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Ogawa et al.

(54) **DATA PROCESSING APPARATUS AND METHOD FOR VIDEO REPRODUCTION**

(76) Inventors: **Shuta Ogawa**, Kawasaki-shi (JP); **Yoshihiro Ohmori**, Ome-shi (JP)

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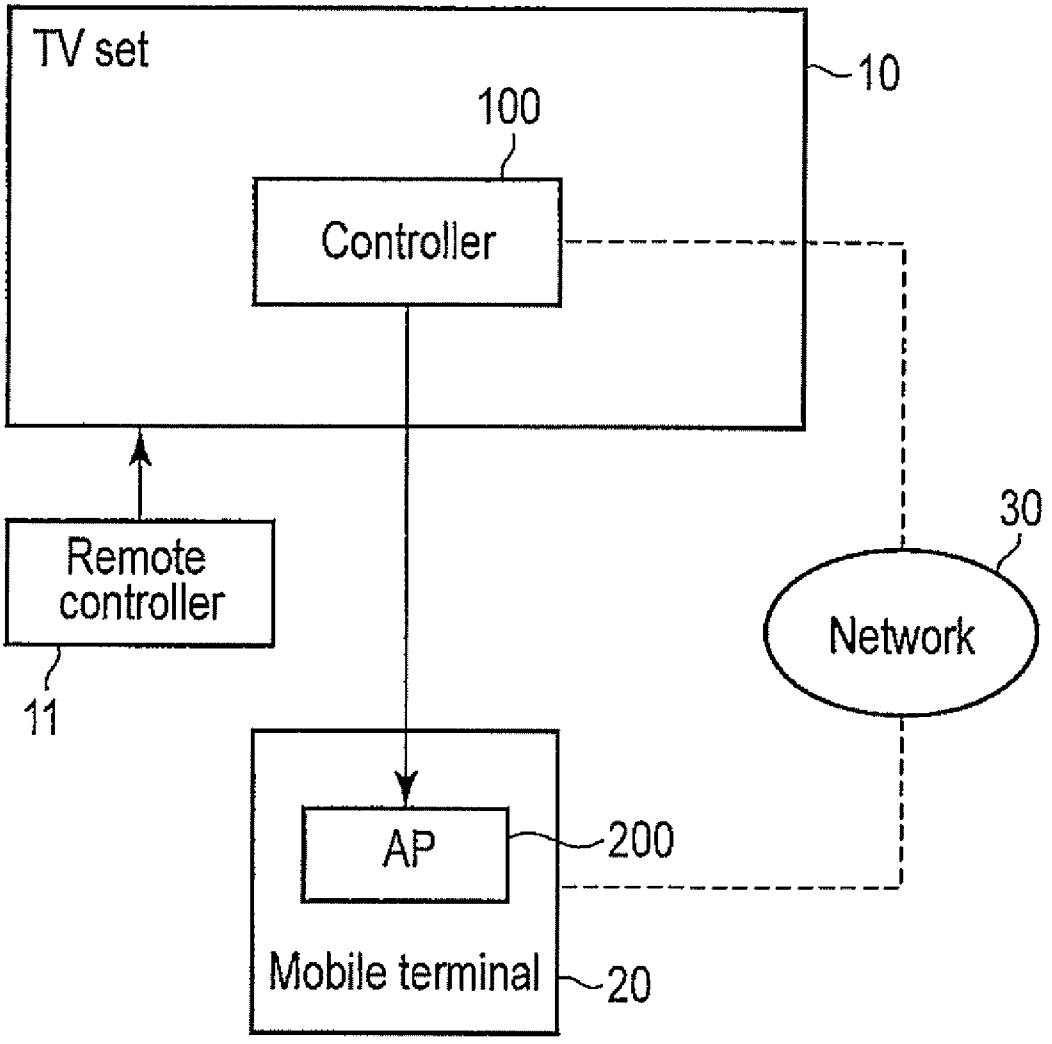
(57) **ABSTRACT**

According to one embodiment, a data processing apparatus includes a viewing information acquisition module, application setting module, and output module. The viewing information acquisition module is configured to acquire viewing information indicating a viewing state of a video reproduction apparatus. The application setting module is configured to set an application used to execute designated data processing associated with an operation of the video reproduction apparatus. The output module is configured to output a launch instruction required to launch the application set by the application setting module.



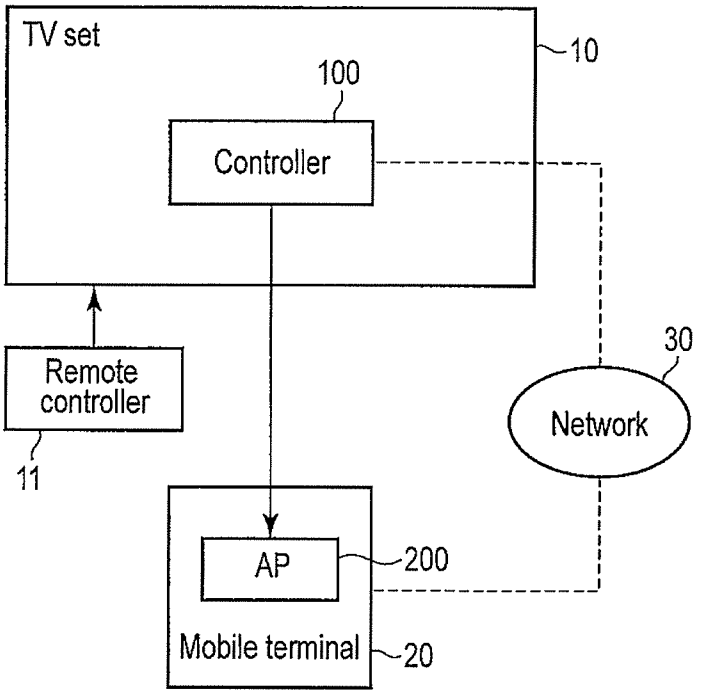

TV set
10
100
Controller
Remote controller
11
30
Network
AP
200
Mobile terminal
20

FIG. 1

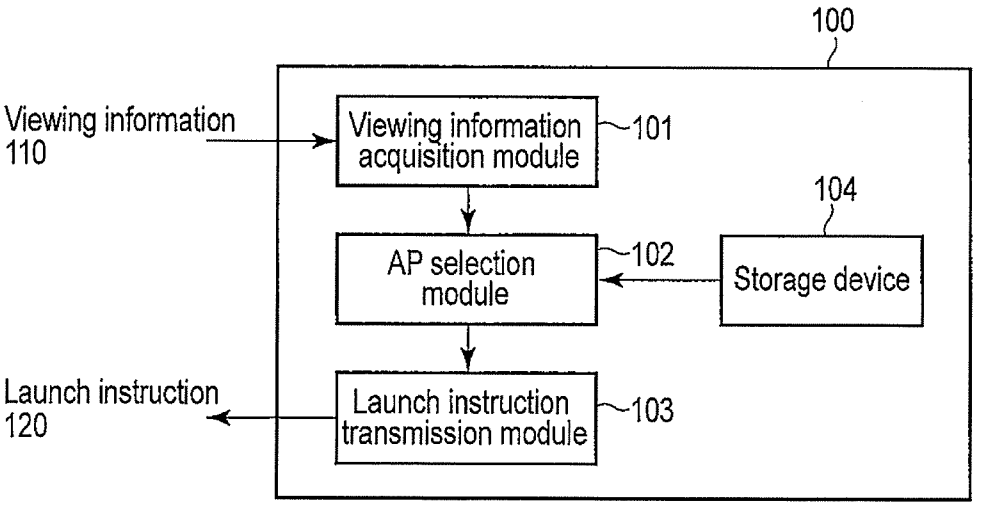

100
Viewing information 110
Viewing information acquisition module
101
104
AP selection module
102
Storage device
Launch instruction 120
Launch instruction transmission module
103

FIG. 2

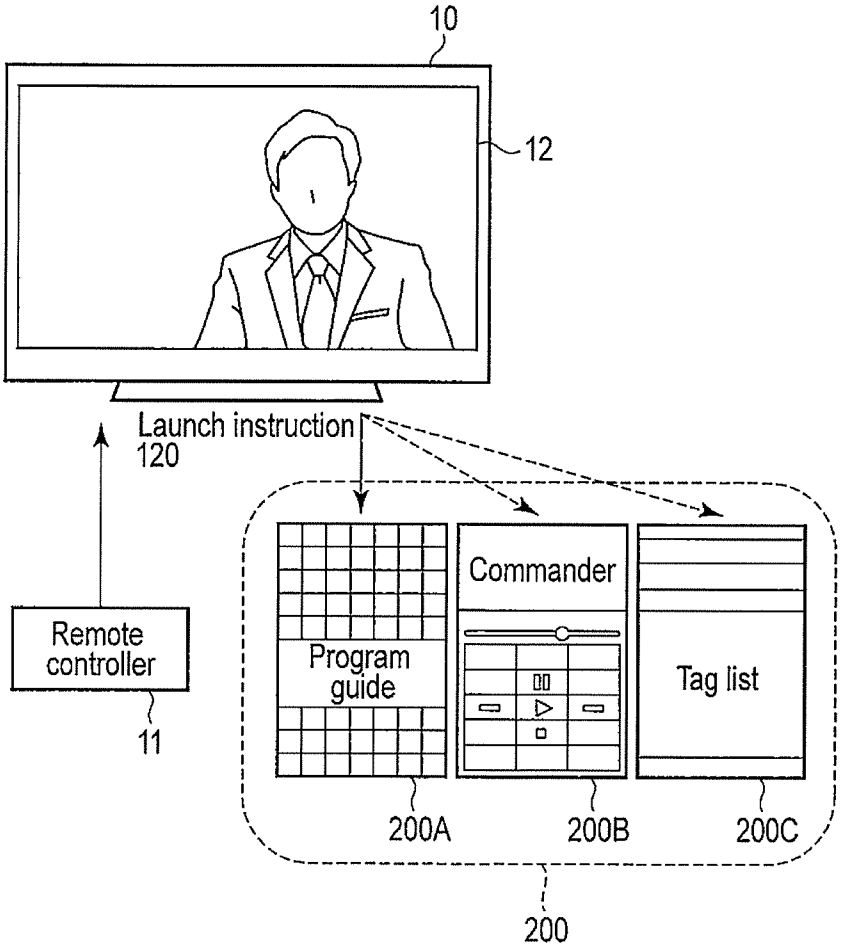

10
12
Launch instruction
120
Remote controller
11
Program guide
Commander
Tag list
200A
200B
200C
200

FIG. 3

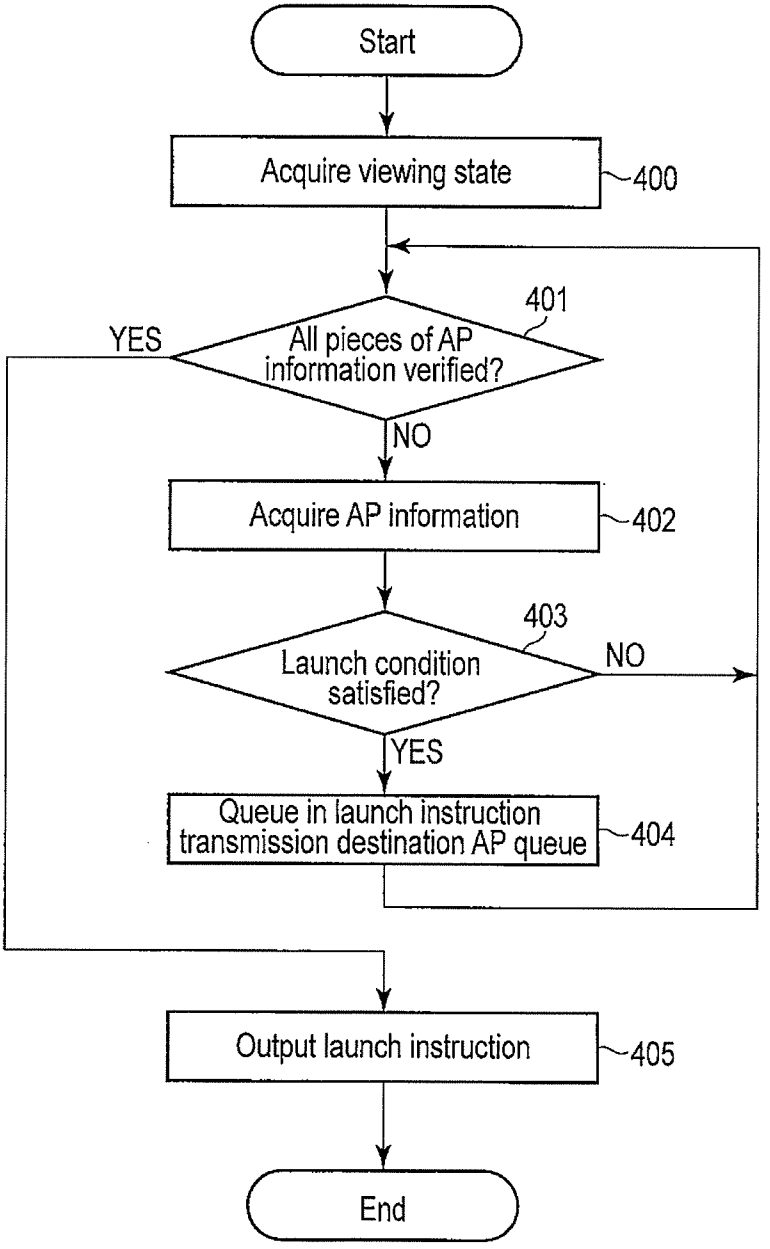

Start
Acquire viewing state
400
401
All pieces of AP information verified?
YES
NO
Acquire AP information
402
403
Launch condition satisfied?
NO
YES
Queue in launch instruction transmission destination AP queue
404
Output launch instruction
405
End

FIG. 4

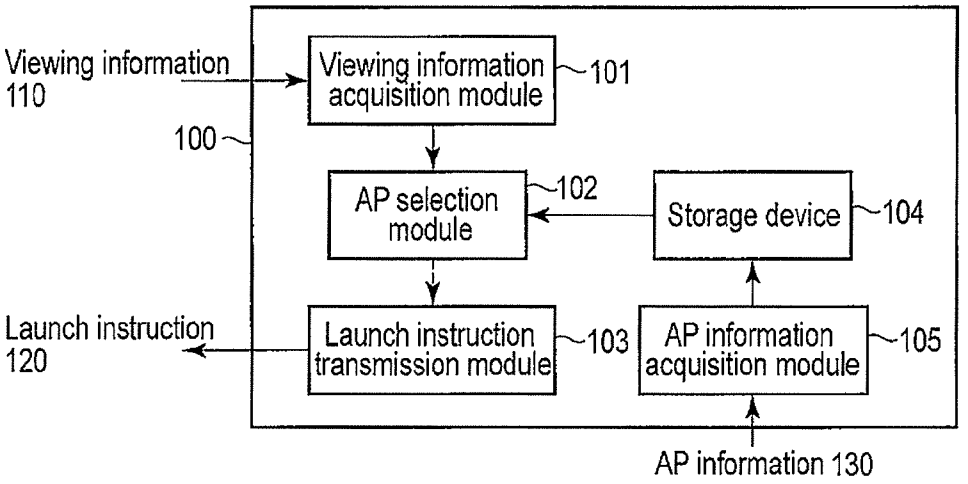

Viewing information
110
100
Viewing information acquisition module
101
AP selection module
102
Storage device
104
Launch instruction
120
Launch instruction transmission module
103
AP information acquisition module
105
AP information 130

FIG. 5

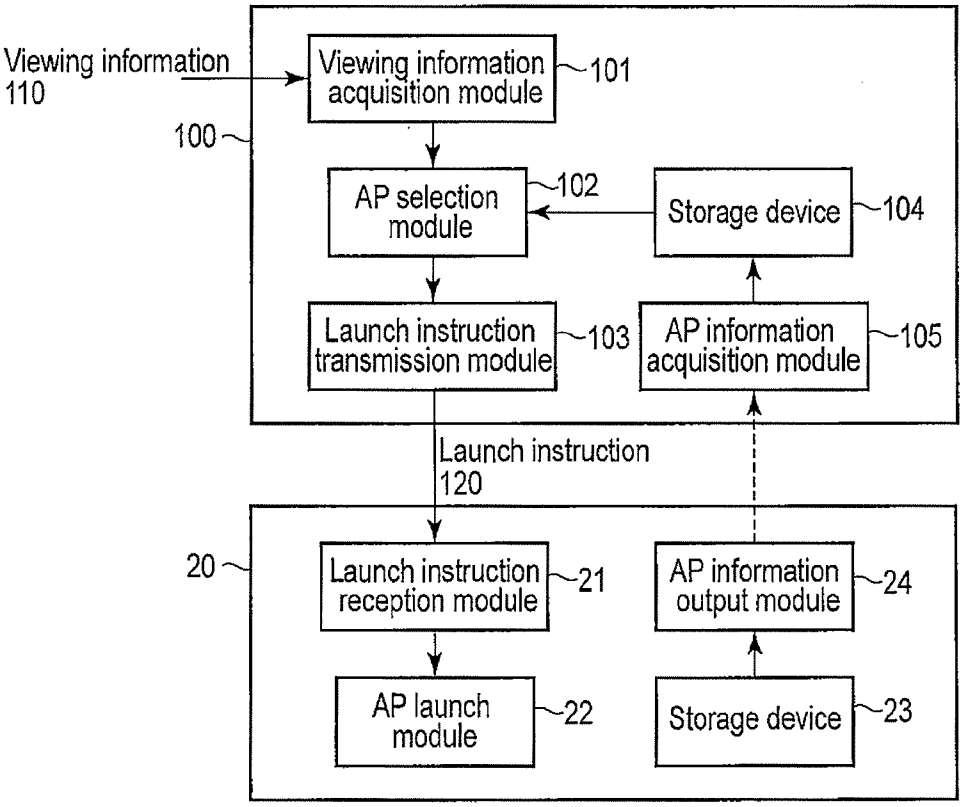

Viewing information
110
100
Viewing information acquisition module
101
AP selection module
102
Storage device
104
Launch instruction transmission module
103
AP information acquisition module
105
Launch instruction
120
20
Launch instruction reception module
21
AP information output module
24
AP launch module
22
Storage device
23

FIG. 6

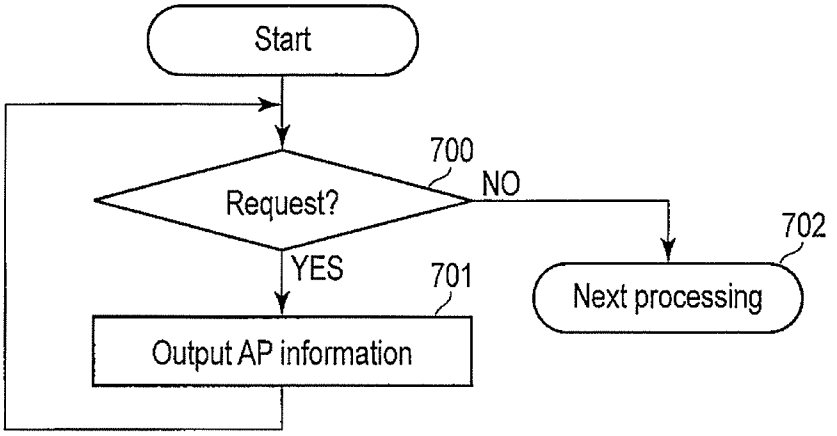

Start
700
Request?
NO
YES
701
Output AP information
702
Next processing

FIG. 7

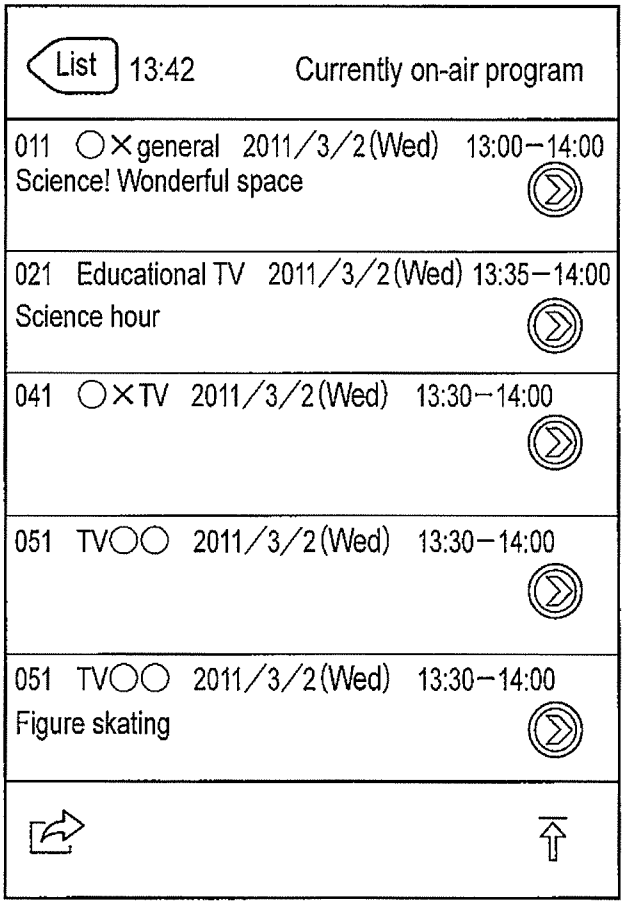

List
13:42
Currently on-air program
011 ○×general 2011/3/2(Wed) 13:00−14:00
Science! Wonderful space
021 Educational TV 2011/3/2(Wed) 13:35−14:00
Science hour
041 ○×TV 2011/3/2(Wed) 13:30−14:00
051 TV○○ 2011/3/2(Wed) 13:30−14:00
051 TV○○ 2011/3/2(Wed) 13:30−14:00
Figure skating

FIG. 8

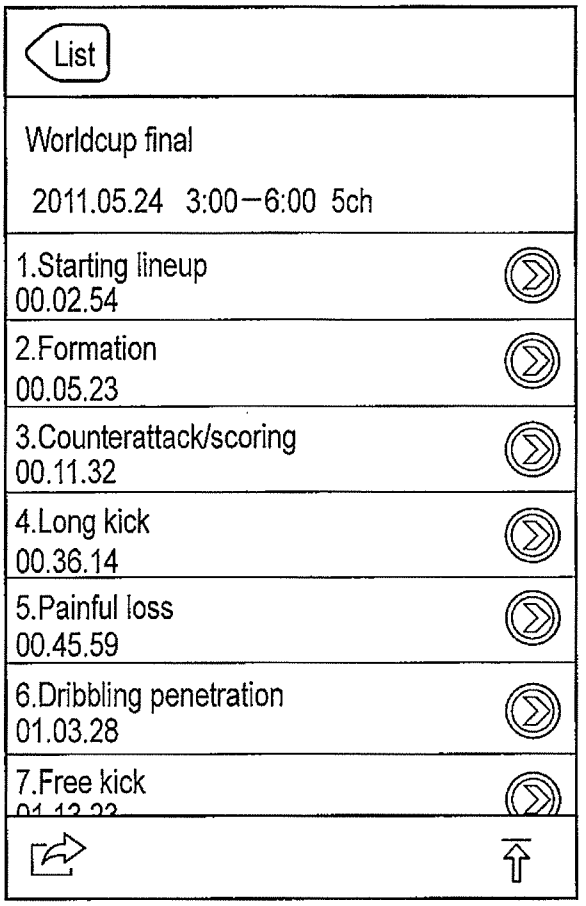
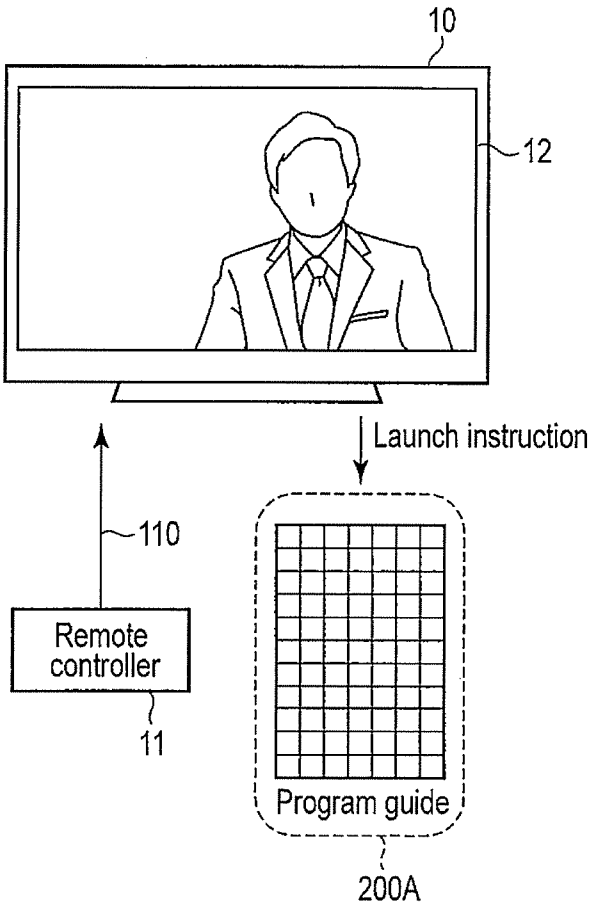


FIG. 9

	AP	Launch condition
A	Current program AP	IF ((Number of times of occurrence of EVch>5) WITHIN 10sec)
B	Tag share type AP	IF (Ntag>10)

FIG. 10


10
12
Launch instruction
110
Remote controller
11
Program guide
200A

F I G. 11

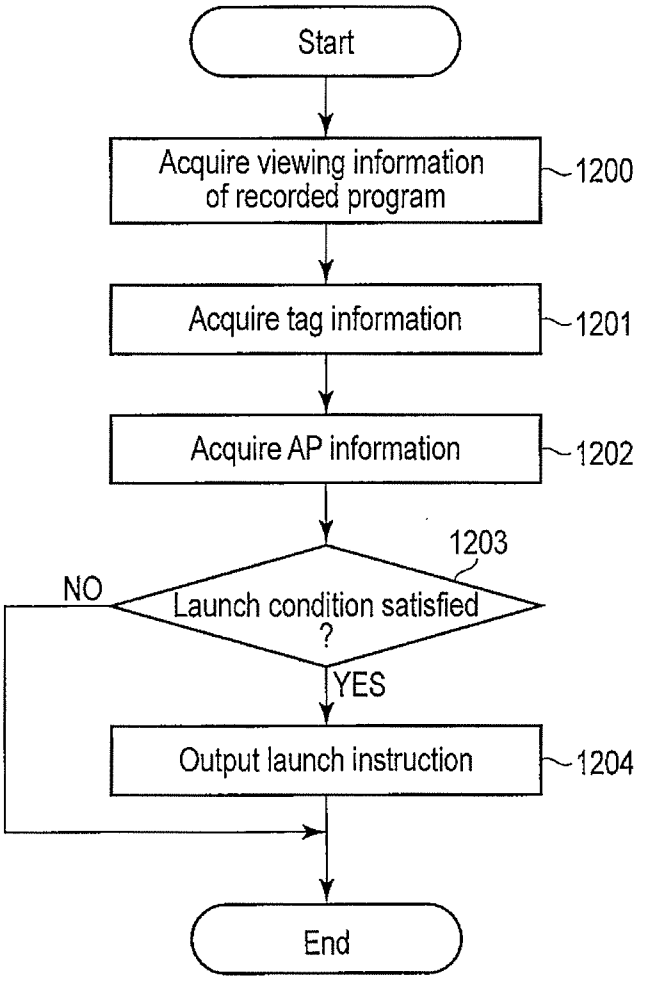

Start
Acquire viewing information of recorded program
1200
Acquire tag information
1201
Acquire AP information
1202
1203
Launch condition satisfied ?
NO
YES
Output launch instruction
1204
End

FIG. 12

DATA PROCESSING APPARATUS AND METHOD FOR VIDEO REPRODUCTION

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is based upon and claims the benefit of priority from prior Japanese Patent Application No. 2011-260674, filed Nov. 29, 2011, the entire contents of which are incorporated herein by reference.

FIELD

[0002] Embodiments described herein relate generally to a data processing apparatus, system, and method for video reproduction.

BACKGROUND

[0003] Conventionally, it is a common practice for a video reproduction apparatus represented by a television (TV) set to make operations such as a power on/off operation and channel switching operation using a remote control unit (to be referred to as a remote controller hereinafter) using infrared communications or the like.

[0004] In recent years, applications used to operate a TV set from a mobile terminal (portable information terminal) have been provided. Such applications are programs which function on the mobile terminal, and are provided via, for example, a network.

[0005] The user can operate a TV set from the mobile terminal installed with the applications via a wireless LAN or home network. In this case, the operations of the TV set include an operation for displaying information such as TV broadcast programs on a display screen of the mobile terminal. In addition to such applications, a remote controller system which provides information such as programs from a TV set to a remote controller has been proposed.

[0006] Use of applications can improve operability of a TV set, and a variety of application functions can broaden the range of the operability of the TV set. However, a user (TV viewer) himself or herself has to judge which functions of applications are to be used in various situations. It is not easy for the user to select an optimal application function depending on the situation, and it is consequently difficult to effectively such applications.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] A general architecture that implements the various features of the embodiments will now be described with reference to the drawings. The drawings and the associated descriptions are provided to illustrate the embodiments and not to limit the scope of the invention.

[0008] FIG. **1** is a block diagram for explaining the arrangement of a system according to the first embodiment;

[0009] FIG. **2** is a block diagram for explaining principal part of a controller according to the first embodiment;

[0010] FIG. **3** is a view for explaining the operation of the controller according to the first embodiment;

[0011] FIG. **4** is a flowchart for explaining the operation of the controller according to the first embodiment;

[0012] FIG. **5** is a block diagram showing an application example according to the first embodiment;

[0013] FIG. **6** is a block diagram showing another application example according to the first embodiment;

[0014] FIG. **7** is a flowchart for explaining the operation of a mobile terminal according to the first embodiment;

[0015] FIG. **8** is a view for explaining a function of an application according to the first embodiment;

[0016] FIG. **9** is a view for explaining a function of an application according to the second embodiment;

[0017] FIG. **10** is a table for explaining launch conditions of applications according to the first and second embodiments;

[0018] FIG. **11** is a view for explaining a modification of the first embodiment; and

[0019] FIG. **12** is a flowchart for explaining the operation of a controller according to the second embodiment.

DETAILED DESCRIPTION

[0020] Various embodiments will be described hereinafter with reference to the accompanying drawings.

[0021] In general, according to one embodiment, a data processing apparatus includes a viewing information acquisition module, application setting module, and output module. The viewing information acquisition module is configured to acquire viewing information indicating a viewing state of a video reproduction apparatus. The application setting module is configured to set an application used to execute designated data processing associated with an operation of the video reproduction apparatus. The output module is configured to output a launch instruction required to launch the application set by the application setting module.

[0022] [System Arrangement]

[0023] As shown in FIG. **1**, a system of this embodiment includes a controller **100** incorporated in a TV set **10**, a remote controller **11**, a mobile terminal **20**, and a network **30**. In this embodiment, the TV set **10** is a digital TV. Alternatively, the TV set **10** may be a cable TV set or a video reproduction apparatus such as a personal computer having a video reproduction function (including an audio reproduction function).

[0024] The remote controller **11** has a power switch, channel switching buttons, and various command buttons of the TV set **10**. The mobile terminal **20** is a portable electronic device such as a portable information terminal or cellular phone, which has data processing functions by installing and executing applications to be described later. The network **30** is a wireless LAN, home network, or the like, and executes data communications based on, for example, an IP (Internet Protocol) between the controller **100** and mobile terminal **20**.

[0025] As shown in FIG. **2**, the controller **100** of the first embodiment has a viewing information acquisition module **101**, application (AP) selection module **102**, launch instruction transmission module **103**, and storage device **104**. The controller **100** is a data processing apparatus including hardware and software of a computer, and implements functions of the respective modules **101** to **103** by software.

[0026] The viewing information acquisition module **101** acquires viewing information **110** indicating a viewing state (user's viewing behavior) when the user views the TV set **10**. More specifically, the viewing information **110** indicates a viewing state such as a zapping behavior performed when the user frequently switches channels of TV programs, a channel number that designates a specific channel, a simple power-on operation, or the like. The viewing information acquisition module **101** generates and acquires the viewing information **110** based on, for example, an operation of the remote controller **11**.

[0027] The AP selection module **102** selects an applicable application based on the viewing information **110** from the

viewing information acquisition module **101** and application launch conditions. More specifically, the storage device **104** stores application information (AP information) required to specify a launch condition and application. The AP information includes an IP address of the mobile terminal **20** in which an application is installed, and an application identifier in addition to the launch condition to be described later. The AP selection module **102** selects an applicable application based on the AP information stored in the storage device **104**.

[0028] Note that the storage device **104** may store only AP information of an application of one type. In this case, when the viewing information **110** matches a launch condition, the AP selection module **102** sets that application; otherwise, the module **102** does not set any application.

[0029] The launch instruction transmission module **103** outputs a launch instruction **120** required to launch the application selected (set) by the AP selection module **102**. More specifically, the controller **100** transmits a packet of the launch instruction **120** onto the network **30**.

[0030] As shown in FIG. **1**, when the mobile terminal **20** receives the packet of the launch instruction **120** from the network **30**, and installs a corresponding application **200**, that application **200** is launched. Note that the application **200** is launched when it is installed in another electronic device connected to the network **30** in addition to the mobile terminal **20**, as a matter of course.

[0031] The controller **100** may transmit the launch instruction **120** which limits both the mobile terminal **20** and application **200**. In this case, even when an identical application **200** is installed in a plurality of mobile terminals (electronic devices), that installed in only one of these mobile terminals is launched. As a practical example, when each AP information includes information "last launch date and time", and the launch condition includes a condition "a newest last launch date and time of all pieces of AP information", an AP to be launched is specified according to the launch instruction **120**.

[0032] [Operation of First Embodiment]

[0033] The operation of the system mainly including the controller **100** will be described below with reference to FIG. **3** and the flowchart shown in FIG. **4**.

[0034] As shown in FIG. **3**, when the user operates the remote controller **11**, a program (video and audio) of a designated channel is being reproduced on a screen **12** of the TV set **10**. A state will be assumed wherein the user is making zapping to search for a program other than the program which is being reproduced. As a result of zapping, since the user operates channel switching buttons on the remote controller **11** within a short period of time, program switching events frequently occur within the short period of time.

[0035] In the controller **100**, the viewing information acquisition module **101** acquires the viewing information **110** indicating a zapping viewing state (user's viewing behavior) based on the operations on the remote controller **11** (block **400**). That is, the controller **100** acquires the viewing information **110** indicating that channel switching events frequently occur.

[0036] The AP selection module **102** acquires application information (AP information) stored in the storage device **104** (block **402**). The AP selection module **102** collates a launch condition included in that AP information with the viewing information **110** to verify whether or not a launch condition set in the AP information is satisfied (block **403**). In this case, the launch condition is information which defines, for example, a zapping viewing state, as will be described later.

[0037] As a practical example, assume that a launch condition set in AP information of a "current program application" is "channel switching events occur Nc times or more when each program viewing time period is within Tc sec". Tc and Nc in the launch condition are decided by, for example, experiments for inspecting the channel switching time period and the number of channel switching events in zapping.

[0038] The AP selection module **102** determines that the launch condition is satisfied as a result of collation with the zapping viewing information **110**, and selects the AP information of the "current program application" (information of an application **200**A) (block **403**).

[0039] The launch instruction transmission module **103** queues a launch instruction corresponding to the selected AP information in a launch instruction transmission destination AP queue (block **404**). Then, after verification of all pieces of AP information stored in the storage device **104** is complete, the controller **100** outputs the launch instruction **120** required to launch application **200**A of the AP information from the launch instruction transmission destination AP queue (block **405**). More specifically, the controller **100** transmits a packet of the launch instruction **120** onto the network **30**. In this case, when a certain exclusive launch condition is satisfied, a launch instruction of an AP which does not correspond to that condition is deleted from the launch instruction transmission destination AP queue. Such exclusive launch condition is, for example, a condition that requires a newest last launch date and time of all the pieces of AP information.

[0040] On the other hand, if the controller **100** cannot find AP information whose launch condition is not satisfied with respect to the viewing information **110** from all the pieces of AP information stored in the storage device **104**, it ends processing without outputting any launch instruction **120**.

[0041] When the controller **100** transmits the packet of the launch instruction **120** onto the network **30**, the mobile terminal **20** receives the packet of the launch instruction **120** via the network **30**. As shown in FIG. **3**, the mobile terminal **20** is installed with, for example, three types of applications **200**A to **200**C as the application **200**. When the mobile terminal **20** receives the launch instruction **120** corresponding to application **200**A, application **200**A is launched. On the other hand, remaining applications **200**B and **200**C are not launched.

[0042] In this case, application **200**A is, for example, the "current program application". As shown in FIG. **8**, application **200**A has a function of displaying a list of programs which are on the air at the current time on the screen of the mobile terminal **20** and starting reproduction of a program that the user wants to view when the user taps a cell of that program with the finger.

[0043] It is optimal to select the current program application **200**A which allows the user to view a list of programs based on an estimation that when the user makes zapping, he or she wants to confirm program content of other channels at the same time. In the controller **100**, the AP selection module **102** selects AP information including a launch condition that launches an application upon detection of zapping based on the viewing information **110**.

[0044] As described above, the controller **100** includes the storage device **104** which stores AP information. AP information is provided for each of applications **200**A to **200**C installed in each mobile terminal **20**. Each of applications **200** which are installed in different mobile terminals and have the same function has independent AP information.

[0045] In this case, upon verification of a launch condition of AP information (block **403**), if a plurality of pieces of AP information satisfy the launch condition at the same time, the AP selection module **102** preferentially selects AP information with a larger launch priority value based on those included in the respective pieces of AP information. When the launch priority values assume the same value, the AP selection module **102** may select AP information verified earlier. In place of handling binary data indicating whether or not the launch condition is satisfied, a method of deciding a launch priority order of AP information more finely by handling multi-valued data indicating satisfied degrees of the condition step by step may be used.

[0046] When an application as a target to which the launch instruction **120** is to be transmitted is fixed, the controller **100** records in advance AP information in the storage device **104** as information which does not depend on a user environment. The controller **100** may acquire AP information from a server via the network, and may store it in the storage device **104**.

[0047] The user manually or automatically sets an IP address of the mobile terminal **20** as environment-dependent information in the controller **100**. In order to automatically obtain the IP address of the mobile terminal, the controller **100** uses a general method used upon conducting a device search on the network. If no application as a target of the launch instruction **120** transmitted from the controller **100** is installed in the mobile terminal **20** of the user, nothing is launched in the mobile terminal **20**, thus posing no problem.

[0048] FIGS. **5** and **6** are block diagrams showing application examples of this embodiment.

[0049] As shown in FIG. **5**, the controller **100** has an AP information acquisition module **105**. The AP information acquisition module **105** externally acquires AP information of a target application, and stores the acquired AP information in the storage device **104**. More specifically, the AP information acquisition module **105** has a connection terminal of a USB memory, and inputs AP information from the connected USB memory.

[0050] As shown in FIG. **6**, the mobile terminal **20** includes a launch instruction reception module **21**, AP launch module **22**, storage device **23**, and AP information output module **24**. The mobile terminal **20** receives a launch instruction from the controller **100** by the launch instruction reception module **21**. The AP launch module **22** launches the application **200** (one of applications **200**A to **200**C) according to the launch instruction received by the launch instruction reception module **21**.

[0051] The mobile terminal **20** outputs AP information stored in the storage device **23** to the controller **100** via the AP information output module **24**. The controller **100** acquires the AP information from the mobile terminal **20** via the AP information acquisition module **105**, and stores the acquired AP information in the storage device **104**.

[0052] As shown in FIG. **7**, the mobile terminal **20** outputs AP information to the controller **100** via the AP information output module **24** in response to a request from the controller **100** (YES in block **700**, block **701**). In this case, the mobile terminal **20** repetitively outputs the AP information every time a request is received from the controller **100** at a given time interval. Of course, the mobile terminal **20** executes predetermined interrupt processing or the like between an interval of requests (block **702**). On the other hand, when the mobile terminal **20** receives the launch instruction **120** from the controller **100** during its operation, it launches the designated application **200**A corresponding to the launch instruction **120**.

[0053] As described above, the user need not make any setting operations about AP information. An AP information acquisition timing of the controller **100** is a timing immediately after the controller **100** is activated or once per given period (several hours to one day).

[0054] The launch condition of the application included in the AP information will be described below.

[0055] The launch condition of the application is defined by a description of a given format. The controller **100** and mobile terminal **20** commonly use the launch condition described using that format. FIG. **10** shows a practical example of the given format.

[0056] For example, a launch condition of the current program application **200**A is defined as follows.

$$\text{IF((the number of times of occurrence of } EVch > 5) \text{ WITHIN 10 sec)} \quad (1)$$

[0057] This conditional statement (1) means that it is true when the number of times of occurrence of channel change events EVch reaches six or more within 10 sec. This conditional statement (1) is an example of the launch condition required to detect a zapping viewing state (viewing information **110**).

[0058] The controller **100** installs, in advance, a function (program) required to execute fragmentary processing (processing for detecting channel switching events EVch), which can be an element of the launch condition, so as to execute that processing in association with the given format.

[0059] On the other hand, the applications **200** installed in the mobile terminal **20** have launch conditions according to the given format. The controller **100** collects these launch conditions, and uses them in determination upon transmission of a launch instruction to each application.

[0060] The launch condition of an application need not be included in the application itself, but the controller **100** may have launch conditions of all released applications. In this case, each application has an identifier of a launch condition so as to inform the controller **100** of which launch condition is true to transmit a launch instruction to itself. The controller **100** may collect identifiers of launch conditions and may periodically determine true/false of the launch conditions indicated by the collected identifiers.

Second Embodiment

[0061] The second embodiment will be described below with reference to FIGS. **9** and **10**, and the flowchart shown in FIG. **12**. Note that the arrangements of the system, controller **100**, and mobile terminal **20** are the same as those shown in FIGS. **1**, **2**, **5**, and **6** described above.

[0062] The first embodiment has assumed the case in which as the application **200**, current program application **200**A is launched to have a zapping viewing state (user's viewing behavior) as a trigger. The second embodiment will assume a case in which a tag share type application **200**C is to be launched.

[0063] A "tag share" function is that which allows the user to set a tag at an arbitrary position of a program in advance, and reproduces the program from the tag set position later. The "tag" is something like a bookmark set on a timeline of video reproduction, and can be freely named by the user. For example, when the user sets a tag at a position of a goal scene

of a soccer program, and gives a name "goal", he or she can easily view that program from the goal scene at the time of later reproduction. The tag share function allows users to share tags set by individual users. Tags set by users are collected on a server, and other users who view the same program can use these tags.

[0064] FIG. **9** shows a display example on the screen of the mobile terminal **20** by the tag share type application **200**C. That is, application **200**C acquires tags attached to a video from an external server, and displays a list of tags on the screen of the mobile terminal **20**. The user can reproduce the video from the reproduction position of a tag when he or she taps that tag item. It can be estimated that a program with many tags has higher visibility than that without a tag.

[0065] The operation of the controller **100** with the arrangement shown in FIG. **6** will be described below with reference to the flowchart shown in FIG. **12**.

[0066] When the user begins to view a recorded program, the viewing information acquisition module **101** of the controller **100** acquires viewing information **110** indicating a viewing state of the recorded program (block **1200**). The viewing information acquisition module **101** acquires tag information of that recorded program via the network (block **1201**).

[0067] The AP selection module **102** acquires application information (AP information) stored in the storage device **104** (block **1202**). The AP selection module **102** collates a launch condition included in that AP information with the viewing information **110** to verify whether or not the launch condition set in that AP information is satisfied (block **1203**). In this embodiment, the launch condition is a tag share type launch condition, as will be described later.

[0068] The launch instruction transmission module **103** outputs a launch instruction **120** required to launch application **200**C of the AP information selected by the AP selection module **102** (block **1204**). Thus, as shown in FIG. **3**, when the mobile terminal **20** receives the launch instruction **120** corresponding to application **200**C, the tag share type application **200**C is launched.

[0069] As shown in FIG. **10**, the launch condition of the tag share application **200**C is defined by the following given format.

$$IF(Ntag>10) \quad (2)$$

[0070] This conditional statement (2) means that it is true when the number Ntag of tags attached to a recorded program which is being reproduced is 11 or more. This conditional statement is an example of a condition required to detect a viewing state "a recorded program attached with many tags is being reproduced". The controller **100** installs, in advance, a function (program) required to execute fragmentary processing (processing for acquiring the number Ntag of tags attached to a recorded program which is being reproduced), which can be an element of the launch condition, so as to execute that processing in association with the given format.

[0071] More specifically, the launch condition of the tag share type application is defined so that a video having 11 or more attached tags begins to be reproduced. In this case, assume that the value "11" is an average value of the numbers of tags attached to respective videos by the current tag share function. When the number of tags acquired by the viewing information acquisition module **101** is 11 or more, the launch condition is satisfied, and the launch instruction transmission module **103** transmits the launch instruction **120** of the tag share type application **200**C.

[0072] The AP information of the tag share type application **200**C includes information associated with argument information to be included in a launch instruction. The argument information is a value to be passed to the mobile terminal **20** via the launch instruction when the application is launched, and is information which designates how to launch the application. More specifically, the argument information is an identifier of a video to be reproduced. The video identifier is unique information on the tag share function, and specifies a video. Upon reception of the launch instruction, the mobile terminal **20** launches the tag share type application **200**C. In this case, based on the argument information, the mobile terminal **20** automatically transits to a display screen of a tag list of a video indicated by the video identifier of the argument information, as shown in FIG. **9**.

[0073] [Modification]

[0074] In the first and second embodiments, when the user possesses a plurality of mobile terminals, the controller **100** may automatically select a mobile terminal and transmit a launch instruction to the selected mobile terminal. In this case, the mobile terminal **20** which launches the application is preferably located in user's sight. For this reason, AP information to be acquired by the controller **100** may include information indicating whether or not the mobile terminal **20** installed with that application is suited to receive the launch instruction.

[0075] A method of deciding whether or not each mobile terminal is suited to receive the launch instruction is set in advance by the user by operating the mobile terminal. Using a brightness sensor of each mobile terminal, it is determined that a mobile terminal having a given brightness level or lower is not suited to receive the launch instruction. Furthermore, the previously used mobile terminal is preferentially set to receive the launch instruction. Alternatively, all mobile terminals may be allowed to receive the launch instruction several times after the TV is activated unless the user makes a reception inhibition setting or a power switch is off. For example, the AP selection module **102** selects the current program application. In this case, when a plurality of mobile terminals are installed with that application, all the mobile terminals may launch the application. After the application is launched, only the mobile terminal on which the user operates the application may be allowed to receive the launch instruction, and other mobile terminals may be inhibited from receiving the launch instruction until the power switch of the TV is turned off.

[0076] Not only when there are a plurality of mobile terminals but also when only one mobile terminal is used, if the user does not use any function, the application function may be automatically disabled. When no user's operation input is generated for a predetermined period of time since the application of a certain mobile terminal is automatically launched, it may be determined that the automatic launch function of that mobile terminal is not used, and the mobile terminal may be inhibited from receiving the launch instruction until the power switch of the TV is turned off.

[0077] Note that in the first embodiment, as shown in FIG. **11**, when the mobile terminal **20** receives a launch instruction from the controller of the TV set **10**, it launches the designated application **200**A corresponding to the launch instruction **120**. In this case, the application to be launched may be that

which is set by the user in either the controller **100** or mobile terminal **20**. That is, when the launch instruction includes information which designates an application to be launched, the user sets that information in the controller **100**. On the other hand, when the controller **100** transmits a launch instruction which does not include any information that designates an application to be launched, the user sets that information in the mobile terminal **20**.

[0078] An application to be launched may be that which was used lastly. In this case, information of an application which was used lastly is recorded in either the controller **100** or mobile terminal **20** without requiring any user's manual settings.

[0079] Note that in the first and second embodiments, as the application **200**, the current program application and tag share type application are assumed. However, the present embodiments are not limited to them. For example, as the application **200**, that which displays a video recording reservation list, that which displays hot program rankings, that which displays a program related keyword list, or the like may be assumed.

[0080] To summarize, the TV set **10** can automatically select and launch an application suited to a user's viewing state (situation). Therefore, the user can obtain an optimal operation environment of a video reproduction apparatus without recognizing functions of all applications installed in the mobile terminal **20**.

[0081] The various modules of the systems described herein can be implemented as software applications, hardware and/or software modules, or components on one or more computers, such as servers. While the various modules are illustrated separately, they may share some or all of the same underlying logic or code. While certain embodiments have been described, these embodiments have been presented by way of example only, and are not intended to limit the scope of the inventions. Indeed, the novel embodiments described herein may be embodied in a variety of other forms; furthermore, various omissions, substitutions and changes in the form of the embodiments described herein may be made without departing from the spirit of the inventions. The accompanying claims and their equivalents are intended to cover such forms or modifications as would fall within the scope and spirit of the inventions.

What is claimed is:

1. A data processing apparatus comprising:

a viewing information acquisition module configured to acquire viewing information indicating a viewing state of a video reproduction apparatus;

an application setting module configured to set an application used to execute designated data processing associated with an operation of the video reproduction apparatus based on the viewing information; and

an output module configured to output a launch instruction required to launch the application set by the application setting module.

2. The data processing apparatus of claim **1**, further comprising:

a storage device configured to store application information including information required to specify an application and information indicating a launch condition,

wherein the application setting module is configured to collate the viewing information with the launch condition and to select application information which satisfies the launch condition with respect to the viewing information from the storage device.

3. The data processing apparatus of claim **2**, further comprising:

an application information acquisition module configured to acquire the application information via a network, and to store the acquired application information in the storage device.

4. The data processing apparatus of claim **3**, wherein the application information acquisition module is configured to acquire the application information from an electronic device connected to the network and to store the acquired application information in the storage device.

5. The data processing apparatus of claim **4**, wherein the application information acquisition module is configured to acquire the application information from the electronic device connected to the network at an activation timing of the data processing apparatus or at predetermined time intervals, and to store the acquired application information in the storage device.

6. The data processing apparatus of claim **1**, wherein the output module is configured to transmit the launch instruction to one or a plurality of electronic devices connected to a network.

7. A data processing system comprising:

a data processing apparatus that comprises (i) a viewing information acquisition module configured to acquire viewing information indicating a viewing state of a video reproduction apparatus, (ii) an application setting module configured to set an application used to execute designated data processing associated with an operation of the video reproduction apparatus based on the viewing information, and (iii) an output module configured to output a launch instruction required to launch the application set by the application setting module;

an electronic device; and

a data communication module configured to make a data communication between the data processing apparatus and the electronic device,

wherein the electronic device comprises:

a module configured to receive the launch instruction; and

a module configured to launch an application according to the received launch instruction.

8. The data processing system of claim **7**, wherein the data processing apparatus comprises a storage device configured to store application information including information required to specify an application and information indicating a launch condition, and

the application setting module is configured to collate the viewing information and the launch condition, and to select application information which satisfies the launch condition with respect to the viewing information from the storage device.

9. The data processing system of claim **8**, wherein the data processing apparatus comprises an application information acquisition module configured to acquire the application information, and

the electronic device comprises a module configured to output the application information to the application information acquisition module.

10. The data processing system of claim **9**, wherein the data processing apparatus is configured to control the application information acquisition module to acquire, from the elec-

tronic device, the application information at an activation timing of the data processing apparatus or at predetermined time intervals.

11. The data processing system of claim **7**, wherein the data processing apparatus is configured to be included in the video reproduction apparatus,

the electronic device is configured to be a mobile terminal installed with the application, and

the information communication module is configured to connect the data processing apparatus and the electronic device via a network.

12. A method of making an operation of a video reproduction apparatus, the method comprising:

acquiring viewing information indicating a viewing state of the video reproduction apparatus;

setting an application required to execute designated data processing associated with the operation based on the viewing information; and

outputting a launch instruction required to launch the set application.

13. The method of claim **12**, wherein the acquiring of the viewing information, setting of the application and outputting of the launch instruction are performed by a hardware controller.

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