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(54) **FACILITATING CONVERSATIONS WITH AUTOMATED LOCATION MAPPING**

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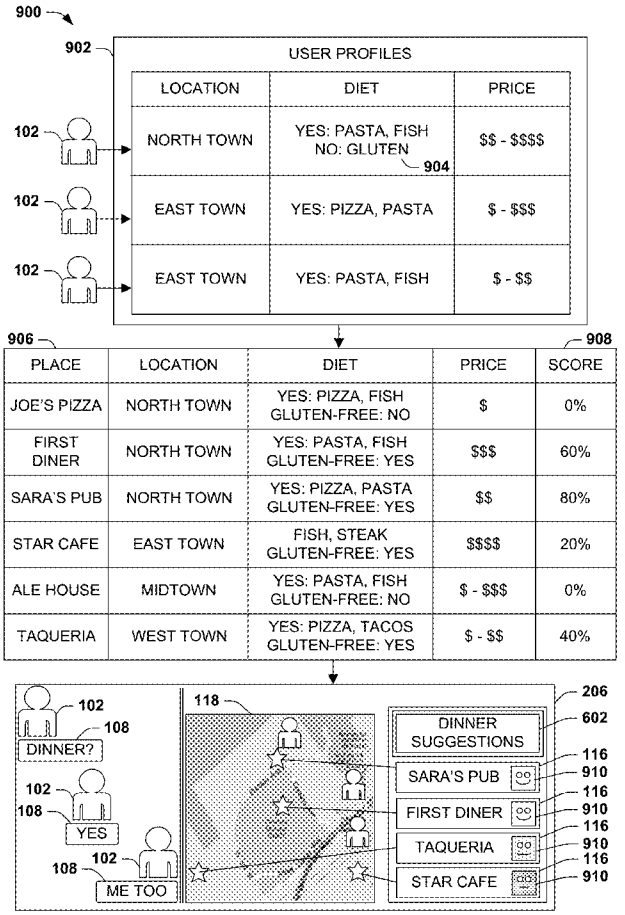
(57) **ABSTRACT**

Individuals may utilize devices to engage in conversations about topics respectively associated with a location (e.g., restaurants where the individuals may meet for dinner). Often, the individual momentarily withdraws from the conversation in order to issue commands to the device to retrieve and present such information, and may miss parts of the conversation while interacting with the device. Additionally, the individual often explores such topics individually on a device and conveys such information to the other individuals through messages, which is inefficient and error-prone. Presented herein are techniques enabling devices to facilitate conversations by monitoring the conversation for references, by one individual to another (rather than as a command to the device), to a topic associated with a location. In the absence of a command from an individual, the device may automatically present a map alongside a conversation interface showing the location(s) of the topic(s) referenced in the conversation.



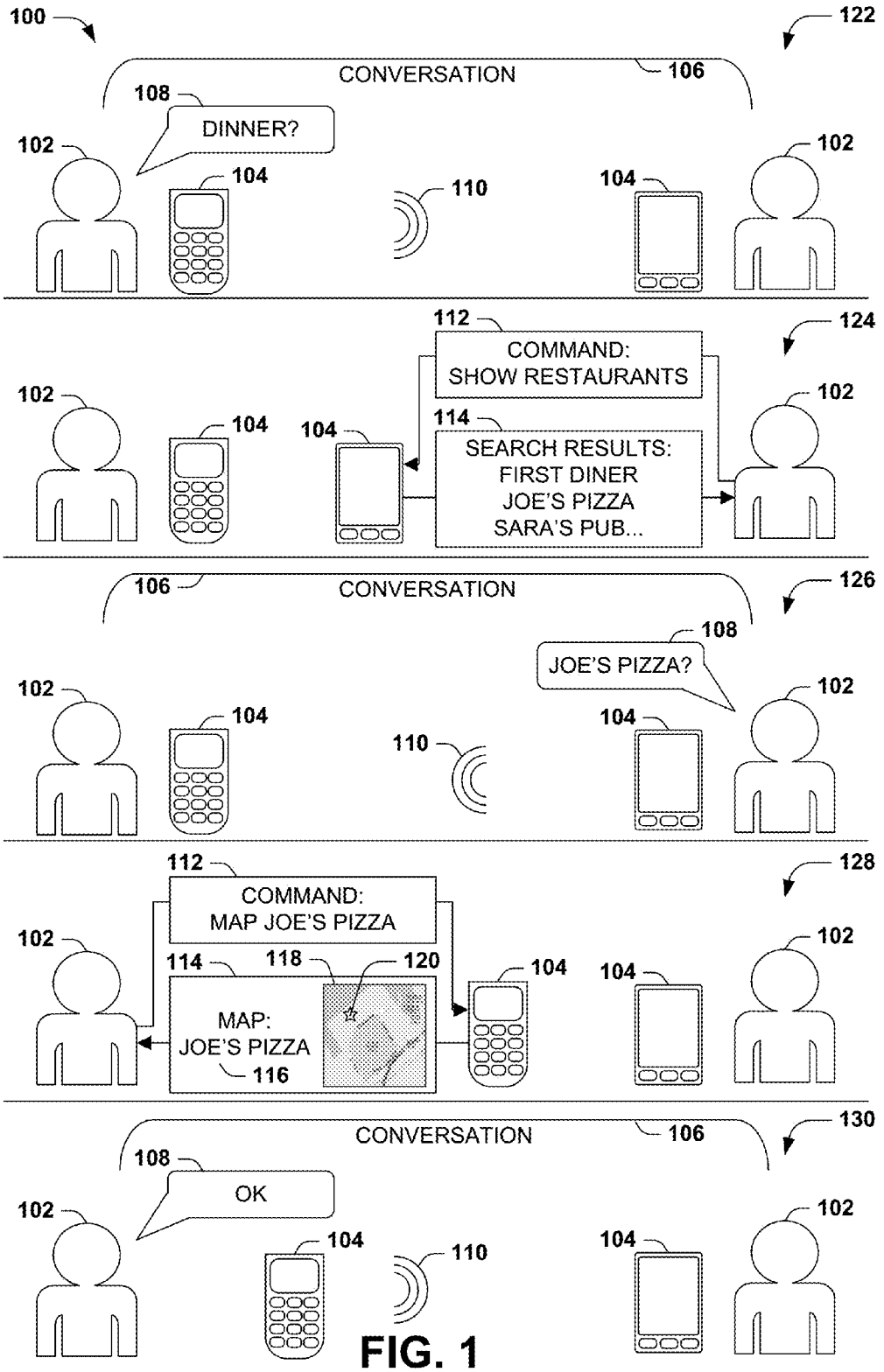

100
122
CONVERSATION
106
108
DINNER?
102
104
110
104
102
112
COMMAND:
SHOW RESTAURANTS
124
102
104
104
114
SEARCH RESULTS:
FIRST DINER
JOE'S PIZZA
SARA'S PUB...
102
106
CONVERSATION
126
108
JOE'S PIZZA?
102
104
110
104
102
112
COMMAND:
MAP JOE'S PIZZA
128
102
114
118
120
104
MAP:
JOE'S PIZZA
116
104
102
CONVERSATION
106
130
108
OK
102
104
110
104
102

FIG. 1

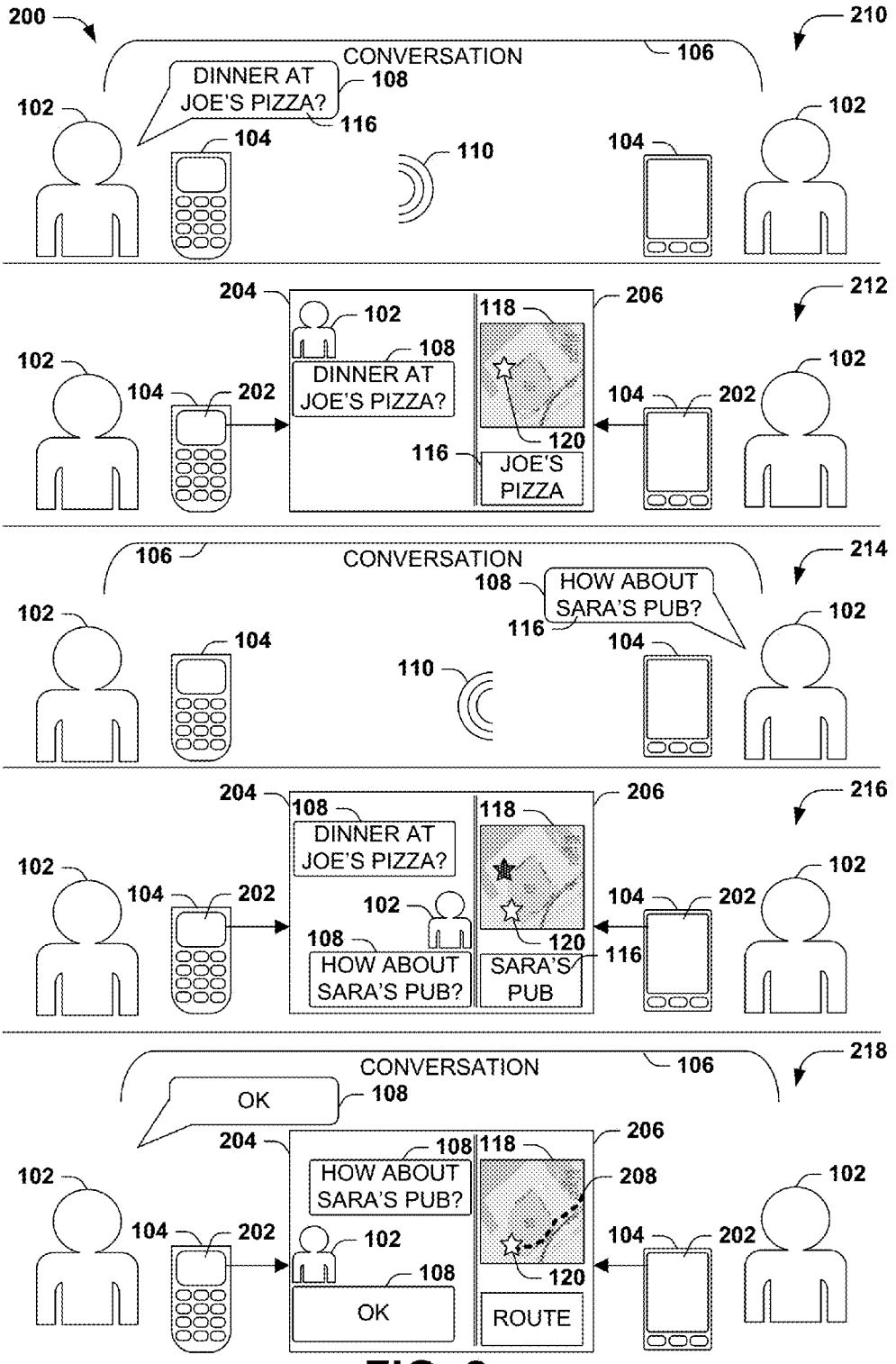

200
210
CONVERSATION
106
DINNER AT JOE'S PIZZA?
108
116
102
104
110
212
204
118
206
JOE'S PIZZA
120
202
214
HOW ABOUT SARA'S PUB?
216
SARA'S PUB
218
OK
ROUTE
208

FIG. 2

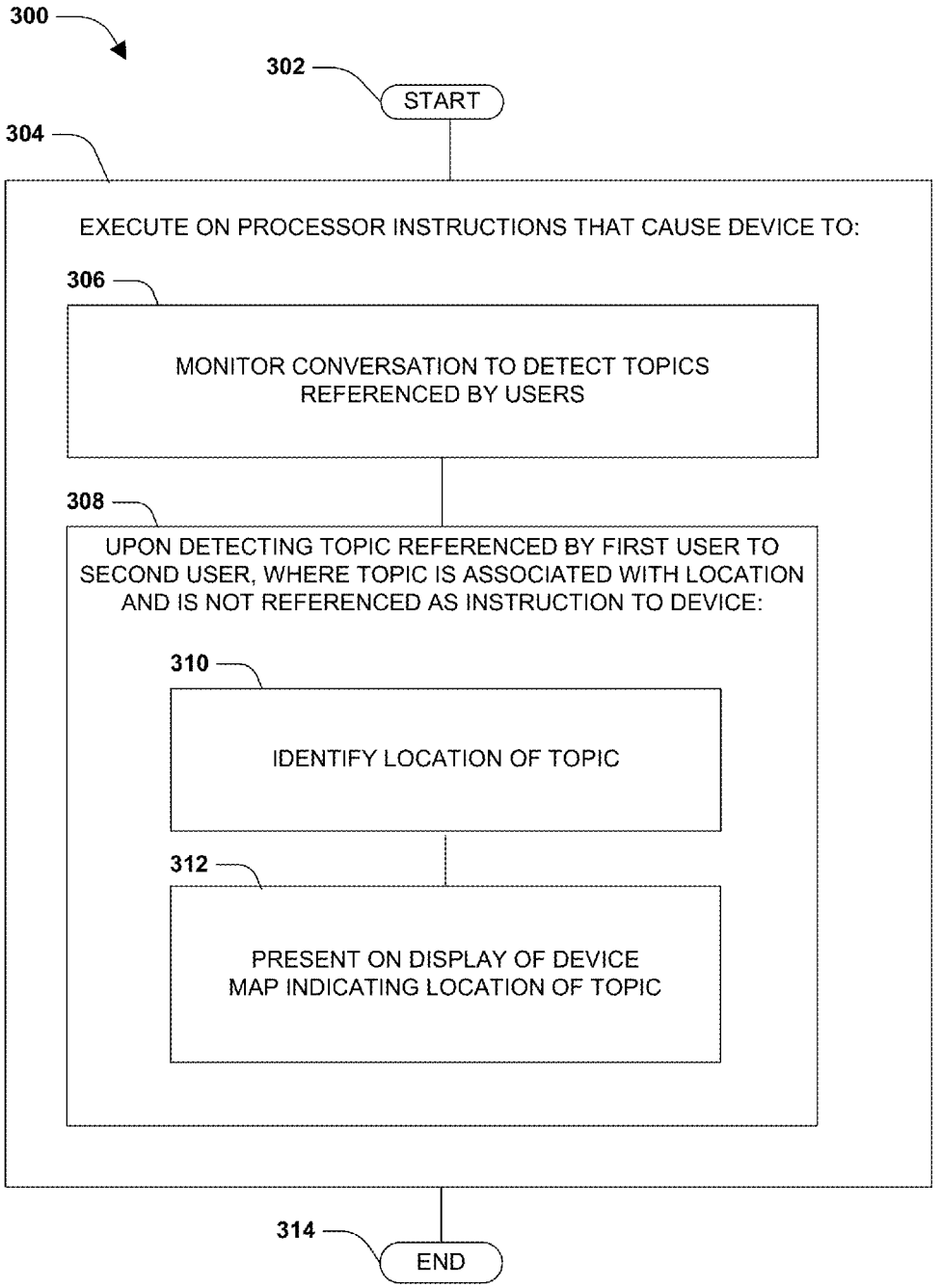

300
302
START
304
EXECUTE ON PROCESSOR INSTRUCTIONS THAT CAUSE DEVICE TO:
306
MONITOR CONVERSATION TO DETECT TOPICS REFERENCED BY USERS
308
UPON DETECTING TOPIC REFERENCED BY FIRST USER TO SECOND USER, WHERE TOPIC IS ASSOCIATED WITH LOCATION AND IS NOT REFERENCED AS INSTRUCTION TO DEVICE:
310
IDENTIFY LOCATION OF TOPIC
312
PRESENT ON DISPLAY OF DEVICE MAP INDICATING LOCATION OF TOPIC
314
END

FIG. 3

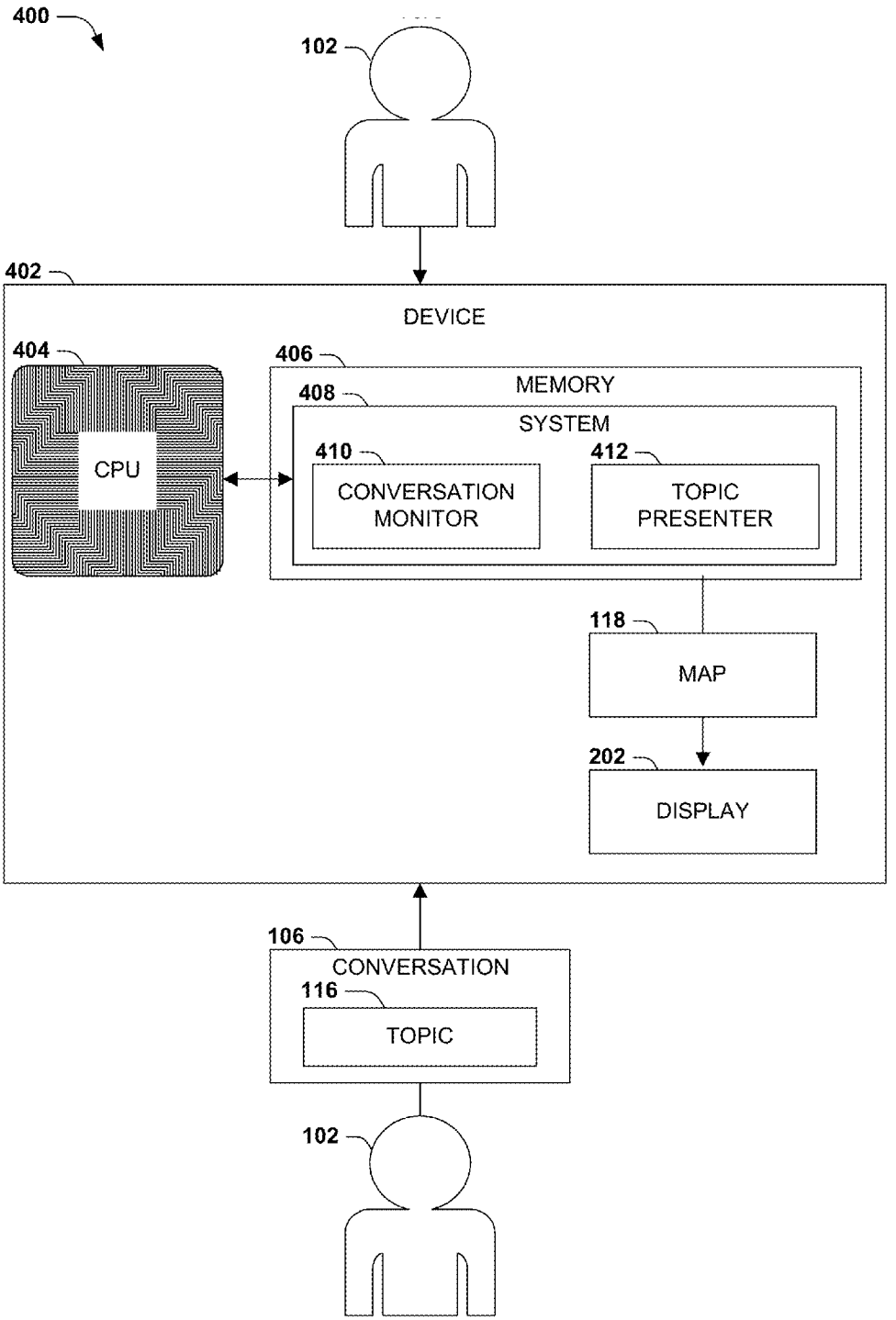

400
102
402
DEVICE
404
CPU
406
MEMORY
408
SYSTEM
410
CONVERSATION MONITOR
412
TOPIC PRESENTER
118
MAP
202
DISPLAY
106
CONVERSATION
116
TOPIC
102

FIG. 4

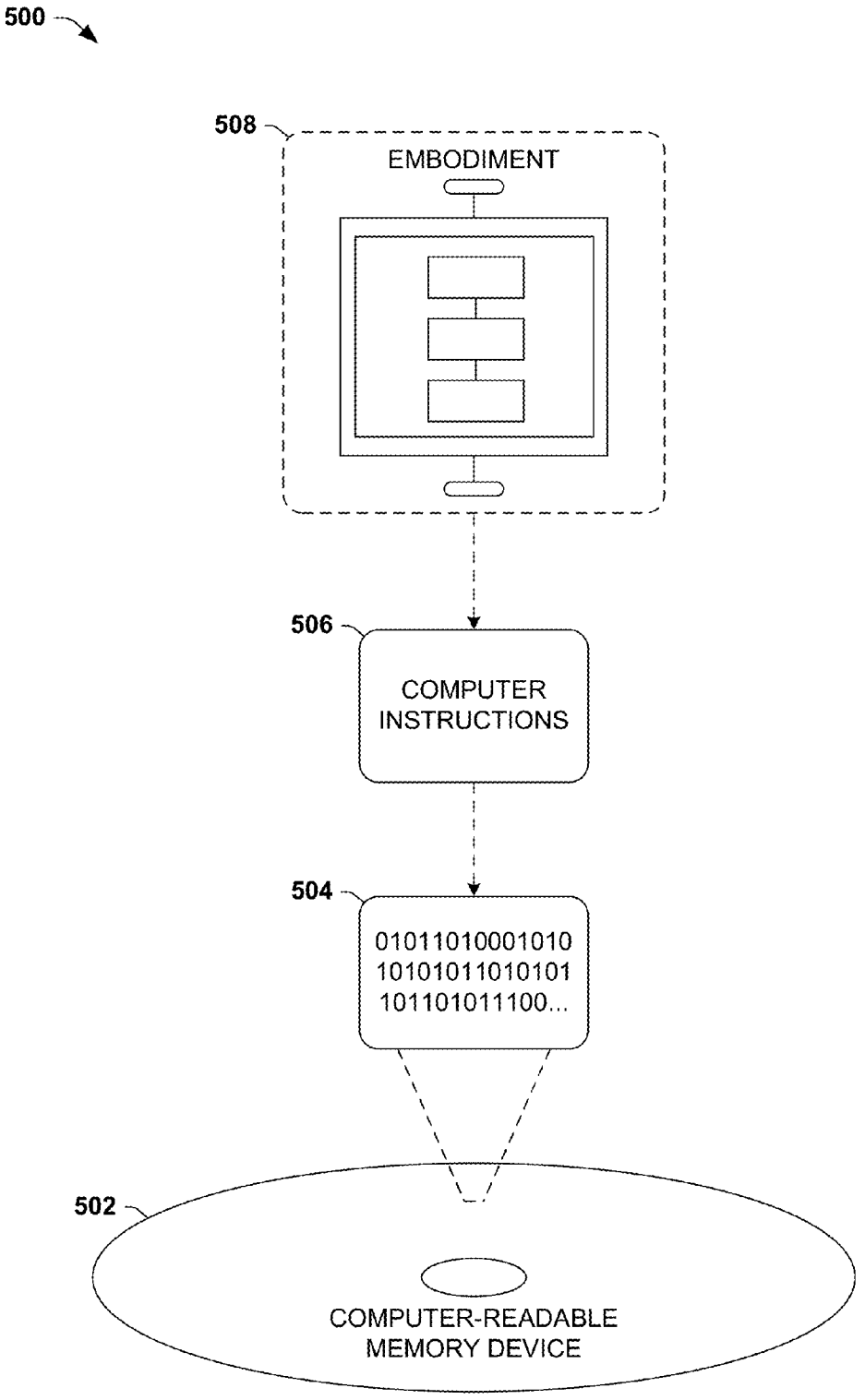

500
508
EMBODIMENT
506
COMPUTER INSTRUCTIONS
504
01011010001010
10101011010101
101101011100...
502
COMPUTER-READABLE MEMORY DEVICE

FIG. 5

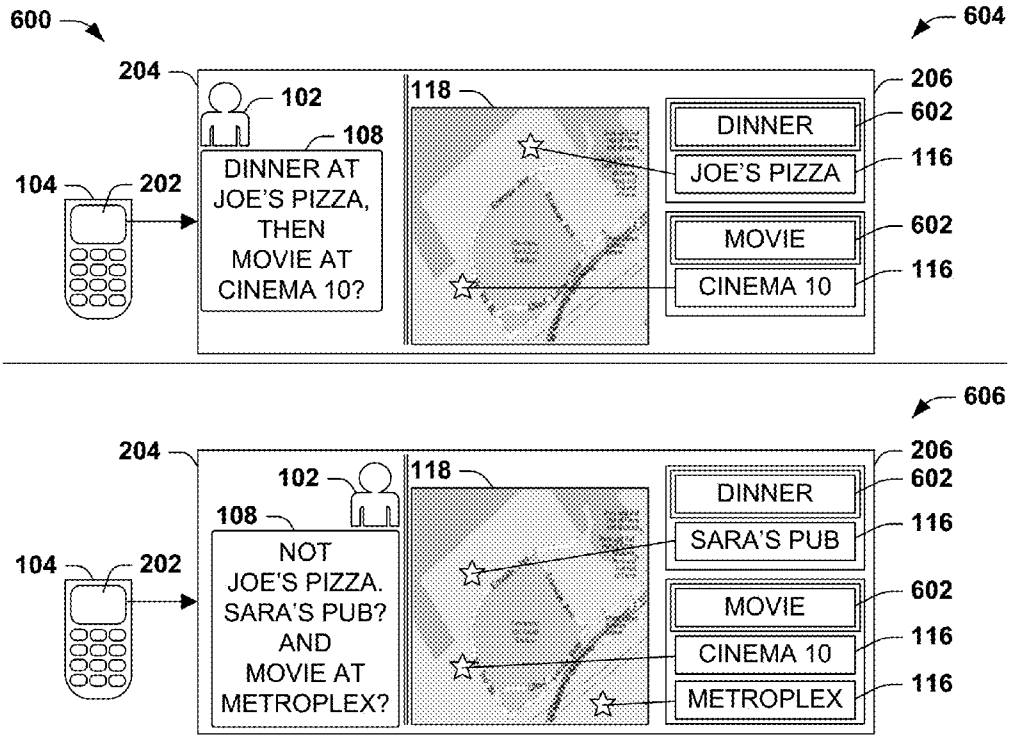

600
604
204
102
108
DINNER AT JOE'S PIZZA, THEN MOVIE AT CINEMA 10?
104
202
118
206
DINNER
602
JOE'S PIZZA
116
MOVIE
602
CINEMA 10
116
606
204
102
108
NOT JOE'S PIZZA. SARA'S PUB? AND MOVIE AT METROPLEX?
104
202
118
206
DINNER
602
SARA'S PUB
116
MOVIE
602
CINEMA 10
116
METROPLEX
116

FIG. 6

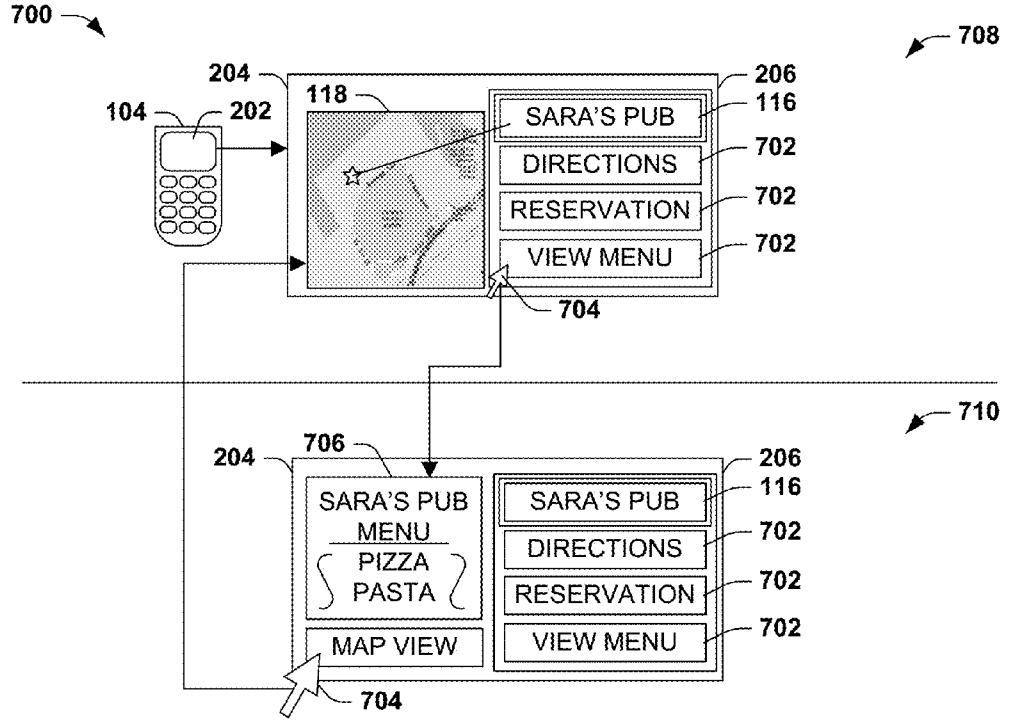

700
708
204
104
202
118
206
SARA'S PUB
116
DIRECTIONS
702
RESERVATION
702
VIEW MENU
702
704
710
706
204
SARA'S PUB MENU
PIZZA
PASTA
MAP VIEW
206
SARA'S PUB
116
DIRECTIONS
702
RESERVATION
702
VIEW MENU
702
704

FIG. 7

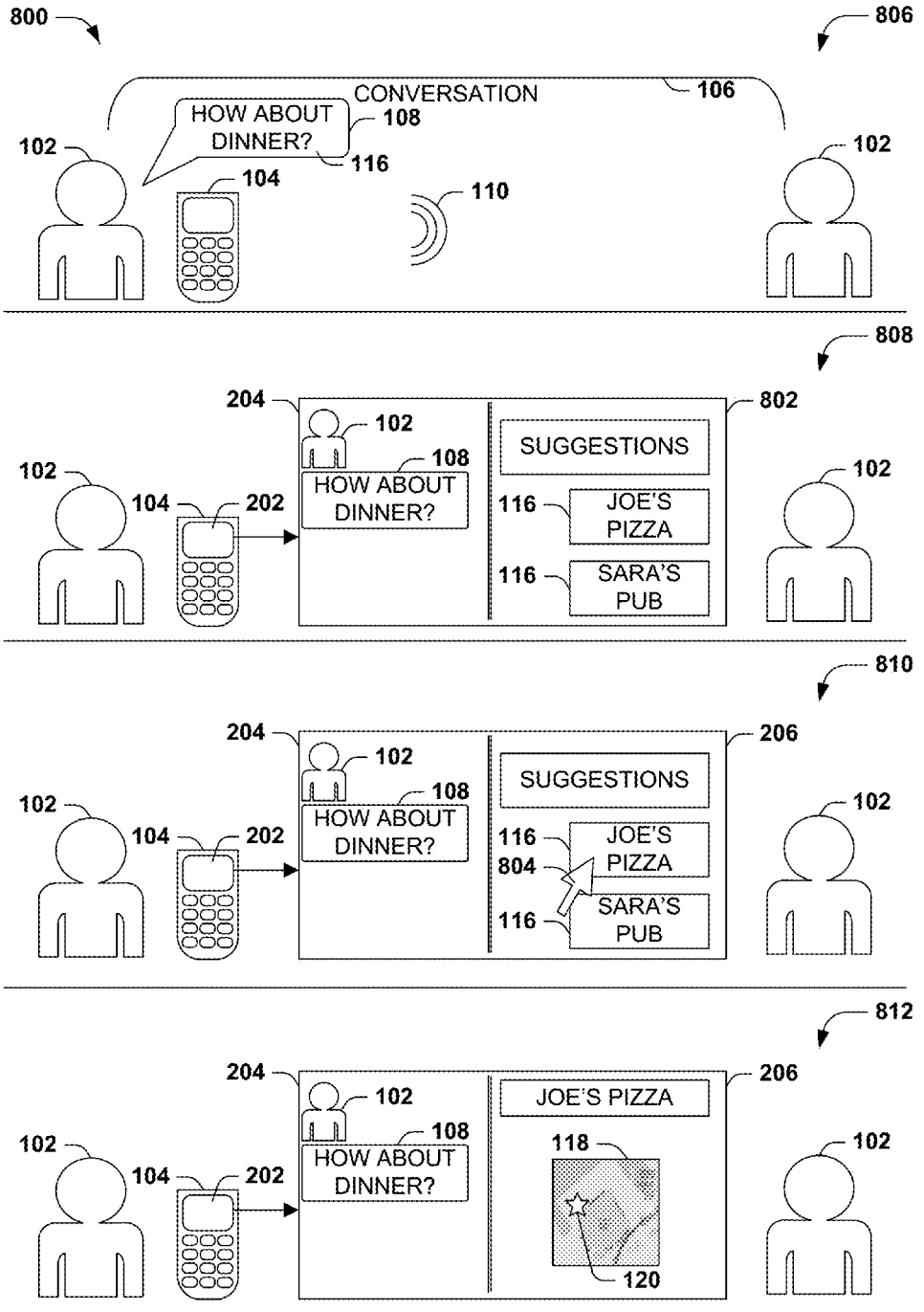

800
806
CONVERSATION
106
HOW ABOUT DINNER?
108
116
102
104
110
102
808
204
102
802
SUGGESTIONS
108
HOW ABOUT DINNER?
102
104
202
116
JOE'S PIZZA
116
SARA'S PUB
102
810
204
102
206
SUGGESTIONS
108
HOW ABOUT DINNER?
102
104
202
116
JOE'S PIZZA
804
116
SARA'S PUB
102
812
204
102
206
JOE'S PIZZA
108
HOW ABOUT DINNER?
118
102
104
202
120
102

FIG. 8

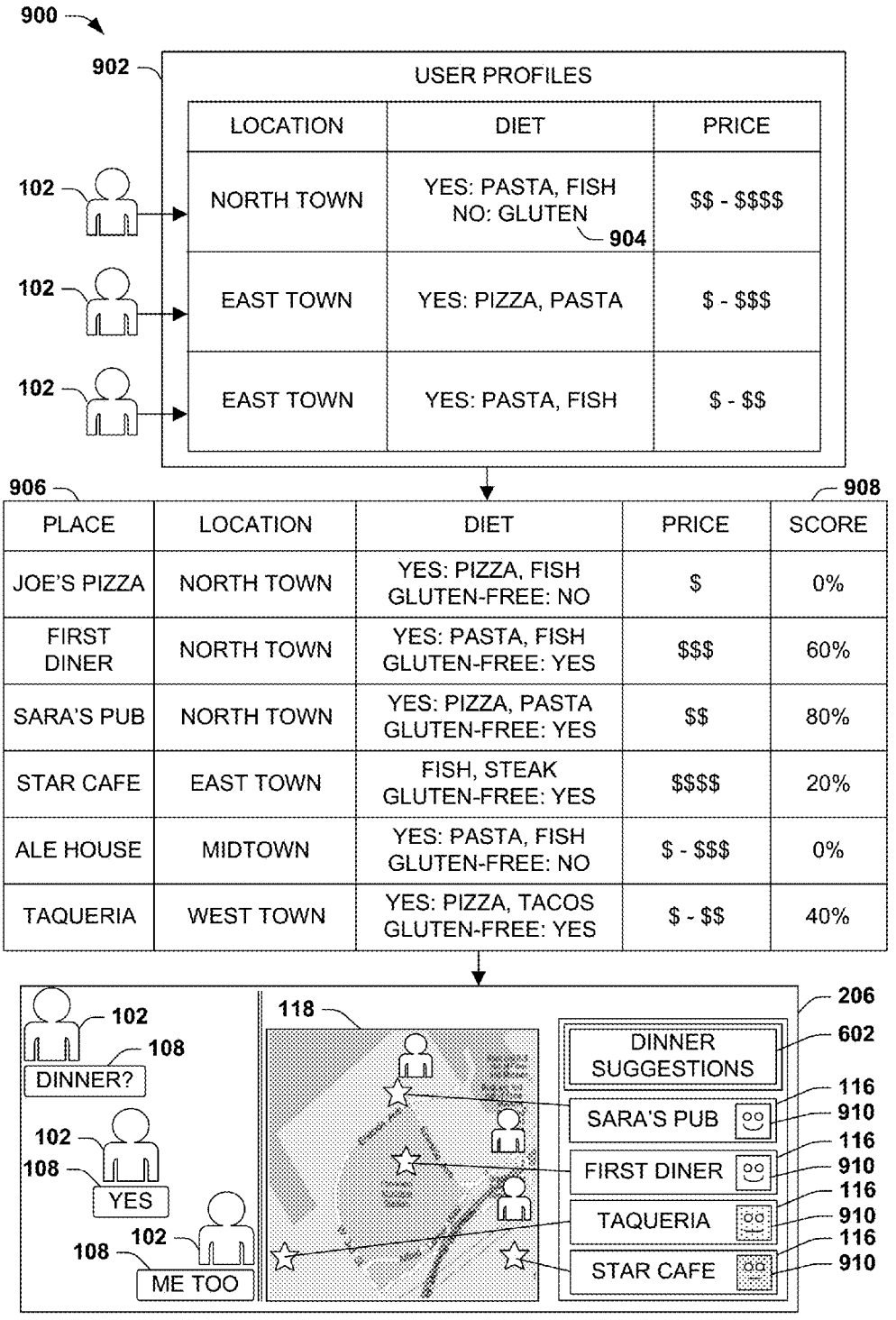

900
902
USER PROFILES
LOCATION
DIET
PRICE
102
NORTH TOWN
YES: PASTA, FISH
NO: GLUTEN
904
$$ - $$$$
102
EAST TOWN
YES: PIZZA, PASTA
$ - $$$
102
EAST TOWN
YES: PASTA, FISH
$ - $$
906
908
PLACE
LOCATION
DIET
PRICE
SCORE
JOE'S PIZZA
NORTH TOWN
YES: PIZZA, FISH
GLUTEN-FREE: NO
$
0%
FIRST DINER
NORTH TOWN
YES: PASTA, FISH
GLUTEN-FREE: YES
$$$
60%
SARA'S PUB
NORTH TOWN
YES: PIZZA, PASTA
GLUTEN-FREE: YES
$$
80%
STAR CAFE
EAST TOWN
FISH, STEAK
GLUTEN-FREE: YES
$$$$
20%
ALE HOUSE
MIDTOWN
YES: PASTA, FISH
GLUTEN-FREE: NO
$ - $$$
0%
TAQUERIA
WEST TOWN
YES: PIZZA, TACOS
GLUTEN-FREE: YES
$ - $$
40%
102
108
DINNER?
102
108
YES
102
108
ME TOO
118
206
602
DINNER SUGGESTIONS
SARA'S PUB
FIRST DINER
TAQUERIA
STAR CAFE
116
910
116
910
116
910
116
910

FIG. 9

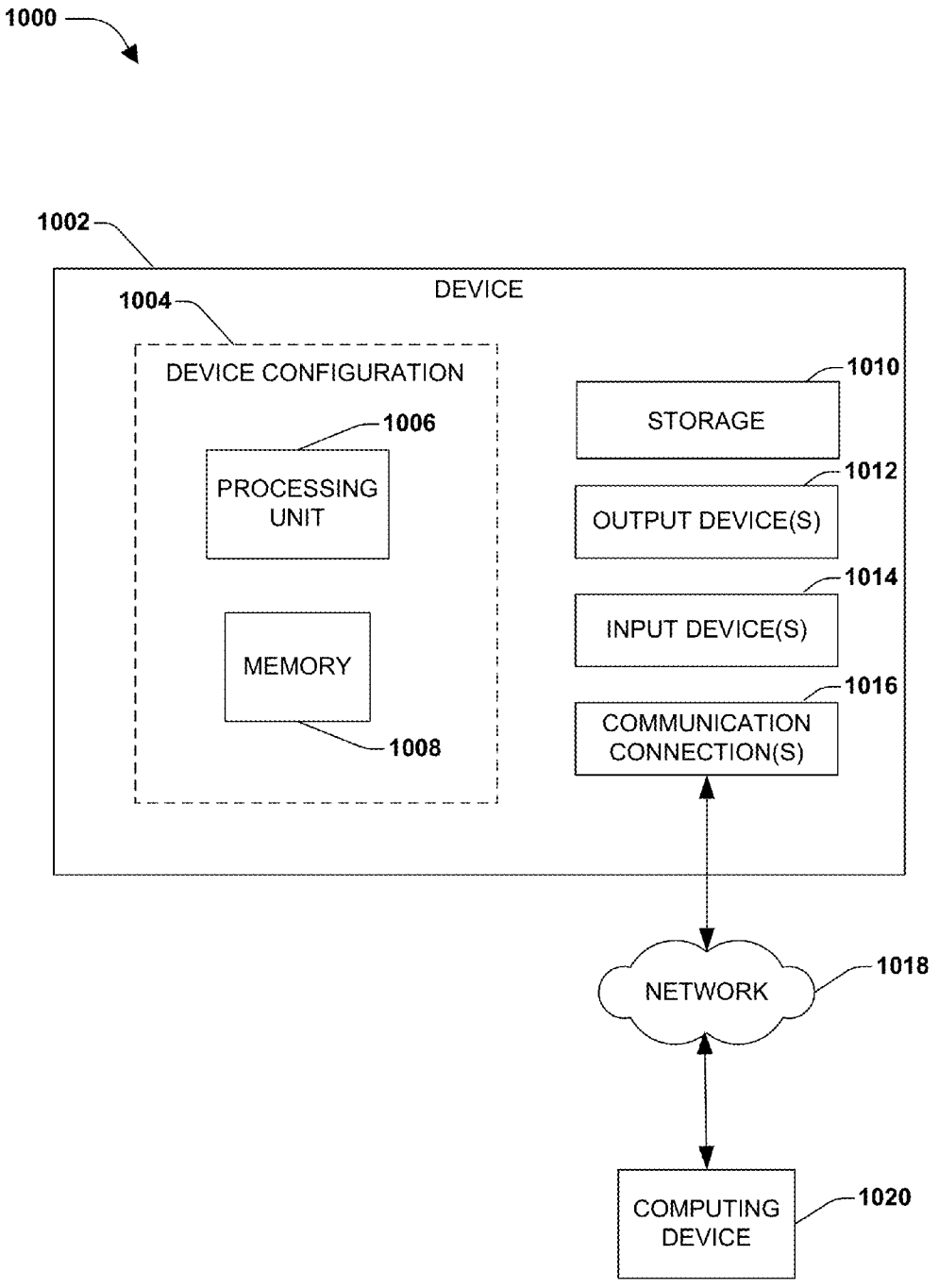

1000
1002
DEVICE
1004
DEVICE CONFIGURATION
1006
PROCESSING UNIT
MEMORY
1008
1010
STORAGE
1012
OUTPUT DEVICE(S)
1014
INPUT DEVICE(S)
1016
COMMUNICATION CONNECTION(S)
NETWORK
1018
COMPUTING DEVICE
1020

FIG. 10

FACILITATING CONVERSATIONS WITH AUTOMATED LOCATION MAPPING

BACKGROUND

[0001] Within the field of computing, many scenarios involve a conversation among two or more individuals about one or more topics that are associated with a location, such as plans to meet at a restaurant for dinner or to attend a film at a theater. In such scenarios, an individual who is also using a device may alternate between conversing with one another and with interacting with a device to identify, explore, and select the location-based topics. Devices may provide a variety of tools that may facilitate such conversations, such as applications for identifying or recommending topics based on a set of search criteria, such as an events guide application or a restaurant recommendations application; applications for viewing details about a topic, such as viewing restaurant menus and availability for reservations; applications for initiating transactions with a location-based topic, such as making a reservation at a restaurant or purchasing tickets to a theater or music concert; applications for identifying discounts on such and applications for logging the presence of the user at the location of a topic, such as a "check-in" application enabling a user to inform social contacts of their presence at a particular event or location; applications for finding discounts on topics, such as discounted theater tickets and restaurant coupons; and applications for presenting maps and identifying routes to reach the locations of the respective topics.

SUMMARY

[0002] This Summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This Summary is not intended to identify key factors or essential features of the claimed subject matter, nor is it intended to be used to limit the scope of the claimed subject matter.

[0003] Many devices may provide a variety of tools that may facilitate users in conversations involving location-based topics. However, in order to use these tools, a user may have to direct his or her attention, alternatively, to the other individuals involved in the conversation and to directing commands at the device to invoke such tools. For example, a set of users may agree to have dinner together; request a device to provide a list of nearby restaurants; discuss the options with each other; request the device to provide more information about a restaurant, such as a menu or a location; discuss and agree on a selected restaurant; and then request the device to plot a route from a current location to the location of the selected restaurant. In this manner, the users may utilize their devices to facilitate the conversation of location-based topics.

[0004] While the tools provided by such devices may significantly facilitate the conversation, it may be appreciated that the alternatively directed attention of the users may also impair the conversation. For example, a user who is interacting with a device to retrieve such information may miss part of the conversation. Additionally, sharing such information among users may be difficult; e.g., a first user may use a recommendations application to search for location-based topics of interest, but may have to relate the identified options to a second individual through the conversation, rather than enabling the second individual to view the same options as presented to the user of the device.

[0005] Presented herein are techniques for configuring devices to facilitate conversations about location-based topics. In an embodiment of these techniques, a device may be configured to monitor a conversation among at least two individuals to detect topics referenced by an individual. Upon detecting a topic referenced by a first individual to a second individual of the conversation, where the topic is associated with a location and is not referenced as a command to the device, the device may identify the location of the topic, and present on the display a map indicating the location of the topic. In particular, the map may be presented alongside the conversation, such as adjacent to a text-based conversation (e.g., a textual conversation, a verbal conversation that is automatically translated into text, or a video conversation where speech and/or nonverbal communication are automatically translated into text), a map may be presented that automatically displays the locations of topics referenced within the conversation by the individuals. In further embodiments, a device may maintain a list of the topics referenced in the conversation; may automatically suggest topics for the conversation (e.g., presenting a set of recommendations for restaurants that are compatible with the dietary preferences specified in the social profiles of the individuals, and that are near the current locations of the individuals); may allow individuals to alter the list; and may synchronize the presentation of the list with a second device of a second individual, thereby enabling the individuals to review the options together. These and other variations in the presentation of location-based topics in furtherance of a conversation among the individuals may be achievable in accordance with the techniques presented herein.

[0006] To the accomplishment of the foregoing and related ends, the following description and annexed drawings set forth certain illustrative aspects and implementations. These are indicative of but a few of the various ways in which one or more aspects may be employed. Other aspects, advantages, and novel features of the disclosure will become apparent from the following detailed description when considered in conjunction with the annexed drawings.

DESCRIPTION OF THE DRAWINGS

[0007] FIG. **1** is an illustration of an exemplary scenario featuring a conversation among two individuals about a set of location-based topics.

[0008] FIG. **2** is an illustration of an exemplary scenario featuring the facilitation of a conversation among two individuals about a set of location- based topics in accordance with the techniques presented herein.

[0009] FIG. **3** is an illustration of an exemplary method of facilitating a conversation among at least two users about a topic associated with a location in accordance with the techniques presented herein.

[0010] FIG. **4** is a component block diagram illustrating an exemplary system for facilitating a conversation among at least two users about a topic associated with a location in accordance with the techniques presented herein.

[0011] FIG. **5** is an illustration of an exemplary computer-readable medium including processor-executable instructions configured to embody one or more of the provisions set forth herein.

[0012] FIG. **6** is an illustration of an exemplary scenario featuring a grouping of topic groups referenced within a conversation among two individuals in accordance with the techniques presented herein.

[0013] FIG. **7** is an illustration of an exemplary scenario featuring a viewing of information about a location-based topic referenced in a conversation among at least two individuals in accordance with the techniques presented herein.

[0014] FIG. **8** is an illustration of an exemplary scenario featuring a presentation of recommendations of location-based topics to a user in accordance with the techniques presented herein.

[0015] FIG. **9** is an illustration of an exemplary scenario featuring a recommendation of location-based topics for a conversation among at least two individuals in accordance with the techniques presented herein.

[0016] FIG. **10** is an illustration of an exemplary computing environment wherein a portion of the present techniques may be implemented and/or utilized.

DETAILED DESCRIPTION

[0017] The claimed subject matter is now described with reference to the drawings, wherein like reference numerals are used to refer to like elements throughout. In the following description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the claimed subject matter. It may be evident, however, that the claimed subject matter may be practiced without these specific details. In other instances, structures and devices are shown in block diagram form in order to facilitate describing the claimed subject matter.

A. Introduction

[0018] FIG. **1** is an illustration of an exemplary scenario **100** featuring a conversation among a set of individuals **102** using a pair of devices **104** to engage in a conversation **106** that includes references to topics that are associated with a location.

[0019] In this exemplary scenario **100**, at a first time point **122**, a first individual **102** uses a first device **104** to express a first message **108**, indicating an invitation to a second individual **102** to join the first individual **102** for dinner. The first device **104** transmits **110** the first message **108** to a second device **104** operated by the second individual **102**, who receives the first message **108** and begins to consider the options for dinner.

[0020] At a second time point **124**, the second individual **102** momentarily withdraws from the conversation **106** in order to direct a command **112** to the second device **104**, e.g., a request to present a list of restaurants in the area of the second individual **102**. The second device **104** presents a set of search results **114**, and the second individual **102** provisionally selects a restaurant to suggest to the first individual **102**.

[0021] At a third time **126**, the second individual **102** returns to the conversation **106** and expresses a second message **108**, indicating a suggestion of a restaurant. The second device **104** transmits **110** the second message **108** to the first device **104**, which presents the second message **108** to the first individual **102**.

[0022] At a fourth time **128**, the first individual **102** momentarily withdraws from the conversation **106** to investigate the restaurant referenced in the second message **108** from the second individual **102**. The first individual **102** directs a command **112** to the first device **104** to show a location map including a location **120** associated with the topic **116** of the second message **108** (e.g., the street address of the restaurant). The first device **104** therefore presents to the first individual **102** a mapping application **114**, including a map **118** that depicts the location **120** of the topic **116** in relation to the first individual **102**.

[0023] At a fifth time point **130**, the first individual **102** determines that the restaurant suggested by the second individual **102** is acceptable, and returns to the conversation **106** to create a third message **108** directed to the second individual **102**. The first device **104** of the first individual **102** transmits **110** the third message **108** to the second individual **102** to complete the conversation **106**. In this manner, the devices **104** of the individuals **102** facilitate the conversation **106** by presenting information about the topics **116** and the locations **120** associated therewith.

B. Presented Techniques

[0024] The exemplary scenario **100** of FIG. **1** provides examples of the manner in which devices **104** may facilitate a conversation **106** among at least two individuals **102** involving topics **116** that are associated with locations **120** (e.g., restaurants for which a street address or geopositioning coordinate may be identified). However, in the exemplary scenario **100** of FIG. **1**, several aspects of this interaction may be disadvantageous to one or both individuals **102**.

[0025] As a first example, each individual **102** utilizes a device **104** to retrieve information about the topics **116** referenced in the conversation **106** by directing a command **112** to the device **104**. However, doing so diverts the attention of the individual **102** from the conversation **106** to the device **104** in order to initiate the command **112** and to view the provided information. During this period of diversion, the individual **102** may miss parts of the conversation; e.g., at the fourth time point **128**, while the first individual **102** is examining the map **118** of the location **102** of the restaurant, the second individual **102** may not be aware that the first individual **102** has momentarily withdrawn form the conversation **106**. The second individual **102** may therefore continue speaking, and the first individual **102** may not hear the second individual **102**, resulting in miscommunication. Alternatively, the first individual **102** may instruct the second individual **102** to wait while the first individual **102** examines the map **118**, causing a disruptive delay in the conversation **106** that may frustrate the second individual **102**.

[0026] As a second example, while one individual **102** is using a device **104** to view information that is pertinent to the conversation **106**, the other individual **102** is unable to view the same information. Rather, each individual **102** individually views the information, and then creates a message **108** relaying the information to the other individual **102**. This exchange of information may be inefficient and/or time-consuming. For example, the first individual **102** executes a query, views some information, and then creates a message **108** conveying some details the second individual **102**. The second individual **102** then re-inputs the same query in order to review the same information. Thus, while each device **104** assists one of the individuals **102**, the devices **104** do not interoperate to share the information with the other individual **102**; rather, the individuals **102** convey such information through the exchange of manually created messages **108**.

[0027] As a third example, the exchange of information through messages **108** may result in a variety of communication errors. For example, the first device **104** of the first user **102** may fulfill the command **112** to view a map to "Joe's Pizza" by searching for and finding a restaurant matching the

specified name. However, this restaurant may differ from the restaurant being displayed on the second device **104** of the second user **102**. Thus, the individuals **102** may exchange messages **108** agreeing to meet at a particular location **120**, but may inadvertently be referring to different locations presented by the devices **104**. These and other disadvantages may arise from the manner in which the individuals **102** and devices **104** interact in the exemplary scenario **100** of FIG. **1**.

[0028] Presented herein are techniques for alternatively configuring a device **104** to facilitate a conversation **106** among at least two individuals **102** involving a topic **116** that is associated with a location **120**. In accordance with these techniques, rather than waiting for a command **112** from an individual **102** to present information about a topic **116** while the individual **102** engages in the conversation **106**, a device **104** may monitor the conversation **106** to detect a reference from a first individual **102** to a second individual **102** within the conversation **106** that involves a topic **116** associated with a location **120**. Notably, the device **104** may detect this reference as part of the conversation **106** among the individuals **102**, e.g., in a message **108** written by the first individual **102** and directed to the second individual **102**, rather than as a command **112** directed by the individual **102** to the device **104**. Upon detecting such a reference, the device **104** may identify the location **120** of the topic **116** (e.g., performing a search of a location database to identify a street address or geolocation coordinate identifying the location **120** of the topic **116**). The device **104** may then present to the individual **102** a map **118** indicating the location **120** of the topic. Notably, this map **118** may be presented concurrently with the conversation **106**; e.g., a textual conversation interface (such as an exchange of written messages **108**, and/or a speech-to-text transcript of a verbal communication) may be presented adjacent to the map **118** indicating the locations **120** of the topics **116** of the conversation **106**.

[0029] FIG. **2** presents an illustration of an exemplary scenario **200** featuring a pair of devices **104** respectively configured to facilitate a conversation **106** among two individuals **102** in accordance with the techniques presented herein. In this exemplary scenario **200**, at a first time point **210**, the first individual **102** creates a message **108** to the second individual **102** within the conversation **106**, where the first message **108** references a topic **116** that is associated with a location **120** (e.g., a restaurant having a street address). In this exemplary scenario **200**, the first individual **102** creates the message **108** by speaking to the first device **104**. The first device **104** of the first individual **102** transmits **110** the first message **108** to the second device **104**. For example, the first message **108** may be translated by the first device **104** into text, which is transmitted to the second device **104**; or, the first device **104** may transmit the first message **108** in verbal form to the second device **104** for presentation to the second individual **102** in verbal form; or, the second device **104** may, upon receiving the verbal first message **108** from the first device **104**, translate the verbal message into a text message for presentation to the second user **102**. A variety of such techniques may also be utilized, e.g., to present the first message **108** of the first user **102** in both verbal and text form.

[0030] As further illustrated in the exemplary scenario **200** of FIG. **2**, one or both of the first device **104** and the second device **104** also monitors the conversation **106**, and thus detects the reference in the first message **108** to the topic **116** associated with a location **120**. For example, the first device **104** and/or the second device **104** may evaluate the first message **108** of the first individual **102**, and may detect the mention of the location **120** ("Joe's Pizza"). Such detection may be achieved, e.g., through comparison of the content of the first message **108** with a general set of keywords or key phrases (such as a directory of known locations), and/or a specific set of identifiers (such as locations **120** included in an address book of either individual **102**), and/or according to the context of the first message **108** (such as applying lexical analysis to determine that a phrase such as "let's have dinner at . . . " is frequently followed by the name of a restaurant). The first device **104** and/or the second device **104** may also utilize various forms of natural language parsing, such as machine learning techniques that are trained to understand spoken language; dialogue management techniques to determine a particular domain (e.g., a list of places to go); the referenced entities (e.g., relative references to the entities of the conversation, such as "the other one" when discussing two restaurants); the action and/or intent of the participants, such as a consensus for making a reservation; and related attributes, such as ratings, menus, reviews, and hours of operation.

[0031] At a second time point **212**, the first device **104** presents a conversation interface **204** on a display **202** for the first individual **102** (e.g., a text messaging interface, a transcript of a voice chat such as a telephone call, or a videoconference) that includes the first message **108** of the first individual **102**. The second device **104** also presents the conversation interface **204** on a display **202** for the second individual **102** that includes the first message **108** from the first individual **102**. In addition, each device **104** presents on the display **202**, adjacent to the conversation interface **204**, a map interface **206** including a map **118** that depicts the location **120** of the topic **116** referenced in the first message **108**. Notably, the map interface **206** is presented by each device **104** in the absence of a command **112** from either individual **102** to present a map **118** or otherwise provide information about the topic **116**. Rather, one or both devices **104** has detected the location-based reference in the first message **108**, and has automatically inserted the map interface **206** alongside the conversation interface **204**. Additionally, both devices **104** automatically present the same location **120** for the topic **116** (e.g., because each device **104** has individually identified the reference to the topic **116** in the first message **108** and the location **120** of the topic **116**, and/or because one device **104** has automatically synchronized with the other device **104** to share the information and to coordinate the presentation of the map **118** of the location **120** of the topic **116** to both individuals **102**).

[0032] At a third time point **214**, the second individual **102** presents a second message **108** within the conversation **106** that references a second topic **116**. The second device **104** transmits **110** the second message **108** to the first device **104** for presentation to the first individual **102**. Again, because one or both devices **104** monitors the conversation **106**, and thus detects that the second message **108** references a second topic **116** that is associated with a location **120**.

[0033] At a fourth time point **216**, the conversation interface **204** presented to each individual **102** is updated with the second message **108**. Additionally, on one or both devices **104**, the location **120** of the second topic **116** is identified, and the map **118** presented on the display **202** alongside the conversation interface **204** is updated to present the location **120** of the second topic **116** as well as the location **120** of the first topic **116**. Again, the map interface **206** is updated in the

absence of a command **112** from either individual **102** to show the location **120** of the second topic **116**; and, again, both devices **104** may update the map **118** either by individually detecting the reference to the second topic **116** and inserting the location **120** of the second topic **116** into the map **118**, and/or by synchronizing the presentation to the individuals **102** with the other device **104**.

[0034] At a fifth time point **218**, the first individual **102** and the second individual **102** may conclude the conversation **106** when the first individual **102** sends a third message **108** accepting the suggestion of the second individual **102**. One or both devices **104** may detect that the conversation **106** has ended and that the individuals **102** have agreed on a particular topic **116** (e.g., to have dinner together at the restaurant suggested by the second individual **102**). Additionally, one or both devices **104** may present on the display **202** a map **118** of the location **120** of the selected topic **116**, and well as a route **208** from the current location of each individual **102** to the location **120**.

[0035] In comparison with the exemplary scenario **100** of FIG. **1**, the manner in which the devices **104** facilitate the conversation **106** among the individuals **102**, in the exemplary scenario **200** of FIG. **2** may provide some advantages. As a first example, one or both devices **104** provides maps **118** and/or related information (such as routing) about the topics **116** discussed in the conversation **106** automatically by monitoring the conversation **106** and detecting references to such topics **116**, rather than in response to a command **112** from an individual **102**. Accordingly, both individuals **102** may remain present in and focused upon the conversation **106**, rather than upon interacting with the devices **104** to request a retrieval of such information. As a second example, the devices **104** may interoperate to present the same information (e.g., the same location of the same restaurant) at the same time on each device **104** to each individual **102**, and without either individual **102** having to convey this information to the other individual **102** (e.g., neither individual **102** has to convey the information presented on one device **104** to the other individual **102**, and neither individual **102** has to re-enter information into a device **104** that the other individual **102** already provided to the other device **104**). In this manner, the configuration of the devices **202** may facilitate the convenience, efficiency, and/or accuracy of the conversation **106** in accordance with the techniques presented herein.

C. Exemplary Embodiments

[0036] FIG. **3** presents an illustration of an exemplary first embodiment of the techniques presented herein, illustrated as an exemplary method **300** of facilitating a conversation **106** among at least two individuals **102**. The exemplary first method **300** may be implemented, e.g., as a set of instructions stored in a memory component (e.g., a memory circuit, a platter of a hard disk drive, a solid-state storage device, or a magnetic or optical disc) of a device **104** having a processor and a display **202**, where the instructions, when executed on the processor, cause the device **104** to operate according to the techniques presented herein. The exemplary first method **300** begins at **302** and involves executing **304** the instructions on the processor of the device **104**. In particular, the execution of the instructions on the processor causes the device **104** to monitor **306** the conversation **106** to detect topics **116** referenced by an individual **102**. The execution of the instructions also causes the device **104** to, upon detecting **308** a topic **116** referenced by a first individual **102** to a second individual **102** of the conversation **106**, where the topic **116** is associated with a location **102**, and where the topic **116** is not referenced as a command **112** to the device **104**, identify **310** the location **120** of the topic **116**, and present **312**, on the display **202** of the device **104**, a map **118** indicating the location **120** of the topic **116**. In this manner, the exemplary method **300** enables the device to facilitate the conversation **106** among the individuals **102** in accordance with the techniques presented herein, and so ends at **314**.

[0037] FIG. **4** presents an illustration of an exemplary second embodiment of the techniques presented herein, illustrated as an exemplary system **408** for enabling a device **104** to facilitate a conversation **106** among at least two individuals **102**. One or more components of the exemplary system **408** may be implemented, e.g., as instructions stored in a memory **406** of the device **402** that, when executed on a processor **404** of the device **402**, cause the device **402** to perform at least a portion of the techniques presented herein. Alternatively (though not shown), one or more components of the exemplary system **408** may be implemented, e.g., as a volatile or nonvolatile logical circuit, such as a particularly designed semiconductor-on-a-chip (SoC) or a configuration of a field-programmable gate array (FPGA), that performs at least a portion of the techniques presented herein, such that the interoperation of the components completes the performance of a variant of the techniques presented herein. The exemplary system **408** includes a conversation monitor **410** that monitors the conversation **106** to detect topics **116** referenced by an individual **102**. The exemplary system **408** also includes a topic presenter **412** that, upon the conversation monitor **410** detecting a topic **116** that is referenced by a first individual **102** to a second individual **102** of the conversation **106**, where the topic is associated with a location **102** and is not referenced as a command **112** to the device **402**, identify a location **120** of the topic **116**, and present, on the display **202**, a map **118** indicating the location **120** of the topic **116**. In this manner, the interoperation of the components of the exemplary system **406** facilitates the conversation **106** among the at least two individuals **102** in accordance with the techniques presented herein.

[0038] Still another embodiment involves a computer-readable medium comprising processor-executable instructions configured to apply the techniques presented herein. Such computer-readable media may include, e.g., computer-readable storage devices involving a tangible device, such as a memory semiconductor (e.g., a semiconductor utilizing static random access memory (SRAM), dynamic random access memory (DRAM), and/or synchronous dynamic random access memory (SDRAM) technologies), a platter of a hard disk drive, a flash memory device, or a magnetic or optical disc (such as a CD-R, DVD-R, or floppy disc), encoding a set of computer-readable instructions that, when executed by a processor of a device, cause the device to implement the techniques presented herein. Such computer-readable media may also include (as a class of technologies that are distinct from computer-readable storage devices) various types of communications media, such as a signal that may be propagated through various physical phenomena (e.g., an electromagnetic signal, a sound wave signal, or an optical signal) and in various wired scenarios (e.g., via an Ethernet or fiber optic cable) and/or wireless scenarios (e.g., a wireless local area network (WLAN) such as WiFi, a personal area network (PAN) such as Bluetooth, or a cellular or radio network), and which encodes a set of computer-readable instructions that,

when executed by a processor of a device, cause the device to implement the techniques presented herein.

[0039] An exemplary computer-readable medium that may be devised in these ways is illustrated in FIG. **5**, wherein the implementation **600** comprises a computer-readable memory device **502** (e.g., a CD-R, DVD-R, or a platter of a hard disk drive), on which is encoded computer-readable data **504**. This computer-readable data **504** in turn comprises a set of computer instructions **506** configured to operate according to the principles set forth herein. In a first such embodiment, the processor-executable instructions **506** may be configured to cause a computing device to perform a method of facilitating a conversation **106** among at least two individuals **102**, such as the exemplary method **300** of FIG. **3**. In a second such embodiment, the processor-executable instructions **506** may be configured to implement one or more components of a system of facilitating a conversation **106** among at least two individuals **102**, such as the exemplary system **408** of FIG. **4**. Some embodiments of this computer-readable medium may comprise a computer-readable storage device (e.g., a hard disk drive, an optical disc, or a flash memory device) that is configured to store processor-executable instructions configured in this manner. Many such computer-readable media may be devised by those of ordinary skill in the art that are configured to operate in accordance with the techniques presented herein.

D. Variations

[0040] The techniques discussed herein may be devised with variations in many aspects, and some variations may present additional advantages and/or reduce disadvantages with respect to other variations of these and other techniques. Moreover, some variations may be implemented in combination, and some combinations may feature additional advantages and/or reduced disadvantages through synergistic cooperation. The variations may be incorporated in various embodiments (e.g., the exemplary method **300** of FIG. **3**; the exemplary system **408** of FIG. **4**; and the exemplary computer-readable memory device **502** of FIG. **5**) to confer individual and/or synergistic advantages upon such embodiments.

[0041] D1. Scenarios

[0042] A first aspect that may vary among embodiments of these techniques relates to the scenarios wherein such techniques may be utilized.

[0043] As a first variation of this first aspect, the techniques presented herein may be utilized with many types of devices **104**, including workstations; servers; game consoles; laptop and palmtop form factor computers; and mobile devices, such as phones, tablets, texting devices, cameras, portable media players, portable game players, and global positioning system (GPS) receivers. Such techniques may also be provided by as a first device as a service for a second device (e.g., a server and/or client), and/or by an interoperating set of devices (e.g., devices of respective individuals that synchronize and coordinate the presentation of information to the individuals **102**). Additionally, one or more devices **104** may be utilized by one of the individuals **102** of the conversation **106**, or a device **104** may be utilized by two or more individuals **102** (e.g., passengers in an automobile, or a group of individuals **102** together consulting an information kiosk).

[0044] As a second variation of this first aspect, the techniques presented herein may be utilized to facilitate many types of conversations **106**. Such conversations may include a variety of modalities, such as an exchange of text messages (e.g., email messages, Simple Message Service (SMS) messages, and/or chat sessions, such as instant messaging scenarios); an exchange of voice communication (e.g., a phone call or voice-over-internet-protocol (VoIP) session); an exchange of images (e.g., a photo exchange service); an exchange of video streams (e.g., a videoconference); and/or an exchange of personal information (e.g., a mutual location sharing application). In some such scenarios, different individuals may participate in different modalities (e.g., a first individual **102** may generate text messages, while a second individual **102** may generate a voice stream). A device **104** of an individual **102** may therefore provide an asymmetric, mixed-modality communication session, and/or may translate from a first modality to a second modality (e.g., translating an incoming voice stream into a textual transcript, such as by using a speech-to-text interpreter). Alternatively or additionally, a particular individual **102** in the conversation may only send or only receive messages (e.g., a passive listener of the conversation **106**). Alternatively or additionally, each device **104** may be utilized by one individual **102**, or by a group of two or more individuals **102** participating collectively in the conversation **106**. As a further variation, a conversation server that interoperates with one or several devices **104** to facilitate the conversation between the individuals **102** may perform all or some of the monitoring, detecting, identifying, and/or presenting involved in the techniques presented herein.

[0045] As a third variation of this first aspect, the techniques presented herein may be utilized to facilitate many types of conversations **106**. In some such scenarios, translation may be performed (e.g., translating a first language of a first individual **102** to a second language of a second individual **102**, or translating from a native language of a first individual **102** to an accessibility language understood by a second individual **102**, such as Braille). Alternatively or additionally, such conversations **106** may include references to many types of topics **116** associated with a location **120**, such as a residence of an individual **102** (including an individual **102** participating in the conversation **106**); a business (e.g., a restaurant, a theater, or an office); an event (e.g., a concert or site of a news story); and/or an individual (e.g., the current location of an individual **102** of the conversation **106**). In some variations, the conversation between the individuals **102** may be asynchronous, such as an exchange of text or email messages, and the evaluation of such messages to identify referenced locations **120** may be performed in a non-realtime manner. In other scenarios, the conversation between the individuals **102** may be fluid and realtime, such as a telephone call or videoconference, and respective devices **104** may perform the evaluation of messages **108** in a realtime or near-realtime manner concurrently with the conversation, which may enable a rapidly responsive updating of a map to reflect the topics and locations **120** currently being discussed by the individuals **102**. Many such scenarios may be devised where the techniques presented herein may be advantageously utilized.

[0046] D2. Detecting and Tracking Referenced Topics

[0047] A second aspect that may vary among embodiments of the techniques presented herein relates to the manner of identifying topics **116** referenced within the conversation **106**, and of tracking such topics **116** through the conversation.

[0048] As a first variation of this second aspect, a device **104** may monitor the conversation **106** to detect references to topics **116** in various ways. As a first such example, the device **104** may comprise a set of recognizable keywords or phrases, such as the names of restaurants in the area of one or more individuals **102** of the conversation **106**, and may detect instances of these keywords for phrases in the messages **108** of the conversation **106**. Such keywords or phrases may include, e.g., the names of locations **120** where one or more of the individuals **102** has recently and/or frequently visited, and/or the names of locations **120** that are associated with a calendar event for one or more of the individuals **102**. Such keywords and/or phrases key may also be drawn from data sources that are particular to the individuals **102**, such as those associated with locations **120** that are near the current location of one or more individuals **102**, and/or an address book or travel history of one or more individuals **102**. As another example, such keywords may comprise the names of locations **120** that are of high and/or trending popularity in the vicinity of one or more of the individuals **102**, and/or among contacts of one or more of the individuals **102** within a social network or an institution. As a further variation, such concepts may be selected from two or more individual profiles of the individuals **102** of the conversation, such as including a second individual profile of a second individual **102** of the conversation.

[0049] As a second such example of this first variation of this second aspect, the device **104** may utilize a natural-language parsing technique to detect the references, such as linguistic structure and conversational patterns (e.g., phrases such as "meet me at [name of location]" and "let's visit [name of location]" indicating the name of a referenced location). As a third such example, the device **104** may utilize metadata, such as a hashtag or hyperlink inserted by a user **102** into a message **108** that identifies a topic **116** having a location **120**. As a fourth such example, the device **104** may analyze the conversation **106** with a machine learning evaluation technique, such as an artificial neural network that has been trained to recognize topics **116** arising within conversations **106**. Such machine-learning evaluation techniques may involve, e.g., identifying the domain of the conversation, including the topics **116** and/or locations **120** that are associated with such domains (e.g., conversations about meals, which frequently involve references to restaurant locations **120**, vs. conversations about social plans, which frequently involve references to locations **120** such as movie theaters and concert halls). The first device **104** and/or the second device **104** may also utilize various forms of natural language parsing, such as machine learning techniques that are trained to understand spoken language; dialogue management techniques to determine a particular domain (e.g., a list of places to go); the referenced entities (e.g., relative references to the entities of the conversation, such as "the other one" when discussing two restaurants); the action and/or intent of the participants, such as a consensus for making a reservation; and related attributes, such as ratings, menus, reviews, and hours of operation.

[0050] As a second variation of this second aspect, in addition to identifying the topics **116** of the conversation **106**, a device **104** may track a set of one or more topic groups arising within the conversation **106** that are respectively associated with at least one topic **116**. For example, the individuals **102** may discuss a set of evening plans, including (as a first topic group) restaurants where the individuals **102** may meet for dinner, and (as a second topic group) locations to view a film following dinner. As the individuals **102** reference and discuss the topics **116**, in addition to identifying the topics **116** and presenting a map **118** indicating the locations **120** of the topics **116**, a device **104** may group the list of topics **116** into topic groups, thereby facilitating an organized summary of the conversation **106**. For example, a topic presenter may, upon detecting a topic **116** referenced by a first individual **102** to a second individual **102** of the conversation **106**, identify a selected topic group of the conversation **106** that is associated with the topic **116**, and store the topic **116** in the conversation topic set, where the storage associated the topic **116** with the selected topic group. The device **104** may also present, on the display **202**, a list comprising at least two topic groups, and the topics **116** of the conversation **106** that are associated with the respective topic groups.

[0051] As a third variation of this second aspect, a device **104** monitoring the conversation **106** may track a set of topics **116** referenced by the individuals **102** during the conversation **106**. For example, upon detecting a topic **116** referenced by a first individual **102** of the conversation **106**, a device **104** may store the topic **116** in a conversation topic set. The device **104** may then present, on the display **202**, a list comprising the conversation topic set, and upon receiving from an individual **102** a selection of a selected topic **116** in the list, present on the map **118** the location **120** of the selected topic **116** (e.g., a list of the restaurants discussed by the individuals **102** during a conversation **106** about where to meet for dinner). The device **104** may also detect the selection by an individual **102** of a topic **116** in the list, and may present on the map **118** the location **120** of the selected topic **16**. Additionally, the device **104** may persistently store the conversation topic list for later review by the individuals **102**. In an embodiment, upon detecting a conversation end, the device **104** stores the conversation topic set; and upon receiving a request from an individual **102** to present the conversation topic set after the conversation end, the device **104** may present, on the display **202**, a list comprising the conversation topic set.

[0052] In addition to collecting, storing, and presenting the topics **116** of the conversation **106**, further variations of this third variation of this second aspect involve altering the list comprising the conversation topic set to reflect the substance of the conversation **106** among the individuals **102**. For example, upon receiving a request from an individual **102** to alter the conversation topic set, the device **104** alter the conversation topic set according to the request of the individual **102**. Such requests may include, e.g., a request from an individual **102** for a removal of a selected topic **116** from the conversation topic set, such as an expression of disapproval of a topic **116** suggested by another individual **102** of the conversation **106**. In addition to removing the topic **116** from the conversation **106**, the device **104** may subsequently refrain from presenting the selected topic **116** in the conversation topic set. As a still further variation, one or more individuals **102** within a conversation **106** may be designated as a conversation leader of the conversation **106** (e.g., a moderator of a large group discussion). A device **104** may alter the conversation topic set only in accordance with requests received from a conversation leader, and may refrain from altering the conversation in response to request from individuals **102** who are not a conversation leader of the conversation **106**. That is, while many individuals **102** in the discussion may propose the addition and/or removal of topics **116**, the device **104** may

alter the conversation topic set only when such proposals are accepted by a conversation leader of the conversation **106**.

[0053] FIG. **6** presents an illustration of an exemplary scenario **600** featuring several of the variations of the second aspect presented herein. In this exemplary scenario **600**, at a first time point **604**, a first individual **102** in a conversation **106** provides a message **108** referencing two topics **116**: the name of a restaurant, and the name of a theater. In view of this message **108**, a device **104** may identify a different topic group **602** for each topic **116** (e.g., a "dinner" topic group **602** for topics **116** comprising restaurants, and a "movie" topic group **602** for topics **116** comprising theaters); and upon presenting the conversation interface **204**, the device **104** may group the list of topics **116** according to the topic groups **602** of the topics **116**. At a second time point **606**, a second individual **102** of the conversation **106** may provide a second message **108** declining consideration of a selected topic **116** of the conversation **106**, and the device **104** may alter the conversation topic set by removing the selected topic **116** from the list. The second message **108** may also specify an alternative topic **116** for each of the first topic group **602** (e.g., a different place to have dinner) and the second topic group **602** (e.g., a different theater where the individuals **102** may view a film). The device **104** may identify the topic group **602** associated with each topic **116** of the second message **108** (e.g., by referring to a location database to identify the type of location **120** referenced by the topic **116**, and/or by evaluating the context of the conversation **106** in which the topic **116** was referenced), and may present the list on the display **202** with the added topics **116** respectively grouped according to the topic group **602** associated with the topic **116**. Embodiments may utilize many such variations while identifying and tracking the topics **116** referenced within a conversation **106** in accordance with the techniques presented herein.

[0054] D3. Presenting Locations of Conversation Topics

[0055] A third aspect that may vary among embodiments of the techniques presented herein involves the manner of presenting to an individual **102** the location(s) **120** of the topic(s) **116** of the conversation **106** on a map **118**.

[0056] As a first variation of this third aspect, many types of maps **118** may be presented, including an area map, a road map, an aerial map (e.g., a bird's-eye view captured by a satellite of an area including a location **120**), a topographical map, and a population or traffic map. The map **118** may also present only one location **120**, or the respective locations **120** of two or more topics **116**, and/or may also indicate a current or projects location **120** of one or more individuals **102** of the conversation **106**.

[0057] As a second variation of this third aspect, the map interface **206** may be presented on the display **202** to an individual **102** in various ways. For example, the device **104** may initially refrain from presenting the map **118** in a map interface **206** of the conversation interface **204** before detecting in the conversation **106** at least one reference to a topic **116** that is associated with a location **120**. Upon detecting such a reference, the device **104** may insert the map interface **206** into the conversation interface **204**, including the map **118** indicating the location **120** of the topic **116**. Alternatively or additionally, upon detecting a shift in the conversation **106** away from references to topics **116** associated with locations **120**, the device **104** may remove the map interface **206** from the conversation interface **204**.

[0058] As a third variation of this third aspect, the device **104** may occasionally substitute the presentation of the map **118** of a location **120** with other information about the topic **116** of the location **120**. For example, upon receiving from an individual **120** a selection of a selected topic **116** of the conversation **106**, the device **104** may replace the map **118** on the display **202** with an information interface describing the topic **106** (e.g., a picture of the location **120** of the topic **116**, a menu of a restaurant, or a listing of movies playing at a theater); and upon receiving from an individual **102** a request to return to the map **118**, the device **104** may replace the information interface on the display **202** with the map **118**. Such information may be retrieved from a variety of sources (e.g., from a web page associated with the topic **106**; from a location database or a reviews database; or from an advertiser, such as an advertisement associated with a topic **116** including a discount for the individuals **102**, where the advertisement is retrieved and presented with the topic **116** in the map interface **206**).

[0059] As a fourth variation of this third aspect, the device **104** may present a set of action options for actions that are associated with a topic **116** and/or location **120**. The device **104** may therefore identify at least one action that is associated with the topic **106**, The device **104** may therefore present on the display **202**, associated with the topic **116**, an action option to invoke the respective actions; and, upon receiving from an individual **102** a selection of a selected action option for a selected topic **116**, invoke the selected action option for the selected topic **116**.

[0060] FIG. **7** presents an illustration of an exemplary scenario **700** featuring several variations in the presentation, on the display **202** of a device **104**, of locations **120** for a selected topic **116** of a conversation **106**. In this exemplary scenario **700**, at a first time point **708**, the device **104** may include in the presentation of the conversation interface **204** (not shown) a map interface **206** that, in addition to indicating the location **120** of the topic **116**, presents action options **702** for respective actions that may be invoked in relation to the topic **116**. In this exemplary scenario **700**, the selected topic **116** comprises a restaurant, and the device **104** identifies and presents action options **702** for actions including plotting a route between a current location of the individual **102** and the location **120**; initiating a reservation of a table at the restaurant; and initiating a communication session between the restaurant and the individual **102**. If the individual **102** selects **704** an action option **702** offering to show a menu for the restaurant, then at a second time point **710**, the display **202** of the device **104** hides the map interface **206** and presents an information interface **706** providing information about the topic **116**, i.e., the menu of the restaurant. A user selection **704** of an action option to return to the map causes a removal of the information interface **706** and a second presentation of the map interface **206**. In this manner, the presentation of the topic **116** and location **120** may be responsive to user interaction initiated by an individual **102**, and may respond accordingly by adjusting the contents of the display **202** of the device **104**, in accordance with several variations of this third aspect of the techniques presented herein.

[0061] D4. Topic Suggestions

[0062] A fourth aspect that may vary among embodiments of the techniques presented herein involves suggested topics **106** for a topic group **602** of the conversation **106**. For example, if the conversation **106** of the individuals **102** focuses on where to have dinner, a device **104** may identify at

least one suggested topic **116** for the topic group **602**, and present the least one suggested topic **116** to the individual **102**.

[0063] As a first variation of this fourth aspect, suggested topics **116** may be inserted into a conversation **106** in response to various events. As a first such example, suggested topics **116** may be inserted upon detecting a new topic group **602** (e.g., a suggestion from a first individual **102** to a second individual **102** to have dinner somewhere). As a second such example, upon receiving a request for removal of a topic **116** from a topic group **602**, a device **104** may identify an alternative topic **116** for the selected topic group **602**, and suggest the alternative topic in lieu of the removed topic **116**. As a third such example, alternative topics may be identified and suggested if a topic group **602** remains unfilled for at least a threshold duration (e.g., if the individuals **102** are unable to agree on a restaurant after a minute of conversation **106**). As a fourth such example, the device **104** may present to an individual **102** an option to identify and present suggested topics **116** for a topic group **602**, and may do so upon receiving an activation of the option by the individual **102** (e.g., upon the individual **102** selecting a "suggestions" button).

[0064] As a second variation of this fourth aspect, suggested topics **116** may be automatically presented by the device **104** to the individual **102**. For example, upon detecting a reference to a topic **116**, the device **104** may automatically present location-based suggestions on a map **118** without awaiting a request from the individual **102** to do so. Alternatively, and as illustrated in the exemplary scenario **800** of FIG. **8**, the suggested topics **116** may be presented in response to input from the individual **102**. At a first time point **806**, the individuals **102** in a conversation **106** may exchange messages **108** involving a topic **116**, and a device **104** may identify one or more suggested topics **116** respectively associated with a location **120**. At a second time point **808**, the device **104** may present a suggestions pane **802** adjacent to the conversation **110** with a list of suggested topics **116**. At a third time point **810**, the device **104** may detect user input from the individual **102** comprising a selection **804** of a suggested topic **116**, and in response and at a fourth time point **810**, the device **104** may present a map interface **206** adjacent to the conversation **110** with a map **118** indicating the location **120** of the suggested topic **116** selected by the individual **102**. In this manner, the device **104** may utilize manual user input in the presentation of the suggested topics **116** to the individual **102**.

[0065] As a third variation of this fourth aspect, suggested topics **116** may be integrated with at least one topic **116** referenced by an individual **102** of the conversation **106** in various ways. For example, the suggested topics **116** may be presented in a different area of the map interface **206** than the topics **116** referenced by the individuals **102** (e.g., a "referenced restaurants" list and a "suggested restaurants" list). Alternatively, the suggested topics **116** may be presented together with the topics **116** referenced by the individuals **102**, e.g., as a mixed list, optionally with the suggested topics **116** presented in a different visual manner than the topics **116** referenced by the individuals **102** of the conversation **106**.

[0066] As a fourth variation of this fourth aspect, suggested topics **116** may be identified in a variety of ways. As a first such example, at least one individual **102** may identify at least one topic group constraint for a topic group **602** (e.g., for the topic group of restaurants, an individual **102** may specify a preference for a particular type of food), and the device **104** may identify only suggested topics that satisfy the topic group constraints of the topic group **602**. As a second such example, a device **104** may refer to an individual profile of at least one individual **102** in the conversation **106**, and may identify suggested topics that are consistent with the individual profile (e.g., restaurants that are consistent with dietary restrictions of the individual **102** specified in the individual profile, or restaurants where the individual profile indicates that the individual **102** has previously visited and enjoyed). If a plurality of suggested topics **116** are available for presentation, a device **104** may calculate, for each suggested topic, a suggested topic score associating the suggested topic **16** with the topic group constraints of the topic group **602**, and may present the suggested topics **602** sorted according to the suggested topic scores. In some scenarios, the identification of suggested topics **116** may be difficult, e.g., if individuals **102** in the conversation **106** have conflicting preferences or restrictions, and the device **104** may have to select suggested topics as a consensus among the individuals **102**.

[0067] FIG. **9** presents an illustration of an exemplary scenario featuring a presentation of suggested topics to individuals **102** in view of several of the variations of this fourth aspect. In this exemplary scenario **900**, a set of individuals **102** are having a conversation **106** about where to meet for dinner. A device **104** of an individual **102** may have access to an individual profile **902** for each individual **102**, where the individual profile **902** specifies a location **120** of the individual **102** (e.g., a current location of the individual **102**, or a projected location **102** of the individual **102** prior to a selected meeting time); a set of specified dietary preferences and dietary restrictions; and a price range preference. The details of the individual profiles **902** may be regarded by the device **104** as topic group constraints **904** for a "dinner restaurants" topic group **602**. The device **104** may also have access to a topic database **906**, such as a restaurant database providing various details about the restaurants. The device **104** may endeavor to select, for presentation to the individuals **120** as suggested topics **116**, a subset of topics **116** that are consistent with the details of the individual profiles **902**. Additionally, in this scenario, none of the topics **116** is consistent with all of the topic group constraints **904** (e.g., because the individuals **102** are located in different areas of a region, no location **120** is within a short distance of all of the individuals **102**). Therefore, the device **104** may calculate, for each topic **116**, a suggested topic score **908** indicating a conformity of the topic **116** with the topic group constraints **904**. Additionally, various topic group constraints **904** may be attributed different weights (e.g., a dietary restriction of a single individual **102**, such as availability of gluten-free food options, may be a rigid constraint, while food preferences may be resolved by consensus). As another example, a consensus about locations **102** may be selected to minimize the collective travel time of all of the individuals **102**, and/or to achieve an earliest meeting time, taking into account the different travel options available to each individual **102**. The device **104** may then present the suggested topics **116** for the meeting to the individuals **102** as a topic group **602** with a map **118** presenting the location **120** of each topic **116**, and optionally including a rating **910** for each topic **116** in the topic group **602** indicating an anticipated degree of consensus among the individuals **102**, and/or sorting the topics **116** according to the respective ratings **910**. In this manner, a device may provide a topic group **602** with a map **118** indicating the locations **120** of suggested topics **116** in accordance with the techniques presented herein.

E. Computing Environment

[0068] The techniques discussed herein may be devised with variations in many aspects, and some variations may present additional advantages and/or reduce disadvantages with respect to other variations of these and other techniques. Moreover, some variations may be implemented in combination, and some combinations may feature additional advantages and/or reduced disadvantages through synergistic cooperation. The variations may be incorporated in various embodiments to confer individual and/or synergistic advantages upon such embodiments.

[0069] FIG. **10** and the following discussion provide a brief, general description of a suitable computing environment to implement embodiments of one or more of the provisions set forth herein. The operating environment of FIG. **10** is only one example of a suitable operating environment and is not intended to suggest any limitation as to the scope of use or functionality of the operating environment. Example computing devices include, but are not limited to, personal computers, server computers, hand-held or laptop devices, mobile devices (such as mobile phones, Personal Digital Assistants (PDAs), media players, and the like), multiprocessor systems, consumer electronics, mini computers, mainframe computers, distributed computing environments that include any of the above systems or devices, and the like.

[0070] Although not required, embodiments are described in the general context of "computer readable instructions" being executed by one or more computing devices. Computer readable instructions may be distributed via computer readable media (discussed below). Computer readable instructions may be implemented as program modules, such as functions, objects, Application Programming Interfaces (APIs), data structures, and the like, that perform particular tasks or implement particular abstract data types. Typically, the functionality of the computer readable instructions may be combined or distributed as desired in various environments.

[0071] FIG. **10** illustrates an example of a system **1000** comprising a computing device **1002** configured to implement one or more embodiments provided herein. In one configuration, computing device **1002** includes at least one processing unit **1006** and memory **1008**. Depending on the exact configuration and type of computing device, memory **1008** may be volatile (such as RAM, for example), non-volatile (such as ROM, flash memory, etc., for example) or some combination of the two. This configuration is illustrated in FIG. **10** by dashed line **1004**.

[0072] In other embodiments, device **1002** may include additional features and/or functionality. For example, device **1002** may also include additional storage (e.g., removable and/or non-removable) including, but not limited to, magnetic storage, optical storage, and the like. Such additional storage is illustrated in FIG. **10** by storage **1010**. In one embodiment, computer readable instructions to implement one or more embodiments provided herein may be in storage **1010**. Storage **1010** may also store other computer readable instructions to implement an operating system, an application program, and the like. Computer readable instructions may be loaded in memory **1008** for execution by processing unit **1006**, for example.

[0073] The term "computer readable media" as used herein includes computer storage media. Computer storage media includes volatile and nonvolatile, removable and non-removable media implemented in any method or technology for storage of information such as computer readable instructions or other data. Memory **1008** and storage **1010** are examples of computer storage media. Computer storage media includes, but is not limited to, RAM, ROM, EEPROM, flash memory or other memory technology, CD-ROM, Digital Versatile Disks (DVDs) or other optical storage, magnetic cassettes, magnetic tape, magnetic disk storage or other magnetic storage devices, or any other medium which can be used to store the desired information and which can be accessed by device **1002**. Any such computer storage media may be part of device **1002**.

[0074] Device **1002** may also include communication connection(s) **1016** that allows device **1002** to communicate with other devices. Communication connection(s) **1016** may include, but is not limited to, a modem, a Network Interface Card (NIC), an integrated network interface, a radio frequency transmitter/receiver, an infrared port, a USB connection, or other interfaces for connecting computing device **1002** to other computing devices. Communication connection(s) **1016** may include a wired connection or a wireless connection. Communication connection(s) **1016** may transmit and/or receive communication media.

[0075] The term "computer readable media" may include communication media. Communication media typically embodies computer readable instructions or other data in a "modulated data signal" such as a carrier wave or other transport mechanism and includes any information delivery media. The term "modulated data signal" may include a signal that has one or more of its characteristics set or changed in such a manner as to encode information in the signal.

[0076] Device **1002** may include input device(s) **1014** such as keyboard, mouse, pen, voice input device, touch input device, infrared cameras, video input devices, and/or any other input device. Output device(s) **1012** such as one or more displays, speakers, printers, and/or any other output device may also be included in device **1002**. Input device(s) **1014** and output device(s) **1012** may be connected to device **1002** via a wired connection, wireless connection, or any combination thereof. In one embodiment, an input device or an output device from another computing device may be used as input device(s) **1014** or output device(s) **1012** for computing device **1002**.

[0077] Components of computing device **1002** may be connected by various interconnects, such as a bus. Such interconnects may include a Peripheral Component Interconnect (PCI), such as PCI Express, a Universal Serial Bus (USB), Firewire (IEEE 1394), an optical bus structure, and the like. In another embodiment, components of computing device **1002** may be interconnected by a network. For example, memory **1008** may be comprised of multiple physical memory units located in different physical locations interconnected by a network.

[0078] Those skilled in the art will realize that storage devices utilized to store computer readable instructions may be distributed across a network. For example, a computing device **1020** accessible via network **1018** may store computer readable instructions to implement one or more embodiments provided herein. Computing device **1002** may access computing device **1020** and download a part or all of the computer readable instructions for execution. Alternatively, computing device **1002** may download pieces of the computer readable instructions, as needed, or some instructions may be executed at computing device **1002** and some at computing device **1020**.

F. Use of Terms

[0079] Although the subject matter has been described in language specific to structural features and/or methodological acts, it is to be understood that the subject matter defined in the appended claims is not necessarily limited to the specific features or acts described above. Rather, the specific features and acts described above are disclosed as example forms of implementing the claims.

[0080] As used in this application, the terms "component," "module," "system", "interface", and the like are generally intended to refer to a computer-related entity, either hardware, a combination of hardware and software, software, or software in execution. For example, a component may be, but is not limited to being, a process running on a processor, a processor, an object, an executable, a thread of execution, a program, and/or a computer. By way of illustration, both an application running on a controller and the controller can be a component. One or more components may reside within a process and/or thread of execution and a component may be localized on one computer and/or distributed between two or more computers.

[0081] Furthermore, the claimed subject matter may be implemented as a method, apparatus, or article of manufacture using standard programming and/or engineering techniques to produce software, firmware, hardware, or any combination thereof to control a computer to implement the disclosed subject matter. The term "article of manufacture" as used herein is intended to encompass a computer program accessible from any computer-readable device, carrier, or media. Of course, those skilled in the art will recognize many modifications may be made to this configuration without departing from the scope or spirit of the claimed subject matter.

[0082] Various operations of embodiments are provided herein. In one embodiment, one or more of the operations described may constitute computer readable instructions stored on one or more computer readable media, which if executed by a computing device, will cause the computing device to perform the operations described. The order in which some or all of the operations are described should not be construed as to imply that these operations are necessarily order dependent. Alternative ordering will be appreciated by one skilled in the art having the benefit of this description. Further, it will be understood that not all operations are necessarily present in each embodiment provided herein.

[0083] Moreover, the word "exemplary" is used herein to mean serving as an example, instance, or illustration. Any aspect or design described herein as "exemplary" is not necessarily to be construed as advantageous over other aspects or designs. Rather, use of the word exemplary is intended to present concepts in a concrete fashion. As used in this application, the term "or" is intended to mean an inclusive "or" rather than an exclusive "or". That is, unless specified otherwise, or clear from context, "X employs A or B" is intended to mean any of the natural inclusive permutations. That is, if X employs A; X employs B; or X employs both A and B, then "X employs A or B" is satisfied under any of the foregoing instances. In addition, the articles "a" and "an" as used in this application and the appended claims may generally be construed to mean "one or more" unless specified otherwise or clear from context to be directed to a singular form.

[0084] Also, although the disclosure has been shown and described with respect to one or more implementations, equivalent alterations and modifications will occur to others skilled in the art based upon a reading and understanding of this specification and the annexed drawings. The disclosure includes all such modifications and alterations and is limited only by the scope of the following claims. In particular regard to the various functions performed by the above described components (e.g., elements, resources, etc.), the terms used to describe such components are intended to correspond, unless otherwise indicated, to any component which performs the specified function of the described component (e.g., that is functionally equivalent), even though not structurally equivalent to the disclosed structure which performs the function in the herein illustrated exemplary implementations of the disclosure. In addition, while a particular feature of the disclosure may have been disclosed with respect to only one of several implementations, such feature may be combined with one or more other features of the other implementations as may be desired and advantageous for any given or particular application. Furthermore, to the extent that the terms "includes", "having", "has", "with", or variants thereof are used in either the detailed description or the claims, such terms are intended to be inclusive in a manner similar to the term "comprising."

What is claimed is:

1. A method of facilitating, on a device having a processor and a display, a conversation among at least two individuals, the method comprising:

executing on the processor instructions configured to:

monitor the conversation to detect topics referenced by an individual; and

upon detecting a topic referenced by a first individual to a second individual of the conversation, where the topic is associated with a location and is not referenced as a command to the device:

identify the location of the topic; and

present on the display a map indicating the location of the topic.

2. The method of claim **1**, wherein executing the instructions on the processor further causes the device to:

upon detecting a topic referenced by a first individual, store the topic in a conversation topic set;

present on the display a list comprising the conversation topic set; and

upon receiving from an individual a selection of a selected topic in the list, present on the map the location of the selected topic.

3. The method of claim **2**, wherein executing the instructions on the processor further causes the device to:

upon detecting a conversation end, store the conversation topic set; and

after the conversation end, upon receiving a request from an individual to present the conversation topic set, present on the display a list comprising the conversation topic set.

4. The method of claim **2**, wherein executing the instructions on the processor further causes the device to, upon receiving a request from an individual to alter the conversation topic set, alter the conversation topic set according to the request of the individual.

5. The method of claim **4**, wherein:

the request comprises a removal of a selected topic from the conversation topic set; and

the instructions are further configured to, after receiving the request for removal, refrain from presenting the selected topic in the conversation topic set.

6. The method of claim 5, wherein the instructions are further configured to, after receiving the request for removal:
identify an alternative topic for the selected topic; and
suggest the alternative topic to at least one individual of the conversation.
7. The method of claim 4, wherein:
at least one individual of the conversation comprises a conversation leader of the conversation; and
altering the conversation topic set further comprises: upon receiving a request from an individual who is not a conversation leader to alter the conversation topic set, refraining from altering the conversation topic set.
8. A system for facilitating, on a device having a processor, a memory, and a display, a conversation among at least two individuals, the system comprising:
a conversation monitor comprising instructions stored in the memory that, when executed on the processor, cause the device to monitor the conversation to detect topics referenced by an individual; and
a topic presenter comprising instructions stored in the memory that, when executed on the processor, cause the device to, upon the conversation monitor detecting a topic referenced by a first individual to a second individual of the conversation, where the topic is not referenced as a command to the device:
identify a location of the topic; and
present on the display a map indicating the location of the topic.
9. The system of claim 2, wherein:
executing on the processor of the instructions comprising the conversation monitor further causes the device to monitor the conversation to detect at least one topic group of the conversation; and
the execution on the processor of the instructions comprising the topic presenter further causes the device to:
upon detecting a topic referenced by a first individual to a second individual of the conversation:
identify a selected topic group of the conversation that is associated with the topic, and
store the topic in the conversation topic set associated with the selected topic group; and
presenting on the display a list comprising:
the at least two topic groups; and
for the respective at least two topic groups, the topics of the conversation that are associated with the topic group.
10. The system of claim 9, wherein:
executing on the processor the instructions of the topic presenter further causes the device to identify at least one advertisement associated with at least one topic; and
presenting the list further comprises: presenting on the display, for at least one selected topic, the advertisement associated with the selected topic.
11. The system of claim 9, further comprising: a topic suggester comprising instructions stored in the memory that, when executed on the processor, cause the device to, for the respective topic groups of the conversation:
identify at least one suggested topic for the topic group; and
present the least one suggested topic to the individual.
12. The system of claim 11, wherein executing on the processor the instructions of the topic suggester further causes the device to:
present to an individual of the device an option to present the at least one suggested topic for the topic group; and
upon receiving from the individual a selection of the option, present the at least one suggested topic for the topic group to the individual.
13. The system of claim 11, wherein:
executing on the processor the instructions of the conversation monitor further causes the device to, for respective topic groups, monitor the conversation for at least one topic group constraint of the topic group; and
identifying the at least one suggested topic further comprises: identifying at least one suggested topic that satisfies the at least one topic group constraint of the topic group.
14. The system of claim 13, wherein:
identifying the at least one suggested topic for the topic group further comprises: for respective at least two suggested topics, calculate a suggested topic score that is associated with the at least one topic group constraint; and
presenting the at least one suggested topic further comprises: for the respective topic groups, presenting the at least two suggested topic sorted according to the suggested topic score of the respective at least two suggested topics.
15. The system of claim 11, wherein:
the device has access to, for at least one individual of the conversation, an individual profile of the individual; and
identifying the at least one suggested topic further comprises: identifying at least one suggested topic that is consistent with the individual profile of at least one individual of the conversation.
16. The system of claim 15, wherein:
the device has access to a second individual profile of a second individual of the conversation; and
identifying the at least one suggested topic further comprises: identifying at least one suggested topic that is consistent with the individual profile of the at least one individual of the conversation and the second individual profile of the second individual of the conversation.
17. A computer-readable memory device storing instructions that, when executed on a processor of a computing device having a display, cause the device to facilitate a conversation among at least two individuals by:
monitoring the conversation to detect topics referenced by an individual; and
upon detecting a topic referenced by a first individual to a second individual of the conversation, where the topic is not referenced as a command to the computing device:
identifying a location of the topic; and
presenting on the display a map indicating the location of the topic.
18. The computer-readable memory device of claim 17, wherein executing the instructions on the processor further causes the computing device to:
upon receiving from an individual a selection of a selected topic of the conversation, replace the map on the display with an information interface describing the topic; and
upon receiving from an individual a request to return to the map, replace the information interface on the display with the map.
19. The computer-readable memory device of claim 17, wherein:
the conversation comprises a verbal communication among the at least two individuals; and

executing the instructions on the processor further causes the computing device to:

translate the verbal communication among the individuals into a text transcript; and

present the text transcript of the conversation with the map.

20. The computer-readable memory device of claim **16**, wherein executing the instructions on the processor further causes the computing device to:

identify at least one action that is associated with the topic;

present on the display, associated with the topic, an action option to invoke the action; and

upon receiving from an individual of the computing device a selection of a selected action option for a selected topic, invoke the selected action option for the selected topic.

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