigten Servicebilds entsprechend der
- Anzeige des Werbungs-/Orientierungsbilds an das Ende der Anzeige des Werbungs-/Orientierungsbilds angepasst wird.
14. Zuginstalliertes Inhaltsbereitstellungssystem nach Anspruch 12 oder 13, wobei, wenn mindestens ein Werbungs-/Orientierungsbildinhalt und mehrere Servicebildinhalte als die in der Anzeigesequenz für die erste Anzeige enthaltenen Zugnutzinformationen enthalten sind, wobei die Anzeigesequenz eine Sequenz anzuzeigender Servicebilder und Werbungs-/Orientierungsbilder enthält, unter den Servicebildinhalten ein Servicebildinhalt mit einer niedrigen Priorität als Servicebildinhalt eingefügt wird, der nach einer Anzeige des Werbungs-/Orientierungsbildinhalts angezeigt wird.
15. Verfahren zum Anzeigen von Zugnutzinformationen, das auf ein zuginstalliertes Inhaltsbereitstellungssystem angewendet wird, Folgendes umfassend:
- einen Servicebildplaner (22), der einen Servicebildinhalt (46) verwaltet, der auf Grundlage von Zuginformationen unter Arten von Zugnutzinformationen generiert wird, die auf einer Anzeige (5, 6) in einem Zug angezeigt werden sollen;
- eine Werbungs-/Orientierungsbildplaner (21), der einen Werbungs-/Orientierungsbildinhalt verwaltet;
- eine erste Speichereinheit, die den Werbungs-/Orientierungsbildinhalt speichert;
- einen Werbungs-/Orientierungsbildzwischenpeicher, der den Werbungs-/Orientierungsbildinhalt, der angezeigt werden soll, vor der Anzeige des Werbungs-/Orientierungsbildinhalts temporär akkumuliert;
- eine zweite Speichereinheit, die den Servicebildinhalt (46) speichert; und
- eine Anzeigesteuereinheit (41), die auf Grundlage eines vorab angesetzten Anzeigeplans die Anzeige eines Servicebilds und eines Werbungs-/Orientierungsbilds steuert, die auf der Anzeige angezeigt werden sollen,

dadurch gekennzeichnet, dass

ein Umschalten vom Dienstleitungsbild zum Werbungs-/Orientierungsbild in der Anzeige entsprechend der Steuerung durch den Servicebildplaner (22), der eine Anzeigevorbereitungsabschlussmitteilung des Werbungs-/Orientierungsbilds (SQ22) vom Werbungs-/Orientierungsbildplaner (21) erhält, auf eine solche Weise erfolgt, dass der Servicebildplaner (22) einen Werbungs-/Orientierungsbildanzeigebefehl (SQ23) an den Werbungs-/Orientierungsbildplaner (21) ausgibt, der einen Wer-

bungs-/Orientierungsbildanzeigebefehl (SQ24) an die Anzeigesteuereinheit (41) in jeder der Anzeigesteuervorrichtungen (4) zu einer vorbestimmten Zeitvorgabe unter Berücksichtigung der Zeit ausgibt, bis der Befehl (SQ24) die Anzeigesteuereinheit (41) in jeder der mehreren Anzeigesteuervorrichtungen (4) vom Dienstleistungsbildplaner (22) her über den Werbungs-/Orientierungsbildplaner (21) erreicht, und dass

ein Umschalten vom Werbungs-/Orientierungsbild zum Servicebild in der Anzeige entsprechend der Steuerung durch den Servicebildplaner (22), der eine Endzeitmitteilung eines aktuell angezeigten Werbungs-/Orientierungsbilds (SQ32) vom Werbungs-/Orientierungsbildplaner (21) her und eine Vorbereitungsabschlussmitteilung (SQ33) von der Anzeigesteuereinheit (41) in jeder der Anzeigesteuervorrichtungen (4) her erhält, auf eine solche Weise erfolgt, dass der Werbungs-/Orientierungsbildplaner (22) dazu angepasst wird, einen Servicebildanzeigebefehl (SQ34) an die Anzeigesteuereinheit (41) in jeder der Anzeigesteuervorrichtungen (4) zu einer vorbestimmten Zeitvorgabe unter Berücksichtigung der Zeit auszugeben, bis der Befehl (SQ34) die Anzeigesteuereinheit (41) in jeder der Anzeigesteuervorrichtungen (4) vom Servicebildplaner (22) her erreicht.

16. Verfahren nach Anspruch 15 zum Anzeigen von Zugnutzinformation, das auf ein zuginstalliertes Inhaltsbereitstellungssystem angewendet wird, Folgendes umfassend:

einen Servicebildplaner, der einen Servicebildinhalt verwaltet, der auf Grundlage von Zugnutzinformationen unter Arten von Zugnutzinformationen generiert wird, die angezeigt werden sollen, wobei die Anzeige eine erste (5) und eine zweite (6) Anzeige enthält und die Anzeigesteuereinheit eine erste Anzeigesteuereinheit (41a) enthält, die auf Grundlage eines vorab angesetzten Anzeigeplans die Anzeige eines Servicebilds und eines Werbungs-/Orientierungsbilds steuert, die auf der ersten Anzeige angezeigt werden sollen, und

eine zweite Anzeigesteuereinheit (41b), welche die Anzeige eines Servicebilds steuert, das auf der zweiten Anzeige angezeigt werden soll.

17. Verfahren zum Anzeigen von Zugnutzinformationen nach Anspruch 16, wobei, wenn es sich bei den Zugnutzinformationen, die auf der ersten Anzeige angezeigt werden, und den Zugnutzinformationen, die auf der zweiten Anzeige angezeigt werden, um Arten von aufeinander bezogenen Informationen handelt, die Arten von Zugnutzinformationen angezeigt wer-

den, indem die Zeitvorgaben zum Anzeigen der Arten von Zugnutzinformationen auf der ersten und zweiten Anzeige miteinander synchronisiert werden.

Revendications

1. Système de fourniture de contenu (Content Delivery System) monté sur un train, qui affiche, sur un affichage (5, 6) dans un train, des informations de contenu de train incluant du contenu d'image de publicité/guidage et du contenu d'image de service (46) générées sur la base d'informations de train, le système de fourniture de contenu monté sur un train comprenant :

un dispositif de fourniture d'informations vidéo (2) qui effectue une gestion d'un plan d'affichage des informations de contenu de train, enregistre le contenu d'image de publicité/guidage, et effectue une commande de fourniture pour le contenu d'image de publicité/guidage ; et

une pluralité de dispositifs de commande d'affichage (4), incluant chacun une unité d'enregistrement (42) qui enregistre le contenu d'image de service (46), accumule temporairement le contenu d'informations de publicité/guidage, devant être affiché, distribué depuis le dispositif de fourniture d'informations vidéo (2), et une unité de commande d'affichage (41) qui effectue une préparation d'images de service et un traitement d'accumulation d'image de publicité/guidage et commande, sur la base du plan d'affichage créé par le dispositif de fourniture d'informations vidéo (2), un affichage d'une image de service et d'une image de publicité/guidage devant être affichées sur l'affichage, sachant que le dispositif de fourniture d'informations vidéo (2) inclut :

un programmeur d'image de service (22) qui gère le contenu d'image de service (46) inclus dans le plan d'affichage ; et

un programmeur d'image de publicité/guidage (21) qui gère le contenu d'image de publicité/guidage inclus dans le plan d'affichage,

caractérisé en ce que

un basculement de l'image de service à l'image de publicité/guidage dans l'affichage est exécuté conformément à une commande effectuée par le programmeur d'image de service (22) qui reçoit un avis d'exécution de préparation d'affichage de l'image de publicité/guidage (SQ22) depuis le programmeur d'image de publicité/guidage,

- dage (21) de telle manière que le programmeur d'image de service (22) soit apte à émettre une consigne d'affichage d'image de publicité/guidage (SQ23) vers le programmeur d'image de publicité/guidage (21), lequel émet une consigne d'affichage de publicité/guidage (SQ24) vers l'unité de commande d'affichage (41) dans chacun des dispositifs de commande d'affichage (4), à horaire prédéterminé compte tenu d'un temps jusqu'à ce que la consigne (SQ24) atteigne l'unité de commande d'affichage (41) dans chacun des dispositifs de commande d'affichage (4) depuis le programmeur d'image de service (22) via le programmeur d'image de publicité/guidage (21), et **en ce que** un basculement de l'image de publicité/guidage à l'image de service dans l'affichage est exécuté conformément à une commande effectuée par le programmeur d'image de service (22) qui reçoit un avis de temps de fin d'une image de publicité/guidage en cours d'affichage (SQ32) depuis le programmeur d'image de publicité/guidage (21) et un avis d'exécution de préparation (SQ33) depuis l'unité de commande d'affichage (41) dans chacun des dispositifs de commande d'affichage (4) de telle manière que le programmeur d'image de service (22) soit apte à émettre une consigne d'affichage d'image de service (SQ34) vers l'unité de commande d'affichage (41) dans chacun des dispositifs de commande d'affichage (4), à horaire prédéterminé compte tenu d'un temps jusqu'à ce que la consigne (SQ34) atteigne l'unité de commande d'affichage (41) dans chacun des dispositifs de commande d'affichage (4), depuis le programmeur d'image de service (22).
2. Le système de fourniture de contenu monté sur un train de la revendication 1, sachant que le contenu d'image de service est généré sur la base des informations de train.
 3. Le système de fourniture de contenu monté sur un train selon la revendication 1 ou 2, sachant que le contenu d'image de publicité/guidage est accumulé préalablement dans les dispositifs de commande d'affichage avant l'affichage de l'image de publicité/guidage sur l'affichage.
 4. Le système de fourniture de contenu monté sur un train selon l'une quelconque des revendications 1 à 3, sachant que le plan d'affichage inclut une pluralité de séquences d'affichage, la séquence d'affichage incluant une séquence d'images de service et d'images de publicité/guidage à afficher, et le dispositif de fourniture d'informations vidéo détermine, sur la base des informations de train, une transition parmi les séquences d'affichage.
 5. Le système de fourniture de contenu monté sur un train selon la revendication 4, sachant que, lorsque le dispositif de fourniture d'informations vidéo ne détermine pas une transition à une prochaine séquence d'affichage, une séquence d'affichage en cours d'affichage est affichée de manière répétée.
 6. Le système de fourniture de contenu monté sur un train selon l'une quelconque des revendications 1 à 5, sachant que, lorsque du contenu en cours d'affichage est une image de publicité/guidage et du contenu programmé pour être affiché en prochain lieu est une image de service, un basculement de l'image de publicité/guidage à l'image de service est effectué après une fin de l'image de publicité/guidage.
 7. Le système de fourniture de contenu monté sur un train selon la revendication 6, sachant que, lorsqu'au moins un contenu d'image de publicité/guidage et une pluralité de contenus d'image de service sont inclus en tant que les informations de contenu de train incluses dans la séquence d'affichage, la séquence d'affichage incluant une séquence d'images de service et d'images de publicité/guidage à afficher, un contenu d'image de service ayant une faible priorité est intégré en tant que contenu d'image de service affiché après affichage du contenu d'image de publicité/guidage parmi les contenus d'image de service.
 8. Le système de fourniture de contenu monté sur un train selon la revendication 1, sachant que l'affichage inclut un premier (5) et un deuxième (6) affichage, et les dispositifs de commande d'affichage sont aptes à afficher l'image de publicité/guidage et l'image de service devant être affichées sur le premier affichage et afficher une image de service devant affichée sur le deuxième affichage.
 9. Le système de fourniture de contenu monté sur un train selon la revendication 8, sachant que le contenu d'image de publicité/guidage est accumulé préalablement dans les dispositifs de commande d'affichage avant l'affichage de l'image de publicité/guidage sur le premier affichage.
 10. Le système de fourniture de contenu monté sur un train selon l'une quelconque des revendications 8 ou 9, sachant que le plan d'affichage inclut une pluralité de séquences d'affichage pour chacun du premier et du deuxième affichage, la séquence d'affichage incluant une séquence d'images de service

et d'images de publicité/guidage à afficher, et le dispositif de fourniture d'informations vidéo détermine, sur la base des informations de train, une transition parmi les séquences d'affichage.

- 5
11. Le système de fourniture de contenu monté sur un train selon la revendication 10, sachant que, lorsque le dispositif de fourniture d'informations vidéo ne détermine pas une transition à une prochaine séquence d'affichage, une séquence d'affichage en cours d'affichage est affichée de manière répétée.
- 10
12. Le système de fourniture de contenu monté sur un train selon l'une quelconque des revendications 8 à 11, sachant que, dans le premier affichage, lorsque du contenu en cours d'affichage est une image de publicité/guidage et du contenu programmé pour être affiché en prochain lieu est une image de service, un basculement de l'image de publicité/guidage à l'image de service est effectué après une fin de l'image de publicité/guidage.
- 15
- 20
13. Le système de fourniture de contenu monté sur un train selon la revendication 12, sachant que, lorsque le temps d'affichage de l'image de publicité/guidage affichée sur le premier affichage est étendu et que le basculement de l'image de publicité/guidage à l'image de service est effectué après la fin de l'image de publicité/guidage, une fin de l'affichage de l'image de service affichée sur le deuxième affichage selon l'affichage de l'image de publicité/guidage est ajustée à la fin de l'affichage de l'image de publicité/guidage.
- 25
- 30
14. Le système de fourniture de contenu monté sur un train selon la revendication 12 ou 13, sachant que, lorsqu'au moins un contenu d'image de publicité/guidage et une pluralité de contenus d'image de service sont inclus en tant que les informations de contenu de train incluses dans la séquence d'affichage pour le premier affichage, la séquence d'affichage incluant une séquence d'images de service et d'images de publicité/guidage à afficher, un contenu d'image de service ayant une faible priorité est intégré en tant que contenu d'image de service affiché après affichage du contenu d'image de publicité/guidage parmi les contenus d'image de service.
- 35
- 40
- 45
- 50
15. Procédé d'affichage d'informations de contenu de train appliqué à un système de fourniture de contenu monté sur un train incluant :

un programmeur d'image de service (22) qui gère du contenu d'image de service (46) généré sur la base d'informations de train parmi des types d'informations de contenu de train devant être affichées sur un affichage (5, 6) dans un

55

train ;

un programmeur d'image de publicité/guidage (21) qui gère du contenu d'image de publicité/guidage ;

une première unité d'enregistrement qui enregistre le contenu d'image de publicité/guidage ; une mémoire tampon d'enregistrement d'image de publicité/guidage qui accumule temporairement le contenu d'image de publicité/guidage, devant être affiché, avant un affichage du contenu d'image de publicité/guidage ;

une deuxième unité d'enregistrement qui enregistre le contenu d'image de service (46) ; et une unité de commande d'affichage (41) qui commande, sur la base d'un plan d'affichage établi préalablement, un affichage d'une image de service et d'une image de publicité/guidage devant être affichées sur l'affichage,

caractérisé en ce que

un basculement de l'image de service à l'image de publicité/guidage dans l'affichage est exécuté conformément à une commande effectuée par le programmeur d'image de service (22) qui reçoit un avis d'exécution de préparation d'affichage de l'image de publicité/guidage (SQ22) depuis le programmeur d'image de publicité/guidage (21) de telle manière que le programmeur d'image de service (22) émette une consigne d'affichage d'image de publicité/guidage (SQ23) vers le programmeur d'image de publicité/guidage (21), lequel émet une consigne d'image de publicité/guidage (SQ24) vers l'unité de commande d'affichage (41) dans chacun des dispositifs de commande d'affichage (4), à horaire prédéterminé compte tenu d'un temps jusqu'à ce que la consigne (SQ24) atteigne l'unité de commande d'affichage (41) dans chacun d'une pluralité de dispositifs de commande d'affichage (4) depuis le programmeur d'image de service (22) via le programmeur d'image de publicité/guidage (21),

et en ce que

un basculement de l'image de publicité/guidage à l'image de service dans l'affichage est exécuté conformément à une commande effectuée par le programmeur d'image de service (22) qui reçoit un avis de temps de fin d'une image de publicité/guidage en cours d'affichage (SQ32) depuis le programmeur d'image de publicité/guidage (21) et un avis d'exécution de préparation (SQ33) depuis l'unité de commande d'affichage (41) dans chacun des dispositifs de commande d'affichage (4) de telle manière que le programmeur d'image de service (22) soit apte à émettre une consigne d'affichage d'image de service (SQ34) vers l'unité de commande

d'affichage (41) dans chacun des dispositifs de commande d'affichage (4), à horaire prédéterminé compte tenu d'un temps jusqu'à ce que la consigne (SQ34) atteigne l'unité de commande d'affichage (41) dans chacun des dispositifs de commande d'affichage (4), depuis le programmeur d'image de service (22). 5

16. Le procédé de la revendication 15 destiné à afficher des informations de contenu de train appliqué à un système de fourniture de contenu monté sur un train incluant : 10

un programmeur d'image de service qui gère du contenu d'image de service généré sur la base d'informations de train parmi des types d'informations de contenu de train devant être affichées, sachant que l'affichage inclut un premier (5) et un deuxième (6) affichage, et l'unité de commande d'affichage inclut une première unité de commande d'affichage (41a) qui commande, sur la base d'un plan d'affichage établi préalablement, un affichage d'une image de service et d'une image de publicité/guidage devant être affichées sur le premier affichage, et 25
 une deuxième unité de commande d'affichage (41b) qui commande un affichage d'une image de service devant être affichée sur le deuxième affichage. 30

17. Le procédé d'affichage d'informations de contenu de train selon la revendication 16, sachant que lorsque les informations de contenu de train affichées sur le premier affichage et les informations de contenu de train affichées sur le deuxième affichage sont des types d'informations associés les uns aux autres, les types d'informations de contenu de train sont affichés en synchronisant entre eux des horaires prédéterminés d'affichage des types d'informations de contenu de train sur le premier et le deuxième affichage. 40

45

50

55

FIG.1

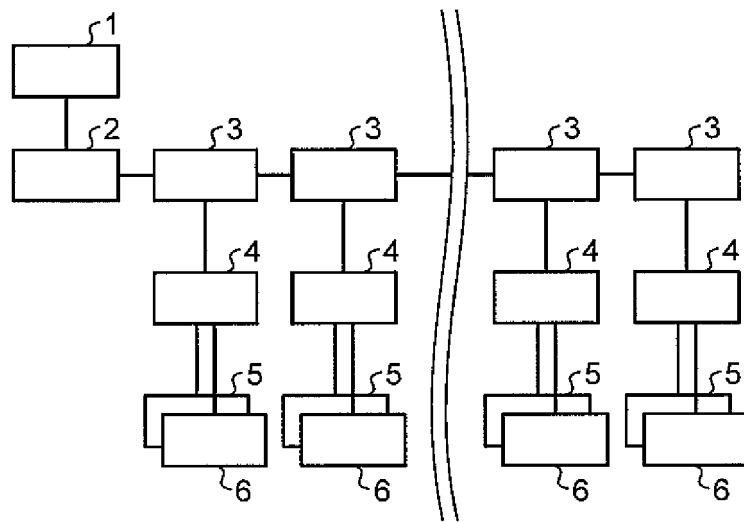


FIG.2

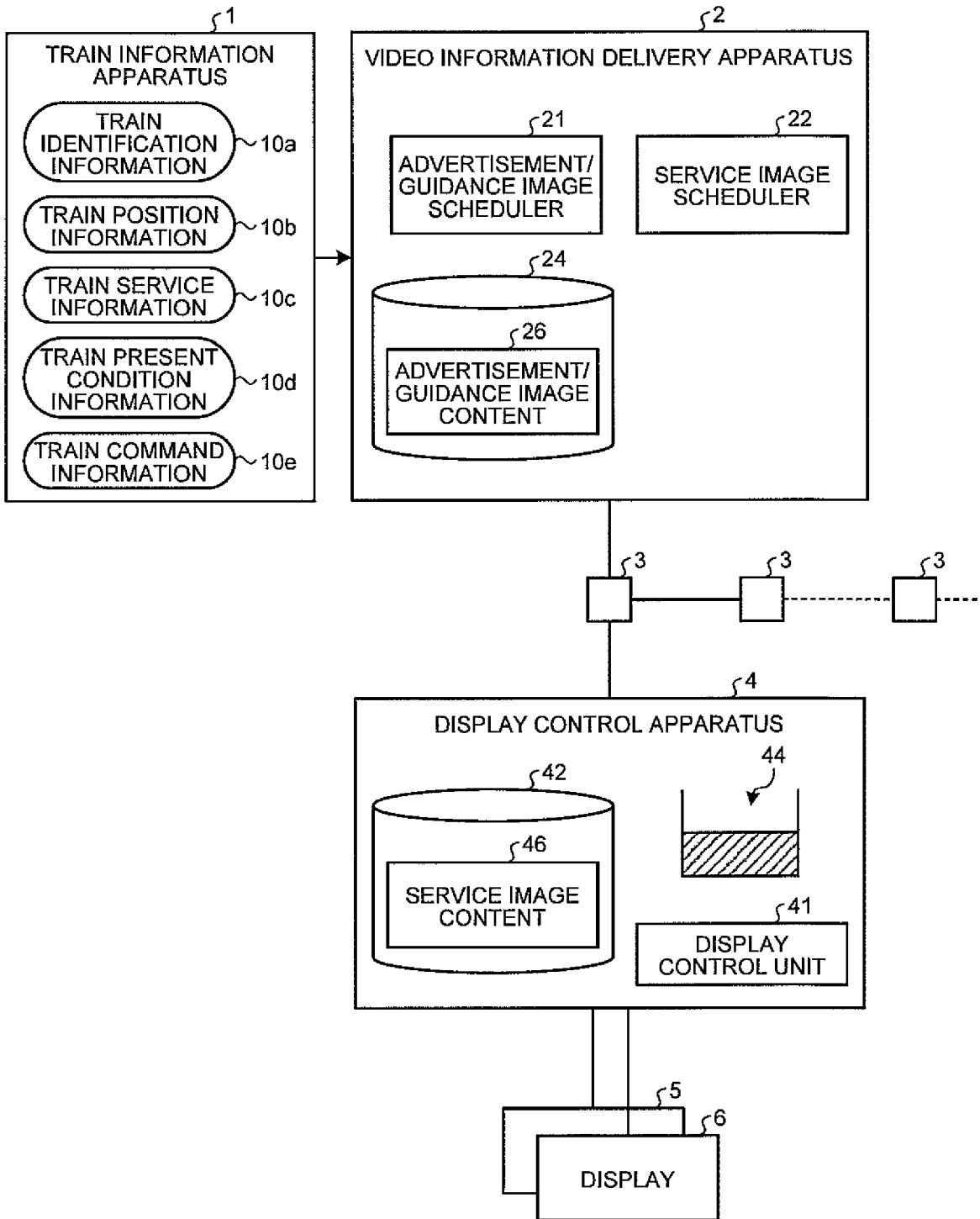


FIG.3

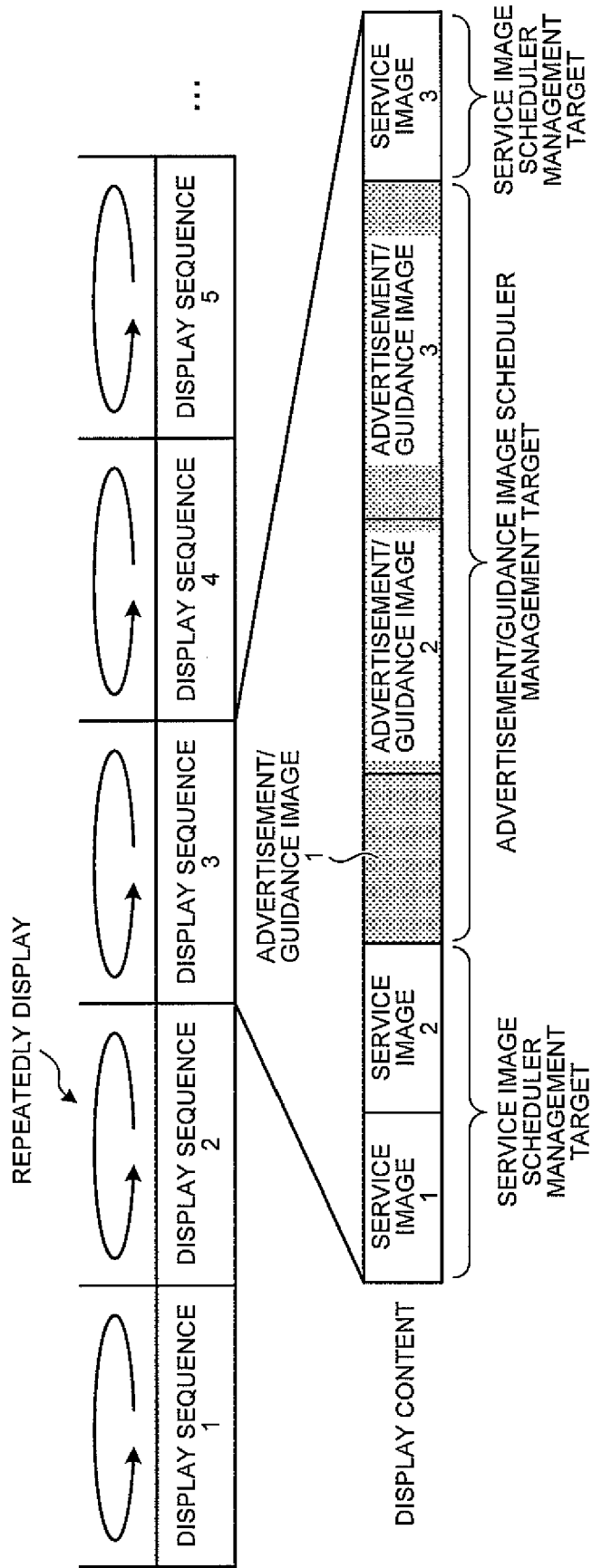


FIG.4

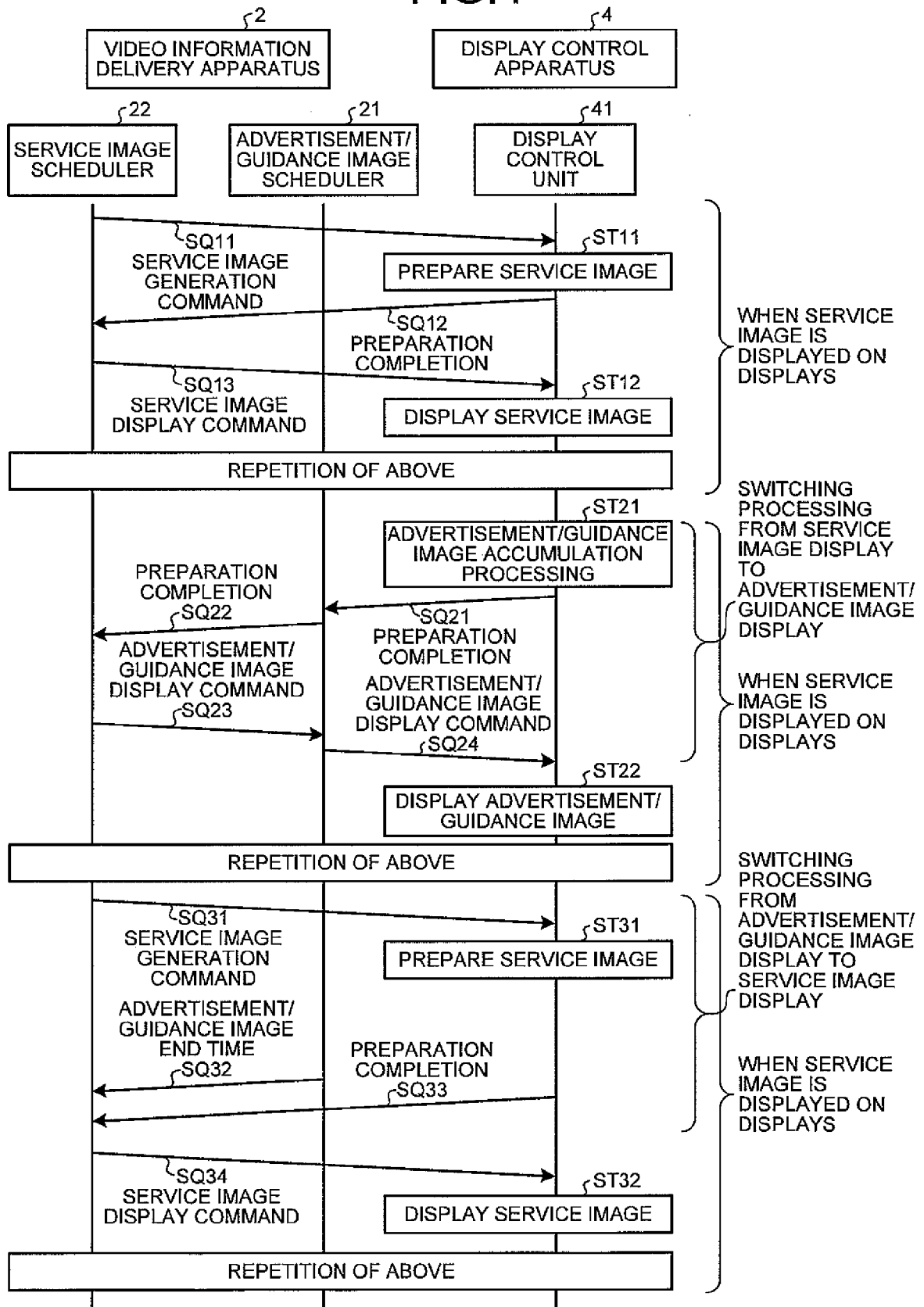


FIG.5

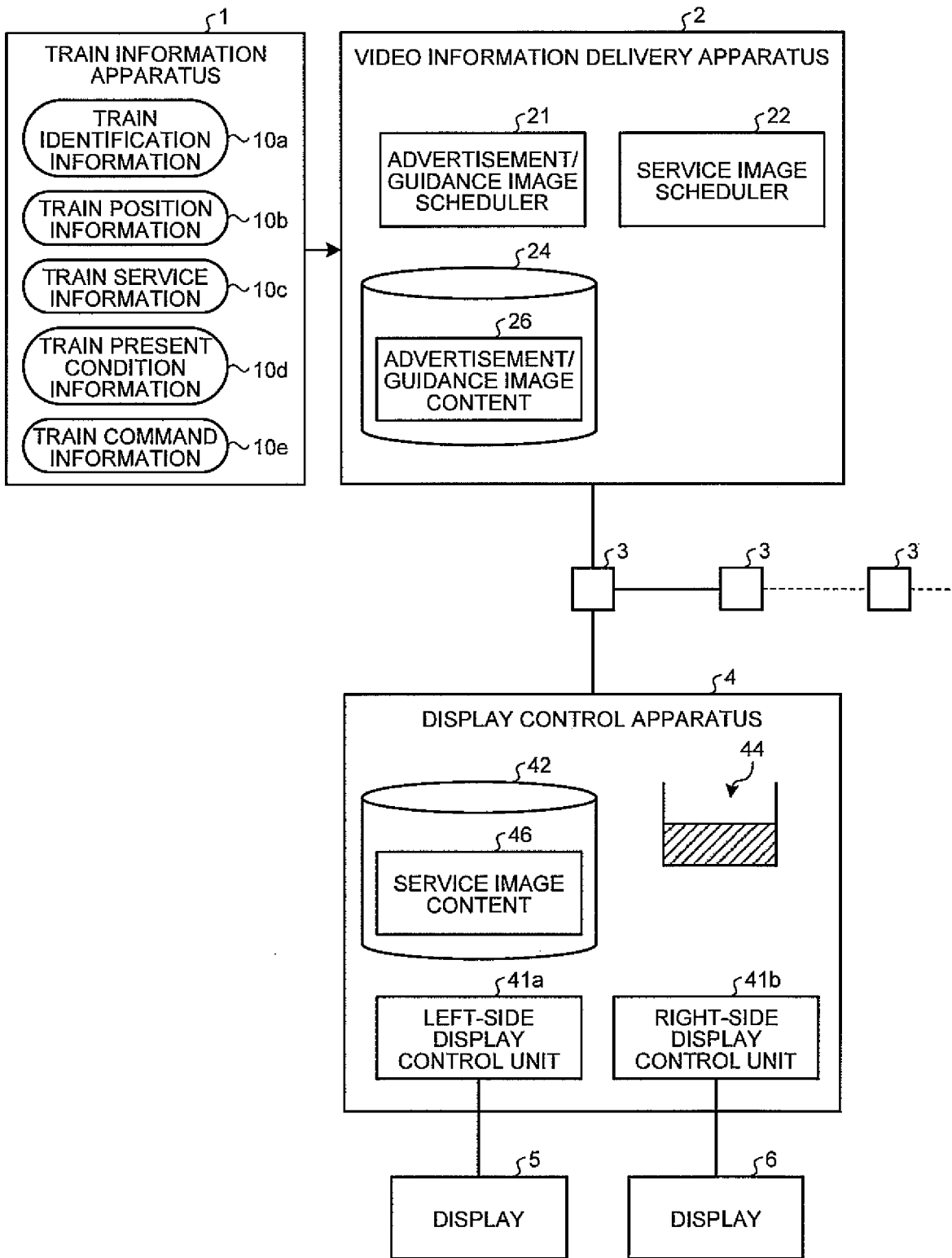


FIG.6

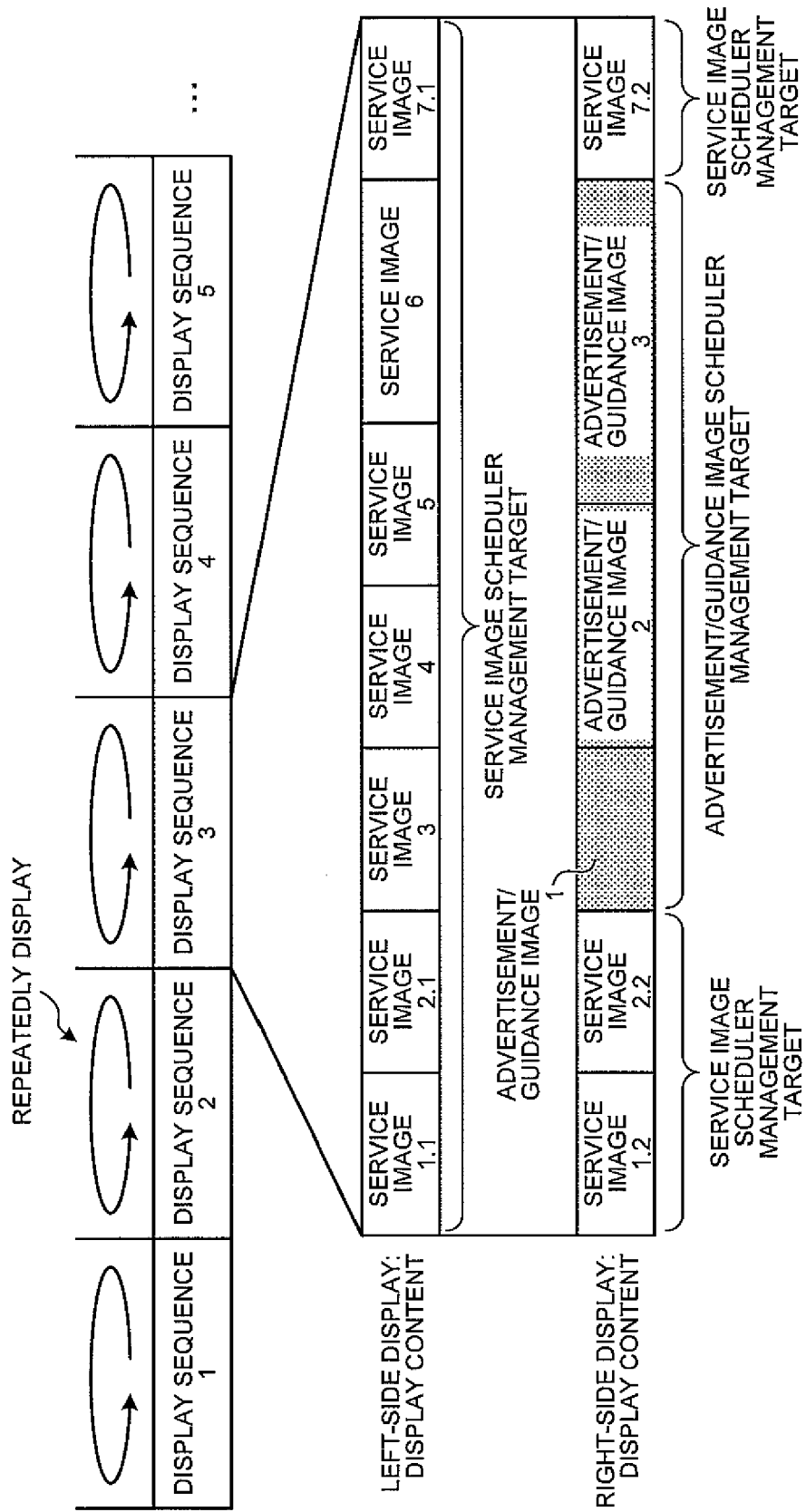
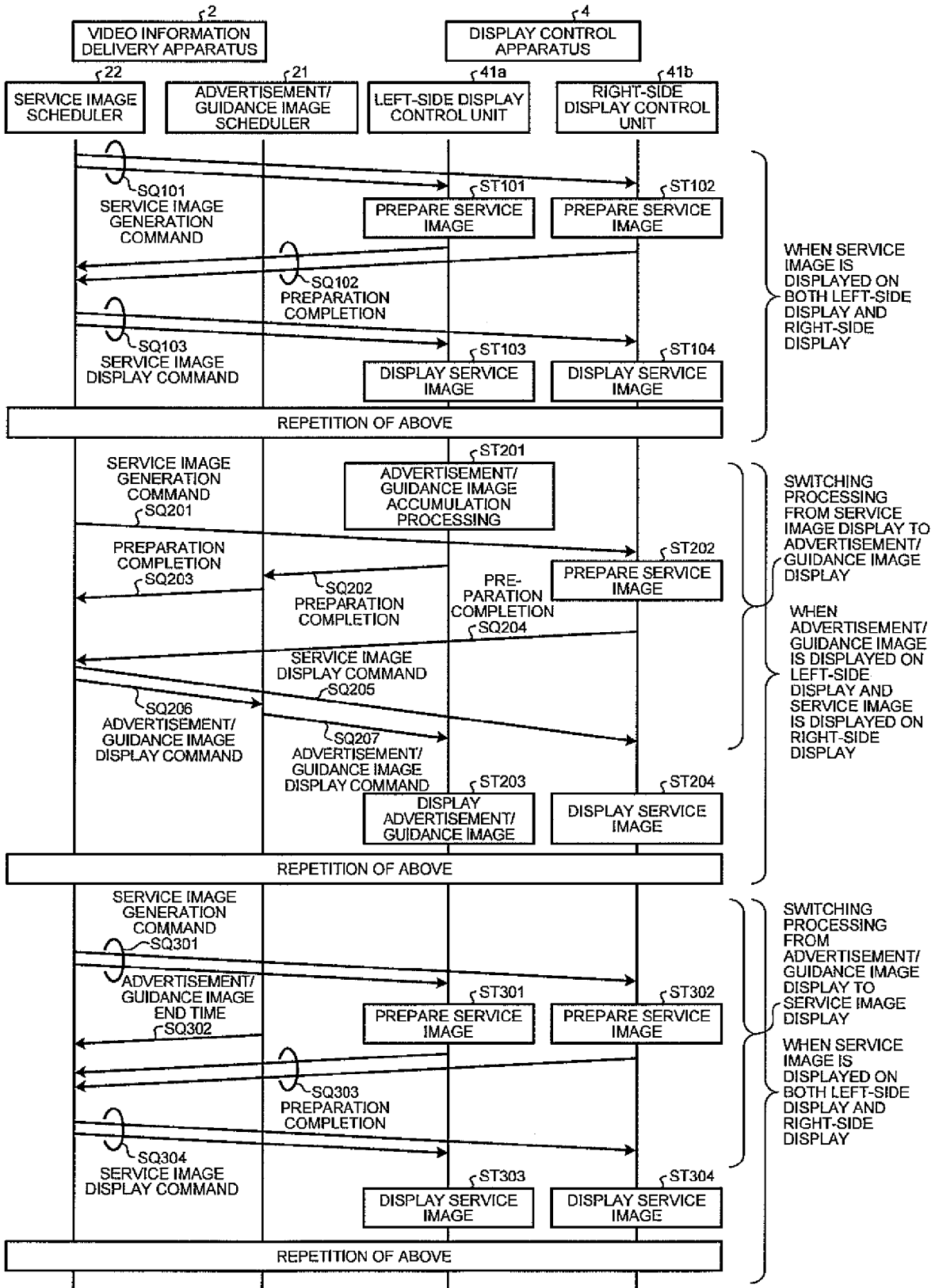


FIG.7



REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- EP 1903800 A1 [0005]
- JP 2005057524 A [0006]