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(54) **DISPLAY APPARATUS AND NON-TRANSITORY COMPUTER READABLE MEDIUM STORING PROGRAM**

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(57) **ABSTRACT**

A display apparatus includes: a display surface that displays information; and a display unit that, in response to a motion to move or place a mobile information terminal closer to or on the display surface, displays a first operation in which a first image is moved from the mobile information terminal to the display surface and displayed on the display surface, or a second operation in which a second image displayed on the display surface is moved from the display surface to the mobile information terminal.

FIG. 1

100

60a

60b

10

30

40

20

60c

60d

50

FIG. 2

100

COMMUNICATION I/F 5

ROM 3

RAM 2

CPU 1

HDD 4

OPERATION DETECTOR 40

PROJECTOR 30

PRINTER 50

IMAGER 60

GUIDE DISPLAY 10

FIG. 3

CONTROL DEVICE — 70

DISPLAY CONTROLLER — 71

PROJECTION CONTROLLER — 72

DETECTION CONTROLLER — 73

PRINT CONTROLLER — 74

IMAGING CONTROLLER — 75

COMMUNICATION CONTROLLER — 76

PAYMENT PROCESSOR — 77

DOCUMENT TYPE RECOGNIZER — 78

SCAN DATA PROCESSOR — 79

FIG. 4

FIG. 5

FIG. 6

10

F   G   H
E   C   A
    B   D

EDITION

EXPANSION GESTURE
ALLOWS EDITING
MODE TO BE SET.

121

PRINT

TAPPING "PRINT"
BUTTON DISPLAYED ON
SMARTPHONE CAUSES
PRINTING TO START.

122

20

103

911   10 YEN

912   10 YEN

913   80 YEN

90

PRINT

FIG. 7

123 — CONTENT CHECK

CONFIDENTIAL
DOCUMENT IS DISPLAYED
IN BLURRED MANNER
AND ITS CONTENTS ARE
CHECKED BY TRACING
DOCUMENT WITH FINGER.

SELECTION OF
OUTPUT FORMAT — 124

PLEASE PRESS
BOOKBINDING BUTTON
TO SELECT DESIRED
OUTPUT FORMAT.

10

20

104

90

PRINT

FIG. 8

— 10

123 —
CONTENT CHECK

CONFIDENTIAL
DOCUMENT IS DISPLAYED
IN BLURRED MANNER
AND ITS CONTENTS ARE
CHECKED BY TRACING
DOCUMENT WITH FINGER.

SELECTION OF
OUTPUT FORMAT

PLEASE PRESS
BOOKBINDING BUTTON
TO SELECT DESIRED
OUTPUT FORMAT.
— 124

— 20

— 105

— 90

PRINT

FIG. 9

10

125 — logout

PLEASE REMOVE
SMARTPHONE FROM
STAND TO LOG OUT.

PERSONAL
BELONGINGS

PLEASE DO NOT
LEAVE ANYTHING. — 126

20

106

90

FIG. 10

10

PLEASE ADJUST POSITIONS
OF DOCUMENTS TO
FORM DESIRED GROUP.

171

1

1

2

95

951

DOCUMENT

20

953

150

952

FIG. 11

PLEASE ADJUST POSITIONS
OF DOCUMENTS TO
FORM DESIRED GROUP.

171

10

1

1   2

95

20

151
951

153
953

RECEIPT

A4 PAPER

BUSINESS
CARD

152

952

FIG. 12

172 —

YOU CAN CHECK
RESULT OF SCANNING
BY REMOVING
DOCUMENT.

— 173

PLEASE SPECIFY
STORAGE DESTINATION.

— 10

921 —

— 20

— 923

— 922

FIG. 13

10

172 — YOU CAN CHECK RESULT OF SCANNING BY REMOVING DOCUMENT.

173 — PLEASE SPECIFY STORAGE DESTINATION.

20

923

926

154

90

921

924

922   925

STORE

FIG. 14

10

972

176 — CONFIRMATION OF STORAGE DESTINATION

YOU CAN CHANGE STORAGE DESTINATION BY TOUCHING SCREEN.

177 — PLEASE DETERMINE PAYMENT METHOD.

20

971

155

90

927

STORE

FIG. 15

```
                    ┌─────────┐
                    │  START  │
                    └─────────┘
                         │
                         ▼
          ┌──────────────────────────────┐
          │   DISPLAY STAND-BY SCREEN     │───S701
          └──────────────────────────────┘
                         │
                         ▼
                                          S702
                    ╱──────────────────────╲
         NO        ╱    HAS APPROACHING      ╲
    ◄─────────────┤  OF USER BEEN DETECTED?   │
                   ╲                         ╱
                    ╲───────────────────────╱
                         │ YES
                         ▼
          ┌──────────────────────────────┐
          │  PERFORM PUBLIC PRINT PROCESSING │───S703
          └──────────────────────────────┘
                         │
                         ▼
                                   S704
                    ╱──────────────╲
         NO        ╱  HAS ANYTHING   ╲
    ◄─────────────┤   BEEN PLACED?    │
                   ╲                 ╱
                    ╲───────────────╱
                         │ YES     S705
                         ▼
          YES     ╱──────────────╲
    ◄────────────┤ IS IT DOCUMENT? │
                  ╲               ╱
                   ╲─────────────╱
                         │ NO
                         ▼
                                    S707
                  ╱──────────────────╲    NO
                 ╱   IS IT MOBILE      ╲─────────┐
                ┤ INFORMATION TERMINAL? │        │
                 ╲                     ╱         │
                  ╲───────────────────╱          │
                         │ YES  S708             │
    S706                 ▼                       ▼  S709
┌───────────────┐ ┌───────────────┐ ┌───────────────────┐
│   PERFORM     │ │ PERFORM PRINT │ │     PERFORM        │
│TWO-DIMENSIONAL│ │  PROCESSING   │ │THREE-DIMENSIONAL   │
│SCAN PROCESSING│ │               │ │ SCAN PROCESSING    │
└───────────────┘ └───────────────┘ └───────────────────┘
         │               │                   │
         └───────────────┼───────────────────┘
                         ▼
                    ┌─────────┐
                    │   END   │
                    └─────────┘
```
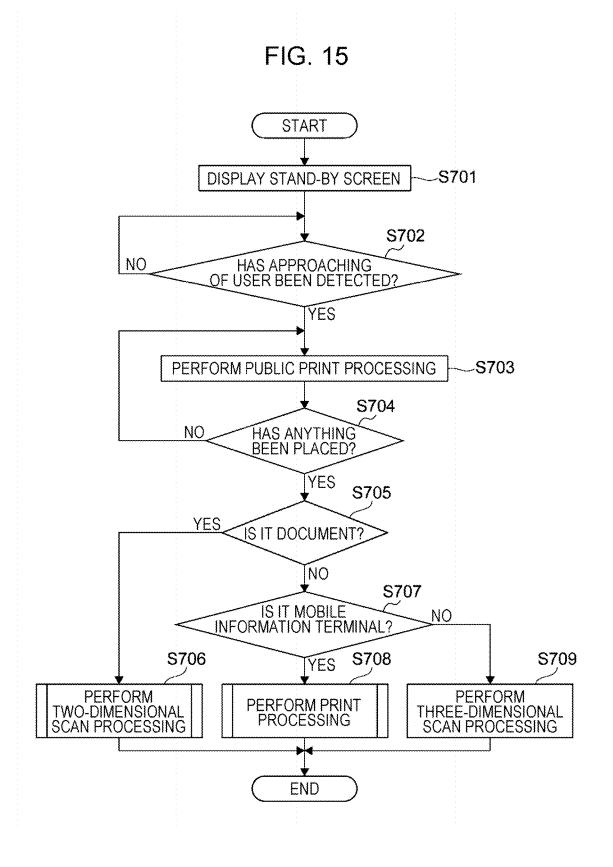
FIG. 16

PRINT PROCESSING

DISPLAY LOGIN COMPLETION SCREEN —S721

PERFORM PRINT INSTRUCTION
SCREEN DISPLAY PROCESSING —S722

PERFORM PAYMENT PROCESSING —S723

S724
HAS PRINT
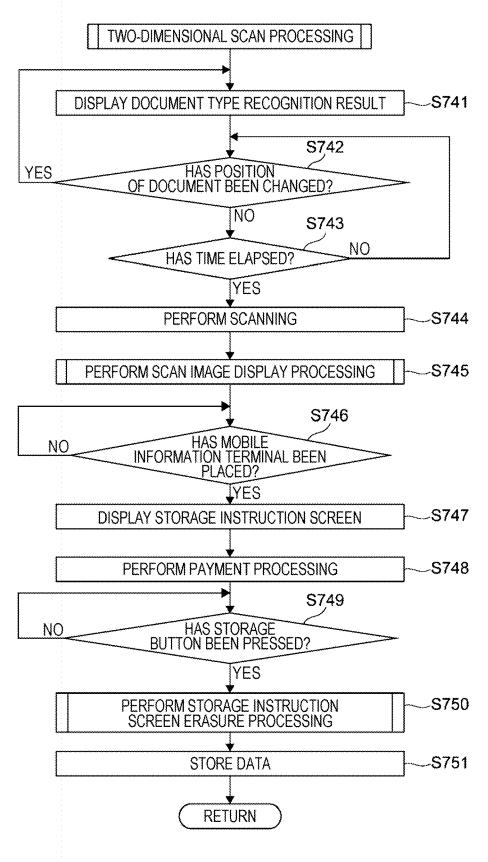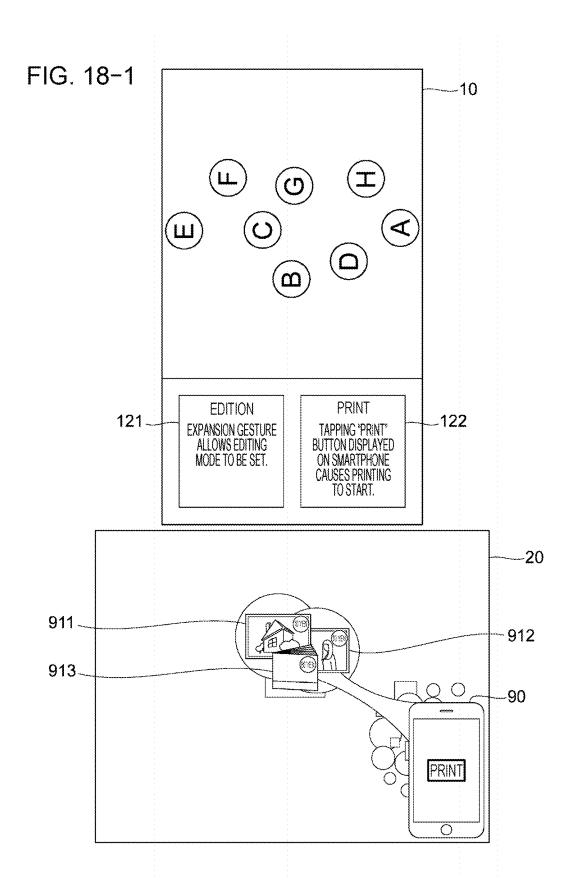BUTTON BEEN PRESSED?

NO

YES

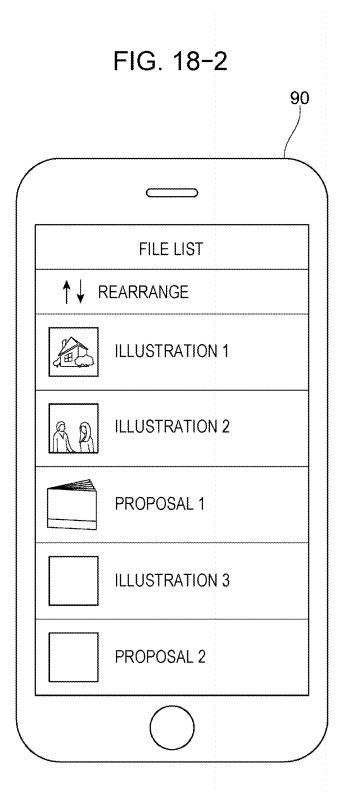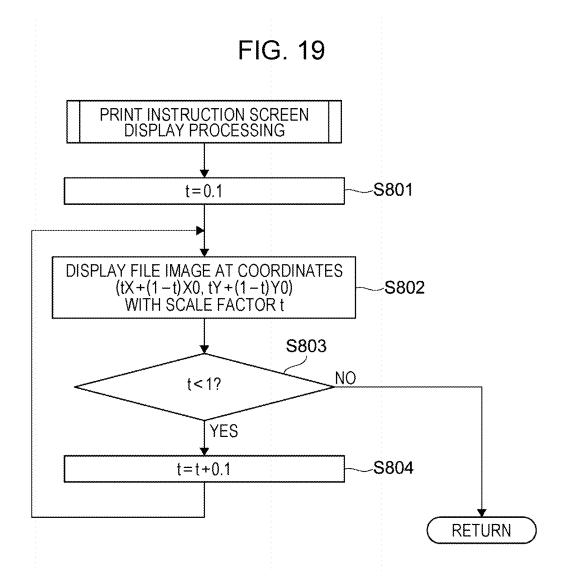PERFORM PRINTING —S725

DISPLAY LOGOUT GUIDE SCREEN —S726

RETURN

FIG. 17

```
┌─────────────────────────────────────────┐
│   TWO-DIMENSIONAL SCAN PROCESSING        │
└─────────────────────────────────────────┘
```

DISPLAY DOCUMENT TYPE RECOGNITION RESULT — S741

HAS POSITION OF DOCUMENT BEEN CHANGED? S742   YES / NO

HAS TIME ELAPSED? S743   NO / YES

PERFORM SCANNING — S744

PERFORM SCAN IMAGE DISPLAY PROCESSING — S745

HAS MOBILE INFORMATION TERMINAL BEEN PLACED? S746   NO / YES

DISPLAY STORAGE INSTRUCTION SCREEN — S747

PERFORM PAYMENT PROCESSING — S748

HAS STORAGE BUTTON BEEN PRESSED? S749   NO / YES

PERFORM STORAGE INSTRUCTION SCREEN ERASURE PROCESSING — S750

STORE DATA — S751

RETURN

FIG. 18-1

10

F G H

E C A

B D

121 — EDITION
EXPANSION GESTURE
ALLOWS EDITING
MODE TO BE SET.

PRINT
TAPPING "PRINT"
BUTTON DISPLAYED
ON SMARTPHONE
CAUSES PRINTING
TO START. — 122

20

911

912

913

90

PRINT

FIG. 18-2

90

FIG. 19

```
┌─────────────────────────────────┐
│   PRINT INSTRUCTION SCREEN      │
│      DISPLAY PROCESSING         │
└─────────────────────────────────┘
                 │
                 ▼
┌─────────────────────────────────┐
│            t = 0.1              │────S801
└─────────────────────────────────┘
                 │
                 ▼
┌─────────────────────────────────┐
│ DISPLAY FILE IMAGE AT COORDINATES│
│  (tX + (1 − t)X0, tY + (1 − t)Y0)│────S802
│      WITH SCALE FACTOR t         │
└─────────────────────────────────┘
                 │
                 ▼           S803
           ╱──────────╲
          ╱            ╲        NO
         ╱    t < 1?    ╲──────────────┐
          ╲            ╱               │
           ╲──────────╱                │
                 │ YES                 │
                 ▼                     │
┌─────────────────────────────────┐    │
│          t = t + 0.1            │────S804
└─────────────────────────────────┘    │
                 │                     │
                 │                     ▼
                                  ╭─────────╮
                                  │ RETURN  │
                                  ╰─────────╯
```

FIG. 20-1

FIG. 20-2

90

FOLDER LIST

↑↓ REARRANGE

¥ EXPENSE SETTLEMENT CLOUD SYSTEM

☁ DOCUMENT MANAGEMENT CLOUD SYSTEM

◇ BUSINESS CARD MANAGEMENT CLOUD SYSTEM

STORE

FIG. 21

STORAGE INSTRUCTION SCREEN
ERASURE PROCESSING

$t = 0.1$ —S821

DISPLAY SCANNED IMAGE AT COORDINATES
$((1-t)X+tX0, (1-t)Y+tY0)$
WITH SCALE FACTOR $(1-t)$ —S822

S823

$t < 1?$ NO

YES

$t = t + 0.1$ —S824

RETURN

DISPLAY APPARATUS AND NON-TRANSITORY COMPUTER READABLE MEDIUM STORING PROGRAM

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is based on and claims priority under 35 USC 119 from Japanese Patent Application No. 2017-219918 filed on Nov. 15, 2017.

BACKGROUND

Technical Field

[0002] The present invention relates to a display apparatus and a non-transitory computer readable medium storing a program.

SUMMARY

[0003] According to an aspect of the invention, there is provided a display apparatus including: a display surface that displays information; and a display unit that, in response to a motion to move or place a mobile information terminal closer to or on the display surface, displays a first operation in which a first image is moved from the mobile information terminal to the display surface and displayed on the display surface, or a second operation in which a second image displayed on the display surface is moved from the display surface to the mobile information terminal.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] Exemplary embodiment of the present invention will be described in detail based on the following figures, wherein:

[0005] FIG. 1 is a perspective view of an image processing apparatus according to an exemplary embodiment of the invention;

[0006] FIG. 2 is a diagram illustrating an example of a hardware configuration of the image processing apparatus according to the exemplary embodiment of the invention;

[0007] FIG. 3 is a block diagram illustrating a functional configuration example of a control device in the exemplary embodiment of the invention;

[0008] FIG. 4 is a view illustrating a screen display example during stand-by of the image processing apparatus;

[0009] FIG. 5 is a view illustrating a screen display example when login is completed in the image processing apparatus;

[0010] FIG. 6 is a view illustrating a screen display example when a print operation is started in the image processing apparatus;

[0011] FIG. 7 is a view illustrating a screen display example when file contents are checked in the image processing apparatus;

[0012] FIG. 8 is a view illustrating a screen display example when an output format is selected in the image processing apparatus;

[0013] FIG. 9 is a view illustrating a screen display example when a print operation is completed in the image processing apparatus;

[0014] FIG. 10 is a view illustrating a screen display example when documents are placed by a user on an operation stand;

[0015] FIG. 11 is a view illustrating a screen display example when documents are placed by a user on an operation stand;

[0016] FIG. 12 is a view illustrating a screen display example when two-dimensional scan is completed in the image processing apparatus;

[0017] FIG. 13 is a view illustrating a screen display example when a storage operation is started in the image processing apparatus;

[0018] FIG. 14 is a view illustrating a screen display example when three-dimensional scan is completed in the image processing apparatus;

[0019] FIG. 15 is a flowchart illustrating an operation example of the control device in the exemplary embodiment of the invention;

[0020] FIG. 16 is a flowchart illustrating an operation example of the control device when print processing is performed.

[0021] FIG. 17 is a flowchart illustrating an operation example of the control device when two-dimensional scan processing is performed;

[0022] FIG. 18-1 is a view illustrating a screen display example displayed in print instruction screen display processing;

[0023] FIG. 18-2 is a view illustrating a screen display example of a mobile information terminal when print instruction screen display processing is performed;

[0024] FIG. 19 is a flowchart illustrating an operation example of the control device when print instruction screen display processing is performed;

[0025] FIG. 20-1 is a view illustrating a screen display example displayed in storage instruction screen erasure processing;

[0026] FIG. 20-2 is a view illustrating a screen display example of a mobile information terminal when storage instruction screen erasure processing is performed; and

[0027] FIG. 21 is a flowchart illustrating an operation example of the control device when storage instruction screen erasure processing is performed.

DETAILED DESCRIPTION

[0028] Hereinafter, an exemplary embodiment of the invention will be described in detail with reference to the accompanying drawings.

[Entire Configuration of Image Processing Apparatus]

[0029] FIG. 1 is a perspective view of an image processing apparatus 100 according to an exemplary embodiment of the invention. As illustrated, the image processing apparatus 100 includes a guide display 10, an operation stand 20, a projector 30, an operation detector 40, a printer 50, and imagers 60a to 60d.

[0030] The guide display 10 is a display that displays a message to a user, such as guidance, for an operation of the image processing apparatus 100. Unlike the later-described operation stand 20, even when contact is made with the surface of the guide display 10, contact is not detected. Here, for instance, a liquid crystal display may be used as the guide display 10. In the exemplary embodiment, the guide display 10 is provided as an example of a first display surface that does not detect a contact operation.

[0031] The operation stand 20 is a substantially horizontal stand that projects toward a user so that the user can place

2

and operate a mobile information terminal and a document. In this case, the "substantially horizontal" may refer to a horizontal levelness that does not cause a mobile information terminal or a document placed on the operation stand **20** to slip down. The operation stand **20** is designed so that an image is displayed by the function of the later-described projector **30**, and contact with the surface of the operation stand **20** is detected by the function of the later-described operation detector **40**. However, the operation stand **20** itself may be configurated by a display and a projector **30** may not be provided. In the exemplary embodiment, the operation stand **20** is provided as an example of a display surface, a second display surface, and a platen.

[0032] The projector **30** is a projector that projects an image onto the operation stand **20**. The projector **30** projects an image onto the operation stand **20** in an oblique direction from above because the projector **30** is provided at a lower portion of the guide display **10**. The projector **30**, however, may be provided vertically above the operation stand **20** to project an image onto the operation stand **20** in a direction from immediately above. Alternatively, the projector **30** may be provided vertically below the operation stand **20**, or the projector **30** may project an image onto the operation stand **20** in a direction from immediately below using a mirror along with the projector **30**. Here, for instance, a liquid crystal projector may be used as the projector **30**.

[0033] The operation detector **40** detects an operation by contacting with the surface of the operation stand **20**. Detection of the operation may be made by sensing blocking of infrared rays by a finger of a user, the infrared rays radiating to the surface of the operation stand **20** radially. Specifically, for instance, an infrared LED and an infrared sensor may be used as the operation detector **40**.

[0034] The printer **50** is a printer that prints an image on paper or other media. Here, for instance, an electrophotographic system that forms an image by transferring toner adhering to a photoconductor onto a recording medium, or an inkjet printer that discharges ink on a recording medium to form an image may be used as the printer **50**. Alternatively, the printer **50** may be a printer that creates a printed material by pressing a block, to which ink is applied, against paper or other media. In the exemplary embodiment, the printer **50** is provided as an example of the printer.

[0035] The imagers **60**a to **60**d are cameras that capture an image of a document or a mobile information terminal placed on the operation stand **20**. Among these, the imagers **60**a, **60**b are provided at an upper portion of the guide display **10**, and thus mainly capture an image of a document or a mobile information terminal placed on the operation stand **20** from above. Also, the imagers **60**c, **60**d are provided on the near side of the guide display **10**, and thus mainly capture an image in an oblique direction from below when a three-dimensional object is placed on the operation stand **20**. Like this, the imagers **60**a to **60**d have different applications according to the positions provided, and hereinafter are referred to as the imager **60** when these imagers are not distinguished from each other. In this case, the imager **60** is provided as a scanner, thus hereinafter "captures something" may also be expressed as "scans something". In the exemplary embodiment, the imager **60** is provided as an example of the reading device. Although four imagers **60** are illustrated in the drawings, the number of imagers **60** is not limited to four. For instance, an imager **60**

for detecting a line of sight and/or motion of a user may be provided at a position which allows such detection.

[Hardware Configuration of Image Processing Apparatus]

[0036] FIG. **2** is a diagram illustrating an example of a hardware configuration of the image processing apparatus **100** according to the exemplary embodiment. As illustrated, the image processing apparatus **100** includes a central processing unit (CPU) **1**, a random access memory (RAM) **2**, a read only memory (ROM) **3**, a hard disk drive (HDD) **4**, a communication interface (hereinafter referred to as a "communication I/F") **5**, a guide display **10**, a projector **30**, an operation detector **40**, a printer **50**, and an imager **60**.

[0037] The CPU **1** implements the later-described functions by loading various programs stored in the ROM **3** into the RAM **2**, and executing the programs. The RAM **2** is a memory that is used as a memory for work of the CPU **1**. The ROM **3** is a memory that stores various programs to be executed by the CPU **1**. The HDD **4** is, for instance, a magnetic disk device that stores data scanned by the imager **60**, data used by printing in the printer **50** and other data. The communication I/F **5** transmits and receives various information to and from other devices via a communication line.

[0038] Since the guide display **10**, the projector **30**, the operation detector **40**, the printer **50**, and the imager **60** have been already described with reference to FIG. **1**, a description thereof is omitted here.

[Functional Configuration of Control Device]

[0039] FIG. **3** is a block diagram illustrating a functional configuration example of a control device **70** that controls the image processing apparatus **100**. Here, the control device **70** is an example of a display device and a an image reading device, and is regarded as a device which is implemented by the CPU **1** (see FIG. **2**) of the image processing apparatus **100** in such a manner that the CPU **1** reads a program implementing the later-described functional units, for instance, from the ROM **3** (see FIG. **2**) to the RAM (see FIG. **2**) and executes the program. As illustrated, the control device **70** includes a display controller **71**, a projection controller **72**, a detection controller **73**, a print controller **74**, an imaging controller **75**, a communication controller **76**, a payment processor **77**, a document type recognizes **78**, and a scan data processor **79**.

[0040] The display controller **71** displays various types of guidance and various screens on the guide display **10**. In the exemplary embodiment, the display controller **71** is provided as an example of a first display unit that displays information on the first display surface.

[0041] The projection controller **72** displays various screens on the operation stand **20** using the projector **30**. In the exemplary embodiment, the projection controller **72** is provided as an example of a second display unit that displays information on the display surface, the second display surface, and the platen.

[0042] The detection controller **73** determines whether or not the operation detector **40** has detected an operation by contacting with the surface of the operation stand **20**. In addition, the detection controller **73** also determines whether or not a human sensor (not illustrated) has detected approach of a user.

[0043] The print controller **74** controls printing by the printer **50**.

[0044] The imaging controller **75** controls the imager **60** to capture an image of a document or a mobile information terminal placed on the operation stand **20**, and obtains the image captured by the imager **60**. In particular, the imaging controller **75** controls the imager **60** such that when a predetermined time has elapsed since a document is placed on the operation stand **20**, the imager **60** scans the document. In the exemplary embodiment, the imaging controller **75** is provided as an example of a reading unit that reads an image. Also, the imaging controller **75** may obtain a detection result from the imager **60** that detects a line of sight and/or motion of a user. In this case, the imaging controller **75** is an example of a detection unit that detects motion of a user.

[0045] When information recorded on a card is read by a card reader (not illustrated), the communication controller **76** receives the information from the card reader. Also, when information stored in a mobile information terminal is received by a near field communication (NFC) reader (not illustrated), the communication controller **76** receives the information from the NFC reader. In addition, the communication controller **76** receives information stored in a mobile information terminal via Wi-Fi (registered trademark). Instead of Wi-Fi, Bluetooth (registered trademark) may be used. However, a description is given below with Wi-Fi used. In the exemplary embodiment, the communication controller **76** is provided as an example of a reading unit that reads information.

[0046] In addition, the communication controller **76** receives a file from an external cloud system or transmits a file to an external cloud system via the communication I/F **5**. In the exemplary embodiment, the communication controller **76** is provided as an example of a receiving unit that receives data from another device, and an example of a transmission unit that transmits data to another device.

[0047] The payment processor **77** performs payment-related processing such as generation of payment information based on the information received by the communication controller **76** from the card reader and the information received by the communication controller **76** from Wi-Fi.

[0048] When a document is placed on the operation stand **20**, the document type recognizer **78** recognizes the type of the document. The type of the document may be recognized, for instance, by pattern matching with image data pre-stored for each type of document.

[0049] The scan data processor **79** performs various types of processing on scan data obtained by the imaging controller **75**. Here, the various types of processing include processing of scan data, and processing to integrate pieces of scan data obtained by multiple scans. In the exemplary embodiment, the scan data processor **79** is provided as an example of an output unit that outputs an image obtained by integrating two images.

[Screen Display Example of Image Processing Apparatus]

[0050] In the exemplary embodiment, final printing and scanning are performed by the image processing apparatus **100**, but a prior operation for the printing and scanning is performed by a mobile information terminal such as a smartphone.

[0051] Thus, before a screen display example of the image processing apparatus **100** is described, a prior operation performed in the mobile information terminal will be described. An application software (hereinafter referred to as an "application") for utilizing the image processing appara-

tus **100** is installed in the mobile information terminal, and a user performs the prior operation using the application. It is to be noted that the application used in the exemplary embodiment is only for utilizing the image processing apparatus **100**, thus any "application" mentioned in the present description indicates the application for utilizing the image processing apparatus **100**.

[0052] First, the operation for the first time in the mobile information terminal will be described. When subscribing a service for utilizing the image processing apparatus **100**, a user starts up the application by the mobile information terminal, and registers authentication information and other various information for performing authentication in the mobile information terminal.

[0053] The various information (hereinafter referred to as "registration information") registered in the mobile information terminal includes a payment method, a print setting, and a storage destination.

[0054] In the exemplary embodiment, the image processing apparatus **100** is designed to be installed and utilized in a public space, and thus a payment method has to be registered. Specifically, the payment method indicates how payment is made for printing and scanning, and includes, for instance, payment by a credit card, and payment by an electronic money IC card.

[0055] Also, the print setting indicates a desired print style when printing is made. In addition to normal print setting such as monochrome printing or color printing, and single-sided printing or double-sided printing, the print setting also includes a special output style such as stapling, and putting a printed material in an envelope or a vinyl bag.

[0056] Also, the storage destination indicates where scan data obtained by scanning a document is stored. The storage destination includes an expense settlement cloud system, a document management cloud system, and a business card management cloud system. These storage destinations may be each registered as the location where scan data of a document is stored according to the type of the document. Registration may be made such that for instance, when the type of a document is receipt, the scan data is stored in the expense settlement cloud system, when the type of a document is A4 paper, the scan data is stored in the document management cloud system, and when the type of a document is business card, the scan data is stored in the business card cloud system.

[0057] Next, the operation for the second time and after in the mobile information terminal will be described. For instance, when printing a file stored in a cloud system, a user starts up the application by the mobile information terminal, obtains a list of files from the cloud system, and the list is displayed on the display of the mobile information terminal. In this state, a user reserves printing by designating a file which is desired to be printed. Hereinafter, a file for which printing is reserved is called a "print reservation file". Also, a user registers various information in the print reservation file. For instance, a user sets an output format, and a payment method to the print reservation file. Alternatively, a user may leave the output format and the payment method unset.

[0058] Subsequently, for actually printing the file, a user has to go to an installation location of the image processing apparatus **100** in a public space. The application of the mobile information terminal also provides relevant information for this case. For instance, when a user designates a print reservation file and presses down a search button of the

mobile information terminal, the application displays a map of the surrounding area of the user on the display of the mobile information terminal, and displays the installation location of an image processing apparatus **100** that can print the print reservation file in consideration of an output format set for the designated print reservation file. Thus, it is possible for the user to go to the installation location of the image processing apparatus **100** and to print the print reservation file which is desired to be printed.

[0059] Hereinafter, a screen display example in the image processing apparatus **100** will be described.

(Screen Display Example During Stand-by)

[0060] FIG. **4** is a view illustrating a screen display example during stand-by of the image processing apparatus **100**. As illustrated, the image processing apparatus **100** displays a stand-by screen **101** on the guide display **10** during stand-by. The stand-by screen **101** includes a graphic as an example of a display element that expresses information which is considered to be necessary for a user related to the installation location of the image processing apparatus **100**. FIG. **4** illustrates information A to H as an example of such information. The stand-by screen **101** has various versions according to the installation location of the image processing apparatus **100**, and the information A to H vary with the version of the stand-by screen **101**. For instance, when the image processing apparatus **100** is installed in a station, the stand-by screen **101** is a station version, and the information A to H is the information on train operation, schedule, and travel. Although all graphics indicating the information A to H have the same size in FIG. **4**, the size may be changed according to a priority level of information, for instance, a graphic indicating information that is considered to be highly necessary for users is displayed in large size.

[0061] In the state where the stand-by screen **101** of FIG. **4** is displayed, when one of a mobile information terminal **90**, a document **95**, and a three-dimensional object **97** is placed on the operation stand **20** by a user, the image processing apparatus **100** proceeds to one of print processing, two-dimensional scan processing, and three-dimensional scan processing according to the object placed on the operation stand **20**. Specifically, when the mobile information terminal **90** is placed on the operation stand **20** by a user, successful authentication based on authentication information transmitted by the application which has been started up in the mobile information terminal **90** causes the image processing apparatus **100** to proceed to the print processing. In contrast, when the document **95** is placed on the operation stand **20** by a user, the image processing apparatus **100** proceeds to the two-dimensional scan processing, and when the three-dimensional object **97** is placed on the operation stand **20** by a user, the image processing apparatus **100** proceeds to the three-dimensional scan processing.

(Screen Display Example at Time of Print Processing)

[0062] FIG. **5** is a view illustrating a screen display example when login is completed in the image processing apparatus **100**. When the mobile information terminal **90** is placed on the operation stand **20** by a user and authentication is successful, the image processing apparatus **100** starts print processing. In this process, successful authentication causes login processing to be completed, thus the image processing

apparatus **100** first displays a login completion screen **102** on the guide display **10** and the operation stand **20**. As illustrated, the login completion screen **102** is a screen in which the mobile information terminal **90**, the operation stand **20**, and the guide display **10** are linked by animation.

[0063] FIG. **6** is a view illustrating a screen display example when a print operation is started in the image processing apparatus **100**. When a print reservation file is designated by the mobile information terminal **90** placed on the operation stand **20**, the image processing apparatus **100** displays a print instruction screen **103** on the operation stand **20**. The print instruction screen **103** includes an image (hereinafter referred to as a "file image") indicating the print reservation file. FIG. **6** illustrates file images **911** to **913** as an example of such a file image. Furthermore, in FIG. **6**, a printing fee is calculated according to the attribute of the print reservation file, and the printing fee is also displayed on the print instruction screen **103**. On the other hand, the image processing apparatus **100** displays a guide **121** regarding edition and a guide **122** regarding print on the guide display **10**. At this point, as illustrated, the application displays a print button on the display of the mobile information terminal **90**.

[0064] FIG. **7** is a view illustrating a screen display example when file contents are checked in the image processing apparatus **100**. When an expansion gesture is made by a user in accordance with the guide **121** of FIG. **6**, the image processing apparatus **100** displays a file content display screen **104** on the operation stand **20**. The file content display screen **104** is a screen that displays a document in actual size and allows editing of the document. For instance, when an expansion gesture is made on the file image **913**, the contents of the print reservation file represented by the file image **913** are displayed. On the other hand, the image processing apparatus **100** displays a guide **123** regarding content check and a guide **124** regarding an output format. The characters of a confidential document such as an in-house document are first displayed in a blurred manner, and the characters traced by a finger of a user in accordance with the guide **123** may be displayed in a recognizable manner. Alternatively, the characters traced by the palm of a user may be displayed in a more recognizable manner.

[0065] FIG. **8** is a view illustrating a screen display example when an output format is selected in the image processing apparatus **100**. When a bookbinding button (not illustrated) is pressed down by a user in accordance with the guide **124** of FIG. **7**, the image processing apparatus **100** displays an output format display screen **105** on the operation stand **20**. The output format display screen **105** includes various output formats, and a desired output format is selectable from the output formats. When one of the output formats is selected by a user, the image processing apparatus **100** returns the current screen to the original screen.

[0066] Subsequently, in the state where the print instruction screen **103** of FIG. **6** is displayed, when a printing fee is paid and the print button is pressed down by a user, the image processing apparatus **100** starts printing. In this process, the image processing apparatus **100** moves the file images **911** to **913** toward the near side to fade out of sight.

[0067] FIG. **9** is a view illustrating a screen display example when a print operation is completed in the image processing apparatus **100**. When the print operation is completed, the image processing apparatus **100** displays a logout

guide screen **106** on the operation stand **20**. The logout guide screen **106** includes a faintly shining area around the mobile information terminal **90** for prompting a user to remove the mobile information terminal **90**. On the other hand, the image processing apparatus **100** displays a guide **125** regarding logout and a guide **126** regarding personal belongings on the guide display **10**. At this point, as illustrated, the application displays a check mark on the display of the mobile information terminal **90** to notify a user of completion of printing.

[0068] Thus, when a user removes the mobile information terminal **90** from the operation stand **20**, the image processing apparatus **100** performs logout processing, and displays a message indicating completion of logout on the guide display **10** and the operation stand **20**. Also, the application displays a message indicating completion of logout on the display of the mobile information terminal **90**.

(Screen Display Example at Time of Two-Dimensional Scan Processing)

[0069] FIGS. **10** and **11** are each a view illustrating a screen display example when the document **95** is placed on the operation stand **20** by a user. When the document **95** is placed on the operation stand **20** by a user, the image processing apparatus **100** displays a guide **171** regarding position adjustment of the document **95** on the guide display **10**. First, a case is considered where a receipt **951**, an A4 paper **952**, and a business card **953** are placed as the document **95** closely to each other on the operation stand **20** by a user in accordance with the guide **171** as illustrated in FIG. **10**. In this case, the image processing apparatus **100** recognizes the type of the document **95** as a document, and displays a document type recognition result **150** indicating the type on the operation stand **20**. Next, a case is considered where the receipt **951**, the A4 paper **952**, and the business card **953** are placed as the document **95** apart from each other on the operation stand **20** by a user in accordance with the guide **171** as illustrated in FIG. **11**. In this case, the image processing apparatus **100** recognizes the types of the document **95** as a receipt, A4 paper, and a business card, and displays document type recognition results **151** to **153** indicating the types on the operation stand **20**.

[0070] Subsequently, when a predetermined time elapses with the document **95** placed as illustrated in FIG. **11**, the image processing apparatus **100** scans the document **95**.

[0071] FIG. **12** is a view illustrating a screen display example when the scan is completed in the image processing apparatus **100**. When the scan is completed, the image processing apparatus **100** displays a guide **172** regarding removal of the document **95** and a guide **173** regarding storage destination on the guide display **10**. When the receipt **951**, the A4 paper **952**, and the business card **953** are removed from the operation stand **20** by a user in accordance with the guide **172**, the image processing apparatus **100** displays a scanned image **921** of the receipt, a scanned image **922** of the A4 paper, and a scanned image **923** of the business card on the operation stand **20**. In this process, the image processing apparatus **100** displays the scanned images **921** to **923** in an erect state.

[0072] FIG. **13** is a view illustrating a screen display example when a storage operation is started in the image processing apparatus **100**. When the mobile information terminal **90** is placed on the operation stand **20** by a user, the image processing apparatus **100** displays a storage instruc-

tion screen **154** on the operation stand **20**. In addition to the scanned images **921** to **923**, the storage instruction screen **154** includes storage destination icons **924** to **926** indicating respective storage destinations registered for the types of document in the mobile information terminal **90**. Here, the storage destination icon **924** indicates the expense settlement cloud system registered as the storage destination of scan data of receipt. Also, the storage destination icon **925** indicates the document management cloud system registered as the storage destination of scan data of A4 paper. In addition, the storage destination icon **926** indicates the business card management cloud system registered as the storage destination of scan data of business card. In this process, the application displays a storage button on the display of the mobile information terminal **90**. When a storage fee is paid and the storage button is pressed down on the storage instruction screen **154** by a user, the image processing apparatus **100** stores the scan data of the receipt, A4 paper, and business card in the respective corresponding cloud systems.

[0073] Subsequently, as illustrated in FIG. **9**, the image processing apparatus **100** displays the guide **125** regarding logout, and the guide **126** regarding personal belongings on the guide display **10**. Thus, when a user removes the mobile information terminal **90** from the operation stand **20**, the image processing apparatus **100** performs logout processing, and displays a message indicating completion of logout on the guide display **10** and the operation stand **20**. Also, the application displays a message indicating completion of logout on the mobile information terminal **90**.

(Screen Display Example at Time of Three-Dimensional Scan Processing)

[0074] When a predetermined time elapses with the three-dimensional object **97** placed on the operation stand **20**, the image processing apparatus **100** scans the three-dimensional object **97**. When the three-dimensional object **97** is removed from the operation stand **20** by a user, the image processing apparatus **100** displays a result of scanning the three-dimensional object **97** on the guide display **10** and the operation stand **20**.

[0075] FIG. **14** is a view illustrating a screen display example when the scan is completed in the image processing apparatus **100**. When the scan is completed, the image processing apparatus **100** displays a planar image **971** of a scan result on the operation stand **20**. On the other hand, the image processing apparatus **100** displays a three-dimensional image **972** of a scan result on the guide display **10**. The three-dimensional image **972** is displayed while being rotated as indicated by an arrow in FIG. **14**, thereby allowing a user to check the three-dimensional shape of the scan result. In addition, the image processing apparatus **100** displays a guide **176** regarding confirmation of a storage destination and a guide **177** regarding determination of a payment method on the guide display **10**. When the mobile information terminal **90** is placed on the operation stand **20** by a user in this state, the image processing apparatus **100** displays a storage instruction screen **155** on the operation stand **20**. In addition to the planar image **971** of the scan result, the storage instruction screen **155** includes a storage destination icon **927** indicating a storage destination registered in the mobile information terminal **90**. Here, the storage destination icon **927** indicates a cloud system which is registered as the storage destination of scan data of

three-dimensional objects. In this process, the application displays a storage button on the display of the mobile information terminal **90**. When a storage fee is paid and the storage button is pressed down on the storage instruction screen **155** by a user, the image processing apparatus **100** stores the scan data of the three-dimensional object **97** in a corresponding cloud system.

[0076] Subsequently, as illustrated in FIG. **9**, the image processing apparatus **100** displays the guide **125** regarding logout, and the guide **126** regarding personal belongings on the guide display **10**. Thus, when the mobile information terminal **90** is removed from the operation stand **20** by a user, the image processing apparatus **100** performs logout processing, and displays a message indicating completion of logout on the guide display **10** and the operation stand **20**. Also, the application displays a message indicating completion of logout on the mobile information terminal **90**.

[Operation Example of Control Device]

[0077] FIG. **15** is a flowchart illustrating an operation example of the control device **70** that performs such screen display.

[0078] As illustrated, in the control device **70**, the display controller **71** first displays the stand-by screen **101** on the guide display **10** (step S**701**).

[0079] Next, the detection controller **73** determines whether or not a human sensor has detected approach of a user (step S**702**). When it is determined that the human sensor has not detected approach of a user, the detection controller **73** repeats step S**702**, whereas when it is determined that the human sensor has detected approach of a user, the control device **70** performs public print processing to print information necessary for a user in a public space (step S**703**).

[0080] Subsequently, the imaging controller **75** determines whether or not the imager **60** has detected anything placed on the operation stand **20** (step S**704**). When it is determined that the imager **60** has not detected anything placed on the operation stand **20**, the control device **70** continues the public print processing.

[0081] On the other hand, when it is determined that the imager **60** has detected anything placed on the operation stand **20**, the imaging controller **75** determines whether or not the imager **60** has detected the document **95** placed on the operation stand **20** (step S**705**). As a result, when it is determined that the imager **60** has detected the document **95** placed on the operation stand **20**, the control device **70** performs two-dimensional scan processing (step S**706**).

[0082] Also, when it is determined that the imager **60** has not detected the document **95** placed on the operation stand **20**, the imaging controller **75** determines whether or not the imager **60** has detected the mobile information terminal **90** placed on the operation stand **20** (step S**707**). As a result, when it is determined that the imager **60** has detected the mobile information terminal **90** placed on the operation stand **20**, the control device **70** performs print processing (step S**708**). At this point, in the control device **70**, it is assumed that the communication controller **76** obtains authentication information registered in the mobile information terminal **90** before the print processing is performed, makes authentication and Wi-Fi connection setting based on the authentication information, and receives registration information from the mobile information terminal **90** via Wi-F. On the other hand, when it is determined that the

imager **60** has not detected the mobile information terminal **90** placed on the operation stand **20**, the control device **70** performs three-dimensional scan processing (step S**709**).

[0083] FIG. **16** is a flowchart illustrating an operation example of the control device **70** when the print processing in step S**708** of FIG. **15** is performed.

[0084] As illustrated, the control device **70** first displays the login completion screen **102** on the guide display **10** and the operation stand **20** (step S**721**). Specifically, the display controller **71** displays part of the login completion screen **102** on the guide display **10**, and the projection controller **72** displays the remaining part of the login completion screen **102** on the operation stand **20** using the projector **30**.

[0085] Next, the projection controller **72** performs print instruction screen display processing to display a print instruction screen **103** on the operation stand **20** using the projector **30**, the print instruction screen **103** for giving an instruction to print a print reservation file (step S**722**).

[0086] Subsequently, the payment processor **77** performs payment processing by a payment method registered for the print reservation file in the registration information or a payment method selected then (step S**723**). The communication controller **76** then determines whether or not notification that the print button has been pressed down in the mobile information terminal **90** has been received via Wi-Fi (step S**724**). When it is determined that notification that the print button has been pressed down in the mobile information terminal **90** has not been received via Wi-Fi, the communication controller **76** repeats step S**724**, whereas when it is determined that notification that the print button has been pressed down in the mobile information terminal **90** has been received via Wi-Fi, the print controller **74** performs control so that printing is made by the printer **50** (step S**725**).

[0087] Subsequently, when printing by the printer **50** is completed, the projection controller **72** displays the logout guide screen **106** on the operation stand **20** using the projector **30** (step S**726**).

[0088] FIG. **17** is a flowchart illustrating an operation example of the control device **70** when the two-dimensional scan processing in step S**706** of FIG. **15** is performed.

[0089] As illustrated, the control device **70** first displays a document type recognition result on the operation stand **20** (step S**741**). Specifically, the imaging controller **75** obtains the image of the document **95** captured by the imager **60**, the document type recognizes **78** recognizes the type of the document **95**, for instance, by pattern matching, and the projection controller **72** displays a result of the recognition on the operation stand **20** using the projector **30**.

[0090] Next, the imaging controller **75** determines whether or not the imager **60** has detected change in the position of the document **95** (step S**742**). When it is determined that the imager **60** has detected change in the position of the document **95**, the control device **70** performs step S**741** again. When it is determined that the imager **60** has not detected change in the position of the document **95**, the imaging controller **75** determines whether or not a predetermined time has elapsed (step S**743**). When it is determined that a predetermined time has not elapsed, the imaging controller **75** performs step S**742** again.

[0091] On the other hand, when it is determined that a predetermined time has elapsed, the imaging controller **75** scans the document **95** placed on the operation stand **20** using the imager **60** (step S**744**). Thus, the projection

controller **72** performs scan image display processing to display the scanned image **92** on the operation stand **20** using the projector **30** (step S745).

[0092] Next, the imaging controller **75** determines whether or not the imager **60** has detected the mobile information terminal **90** placed on the operation stand **20** (step S746). When it is determined that the imager **60** has not detected the mobile information terminal **90** placed on the operation stand **20**, the imaging controller **75** repeats step S746, whereas when it is determined that the imager **60** has detected the mobile information terminal **90** placed on the operation stand **20**, the projection controller **72** displays a storage instruction screen on the operation stand **20** using the projector **30**, the storage instruction screen for giving an instruction to store scan data (step S747). At this point, it is assumed that the communication controller **76** obtains authentication information registered in the mobile information terminal **90**, makes authentication and Wi-Fi connection setting based on the authentication information, and receives registration information from the mobile information terminal **90** via Wi-Fi.

[0093] Subsequently, the payment processor **77** performs payment processing by a payment method registered for the type of the document **95** in the registration information or a payment method selected then (step S748). The communication controller **76** then determines whether or not notification that the storage button has been pressed down in the mobile information terminal **90** has been received via Wi-Fi (step S749). When it is determined that notification that the storage button has been pressed down in the mobile information terminal **90** has not been received via Wi-Fi, the communication controller **76** repeats step S749, whereas when it is determined that notification that the storage button has been pressed down in the mobile information terminal **90** has been received via Wi-Fi, the projection controller **72** performs storage instruction screen erasure processing to erase the storage instruction screen **154** (step S750). The communication controller **76** then transmits the scan data of the document **95** to a storage destination registered for the type of the document **95** via the communication I/F **5**, and stores the scan data (step S751).

[Screen Display Example at Time of Print Instruction Screen Display Processing of Image Processing Apparatus]

[0094] In the exemplary embodiment, when the image processing apparatus **100** performs print instruction screen display processing, in response to a motion to move or place the mobile information terminal **90** closer to or on the operation stand **20**, the image processing apparatus **100** displays, on the operation stand **20**, an operation in which a file image is moved from the mobile information terminal **90** to the operation stand **20**. Here, the operation in which a file image is moved from the mobile information terminal **90** to the operation stand **20** refers to the operation in which a file image is displayed at a time point at a position at which at least part of the file image is in contact with the mobile information terminal **90** on the operation stand **20**, and at a subsequent time point, the file image is displayed at a position at which the file image is not in contact at all with the mobile information terminal **90** on the operation stand **20**. The process of the movement from a position at which at least part of the file image is in contact with the mobile information terminal **90** on the operation stand **20** to a position at which the file image is not in contact at all with

the mobile information terminal **90** on the operation stand **20** may be displayed or may not be displayed. Alternatively, such an operation may be displayed when a motion to move the mobile information terminal **90** closer to the operation stand **20** is just performed without waiting for a motion to place the mobile information terminal **90** on the operation stand **20**. However, a description is given below under the assumption that in response to a motion to place the mobile information terminal **90** on the operation stand **20**, an operation including the process of movement is displayed.

[0095] FIG. **18-1** is a view illustrating a screen display example displayed in the print instruction screen display processing in step S722 of FIG. **16**, and FIG. **18-2** is a view illustrating a screen display example of the mobile information terminal **90** at this time point. First, as illustrated in FIG. **18-2**, a list including the names of print reservation files is displayed by a user on the display of the mobile information terminal **90**. Here, an icon is displayed only for each print reservation file, and thus any file other than the print reservation files is distinguished from the print reservation files. The mobile information terminal **90** is then placed on the operation table **20** by a user. Then, as illustrated in FIG. **18-1**, the mobile information terminal **90** displays a print button on the display. The image processing apparatus **100** then displays on the operation stand **20** an animation in which the file images **911** to **913** indicating print reservation files jump out from the mobile information terminal **90** as illustrated in FIG. **18-1**. Here, the print reservation file is an example of first data, the name of the print reservation file is an example of first information that identifies the first data, and the file image is an example of first image associated with first information. Also, an animation in which the file images **911** to **913** jump out from the mobile information terminal **90** is an example of a first operation in which a first image is moved from the mobile information terminal to the display surface, and is displayed on the display surface.

[0096] Subsequently, when the print instruction screen **103** of FIG. **6** is displayed on the operation stand **20**, the image processing apparatus **100** stops the animation. At this point, the image processing apparatus **100** has received a print reservation file from a cloud system that stores print reservation files. Specifically, in the exemplary embodiment, the situation that a print reservation file has become a target to be printed is displayed by an operation in which a file image is moved from the mobile information terminal **90** to the operation stand **20**.

[0097] It is assumed above that the file images **911** to **913** are gradually enlarged when jumping out from the mobile information terminal **90**. Although a description is given below also under the assumption that the file images **911** to **913** are gradually enlarged, the file images **911** to **913** do not have to be gradually enlarged. For instance, the file images **911** to **913** may be enlarged to the size of FIG. **6** at the position where the mobile information terminal **90** has been placed, and may be moved with the size maintained. Although a description is given below under the assumption that also for enlargement of a file image, an operation including the process of enlargement is displayed, the operation may not include the process of enlargement of a file image.

[0098] When multiple file images are displayed on the operation stand **20**, the image processing apparatus **100** may receive print reservation files from respective cloud systems corresponding to the individual file images. In this case, a

combined image of the file images **911** to **913** is an example of the first image, and the file images **911** to **913** is an example of multiple partial images.

[0099] In addition, the image processing apparatus **100** is designed to receive a print reservation file from an external cloud system. In this case, the cloud system is an example of another device different from the image processing apparatus **100** and the mobile information terminal. However, the image processing apparatus **100** may be designed to receive a print reservation file from the mobile information terminal **90**.

[Operation Example at Time of Print Instruction Screen Display Processing of Control Device]

[0100] FIG. **19** is a flowchart illustrating an operation example of the control device **70** when the print instruction screen display processing in step S722 of FIG. **16** is performed. It is to be noted that the animation in which the file images **911** to **913** jump out from the mobile information terminal **90** may be any type of animation, and here, as an example, each of the file images **911** to **913** linearly moves from the center position of the mobile information terminal **90** to the display position of FIG. **6**. The movement distance and the size of each of the file images **911** to **913** are proportional to the elapsed time since the mobile information terminal **90** is placed on the operation stand **20**, and the state of FIG. **6** is achieved when one second has elapsed since the mobile information terminal **90** is placed on the operation stand **20**. Hereinafter, in the coordinate system on the operation table **20**, let (X0, Y0) be the coordinates of the center of the mobile information terminal **90**, attention is focused on only one of the file images **911** to **913**, and let (X, Y) be the coordinates of the center of the file image. In addition, let t be the elapsed time since the mobile information terminal **90** is placed, and display changes every 0.1 seconds.

[0101] As illustrated, in the control device **70**, the projection controller **72** first sets the elapsed time t to 0.1 (step S801). Subsequently, the projection controller **72** displays a file image with a magnification factor of t at the position of the coordinates (tX+(1−t)X0, tY+(1−t)Y0) on the operation stand **20** (step S802).

[0102] Subsequently, the projection controller **72** determines whether or not the elapsed time t is smaller than 1 (step S803). When the elapsed time t is determined to be smaller than 1, the projection controller **72** adds 0.1 to t (step S804), and causes the flow to return to step S802. On the other hand, when the elapsed time t is not determined to be smaller than 1, the projection controller **72** causes the processing to return to FIG. **16**.

[Screen Display Example at Time of Storage Instruction Screen Erasure Processing of Image Processing Apparatus]

[0103] In the exemplary embodiment, when the image processing apparatus **100** performs storage instruction screen erasure processing, in response to a motion to move or place the mobile information terminal **90** closer to or on the operation stand **20**, the image processing apparatus **100** displays, on the operation stand **20**, an operation in which a scanned image is moved from the operation stand **20** to the mobile information terminal **90**. Here, the operation in which a scanned image is moved from the operation stand **20** to the mobile information terminal **90** refers to the operation

in which a scanned image is displayed at a time point at a position at which the scanned image is not in contact at all with the mobile information terminal **90** on the operation stand **20**, and at a subsequent time point, the scanned image is displayed at a position at which at least part of the scanned image is in contact with the mobile information terminal **90** on the operation stand **20**. The process of movement from a position at which the scanned image is not in contact at all with the mobile information terminal **90** on the operation stand **20** to a position at which at least part of the scanned image is in contact with the mobile information terminal **90** on the operation stand **20** may be displayed or may not be displayed. Alternatively, such an operation may be displayed when a motion to move the mobile information terminal **90** closer to the operation stand **20** is just performed without waiting for a motion to place the mobile information terminal **90** on the operation stand **20**. However, a description is given below under the assumption that in response to a motion to place the mobile information terminal **90** on the operation stand **20**, an operation including the process of movement is displayed.

[0104] FIG. **20-1** is a view illustrating a screen display example displayed in the storage instruction screen erasure processing in step S750 of FIG. **17**, and FIG. **20-2** is a view illustrating a screen display example of the mobile information terminal **90** at this time point. First, the mobile information terminal **90** is placed on the operation stand **20** by a user with the storage instruction screen **154** of FIG. **13** displayed. In the mobile information terminal **90**, as illustrated in FIG. **20-2**, the application displays on the display a list including the names of folders indicating the cloud systems which are set as the respective storage destinations of the scanned images **921** to **923**, and further displays a storage button. When a storage button is pressed by a user, as illustrated in FIG. **20-1**, the image processing apparatus **100** displays on the operation stand **20** an animation in which the scanned images **921** to **923** indicating scan data enter the mobile information terminal **90**. Here, the scan data is an example of second data, the name of the folder of a storage destination, is an example of second information that identifies the storage location of the second data, and the scanned image is an example of second image associated with the second information. The animation in which the scanned images **921** to **923** enter the mobile information terminal **90** is an example of a second operation in which the second image displayed on the display surface is moved from the display surface to the mobile information terminal.

[0105] At this point, the image processing apparatus **100** has transmitted scan data to the cloud system. In other words, in the exemplary embodiment, the situation that scan data has become a target to be stored is displayed by the operation in which a scanned image is moved from the operation stand **20** to the mobile information terminal **90**.

[0106] It is assumed above that the scanned images **921** to **923** are gradually reduced when entering the mobile information terminal **90**. Although a description is given below also under the assumption that the scanned images **921** to **923** are gradually reduced, the file scanned images **921** to **923** do not have to be gradually reduced. For instance, the scanned images **921** to **923** may be moved with the size maintained of FIG. **13**, and may disappear when moved to the position where the mobile information terminal **90** has been placed. Although a description is given below under the assumption that also for reduction of a scanned image, an

operation including the process of reduction is displayed, the operation may not include the process of reduction of a scanned image.

[0107] Alternatively, when multiple scanned images are displayed on the operation stand **20**, the image processing apparatus **100** may transmit scan data to respective cloud systems corresponding to the individual scanned images. In this case, a combined image of scanned images **921** to **923** is an example of the second image, and the scanned images **921** to **923** is an example of multiple partial images.

[0108] In addition, the image processing apparatus **100** is designed to transmit scan data to an external cloud system. In this case, the cloud system is an example of another device different from the image processing apparatus **100** and the mobile information terminal. However, in response to placing of the mobile information terminal **90** on the operation stand **20** by a user with a folder "local" displayed on the display, the image processing apparatus **100** may transmit scan data to the mobile information terminal **90**.

[Operation Example at Time of Storage Instruction Screen Erasure Processing of Control Device]

[0109] FIG. **21** is a flowchart illustrating an operation example of the control device **70** when the storage instruction screen erasure processing in step S750 of FIG. **17** is performed. It is to be noted that the animation in which the scanned images **921** to **923** enter the mobile information terminal **90** may be any type of animation, and here, as an example, each of the scanned images **921** to **923** linearly moves from the display position of FIG. **13** to the center position of the mobile information terminal **90**. The movement distance and the size of each of the scanned images **921** to **923** are proportional to the elapsed time since the mobile information terminal **90** is placed on the operation stand **20**, and the scanned images disappear when one second has elapsed since the mobile information terminal **90** is placed on the operation stand **20**. Hereinafter, in the coordinate system on the operation table **20**, let $(X0, Y0)$ be the coordinates of the center of the mobile information terminal **90**, attention is focused on only one of the scanned images **921** to **923**, and let (X, Y) be the coordinates of the center of the scanned image. In addition, let t be the elapsed time since the mobile information terminal **90** is placed, and display changes every 0.1 seconds.

[0110] As illustrated, in the control device **70**, the projection controller **72** first sets the elapsed time t to 0.1 (step S821). Subsequently, the projection controller **72** displays a scanned image with a magnification factor of $(1-t)$ at the position of the coordinates $((1-t)X+tX0, (1-t)Y+tY0)$ on the operation stand **20** (step S822).

[0111] Subsequently, the projection controller **72** determines whether or not the elapsed time t is smaller than 1 (step S823). When the elapsed time t is determined to be smaller than 1, the projection controller **72** adds 0.1 to t (step S824), and causes the flow to return to step S822. On the other hand, when the elapsed time t is not determined to be smaller than 1, the projection controller **72** causes the processing to return to FIG. **17**.

[Program]

[0112] The processing performed by the control device **70** in the exemplary embodiment is prepared, for instance, as a program such as application software.

[0113] Specifically, any program that implements the exemplary embodiment is considered to be a program that causes a computer to implement the function that, in response to a motion to move or place the mobile information terminal closer to or on the display surface, displays the first operation in which the first image is moved from the mobile information terminal to the display surface and displayed on the display surface, or the second operation in which the second image displayed on the display surface is moved from the display surface to the mobile information terminal.

[0114] In addition, any program that implements the exemplary embodiment is also considered to be a program that causes a computer to implement the function that, in response to a motion to move or place the mobile information terminal closer to or on the display surface, displays the situation that a document has become a processing target by an operation in which an image indicating the document is moved from the mobile information terminal to the display surface or from the display surface to the mobile information terminal.

[0115] It is to be noted that any program that implements the exemplary embodiment may be provided not only by a communication unit, but also by a recording medium such as a CD-ROM that stores the program.

[0116] The foregoing description of the exemplary embodiment of the present invention has been provided for the purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise forms disclosed. Obviously, many modifications and variations will be apparent to practitioners skilled in the art. The embodiment was chosen and described in order to best explain the principles of the invention and its practical applications, thereby enabling others skilled in the art to understand the invention for various embodiments and with the various modifications as are suited to the particular use contemplated. It is intended that the scope of the invention be defined by the following claims and their equivalents. cm What is claimed is:

1. A display apparatus comprising:
  a display surface that displays information; and
  a display unit that, in response to a motion to move or place a mobile information terminal closer to or on the display surface, displays a first operation in which a first image is moved from the mobile information terminal to the display surface and displayed on the display surface, or a second operation in which a second image displayed on the display surface is moved from the display surface to the mobile information terminal.

2. The display apparatus according to claim **1**, wherein the first image is associated with first information which is set in the mobile information terminal.

3. The display apparatus according to claim **2**, wherein the first information identifies first data represented by the first image.

4. The display apparatus according to claim **3**, wherein the first data is data for which printing by a printer connected to the display apparatus is reserved.

5. The display apparatus according to claim **3**, further comprising
  a receiving unit that receives the first data from another device different from the display apparatus and the mobile information terminal.

6. The display apparatus according to claim **5**,
wherein the first image includes a plurality of partial images, and
for each of the plurality of partial images, the receiving unit receives data represented by the partial image from the another device associated with the partial image.

7. The display apparatus according to claim **1**,
wherein the second image is associated with second information which is set in the mobile information terminal.

8. The display apparatus according to claim **7**,
wherein the second information identifies second data represented by the second image.

9. The display apparatus according to claim **8**,
wherein the second data is obtained by reading a target to be read by a reader connected to the display apparatus.

10. The display apparatus according to claim **8**, further comprising
a transmitting unit that transmits the second data to another device different from the display apparatus and the mobile information terminal.

11. The display apparatus according to claim **10**,
wherein the second image includes a plurality of partial images, and
for each of the plurality of partial images, the transmitting unit transmits data represented by the partial image to the another device associated with the partial image.

12. The display apparatus according to claim **1**,
wherein the first operation includes a process of the movement of the first image.

13. The display apparatus according to claim **1**,
wherein the display unit displays the first operation in which the first image is enlarged.

14. The display apparatus according to claim **13**,
wherein the first operation includes a process of the movement and the enlargement of the first image.

15. The display apparatus according to claim **1**,
wherein the second operation includes a process of the movement of the second image.

16. The display apparatus according to claim **1**,
wherein the display unit displays the second operation in which the second image is reduced.

17. The display apparatus according to claim **16**,
wherein the second operation includes a process of the movement and the reduction of the second image.

18. A display apparatus comprising:
a display surface that displays information; and
a display unit that, in response to a motion to move or place a mobile information terminal closer to or on the display surface, displays a situation that a document has become a processing target by an operation in which an image representing the document is moved from the mobile information terminal to the display surface or from the display surface to the mobile information terminal.

19. A non-transitory computer readable medium storing a program causing a computer to execute a process, the process comprising, in response to a motion to move or place a mobile information terminal closer to or on a display surface, displaying a first operation in which a first image is moved from the mobile information terminal to the display surface and displayed on the display surface, or a second operation in which a second image displayed on the display surface is moved from the display surface to the mobile information terminal.

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