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Yan

(10) **Patent No.: US 11,233,757 B1**
(45) **Date of Patent: *Jan. 25, 2022**

(54) **SYSTEMS AND METHODS FOR ELECTRONIC GROUP EXCHANGE OF DIGITAL BUSINESS CARDS DURING VIDEO CONFERENCE, TELECONFERENCE OR MEETING AT SOCIAL DISTANCE**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

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(22) Filed: **Jan. 7, 2021**

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(51) **Int. Cl.**
H04L 12/58 (2006.01)
H04L 29/08 (2006.01)
G06K 7/14 (2006.01)

(52) **U.S. Cl.**
CPC ***H04L 51/08*** (2013.01); ***H04L 51/046*** (2013.01); ***H04L 67/306*** (2013.01); *G06K 7/1417* (2013.01)

(58) **Field of Classification Search**
None
See application file for complete search history.

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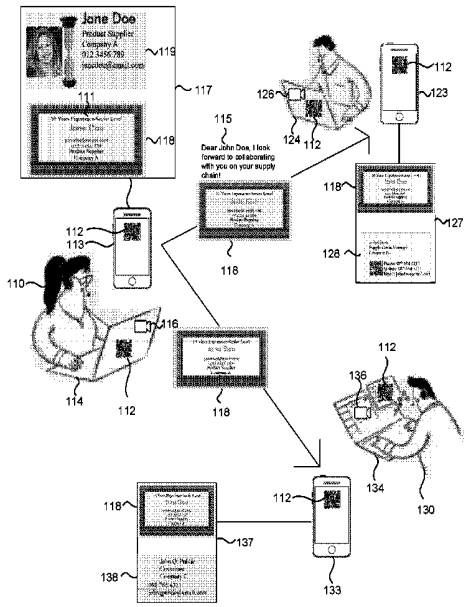
Primary Examiner — Backhean Tiv
(74) *Attorney, Agent, or Firm* — Sheppard Mullin Richter & Hampton LLP

(57) **ABSTRACT**

Provided is a system and computer readable medium for electronic group exchange of digital business cards, that includes a computing system comprising a server configured to store data of business cards associated with client devices, one or more processors; and a memory storing instructions that, when executed by the one or more processors, causes the one or more processors to perform a group exchange of digital business cards among all devices in the group. The digital business cards may be automatically exchanged among different devices in response to detecting, from the different devices, scans of a group QR code or a scannable code, detecting inputs of a group numeric or alphanumeric code, detecting a selection of nearby devices with which to exchange digital business cards, or detecting devices that are participating in a conference setting.

20 Claims, 15 Drawing Sheets



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(60) Provisional application No. 63/048,642, filed on Jul. 6, 2020.

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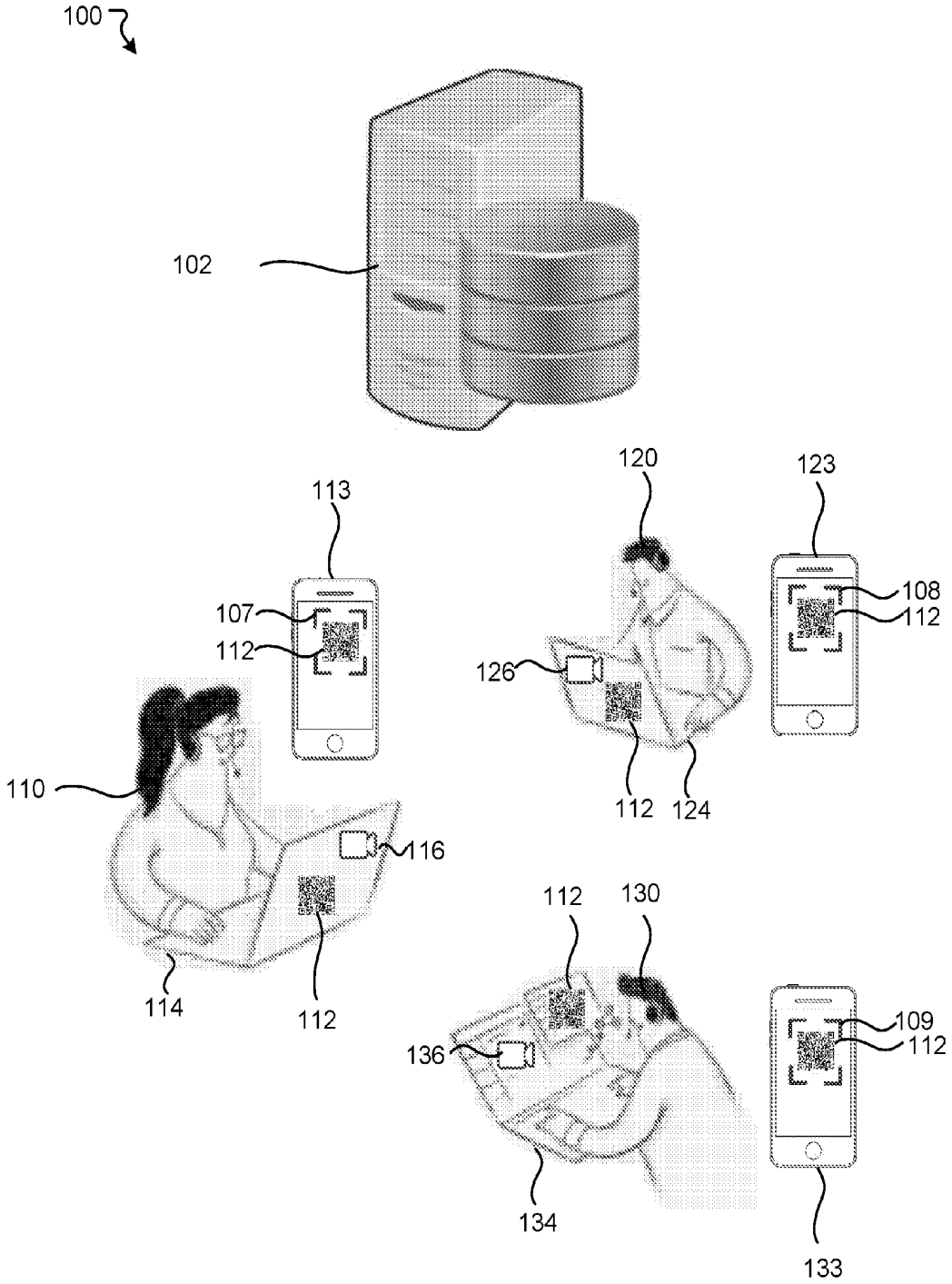
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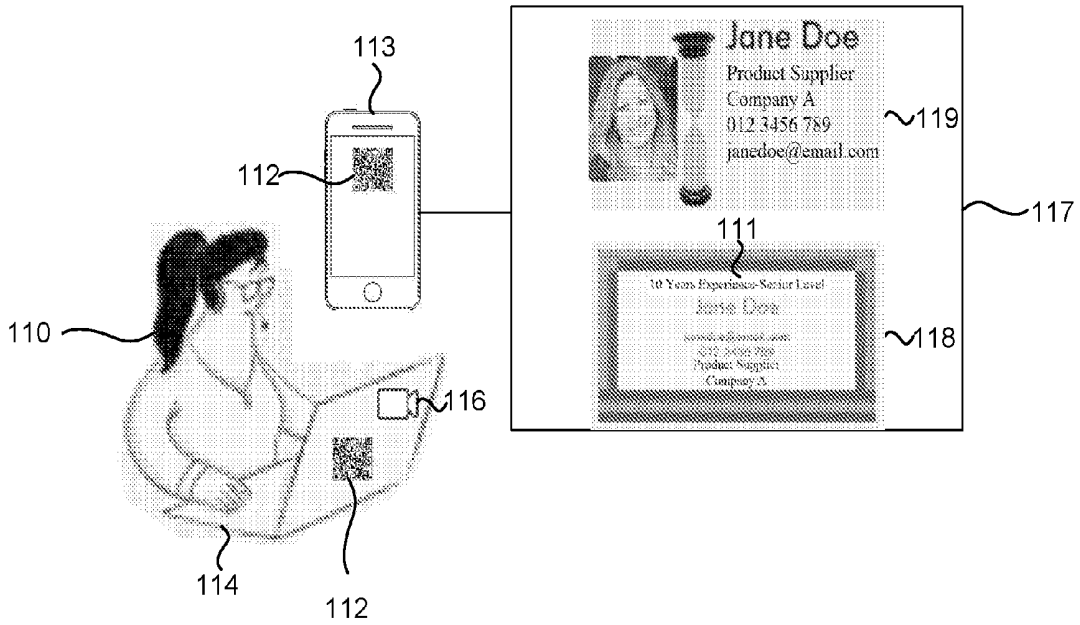
FIG. 1A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Product Supplier
Company A
012 3456 789
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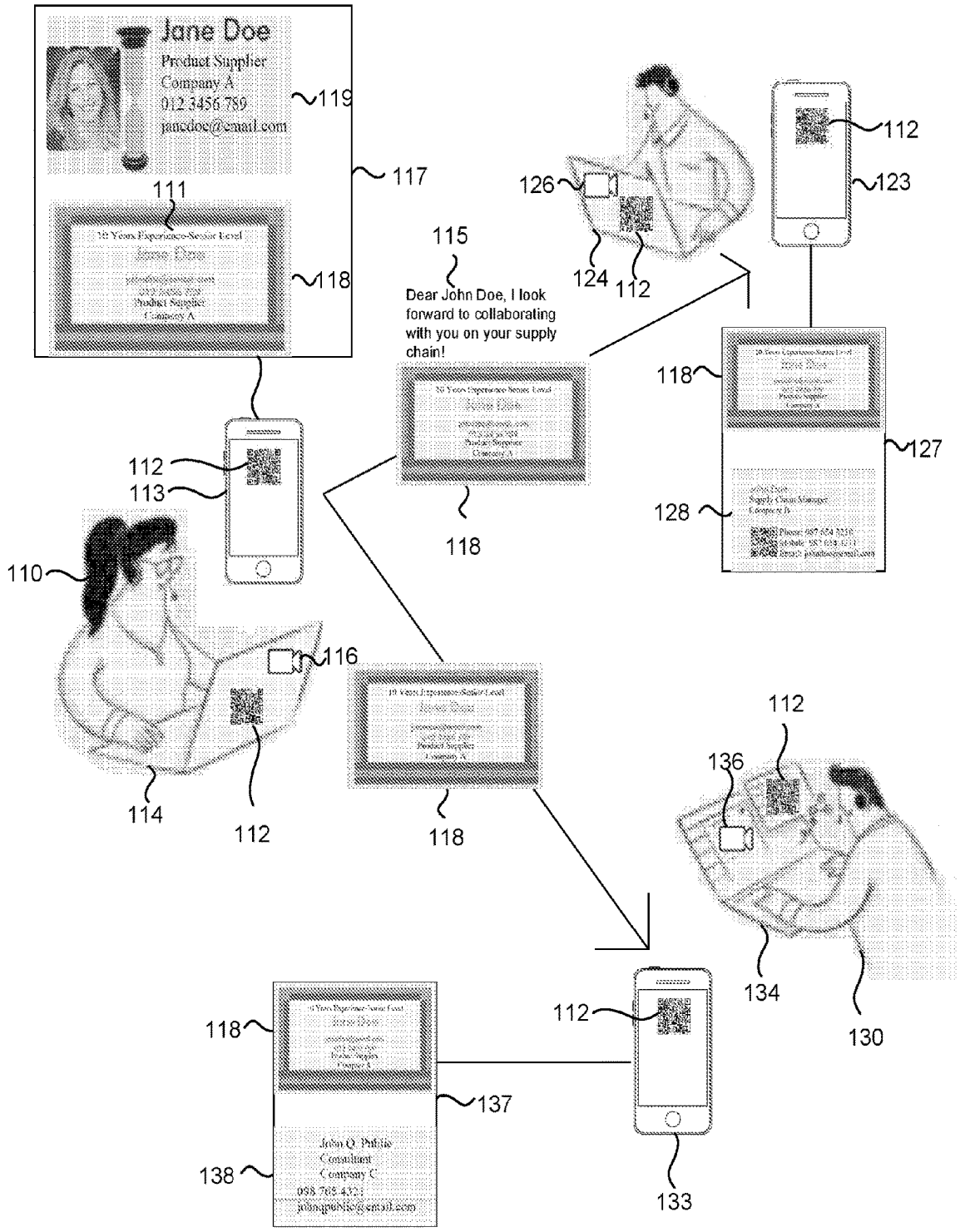
FIG. 1B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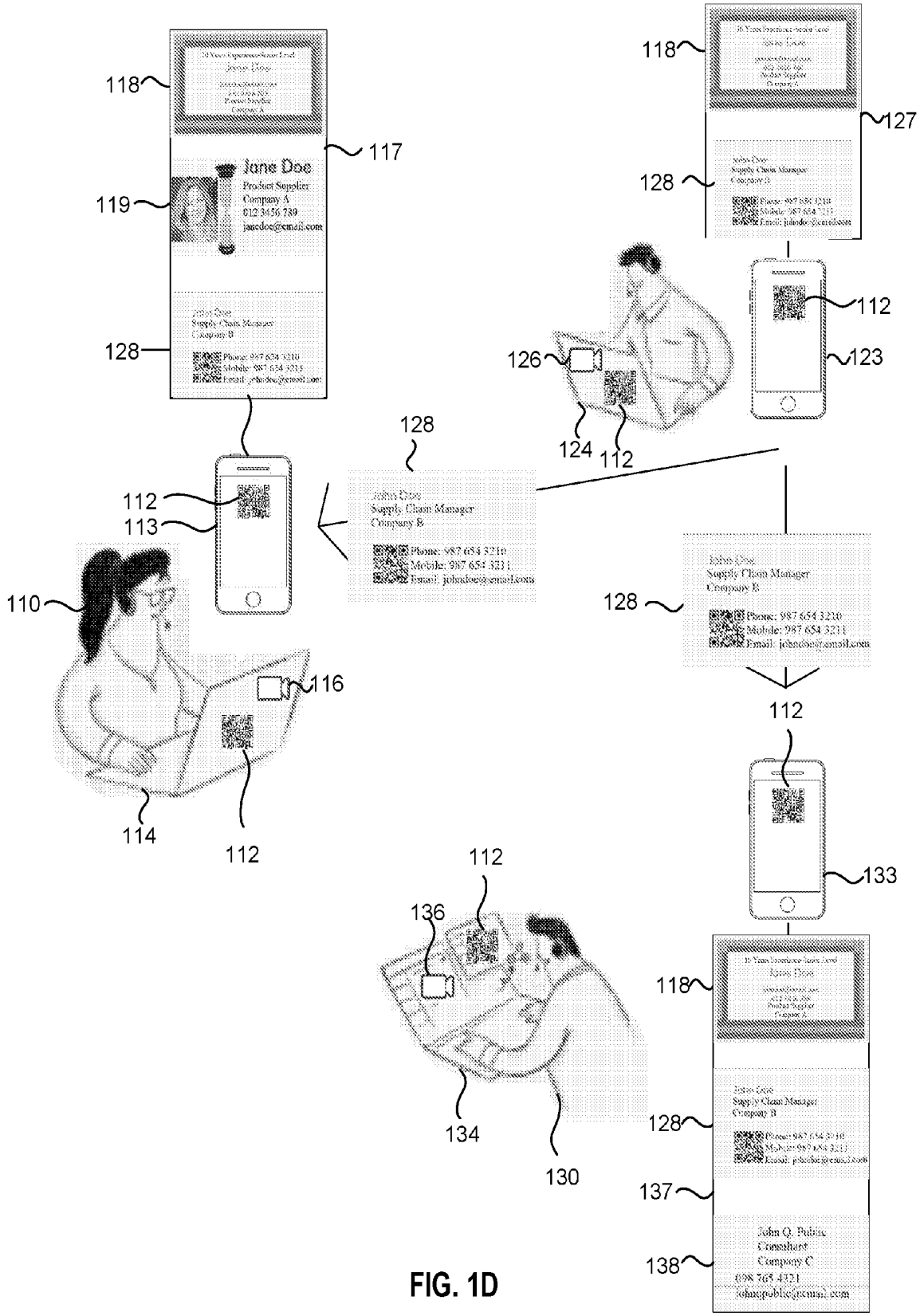
Product Supplier
Company A
012 3456 789
janedoe@email.com
119
117
111
118
112
113
110
116
114
112
118
115
Dear John Doe, I look forward to collaborating with you on your supply chain!
118
126
124
112
112
123
118
127
128
112
136
134
130
118
137
138
112
133

FIG. 1C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Product Supplier
Company A
012 3456 789
janedoe@email.com
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John Doe
Supply Chain Manager
Company B
Phone: 987 654 3210
Mobile: 987 654 3211
Email: johndoe@email.com
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John Doe
Supply Chain Manager
Company B
Phone: 987 654 3210
Mobile: 987 654 3211
Email: johndoe@email.com
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112
123
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112
128
John Doe
Supply Chain Manager
Company B
Phone: 987 654 3210
Mobile: 987 654 3211
Email: johndoe@email.com
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John Q. Public
Consultant
Company C
698 765 4321
jqpublic@email.com
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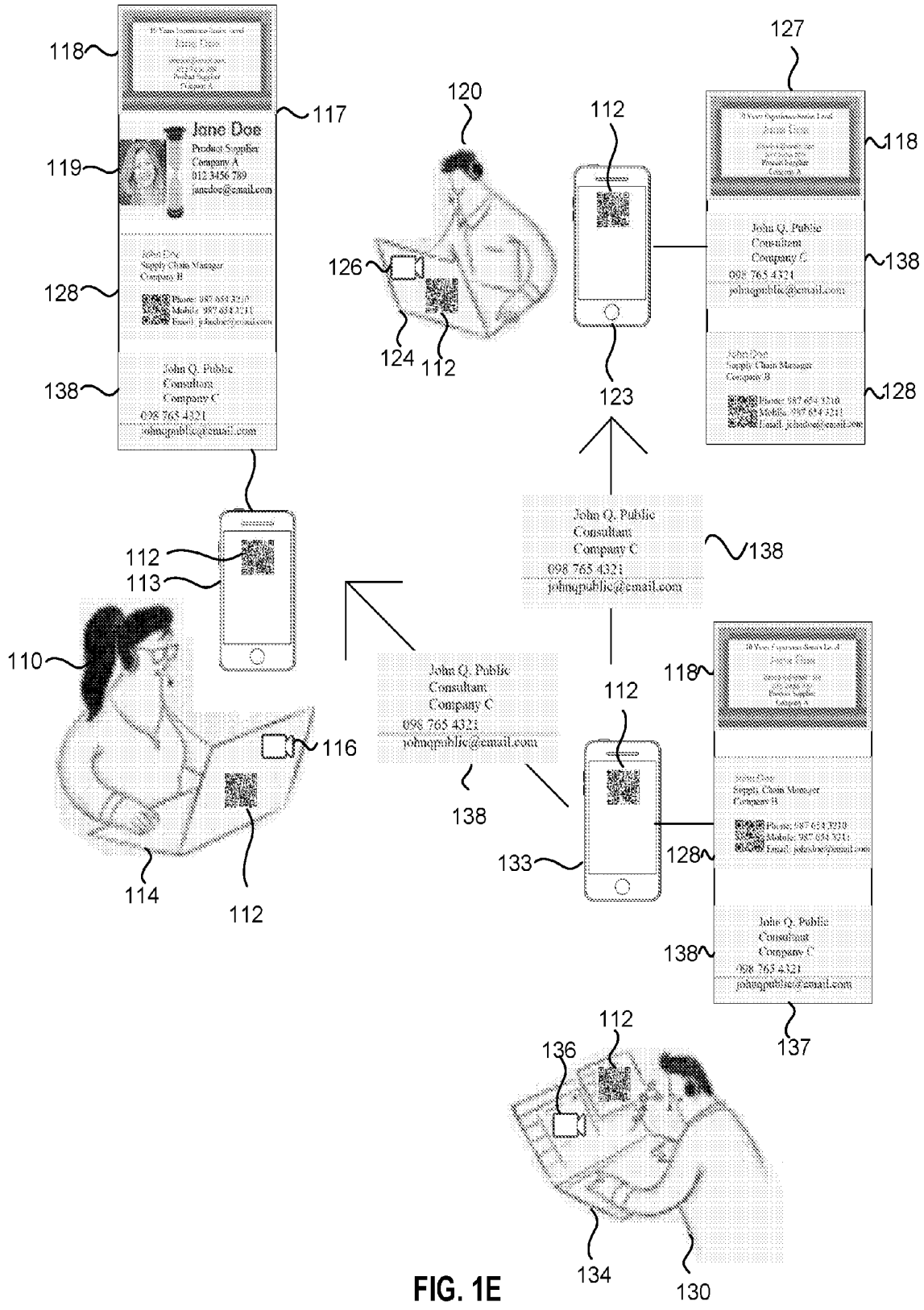
FIG. 1D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Product Supplier
Company A
012 3456 789
janedoe@email.com
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128
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Supply Chain Manager
Company B
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John Q. Public
Consultant
Company C
098 765 4321
johnqpublic@email.com
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128
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112
John Q. Public
Consultant
Company C
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FIG. 1E

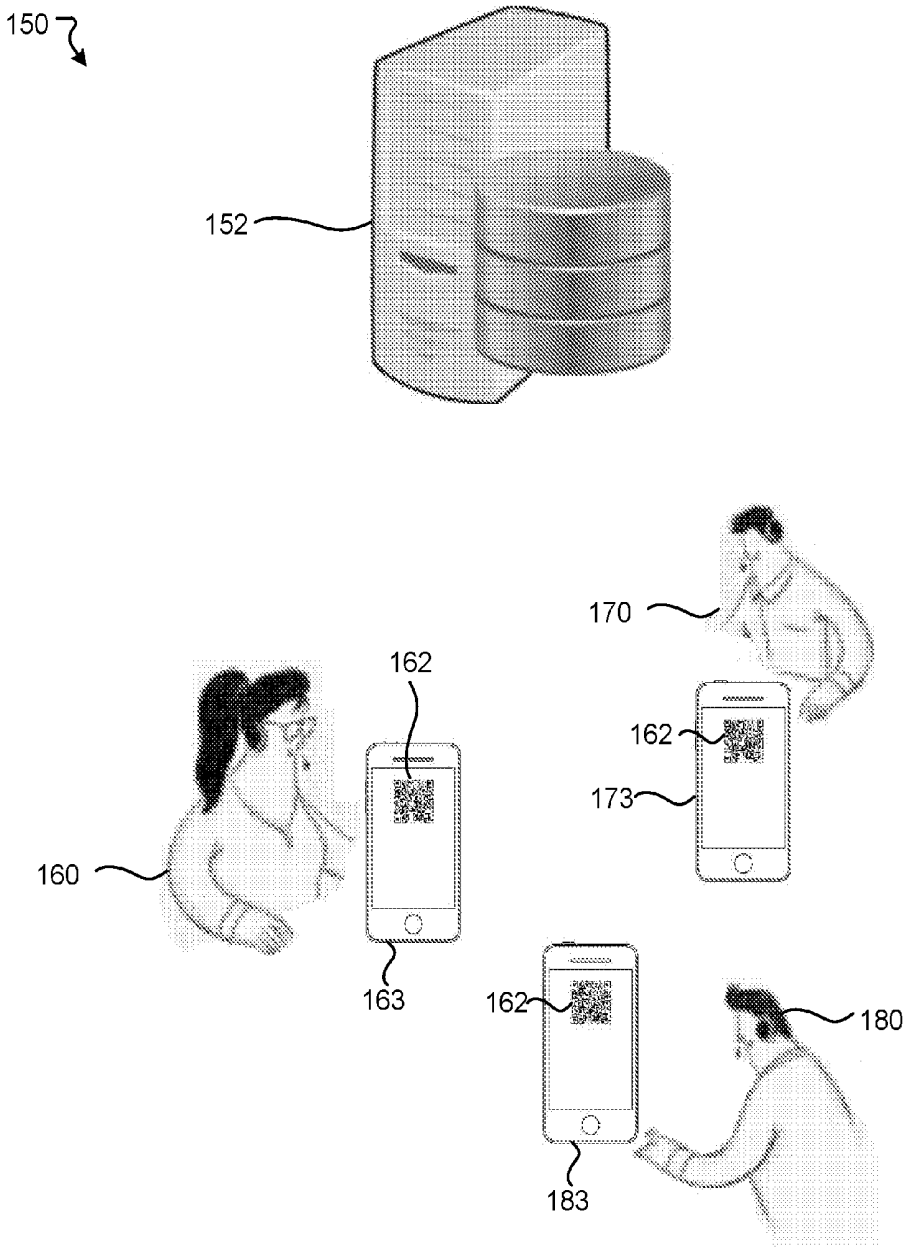

FIG. 1F

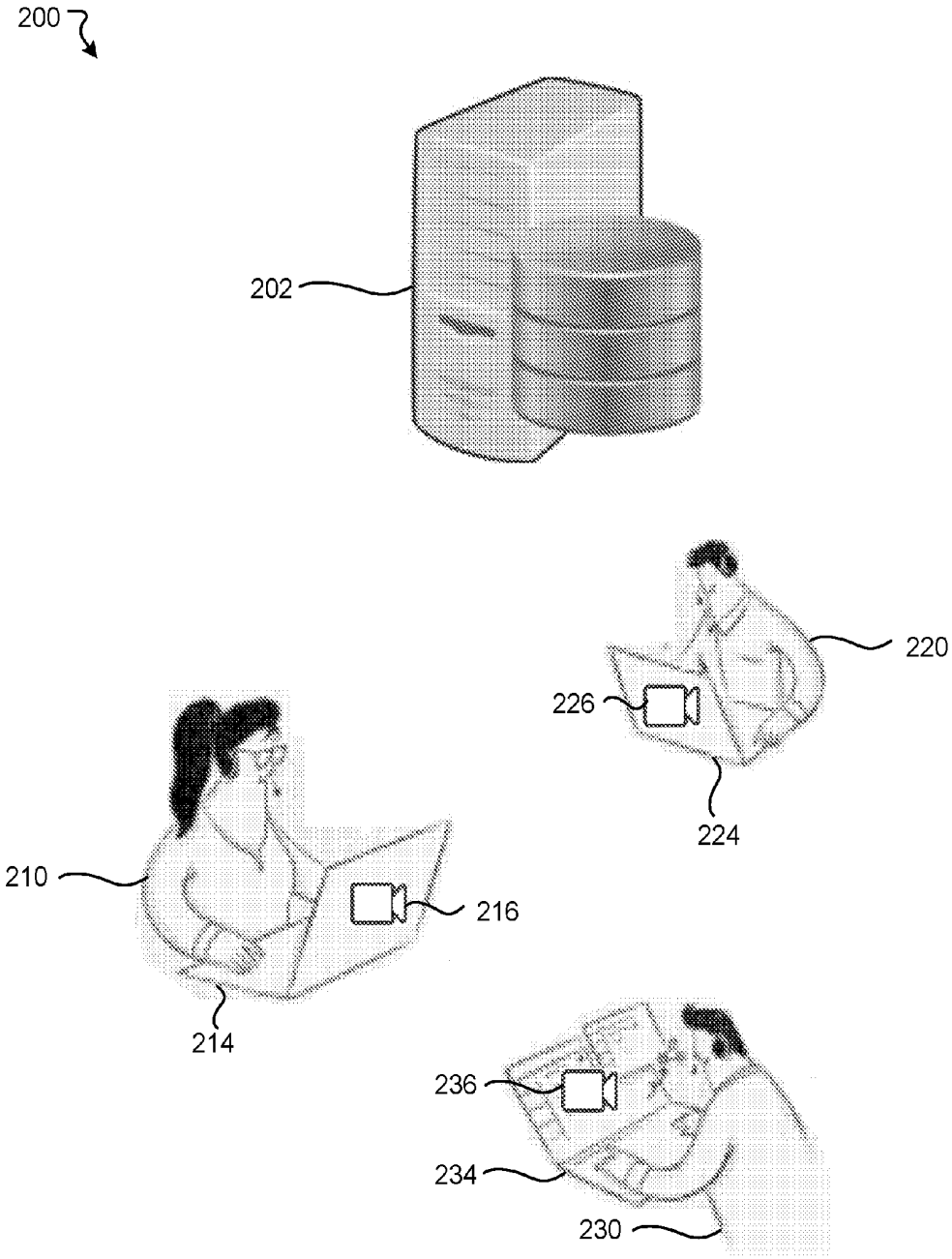

FIG. 2

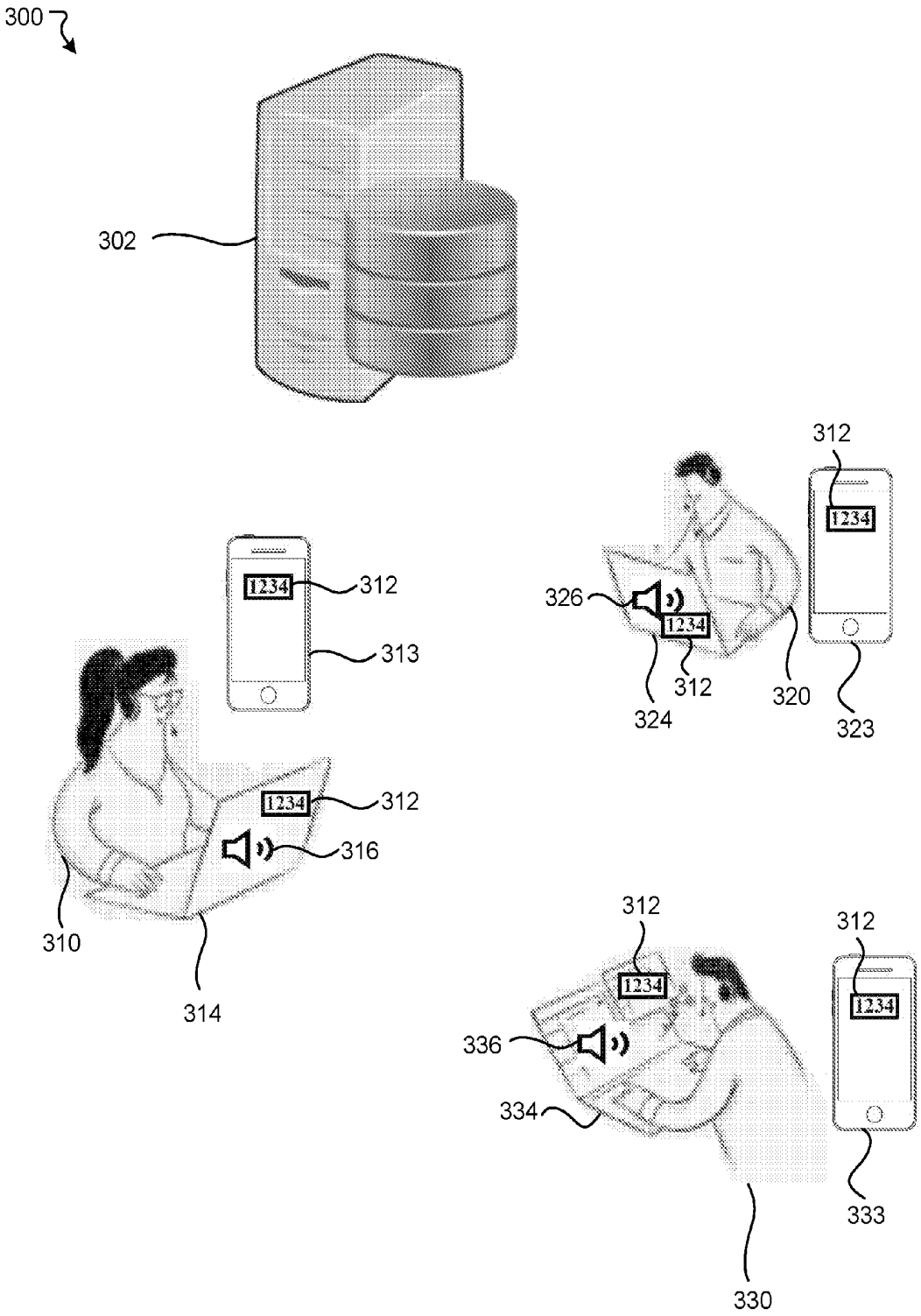

FIG. 3A

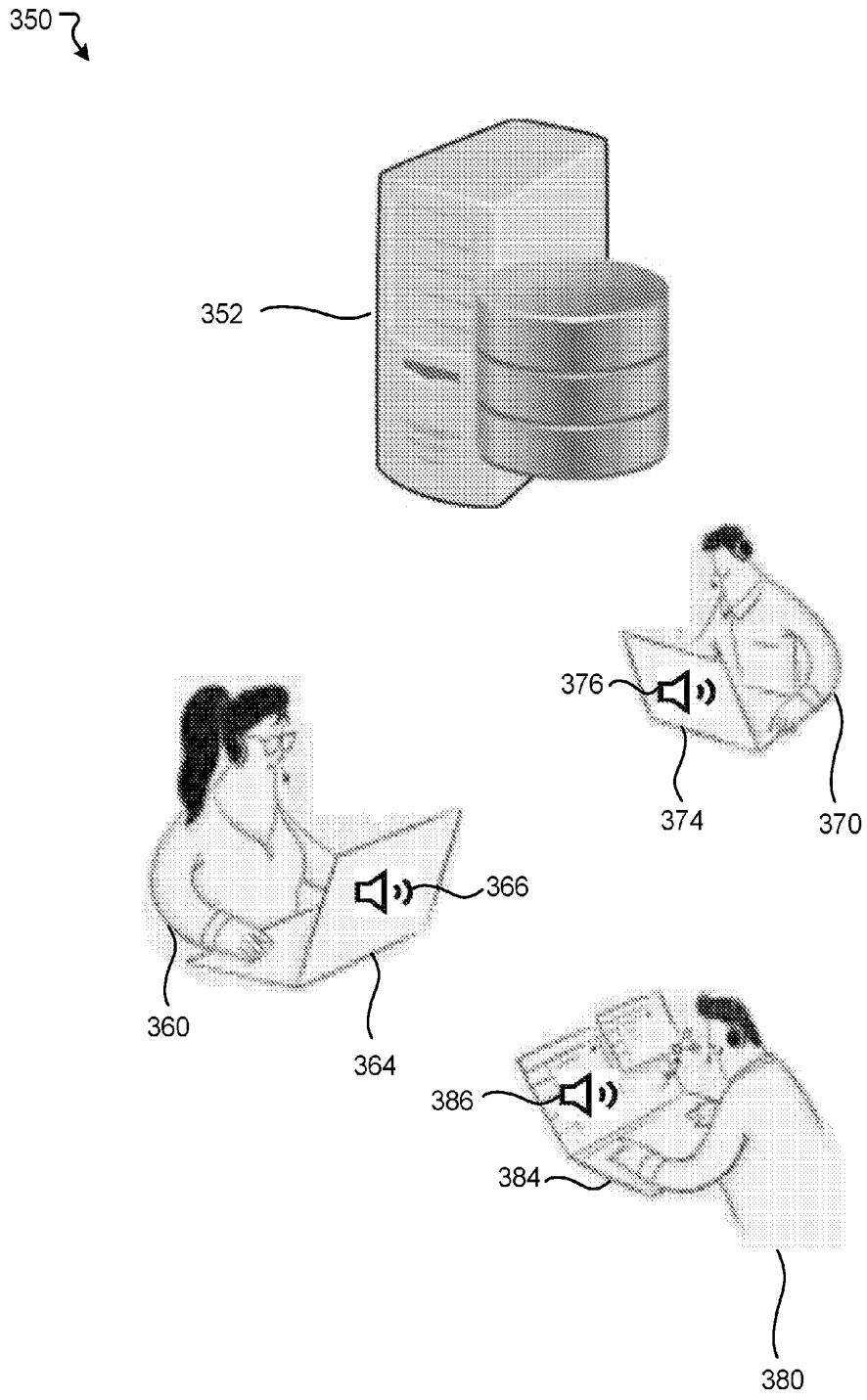

FIG. 3B

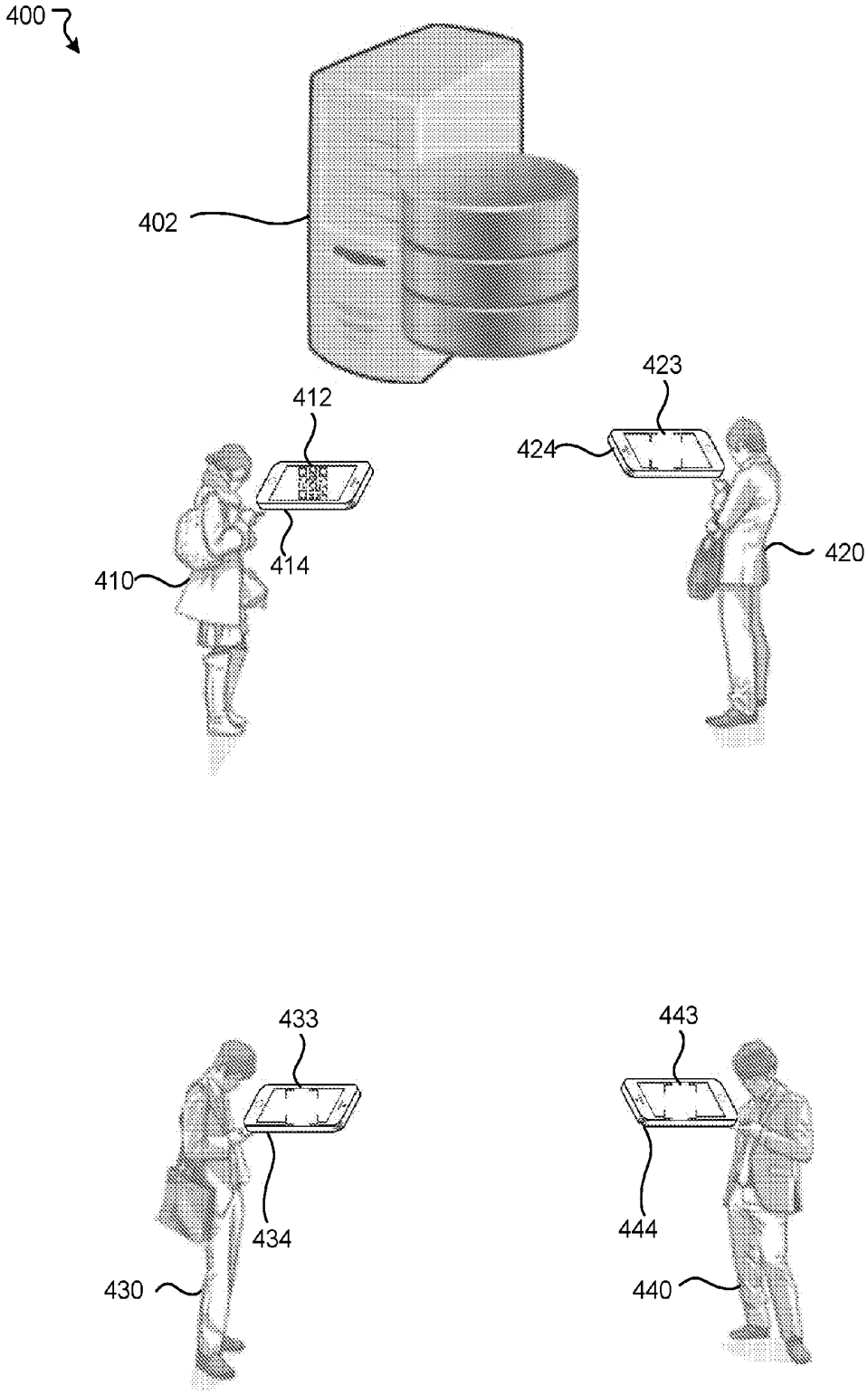

FIG. 4A

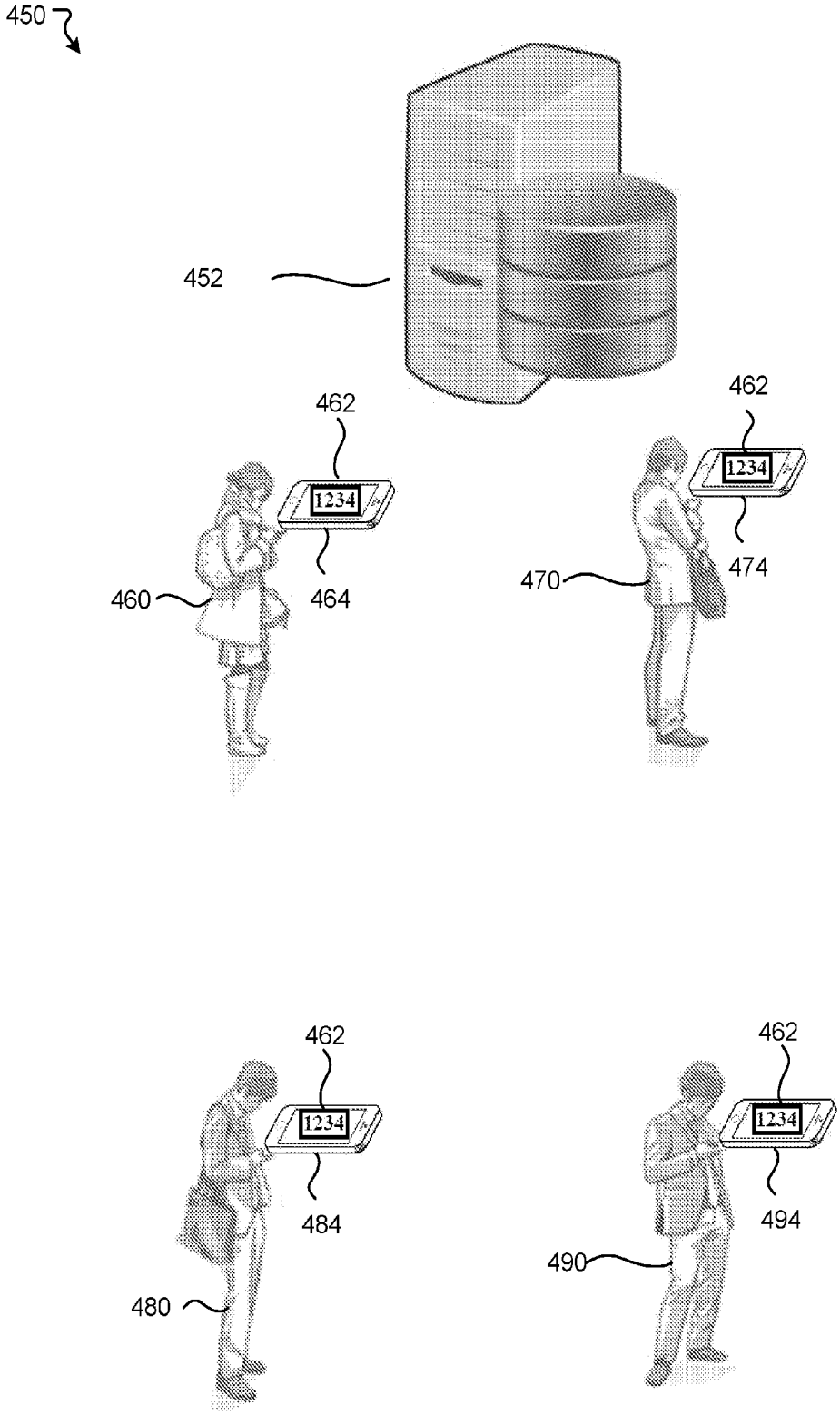
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FIG. 4B

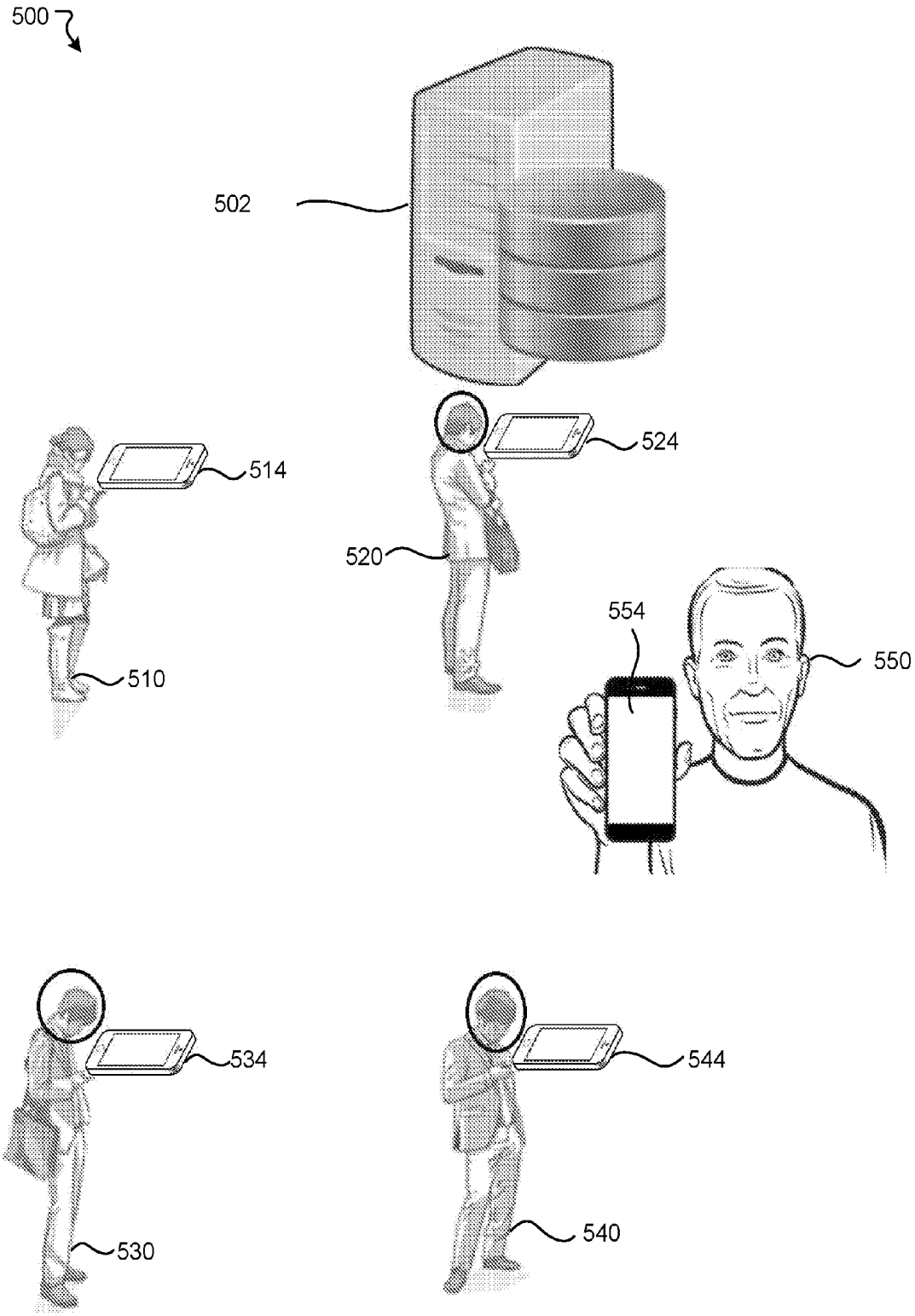
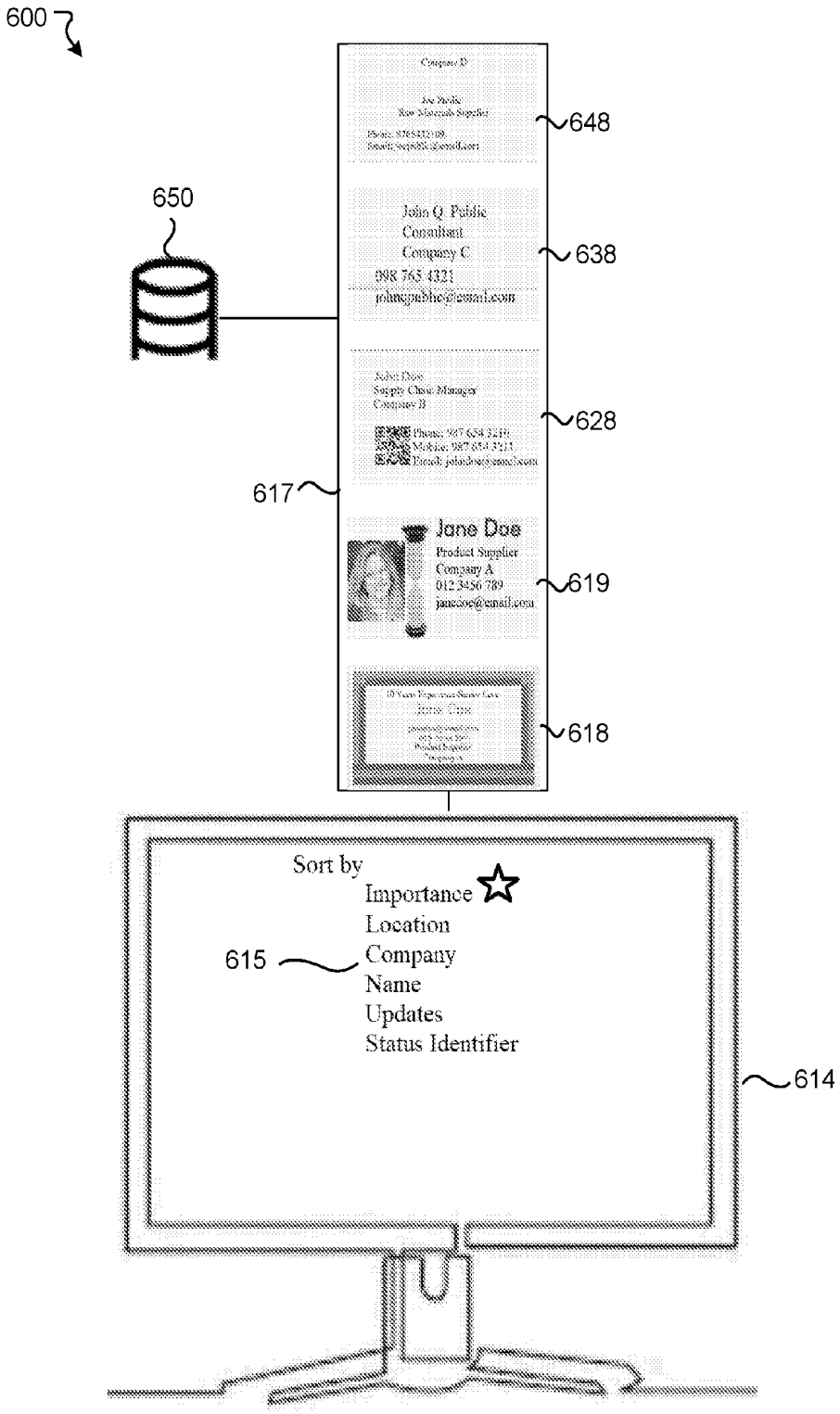


FIG. 5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John Q. Public
Consultant
Company C
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Jane Doe
Product Supplier
Company A
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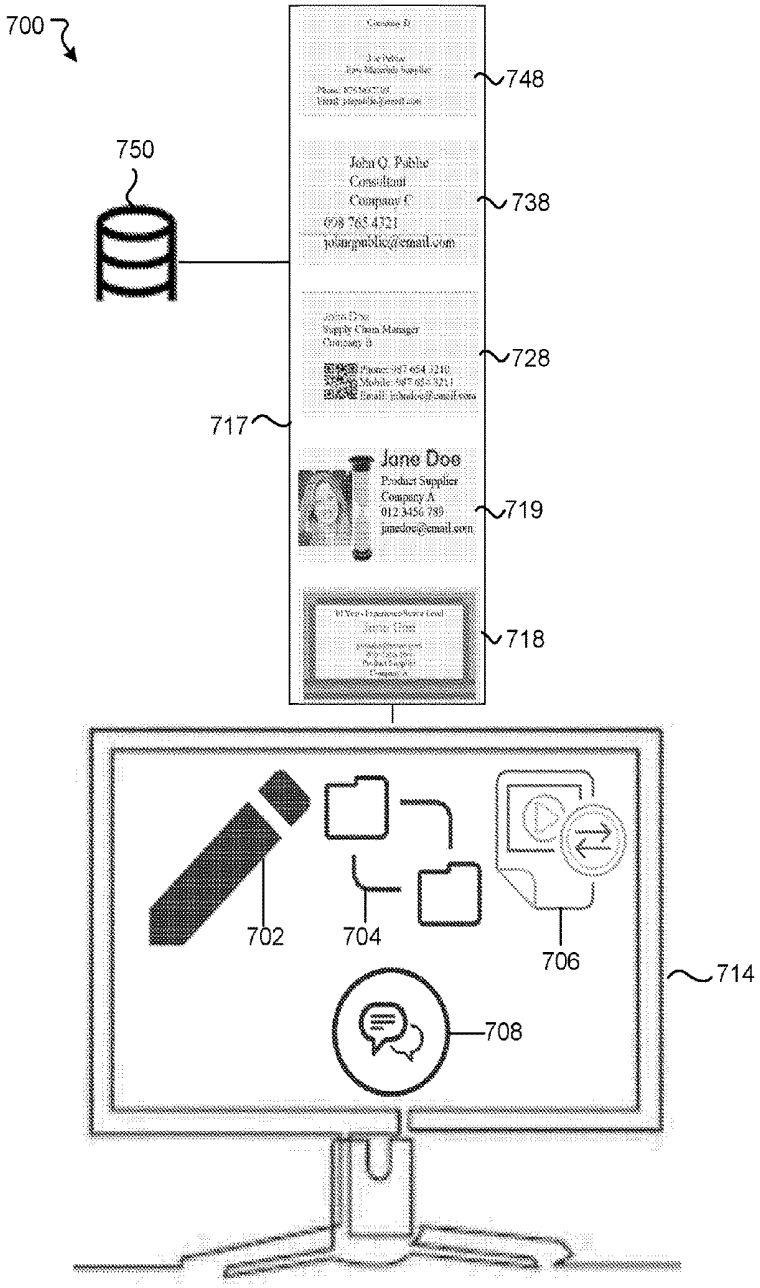
Sort by
Importance
Location
615
Company
Name
Updates
Status Identifier
614

FIG. 6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John Q. Public
Consultant
Company C
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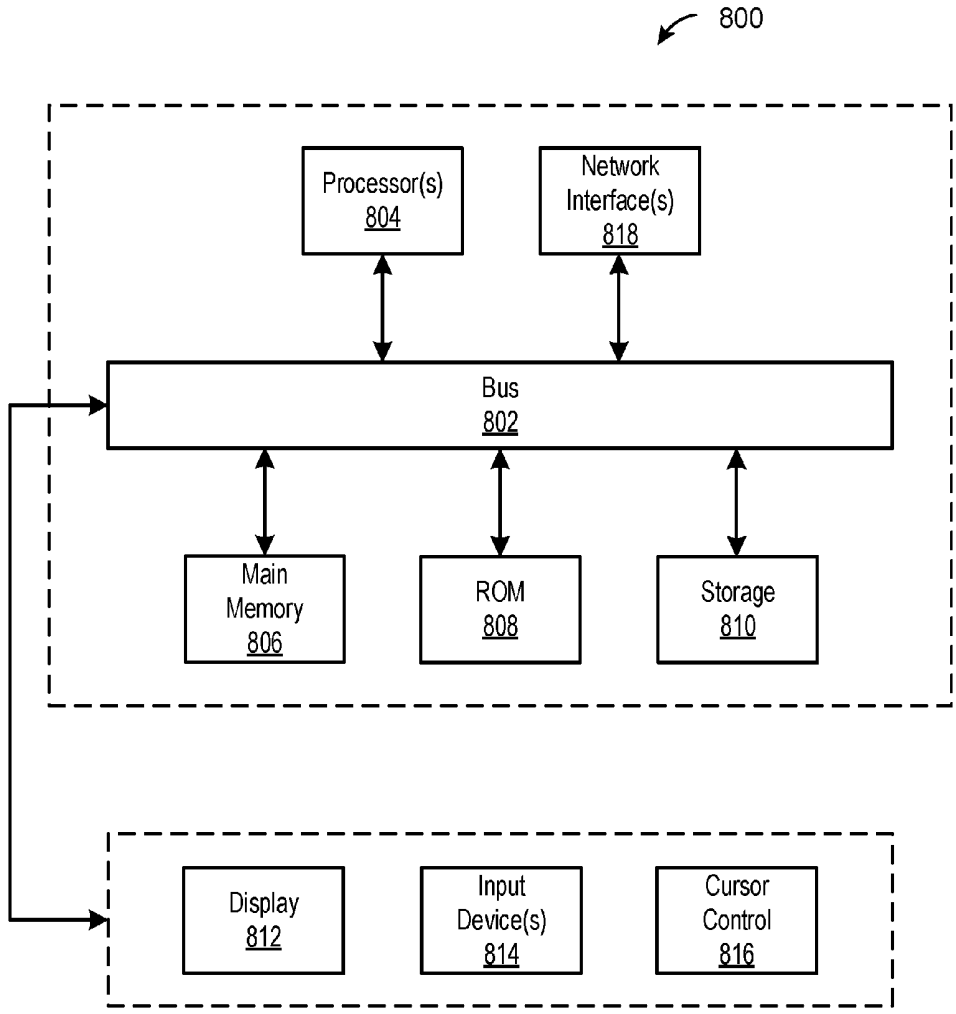
Jane Doe
Product Supplier
Company A
719
718
702
704
706
714
708

FIG. 7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Processor(s)
804
Network
Interface(s)
818
Bus
802
Main
Memory
806
ROM
808
Storage
810
Display
812
Input
Device(s)
814
Cursor
Control
816

FIG. 8

SYSTEMS AND METHODS FOR ELECTRONIC GROUP EXCHANGE OF DIGITAL BUSINESS CARDS DURING VIDEO CONFERENCE, TELECONFERENCE OR MEETING AT SOCIAL DISTANCE

CROSS-REFERENCE TO RELATED APPLICATION

This application is a continuation of U.S. patent application Ser. No. 16/927,672, filed Jul. 13, 2020, which claims the benefit under 35 U.S.C § 119 (e) of the U.S. Provisional Application Ser. No. 63/048,642, filed Jul. 6, 2020, the contents of which are incorporated herein in its entirety.

BACKGROUND

The present disclosure relates generally to electronic group exchange of digital business cards, for example, touchless multiparty business card exchange during a video conference, teleconference, or within social distancing constraints.

The Covid-19 pandemic is a catalyst that has resulted in rapid, sweeping changes in manners of social and business interaction. For example, video-conferencing and teleconferencing have become more commonplace and have largely supplanted traditional face-to-face meetings. Long-established events such as conferences, trade shows, and office visits have been replaced by virtual meetings or have implemented social distancing practices for protection purposes. Accordingly, the practice of exchanging paper business cards needs to be adapted to the current reality of virtual meetings and social distancing guidelines or regulations, as addressed by the present disclosures, which facilitates touchless exchange of business cards and other information.

In such a manner, efficient and touchless business card exchange among a group of devices may be facilitated, in which every device transmits a business card to multiple other devices and receives business cards from the multiple other devices together, rather than having to transmit and receive business cards one-by-one to different users. For example, even if only three nearby people exchanged business cards with one another in a conventional manner, three separate sending and three separate receiving interactions would be required. Using this touchless business card exchange described in this application, a single interaction would seamlessly exchange business cards among a group.

SUMMARY

Described herein are systems and methods for providing automatic exchange of digital, electronic, or virtual business cards in response to scanning and/or capturing a QR code, barcode, or other scannable code, inputting a numeric or alphanumeric code, or selection by a device associated with a nearby user. The systems may comprise a computing or client device, or a computing system which may comprise a cloud server and/or processor. In some embodiments, a computing system may comprise a server configured to store data of business cards associated with client devices, the data comprising, for each entity of the entities, a name, a title associated with the name, contact information associated with the name, and an occupation associated with the name; one or more processors; and a memory storing instructions that, when executed by the one or more processors, causes the one or more processors to perform: receiving a group QR code, barcode, or scannable code created by a client device of the client devices; detecting scans and/or captures of the group QR code, barcode, or the scannable code from second client devices of the client devices; and in response to detecting the scans and/or captures, automatically exchanging the data among the second client devices and the client device.

In some embodiments, a computing system may comprise a server configured to store the aforementioned data of business cards. The computing system may further comprise one or more processors and a memory storing instructions that, when executed by the one or more processors, causes the one or more processors to perform: receiving a group code created by a client device of the client devices, the group code comprising a group numeric code or a group alphanumeric code; detecting inputs of the group code from at least one second client device of the client devices; and in response to detecting the inputs of the group numeric or the group alphanumeric code, automatically exchanging the data among the at least one second client device and the client device. Thus the exchange could be one-to-one or among more than two devices.

In some embodiments, the instructions may cause the one or more processors to perform: receiving a request to exchange the data from a client device of the client devices; detecting other client devices, from the client devices, that are within a threshold radius of the client device, using a GPS, Bluetooth, or other location based technologies; transmitting, to the client device, information of the other client devices; receiving, from the client device, a selection, from the other client devices, of second client devices with which to exchange the data; and automatically exchanging the data among the client device and the selected second client devices.

In some embodiments, the instructions may cause the one or more processors to perform: detecting second client devices, of the client devices, that are participating in a conference setting, wherein a quantity of the second client devices is greater than two; and automatically exchanging the data among the detected second client devices.

In some embodiments, the server or a local device associated with a particular client device stores or backs up a plurality of business cards that all describe a single user associated with the particular client device, and the automatically exchanging the data comprises: extracting data regarding individual characteristics of each of other client devices, the other client devices being comprised within or as part of a group consisting of the second client devices and the client device, the individual characteristics comprising any of industries, professions, fields, specialties, or titles associated with respective users of the other client devices; transmitting the extracted data to the particular client device; receiving, from the particular client device or manually from a user associated with the particular client device, a selection of one or more particular business cards, out of the plurality of business cards, to be provided to each of the other client devices, the selection being based on the extracted data; and transmitting the selected one or more particular business cards to the other client devices.

In some embodiments, the automatically exchanging the data comprises: determining whether to transfer, from a particular client device to a second particular client device, business card data describing another user of another device, based on a selection or an input by a user of the particular client device or based on a degree of similarity between a profession, specialty, title, or field of practice of the another user and a user of the second particular client device; and transferring the business card data in accordance with the

determination, with or without permission from the another user. Permission from the another user may or may not be received.

Various embodiments of the present disclosure provide an analogous method implemented by a computing system including one or more processors and storage media storing machine-readable instructions, wherein the method is performed using the one or more processors. Various embodiments of the present disclosure provide a computer readable storage medium including instructions that, when executed by one or more processors of a computing system, cause the computing system to perform the aforementioned or analogous steps associated with the server and client devices. The steps may include the storing in a server, receiving, detecting, transmitting, automatic exchanging, transmitting, and determining steps described above.

BRIEF DESCRIPTION OF THE DRAWINGS

Certain features of various embodiments of the present technology are set forth with particularity in the appended claims. A better understanding of the features and advantages of the technology will be obtained by reference to the following detailed description that sets forth illustrative embodiments, in which the principles of the invention are utilized, and the accompanying drawings of which:

FIG. **1**A illustrates an example environment in which touchless business card exchange may be facilitated, in a video conference setting, according to some embodiments of the present disclosure.

FIGS. **1**B-**1**E illustrate exemplary implementations in accordance with the example environment of FIG. **1**A, according to some embodiments of the present disclosure.

FIG. **1**F illustrates an alternative example environment, in a video conference setting, to that shown in FIG. **1**A.

FIG. **2** illustrates an example environment in which touchless business card exchange may be facilitated, in a video conference setting, according to some embodiments of the present disclosure.

FIGS. **3**A and **3**B illustrate example environments in which touchless business card exchange may be facilitated, in a teleconference setting, according to some embodiments of the present disclosure.

FIGS. **4**A and **4**B illustrate example environments in which touchless business card exchange may be facilitated, in a face-to-face setting, according to some embodiments of the present disclosure.

FIG. **5** illustrates an example environment in which touchless business card exchange may be facilitated, in a face-to-face setting, according to some embodiments of the present disclosure.

FIGS. **6-7** illustrate exemplary implementations in accordance with any of the example environments described with respect to FIGS. **1**A, **1**F, **2**, **3**A, **3**B, **4**A, **4**B, and/or **5**.

FIG. **8** is a diagram of an example computer system for implementing the features disclosed herein.

DETAILED DESCRIPTION

Scenarios with which to implement business card exchange in a context of social distancing regulations or in virtual settings include a video conference setting, a teleconference setting, and a face-to-face setting at a social distance. During the video conference setting, a device, which may be a personal computer, handheld device such as a mobile phone, tablet or any other device having a video conference feature, may, using the device and/or a central server such as a cloud-based server, generate or create a QR code, known as a group QR code, which may be received by all devices participating in the current video conference setting. In some embodiments, as will be described below with respect to FIG. **1**A, one device receives the group QR code and a separate device scans and/or captures the QR code and exchanges the business cards. Although the foregoing describes a group QR code, it is contemplated that a barcode or other scannable code may also be implemented in place of, or in addition to, the group QR code. Any devices that have scanned and/or captured the group QR code may exchange business card information, either automatically or after authorizing or approving the business card information exchange. In some embodiments, instead of or in addition to the group QR code in the video conference setting, a group numeric code or group alphanumeric code may be created. Once the group numeric code or the group alphanumeric code is inputted, the business card information may be exchanged among all devices that have inputted the group numeric code or the group alphanumeric code.

During the teleconference setting, a device may create a group numeric code or group alphanumeric code which is received by all other devices participating in the teleconference setting. Any devices that have inputted the group numeric code or the group alphanumeric code may exchange business card information, either automatically or after authorizing or approving the business card information exchange. In some embodiments, a device may receive the group numeric code or the group alphanumeric code using the teleconference setting, and a separate device may exchange the business cards upon entry or receipt of the group numeric code or the group alphanumeric code.

During the face-to-face setting, a device, together with a cloud server and/or processor, may automatically locate other devices using GPS, Bluetooth, or other location based technologies, for example, within a predetermined radius or distance of the device, select a subset of the devices, and initiate a business card exchange without a QR code, numeric code, or alphanumeric code. In other embodiments, during the face-to-face setting, a device may also initiate the request to exchange the business card information by initiating a group and creating a group code such as a group QR code, barcode, or other scannable code, a group numeric code, and/or a group alphanumeric code, to be shared among the group. Any devices that have scanned and/or captured the group QR code, barcode, or other scannable code, or inputted the group numeric or group alphanumeric code may exchange the business card information with the multiple other devices that have also scanned and/or captured, or inputted the respective codes, either automatically or after authorizing or approving the business card information exchange.

Business card information, in some embodiments, may comprise a name, contact information associated, title such as a job title, company information associated with the name, a level or years of experience, one or more occupations or specialties, one or more photographs, one or more multimedia files, one or more text files, one or more reviews or ratings, and/or one or more further contacts related to the occupations or specialties. In some embodiments, as will be described with respect to FIG. **1**A, and as applicable to the exemplary environments depicted in FIGS. **1**F, **2**, **3**A, **3**B, **4**A, **4**B, and **5**, a device may store multiple business cards belonging to a single user associated with the device, and select one business card to exchange, for example, based on a target audience. In some embodiments, a user of the device may manually select one particular business card to

exchange with another device and the device may accept the manual selection. In some embodiments, the device may automatically select one particular business card to exchange with another device based on a profession, field, specialty, and/or title of an entity associated with or using that other device. For instance, if another device that is exchanging business cards with the device belongs to a user in a similar profession, field, or specialty as the user of the device, or is likely to frequency interact or transact with the entity, the device may select a business card having more details regarding an experience level or services provided, compared to a scenario in which the device belongs to an entity in a different or dissimilar profession, field, or specialty.

FIG. **1**A illustrates an example environment **100** in which touchless business card exchange may be facilitated, in particular, in a video conference setting. In FIG. **1**A, an entity **110**, which may be a person, may utilize a device **114** having videoconferencing features **116** and further utilize an other device **113** that scans and/or captures an incoming or received QR code, if necessary, and/or exchanges business cards using an application, module, and/or widget. The other device **113** may include a scanner **107**, which could be used to scan incoming QR codes, though not specifically used in FIG. **1**A. The device **114** may be a computer, laptop, handheld device such as a mobile phone or tablet, or any device having video conference capabilities and one or more processors to conduct a videoconference in order to transmit, share, and/or receive a QR code. The other device **113**, separate from the device **114**, may be a mobile phone, tablet, handheld device, computer, or laptop.

In some embodiments, as will be shown in FIGS. **1**F and **2**, a single device, rather than two separate devices, may carry out electronic business card exchange, in situations in which the QR code is electronically transmitted and/or in which a device with videoconferencing features also includes an application, module, and/or widget to perform exchange of business cards with or without using QR codes. In other embodiments, as illustrated in FIG. **1**A, if scanning and/or capturing of the QR code is required, the device **114** may generate, for example, using an application, module, and/or widget, a group QR code **112** and share the group QR code **112** among all participants in the video conference setting onto respective screens or displays of the devices belonging to the participants. The device **114** may send the group QR code **112** to a central server and/or processor **102** such as a cloud-based server and processor, so that the central server and/or processor **102** can check whether and when each of devices among which the QR code **112** is being shared have scanned and/or captured the group QR code **112**. Although the foregoing description describes a group QR code, it is contemplated that a barcode or other scannable code may also be implemented in place of, or in addition to, the group QR code **112**. In some embodiments, the same device **114** may generate the group QR code **112** and also transmit or share the group QR code **112** to other devices. In other embodiments, a device that generates the group QR code **112** may be different from a device that transmits or shares the group QR code using the videoconferencing features **116**. For example, the other device **113** may generate the group QR code **112** and the device **114** may scan and/or capture the generated group QR code **112** and transmit or share the group QR code **112** using the videoconferencing features **116**. The other participants in the video conference setting may include a second device **124** and a third device **134** belonging to or associated with a second entity **120** and a third entity **130**, respectively. The second device **124** and the third device **134** may each be a computer, laptop, handheld device such as a mobile phone or tablet, or any device having video conference capabilities and one or more processors to perform at least some tasks associated with business card exchange. For example, the second device **124** and the third device **134** may receive and/or display the group QR code **112**. Afterwards, the group QR code may be scanned and/or captured by a second other device **123** and a third other device **133**, respectively, to initiate business card exchange by the second other device **123** and the third other device **133**. In some alternate embodiments, as shown in FIG. **1**F, the receiving and/or displaying of the group QR code **112** may be done on a same device as the exchanging of the business cards, not separate devices.

In one embodiment, as shown in FIG. **1**A, the device **114** may provide the group QR code **112** to the second device **124** and the third device **134** by using a videocamera of the device **114** to share the group QR code **112** in the video-conference setting. Thus, the second device **124** and the third device **134** could receive the group QR code **112** on their respective screens or displays. The group QR code **112** could be accessible and visible to each of the individual devices through respective screens or displays of the second device **124** and the third device **134** without an electronic transmission by the device **114** of the group QR code **112**. Once the second device **124** and the third device **134** have received or accessed the group QR code **112**, the second other device **123** and the third other device **133** may scan and/or capture, from the respective screens or displays of the second device **124** and the third device **134**, the group QR code **112**. The second other device **123** and the third other device **133** may include a scanner **108** and a scanner **109**, respectively. The scanning and/or capturing of the group QR code **112** may be detected by the central server and/or processor **102** and/or other devices. The other devices may receive a notification that another device has successfully scanned and/or captured the group QR code **112**, from the central server and/or processor **102** and/or from any of the devices or a third party device. For example, the other device **113** may receive a notification that the second other device **123** has scanned and/or captured the group QR code **112**, from the central server and/or processor **102** and/or from the third other device **133**. In response to each of the other device **113**, the second other device **123** and the third other device **133** scanning and/or capturing the group QR code **112**, the business cards associated with or belonging to each of the individual devices may be exchanged among the other device **113**, the second other device **123** and the third other device **133**.

The central server and/or processor **102** may further perform, coordinate, or facilitate one or more functions described below with respect to FIGS. **1**A-**1**E, such as, receiving individual location information obtained from GPSes, Bluetooth, or other location based technology of the individual devices, including the device **114**, the second device **124**, and the third device **134**, and reported by each of the individual devices to the central server and/or processor **102**. The central server and/or processor **102** may further perform receiving data associated with business cards from the other device **113**, the second other device **123**, and the third other device **133**, storing the data, backing up the data, determining whether an authorization to exchange the data has been provided by each of the second other device **123** and the third other device **133**, and exchanging the data among the device or devices that have authorized, or exchanging the data among the other device

113, the second other device 123, and the third other device 133 without an authorization.

In some embodiments, instead of or in addition to the group QR code 112, the device 114 or the other device 113 may generate a group numeric code and/or a group alphanumeric code to be shared by the other device 113, the second other device 123, and the third other device 133. In some embodiments, the device 114 may determine which one of a group QR code/scannable code or a group numeric/alphanumeric code to provide or generate based on a determination of whether the other devices have videoconferencing capabilities or features. For example, if at least one of the second device 124 or the third device 134 does not have videoconferencing capabilities, the device 114 may determine to provide a group numeric/alphanumeric code. A group numeric code or a group alphanumeric code may be provided by the device 114 to each of the individual devices using voice or text such as SMS in a chat function of the teleconference setting. If both of the second device 124 and the third device 134 have videoconferencing capabilities, the device 114 may determine to show or display a group QR code using a videocamera of the device 114, onto respective screens of the second device 124 and the third device 134. Here, the second device 124 may have videoconferencing features 126 and the third device 134 may have videoconferencing features 136. In FIG. 1A, the second other device 123 and the third other device 133 may all have scanned and/or captured the group QR code 112. It is contemplated that any number of devices or entities may exchange business cards in accordance with FIG. 1A.

FIGS. 1B-1E illustrate an exchange of business cards. In some embodiments, the steps illustrated in FIGS. 1B-1E may be performed or facilitated by the central server and/or processor 102. In some embodiments, the steps illustrated in FIGS. 1B-1E may be conducted simultaneously or substantially simultaneously. For example, each of the other device 113, the second other device 123, and the third other device 133 may transmit and receive business cards simultaneously once the group QR code 112 has been scanned and/or captured by all devices. In some embodiments, the steps illustrated in FIGS. 1B-1E may be conducted sequentially. For example, as soon as a device has scanned and/or captured the group QR code 112, business cards may be exchanged among that device and other devices that have already scanned and/or captured the QR code 112. In some examples, some of the devices may scan and/or capture the group QR code 112 at a later time. As long as the scanning and/or capturing takes place before an expiration date or time of the QR code 112, each device that has scanned and/or captured the group QR code 112 may participate in the business card exchange. In some embodiments, one of the other device 113, the second other device 123, and the third other device 133 may send business cards to the other devices first before receiving business cards from the other devices. In FIG. 1B, the other device 113 may have numerous business cards, including a first business card 118 and a second business card 119, stored in the other device 113 itself, or stored in a server, database, memory, or other storage 117 that is particularly associated with the other device 113, or stored in a local device. For example, the phrase "particularly associated" may mean that the server, database, memory, or other storage 117 being specifically connected to or integrated as part of the other device 113 and/or the other device 113 may be granted a privilege to access the server, database, memory, or other storage 117. Each of the business cards stored in the other device 113 or otherwise associated with the other device 113 may be backed up in the central server and/or processor 102.

In some embodiments, the first business card 118 and the second business card 119 may both belong to the entity 110, and may have different features that are intended to appeal to different target audiences. In some embodiments, the entity 110 himself or herself may manually select a particular business card, for example, among the first business card 118, the second business card 119 and other business cards, to exchange or provide to another device, and the other device 113 may detect the manual selection and exchange or provide the selected business card in accordance with the selection. In some embodiments, the other device 113 itself may automatically, with or without an input from the entity 110, select a particular business card. The selection of a particular business card may be conducted automatically by the other device 113 based on criteria such as a level of experience, field of expertise, type of profession, position, role, relationship, and/or type of field or profession of other parties with whom business cards are being exchanged, such as the second entity 120 and the third entity 130. The relevant information of the criteria, which may be needed to select a particular business card, may be obtained by the other device 113 using a portion of business card information of the other parties, or by requesting the information from the other parties before providing the particular business card to the other parties. The selection of a particular business card may be conducted and refined by machine learning using the listed above, as inputs, and feedback provided by recipients of business cards, regarding, for example, a relevance of the selected business card.

For example, the other device 113 may select the first business card 118, which also includes further information, that may be more appropriate for another device belonging to an entity of a similar industry, profession, field, or specialty as the user of the other device 113, or is otherwise likely to utilize the services of the entity 110. The further information here may be embedded in an additional information field 111 that provides further relevant information such as a level or number of years of experience. In another example, the other device 113 may select a particular business card based on a title, position, and/or education level of an entity associated with another device. For example, if an entity associated with another device has an advanced degree such as a doctorate or a leadership position, the other device 113 may select a business card having additional details regarding one or more degrees and/or leadership positions of the entity 110. Thus, the other device 113 may select a business card with description that is a closest match with a background of the entity (including title, position, and/or education level) associated with another device. Other additional business cards besides the first business card 118 and the second business card 119 may be stored in the other device 113 itself, or stored in a server, database, memory, or other storage 117 that is particularly associated with the other device 113, or stored in a local device. For example, other additional business cards may include additional information pertaining to years of experience, levels of experience, particular fields of specialty, reviews and/or ratings, which may be selected by the other device 113 and sent to an entity in a same or similar industry, field of practice, profession, or specialty. As another example, another business card may be a business card of a company, such as a company that the entity 110 is associated with.

In some embodiments, one or more fields of a business card such as the additional information field 111 of the first

business card **118** may be editable or adjustable, either automatically by the other device **113** or manually by the entity **110**. For example, the additional information field **111** that may provide information regarding a job title, based on who or which customer, potential customer, or business person the first business card **118** is being sent to. In another example, information fields corresponding to degrees and/or leadership positions may either be left empty or filled in, depending on who that business card is being delivered to.

In some embodiments, in FIG. **1**C, a business card delivered or transmitted by the other device **113** may be personalized to each of the entities that the business card is delivered to. For example, along with the first business card **118** or the second business card **119**, a personalized greeting **115** including a name of recipient, and/or a particular service offered by the entity **110** may be delivered to the second other device **123**. In some embodiments, as a further security measure, business card data received by the second entity **120** and the third entity **130** may be encrypted, after receipt, and decrypted based on one or more private keys.

Once the first business card **118** is successfully received by the second other device **123**, the second other device **123** may store the first business card **118** in the second other device **123** itself, or in a server, database, memory, or other storage **127** particularly associated with the second other device **123**, or in a local device. The second other device **123**, or second server, database, memory, or other storage **127**, or a local device, may already include a third business card **128** of the second entity **120**. In some embodiments, the personalized greeting **115** may be accessible or visible upon the first business card **118** being selected. Each of the business cards stored in the second other device **123** or associated with the second other device **123** may be backed up in the central server and/or processor **102**.

Once the first business card **118** is successfully received by the third other device **133**, the third other device **133** may store the first business card **118** in the third other device **133** itself, or in a server, database, memory, or other storage **137** that is particularly associated with the third other device **133**, or in a local device. The third other device **133**, or third server, database, memory, or other storage **137**, or a local device, may already have stored a fourth business card **138** of the third entity **130**, along with additional business cards of the third entity **130**. Each of the business cards stored in the third other device **133** or otherwise associated with the third other device **133** may be backed up in the central server and/or processor **102**.

In FIG. **1**D, the second other device **123** may transmit the third business card **128** to the other device **113** and the third other device **133**, in a same or similar manner to the transmission of the first business card **118** or the second business card **119** from the other device **113**. Once the third business card **128** is successfully received by the other device **113**, the other device **113** may store the third business card **128** in the other device **113** itself, or in the server, database, memory, or other storage **117**, or in a local device. Once the third business card **128** is received by the third other device **133**, the third other device **133** may store the third business card **128** in the third other device **133** itself, in a third server, database, memory, or other storage **137**, or a local device.

In FIG. **1**E, the third other device **133** may transmit the fourth business card **138** to the other device **113** and the second other device **123**, in a same or similar manner to the transmission of the first business card **118** or the second business card **119** from the other device **113**. Once the fourth business card **138** is successfully received by the other device **113**, the other device **113** may store the fourth business card **138** in the other device **113** itself, or in the server, database, memory, or other storage **117**, or in a local device. Once the fourth business card **138** is successfully received by the second other device **123**, the second other device **123** may store the fourth business card **138** in the second other device **123** itself, in a second server, database, memory, or other storage **127**, or in a local device.

In some embodiments, a device may transmit, through the central server and/or processor **102**, a business card from another entity not associated with the device. For example, the other device **113** may transmit to another device such as the second other device **123**, the fourth business card **138** that belongs to the third other device **133**. In some embodiments, the other device **113** may make such determination of whether to transmit a business card from another entity or describing another entity based on a degree of matching or similarity between a profession, specialty, title, or field of practice of the another entity and the entity to which the other device **113** is transmitting the business card to, or based on a degree of matching between professional and/or business interests between the aforementioned entities. For example, the other device **113** may make such determination based on whether the second entity **120** associated with the second other device **123** is in a similar field, specialty, or profession as the third entity **130**. In other embodiments, the entity **110** may himself or herself determine, or manually select, whether to transmit the business card from another entity. The other device **113** may or may not require authorization/permission from the third entity **130** before transmitting the fourth business card **138** to another device belonging to another entity such as to the second other device **123**.

FIG. **1**F illustrates an alternative environment **150** to that shown in FIG. **1**A. In FIG. **1**F, a separate device such as the device **114** described in FIG. **1**A may not be required to receive a QR code such as QR code **162** via a videoconferencing feature, meaning that the QR code **162** does not need to be scanned and/or captured by a separate device. Rather, the QR code **162** may be generated by a device **163** and either transmitted to or shown on respective screens of a second device **173** and a third device **183**. Thus, once the QR code **162** is received, displayed or shown on the respective screens, the exchange of business cards to and from the device **163**, the second device **173**, and the third device **183** may be automatically carried out, by the central server and/or processor **102**, upon the receipt of the QR code **162**, with or without authorization by the device **163**, the second device **173**, and/or the third device **183**. The exchange of the business cards may proceed as shown in FIGS. **1**B-**1**E, and may be coordinated or conducted by the central server and/or processor **152**.

FIG. **2** illustrates an example environment **200** in which touchless business card exchange may be facilitated, in particular, in a video conference setting in which a central server and/or processor **202** such as a cloud-based server and processor automatically detects a device **214**, a second device **224**, and a third device **234** having videoconference features **216**, **226**, and **236**, respectively, that are all involved in a videoconference. The device **214**, the second device **224**, and the third device **234** may each comprise a computer, laptop, handheld device such as a mobile phone or tablet, or any device having video conference capabilities and one or more processors to perform business card exchange. The device **214**, the second device **224**, and the third device **234** may belong to a first entity **210**, a second entity **220**, and a third entity **330**, respectively. The central

server and/or processor **202** may automatically initiate the exchange of business cards among the device **214**, the second device **224**, and the third device **234**, that are participating in the videoconference, without any QR or scannable code, or numeric/alphanumeric code. The exchange of business cards may be in a same or similar manner as in FIGS. **1**B-**1**E.

FIG. **3**A illustrates an example environment **300** in which touchless business card exchange may be facilitated, in particular, in a teleconference setting. In FIG. **3**A, an entity **310**, which may be a person, may utilize a device **314** having teleconferencing features **316**, which may be a computer, laptop, telephone, handheld device such as a mobile phone or tablet, or any device having teleconference capabilities and data storage capabilities or otherwise being associated with a data storage. In some embodiments, the device **314** may or may not have videoconferencing features. The device **314** may create a group numeric code **312**, here shown as "1234," to be shared among a group of participants in the teleconference setting, which may include a second device **324** and a third device **334** belonging to or associated with a second entity **320** and a third entity **330**, respectively. The group numeric code **312** may be communicated or otherwise transmitted during the teleconference setting or be otherwise shown on a display or screen of the second device **324** and the third device **334**. As shown in FIG. **3**A, the teleconference setting may be conducted on a separate device from the business card exchange. The group numeric code **312** may be electronically or manually inputted into an other device **313**, a second other device **323**, and/or a third other device **333**, from the device **314**, the second device **324** and the third device **334**, respectively. The actual exchange of business cards may be carried out from the participating devices, which include the other device **313**, the second other device **323**, and the third other device **333**, using an application, module, and/or widget on each of the aforementioned devices. The other device **313**, the second other device **323**, or the third other device **333** may send the group numeric code **312** to a central server and/or processor **302**. The central server and/or processor **302**, and/or one or more of the participating devices, may check whether and when each of the participating devices have properly inputted the group numeric code **312**. Once the other device **313**, the second other device **323** and the third other device **333** have properly inputted the group numeric code **312**, the exchange of the electronic business cards may be conducted in a same or similar manner as that described with respect to FIGS. **1**B-**1**E.

In other embodiments, the device **314**, the second device **324**, and the third device **334** may also include an application, module, and/or widget that performs the business card exchange, so that the teleconference and the business card exchange may occur on the same device **314**, **324**, and **334**, for each of the entity **310**, the second entity **320**, and the third entity **330**, respectively. Thus, in those embodiments, the other device **313**, the second other device **323**, and the third other device **333** may not be required. The device **314** may send the group numeric code **312** to the central server and/or processor **302**. The central server and/or processor **302**, and/or one or more of the participating devices, may check whether and when each of the participating devices have properly inputted the group numeric code **312**. Once the device **314**, the second device **324** and the third device **334** have properly inputted the group numeric code **312**, the exchange of the electronic business cards among the device **314**, the second device **324** and the third device **334** may be conducted in a same or similar manner as that described with respect to FIGS. **1**B-**1**E.

FIG. **3**B illustrates an example environment **350** in which touchless business card exchange may be facilitated, in particular, in a teleconference setting, in which a central server and/or processor **352** such as a cloud-based server and processor automatically detects a device **364**, a second device **374**, and a third device **384** having teleconference features **366**, **376**, and **386**, respectively, that are all involved in a teleconference. The device **364**, the second device **374**, and the third device **384** may each comprise a computer, laptop, handheld device such as a mobile phone or tablet, or any device having or any device having teleconference capabilities and data storage capabilities or otherwise being associated with a data storage. The device **364**, the second device **374**, and the third device **384** may belong to a first entity **360**, a second entity **370**, and a third entity **380**, respectively. The central server and/or processor **352** may automatically initiate the exchange of business cards among the device **364**, the second device **374**, and the third device **384**, that are participating in the teleconference, without any code. The actual exchange of business cards may be carried out in a same or similar manner as in FIGS. **1**B-**1**E.

FIG. **4**A illustrates an example environment **400** in which touchless business card exchange may be facilitated, in particular, in a face-to-face setting in which entities are within a specified radius or distance from one another, but exercising social distancing guidelines. In FIG. **4**A, an entity **410**, which may be a person, may utilize a device **414** which may be a computer, laptop, handheld device such as a mobile phone or tablet. The device **414** may generate a group QR code **412** and present or provide the group QR code **412** to be shared among the devices in the face-to-face setting, so that the devices are allowed to use their respective cameras or scanners to scan and/or capture the group QR code **412**. In some embodiments, the device **414** may electronically transmit the group QR code **412** to each of the other devices, such that the other devices need not scan and/or capture the group QR code and automatically exchange the business cards among the group with the device **414**. In some embodiments, the other devices include a second device **424**, a third device **434**, and a fourth device **444** belonging to or be associated with a second entity **420**, a third entity **430**, and a fourth entity **440**, respectively. The second device **424**, the third device **434**, and the fourth device **444** may include a scanner **423**, a scanner **433**, and a scanner **443**, respectively, to scan the group QR code **412**. The device **414** may send the group QR code **412** to a central server and/or processor **402** such as a cloud-based server and processor, so that the central server and/or processor **402** can check whether and when each of the devices have scanned and/or captured the group QR code **412**. Once the second device **424**, the third device **434**, and the fourth device **444** have scanned and/or captured the group QR code **412**, the second device **424**, the third device **434**, and the fourth device **444** may exchange electronic business cards, as coordinated or conducted at least in part by a central server and/or processor **402**, in a same or similar manner as that described with respect to FIGS. **1**B-**1**E.

In some embodiments, as shown in FIG. **4**B, in the face-to-face setting, instead of or in addition to a group QR code, a device **464** may generate a group numeric code **462** or a group alphanumeric code. A second device **474**, a third device **484**, and a fourth device **494** may be informed of the group numeric code or the group alphanumeric code by voice, for example. A central server and/or processor **452**

may receive the group numeric code **462**, and check whether and when each of the devices have inputted the group numeric code **462**. Once the second device **474**, the third device **484**, and the fourth device **494** input the group numeric code or the group alphanumeric code, and the input is detected by the central server and/or processor **452**, the exchange of business cards may be initiated among the group with the device **464**, in a same or similar manner as that described with respect to FIGS. **1**B-**1**E. The device **464**, the second device **474**, the third device **484**, and the fourth device **494** may belong to or be associated with an entity **460**, a second entity **470**, a third entity **480**, and a fourth entity **490**, respectively.

FIG. **5** illustrates an example environment **500** in which touchless business card exchange may be facilitated, in particular, in a face-to-face setting in which entities are within a specified radius or distance from one another, but preferably exercising at least loose social distancing guidelines. In FIG. **5**, an entity **510**, which may be a person, may utilize a device **514**, which may be a computer, laptop, handheld device such as a mobile phone or tablet. A central server and/or processor **502** may perform or facilitate one or more functions of business card exchange, such as, receiving locations determined by GPSes, Bluetooth, or other location based technologies of the device **514** and other devices, providing information of which devices are within the specified radius or distance, receiving data associated with business cards from the device and other devices, receiving a selection of other devices from the device **514**, determining whether an authorization to exchange the data has been provided by each of the other devices, and exchanging the data among the one or more devices that have provided the authorization. The device **514**, together with the central server or the processor **502**, may utilize GPS, Bluetooth, or other location based technologies, to determine one or more devices nearby, such as within a threshold distance or radius from the device **514**, or corresponding entities of the nearby devices, with which to exchange business cards. For example, the device **514** may select a subset of the devices nearby, which may include all of or a portion of the devices or corresponding entities within a specified radius or distance from the entity **510**. In FIG. **5**, the device **514** has selected a second entity **520** corresponding to a second device **524**, a third entity **530** corresponding to a third device **534**, and a fourth entity **540** corresponding to a fourth device **544**, but has left a fifth entity **550** corresponding to the fifth device **554** unselected. The selection of entities may not require a QR code, numeric code, or alphanumeric code in FIG. **5**. Once the second device **524**, the third device **534**, and the fourth device **544** are selected, the second device **524**, the third device **534**, and the fourth device **544** may form a virtual gathering and exchange electronic business cards in a same or similar manner as described in FIGS. **1**B-**1**E, and/or FIG. **2**.

FIGS. **6** and **7** illustrate exemplary implementations **600** and **700**, respectively, in accordance with any of the example environments described with respect to FIGS. **1**A, **2**, **3**A, **3**B, **4**A, **4**B, and/or **5**. In FIG. **6**, a device **614** may be implemented, for example, as the device **114**, **214**, **314**, **414**, or **514**. The device **614** may store different business cards including a first business card **618** and a second business card **619** of an entity associated with the device **614**, along with a third business card **628**, a fourth business card **638**, and a fifth business card **658** associated with other devices. In some embodiments, a server, database, memory, or other storage **617** may be part of or particularly associated with the device **614**. In FIG. **6**, one or more processors of the device **614** may sort the business cards by criteria such as importance, location, company, name, most recent updates, and/or status identifier such as whether an entity associated with a business card is currently inactive or not working. In some examples, a importance may be set automatically by the device **614** based on factors such as a profession, field, or specialty, a degree of matching or similarity between the entity associated with the device **614** and the entity or entities associated with a business card. In other examples, a menu **615** may be provided as part of a user interface to allow a user to sort the business cards. In FIG. **6**, data associated with business cards stored, for example, in the device **614**, may be backed up to a second storage **650**.

In FIG. **7**, a device **714**, which be implemented, for example, as the device **114**, **214**, **314**, **414**, **514**, or **614** may store different business cards including a first business card **718** and a second business card **719** of an entity associated with the device **714**, along with a third business card **728**, a fourth business card **738**, and a fifth business card **748** associated with other devices. In some embodiments, a server, database, memory, or other storage **717** may be part of or particularly associated with the device **714**. In some embodiments, the server, database, memory, or other storage **717** may store the first business card **718**, the second business card **719**, the third business card **728**, and the fourth business card **738**, and the fifth business card **748**. In FIG. **7**, one or more processors of the device **714** may provide editing features **702**, file exchange features **704**, multimedia exchange features **706**, and chat features **708**. In some examples, the editing features **702** may allow the device **714** to edit information only in the first business card **718** and the second business card **719**, which are business cards belonging to a user of the device **714**. In other alternative examples, the editing features **702** may allow the device **714** to edit information of business cards belonging to other people, with or without permission. The device **714** may further provide a feedback, review, or rating to an entity or entities associated with a business card, such as the fifth business card **748**. The device **714** may or may not publish the changes to other devices.

The techniques described herein, for example, are implemented by one or more special-purpose computing devices. The special-purpose computing devices may be hard-wired to perform the techniques, or may include circuitry or digital electronic devices such as one or more application-specific integrated circuits (ASICs) or field programmable gate arrays (FPGAs) that are persistently programmed to perform the techniques, or may include one or more hardware processors programmed to perform the techniques pursuant to program instructions in firmware, memory, other storage, or a combination.

FIG. **8** is a block diagram that illustrates a computer system **800** upon which any of the embodiments described herein may be implemented. The computer system **800** includes a bus **802** or other communication mechanism for communicating information, one or more hardware processors **804** coupled with bus **802** for processing information. A description that a device performs a task is intended to mean that one or more of the hardware processor(s) **804** performs.

The computer system **800** also includes a main memory **806**, such as a random access memory (RAM), cache and/or other dynamic storage devices, coupled to bus **802** for storing information and instructions to be executed by processor **804**. Main memory **806** also may be used for storing temporary variables or other intermediate information during execution of instructions to be executed by

processor **804**. Such instructions, when stored in storage media accessible to processor **804**, render computer system **800** into a special-purpose machine that is customized to perform the operations specified in the instructions.

The computer system **800** further includes a read only memory (ROM) **808** or other static storage device coupled to bus **802** for storing static information and instructions for processor **804**. A storage device **810**, such as a magnetic disk, optical disk, or USB thumb drive (Flash drive), etc., is provided and coupled to bus **802** for storing information and instructions.

The computer system **800** may be coupled via bus **802** to output device(s) **812**, such as a cathode ray tube (CRT) or LCD display (or touch screen), for displaying information to a computer user. Input device(s) **814**, including alphanumeric and other keys, are coupled to bus **802** for communicating information and command selections to processor **804**. Another type of user input device is cursor control **816**. The computer system **800** also includes a communication interface **818** coupled to bus **802**.

The invention claimed is:

1. A computing system comprising:

a server configured to store data of business cards from entities associated with client devices, the data comprising, for each entity of the entities, any of a name, a title, contact information associated with the name, and an occupation associated with the name;

one or more processors; and

a memory storing instructions that, when executed by the one or more processors, causes the one or more processors to perform:

receiving a group QR code or scannable code created by a client device of the client devices, the client device being associated with a first user;

transmitting the group QR code or scannable code to other devices associated with the client devices to indicate an invitation to exchange data, the other devices being associated with one or more second users;

detecting scans or captures of the group QR code or the scannable code from second client devices, wherein at least one of the second client devices is associated with a second user of the second users, the second client devices comprising a subset of the client devices and being distinct from the other devices, wherein each of the scans or captures of the group QR code or the scannable code indicates an approval of the invitation to exchange the data from the second client devices;

in response to detecting the scans or captures, automatically exchanging the data, at the server, among the second client devices and the client device; and

syncing, to the second client devices and the client device, the exchanged data from the server.

2. The computing system of claim **1**, wherein the instructions further cause the computing system to perform:

setting an expiration time by which the second client devices are to scan the group QR code or the scannable code; and

the detecting of the scans or captures of the group QR code or the scannable code from the second client devices comprises:

determining whether the scans or captures occurred before the expiration time; and

automatically exchanging the data, at the server, among the second client devices and the client device in response to determining that the scans or captures occurred before the expiration time.

3. The computing system of claim **1**, wherein the instructions further cause the computing system to perform:

in response to syncing, to the second client devices and the client device, the exchanged data, backing up the synced exchanged data at the server.

4. The computing system of claim **1**, wherein the instructions further cause the computing system to perform:

sorting, at each of the second client devices and the client device, the data of the business cards based on respective importances of the business cards.

5. The computing system of claim **4**, wherein the instructions further cause the computing system to perform:

detecting, at the server, a change of an importance of one of the business cards; and

storing the change of the importance at the server.

6. The computing system of claim **1**, wherein the instructions further cause the computing system to perform:

in response to syncing, to the second client devices and the client device, the exchanged data, encrypting the data; and

decrypting the encrypted data using one or more private keys.

7. A nontransitory computer readable storage medium including instructions that, when executed by one or more processors of a computing system, cause the computing system to perform a method comprising:

storing, in a server of the computing system, data of business cards from entities associated with client devices, the data comprising, for each entity of the entities, any of a name, a title, contact information associated with the name, and an occupation associated with the name;

receiving a group QR code or scannable code created by a client device of the client devices, the client device being associated with a first user;

transmitting the group QR code or scannable code to other devices associated with the client devices to request an exchange of the data among the client devices to indicate an invitation to exchange data, the other devices being associated with one or more second users;

detecting scans or captures of the group QR code or the scannable code from second client devices, wherein at least one of the second client devices is associated with a second user of the second users, the second client devices comprising a subset of the client devices and being distinct from the other devices, wherein each of the scans or captures of the group QR code or the scannable code indicates an approval of the invitation to exchange the data among the second client devices;

in response to detecting the scans or captures, automatically exchanging the data, at the server, among the second client devices and the client device; and

syncing, to the second client devices and the client device, the exchanged data from the server.

8. The nontransitory computer readable storage medium of claim **7**, wherein the instructions further cause the computing system to perform:

setting an expiration time by which the second client devices are to scan the group QR code or the scannable code; and

the detecting of the scans or captures of the group QR code or the scannable code from the second client devices comprises:

determining whether the scans or captures occurred before the expiration time; and

automatically exchanging the data, at the server, among the second client devices and the client device in response to determining that the scans or captures occurred before the expiration time.

9. The nontransitory computer readable storage medium of claim **7**, wherein the instructions further cause the computing system to perform:

in response to syncing, to the second client devices and the client device, the exchanged data, backing up the synced exchanged data at the server.

10. The nontransitory computer readable storage medium of claim **7**, wherein the instructions further cause the computing system to perform:

sorting, at each of the second client devices and the client device, the data of the business cards based on respective importances of the business cards;

detecting, at the server, a change of an importance of one of the business cards; and

storing the change of the importance at the server.

11. A computing system comprising:

a server configured to store data of business cards from entities associated with client devices, the data comprising, for each entity of the entities, any of a name, a title, contact information associated with the name, and an occupation associated with the name;

one or more processors; and

a memory storing instructions that, when executed by the one or more processors, causes the one or more processors to perform:

receiving a group code created by a client device of the client devices, the group code comprising a group numeric code or a group alphanumeric code, the client device being associated with a first user;

transmitting the group code to other devices associated with the client devices to indicate an invitation to exchange data, the other devices being associated with one or more second users;

detecting inputs of the group code from second client devices, wherein at least one of the second client devices is associated with a second user of the second users and each of the inputs of the group code indicates an approval of the invitation to exchange the data from the second client devices;

in response to detecting the inputs, automatically exchanging the data, at the server, among the client device, and the second client devices or the other devices; and

syncing, to the client device, and the second client devices or the other devices, the exchanged data from the server.

12. The computing system of claim **11**, wherein the instructions further cause the computing system to perform:

setting an expiration time by which the second client devices or the other devices are to input the group code; and

the detecting of the inputs of the group code from the second client devices or the other devices comprises:

determining whether the inputs occurred before the expiration time; and

automatically exchanging the data, at the server, among the client device, and the second client devices or the other devices, in response to determining that the inputs occurred before the expiration time.

13. The computing system of claim **11**, wherein the instructions further cause the computing system to perform:

in response to syncing, to the client device, and the second client devices or the other devices, the exchanged data, backing up the synced exchanged data at the server.

14. The computing system of claim **11**, wherein the instructions further cause the computing system to perform:

sorting, at each of the client device, and the second client devices or the other devices, the data of the business cards based on respective importances of the business cards.

15. The computing system of claim **14**, wherein the instructions further cause the computing system to perform:

detecting, at the server, a change of an importance of one of the business cards; and

storing the change of the importance at the server.

16. The computing system of claim **11**, wherein the instructions further cause the computing system to perform:

in response to syncing, to the client device, and the second client devices or the other devices, the exchanged data, encrypting the data; and

decrypting the encrypted data using one or more private keys.

17. A nontransitory computer readable storage medium including instructions that, when executed by one or more processors of a computing system, cause the computing system to perform a method comprising:

storing, in a server of the computing system, data of business cards from entities associated with client devices, the data comprising, for each entity of the entities, any of a name, a title, contact information associated with the name, and an occupation associated with the name;

receiving a group code created by a client device of the client devices, the client device being associated with a first user, and the group code comprising a group numeric code or a group alphanumeric code;

transmitting the group code to other devices associated with the client devices to indicate an invitation to exchange data, the other devices being associated with one or more second users;

detecting inputs of the group code from second client devices, wherein at least one of the second client devices is associated with a second user of the second users, and each of the inputs of the group code indicates an approval of the invitation to exchange the data from the second client devices or the other devices;

in response to detecting the inputs, automatically exchanging the data, at the server, among the client device, and the second client devices or the other devices; and

syncing, to the client device, and the second client devices or the other devices, the exchanged data from the server.

18. The nontransitory computer readable storage medium of claim **17**, wherein the instructions further cause the computing system to perform:

setting an expiration time by which the second client devices or the other devices are to input the group code; and

the detecting of the inputs of the group code from the second client devices or the other devices comprises:

determining whether the inputs occurred before the expiration time; and

automatically exchanging the data, at the server, among the client device, and the second client devices or the other devices, in response to determining that the inputs occurred before the expiration time.

19. The nontransitory computer readable storage medium of claim 17, wherein the instructions further cause the computing system to perform:

in response to syncing, to the client device, and the second client devices or the other devices, the exchanged data, backing up the synced exchanged data at the server.

20. The nontransitory computer readable storage medium of claim 17, wherein the instructions further cause the computing system to perform:

sorting, at each of the client device, and the second client devices or the other devices, the data of the business cards based on respective importances of the business cards;

detecting, at the server, a change of an importance of one of the business cards; and

storing the change of the importance at the server.

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