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(54) **SYSTEM AND METHOD FOR
TRANSPORTATION CHECK-IN**

(75) Inventors: **Gloria Lin**, San Ramon, CA (US); **Amir
M. Mikhak**, Cambridge, MA (US)

(73) Assignee: **Apple Inc.**, Cupertino, CA (US)

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patent is extended or adjusted under 35
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(51) **Int. Cl.**
G06K 5/00 (2006.01)

(52) **U.S. Cl.** **235/382**

(58) **Field of Classification Search** 35/380,
35/382, 492, 384, 435
See application file for complete search history.

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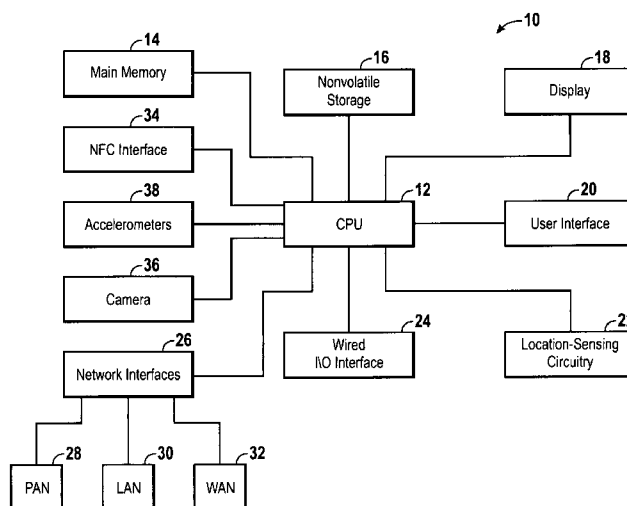
Primary Examiner — Seung Lee

(74) *Attorney, Agent, or Firm* — Fletcher Yoder PC

(57) **ABSTRACT**

There is provided a method and system for transportation check-in (e.g., ticketing and identification) via near field communication (NFC) using a handheld electronic device, such as a cellular phone or a personal media player. The handheld device may store and transmit travel reservations and traveler identifications using a travel management application. Various methods may be employed to acquire the reservation and identification information on the handheld device. For example, travel reservations may be made via the management application or may be retrieved from an email, a website, another NFC-enabled device, or a carrier-provided confirmation number. User identification may be acquired by scanning a radio frequency identification tag embedded in a government-issued I.D. In another embodiment, an I.D. number may be entered via the travel management application, and the user's identification information may be downloaded from the issuing authority.

17 Claims, 24 Drawing Sheets



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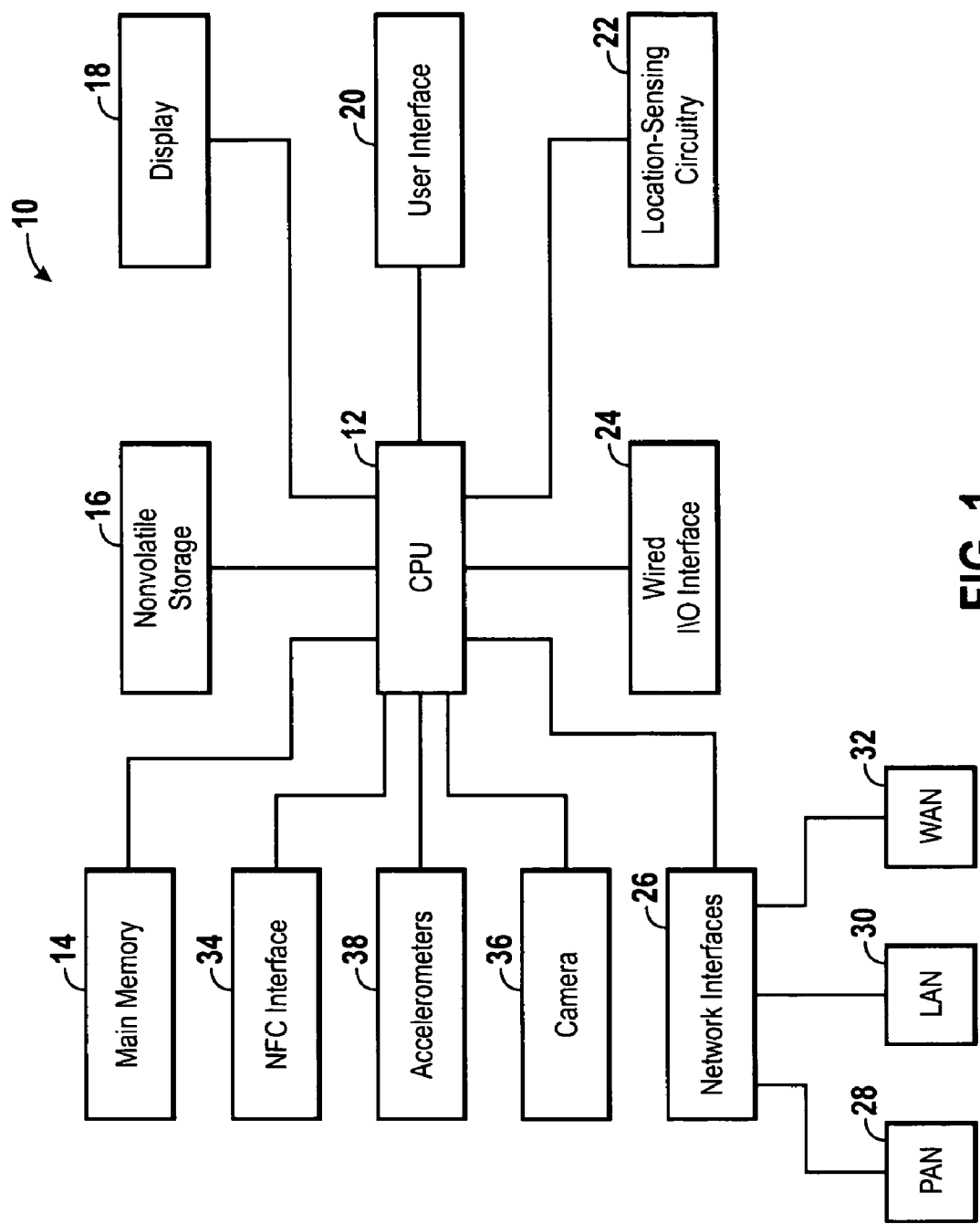
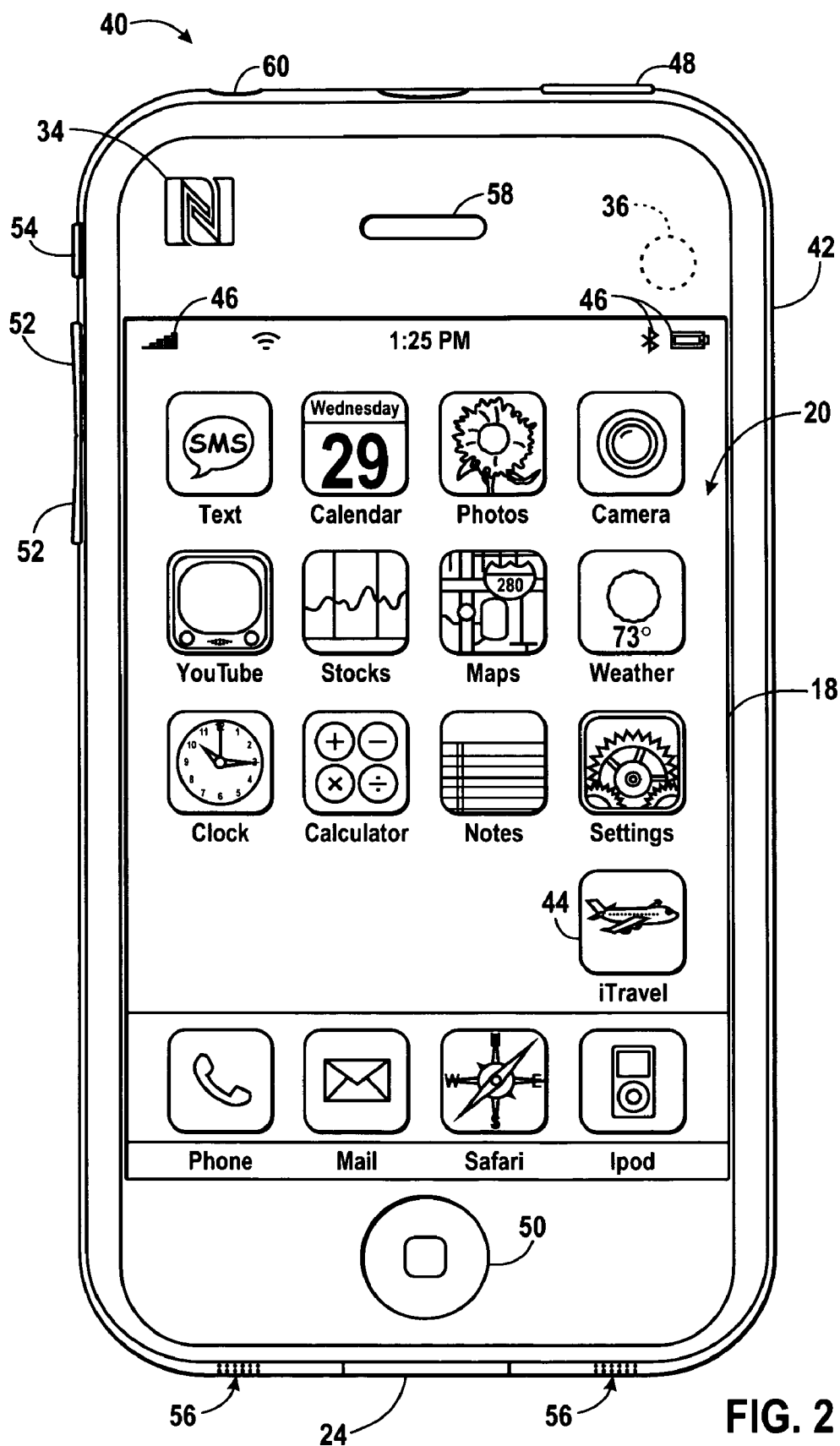


FIG. 1



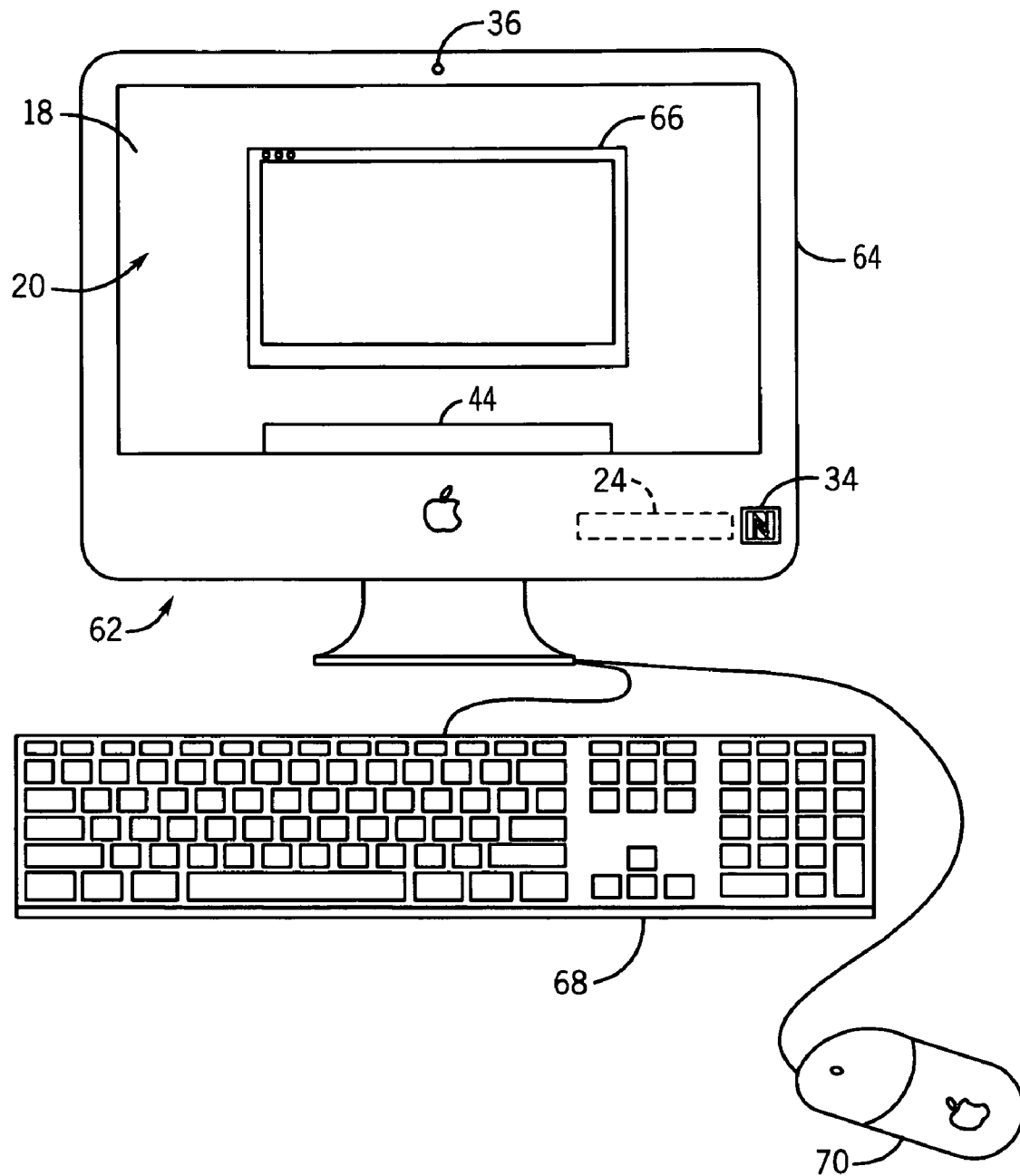


FIG. 3

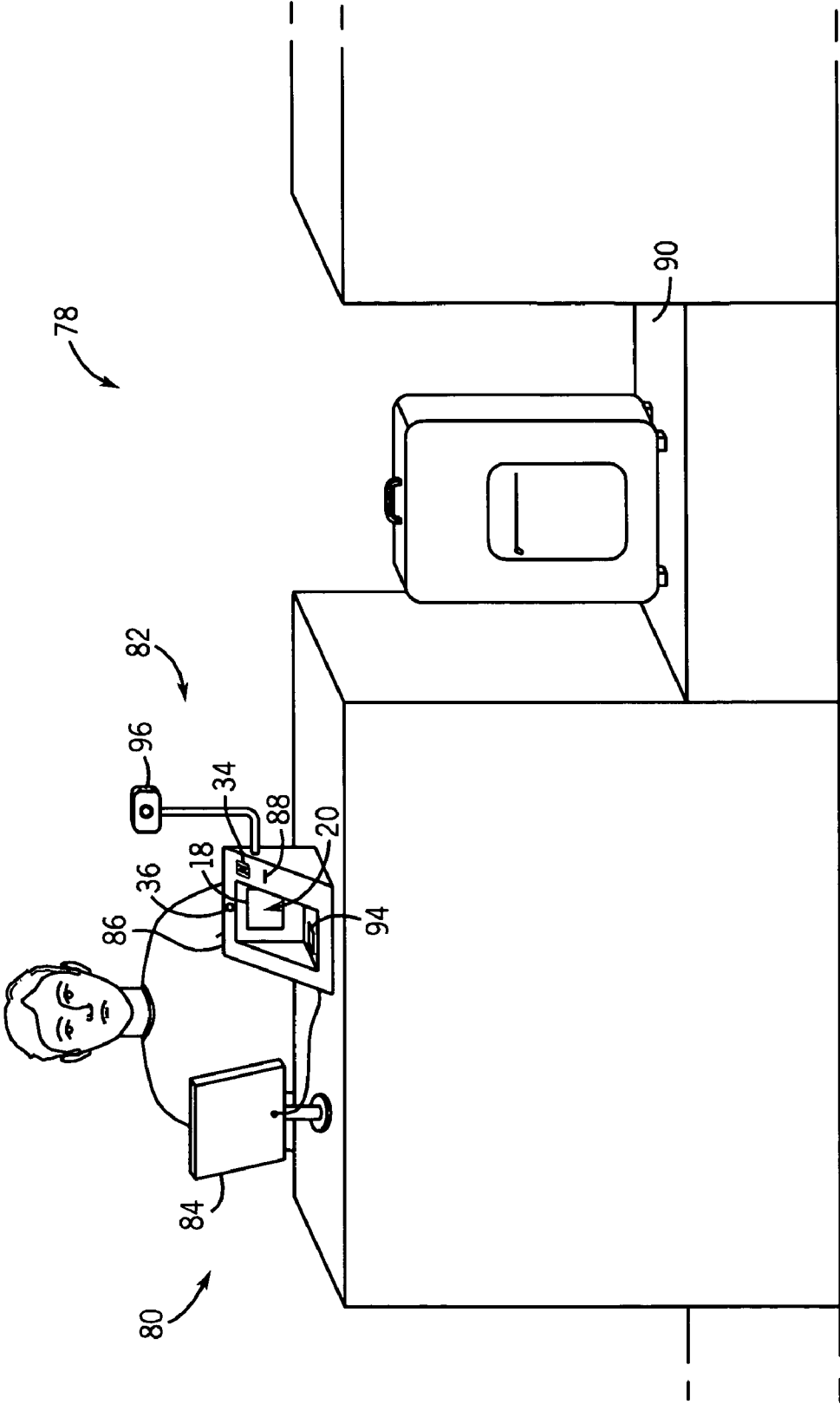
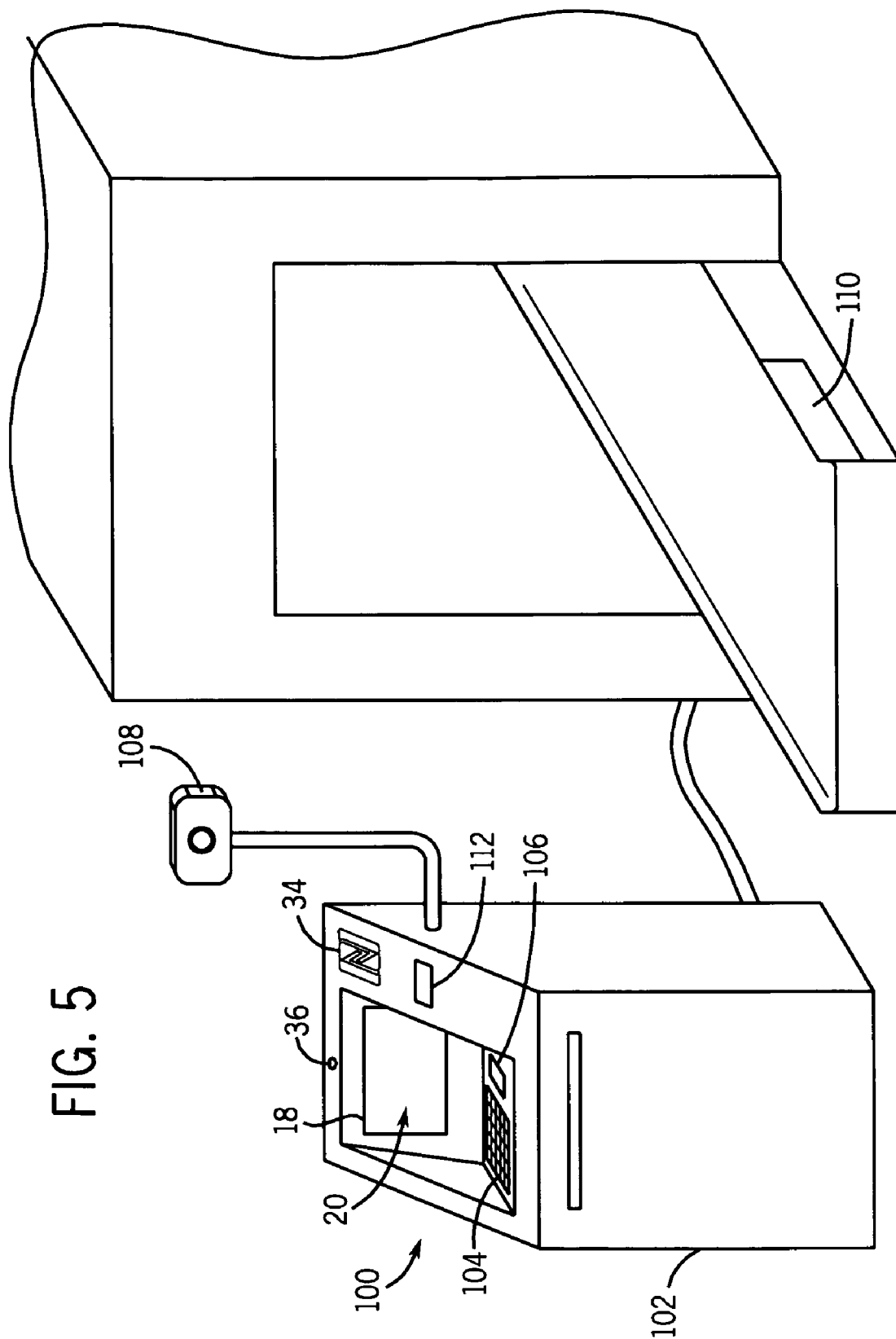


FIG. 4



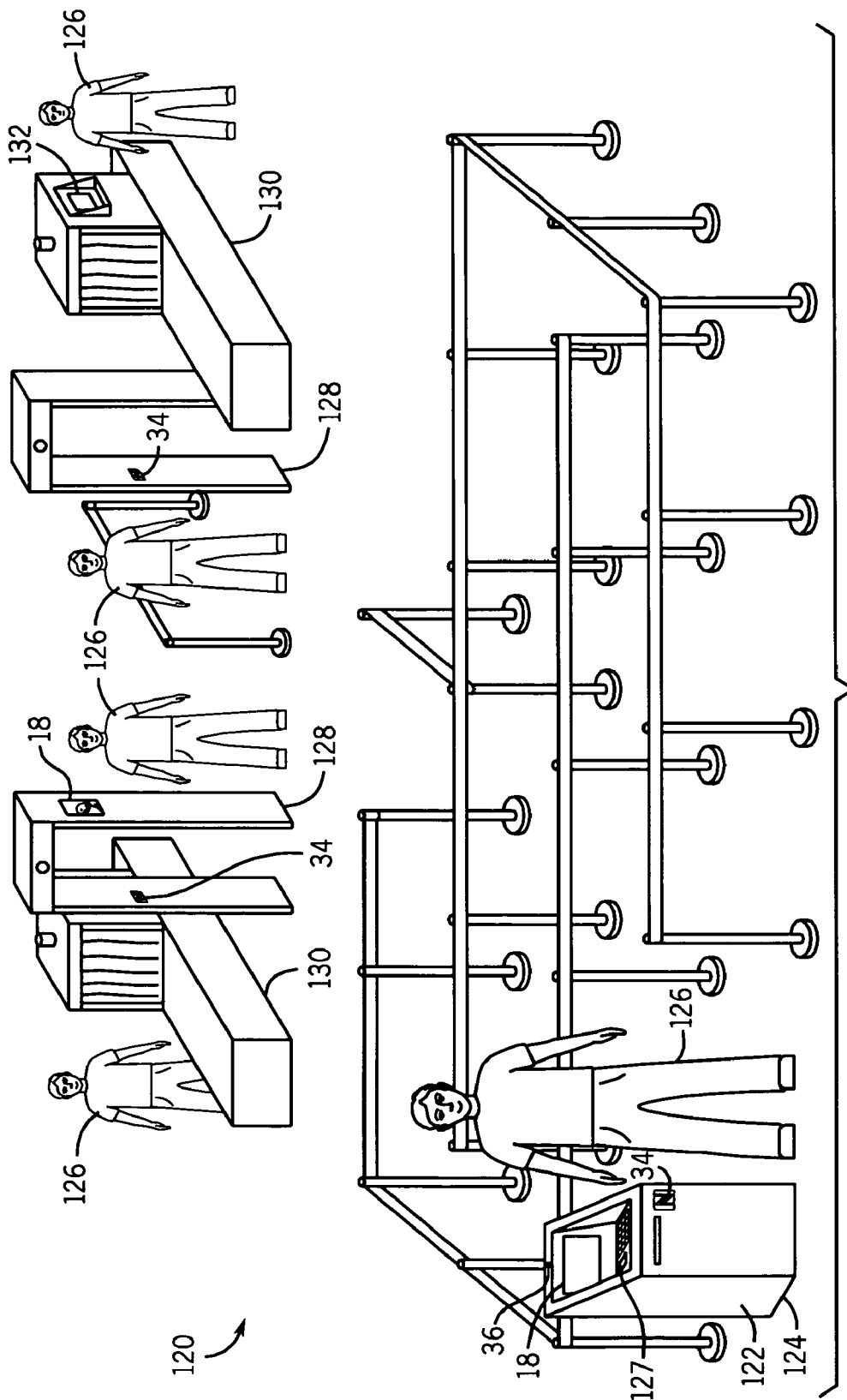
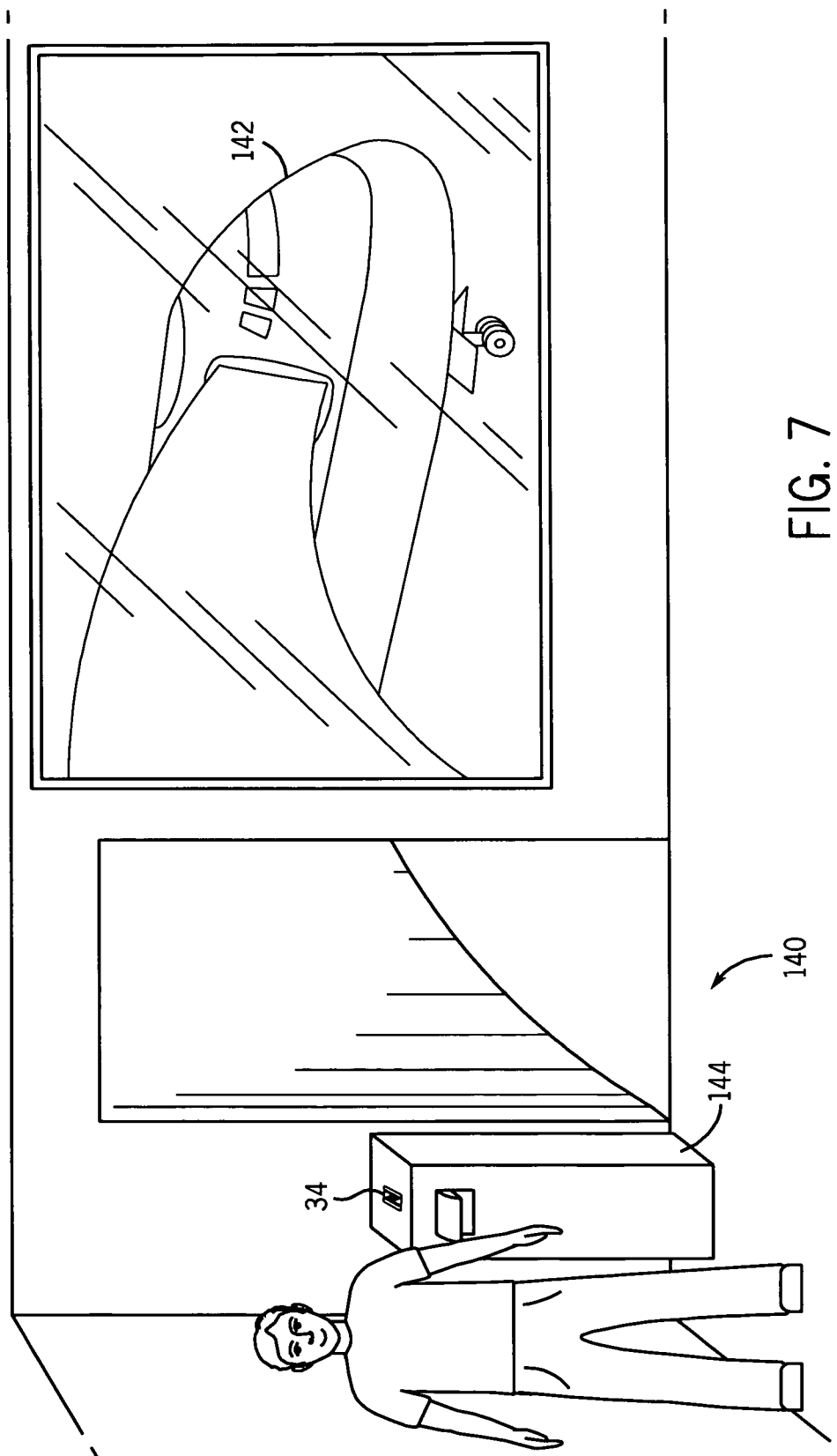


FIG. 6



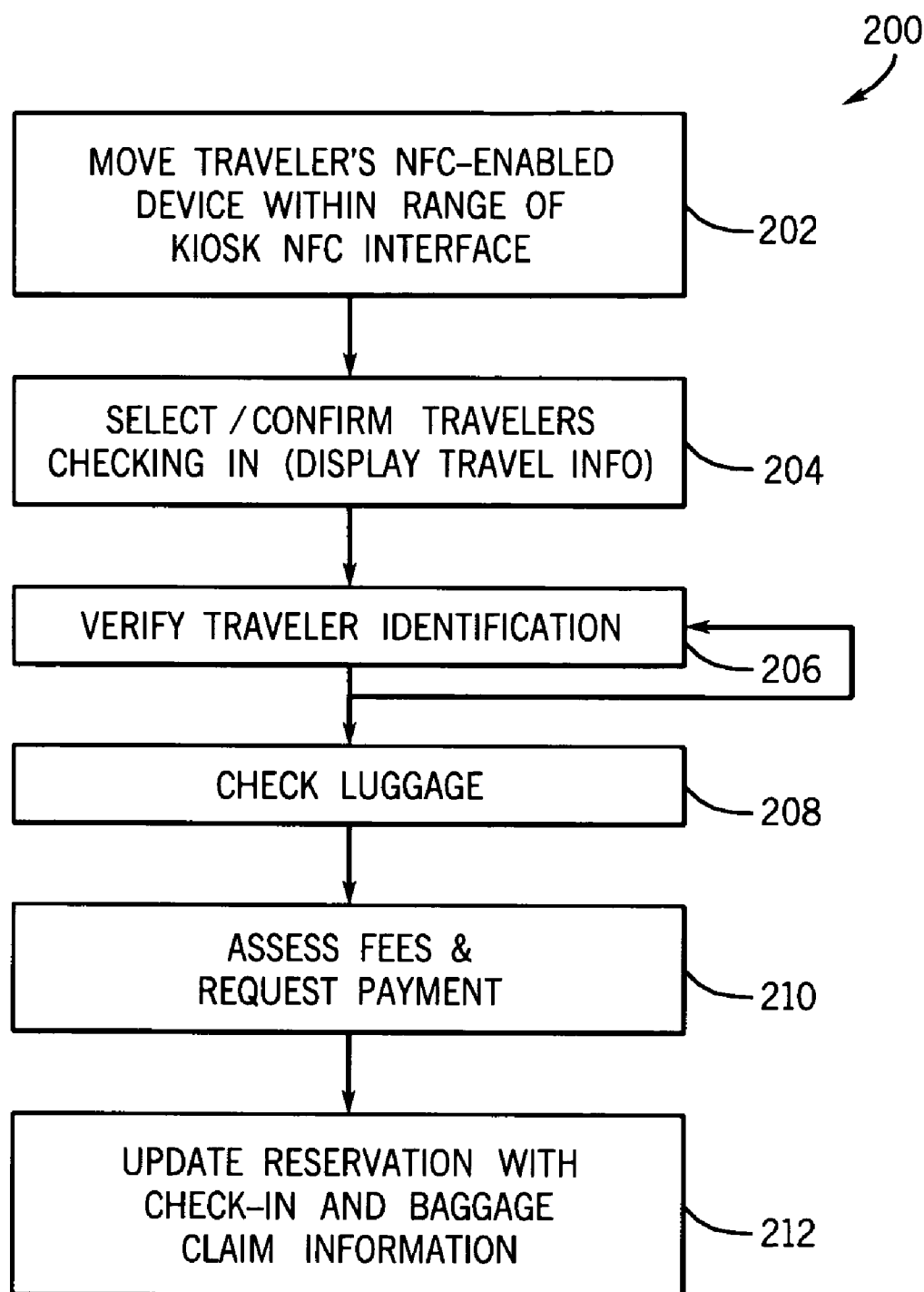


FIG. 8

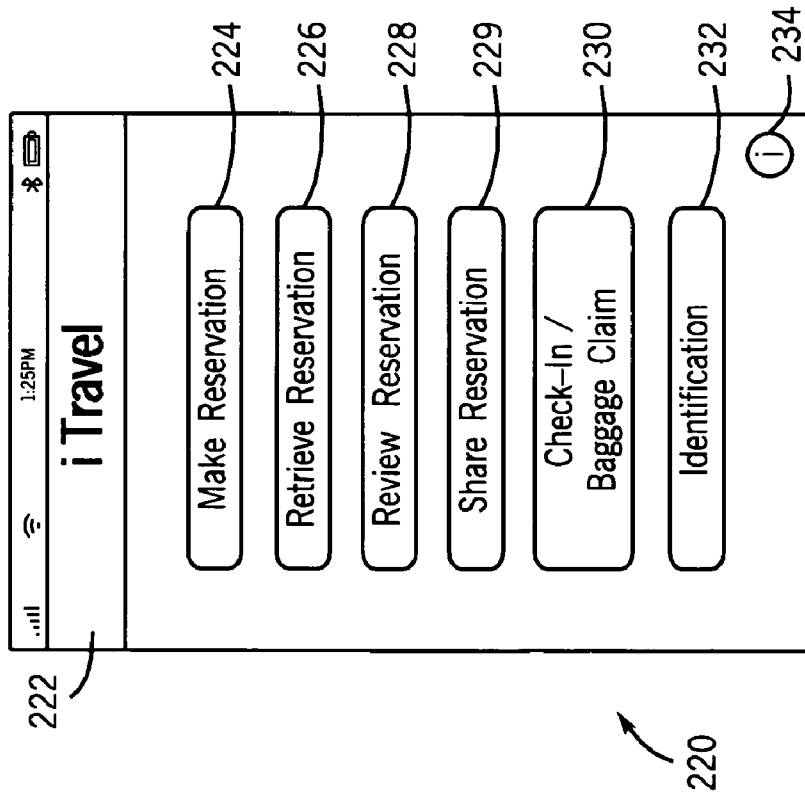


FIG. 9

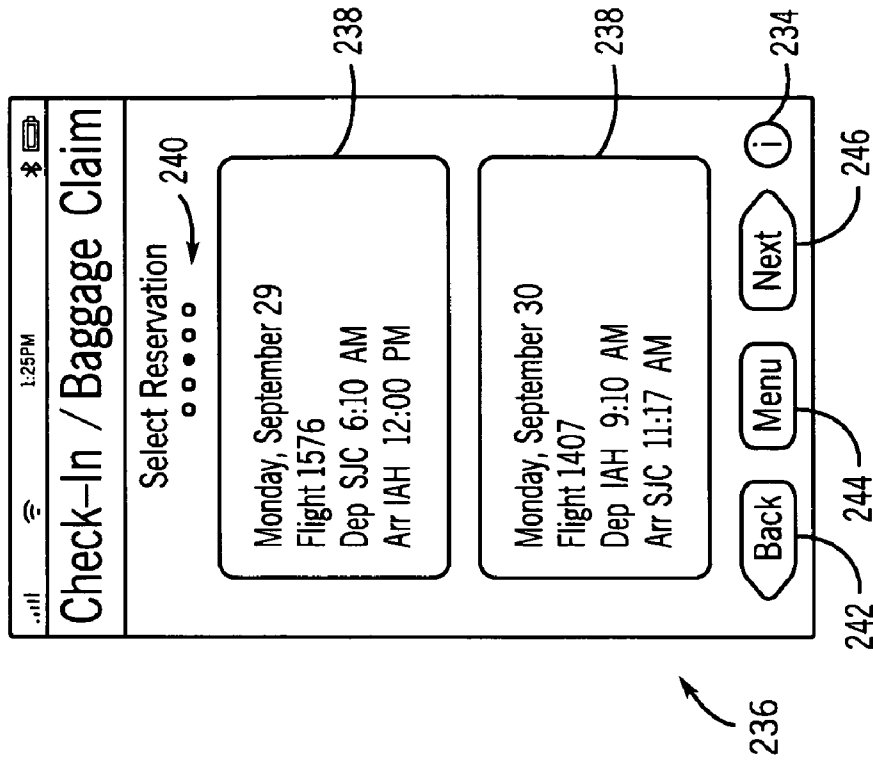


FIG. 10

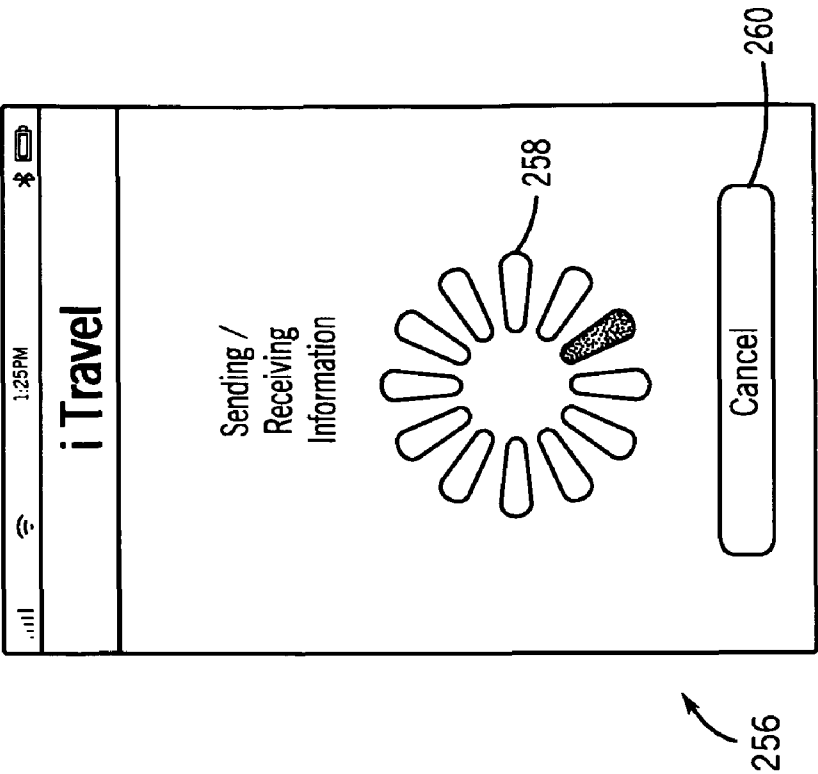


FIG. 11

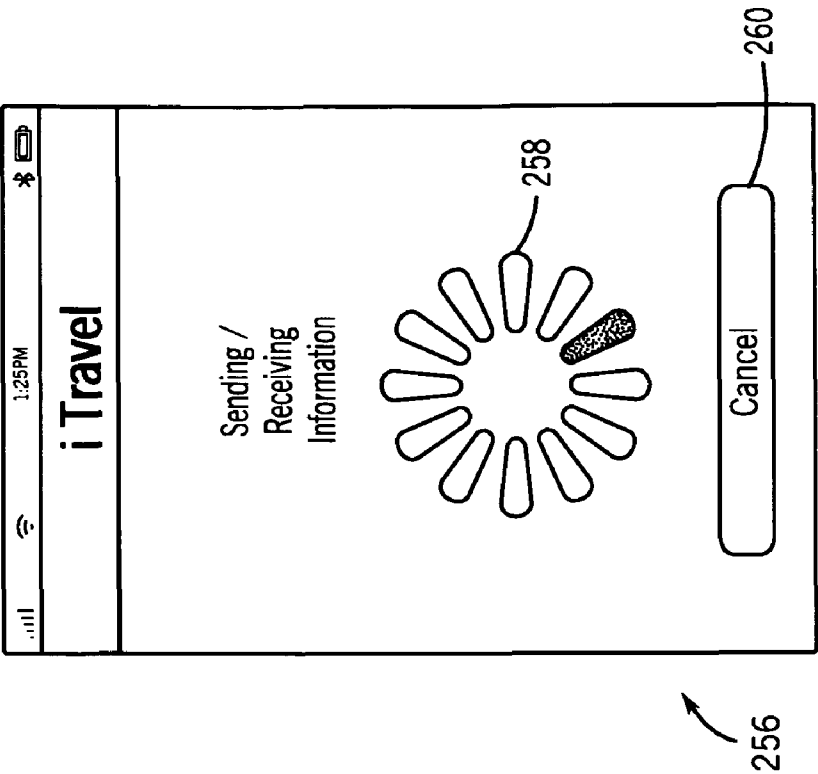


FIG. 12

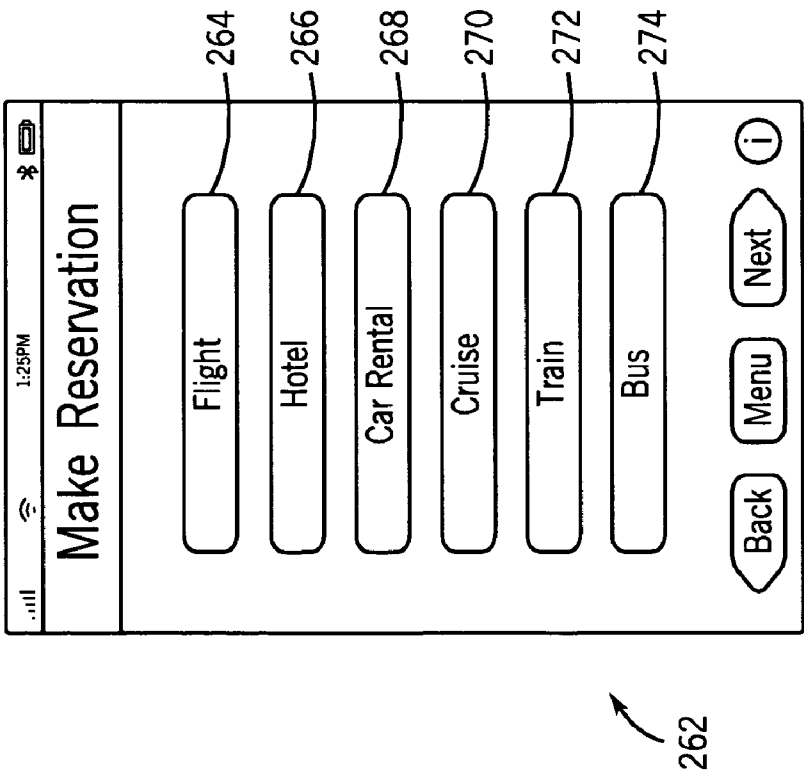


FIG. 13

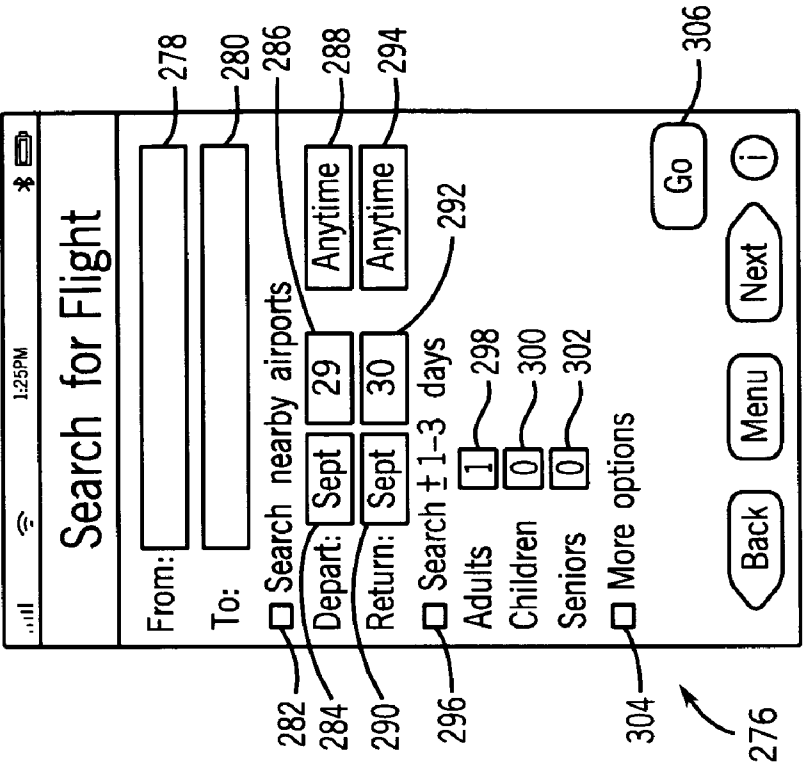


FIG. 14

Airline	Dep	Arr	Stops	Price
Frontier Airlines	6:10am MKE	7:51am DEN	0	\$99
Delta Air Lines	9:10am MKE	6:24pm DEN	2	\$304
Midwest Airlines	2:57pm MKE	5:59pm DEN	1	\$409

Back Menu Next i

FIG. 15

Traveler 1: First name: Last name: Seat request: ☐ Aisle ☐ Window Frequent flyer # ☐ Save traveler information

Traveler 2: First name: Last name: Seat request: ☐ Aisle ☐ Window Frequent flyer # ☐ Save traveler information

Back Menu Next Go i

FIG. 16

FIG. 17

Payment Method

Price details:

2 adults	916.00
Taxes / fees	33.00
Total	949.00

Payment method:

Visa	1000.00
Master Card	1262.39
Discover	251.76
Checking	343.18
Other	

Back Menu Next i

326

FIG. 18

Confirm Reservation

Travelers:

Depart:

Return:

Total price: 949.00

Payment method: Visa

Back Menu Next Purchase i

338

Review Reservation

Select Reservation

Depart SJC Sep 29
Return IAH Sep 30

Depart SJC Oct 3
Return ATL Oct 5

Depart OAK Oct 8
Return HOU Oct 10

Car rental HOU Oct 8

Hotel Houston Oct 8-10

Back Menu Next i

FIG. 20

Review Reservation

Travelers:
Depart:
Return:
Total price: 949.00
Payment mehtod: Visa

Set up / Change reminder

Back Menu Next i

FIG. 19

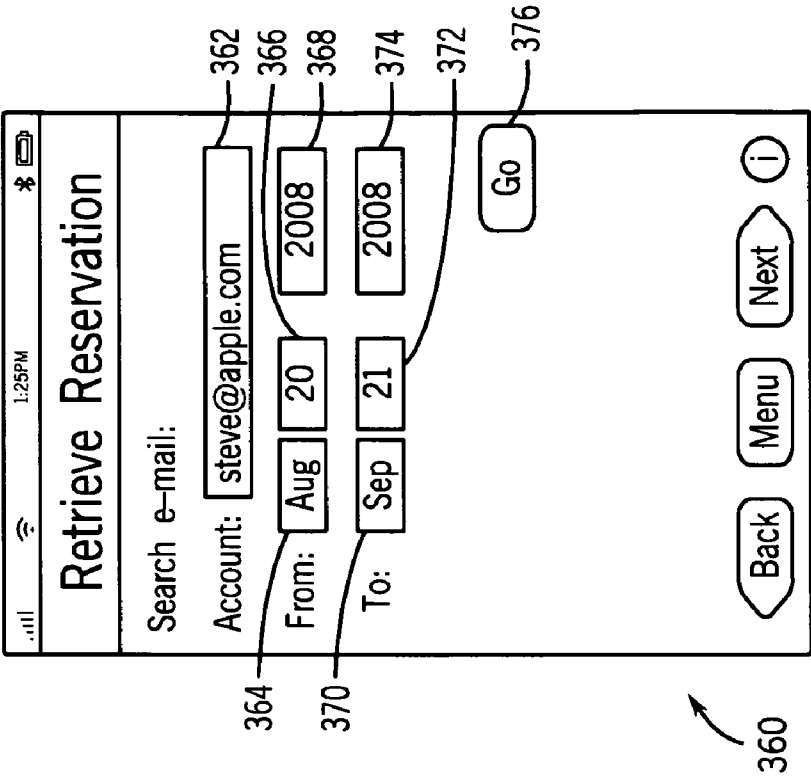


FIG. 21

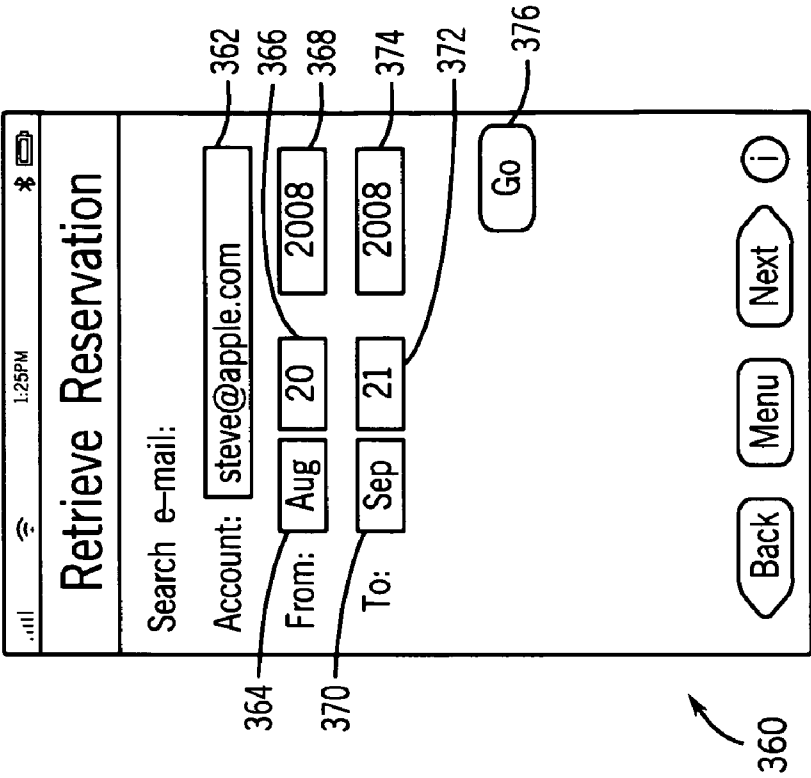


FIG. 22

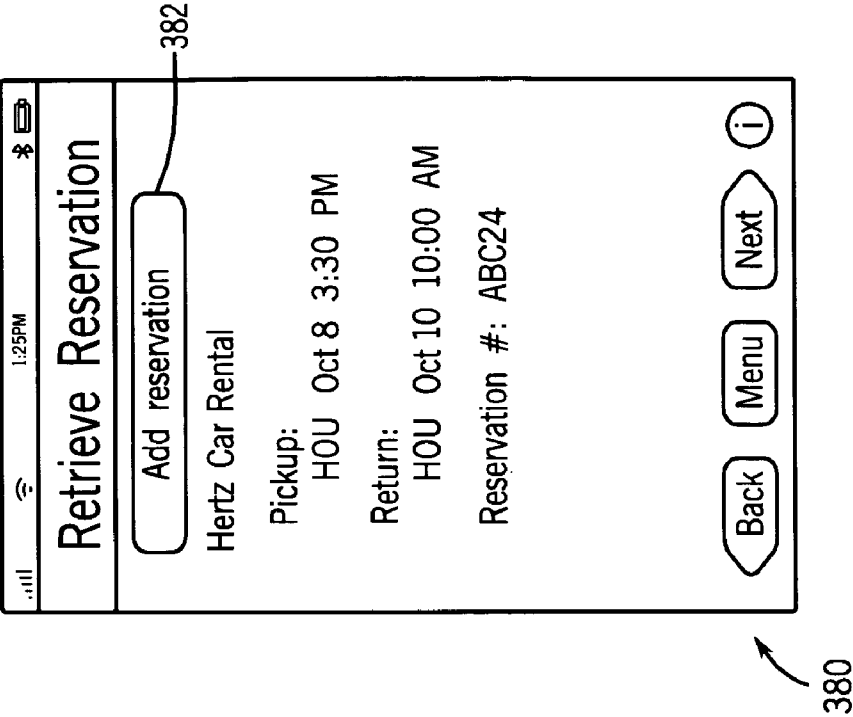


FIG. 23

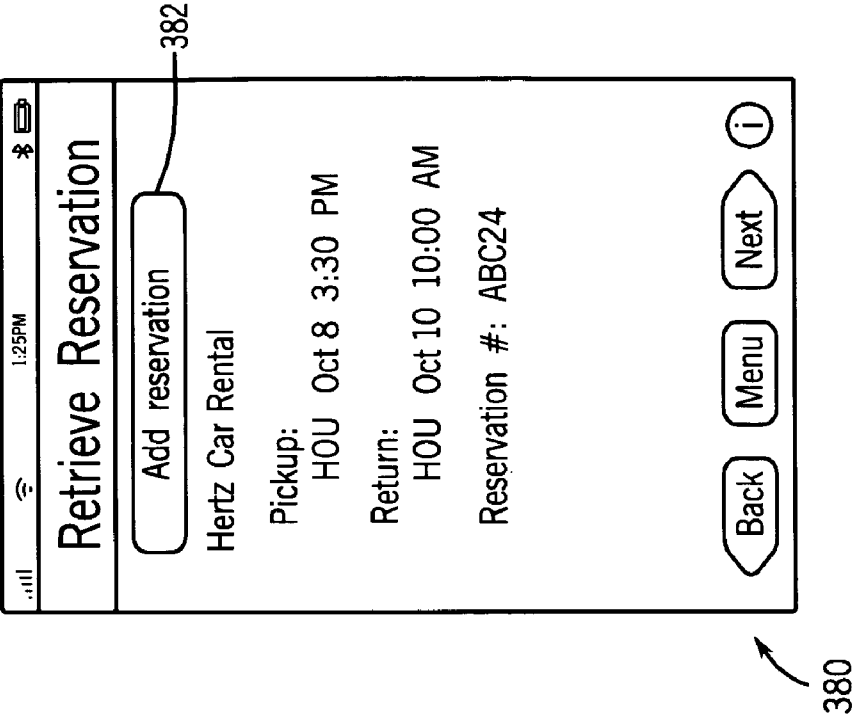


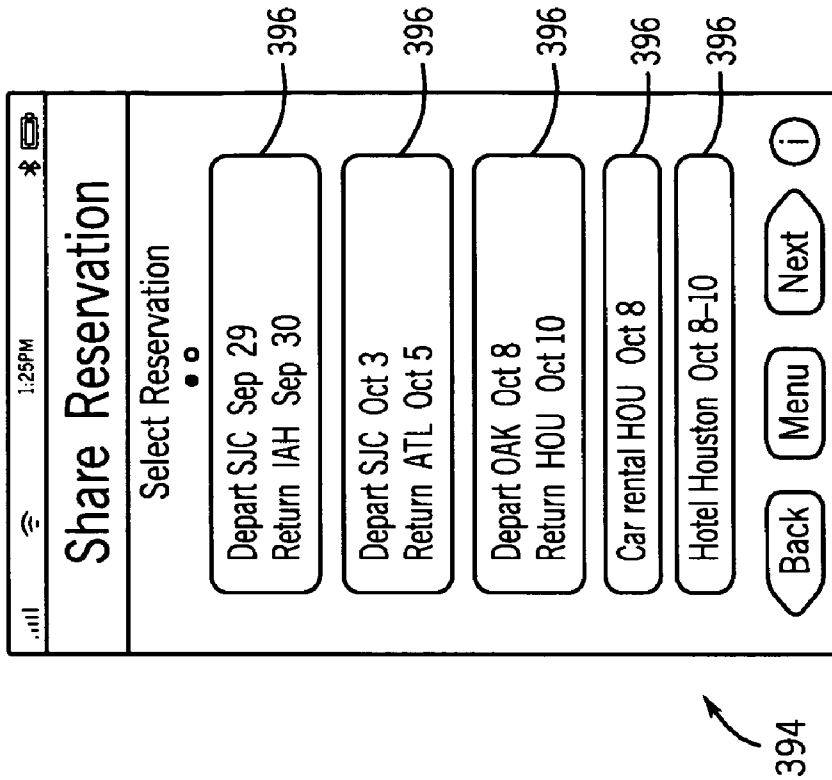
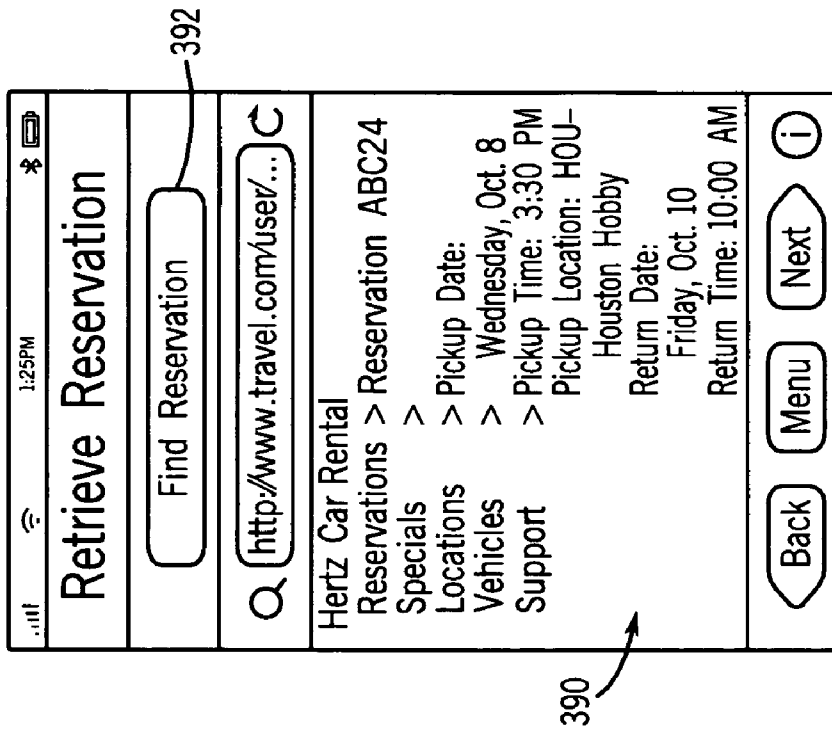
FIG. 24

FIG. 26 is a screenshot of a mobile device screen displaying a "Retrieve Reservation" form. The screen features a status bar at the top with icons for signal strength, time (1:25PM), and battery level. The main content area includes a title "Retrieve Reservation", a "Find Reservation" button, a search bar containing the URL "http://www.travel.com", and input fields for "User Name" and "Password". A "Login" button is located below the password field. The bottom of the screen contains navigation buttons: "Back", "Menu", "Next", and an information icon.

FIG. 26

FIG. 25 is a screenshot of a mobile device screen displaying a "Retrieve Reservation" form. The screen features a status bar at the top with icons for signal strength, time (1:25PM), and battery level. The main content area includes a title "Retrieve Reservation", a "Find Reservation" button, a search bar with a magnifying glass icon, and a "Google" button. Below these is a virtual keyboard with letters, numbers, and symbols. A "Go" button is located to the right of the keyboard. The bottom of the screen contains navigation buttons: "Back", "Menu", "Next", and an information icon.

FIG. 25



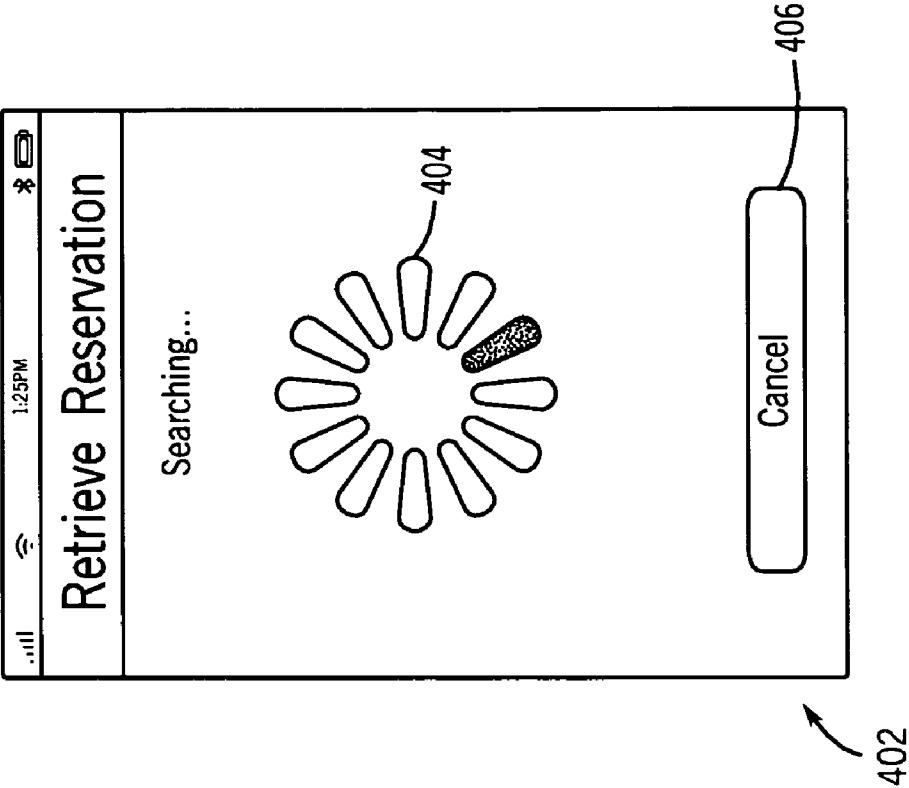


FIG. 30

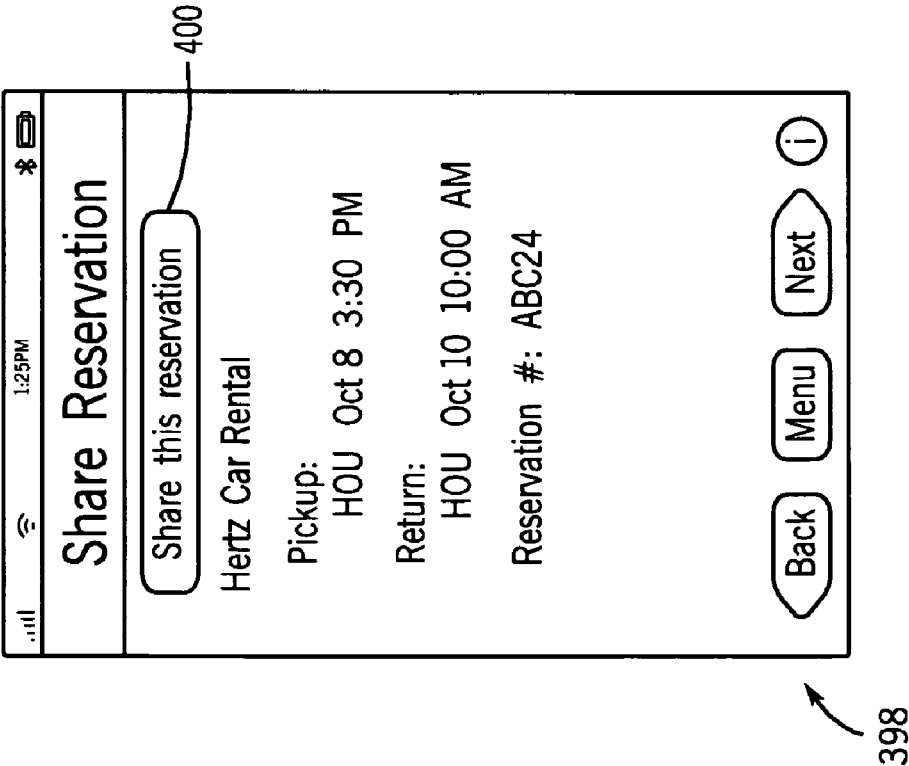


FIG. 29

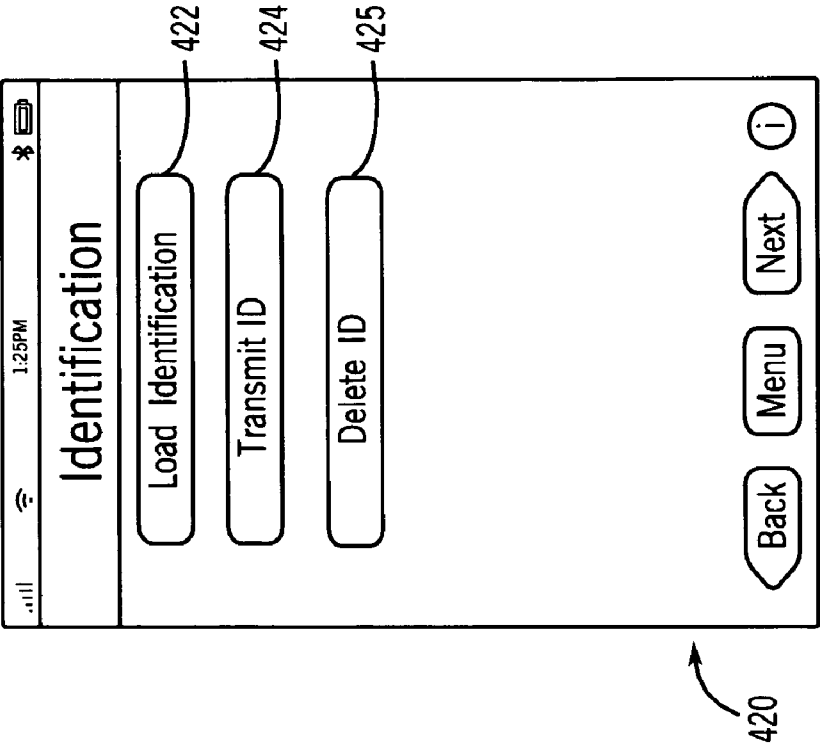


FIG. 31

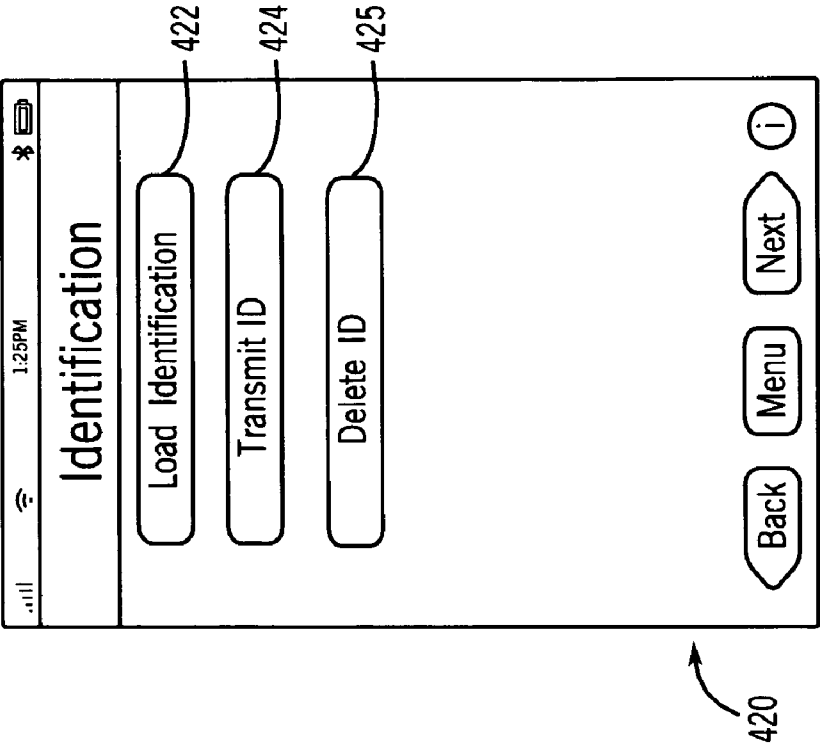


FIG. 32

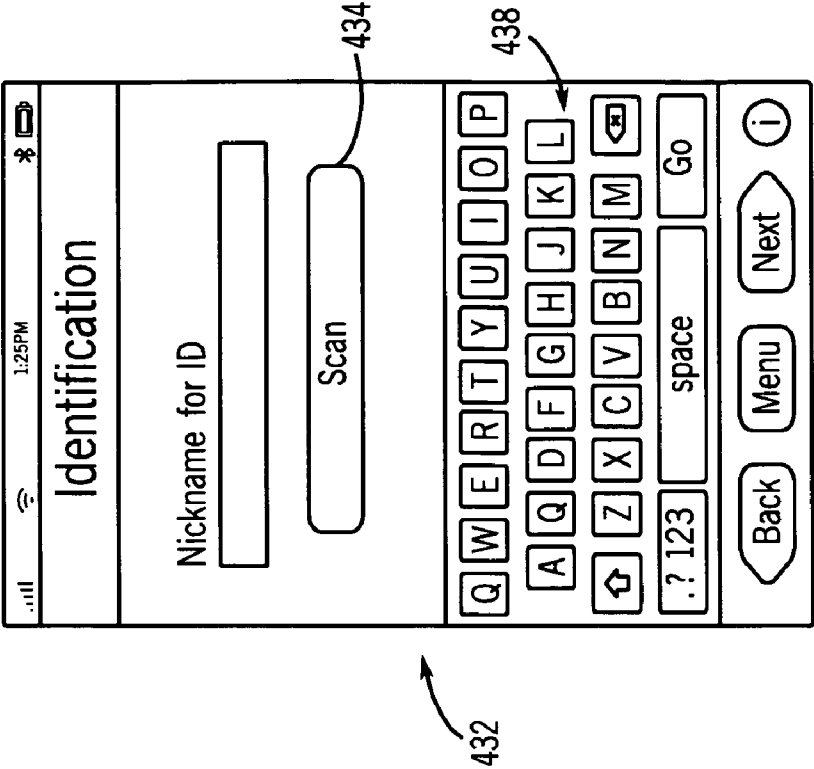


FIG. 33

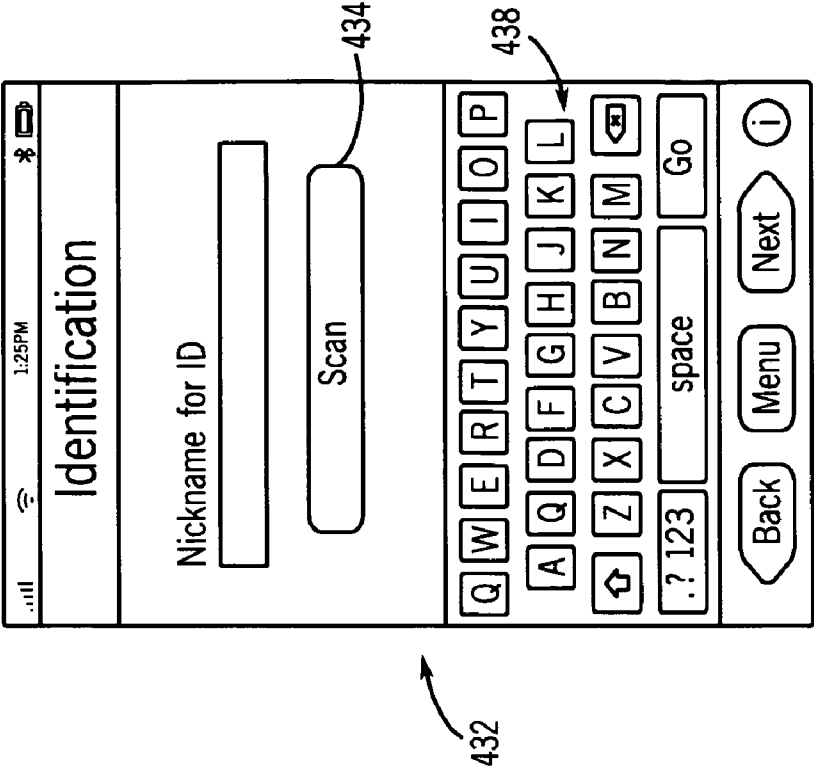


FIG. 34

FIG. 35 is a screenshot of a mobile device screen displaying an "Identification" form. The status bar at the top shows the time as 1:25 PM and a battery level icon. The form has a title bar "Identification" and a button "Add Identification" (442). Below the title bar, the form contains the following text: "Nickname: John - Passport", "Name: John W. Smith", "DOB: 12 / 25 / 75", "Passport #: 321FA7", "Country of Citizenship: US", and "Address: 123 Main St. Cupertino, CA". At the bottom of the screen, there are three navigation buttons: "Back", "Menu", and "Next" (440), along with an information icon (i).

FIG. 35

FIG. 36 is a screenshot of a mobile device screen displaying an "Identification" form. The status bar at the top shows the time as 1:25 PM and a battery level icon. The form has a title bar "Identification" and a button "Add Identification" (442). Below the title bar, the form contains the following text: "Nickname for ID" (446), "Type" (448) with a dropdown menu showing "Passport", "Authority" (450) with a dropdown menu showing "United States", and "ID #" (456) with a text input field. Below the form, there is a keyboard (454) with letters A through Z, numbers 0 through 9, and special characters. At the bottom of the screen, there are three navigation buttons: "Back", "Menu", and "Next" (440), along with an information icon (i).

FIG. 36

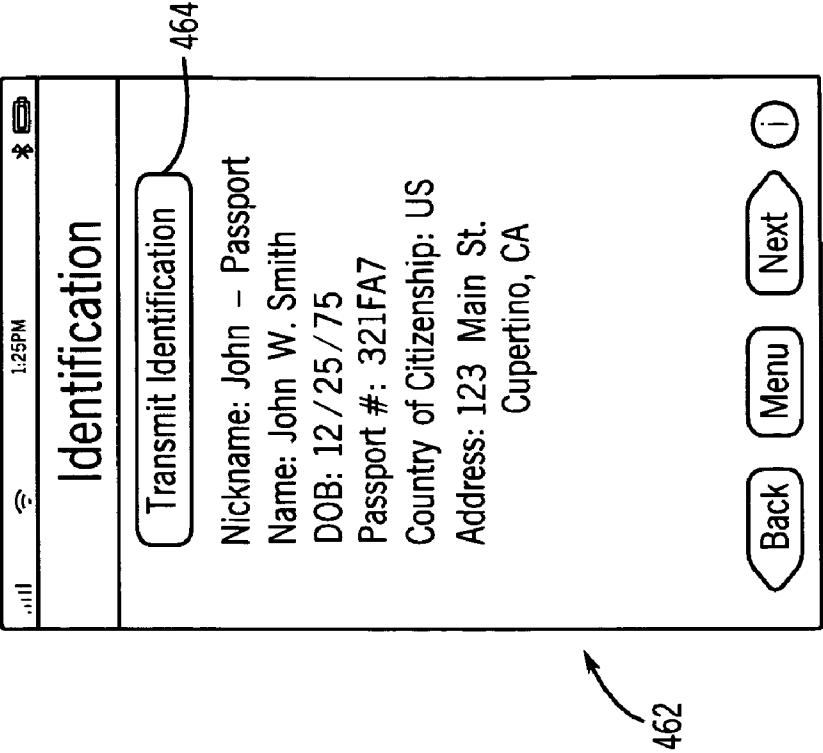


FIG. 37

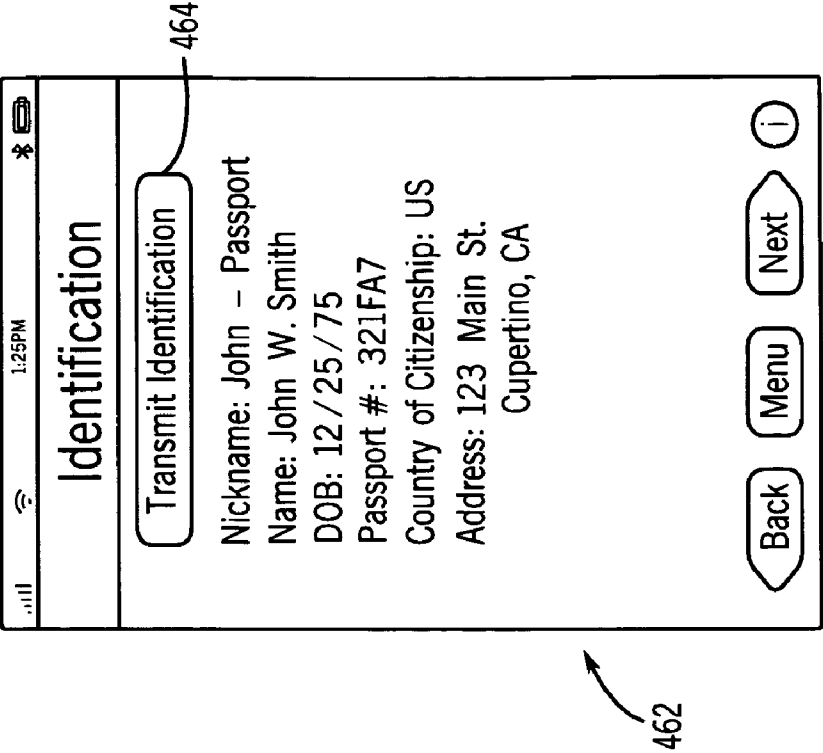


FIG. 38

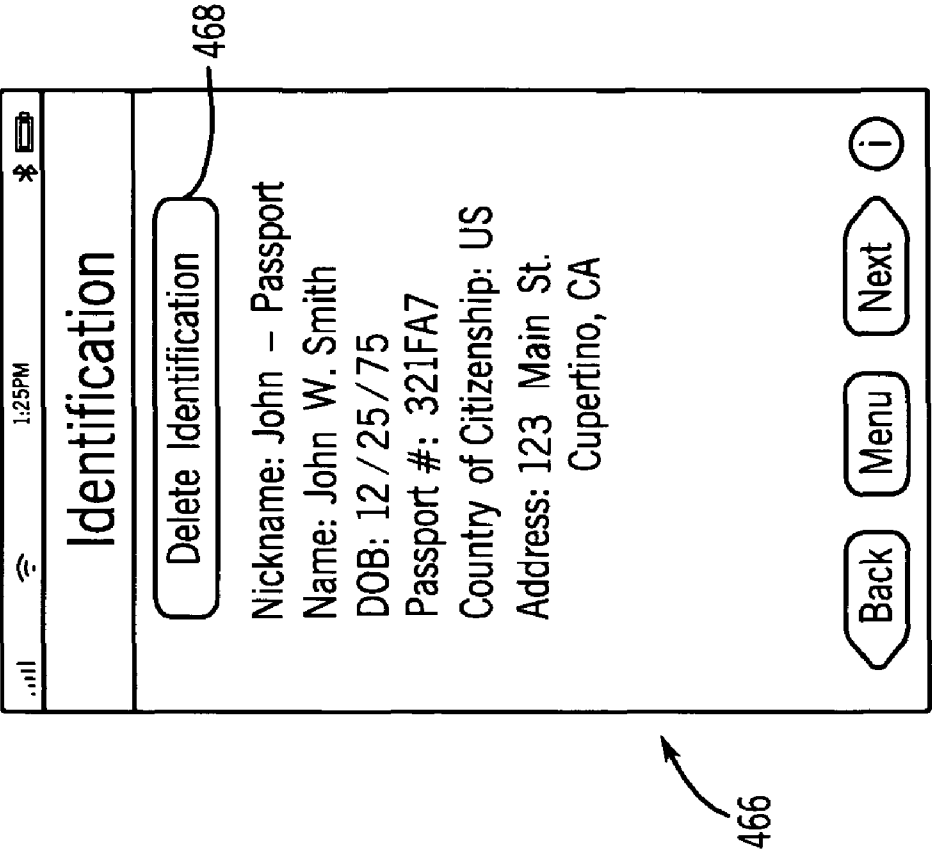


FIG. 39

1

SYSTEM AND METHOD FOR TRANSPORTATION CHECK-IN

BACKGROUND

1. Technical Field

The present disclosure relates generally to transportation check-in and, more particularly, to employing near field communication for identification and ticketing by transportation providers.

2. Description of the Related Art

This section is intended to introduce the reader to various aspects of art that may be related to various aspects of the present disclosure, which are described or claimed below. This discussion is believed to be helpful in providing the reader with background information to facilitate a better understanding of the various aspects of the present disclosure. Accordingly, it should be understood that these statements are to be read in this light, and not as admissions of prior art.

Transportation ticketing has traditionally involved a pre-printed ticket which is scanned at a departure station. For example, transportation tickets may be printed at home with a barcode or a QR code (i.e., a 3-dimensional barcode) encoded with information about the traveler and/or the travel (e.g., name, destination, departure time, schedule number, etc.). In addition, this information may be included in plain language on the printed ticket. A traveler may be required to present this pre-printed ticket to gain admission to the transportation depot (e.g., airport, train station, bus station, etc.), to pass through a security check-point, and/or to board the vehicle for transportation.

For example, in order to board an airplane at an airport, a traveler may be asked to present his pre-printed ticket in order to check in to his flight, to pass through the Transportation Security Administration (TSA) checkpoint, and to enter the gangway to board the airplane. The traveler may also be required to present photo identification at some or all of these locations. The ticket and/or identification may also be required to retrieve luggage from a baggage claim station at the traveler's destination. In addition to carrying the ticket and identification, the traveler may be carrying luggage and/or carryon bags to the ticket counter; bags, a laptop, and shoes through the TSA checkpoint; and carryon bags onto the airplane. Juggling multiple items while presenting a paper ticket and identification is often inconvenient and may lead to forgotten items, lost tickets and/or identification, and other hassles.

Furthermore, printing out paper tickets consumes natural resources and costs money every time a ticket is printed. Indeed, many airlines charge a traveler considerable fees to receive an airline-printed ticket. Accordingly, a traveler is generally expected to have a pre-printed ticket in his hands upon arrival at the transportation depot.

SUMMARY

Certain aspects of embodiments disclosed herein by way of example are summarized below. It should be understood that these aspects are presented merely to provide the reader with a brief summary of certain forms an invention disclosed and/or claimed herein might take and that these aspects are not intended to limit the scope of any invention disclosed and/or claimed herein. Indeed, any invention disclosed and/or claimed herein may encompass a variety of aspects that may not be set forth below.

Accordingly, there is provided a handheld electronic device, such as a cellular phone or a personal media player,

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which may enable traveler check-in for travel. That is, ticketing and identification information may be stored on the handheld electronic device and transmitted, such as via near field communication, to another electronic device. The handheld device may be used to check into flights, hotels, car rentals, cruises, trains, buses, and so forth.

In addition, traveler identification information may be transmitted electronically to enable faster security verification during check-in. The traveler identification information may enable automatic lookup of the traveler in a security database, thereby reducing the inconveniences of incorrect identification. Travelers may also provide specialized identification, such as fingerprints or retinal scans, in order to provide heightened security on high-risk modes of transportation.

Travel information may be managed on the handheld device by a travel management application. Ticketing and reservation information may be entered into the application via several methods. For example, reservations may be made through the travel management application. In another embodiment, reservations may be retrieved from an email, a website, another electronic device, or via a carrier-provided confirmation number. Additional reservation retrieval methods may be employed, such as, for example, acquiring digital images of travel documents and extracting reservation images via optical character recognition software, barcode-reading software, or QR-code-reading software.

Identifications may also be managed via the travel management application. I.D.s, such as passports or driver's licenses, may be loaded onto the handheld device via, for example, scanning a radio frequency identification tag embedded in the I.D., or entering an I.D. number and looking up the corresponding identification information. Again, additional identification retrieval methods may be employed.

BRIEF DESCRIPTION OF THE DRAWINGS

Advantages of the invention may become apparent upon reading the following detailed description and upon reference to the drawings in which:

FIG. 1 is a block diagram of an electronic device in accordance with aspects of the present disclosure;

FIG. 2 is a front view of an embodiment of the electronic device of FIG. 1 in accordance with aspects of the present disclosure;

FIG. 3 is a front view of another embodiment of the electronic device of FIG. 1 in accordance with aspects of the present disclosure;

FIG. 4 is a perspective view of a ticketing and baggage check counter kiosk including an embodiment of the electronic device of FIG. 1 in accordance with aspects of the present disclosure;

FIG. 5 is a perspective view of an unmanned ticketing and baggage check kiosk including an embodiment of the electronic device of FIG. 1 in accordance with aspects of the present disclosure;

FIG. 6 is a perspective view of a transportation security checkpoint including embodiments of the electronic device of FIG. 1 in accordance with aspects of the present disclosure;

FIG. 7 is a perspective view of a boarding gate including an embodiment of the electronic device of FIG. 1 in accordance with aspects of the present disclosure;

FIG. 8 is a flow chart of a travel check-in process using the electronic device of FIG. 1 in accordance with aspects of the present disclosure; and

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FIG. 9 is a schematic of a screen shot of a travel management application on the electronic device of FIG. 1 in accordance with aspects of the present disclosure;

FIGS. 10-12 are schematics of screen shots of a check-in and/or baggage claim function of the travel management application on the electronic device of FIG. 1 in accordance with aspects of the present disclosure;

FIGS. 13-19 are schematics of screen shots of a travel reservation function of the travel management application on the electronic device of FIG. 1 in accordance with aspects of the present disclosure;

FIG. 20 is a schematic of a screen shot of a reservation review function of the travel management application on the electronic device of FIG. 1 in accordance with aspects of the present disclosure;

FIGS. 21-27 are schematics of screen shots of a reservation retrieval function of the travel management application on the electronic device of FIG. 1 in accordance with aspects of the present disclosure;

FIGS. 28 and 29 are schematics of screen shots of a reservation sharing function of the travel management application on the electronic device of FIG. 1 in accordance with aspects of the present disclosure;

FIGS. 30 and 31 are schematics of screen shots of a reservation retrieval function of the travel management application on the electronic device of FIG. 1 in accordance with aspects of the present disclosure;

FIG. 32 is a schematic of a screen shot for an identification management function of the travel management application on the electronic device of FIG. 1 in accordance with aspects of the present disclosure;

FIGS. 33-36 are schematics of screen shots of an identification retrieval function of the travel management application on the electronic device of FIG. 1 in accordance with aspects of the present disclosure;

FIGS. 37 and 38 are schematics of screen shots of an identification transmittal function of the travel management application on the electronic device of FIG. 1 in accordance with aspects of the present disclosure; and

FIG. 39 is a schematic of a screen shot for an identification deletion function of the travel management application on the electronic device of FIG. 1 in accordance with aspects of the present disclosure.

DETAILED DESCRIPTION OF SPECIFIC EMBODIMENTS

One or more specific embodiments of the present invention will be described below. In an effort to provide a concise description of these embodiments, not all features of an actual implementation are described in the specification. It should be appreciated that in the development of any such actual implementation, as in any engineering or design project, numerous implementation-specific decisions must be made to achieve the developers' specific goals, such as compliance with system-related and business-related constraints, which may vary from one implementation to another. Moreover, it should be appreciated that such a development effort might be complex and time consuming, but would nevertheless be a routine undertaking of design, fabrication, and manufacture for those of ordinary skill having the benefit of this disclosure.

Turning first to FIG. 1, an electronic device 10 may be configured for obtaining, storing, or using electronic tickets and/or identification for transportation. As discussed below with reference to FIGS. 2-7, the electronic device 10 may be, among other things, a handheld device, a computer, or a media player adapted to obtain, store, or use electronic travel

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reservations and/or identification, collectively referred to as travel documents, using techniques described in greater detail below; a manned or unmanned kiosk to sell or distribute electronic transportation tickets to another electronic device 10 and/or to enable transportation check-in using another electronic device 10; or an electronic ticket reader to present identification and/or transportation ticketing information upon receipt of travel documents from another electronic device 10. As such, the electronic device 10 may be, for example, an iPhone®, iPod®, iMac®, or MacBook®, available from Apple Inc., or similar devices by any manufacturer. It should be appreciated that embodiments of the electronic device 10 may include more or fewer elements than those shown in FIG. 1.

The electronic device 10 may include at least one central processing unit (CPU) 12. For example, the CPU 12 may include one or more microprocessors, and the microprocessors may be "general purpose" microprocessors, a combination of general and special purpose microprocessors, or ASICs. Additionally or alternatively, the CPU 12 may include one or more reduced instruction set (RISC) processors, video processors, or related chip sets. The CPU 12 may provide processing capability to execute an operating system, run various applications, and/or provide processing for one or more of the techniques described herein. Exemplary applications that may run on the electronic device 10 include a music player, a video player, a picture display, a calendar, an address book, an email client, a telephone dialer, and so forth. In addition, software for managing electronic travel documents may be included on the electronic device 10, as described below.

A main memory 14 may be communicably coupled to the CPU 12, which may store data and executable code. The main memory 14 may represent volatile memory such as RAM, but may also include nonvolatile memory, such as read-only memory (ROM) or Flash memory. In buffering or caching data related to operations of the CPU 12, the main memory 14 may store data associated with open applications running on the electronic device 10.

The electronic device 10 may also include nonvolatile storage 16. The nonvolatile storage 16 may represent any suitable nonvolatile storage medium, such as a hard disk drive or nonvolatile memory, such as flash memory. Being well-suited to long-term storage, the nonvolatile storage 16 may store data files such as media (e.g., music files, video files, pictures, etc.), software (e.g., for implementing functions on the electronic device 10), preference information (e.g., media playback preferences, desktop background image, ringtones, etc.), transaction information (e.g., credit card data, records of transactions, etc.), wireless connection information (e.g., wireless network names and/or passwords, cellular network connections, etc.), subscription information (e.g., a record of podcasts, television shows, or other media to which a user subscribes), as well as personal information (e.g., contacts, calendars, email, etc.). Additionally, travel document data may be saved in the nonvolatile storage 16, as discussed further below.

In certain embodiments, a display 18 of the electronic device 10 may display images and/or data. The display 18 may be any suitable display, such as a liquid crystal display (LCD), a plasma display, an electronic paper display (e.g., E Ink), a light emitting diode (LED) display, an organic light emitting diode (OLED) display, a cathode ray tube (CRT) display, or an analog or digital television. In some embodiments, the display 18 may include touch screen or multi-touch screen technology through which a user may interface with the electronic device 10.

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The electronic device **10** may further have a user interface **20**. The user interface **20** may include, for example, indicator lights, user inputs, and/or a graphical user interface (GUI) on the display **18**. In practice, the user interface **20** may operate via the CPU **12**, using memory from the main memory **14** and long-term storage in the nonvolatile storage **16**. In an embodiment lacking the display **18**, indicator lights, sound devices, buttons, and other various input/output (I/O) devices may allow a user to interface with the electronic device **10**. In an embodiment having a GUI, the user interface **20** may provide interaction with interface elements on the display **18** via certain user input structures, user input peripherals such as a keyboard or mouse, or a touch sensitive implementation of the display **18**.

At a given time, one or more applications may be open and accessible to a user via the user interface **20** and/or displayed on the display **18** of the electronic device **10**. The applications may run on the CPU **12** in conjunction with the main memory **14**, the nonvolatile storage **16**, the display **18**, and the user interface **20**. Various data may be associated with each open application. As will be discussed in greater detail below, instructions stored in the main memory **14**, the nonvolatile storage **16**, or the CPU **12** of the electronic device **10** may obtain, store, and use electronic travel documents. Rather than manage paper tickets and photo ID cards, a user may employ the electronic device **10** to manage travel documents electronically. As such, it should be appreciated that the instructions for carrying out such techniques may represent a standalone application, a function of the operating system of the electronic device **10**, or a function of the hardware of the CPU **12**, the main memory **14**, the nonvolatile storage **16**, or other hardware of the electronic device **10**.

In certain embodiments, the electronic device **10** may include location sensing circuitry **22**. The location sensing circuitry **22** may represent global positioning system (GPS) circuitry, but may also represent one or more algorithms and databases, stored in the nonvolatile storage **16** or main memory **14** and executed by the CPU **12**, which may be used to infer location based on various observed factors. For example, the location sensing circuitry **22** may include an algorithm and database used to approximate geographic location based on the detection of local wireless networks (e.g., 802.11x, otherwise known as Wi-Fi) or nearby cellular phone towers. As discussed below, the electronic device **10** may employ the location sensing circuitry **22** as a factor for carrying out certain ticketing and/or identification management techniques. By way of example, the location sensing circuitry **22** may be used by the electronic device **10** to determine a user's location during an event; the location during the event may then affect and/or determine the information displayed on the electronic device **10**.

With continued reference to FIG. 1, the electronic device **10** may also include a wired input/output (I/O) interface **24** for a wired interconnection between one electronic device **10** and another electronic device **10**. The wired I/O interface **24** may be, for example, a universal serial bus (USB) port or an IEEE 1394 port (e.g., FireWire®, available from Apple Inc.), but may also represent a proprietary connection. Additionally, the wired I/O interface **24** may permit a connection to peripheral user interface devices, such as a keyboard or a mouse.

One or more network interfaces **26** may provide additional connectivity for the electronic device **10**. The network interfaces **26** may include, for example, one or more network interface cards (NIC) or a network controller. In certain embodiments, the network interface **26** may include a personal area network (PAN) interface **28**. The PAN interface **28**

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may provide capabilities to network with, for example, a Bluetooth® network, an IEEE 802.15.4 (e.g., ZigBee) network, or an ultra wideband (UWB) network. As should be appreciated, the networks accessed by the PAN interface **28** may, but do not necessarily, represent low power, low bandwidth, or close range wireless connections. The PAN interface **28** may permit one electronic device **10** to connect to another local electronic device **10** via an ad-hoc or peer-to-peer connection. However, the connection may be disrupted if the separation between the two electronic devices **10** exceeds the range of the PAN interface **28**.

The network interface **26** may also include a local area network (LAN) interface **30**. The LAN interface **30** may be, for example an interface to a wired Ethernet-based network or an interface to a wireless LAN, such as a Wi-Fi network. The range of the LAN interface **30** may generally exceed the range available via the PAN interface **28**. Additionally, in many cases, a connection between two electronic devices **10** via the LAN interface **30** may involve communication through a network router or other intermediary device.

Additionally, for some embodiments of the electronic device **10**, the network interfaces **26** may include the capability to connect directly to a wide area network (WAN) via a WAN interface **32**. The WAN interface **32** may permit a connection to a cellular data network, such as the Enhanced Data rates for GSM Evolution (EDGE) network, a 3G network, or another cellular network. When connected via the WAN interface **32**, the electronic device **10** may remain connected to the Internet and, in some embodiments, to another electronic device **10**, despite changes in location that might otherwise disrupt connectivity via the PAN interface **28** or the LAN interface **30**. As will be discussed below, the wired I/O interface **24** and the network interfaces **26** may represent high-bandwidth communication channels for transferring user data using the simplified data transfer techniques discussed herein.

Certain embodiments of the electronic device **10** may also include a near field communication (NFC) interface **34**. The NFC interface **34** may allow for extremely close range communication at relatively low data rates (e.g., 424 kb/s), and may comply with such standards as ISO/IEC 18092, ECMA-340, ISO/IEC 21481, ECMA-352, ISO 14443, and/or ISO 15693. The NFC interface **34** may have a range of approximately 2-4 cm. The close range communication with the NFC interface **34** may take place via magnetic field induction, allowing the NFC interface **34** to communicate with other NFC interfaces **34** or to retrieve information from tags having radio frequency identification (RFID) circuitry. As described below, the NFC interface **34** may enable initiation and/or facilitation of data transfer of from one electronic device **10** to another electronic device **10**.

The electronic device **10** of FIG. 1 may also include a camera **36**. With the camera **36**, the electronic device **10** may obtain digital images and/or videos. In combination with optical character recognition (OCR) software, barcode-reading software, or QR-code-reading software running on the electronic device **10**, the camera **36** may be used to input data from printed materials having text or barcode information.

In addition, in certain embodiments of the electronic device **10**, one or more accelerometers **38** may be included which sense the movement and/or orientation of the electronic device **10**. The accelerometers **38** may provide input or feedback regarding the position of the electronic device **10** to certain applications running on the CPU **12**. By way of example, the accelerometers **38** may include a 3-axis accelerometer from ST Microelectronics.

FIGS. 2-7 illustrate various specific embodiments of the electronic device 10 of FIG. 1. For example, the electronic device 10 of FIG. 1 may be a handheld device 40, as illustrated in FIG. 2. The exemplary handheld device 40 may be a portable phone and/or a portable media player, such as an iPhone® or an iPod® available from Apple Inc.

The handheld device 40 may have an enclosure 42 of plastic, metal, composite materials, or other suitable materials in any combination. The enclosure 42 may protect the interior components of the handheld device 40 from physical damage and electromagnetic interference (EMI). Additionally, the enclosure 42 may allow certain frequencies of electromagnetic radiation to pass to and/or from wireless communication circuitry within the handheld device 40 to facilitate wireless communication.

The display 18 of the handheld device 40 may include the user interface 20 in the form of a GUI, which may have a number of individual icons representing applications that may be activated. The user interface 20 on the display 18 of the handheld device 40 may also include certain status indicator icons 46, which may indicate the status of various components of the handheld device 40. For example, the status indicator icons may include a cellular reception meter, an icon to indicate when the PAN interface 28 is active (e.g., when a Bluetooth® network is in use), or a battery life meter.

In some embodiments, a travel management application icon 44 may be selectable by a user. For example, the display 18 may serve as a touch-sensitive input device, and icons may be selected by touch. Here, the travel management application icon 44 is designated as “iTravel” to indicate to a user that selection of the icon 44 will allow the user to store and use travel documents, including transportation tickets and/or identification. When the travel management application icon 44 is selected, the travel management application may open, as described further below. The travel management application may enable a user to obtain, store, or use electronic travel documents to gain entry to a terminal, depot, station, mode of transportation, and so forth.

The handheld device 40 may connect to another electronic device 10, such as a computer, through the wired I/O interface 24. For example, the wired I/O interface 24 may be a proprietary connection for coupling the handheld device 40 to another electronic device 10 via USB or FireWire®. Once connected, the devices 10 may synchronize and/or transfer certain data, such as electronic travel documents, in accordance with techniques discussed herein.

User input structures 48, 50, 52, and 54 may supplement or replace the touch-sensitive input capability of the display 18 for interaction with the user interface 20. By way of example, the user input structures 48, 50, 52, and 54 may include buttons, switches, a control pad, keys, knobs, a scroll wheel, or any other suitable input structures. The user input structures 48 and 50 may work in conjunction with the display 18 to control functions of the device. Particularly, the user input structure 48 may be an on/off button; the user input structure 50 may be a navigation button for navigating the user interface 20 to a default or home screen; the user input structures 52 may be a pair of buttons for controlling volume and/or for navigating up and down a screen of the user interface 20; and the user input structure 54 may be a sliding button which mutes the handheld device 40 or which “locks” and “unlocks” the device 40.

In addition, the handheld device 40 may include audio input and/or output structures. For example, audio structures 56 may include one or more microphones for receiving voice data from a user and/or one or more speakers for outputting audio data, such as songs, ringtones, sound tracks associated

with videos, voice data received by the handheld device 40 over a cellular network, and so forth. In addition, an audio structure 58 may include a speaker for output audio data, such as voice data received by the handheld device 40 over the cellular network. In certain embodiments, an audio port 60 may also enable connection of peripheral audio input and output devices, such as headsets, speakers, or microphones, for use with the handheld device 40.

As noted above, some embodiments of the electronic device 10 may include the NFC interface 34. The handheld device 40 depicted in FIG. 2 may include the NFC interface 34 in any suitable location within the enclosure 42. Because the NFC interface 34 may permit communication at a very short range, the location of the NFC interface 34 in the handheld device 40 may be indicated on the exterior of the enclosure 42, as illustrated in FIG. 2. The NFC interface 34 may enable the handheld device 40 to communicate with RFID tags and/or other NFC-enabled electronic devices 10. For example, the NFC interface 34 may enable transmission of electronic travel documents to transportation and/or security personnel, as described further below.

Additionally, the camera 36 may be located, for example, on the back of the handheld device 40. As discussed further below, the camera 36 may be used to obtain a digital images of travel documents. The handheld device 40 may thereafter employ optical character recognition (OCR) software, barcode reading software, and/or QR code reading software to extract ticket information from the image, as described further below.

The handheld device 40 may also include the location sensing circuitry 22 and/or the accelerometers 38. Certain applications running on the handheld device 40 may obtain information about the location, orientation, and/or movement of the handheld device from the location sensing circuitry 22 and/or the accelerometers 38. This information may enable applications to display personalized data or to display data in an innovative manner in response to a user's location and/or movement. For example, the travel management application may acquire the user's location via the location sensing circuitry 22 as a security measure, as discussed in more detail below.

Another embodiment of the electronic device 10 of FIG. 1 may be a computer 62, as illustrated in FIG. 3. The computer 62 may be any computer, such as a desktop computer, a server, or a notebook computer, but may also be a standalone media player or video gaming machine. By way of example, the computer 62 may be an iMac®, a MacBook®, or an AppleTV® by Apple Inc. In addition, the computer 62 may be a personal computer (PC) from another manufacturer. An enclosure 64 may protect internal components of the computer 62. Such internal components may include, for example, the CPU 12, the main memory 14, the nonvolatile storage 16, certain network interfaces 26, and/or the NFC interface 34, as illustrated in FIG. 1.

The NFC interface 34 may permit near field communication between the computer 62 and other NFC enabled electronic devices 10, such as the handheld device 40. Accordingly, the location of the NFC interface 34 within the enclosure 64 may be noted by a label on the exterior of the enclosure 64 to enable positioning of other NFC enabled electronic devices 10 within the short range of the NFC interface 34. Additionally, the NFC interface 34 may also enable the computer 62 to receive electronic ticket data from an RFID tag located on a ticket, as described further below.

The user interface 20 may be displayed on the display 18 of the computer 62 in the form of a GUI. The user interface 20 may display, for example, user interfaces for applications 66

running on the computer 62. Additionally, the user interface 20 may include a variety of icons related to applications installed on the computer 62, such as the travel management application icon 44. When the travel management application icon 44 is selected, another version of the travel management application optimized for the computer 62 may open. The travel management application may enable a user to obtain, store, or use travel documents, as described further herein.

A user may interact with the user interface 20 via various peripheral input devices, such as a keyboard 68 and/or a mouse 70. Peripherals may connect to the computer 62, for example, via the wired I/O interface 24 and/or the PAN interface 28 (e.g., Bluetooth®). The wired I/O interface 24 may also provide a high bandwidth communication channel for coupling other electronic devices 10, such as the handheld device 40, to the computer 62.

The computer 62 may also include the camera 36. As discussed further below, the camera 36 may obtain, among other things, a digital image of a transportation ticket and/or identification. With the digital image, the computer 62 and/or the handheld device 40 may employ optical character recognition (OCR) software, barcode-reading software, or QR-code-reading software to extract ticket information from the image.

Turning to FIG. 4, a perspective view of a ticketing and baggage check counter 78 having an NFC-enabled counter kiosk 80, another embodiment of the electronic device 10 of FIG. 1, is illustrated. The NFC-enabled counter kiosk 80 may communicate with another electronic device 10, such as the handheld device 40, to purchase a transportation ticket and/or to check in for travel. For example, as described further below, a user may purchase or otherwise obtain an electronic travel ticket from the counter kiosk 80. The user may also use an electronic travel ticket and/or electronic identification at the counter kiosk 80 to check in for travel, including checking in luggage. As described in more detail below, the electronic travel ticket may include a unique identifier, such as a digital code, which may be utilized to look up and/or alter information regarding a traveler's reservation in a networked database.

The counter kiosk 80 may generally include a traveler interface 82 and an agent interface 84. The traveler interface 82 may have an integrated or separate NFC interface 34 within an enclosure 86. The NFC interface 34 may permit near field communication between the counter kiosk 80 and other NFC enabled electronic devices 10, such as the handheld device 40. Accordingly, the location of the NFC interface 34 within the enclosure 86 may be noted by a label on the exterior of the enclosure 86 to enable positioning of other NFC enabled electronic devices 10 within the short range of the NFC interface 34. The traveler interface 82 may also include the display 18 having the user interface 20 (e.g., a touch-screen display) and a credit card scanner 88. A luggage scale 90 may also be coupled to or in communication with the counter kiosk 80 to enable detection and weighing of the traveler's luggage.

To enable purchase and/or redemption of an electronic travel ticket, the traveler interface 82 may communicate with the agent interface 84 and various other computers over a variety of networks using the network interfaces 26 (FIG. 1). By way of example, the traveler interface 82 may be coupled to the agent interface 84 via a direct connection or a LAN. The counter kiosk 80 may communicate with a local server over a local network or a web service over the Internet. The local server or the web service may track, for example, reservation information, whether a traveler has checked in, if the traveler has checked in any bags, and so forth.

In addition, traveler identification information, such as a photograph, fingerprint, or retinal scan, may be accessed from the local server or the web service for verification of the traveler's identity. The camera 36, a fingerprint scanner 94, and/or a retina scanner 96 may also be incorporated into the traveler interface 82 to enable enhanced traveler identification for security purposes, as described in more detail below.

FIG. 5 illustrates an NFC-enabled unmanned kiosk 100, which may be another embodiment of the electronic device 10 of FIG. 1. The unmanned kiosk 100 may be configured to enable a user of another electronic device 10, such as the handheld device 40, to obtain an electronic travel reservation or to check in using an existing electronic travel reservation. The unmanned kiosk 100 may function largely in the same manner as the counter kiosk 80 of FIG. 4, but may operate without a human agent. For example, as described below, a user may purchase or otherwise obtain an electronic travel reservation from the unmanned kiosk 100, or the user may access an existing reservation and check in for travel at the unmanned kiosk 100.

An enclosure 102 may protect the internal components of the unmanned kiosk 100 from its particular environment. For example, the enclosure 102 may include weather resistant material and sealant if the unmanned kiosk 102 is to be located outdoors. Among the components housed within the enclosure 102 may be the NFC interface 34. The NFC interface may enable a user to interact with the unmanned kiosk 100 using an NFC-enabled electronic device 10 or an NFC-enabled card. The unmanned kiosk 100 may also include other elements of the electronic device 10 described above with reference to FIG. 1, such as the display 18 having the user interface 20. The display 18 may be a touch-screen display; in addition, or alternately, the unmanned kiosk 100 may include a keypad 104 to enable user interaction with the kiosk 100.

As noted above with reference to the counter kiosk 80 of FIG. 4, the unmanned kiosk 100 may also communicate with various other computers over a variety of networks to provide functionality for obtaining an electronic travel reservation or checking in with an existing electronic travel reservation. By way of example, the unmanned kiosk 100 may communicate with a local server over a local network or a web service over the Internet using the network interfaces 26. The local server or the web service may track, for example, reservation information, whether a traveler has checked in, if the traveler has checked in any bags, and so forth.

In addition, traveler identification information, such as a photograph, fingerprint, or retinal scan, may be accessed from the local server or the web service for verification of the traveler's identity. The camera 36, a fingerprint scanner 106, and/or a retina scanner 108 may also be incorporated into the unmanned kiosk 100 to enable enhanced traveler identification for security purposes, as described in more detail below.

The unmanned kiosk 100 may also be communicatively coupled to a luggage scale 110. The scale may enable the unmanned kiosk 100 to assess fees for checked baggage, overweight baggage, and so forth. A credit card scanner 112 may also be incorporated into the unmanned kiosk 100 to enable the traveler to pay assessed fees via credit card.

In FIG. 6, a security checkpoint 120 is illustrated. The security checkpoint 120 may include one or more embodiments of the electronic device 10 of FIG. 1. For example, a line entrance kiosk 122 may include the NFC interface 34 within an enclosure 124. The enclosure 124 may also house the display 18, which a security official 126 may monitor. A traveler may approach the line entrance kiosk 22 and move the handheld device 40 to within the range of the NFC inter-

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face **34** of the kiosk **122**, as indicated by a label on the exterior of the enclosure **124**. The kiosk **122** may then receive traveler identification information from the handheld device **40**. For example, the traveler's name, picture, and description may be transmitted from the handheld device **40** to the kiosk **122**. In another embodiment, a unique identifier may be transmitted from the handheld device to the line entrance kiosk **122**, and the traveler's identification information may be downloaded from a networked database. As described above, the identification information may include a picture, description, fingerprint, retinal scan, and so forth. In some embodiments, a camera **36**, fingerprint scanner **127**, and/or retina scanner (not shown) may be incorporated into the line entrance kiosk **122** to enable automatic identity verification (e.g., via facial recognition, fingerprint comparisons, or retina comparisons). In the illustrated embodiment, the security official **126** may compare the traveler to a picture on the display **18** before allowing the traveler to stand in the line. The traveler may move the handheld device **40** within range of the kiosk **122** again to receive confirmation that the traveler's identification was checked.

The traveler may then proceed to a metal detector **128** and a carry-on luggage scanner **130**. The traveler generally places any carry-on luggage on a conveyor belt to pass through the luggage scanner **130**, which X-rays the luggage. Another security official **126** may monitor the progress of carry-on luggage through the scanner **130**, for example, on a monitor **132**. While the traveler's carry-on luggage is being examined, another security official **126** may observe as the traveler passes through the metal detector **128**. To verify that the traveler's identification was checked at the line entrance kiosk **122**, or in lieu of checking identification at the kiosk **122**, the metal detector **128** may be another embodiment of the electronic device **10** of FIG. 1. That is, the metal detector **128** may include elements of the electronic device **10**, such as the NFC interface **34** and the display **18**. Upon approaching the metal detector **128**, the traveler may move the handheld device **40** within range of the NFC interface **34**, as noted by a label on the metal detector **128**. The handheld device **40** may transmit a confirmation that the traveler's identification was verified at the line entrance kiosk **122**. In another embodiment, the metal detector **128** may receive identification information from the handheld device, and the traveler's identification may be verified at the metal detector **128**. That is, a picture of the traveler may be displayed on the display **18** for comparison to the traveler. In other embodiments, the metal detector **128** may include or may be coupled to a camera, a fingerprint scanner, a retina scanner, and so forth. In these instances, the traveler's identity may be confirmed via facial recognition software, fingerprint comparisons, or retina comparisons.

After passing through the security checkpoint **120**, the traveler may be required to present the travel reservation information and/or identification at a boarding gate **140**, illustrated in FIG. 7, before boarding a transportation vehicle **142** (e.g., plane, train, bus, cruise ship, etc.). The boarding gate **140** may be equipped with another embodiment of the electronic device **10** of FIG. 1. For example, a boarding kiosk **144** may be placed next to an entrance to the transportation vehicle **142** to enable one last check of the traveler's documents before boarding. In the illustrated embodiment, the boarding kiosk **144** may include the NFC interface **34**, denoted by a label on the kiosk **144**, and one or more of the network interfaces **26**. The traveler may move the handheld device **40** within range of the NFC interface **34** of the kiosk **144**, for example, to verify that the correct vehicle is being boarded (e.g., to ensure the traveler is getting on the right

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flight) and to keep track of the travelers who have already boarded. To facilitate this oversight, the kiosk **144** may be in communication with a local server over a local network or a web service over the Internet using the network interfaces **26**. In some embodiments, the kiosk **144** may also include the display **18** and/or other identification structures to enable further identity verification.

An exemplary process **200** for travel check-in is illustrated in FIG. 8. The check-in process **200** may be implemented at a check-in device, such as, for example, the ticketing and baggage check counter **78** of FIG. 4 or the unmanned kiosk **200** of FIG. 5. The traveler may approach a check-in device and optionally place luggage on a luggage scale. An NFC-enabled device, such that the handheld device **40**, may be moved within range of an NFC interface in the check-in device (block **202**). As described in more detail below, the check-in device may receive travel reservation information, such as a unique code, from the handheld device **40**. The unique code may be used to look up travel information, for example, from a networked database of travel reservations.

The traveler's reservation information may then be accessed from the networked database. A display on the check-in device may provide a list of travelers associated with the reservation and prompt the traveler to select one or more individuals for check-in (block **204**). For security purposes, the identity of the passengers checking in may be verified (block **206**). A variety of identification verification methods may be employed. In a first embodiment, the traveler's handheld device **40** may include an electronic identification, such as a picture, a fingerprint, a retinal scan, and so forth. In this embodiment, security measures must be taken to ensure that the identifying information may not be altered. For example, a local, state, or federal government may provide a user with an electronic identification which may be stored on the handheld device **40**. The electronic identification may include a picture, the user's full name and birth date, a digitized copy of the user's signature, a description of the user (e.g., height, weight, hair color, eye color, etc.), or any other identifying information. The traveler's identification may be provided by the handheld device **40** to the check-in device, whereby an agent or security official may examine the identification, for example, as displayed on a display.

In another embodiment of traveler identification verification (block **206**), the check-in device may be connected to a local or remote server which contains user identification data. For example, the traveler's handheld device **40** may include a unique identifier, such as an alpha-numeric code, which is used to look up the traveler in a database. The database may contain identification information (e.g., picture, fingerprint, retinal scan, signature, description, etc.) which may then be accessed by the check-in device. Further, the database may be maintained by a government, a travel depot (e.g., an airport, a train station, a cruise terminal, a bus station, etc.), a travel provider (e.g., an airline, a train line, a cruise line, a bus company, etc.), or a third-party security company, for example. Providing identifying data to the database maintainer may be voluntary or mandatory. The traveler may be prompted to provide a photograph, a fingerprint, or a retina scan for comparison with stored identification information. The acquired photograph may be automatically compared to the traveler's identification photograph, for example, via facial recognition software. The scanned fingerprint or retina may also be automatically compared to identifying data stored in the database to verify the traveler's identity.

If more than one traveler is checking in, the passengers may go through the security verification process one-at-a-time. Upon verification of the first traveler, the second traveler may

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tap another handheld device **40** to the check-in device to initiate a similar identification verification process. This process (block **206**) may be repeated until all of the selected passengers (block **204**) are verified. If the additional passengers do not have NFC-enabled handheld devices **40**, any suitable alternate identification method may be employed.

The traveler(s) may then indicate whether they have luggage to check (block **208**). For example, if weight is detected on the scale, the check-in device may automatically prompt the traveler(s) to indicate how many bags are being checked. In another embodiment, the passengers may be prompted to indicate if any luggage will be checked (i.e., a yes/no question) and how many bags are being checked. Tags for the checked luggage may then be printed for placement on the bags, and identifying information on the tags may be associated with the traveler's reservation.

Additionally, some travel providers charge passengers a fee to check luggage. Fees may also be assessed for certain large and/or heavy checked items. Generally, payment is due at the time the luggage is checked, or during traveler check-in. Other fees may also be assessed at check-in, for example, if the traveler(s) request a different travel arrangement than originally reserved. Accordingly, after determining fees to be assessed, the traveler may be requested to pay the fees via the check-in device (block **210**). For example, the traveler may be prompted to pay the assessed fees using a credit card or the NFC-enabled handheld device **40**. That is, the traveler may be asked to select a payment method by choosing one of several options available. If the user selects to pay by credit card, the user may be prompted to insert a credit card into the check-in device, enter security information, and approve payment. In another embodiment, the user may select to pay fees via the handheld device **40**, as described in U.S. patent application Ser. No. 12/286,488, entitled "PEER-TO-PEER FINANCIAL TRANSACTIONS," to Lin et al., filed on Sep. 30, 2008, now published as U.S. Patent Application Publication No. 2010/0082481 A1, the entirety of which is incorporated by reference herein.

Once check-in has been completed, the traveler may again move the handheld device **40** within range of the NFC interface of the check-in device to update the reservation data stored on the handheld device **40** (block **212**). For example, the traveler's baggage claim information may be associated with the reservation data, and the data may be updated to indicate that the traveler went through the check-in process **200**.

FIGS. 9-12 illustrate exemplary screen shots which may be accessed on the handheld device **40** during the check-in process **200** of FIG. 8. Upon selection of the travel management application icon **44** (FIG. 2), the travel management application is launched, an exemplary home screen **220** of which is illustrated in FIG. 9. The home screen **220** may be displayed when the travel management application begins to run on the handheld device **40**. The home screen **220** may include a title bar **222**, which may assist with navigation through the application. The home screen **220** may additionally include a number of user selectable buttons. A button **224** may be labeled "Make Reservation," and may provide access to online travel websites where a user may make a travel reservation (e.g., purchase a ticket, reserve a hotel room, book a rental car, etc.); a button **226** may be labeled "Retrieve Reservation," and may enable a user to add a previously-arranged travel reservation to the travel management application; a button **228** may be labeled "Review Reservation," and may enable a user to view the details of an existing reservation; a button **229** may be labeled "Share Reservation," and may enable a user to share the details of a reservation with another user; a button **230**

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may be labeled "Check In/Baggage Claim," and may enable a user to use a travel reservation (e.g., check in for a flight, check into a hotel room, etc.); a button **232** may be labeled "Identification," and may enable a user to provide identity verification data. An information button **234** may also enable the user to view information about the travel management application, get help using the application, change settings of the application, and so forth.

In order to check in, the traveler may select the "Check-In/Baggage Claim" button **230**. A check-in/baggage claim screen **236**, illustrated in FIG. 10, then provides a list of recent and future user-selectable reservations **238** stored in the travel management application. The user may be prompted to select a reservation by touching the details of that reservation. If the traveler has more reservations than will reasonably fit on the screen **236**, multiple pages of the screen **236** may be employed. A page indicator **240** may indicate which page the traveler is on and how many other pages of reservations **238** are available. In the illustrated embodiment, the page indicator **240** may be a number of dots representing the number of pages available, with the displayed page indicated by a darkened dot. In other embodiments, the page indicator **240** may be numeric, such as "Page 3 of 5." The traveler may switch between pages by flicking the screen (i.e., holding a finger on the screen and sliding left or right quickly).

In addition to the reservations **238**, the check-in/baggage claim screen **236** may include several user-selectable navigation buttons. A "Back" button **242** may enable the user to go back to the previous screen; a "Menu" button **244** may enable the user to return to the home screen **220** (FIG. 9A); a "Next" button **246** may enable the user to go to the following screen; and the information button **234** may open an information menu. The user may employ the "Back" button **242**, for example, to verify or change an entry on a previous page. The "Next" button **246** may be available only when the user has used the "Back" button **242** and has not made any changes on a previous screen; otherwise, the screens may advance normally. The "Menu" button **244** may return the user to the home page **220** to restart the check-in or baggage claim process.

On the screen **236**, the traveler may select the desired travel reservation **238**. A reservation screen **248**, illustrated in FIG. 11, may then display the selected reservation, a "Check In" button **250**, an "Update" button **252**, and a "Baggage Claim" button **254**. Upon selection of the "Check In" button **250**, the handheld device **40** may transmit the traveler's reservation information via the NFC interface **34** (FIGS. 1 and 2). A data transmission screen **256**, illustrated in FIG. 12, may be displayed while the data is being transmitted. The screen **255** may indicate that information is being sent and/or received and may include a progress indicator **258** and a "Cancel" button **260**. The progress indicator **258** may be animated to indicate when the handheld device **40** is transmitting data. If the animation stops, this may be an indication that the device **40** has stopped transmitting data. The "Cancel" button **260** may be used to stop transmission of data or to cancel the attempted transmission of data when it appears that the transmission is not going through.

If the handheld device **40** is within range of an NFC interface on a check-in device (e.g., the counter kiosk **80** or the unmanned kiosk **100**), the check-in device may receive the NFC transmission from the handheld device **40** and initiate traveler check-in. In addition to the reservation information, the handheld device **40** may transmit the traveler's identification information. As discussed above, this information may include, for example, a picture, a description, a signature, a fingerprint, a retina scan, and so forth. In another embodiment,

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ment, the handheld device may transmit a unique code which enables look-up of the traveler's identification information from a networked database.

Additionally, multiple travelers may travel on a single reservation, in which case the reservation information may be acquired from only the first traveler. However, all passengers may be required to provide identification during the check-in process **200** (FIG. **8**, block **206**). Multiple identifications may be stored on a single handheld device **40**, or multiple devices **40** may be used to provide identity verification. For example, the first traveler may provide the reservation information to the check-in device. After the first traveler's identification has been verified, the second traveler may be asked to provide identification. In some instances, the second traveler's identification information may be stored on the handheld device **40** of the first traveler. In other embodiments, another handheld device **40** may contain the second traveler's identification information. If the traveler does not need to provide reservation information but merely needs to transmit identification information, the user may select the "Identification" button **232** from the home screen **220** (FIG. **9**) to transmit identification information, as described below.

The reservation on the handheld device **40** may be updated via NFC or another network connection, such as an airport WAN. For example, after the traveler has checked in on the check-in device, baggage claim information may be transmitted from the check-in device to the handheld device **40** for storage with the reservation information. In addition, the reservation may be updated to indicate that the traveler checked in already. Even before the traveler checks in, the reservation may be updated to indicate, for example, the status or location of the mode of transportation. That is, the traveler may update a flight reservation upon entering the airport to determine if a flight is on time and the gate from which the flight will depart. This update may occur by pressing the "Update" button **252** on the reservation screen **248** (FIG. **11**). The data transmission screen **256** (FIG. **12**) may again be displayed to indicate that information is being sent and/or received by the handheld device.

Further, selection of the "Baggage Claim" button **254** on the reservation screen **248** may display the baggage claim information transmitted to the handheld device **40** during the update. The baggage claim information may include, for example, a list of identifying codes, bar codes, QR codes, or similar identifying information associated with the tags placed on the traveler's checked luggage (FIG. **8**, block **208**).

The "Check-In/Baggage Claim" and "Verify Identity" functions of the travel management application may also be used at the security checkpoint **120** and the boarding gate **140**. The "Check In" function may be used to transmit reservation information and traveler identification information, whereas the "Verify Identity" function may be used to transmit just the traveler identification information, as needed.

Prior to check-in, the traveler may obtain travel reservations for storage on the handheld device **40** through a variety of sources. As illustrated on the home screen **220** (FIG. **9**), the travel management application may include options to make a reservation (i.e., the "Make Reservation" button **224**), to retrieve an existing reservation (i.e., the "Retrieve Reservation" button **226**), to review reservations stored in the handheld device **40** (i.e., the "Review Reservation" button **228**), and to share reservation details with other users (i.e., the "Share Reservation" button **229**). In order to make a new reservation, the user may select the "Make Reservation" button **224** to access an exemplary reservation screen **262**, illustrated in FIG. **13**. The reservation screen **262** may include a number of user-selectable travel options from which the user

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may choose to make a reservation. For example, the reservation screen **262** may include a "Flight" button **264**, a "Hotel" button **266**, a "Car Rental" button **268**, a "Cruise" button **270**, a "Train" button **272**, a "Bus" button **274**, and so forth. The user may select the button corresponding to the type of travel reservation desired.

An exemplary search screen **274** is illustrated in FIG. **14**. The search screen **274** is designed for a flight search; however, it should be understood that similar search screens may be presented for each type of travel reservation offered through the travel management application. On the search screen **276**, text entry boxes **278** and **280** may enable the user to enter departure and destination cities/airports, respectively. A check-box **282** may be selected to search for additional nearby airports. Departure and return dates and times may be entered via drop-down menus **284**, **286**, **288**, **290**, **292**, and **294**. A check-box **296** may be selected to search for fares on surrounding dates. The number of adults, children, and seniors traveling may be entered via drop-down menus **298**, **300**, and **302**, respectively. A check-box **304** may be selected to bring up an additional search screen (not shown) with more detailed search information, such as, for example, the number of stops desired, preferred airlines, service class, fare type, and so forth. A "Go" button **306** may be selected to initiate a search based on the entered parameters.

A departure screen **308**, illustrated in FIG. **15**, may display a list of flights matching the search parameters. If more flights are available than fit on the screen **308**, multiple pages may be used. As described above, the user may move between pages by flicking the screen. After the user selects a departure flight, a similar screen (not shown) may display a list of return flights matching the search parameters. When the departure and arrival flights have been selected, a traveler information screen **310**, illustrated in FIG. **16**, may be displayed to enable entry of information for the passengers traveling in the reservation. Drop-down menus **312** may enable fast fill-in of the traveler information for passengers who have been previously saved on the handheld device **40**. Text entry boxes **314** and **316** may enable the user to enter the first and last names, respectively, of each traveler. Radio buttons **318** may be selected to indicate a seat preference. Text entry boxes **320** may enable entry of the travelers' frequent flyer numbers. In addition, check-boxes **322** may be selected to save the traveler information for future inclusion in the drop-down menus **312**. When the requested information has been entered, the user may press a "Go" button **324** to submit the traveler information.

The travel management application may then request a payment method, as illustrated on a payment screen **326** in FIG. **17**. In the illustrated embodiment, the user may have several credit cards and/or bank accounts stored on the handheld device **40** to enable purchases via the device **40**. The stored payment methods may be displayed as user-selectable buttons on the screen **326**. For example, a "Visa" button **328** may enable payment with a Visa credit or debit card; a "MasterCard" button **330** may enable payment with a MasterCard credit or debit card; a "Discover" button **332** may enable payment with a Discover credit card; and a "Checking" button **334** may enable payment directly from a checking account. In addition, the balances of the available payment methods may be displayed to facilitate the user's selection of a payment method. Additional payment options, such as, for example, Bill Me Later, PayPal, a frequent flyer account, an unsaved credit card, or additional saved accounts, may be accessed via an "Other" button **336**.

FIG. **18** illustrates a reservation confirmation screen **338** which may be presented after the payment method is selected.

The reservation confirmation screen **338** may display the names of the travelers, the departure and return flight information, the total price for the reservation, and the selected payment method. A “Purchase” button **340** may initiate purchase of the selected reservation. For example, the reservation and payment information may be transmitted to a local server or a web service via the network connections **26**. After making the reservation, a reservation review screen **342**, illustrated in FIG. **19**, may be displayed. The reservation review screen **342** may display the names of the travelers, the departure and return flight information, the total price for the reservation, and the selected payment method. In addition, a reminder button **344** may enable the user to set up or change one or more reminders associated with the reservation.

The reservation review screen **342** may also be accessed via the “Review Reservation” button **228** on the home screen **220** (FIG. **9**). After pressing the “Review Reservation” button **228**, a reservation selection screen **346**, illustrated in FIG. **20**, may display a list of the user’s upcoming reservations as selectable buttons **348**. Upon selection of the desired reservation button **348**, the reservation review screen **342** (FIG. **19**) may be displayed.

In addition to making a reservation via the handheld device **40**, as described above, the user may retrieve an existing reservation by selecting the “Retrieve Reservation” button **226** from the home screen **220** (FIG. **9**). A reservation retrieval screen **350** may then be displayed, as illustrated in FIG. **21**. Several user-selectable buttons provide the user options for reservation retrieval. For example, an “Email” button **352** may enable reservation retrieval from an email message; a “Website” button **354** may enable reservation retrieval from a website; an “NFC Device” button **356** may enable reservation retrieval from another NFC-enabled electronic device **10**, such as another handheld device **40**, the computer **62**, or the kiosks **80** or **100**; and a “Confirmation No.” button **358** may enable reservation retrieval from certain carriers using a provided confirmation or reservation number.

Selection of the “Email” button **352** may open an email search screen **360**, illustrated in FIG. **22**. The email search screen **360** may include search options, such as a drop-down menu **362** to select the email account which is to be searched and drop-down menus **364**, **366**, **368**, **370**, **372**, and **374** to select a date range in which to search. A “Go” button **376** may initiate the search. The search results may be displayed on an email search result screen **378**, illustrated in FIG. **23**. The user may select the desired email to open a reservation details screen **380**, illustrated in FIG. **24**. Details of the reservation may be displayed on the reservation details screen **380**. In addition, an “Add Reservation” button **382** may enable the user to add the reservation to the travel management application. The user may then check in to the reservation using the handheld device **40**, as described above.

If the user elects to retrieve a reservation from a website and selects the “Website” button **354** (FIG. **21**), a web browser **384** (e.g., Safari) may open inside the travel management application, as illustrated in FIG. **25**. The user may be prompted to enter a website address or a search, for example, via a virtual QWERTY keyboard **386**. The user may navigate to a registration retrieval or site login page **388**, as illustrated in FIG. **26**. After logging into the website or otherwise retrieving a reservation, as illustrated on a reservation page **390** in FIG. **27**, the user may select a “Find Reservation” button **392**. The “Find Reservation” button **392** may initiate a search of the open web page **390** to find reservation details. The reservation details screen **380** (FIG. **24**) may then display the details found on the web page and the “Add Reservation” button **382** to enable the user to add the reservation to the

travel management application. The user may then check in to the reservation using the handheld device **40**, as described above.

Further, reservation retrieval from another NFC device may be initiated via selection of the “NFC Device” button **352** (FIG. **21**). For example, a travel reservation may be shared between passengers, such as from one handheld device **40** to another handheld device **40** (e.g., by selecting the “Share Reservation” button **229** (FIG. **9**)). In another embodiment, a traveler may make a reservation via the computer **62** (FIG. **3**), the counter kiosk **80** (FIG. **4**), the unmanned kiosk **100** (FIG. **5**), or another NFC-enabled device **10**, and share the reservation with the handheld device **40**.

In an exemplary embodiment in which a reservation is shared between handheld devices **40**, a user may select the “Share Reservation” button **229** from the travel reservation management application home screen **220** (FIG. **9**) on one handheld device **40**, and another user may select the “NFC Device” button from the reservation retrieval screen **350** (FIG. **21**) on another handheld device **40**. Selecting the “Share Reservation” button **229** may open a screen **394**, illustrated in FIG. **28**, displaying a list of the user’s upcoming reservations as selectable buttons **396**. The user may select one of the reservation buttons **396**, at which time a sharing screen **398**, illustrated in FIG. **29**, may open. The sharing screen **398** may display the reservation information and a button **400** labeled, for example, “Share this Reservation.” The handheld device **40** may then transmit the details of the selected reservation via NFC. In an exemplary embodiment, the data transmission screen **256** (FIG. **12**) may be displayed while the reservation information is transmitted.

In addition, another user may activate another handheld device **40** to receive the shared reservation information by selecting the “NFC Device” button from the reservation retrieval screen **350** (FIG. **21**). A searching screen **402** may be displayed, as illustrated in FIG. **30**. The searching screen may display a progress indicator **404** and a “Cancel” button **406**. Upon locating a travel reservation transmission, the reservation details screen **380** (FIG. **24**) may be displayed. The user may add the reservation by selecting the “Add Reservation” button **382**. Thereafter, the user may check in to the reservation using the handheld device **40**, as described above.

In a further embodiment, a user may retrieve a reservation using a confirmation or reservation number, for example, by selecting the “Confirmation No.” button **358** from the reservation retrieval screen **350** (FIG. **21**). A custom interface **408** (e.g., rather than a web browser), illustrated in FIG. **31**, may be used to access reservations in this embodiment. For example, the custom interface **408** may include one or more drop-down menus to enable the user to select supported carriers. A reservation type menu **410** may include, for example, flight, hotel, car rental, cruise, train, bus, and so forth. A carrier menu **412** may include specific companies for which the custom interface **408** is enabled. In addition, the carrier menu **412** may change based on the selection of the reservation type from the menu **410**. That is, if “Flight” is selected in the type menu **410**, airlines may be listed in the carrier menu **412**, whereas if “Hotel” is selected in the type menu **410**, hotel brands may be listed in the carrier menu **412**. A text entry box **414** may enable the user to enter a confirmation or reservation number obtained from the carrier. Additionally, a text entry box **416** may enable the user to enter a name under which the reservation was made. Text entry may be via a virtual QWERTY keyboard **418**. When the reservation is found, the reservation details screen **380** (FIG. **24**) may be displayed. The user may add the reservation to the travel management application by selecting the “Add Reservation” button **382**.

The reservation may then be available on the handheld device **40** for check-in, as described above.

As discussed above, in addition to storing travel reservations, the travel management application may be used to store and transmit a user's identification. It should be noted that, for security purposes, the identifications may not be altered but rather may be merely added and/or deleted from the handheld device **40**. One or more profiles may be stored on the handheld device **40**. For example, a minor's identification information may be stored on a guardian's handheld device **40**. Various identification methods may be employed, as described above. In order to store identification on the handheld device, the user may select the "Identification" button **232** from the travel management application home screen **220** (FIG. 9). An identification options screen **420** may then be displayed, as illustrated in FIG. 32. The identification options screen **420** may include user-selectable buttons, such as, for example, a "Load Identification" button **422**; a "Transmit Identification" button **424**; and a "Delete Identification" button **425**.

Selection of the "Load Identification" button **422** may open a screen **426**, illustrated in FIG. 33, from which the user may select a "Scan ID" button **428** or an "Enter ID Number" button **430**. If the user selects the "Scan ID" button **428**, a screen **432**, illustrated in FIG. 34, may prompt the user to enter a nickname for the identification into a text entry box **434** and then press a "Scan" button **436** to search for nearby RFID-equipped identification (e.g., a passport or driver's license). Nickname entry may be enabled via a virtual QWERTY keyboard **438**. The data transmission screen **256** (FIG. 12) may be displayed while the handheld device **40** searches for the identification information. Upon locating the information, an identification summary screen **440**, illustrated in FIG. 35, may be displayed. The user may add the identification information to the handheld device **40** by selecting an "Add Identification" button **442**.

If the user selects the "Enter ID Number" button **430** from the screen **426** (FIG. 33), an entry screen **444**, illustrated in FIG. 36, may be displayed. The entry screen **444** may include, for example, a nickname text entry box **446**, an identification type drop-down menu **448**, an authority drop-down menu **450**, and an identification number text entry box **452**. Text entry may be facilitated by a virtual QWERTY keyboard **454**. Again, the user may enter a nickname for the identification in the text entry box **446**. The identification type drop-down menu **448** may include options such as "Passport" and "Driver's License." The authority drop-down menu **450** may be based on the identification type drop-down menu **448** and may include, for example, countries and/or states. The identification number text entry box **452** may enable entry of an identification number from the user's identification, such as a passport number or a driver's license number. In the illustrated embodiment, the user may enter the requested information then press a "Go" button to initiate a search for the desired identification. For example, the travel management application may contact the selected authority to download user identification based on the entered information. An additional security code may be required to receive the information electronically. The identification summary screen **440** (FIG. 35) may then be displayed, and the identification information may be added to the handheld device **40** by selection of the "Add Identification" button **442**.

In order to submit identification information, the user may select the "Transmit ID" button from the identification options screen **420** (FIG. 32). An identification selection screen **458**, illustrated in FIG. 37, may then be displayed containing a list of user-selectable identification buttons **460**.

The user may select the desired identification button **460**, at which time an identification transmission screen **462**, illustrated in FIG. 38, may be displayed. The identification transmission screen **462** may include a "Transmit" button **464** to enable transmission of the selected identification. The data transmission screen **256** (FIG. 12) may be displayed while the identification information is transmitted.

In addition to adding identifications to the handheld device **40**, it may be desirable to delete obsolete identifications. Accordingly, the user may select the "Delete Identification" button **425** from the identification options screen **420** (FIG. 32). The identification selection screen **458** (FIG. 37) may then be displayed. The user may select the desired identification button **460** to open a deletion screen **466**, illustrated in FIG. 39. A "Delete Identification" button **468** may enable the user to remove an identification from the handheld device **40**.

While the invention may be susceptible to various modifications and alternative forms, specific embodiments have been shown by way of example in the drawings and have been described in detail herein. However, it should be understood that the invention is not intended to be limited to the particular forms disclosed. Rather, the invention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention as defined by the following appended claims.

The invention claimed is:

1. A method for transportation ticketing check-in, comprising:
 - prompting a traveler to place a handheld electronic device comprising a display and a plurality of wireless communication interfaces within range of a near field communication (NFC) reader, wherein the display is configured to display a graphical user interface, wherein each of the plurality of wireless communication supports a respective communication protocol, and wherein one of the plurality of wireless communication interfaces comprises an NFC interface;
 - retrieving ticketing and traveler identification information from the NFC interface of the handheld electronic device via the NFC reader; and
 - verifying the traveler's identity using the retrieved traveler identification, wherein verifying the traveler's identity comprises comparing a photograph retrieved from the handheld electronic device to the traveler.
2. The method of claim 1, wherein verifying the traveler's identity comprises downloading a photograph of the traveler from a database using an identification code retrieved from the handheld electronic device.
3. The method of claim 1, wherein verifying the traveler's identity comprises:
 - downloading a fingerprint from a database using an identification code retrieved from the handheld electronic device; and
 - comparing the downloaded fingerprint to a scanned fingerprint provided by the traveler at check-in.
4. The method of claim 1, wherein verifying the traveler's identity comprises:
 - downloading a first retinal scan from a database using an identification code retrieved from the handheld electronic device; and
 - comparing the downloaded first retinal scan to a second retinal scan provided by the traveler at check-in.
5. The method of claim 1, comprising:
 - prompting the traveler to place the handheld electronic device within range of the NFC reader again after successfully checking in; and

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updating the ticketing information on the handheld electronic device to indicate that the traveler checked in successfully.

6. The method of claim 5, wherein updating the ticketing information comprises storing information about checked luggage on the handheld electronic device.

7. The method of claim 1, wherein the ticketing information comprises a reservation for a flight, car rental, cruise, train, bus, or a combination thereof.

8. The method of claim 1, wherein, in addition to the NFC interface, the plurality of wireless communication interfaces comprises a Wi-Fi communication interface, a cellular data communication interface, or a combination thereof.

9. A handheld electronic device comprising tangible, machine-readable media, comprising code executable to perform the steps of:

- booking a travel reservation for a mode of transportation using a travel management application on the handheld electronic device;
- scanning an email account on the handheld electronic device for an email containing the travel reservation;
- importing the travel reservation information from the email into the travel management application;
- storing the travel reservation on the handheld electronic device;
- accessing the travel reservation using the travel management application;
- transmitting the travel reservation from the handheld electronic device to a check-in kiosk;
- receiving check-in details from the check-in kiosk to the handheld electronic device; and
- transmitting the check-in details from the handheld electronic device to a gate kiosk to gain entrance to the mode of transportation.

10. The handheld electronic device of claim 9, wherein the tangible, machine-readable media comprises code executable to perform the steps of:

- accessing the travel reservation from a website; and
- importing the travel reservation information from the website into the travel management application.

11. The handheld electronic device of claim 9, wherein the tangible, machine-readable media comprises code executable to perform the steps of:

- receiving the travel reservation via NFC from another NFC-enabled electronic device; and
- importing the travel reservation information from the other NFC-enabled electronic device into the travel management application.

12. The handheld electronic device of claim 9, wherein the tangible, machine-readable media comprises code executable to perform the step of retrieving the travel reservation via the travel management application using a carrier-provided confirmation number.

13. The handheld electronic device of claim 9, wherein at least one of transmitting the travel reservation from the handheld electronic device to a check-in kiosk, receiving check-in details from the check-in kiosk to the handheld electronic device, and transmitting the check-in details from the handheld electronic device to a gate kiosk to gain entrance to the mode of transportation, occurs via near-field communication (NFC).

14. A method for transportation ticketing check-in, comprising:

- prompting a traveler to place a handheld electronic device comprising a display and a plurality of wireless communication interfaces within range of a near field communication (NFC) reader, wherein the display is configured

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- to display a graphical user interface, wherein each of the plurality of wireless communication supports a respective communication protocol, and wherein one of the plurality of wireless communication interfaces comprises an NFC interface;

- retrieving ticketing and traveler identification information from the NFC interface of the handheld electronic device via the NFC reader; and

- verifying the traveler's identity using the retrieved traveler identification, wherein verifying the traveler's identity comprises downloading a photograph of the traveler from a database using an identification code retrieved from the handheld electronic device.

15. A method for transportation ticketing check-in, comprising:

- prompting a traveler to place a handheld electronic device comprising a display and a plurality of wireless communication interfaces within range of a near field communication (NFC) reader, wherein the display is configured to display a graphical user interface, wherein each of the plurality of wireless communication supports a respective communication protocol, and wherein one of the plurality of wireless communication interfaces comprises an NFC interface;

- retrieving ticketing and traveler identification information from the NFC interface of the handheld electronic device via the NFC reader; and

- verifying the traveler's identity using the retrieved traveler identification, wherein verifying the traveler's identity comprises:

- downloading a fingerprint from a database using an identification code retrieved from the handheld electronic device; and
- comparing the downloaded fingerprint to a scanned fingerprint provided by the traveler at check-in.

16. A method for transportation ticketing check-in, comprising:

- prompting a traveler to place a handheld electronic device comprising a display and a plurality of wireless communication interfaces within range of a near field communication (NFC) reader, wherein the display is configured to display a graphical user interface, wherein each of the plurality of wireless communication supports a respective communication protocol, and wherein one of the plurality of wireless communication interfaces comprises an NFC interface;

- retrieving ticketing and traveler identification information from the NFC interface of the handheld electronic device via the NFC reader; and

- verifying the traveler's identity using the retrieved traveler identification, wherein verifying the traveler's identity comprises:

- downloading a first retinal scan from a database using an identification code retrieved from the handheld electronic device; and
- comparing the downloaded first retinal scan to a second retinal scan provided by the traveler at check-in.

17. A handheld electronic device comprising tangible, machine-readable media, comprising code executable to perform the steps of:

- booking a travel reservation for a mode of transportation using a travel management application on the handheld electronic device;
- accessing the travel reservation from a website;
- importing the travel reservation information from the website into the travel management application;

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storing the travel reservation on the handheld electronic device;
accessing the travel reservation using the travel management application;
transmitting the travel reservation from the handheld electronic device to a check-in kiosk;

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receiving check-in details from the check-in kiosk to the handheld electronic device; and
transmitting the check-in details from the handheld electronic device to a gate kiosk to gain entrance to the mode of transportation.

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