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DESCRIPTION

TITLE OF THE INVENTION

SYSTEM INCLUDING OPERATION DEVICE AND
5 INFORMATION STORING APPARATUS, METHOD PERFORMED BY
THE SYSTEM, AND THE INFORMATION STORING APPARATUS

TECHNICAL FIELD

The present invention relates to a system
10 including an operation device and an information
storing apparatus, a method performed by the system,
and the information storing apparatus.

BACKGROUND ART

15 For example, a host session management
server is known, which can easily realize a
communication service using a plurality of different
apparatuses that operate in cooperation with each
other (for example, see Japanese Laid-Open Patent
20 Application No. 2011-35833).

Recently, users use various electronic
devices such as a printer, a MultiFunction Peripheral
(MFP), a projector and so forth, which output
electronic data, and/or various information
25 processing apparatuses such as a portable phone, a
smartphone, a tablet terminal and so forth.

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Concerning such a mode (system) of using these electronic devices and information processing apparatuses, it is expected to improve the utility values thereof as a result of causing these

5 apparatuses to operate in cooperation with each other.

For this purpose, in such a system of using electronic devices and information processing apparatuses, a mechanism has been demanded by which various electronic devices and information processing

10 apparatuses operate in cooperation with each other to provide a service(s).

SUMMARY OF INVENTION

According to one embodiment of the present

15 invention, a system includes an operation device and an information storing apparatus, which are connected via a network. The operation device includes a determining unit configured to determine, based on information input from the outside of the operation

20 device in response to an operation performed on the operation device, an electronic device among a plurality of electronic devices connected to the system, the electronic device to be determined being caused to input electronic data to the information

25 storing apparatus, and a first sending unit

configured to send, to the information storing apparatus, a first request to cause the determined electronic device to input the electronic data to the information storing apparatus. The information

5 storing apparatus includes a second sending unit configured to send, to the determined electronic device, a second request to cause the determined electronic device to input the electronic data to the information storing apparatus, based on the first

10 request sent from the first sending unit of the operation device, and a storing unit configured to store the electronic data in the information storing apparatus, the electronic data having been sent from the determined electronic device based on the second

15 request sent by the second sending unit.

Other objects, features and advantages of the present invention will become more apparent from the following detailed description when read in conjunction with the accompanying drawings.

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BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a configuration diagram of one example of a service providing system according to a first embodiment;

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FIG. 2 is a hardware configuration diagram

of one example of a computer system according to the first embodiment;

FIG. 3 is a processing block diagram of one example of an information storing apparatus according to the first embodiment;

FIG. 4 is a sequence diagram of one example of a procedure of the service providing system according to the first embodiment;

FIG. 5 is a configuration diagram of one example of a response to a file list obtaining request;

FIG. 6 is an image diagram of one example of an IT folder selection screen page;

FIG. 7 is an image diagram of one example of a folder display screen page;

FIG. 8 is an image diagram of one example of an upload screen page;

FIG. 9 is an image diagram of one example of a folder selection screen page;

FIG. 10 is an image diagram of one example of a QR code reading screen page;

FIG. 11 is an image diagram of one example of a scan setting screen page;

FIG. 12 is a configuration diagram of one example of information to be read from a QR code;

FIG. 13 is a configuration diagram of one example of scan information included in a file;

FIG. 14 is a configuration diagram of one example of commands to be used for a scan start
5 instruction to an MFP from the information storing apparatus;

FIG. 15 is an image diagram of one example of a QR code displayed on the MFP;

FIG. 16 is an image diagram of one example
10 of a top screen page displayed on the MFP;

FIG. 17 is a flowchart of one example showing a procedure of the information storing apparatus;

FIG. 18 is a sequence diagram of another
15 example showing a procedure of the service providing system according to the first embodiment;

FIG. 19 is a sequence diagram of yet another example showing a procedure of the service providing system according to the first embodiment;

20 FIG. 20 is a sequence diagram of yet another example showing a procedure of the service providing system according to the first embodiment;

FIG. 21 is a sequence diagram of one example showing a procedure of the service providing
25 system according to a second embodiment;

FIG. 22 is a sequence diagram of another example showing a procedure of the service providing system according to the second embodiment;

FIG. 23 is a sequence diagram of yet
5 another example showing a procedure of the service providing system according to the second embodiment;

FIG. 24 is a sequence diagram of one example showing a procedure of the service providing system according to the third embodiment;

10 FIG. 25 is an image diagram of one example of a file list display screen page;

FIG. 26 is an image diagram of one example of a file detail display screen page;

FIG. 27 is an image diagram of one example
15 of a print setting screen page;

FIG. 28 is an image diagram of one example of a QR code reading screen page;

FIG. 29 is an image diagram of one example of a screen page indicating that downloading is being
20 carried out;

FIG. 30 illustrates one example of a method of transmitting a print file to the MFP;

FIG. 31 is a configuration diagram of one example of print commands included in the print file;

25 FIG. 32 is a flowchart of one example

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showing a procedure of a smartphone;

FIG. 33 is a sequence diagram of another example showing a procedure of the service providing system according to the third embodiment;

5 FIG. 34 is a configuration diagram of one example of information to be read from a QR code;

FIG. 35 illustrates one example of a method of transmitting a projection file to a projector;

10 FIG. 36 is an image diagram of one example of a QR code displayed by the projector;

FIG. 37 is a sequence diagram of yet another example showing a procedure of the service providing system according to the third embodiment;

15 FIG. 38 is a sequence diagram of one example showing a procedure of a service providing system according to a fourth embodiment;

FIG. 39 is a sequence diagram of another example showing a procedure of the service providing system according to the fourth embodiment; and

20 FIG. 40 is a sequence diagram of yet another example showing a procedure of the service providing system according to the fourth embodiment.

DESCRIPTION OF THE EMBODIMENTS

25 Below, the embodiments of the present

invention will be described.

[First Embodiment]

<System Configuration>

5 FIG. 1 is a configuration diagram of one
example of the service providing system according to
the first embodiment. In the service providing
system 1 of FIG. 1, as one example, an information
storing apparatus 10, one or more smartphones 11, one
10 or more tablet terminals 12, one or more MFPs 13 and
one or more projectors 14 are connected to a network
N1 such as a Local Area Network (LAN).

As the network N1, it is possible to use a
network of a private environment such as an intranet,
15 for example. The smartphones 11 and the tablet
terminals 12 are examples of information processing
apparatuses that users carry and operate. Specific
examples of the information processing apparatuses
may be apparatuses that users can operate, and thus
20 include, not only the above-mentioned smartphones 11
and the tablet terminals 12, but also portable phones,
notebook-size Personal Computers (PC), and so forth.

The MFPs 13 and the projectors 14 are
examples of electronic devices that provide services
25 such as print, scan, projection and so forth.

Specific examples of the electronic devices may be apparatuses that can provide services, and thus include, not only the above-mentioned MFPs 13 and the projectors 14, but also printers, scanners, copiers,
5 image display apparatuses, and so forth.

The MFPs 13 are examples of image forming apparatuses. The MFPs 13 have image taking functions, image forming functions and communication functions, and can be used as printers, facsimile machines,
10 scanners and copiers. The projectors 14 are examples of image projection apparatuses, and have projection functions and communication functions.

The information storing apparatus 10 is one example of a cooperative processing apparatus. The
15 information storing apparatus 10 carries out such sophisticated processes that the MFPs 13 and projectors 14 cannot carry out, and carries out processes as a file server. The information storing apparatus 10 provides services using electronic
20 devices such as the MFPs 13 and/or the projectors 14 in cooperation with information processing apparatuses such as the smartphones 11 and/or the tablet terminals 12. Each of the smartphones 11 and the tablet terminals 12 is one example of an
25 operation device. It is noted that the information

storing apparatus 10 may be configured by a plurality of computers in a decentralized manner.

<Hardware Configuration>

5 The information storing apparatus 10 is realized, for example, by a computer system having the hardware configuration shown in FIG. 2. Also, information processing apparatuses such as the smartphones 11 and the tablet terminals 12 include
10 the hardware configurations shown in FIG. 2. FIG. 2 is a hardware configuration diagram of one example of the computer system according to the first embodiment.

 The computer system 100 of FIG. 2 includes an input device 101, a display device 102, an
15 external I/F 103, a RAM 104, a ROM 105, a CPU 106, a communication I/F 107 and a Hard Disk Drive (HDD) 108, which are connected together via a bus B. The input device 101 includes a keyboard, a mouse and so forth, and is used to input respective operation signals.

20 The display device 102 includes a display and/or the like, and displays processing results of the computer system 100. The communication I/F 107 is an interface for connecting the computer system 100 to the network N1. Thereby, the computer system
25 100 can carry out data communication with the other

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apparatuses via the communication I/F 107.

The HDD 108 is a nonvolatile storage device storing programs and data. The programs stored by the HDD 108 include an Operating System (OS) that is
5 basic software controlling the entirety of the computer system 100, application software providing various functions under the control of the OS, and so forth. The HDD 108 manages the stored programs and data using a predetermined file system and/or
10 DataBase (DB).

The external I/F 103 is an interface between the computer system 100 and external devices. The external devices include a recording medium 103a and so forth. Thereby, the computer system 100 can
15 carry out reading information from and/or writing information to the recording medium 103a via the external I/F 103. It is noted that specific examples of the recording medium 103a include a flexible disk, a CD, a Digital Versatile Disk (DVD), a SD memory
20 card, a Universal Serial Bus memory (USB memory) and so forth.

The ROM 105 is a nonvolatile semiconductor memory (storage device) and thus can store programs and/or data even after the power supply has been
25 turned off. The ROM 105 stores programs and data

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such as a Basic Input/Output System (BIOS) to be executed when the computer system 100 is started up, OS settings, network settings, and so forth. The RAM 104 is a volatile semiconductor memory (storage
5 device) and temporarily stores programs and/or data.

The CPU 106 includes an arithmetic and logic unit, reads programs and/or data from storage device(s) such as the ROM 105 and/or HDD 108 to the RAM 140, carries out processes, and thus, realizes
10 controls and/or functions of the entirety of the computer system 100.

The computer system 100 according to the first embodiment can realize various processes described later using this hardware configuration.

15 The CPU 106 in the smartphone 11 or the tablet terminal 12 is one example of a determining unit.

The CPU 106 in the information storing apparatus 10 is one example of a storing unit.

20 The HDD 108 in the information storing apparatus 10 is one example of a memory.

The CPU 106 and the communication I/F 107 in the smartphone 11 or the tablet terminal 12 are one example of a first sending unit.

25 The CPU 106 and the communication I/F 107

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in the information storing apparatus 10 are one example of a second sending unit.

The CPU 106 and the communication I/F 107 in the information storing apparatus 10 are one
5 example of a reception unit.

The CPU 106 and the communication I/F 107 in the information storing apparatus 10 are one example of a sending unit.

10 <Software Configuration>

The information storing apparatus 10 according to the first embodiment includes the processing blocks shown in FIG. 3, for example. The information storing apparatus 10 executes a
15 program(s), and thus, realizes respective functions of an OS 21, a Web server 22, an application server 23, a Web UI 24, a QR code display Web UI 25, a WebApi 26, a shared folder 27, a document management part 28 and a Web control part 29.

20 The OS 21 is the OS of the information storing apparatus 10, and controls the entirety of the system of the information storing apparatus 10. The OS 21 is, for example, Windows (registered trademark), Linux (registered trademark) or the like.

25 The Web server 22 is software for

transmitting and receiving information using Hyper Text Transfer Protocol (HTTP). The Web server 22 is, for example, Apache (registered trademark), IIS (registered trademark) or the like.

5 The application server 23 is software operating as plug-in of the Web server 22, for example. The application server 23 is, for example, Tomcat (registered trademark) or the like.

 The Web UI 24 displays a system setting
10 screen page in response to a HTTP request. A user can change settings via the system setting screen page using a Web browser (not shown).

 The QR code display Web UI 125 displays, on the electronic device such as the MFP 13, a screen
15 page of QR code (registered trademark) as one example of code information, in response to a HTTP request. The QR code is a two-dimensional code of a matrix type.

 The Web Application programming interface
20 (WebApi) 26 can be used via the network N1. The WebApi receives an HTTP request, carries out a process(s) according to the HTTP request, and sends an HTTP response.

 The WebApi 26 is an interface that is
25 previously defined and provided for receiving a

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request from the information processing apparatus such as the smartphone 11, the tablet terminal 12 or the like, and includes a function(s), a class(es) and/or the like.

5 Further, it is possible to provide the WebApi 26 in a form of a Software Development Kit (SDK), to a developer who develops applications to be installed in the information processing apparatus(es). The developer can develop application(s) using the
10 SDK. The SDK may also be provided to a third vender other than a person who provides the information storing apparatus 10. The third vendor can develop an application(s) using the provided SDK. The application(s) developed using the SDK can be
15 installed in the information processing apparatus(s).

By thus providing the WebApi of the information storing apparatus 10 as a SDK, it is possible to install, in the information processing apparatus(es), not only an application(s) developed
20 by a person who provides the information storing apparatus 10 but also an application(s) developed by a third vendor.

The shared folder 27 is a folder published to the network N1 by a Server Message Block (SMB)
25 protocol. A user can access the shared folder 27

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using the information processing apparatus such as the smartphone 11 or the tablet terminal 12.

The document management part 28 manages a file(s) placed in the shared folder 27 and carries out data conversion in response to a request given by the Web control part 29. It is noted that a "file(s)" in the first embodiment is(are) one form of data. The Web control part 29 carries out a process of controlling the document management part 28 in response to a request given by the WebApi 26.

It is noted that, generally, two processes operate in the information storing apparatus 10. One of these two processes includes the Web server 22, the application server 23, the Web UI 24, the QR code display Web UI 25 and the WebApi 26. The other process includes the shared folder 27, the document management part 28 and the Web control part 29. Therefore, the WebApi 26 and the Web control part 29 carry out interprocess communication.

<Details of Processing>

Below, details of processing of the service providing system 1 according to the first embodiment will be described.

Here, processing will be described for a

case where, using the smartphone 11, the MFP 13 is caused to carry out scan and, data obtained from the scan is stored in the information storing apparatus 10. FIG. 4 is a sequence diagram of one example showing a procedure of the service providing system 1 according to the first embodiment.

A user operates the smartphone 11, and selects a file list display process. When the file list display process has been thus selected by the user, the smartphone 11 sends a file list obtaining request to the information storing apparatus 10 by, for example, a HTTP request (GET), in step S1.

Then, in step S2, the WebApi 26 of the information storing apparatus 10 receives the file list obtaining request, and sends a file list obtaining request to the Web control part 29. The Web control part 29 responds to the file list obtaining request sent by the WebApi 29, obtains a file list from the document management part 28 and returns the file list to the WebApi 26. The WebApi 26 provides the file list to the smartphone 11 via a HTTP response such as that shown in FIG. 5.

FIG. 5 is a configuration diagram of one example of a response to a file list obtaining request such as that mentioned above. The response

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of FIG. 5 has a JSON format. However, the format of the response is not limited thereto, and any other format can be used as long as it is possible to display a file list by the smartphone 11. An application installed in the smartphone 11 displays, based on such a response to the file list obtaining request shown in FIG. 5, a file list (including folder(s)) published by the information storing apparatus 10.

10 By repeating the processes of steps S1 and S2, the smartphone 11 displays screen pages such as those shown in FIGs. 6 and 7. FIG. 6 is an image diagram of one example of an IT folder selection screen page. Via the IT folder selection screen page 15 1000 of FIG. 6, the user can select, as an IT folder, either "AllUsers" or "yamada".

FIG. 7 is an image diagram of one example of a folder display screen page. The folder display screen page 1010 of FIG. 7 is a screen page example 20 displayed after the "AllUsers" IT folder has been selected from the IT folder selection screen page 1000 of FIG. 6. On the folder display screen page 1010 of FIG. 7, "category", "data" and "workflow" are displayed as folders. When an "upload" button 1011 25 has been pressed on the folder display screen page

1010 of FIG. 7, the smartphone 11 displays an upload screen page 1020 shown in FIG. 8.

FIG. 8 is an image diagram of one example of an upload screen page. The upload screen page of
5 FIG. 8 has a "folder selection button" 1021 for a user to select a folder (upload destination) to which uploading is to be carried out. When the "folder selection button" 1021 has been pressed, the smartphone 11 displays a folder selection screen page
10 1030 of FIG. 9. FIG. 9 is an image diagram of one example of a folder selection screen page 1030. A user can select a folder to which uploading is to be carried out from the folder selection screen page 1030.

15 Further, the upload screen page 1020 of FIG. 8 also has a "take by camera and transmit" button 1023 and a "scan and transmit" button 1022 as examples of buttons for a user to designate a method of generating a file to be uploaded to the folder to
20 which uploading is to be carried out. A user presses the "scan and transmit" button 1022 when the user wishes to cause the MFP 13 to carry out scan and store data obtained from the scan in the information storing apparatus 10 using the smartphone 11.

25 On the other hand, the user can press the

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"take by camera and transmit" button 1023 when the user wishes to use a camera function of the smartphone 11 to photograph a document or the like and store data obtained from the photographing in the information storing apparatus 10.

In step S3, the user operates the smartphone 11 and selects a folder in which scan data is to be stored from among folders shown in the folder selection screen page 1030 of FIG. 9. A description will now be described assuming that a "data" folder has been thus selected from the folder selection screen page 1030.

The user then operates the smartphone 11 and presses the "scan and transmit" button 1022 so as to cause the smartphone 11 to display, for example, a QR code reading screen page 1100, shown in FIG. 10. FIG. 10 is an image diagram of one example of the QR code reading screen page 1100 displayed on the smartphone 11. The QR code reading screen page 1100 includes a "scan settings" button 1101 and a QR code display area 1102. The QR code display area 1102 is an area in which an image taken by the camera function of the smartphone 11 will be displayed.

Then, in step S4, by pressing the "scan settings" button 1101, for example, the user can

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cause a scan setting screen page 1110 shown in FIG. 11 to be displayed on the smartphone 11, and carries out scan settings. FIG. 11 is an image diagram of one example of a scan setting screen page. The user
5 operates the smartphone 11 and carries out settings for scan to be carried out by the MFP 13A (one of the MFPS 13) via the scan setting screen page 1110 of FIG. 11.

It is noted that timing of carrying out
10 scan settings of step S4 is not limited to the timing of FIG. 4. Scan settings can be carried out before the file list obtaining request of step S1, or before the folder selection of step S3.

In steps S5 and S6 of FIG. 4, the user
15 operates the smartphone 11, and adjusts a positional relationship between the QR code displayed on the MFP 13A (step S0) and the smartphone 11 so that the QR code, an image of which is thus taken by the camera function of the smartphone 11, will be displayed in
20 the QR code display area 1102 of the QR code reading screen page 1100 (see FIG. 10) displayed on the smartphone 11.

The application of the smartphone 11 reads,
from the QR code, an image of which has been thus
25 taken by the camera function, the IP address and

function information of the MFP 13A, as shown in FIG. 12. FIG. 12 is a configuration diagram of one example of the information that the application of the smartphone 11 reads information from the QR code displayed in step S0 of FIG. 4.

It is noted that, a specific method of obtaining the IP address and function information of the MFP 13A or the like is not limited to the above-mentioned method of obtaining information from a QR code by photographing it. It is also possible to obtain the IP address and function information of the MFP 13A or the like using a communication way for sending and receiving information between the smartphone 11 and the MFP 13A or the like. For example, infrared communication, Bluetooth, NFC or the like can be used for this purpose. Thus, various methods can be used even without using a QR code.

In step S7, the application of the smartphone 11 sends a scan start instruction to the information storing apparatus 10. The scan start instruction includes scan information and the IP address of the MFP 13A which is to carry out scan.

One method of sending a scan start instruction to the information storing apparatus 10 is to write a file that includes scan information and

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the IP address of the MFP 13A which is to carry out scan in a predetermined folder of the information storing apparatus 10.

FIG. 13 is a configuration diagram of one
5 example of scan information included in the file.
Scan information of FIG. 13 includes the scan settings that have been set via the scan setting screen page 1110 of FIG. 11 and the path
"AllUsers/data/" of a folder which is to store scan
10 data.

The information storing apparatus 10 monitors the predetermined folder through polling. When the file that includes the scan information and the IP address of the MFP 13A which is to carry out
15 scan has been written in the predetermined folder, the information storing apparatus 10 sends a scan start instruction to the MFP 13A based on the file thus written in the predetermined folder, in step S8. It is noted that sending the scan start instruction
20 of step S7 may be carried out using the WebApi 26. It is noted that, instead of sending the scan start instruction from the information storing apparatus 10 to the MFP 13A, the MFP 13A may obtain the scan start instruction from the information storing apparatus 10
25 by carrying out polling on the information storing

apparatus 10.

Sending the scan start instruction in step S8 is carried out, for example, using commands shown in FIG. 14. FIG. 14 is a configuration diagram of one example of commands to be used for a scan start instruction to be sent to the MFP 13A or the like. The commands of FIG. 14 include a command indicating the path of the folder which is to store scan data" and a command indicating the scan settings.

10 In step S9, the MFP 13A carries out scan based on the scan settings included in the scan start instruction given by the information storing apparatus 10. In step S10, the MFP 13A stores scan data obtained from the scan in the folder of the information storing apparatus 10 which the user has selected in step S3, based on "the path of the folder which is to store scan data" included in the scan start instruction given by the information storing apparatus 10.

20 It is noted that the information storing apparatus 10 can cause the MFP 13A to carry out scan via the network N1 by using Javascript (registered trademark) for scan published by the MFP 13A, for example.

25 Further, the MFP 13A can display (in step

S0), via a Web browser (not shown), a screen page 1200 including a QR code 1201 as shown in FIG. 15 on an operation panel or the like of the MFP 13A as a result of displaying the QR code display Web UI 25 of the information storing apparatus 10.

FIG. 15 is an image diagram of one example of a QR code thus displayed on the MFP 13A. It is noted that the screen page 1200 of FIG. 15 is displayed as a result of a "MFP Everywhere" button 1211 on the top screen page 1210 of the Web browser (not shown) of the MFP 13A shown in FIG. 16 being pressed, for example. FIG. 16 is an image diagram of one example of the top screen page displayed on the MFP 13A or the like.

It is noted that, although the example of displaying the QR code 1201 on the screen page 1200 in FIG. 15 has been described, it is also possible to affix a seal of the QR code 1201 onto the housing of the MFP 13A, as another example. Further, it is possible that the MFP 13 stores image data of the QR code 1201 in the MFP 13 itself. Other than affixing a seal of the QR code 1201 on the housing of the MFP 13A, it is also possible to affix a seal of the QR code 1201 on, for example, a wall of a room in which the MFP 13A is installed. In other words, a specific

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position to affix a seal of the QR code 1201 is preferably a position such that a user can understand that the QR code 1201 is one that is associated with the MFP 13A.

5 FIG. 17 is a flowchart of one example of a procedure of the information storing apparatus 10. In step S21, the information storing apparatus 10 causes the QR code 1201 to be displayed on the screen page 1200 of the MFP 13A.

10 In step S22, the information storing apparatus 10 determines whether a file in which the scan information and the IP address of the MFP 13A which is to carry out scan are included has been written in the predetermined folder. The information
15 storing apparatus 10 repeats the process of step S22 until determining that a file in which the scan information and the IP address of the MFP 13A which is to carry out scan are included has been written in the predetermined folder.

20 When having determined that a file in which the scan information and the IP address of the MFP 13A which is to carry out scan are included has been written in the predetermined folder, the information
storing apparatus 10 obtains the scan information
25 from the file written in the predetermined folder, in

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step S24.

Then, in step S25, the information storing apparatus 10 selects the MFP 13A to which a scan start instruction is to be sent, based on the "IP address of the MFP 13A which is to carry out scan" included in the file written in the predetermined folder, and sends a scan start instruction to the MFP 13A based on the scan information included in the file written in the predetermined folder.

In step S26, the information storing apparatus 10 stores scan data thus obtained from the MFP 13A in the folder that the user has selected in step S3, based on "the path of the folder which is to store scan data" included in the scan start instruction.

According to the sequence diagram of FIG. 4, it is possible to display, on the smartphone 11, a folder of the information storing apparatus 10, by installing the WebApi 26 in the information storing apparatus 10. A user can store scan data in a selected folder of the information storing apparatus 10, by selecting the folder via the smartphone 11 and reading via the smartphone 11 information from the QR code 1201 of the MFP 13A that the user wishes to use for carrying out scan.

Thus, by holding the smartphone 11 against the MFP 13A at a time of starting scan (to cause the smartphone 11 to read information from the QR code of the MFP 13A), a user can easily store scan data

5 obtained from scan carried out by the MFP 13A in a selected folder of the information storing apparatus 10, as a result of the information storing apparatus 10, the smartphone 11 and the MFP 13A operating in cooperation with each other.

10 The sequence diagram of FIG. 4 shows the process of causing the MFP 13A to carry out scan, and storing, in the information storing apparatus 10, data (scan data) obtained from the scan, using the smartphone 11. The service providing system 1
15 according to the first embodiment can also be used, as shown in FIG. 18, to cause the MFP 13A to carry out scan, and store, in the information storing apparatus 10, data (scan data) obtained from the scan, using the tablet terminal 12.

20 FIG. 18 is a sequence diagram of another example showing a procedure of the service providing system 1 according to the first embodiment. It is noted that the processes of step S30 and steps S31 to S40 of FIG. 18 are the same as those of step S0 and
25 steps S1 to S10 of FIG. 4, and thus, duplicate

description will be omitted.

In the sequence diagrams of FIGs. 4 and 18, the processes have been shown for a case where the MFP 13A stores, in the information storing apparatus 10, data (scan data) obtained from scan carried out by the MFP 13A. However, the service providing system 1 according to the first embodiment can also be used for a case of, as shown in a sequence diagram of FIG. 19, storing, in the information storing apparatus 10, data (scan data) obtained from scan carried out by the MFP 13A, through the smartphone 11 or the tablet terminal 12.

FIG. 19 is a sequence diagram of yet another example of a procedure of the service providing system 1 according to the first embodiment. The sequence diagram of FIG. 19 shows an example of storing, in the information storing apparatus 10, data (scan data) obtained from scan carried out by the MFP 13A, through the smartphone 11. Further, processes of step S50 and steps S51 to S56 in the sequence diagram of FIG. 19 are the same as those of step S0 and steps S1 to S6 in the sequence diagram of FIG. 4, and thus, duplicate description will be omitted.

In step S57, the application of the

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smartphone 11 sends a scan start instruction to the information storing apparatus 10. The scan start instruction includes the scan information, the IP address of the MFP 13A which is to carry out scan and the IP address of the smartphone 11. In the scan information included in the scan start instruction of step S57, the scan settings that have been set via the scan setting screen page 1110 of FIG. 11 are included.

10 When the file that includes the scan information, the IP address of the MFP 13A which is to carry out scan and the IP address of the smartphone 11 has been written in the predetermined folder, the information storing apparatus 10 sends a scan start instruction to the MFP 13A based on the file thus written in the predetermined folder, using a command that indicates the scan settings, in step S58. It is noted that, in the scan start instruction of step S58, the scan information and the IP address of the smartphone 11 are included.

 In step S59, the MFP 13A carries out scan based on the scan settings included in the scan start instruction given by the information storing apparatus 10. In step S60, the MFP 13A transmits scan data obtained from the scan to the smartphone 11

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based on the IP address of the smartphone 11 included in the scan start instruction.

In step S61, the smartphone 11 stores the scan data in the folder of the information storing apparatus 10 which the user has selected in step S3, via, for example, a HTTP request (POST). In this process, the WebApi 26 of the information storing apparatus 10 stores the scan data received from the smartphone 11 in the folder that the user has selected in step S3.

Although data (scan data) obtained from scan carried out by the MFP 13A is stored in the information storing apparatus 10 through the smartphone 11 or the tablet terminal 12 in the sequence diagram of FIG. 19, data (scan data) obtained from scan carried out by the MFP 13A can be stored in the smartphone 11 or the tablet terminal 12

Further, although the process is finished when scan data is stored in the folder of the information storing apparatus 10 in the sequence diagrams of FIGs. 4, 18 and 19, it is possible to carry out data conversion or the like on the scan data that has been thus stored in the folder of the information storing apparatus 10, as shown in a sequence diagram of FIG. 20.

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FIG. 20 is a sequence diagram of yet another example of a procedure of the service providing system 1 according to the first embodiment. It is noted that processes of step S70 and steps S71 to S80 in the sequence diagram of FIG. 20 are the same as those of step S0 and steps S1 to S10 in the sequence diagram of FIG. 4, and thus, duplicate description will be appropriately omitted.

In the sequence diagram of FIG. 20, a process of data conversion or the like is carried out on the stored scan data depending on the type of the folder selected in step S73, for example. The "workflow" folder shown on the folder selection screen page 1030 of FIG. 9 is a folder for which it is possible to designate a process to be carried out on the stored scan data. Therefore, by previously setting a process of data conversion to the "workflow" folder shown on the folder selection screen page 1030 of FIG. 9, the information storing apparatus 10 carries out, in step S81, a process of data conversion on the scan data that has been stored in the "workflow" folder in step S80.

[Second Embodiment]

In the service providing system 1 according

to the first embodiment described above, a scan start instruction is sent to the electronic device (the MFP 13A, for example) from the information processing apparatus (the smartphone 11, for example) through
5 the information storing apparatus 10. In the service providing system according to the second embodiment, a scan start instruction is sent to the electronic device (the MFP 13A, for example) directly from the information processing apparatus (the smartphone 11,
10 for example) without inserting the information storing apparatus 10 therebetween.

The service providing system 1 according to the second embodiment has the same system configuration, hardware configuration and software
15 configuration as those of the service providing system 1 according to the first embodiment described above. Thus, the description of the system configuration, hardware configuration and software configuration will be omitted.

20

<Details of Processing>

Below, processing of the service providing system 1 according to the second embodiment will be described in detail.

25

FIG. 21 is a sequence diagram of one

example of a procedure of the service providing system 1 according to the second embodiment. It is noted that processes of step S100 and steps S101 to S106 in the sequence diagram of FIG. 21 are the same as those of step S0 and steps S1 to S6 in the sequence diagram of FIG. 4, and thus, duplicate description will be omitted.

In step S107, the application of the smartphone 11 sends a scan start instruction to the MFP 13A, using the IP address of the MFP 13A that has been read from the QR code photographed by the camera function. The scan start instruction includes the scan information. The smartphone 11 sends the scan start instruction, using, for example, the command(s) shown in FIG. 14.

In step S108, the MFP 13A carries out scan based on the scan settings included in the scan start instruction given by the smartphone 11. In step S109, the MFP 13A stores scan data obtained from the scan in the folder of the information storing apparatus 10 which the user has selected in step S103, based on "the path of the folder which is to store scan data" included in the scan start instruction given by the smartphone 11.

According to the sequence diagram of FIG.

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21, it is possible to display, on the smartphone 11, a folder of the information storing apparatus 10, by installing the WebApi 26 in the information storing apparatus 10. A user can store scan data in a

5 selected folder of the information storing apparatus 10, by selecting the folder via the smartphone 11 and reading via the smartphone 11 information from the QR code 1201 of the MFP 13A that the user wishes to use to carry out scan.

10 Thus, by holding the smartphone 11 against the MFP 13A at a time of starting scan (to cause the smartphone 11 to read information from the QR code of the MFP 13A), a user can easily store scan data obtained from scan carried out by the MFP 13A in a
15 selected folder of the information storing apparatus 10, as a result of the information storing apparatus 10, the smartphone 11 and the MFP 13A operating in cooperation with each other.

The sequence diagram of FIG. 21 shows the
20 process of causing the MFP 13A to carry out scan, and storing, in the information storing apparatus 10, data obtained from the scan, using the smartphone 11. The service providing system 1 according to the second embodiment can also be used, as shown in FIG.
25 22, to cause the MFP 13B to carry out scan, and store

data obtained from the scan in the information storing apparatus 10, using the tablet terminal 12.

FIG. 22 is a sequence diagram of another example showing a procedure of the service providing system 1 according to the second embodiment. It is noted that the processes of step S110 and steps S111 to S119 of FIG. 22 are the same as those of step S100 and steps S101 to S109 of FIG. 21, and thus, duplicate description will be omitted.

In the sequence diagrams of FIGs. 21 and 22, the processes have been shown for a case where the MFP 13A or 13B stores, in the information storing apparatus 10, data obtained from scan carried out by the MFP 13A or 13B. However, the service providing system 1 according to the second embodiment can also be used for a case of, as shown in a sequence diagram of FIG. 23, storing, in the information storing apparatus 10, data obtained from scan carried out by the MFP 13A or 13B, through the smartphone 11 or the tablet terminal 12.

FIG. 23 is a sequence diagram of yet another example of a procedure of the service providing system 1 according to the second embodiment. The sequence diagram of FIG. 23 shows an example of storing data obtained from scan via the MFP 13A in

the information storing apparatus 10 through the smartphone 11. Further, processes of step S120 and steps S121 to S126 in the sequence diagram of FIG. 23 are the same as those of step S100 and steps S101 to 5 S106 in the sequence diagram of FIG. 21, and thus, duplicate description will be omitted.

In step S127, the application of the smartphone 11 sends a scan start instruction to the MFP 13A using the command indicating the scan 10 settings. The scan start instruction includes the scan information and the IP address of the smartphone 11. In the scan information included in the scan start instruction of step S127, the scan settings that have been set via the scan setting screen page 15 1110 of FIG. 11 are included.

In step S128, the MFP 13A carries out scan based on the scan settings included in the scan start instruction given by the smartphone 11. In step S129, the MFP 13A transmits scan data obtained from the 20 scan to the smartphone 11 based on the IP address of the smartphone 11 included in the scan start instruction.

In step S130, the smartphone 11 stores the scan data received from the MFP 13A in the folder of 25 the information storing apparatus 10 which the user

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has selected in step S123, via, for example, a HTTP request (POST). In this process, the WebApi 26 of the information storing apparatus 10 stores the scan data received from the smartphone 11 in the folder
5 that the user has selected in step S123.

In the sequence diagram of FIG. 23, data obtained from scan carried out by the MFP 13A is stored in the information storing apparatus 10 through the smartphone 11. However, it is also
10 possible that, data obtained from scan carried out by the MFP 13A is stored in the smartphone 11.

[Third Embodiment]

The service providing system 1 according to
15 the third embodiment has the same system configuration, hardware configuration and software configuration as those of the service providing system 1 according to the first embodiment described above. Thus, the description of the system
20 configuration, hardware configuration and software configuration will be omitted.

<Details of Processing>

Below, details of processing of the service
25 providing system 1 according to the third embodiment

will be described.

Here, processing will be described for a case where, using the smartphone 11, a file that the information storing apparatus 10 has is printed by the MFP 13. FIG. 24 is a sequence diagram of one example showing a procedure of the service providing system 1 according to the third embodiment. It is noted that processes of steps S200, S201 and S202 are the same as those of steps S0, S1 and S2 of FIG. 4, and the duplicate description will be omitted.

By repeating the processes of steps S201 and S202, the smartphone 11 displays screen pages such as those shown in FIGs. 6 and 7 and screen pages shown in FIGs. 25 and 26.

FIG. 25 is an image diagram of one example of a file list display screen page. The file list display screen page 1050 of FIG. 25 is a screen page example displayed after the "data" folder has been selected from the folder display selection screen page 1010 of FIG. 7. On the file list display screen page 1050 of FIG. 25, "Estimate Sheet.doc" and "Scan_20120607.pdf" are displayed as files.

FIG. 26 is an image diagram of one example of a file detail display screen page. The file detail display screen page 1060 of FIG. 26 is a

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screen page example displayed after the "Estimate Sheet.doc" file has been selected from the file list display screen page 1050 of FIG. 25. On the file detail display screen page 1060 of FIG. 26, an image
5 1063 of the "Estimate Sheet.doc" file thus selected from the file list display screen page 1050 is displayed.

Then, in step S203 of FIG. 24, the user operates the smartphone 11 and selects a file to be
10 printed by the MFP 13 from among the files shown in FIG. 25 or FIG. 26. Then, when a "print settings" 1061 button has been pressed on the file detail display screen page 1060 of FIG. 26, the smartphone 11 displays a print setting screen page 1070 shown in
15 FIG. 27 in step S204. FIG. 27 is an image diagram of one example of the print setting screen page 1070. The user then operates the smartphone 11 and carries out settings for print to be carried out by the MFP 13 via the displayed print setting screen page 1070
20 of FIG. 27.

After selecting a file to be printed by the MFP 13 from the files shown in FIG. 25 or 26, the user can press a "QR" button 1062 on the file detail display screen page 1060 of FIG. 26. Thus, the user
25 can cause a QR code reading screen page 1150, shown

in FIG. 28, for example, to be displayed on the smartphone 11. FIG. 28 is an image diagram of one example of the QR code reading screen page 1150 displayed on the smartphone 11. The QR code reading
5 screen page 1150 includes a QR code display area 1151. The QR code display area 1151 is an area in which an image taken by the camera function of the smartphone 11 will be displayed.

In steps S205 and S206 of FIG. 24, the user
10 operates the smartphone 11, and adjusts a positional relationship between the QR code displayed on the MFP 13 (step S200) and the smartphone 11 so that the QR code, an image of which has been taken by the camera function of the smartphone 11, will be displayed in
15 the QR code display area 1151 of the QR code reading screen page 1150 displayed on the smartphone 11.

The application of the smartphone 11 reads, from the QR code, an image of which has been taken by the camera function, the IP address of the MFP 13 and
20 the function information indicating the scan function and the print function that the MFP 13 provides, as shown in FIG. 12.

After thus reading the IP address and the function information indicating the scan function and
25 the print function of the MFP 13 from the QR code, an

image of which has been taken by the camera function, the application of the smartphone 11 displays to the user a screen page 1160 indicating that downloading is being carried out, as shown in FIG. 29. FIG. 29 is an image diagram of one example of the screen page 1160 indicating that downloading of a print file is being carried out. The screen page 1160 of FIG. 29 may be continuously displayed by the smartphone 11 until step S211 described later is completed.

10 It is noted that, timing of displaying the QR code on the MFP 13, timing of providing the file list from the information storing apparatus 10 to the smartphone 11 and timing of reading information from the QR code displayed on the MFP 13 by the smartphone 15 11 are not limited to the order shown in the sequence diagram of FIG. 24.

In step S207, the application of the smartphone 11 determines a file format as described later depending on the function information that the application of the smartphone 11 has read information from the QR code. For example, when the function information includes the print function, the application of the smartphone 11 determines the file format as RPCS, PDL or the like which can be printed 25 by the MFP 13.

In step S208, the application of the smartphone 11 sends a file obtaining request to the information storing apparatus 10. The file obtaining request includes information of the file selection
5 and information of the file format determined in step S207.

In Step S209, the WebApi 26 of the information storing apparatus 10 receives the file obtaining request and sends a corresponding file
10 obtaining request to the Web control part 29. The Web control part 29 obtains the corresponding file from the shared folder 27 based on the "information of the file selection" included in the file obtaining request thus received from the WebApi 26.

15 Further, the Web control part 29 determines, based on the "information of the file format" included in the file obtaining request from the WebApi 26, whether it is necessary to convert the file format of the file thus obtained from the shared
20 folder 27. For example, when the file format of the file obtained from the shared folder 27 and the file format indicated by the "information of the file format" obtained from the WebApi 26 are the same, the Web control part 29 determines that conversion of the
25 file format of the file obtained from the shared

folder 27 is not necessary.

On the other hand, when the file format of the file obtained from the shared folder 27 and the file format indicated by the "information of the file format" obtained from the WebApi 26 are different
5 from one another, the Web control part 29 determines that conversion of the file format of the file obtained from the shared folder 27 is necessary. When having determined that it is necessary to
10 convert the file format, the Web control part 29 causes the document management part 28 to convert the file format into the file format indicated by the "information of the file format" accordingly. Below, a case where the Web control part 29 has determined
15 that it is necessary to convert the file format will be described. The Web control part 29 then returns the converted file, the file format of which has been thus converted, to the WebApi 26.

In step S210, the WebApi 26 provides the
20 converted file to the smartphone 11 via a HTTP response. In step S211, the application of the smartphone 11 transmits the converted file to the MFP 13 as a print file.

A specific method of thus transmitting a
25 print file to the MFP 13 is, for example, a method of

transmitting using a socket communication to the port of the number 9100 ("port 9100") of the MFP 13, as shown in FIG. 30. FIG. 30 illustrates one example of a method of transmitting a print file to the MFP 13.

- 5 When having received the print file, the MFP 13 carries out print (output) based on the print file, in step S212.

FIG. 31 is a configuration diagram of one example of print commands included in a print file mentioned above. The print commands of FIG. 31 include the contents of print settings that have been set via the print setting screen page 1070 of FIG. 27 (#2 in FIG. 31) and the file name of a file to be printed (#1 in FIG. 31).

- 15 FIG. 32 is a flowchart of one example of a procedure of the smartphone 11. It is noted that the flowchart of FIG. 32 shows the procedure to be carried out after the QR code reading screen page 1150 shown in FIG. 28 has been displayed on the smartphone 11 as mentioned above.

In step S221 of FIG. 32, the application of the smartphone 11 reads the set value of item "Function" shown in FIG. 12 from the QR code, an image of which has been taken by the camera function of the smartphone 11.

25

In step S222, the application of the smartphone 11 determines whether the set value of item "Function" is "Projection" that indicates the projection function (projector 14). When the set value of item "Function" is "Projection" that indicates the projection function (projector 14), the application of the smartphone 11 proceeds to step S225, and sends a file obtaining request, which designates, as a file format, "PDF" that can be projected by the projector 14, to the information storing apparatus 10.

When the set value of item "Function" is not "Projection" that indicates the projection function (projector 14), the application of the smartphone 11 proceeds to step S223, and determines whether the set value of item "Function" is "Print" that indicates the print function (MFP 13). When the set value of item "Function" is "Print" that indicates the print function (MFP 13), the application of the smartphone 11 proceeds to step S224, and sends a file obtaining request, which designates, as a file format, RPCS or PDL that can be printed by the MFP 13, to the information storing apparatus 10.

When the set value of item "Function" is

not "Print" that indicates the print function (MFP 13) in step S223, the application of the smartphone 11 proceeds to step S226, and carries out an error display process since it is not possible to determine a file format that the file obtaining request is to designate.

According to the sequence diagram of FIG. 24, it is possible to display, on the smartphone 11, the files placed in the shared folder 27 of the information storing apparatus 10, by installing the WebApi 26 in the information storing apparatus 10. A user can obtain from the information storing apparatus 10 a converted file of a file format that can be printed by the MFP 13, by selecting the file via the smartphone 11 and reading via the smartphone 11 information from the QR code 1201 of the MFP 13 that the user wishes to use to print the file. The smartphone 11 can cause the MFP 13 to print the converted file thus obtained from the information storing apparatus 10, by transmitting the converted file to the MFP 13 as a print file.

Thus, a user can cause the information storing apparatus 10, the smartphone 11 and the MFP 13 to operate in cooperation with each other, by holding the smartphone 11 against the MFP 13 at a

time of starting print (to cause the smartphone 11 to read information from the QR code of the MFP 13), and thus, the user can easily cause the MFP 13 to print a file placed in the shared folder 27 of the
5 information storing apparatus 10.

The sequence diagram of FIG. 24 shows the process of obtaining a file from the information storing apparatus 10 using the smartphone 11, and printing the file using the MFP 13. The service
10 providing system 1 according to the third embodiment can also be used, as shown in FIG. 33, to obtain a file from the information storing apparatus 10 using the smartphone 11, and project the file using the projector 14.

15 FIG. 33 is a sequence diagram of another example showing a procedure of the service providing system 1 according to the third embodiment. It is noted that the processes of steps S230, S231, S232 and S233 of FIG. 33 are the same as those of steps
20 S200, S201, S202 and S203 of FIG. 24, and thus, duplicate description will be omitted.

When a "projection settings" button (not shown) has been pressed on the file detail display screen page 1060, the smartphone 11 displays a
25 projection setting screen page in step S234.

The user then operates the smartphone 11 and carries out settings for projection to be carried out by the projector 14 via the displayed projection setting screen page.

5 After selecting a file to be projected by the projector 14 from the files shown in FIG. 25 or 26, the user presses the "QR" button 1062 on the file detail display screen page 1060. Thereby, the user can cause the QR code reading screen page 1150, as
10 shown in FIG. 28, for example, to be displayed on the smartphone 11.

In steps S235 and S236, the user operates the smartphone 11, and adjusts a positional relationship between the QR code displayed by the
15 projector 14 (step S230) (onto a projection screen 141 or the like as shown in FIG. 36 described later) and the smartphone 11 so that the QR code, an image of which has been taken by the camera function of the smartphone 11, will be displayed in the QR code
20 display area 1151 of the QR code reading screen page 1150 displayed on the smartphone 11.

The application of the smartphone 11 reads, from the QR code, an image of which has been taken by the camera function of the smartphone 11, the IP
25 address of the projector 14, a projector name, the

function information indicating the projection
function that the projector 14 provides, and a type
of the projector 14, as shown in FIG. 34. FIG. 34 is
a configuration diagram of one example of the
5 information that the application of the smartphone 11
reads from the QR code.

After thus reading the IP address and the
function information indicating the projection
function of the projector 14 from the QR code, the
10 application of the smartphone 11 displays the screen
page indicating that downloading is being carried out
to the user, as shown in FIG. 29, for example.

It is noted that, timing of displaying the
QR code by the projector 14, timing of providing the
15 file list from the information storing apparatus 10
to the smartphone 11, and timing of reading
information by the smartphone 11 from the QR code
displayed by the projector 14 are not limited to the
order shown in the sequence diagram of FIG. 33.

20 In step S237, the application of the
smartphone 11 determines, as shown in FIG. 32, a file
format, depending on the function information that
the application of the smartphone 11 has read from
the QR code. For example, when the function
25 information includes the projection function, the

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application of the smartphone 11 determines the file format as PDF or the like which can be projected by the projector 14.

The processes of steps S238, S239 and S240
5 are the same as those of steps S208, S209 and S210 of FIG. 24, and thus, duplicate description will be omitted. In step S241, the application of the smartphone 11 transmits the converted file to the projector 14 as a projection file. A specific method
10 of transmitting a projection file is, for example, a method of transmitting it using a WebApi that is published by the projector 14, as shown in FIG. 35. FIG. 35 illustrates one example of a method of transmitting a projection file to the projector 14.
15 When having received the projection file, the projector 14 carries out projection (output) based on the projection file, in step S242.

Further, in order to display the QR code, the projector 14 can project a screen page including
20 the QR code 1300 as shown in FIG. 36 on the projection screen 141 or the like, or it is also possible to affix a seal of the QR code 1301 onto the housing of the projector 14, for example. FIG. 36 is an image diagram of one example of a QR code
25 displayed by the projector 14. For example, the

projector 14 can thus project the QR code 1300 by displaying, using a Web browser (not shown), the QR code display Web UI 25 of the information storing apparatus 10. Further, it is possible that the
5 projector 14 stores image data of the QR code 1300 in the projector 14 itself, or obtains image data of the QR code 1300 from the outside.

Other than affixing a seal of the QR code 1301 on the housing of the projector 14, it is also
10 possible to affix a seal of the QR code 1301 on, for example, a wall of a room in which the projector 14 is installed. In other words, a specific position to affix a seal of the QR code 1301 is preferably a position such that a user can understand that the QR
15 code 1301 is one that is associated with the projector 14.

In the sequence diagram of FIG. 24, the processes have been shown for a case of obtaining a file from the information storing apparatus 10 using
20 the smartphone 11 and printing the file using the MFP 13. However, the service providing system 1 according to the third embodiment can also be used for a case of, as shown in a sequence diagram of FIG. 37, using the tablet terminal 12 to obtain a file
25 from the information storing apparatus 10 and print

the file using the MFP 13.

FIG. 37 is a sequence diagram of yet another example of a procedure of the service providing system 1 according to the third embodiment.

5 Since processes of step S250 and steps from S251 to S262 in the sequence diagram of FIG. 37 are the same as those of step S200 and steps from S201 to S212 of FIG. 24 except that the role of the smartphone 11 in the procedure of FIG. 24 is replaced by the tablet

10 terminal 12 in the procedure of FIG. 37, duplicate description will be omitted.

Further, in the sequence diagram of FIG. 33, the processes have been shown for a case of using the smartphone 11 to obtain a file from the information

15 storing apparatus 10 and project the file using the projector 14. However, the service providing system 1 according to the third embodiment can also be used for a case of, using the tablet terminal 12 in the same manner as the case of FIG. 37 to obtain a file

20 from the information storing apparatus 10 and project the file using the projector 14.

[Fourth Embodiment]

A service providing system 1 according to

25 the fourth embodiment has the same system

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configuration, hardware configuration and software configuration as those of the service providing system 1 according to the first embodiment described above. Thus, the description of the system configuration, hardware configuration and software configuration will be omitted.

<Details of Processing>

Below, processing of the service providing system 1 according to the fourth embodiment will be described in detail.

Here, processes will now be described for a case of using the smartphone 11 and causing the MFP 13 to print a file that the information storing apparatus 10 stores therein. FIG. 38 is a sequence diagram showing one example of a procedure of the service providing system 1 according to the fourth embodiment. Processes of step S300 and steps from S301 to S307 of FIG. 38 are the same as those of step S200 and steps from S201 to S207 of FIG. 24, and thus, the duplicate description therefor will be omitted.

In step S308, the application of the smartphone 11 sends a file output request to the information storing apparatus 10. The file output request includes information of the file selection,

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information of the file format determined in step S307 and the IP address of the MFP 13.

In Step S309, the WebApi 26 of the information storing apparatus 10 then receives the file output request and sends a corresponding file output request to the Web control part 29. The Web control part 29 then obtains the file from the shared folder 27 based on the "information of the file selection" included in the file output request thus received from the WebApi 26.

Further, the Web control part 29 determines, based on the "information of the file format" included in the file output request from the WebApi 26, whether it is necessary to convert the file format of the file thus obtained from the shared folder 27. For example, when the file format of the file obtained from the shared folder 27 and the file format indicated by the "information of the file format" obtained from the WebApi 26 are the same, the Web control part 29 determines that conversion of the file format of the file obtained from the shared folder 27 is not necessary.

On the other hand, when the file format of the file obtained from the shared folder 27 and the file format indicated by the "information of the file

format" obtained from the WebApi 26 are different from one another, the Web control part 29 determines that conversion of the file format of the file obtained from the shared folder 27 is necessary.

5 When having determined that it is necessary to convert the file format, the Web control part 29 causes the document management part 28 to convert the file format into the file format indicated by the "information of the file format". Below, a case
10 where the Web control part 29 has determined that it is necessary to convert the file format will be described. The Web control part 29 then returns the converted file, the file format of which has been thus converted, to the WebApi 26.

15 In step S310, the WebApi 26 transmits the converted file to the MFP 13 as a print file. A specific method of thus transmitting the print file to the MFP 13 is, for example, a method of transmitting it using a socket communication to the
20 port of the number 9100 ("port 9100") of the MFP 13, as shown in FIG. 30. When having received the print file, the MFP 13 carries out print (output) based on the print file, in step S311.

According to the sequence diagram of FIG.
25 38, it is possible to display on the smartphone 11

the files placed in the shared folder 27 of the information storing apparatus 10, by installing the WebApi 26 in the information storing apparatus 10. Also, it is possible that a file format that can be
5 printed by the MFP 13 is designated and a file is printed by the MFP 13, as a result of the user selecting the file from those displayed on the smartphone 11 and causing the smartphone 11 to read information from the QR code 1201 of the MFP 13 that
10 the user wishes to use to print the file.

Thus, by holding the smartphone 11 against the MFP 13 at a time of starting print (to cause the smartphone 11 to read information from the QR code of the MFP 13), a user can cause the information storing
15 apparatus 10, the smartphone 11 and the MFP 13 to operate in cooperation with each other, and can easily cause the MFP 13 to print a file placed in the shared folder 27 of the information storing apparatus 10.

20 The sequence diagram of FIG. 38 shows the processes of using the smartphone 11 to cause a file to be transmitted from the information storing apparatus 10 to the MFP 13 and printed by the MFP 13. The service providing system 1 according to the
25 fourth embodiment can also be used, as shown in the

sequence diagram of FIG. 39, to use the smartphone 11 to cause a file to be transmitted from the information storing apparatus 10 to the projector 14 and projected by the projector 14.

5 FIG. 39 is the sequence diagram of another example showing a procedure of the service providing system according to the fourth embodiment. It is noted that the processes of steps S330, S331, S332 and S333 are the same as those of steps S300, S301,
10 S302 and S303 of FIG. 38, and thus, duplicate description will be omitted.

When a "projection settings" button (not shown) on the file detail display screen page 1060 has been pressed, the smartphone 11 displays the
15 projection setting screen page in step S334. The user then operates the smartphone 11 and carries out settings for projection to be carried out by the projector 14 via the thus displayed projection setting screen page.

20 After selecting a file to be projected by the projector 14 from files shown in FIG. 25 or 26, the user presses the "QR" button 1062 on the file detail display screen page 1060. Thereby, the user can cause the smartphone 11 to display the QR code
25 reading screen page 1150 as shown in FIG. 28, for

example.

In steps S335 and S336, the user operates the smartphone 11 to adjust a positional relationship between the QR code displayed by the projector 14 (onto the projection screen 141 or the like) and the smartphone 11 so that the QR code, an image of which has been taken by the camera function of the smartphone 11, will be displayed in the QR code display area 1151 of the QR code reading screen page 1150 displayed on the smartphone 11.

The application of the smartphone 11 reads, from the QR code, an image of which has been taken by the camera function, the IP address of the projector 14, the projector name, the function information indicating the projection function that the projector 14 provides, and the type of the projector 14, as shown in FIG. 34.

It is noted that, timing of displaying the QR code by the projector 14, timing of providing the file list from the information storing apparatus 10 to the smartphone 11 and timing of reading information by the smartphone 11 from the QR code displayed by the projector 14 are not limited to the order shown in the sequence diagram of FIG. 39.

In step S337, the application of the

smartphone 11 determines, as shown in FIG. 32, a file format, depending on the function information that the application of the smartphone 11 has read from the QR code. For example, when the function
5 information includes the projection function, the application of the smartphone 11 determines the file format as PDF or the like which can be projected by the projector 14.

In step S338, the application of the
10 smartphone 11 sends a file output request to the information storing apparatus 10. The file output request includes information of the file selection, information of the file format determined in step S337 and the IP address of the projector 14.

15 In Step S339, the WebApi 26 of the information storing apparatus 10 then receives the file output request and sends a corresponding file output request to the Web control part 29. The Web control part 29 obtains the file from the shared
20 folder 27 based on the "information of the file selection" included in the file output request thus received from the WebApi 26.

Further, the Web control part 29 determines, based on the "information of the file format"
25 included in the file output request from the WebApi

26, whether it is necessary to convert the file
format of the file thus obtained from the shared
folder 27. For example, when the file format of the
file obtained from the shared folder 27 and the file
5 format indicated by the "information of the file
format" obtained from the WebApi 26 are the same, the
Web control part 29 determines that conversion of the
file format of the file obtained from the shared
folder 27 is not necessary.

10 On the other hand, when the file format of
the file obtained from the shared folder 27 and the
file format indicated by the "information of the file
format" obtained from the WebApi 26 are different
from one another, the Web control part 29 determines
15 that conversion of the file format of the file
obtained from the shared folder 27 is necessary.
When having determined that it is necessary to
convert the file format, the Web control part 29
causes the document management part 28 to convert the
20 file format into the file format indicated by the
"information of the file format". Below, a case
where the Web control part 29 has determined that it
is necessary to convert the file format will be
described. The Web control part 29 then returns the
25 converted file, the file format of which has been

thus converted, to the WebApi 26.

In step S340, the WebApi 26 transmits the converted file to the projector 14 as a projection file. A specific method of thus transmitting the projection file to the projector 14 is, for example, a method of transmitting it using a WebApi that is published by the projector 14, as shown in FIG. 35. When having received the projection file, the projector 14 carries out projection (output) based on the projection file, in step S341.

According to the sequence diagram of FIG. 39, it is possible to display, on the smartphone 11, the files placed in the shared folder 27 of the information storing apparatus 10, by installing the WebApi 26 in the information storing apparatus 10. Also, it is possible that a file format that can be projected by the projector 14 is designated and a file is projected by the projector 14, as a result of the user selecting the file from those displayed on the smartphone 11 and causing the smartphone 11 to read information from the QR code 1300, 1301 or the like of the projector 14 that the user wishes to use to project the file.

Thus, by holding the smartphone 11 against the projection screen 141 or the like of the

projector 14 at a time of starting projection to cause the smartphone 11 to read information from the QR code displayed onto the projection screen 141 or the like by the projector 14, a user can cause the information storing apparatus 10, the smartphone 11 and the projector 14 to operate in cooperation with each other, and thus, the user can easily cause the projector 14 to project a file placed in the shared folder 27 of the information storing apparatus 10.

10 The sequence diagram of FIG. 38 shows the processes of using the smartphone 11 to cause a file to be transmitted from the information storing apparatus 10 to the MFP 13, and cause the MFP 13 to print the file. The service providing system 1
15 according to the fourth embodiment can also be used, as shown in the sequence diagram of FIG. 40, to use the tablet terminal 12 to cause a file to be transmitted from the information storing apparatus 10 to the MFP 13, and cause the MFP 13 to print the file.

20 FIG. 40 is the sequence diagram of yet another example showing a procedure of the service providing system 1 according to the fourth embodiment. It is noted that the processes of step S350 and steps from S351 to S361 in the sequence diagram of FIG. 40
25 are the same as those of step S300 and steps from

S301 to S311 of FIG. 38 except that the role of the smartphone 11 in the procedure of FIG. 38 is replaced by the tablet terminal 12 in the procedure of FIG. 40, and thus, duplicate description will be omitted.

5 Further, in the sequence diagram of FIG. 39, the processes have been shown for a case of using the smartphone 11 to cause a file to be transmitted from the information storing apparatus 10 to the projector 14 and cause the projector 14 to project the file.

10 However, the service providing system 1 according to the fourth embodiment can also be used for a case of using the tablet terminal 12 in the same manner as FIG. 40 instead of the smartphone 11 to cause a file to be transmitted from the information storing

15 apparatus 10 to the projector 14 and cause the projector 14 to project the file.

 According to the sequence diagram of FIG. 40, it is possible to display, on the tablet terminal 12, the files placed in the shared folder 27 of the

20 information storing apparatus 10, by installing the WebApi 26 in the information storing apparatus 10. Also, it is possible that a file format that can be printed by the MFP 13 is designated and a file is printed by the MFP 13, as a result of the user

25 selecting the file from those displayed on the tablet

terminal 12 and casing the tablet terminal 12 to read information from the QR code 1201 of the MFP 13 that the user wishes to use to print the file.

Thus, by holding the tablet terminal 12
5 against the MFP 13 at a time of starting print to cause the tablet terminal 12 to read information from the QR code displayed on the MFP 13, a user can cause the information storing apparatus 10, the tablet
terminal 12 and the MFP 13 to operate in cooperation
10 with each other, and thus, the user can easily cause the MFP 13 to print a file placed in the shared folder 27 of the information storing apparatus 10.

Further, also it is naturally possible to use a facsimile function that the MFP 13 has, and
15 transmit data stored in the information storing apparatus 10 by fax. In this case, in step S204 of FIG. 24, facsimile transmission conditions are set instead of setting print conditions (print settings).

The facsimile transmission conditions
20 include, for example, whether to attach a letter of transmittal, a transmission result notification destination, whether to print date and time, transmission source information, transmission destination information and/or the like. Further, it
25 is also possible to use, for the facsimile

transmission conditions, information of another application that is installed and operates in the smartphone. For example, it is possible for a user to select a destination telephone number from among
5 data that is managed by the other application prepared for managing addresses.

The information storing apparatus 10 generates facsimile transmission image data according to the received facsimile transmission conditions
10 (facsimile transmission settings). It is noted that the information storing apparatus 10 can use facsimile transmission image data that is previously generated, or can generate facsimile transmission image data after receiving a facsimile transmission
15 instruction from the smartphone 11.

The thus generated facsimile transmission image data is then transmitted to the MFP 13 from the information storing apparatus 10. The MFP 13 transmits the received facsimile transmission image
20 data to the destination.

Further, in addition to displaying data stored in the information storing apparatus 10 on the smartphone 11, it is also possible that data stored in the information storing apparatus 10 is also
25 stored in the smartphone 11.

<Summary of Embodiments>

Thus, according to the service providing systems 1 according to the embodiments, a user can obtain advantageous effects as follows. That is, by
5 holding an information processing apparatus such as the smartphone 11 or the tablet terminal 12 against an electronic device such as the MFP 13 or the projector 14 and obtaining information for determining the electronic device such as a QR code,
10 the user can cause a cooperative processing apparatus such as the information storing apparatus 10, the information processing apparatus and the electronic device to operate in cooperation with each other, and receive various services using the electronic device.

15 Further, the service providing systems 1 according to the embodiments can provide various services, as a result of an electronic device such as the MFP 13 or the projector 14, an information processing apparatus such as the smartphone 11 or the
20 tablet terminal 12 and a cooperative processing apparatus such as the information storing apparatus 10 operating in cooperation with each other by a cooperation method that is depending on the respective services such as print, projection and
25 scan to be provided.

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Further, a cooperation method concerning a new service to be provided by an electronic device such as the MFP 13, the projector 14 or another new electronic device can be previously defined in the service providing systems according to the embodiments. Thereby, it is possible to cause an electronic device such as the MFP 13, the projector 14 or another new apparatus, an information processing apparatus such as the smartphone 11 or the tablet terminal 12 and a cooperative processing apparatus such as the information storing apparatus 10 to operate in cooperation with each other by the cooperation method that is depending on the new service. Thus, it is possible to provide the new service in addition to existing services.

Thus, according to systems including operation devices and information storing apparatuses, methods performed by the systems, and the information storing apparatuses of the embodiments, apparatuses included in the system operate in cooperation with each other to provide a service(s).

Although the systems including operation devices and information storing apparatuses, methods performed by the systems, and the information storing apparatuses have been described by the embodiments,

the present invention is not limited to the specifically disclosed embodiments, and variations and modifications may be made without departing from the scope of the present invention.

5 The present application is based on and claims the benefit of priority of Japanese Priority Application No. 2012-154914 filed on July 10, 2012 and Japanese Priority Application No. 2013-139587 filed on July 3, 2013, the entire contents of which
10 are hereby incorporated herein by reference.

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CLAIMS

Claim 1. A system including an operation device and an information storing apparatus, which
5 are connected via a network, wherein
the operation device includes
a determining unit configured to determine,
based on information input from the outside of the
operation device in response to an operation
10 performed on the operation device, an electronic
device among a plurality of electronic devices
connected to the system, the electronic device to be
determined being caused to input electronic data to
the information storing apparatus, and
15 a first sending unit configured to send, to
the information storing apparatus, a first request to
cause the determined electronic device to input the
electronic data to the information storing apparatus,
and,
20 the information storing apparatus includes
a second sending unit configured to send,
to the determined electronic device, a second request
to cause the determined electronic device to input
the electronic data to the information storing
25 apparatus, based on the first request sent from the

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first sending unit of the operation device, and
a storing unit configured to store the
electronic data in the information storing apparatus,
the electronic data having been sent from the
5 determined electronic device based on the second
request sent by the second sending unit.

Claim 2. The system as claimed in claim 1,
wherein

10 the information input to the operation
device from the outside of the operation device
includes at least identification information for
determining the electronic device, and
the determining unit of the operation
15 device is configured to determine the electronic
device to be caused to input the electronic data to
the information storing apparatus, based on the
identification information included in the
information input to the operation device.

20

Claim 3. The system as claimed in claim 1,
wherein

the first request includes a setting for
the electronic device to generate the electronic data,
25 the second request includes the setting

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that is included in the first request sent from the operation device, and

the storing unit is configured to store, in the information storing apparatus, the electronic data that the electronic device has generated based on the setting included in the second request.

Claim 4. The system as claimed in claim 1, wherein

the information obtained from the outside of the operation device is image information that the operation device obtains by photographing an image displayed by the electronic device or affixed on the electronic device.

15

Claim 5. The system as claimed in claim 1, wherein

the information storing apparatus includes a memory to store the electronic data, and

the storing unit is configured to store the electronic data in the memory.

Claim 6. The system as claimed in claim 5, wherein

the first request includes designation

information for designating a storing place to store the electronic data sent from the electronic device,

the second request includes the designation information included in the first request sent from

5 the operation device, and

the storing unit is configured to store the electronic data sent from the electronic device in response to the second request in the storing place designated by the designation information.

10

Claim 7. A method that a system including an operation device and an information storing apparatus, which are connected, performs, the method comprising:

15 determining, by a processor, based on information input to the operation device from the outside of the operation device in response to an operation performed on the operation device, an electronic device among a plurality of electronic
20 devices connected to the system, the electronic device to be determined being caused to input electronic data to the information storing apparatus;

sending, by a processor, to the determined electronic device, a request to cause the determined
25 electronic device to input the electronic data to the

information storing apparatus; and,

storing, by a processor, in the information storing apparatus, the electronic data sent by the electronic device in response to the sent request.

5

Claim 8. The method as claimed in claim 7, wherein

the information input to the operation device from the outside of the operation device
10 includes at least identification information for determining the electronic device, and

in the determining, the electronic device to be caused to input the electronic data to the information storing apparatus is determined among the
15 plurality of electronic devices connected to the system based on the identification information included in the information obtained by the operation device.

20 Claim 9. The method as claimed in claim 7, wherein

the request includes a setting for the electronic device to generate the electronic data, the setting being sent to the information storing
25 apparatus, and

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in the sending, the request is sent to the electronic device, and the setting that has been sent from the operation device is sent to the electronic device, and

5 in the storing, the electronic data is stored in the information storing apparatus, which electronic data has been generated by the electronic device based on the setting sent in the sending and has been sent from the electronic device in response
10 to the request.

Claim 10. The method as claimed in claim 7, wherein

the information that is obtained from the
15 outside of the operation device is image information that the operation device obtains by photographing an image displayed by the electronic device or affixed on the electronic device.

20 Claim 11. The method as claimed in claim 7, wherein

the information storing apparatus includes a memory to store the electronic data, and

in the storing, the electronic data is
25 stored in the memory.

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Claim 12. The method as claimed in claim 11, wherein

the request includes designation information for designating a storing place to store the electronic data sent from the electronic device,

the request to be sent to the electronic device includes the designation information that has been included in the request sent from the operation device, and

in the storing, the electronic data is stored in the storing place designated by the designation information, which electronic data has been sent from the electronic device in response to the request.

15

Claim 13. An information storing apparatus connected with an operation device and a plurality of electronic devices, the information storing apparatus comprising:

a reception unit configured to receive, from the operation device, a first request for causing a determined electronic device to input electronic data to the information storing apparatus, wherein the operation device determines, based on information input to the operation device from the

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outside of the operation device in response to an operation performed on the operation device, the electronic device among the plurality of electronic devices connected to the information storing

5 apparatus;

a sending unit configured to send, to the determined electronic device, a second request to cause the determined electronic device to input the electronic data to the information storing apparatus,
10 based on the first request received by the reception unit; and

a storing unit configured to store the electronic data in the information storing apparatus, which electronic data has been sent from the
15 determined electronic device based on the second request sent by the sending unit.

Claim 14. The information storing apparatus as claimed in claim 13, wherein

20 the first request includes a setting for the electronic device to generate the electronic data, the second request includes the setting that is included in the first request sent from the operation device, and

25 the storing unit is configured to store the

electronic data that the electronic device has generated based on the setting included in the second request.

5 Claim 15. The information storing apparatus as claimed in claim 13, further comprising a memory to store the electronic data, wherein
the storing unit is configured to store the electronic data in the memory.

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