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	Specification		9	20	
	Claims		21	22	
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	Appendix to the Specification		24	56	
	Drawings-other than black and white line drawings		57	70	
Warnings:					
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2	Fee Worksheet (SB06)	fee-info.pdf	29843	no	2
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VISUAL BOT BUILDER

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BACKGROUND

[0001] A chat bot may be a computer program that conducts a conversation via auditory and/or textual methods. A chat bot may be designed to simulate a human conversational pattern.

DETAILED DESCRIPTION

Calling Dialogs

[0002] Chat bots may be used in various circumstances, including providing customer service information. For example, chat bots may be used to interact and interface with customers or consumers who are looking for answers to frequently asked questions. Some of these questions may include "how do I get a refund?" "what is my order status?" "how do I cancel my order?" "What is your return policy?" "What is the cheapest flight to Europe?" The chat bot may serve as an interface between the customer and one or more backend database, information, or other processing systems.

[0003] The user may request information or functionality to be performed. The chat bot may receive, interpret, and respond to the request by performing an action, or requesting additional information from the user. The back and forth interaction between a user and chat bot may be referred to as a conversation. A particular conversational thread directed at achieving a particular outcome (acquiring information from a user (such as validating a user), or performing a user-requested or action (such as providing an order status or processing a refund), may be referred to as a dialog. An example dialog of a conversation is shown in Figure 1.

[0004] In the conversation of Fig. 1, the user is requesting to book a flight. The dialog executed by the chat bot may be 'book flight,' dialog that requests additional information from the user and processes the request to book the flight.

- [0005]** The dialog may be used to build a conversation with a user and may be reusable across different interactions or with different users simultaneously). For example, two different users may be accessing the system simultaneously to book flights, and the chat bot may use the same book flight dialog.
- [0006]** An interaction with a bot may begin with a basic greeting such as "Hello, how may I help you today?" From there, depending on how the user answers, different dialogs, programs, or sub-routines may be called by the bot to interact with the user.
- [0007]** Building a chat bot often includes anticipating or building potential conversational flows. The conversational flow may include calling multiple different dialogs.
- [0008]** Figure 2 illustrates an example of a Welcome Dialog.
- [0009]** The welcome message the bot provides to the user is shown in the message section. The user may respond to the message by saying they need help, in which case an administrator, using the provided chatbot builder user interface (UI) may determine how the bot would respond to the message. Example bot responses include waiting for user input, showing a menu of options, or calling another dialog. In the example shown, the response may include calling a main menu dialog.
- [0010]** Figure 3 illustrates a number of different dialogs that may be created for one or more interactions between a chatbot and a user. In the process rules section an administrator may determine how the bot responds to a particular user state or input. For example, in the process rules, the bot determines whether or not the user has been verified. Verification may include confirming the user identity with a username and password. For example, a user may be verified to provide the user different status or account information, such as account balance, perform transfer requests, or order updates.
- [0011]** If the user is not verified, then the Dialog for user verification is called. Using the botbuilder user interface, an administrator may select a call dialog action, in which case the system may populate the dialog name with a drop down or list of previously created dialogs, or enable the administrator to name and create a new dialog. The system may then enable the user to design the interaction for the new dialog.
- [0012]** The user verification dialog may ask the user for particular information: email address, password, username, address, answers to security questions, pin number, order number,

- ticket number, or other information by which the system or bot can verify the user's identity and/or retrieve information about the user's account.
- [0013]** Once the user has been verified additional functionality (e.g., via dialogs) may be made available to the bot to assist the user. In an embodiment, if the user is unable to be verified, the user may be transferred to another chat with a live person or called on the telephone by a live associate to help the user.
- [0014]** Through dialogs, a chat bot can provide the user with information, request information from the user or other systems, or perform actions based on user requests, information, or actions (such as account transfers, refunds, processing payments, booking tickets, etc.).
- [0015]** Based on user responses, the chat bot can jump around to different dialogs (conversational flows or interactions with the user). The chatbot builder may enable an administrator to visually design the conversational flow based on different user responses.
- [0016]** In an embodiment, the system supporting the chat bot may maintain a state of each dialog or user session, so that if the chat bot goes from a first booking ticket dialog (where the user has reserved a ticket but not clicked "purchase") and then goes to check their account status from a second status dialog, if the user returns to booking ticket dialog, the bot may resume right where the user left off, with the previous ticket. Then by simply selecting "purchase," the action may be completed. In an embodiment, the chat builder interface may enable an administrator to determine whether or not the state of the particular dialog is to be preserved upon a subsequent return to the same dialog by the same user in this or a future session.
- [0017]** Verifying the identity of a user may be a commonly used dialog, in which the same process is repeated over and over again across different users by the same or different bots. In an embodiment, the identity of a user may be verified after or as part of the welcome dialog. Or, for example, the user identity may be verified after the user requests to perform a particular action (such as check my order status), for which account information or authentication is required.
- [0018]** Reusing dialogs may be difficult to perform in other tools. For example, using a text-only bot builder, it may not be possible to visually display the user responses or information on the same screen as the bot responses. This visual display simplifies the bot building process for the admin, and enables a more smooth conversational flow.

- [0019]** Rather than drawing lines back and forth between different dialogs, the bot builder UI enables an admin to select a call dialog action as a response and select which dialog(s) are to be executed in response to the user intent or response. The bot builder UI dialog builder enables an admin to call different dialogs within the logic or conversation of the bot. For example, using the bot builder UI, the admin can instruct to bot to execute the User Verification dialog. Then, for example, in executing, upon completion of the User Verification dialog, the bot may return to the originating dialog, or may be transferred to another dialog as part of User Verification, all of which can be designed within the bot builder UI. The bot builder UI makes designing this flow intuitive and easy for the administrator.
- [0020]** The bot builder UI enables an administrator to see how the interaction would appear from the user's point of view. For example, as the flow is being designed, the system may simulate a user interaction as shown in the 'food company bot' preview box.
- [0021]** The bot builder UI enables an administrator to quickly and easily select how to receive responses/input from a user. For example, the admin may provide only user menu selections, only text/voice selections, or a combination of either or both. The bot builder UI enables an administrator to visually create the conversational flow from the bot's point of view and have a real-time immediate preview of the flow from the user's perspective. The bot builder UI enables calls back-and-forth between different dialogs for the conversation.
- [0022]** Figure 4 illustrates an example welcome dialog.
- [0023]** As shown in the figure above, the bot builder interface allows the admin to select which action the bot should take after presenting the text shown. Then after welcome dialog executes, the system/bot may load or execute the main menu dialog, see Figure 5.
- [0024]** As can be seen on the main menu dialog of Fig. 5, the admin can provide the user a selection of different menu options. The example options shown include: order status, update order, cancel order, transfer to agent, reset password. The example shown includes an additional search box so the user may search for additional menu items. Alternatively or additionally, the user may type in text, key words, questions, or commands, which may be evaluated and the corresponding dialog may be loaded and executed by the bot. The bot builder UI may enable the administrator to visually

configure how the bot responds to different user input, by performing different actions, requesting information, or calling various dialogs.

- [0025]** As shown in the example of Figure 6, on the right side, may a preview of a simulated customer experience. The customer experience box ("Food Company Bot") may first execute a welcome dialog, and then provide the user different options the user can select from with a mouse click or touch (on a touchscreen interface). Alternatively, the user may speak or type a question, message or command, in the box that reads "Type your message..." The bot builder UI may process the admin selections in real-time, or upon an 'execution' selection, so the administrator may visually test and see the user experience with the bot in real time, without leaving the design interface.
- [0026]** These different dialogs don't have to be strung together into a single long execution, but instead can be invoked with a "call" action within the UI. Thus making the code for a particular bot shorter and easier to manage and maintain. Also the dialog may be used (and reused) by multiple different bots which may be customized for different customer experiences. For example, the user verification dialog may be used across different systems, connecting to different databases, but requesting the same information from users (e.g., e-mail address or username, and password). Or for example, a general verification bot dialog may be created, and then an admin may visually select which information the admin wants to request from a user (email or username, password or pin, security questions, etc.).
- [0027]** By not stringing the code of each dialog together, and instead providing dialog calls or references, the bot builder UI enables simple dialog reused. Then, for example, if a change is made a dialog, it is automatically propagated to any other calling dialogs or bots without requiring the admin or other developer to copy and paste the code over and over again.
- [0028]** In Figure 7, a customer intent may be to determine an "order status." However, different users may have different ways by which to request the order status. The bot builder UI allows a developer to account for the various ways in which customer intent may be determined. The example figure above shows different text a user may speak/type which may include the intent to retrieve or request an order status.

- [0029]** The bot builder UI may train the dialog with different keywords/phrases to make the flow better and the particular dialog smarter and responsive to a broader or narrower range of inputs/users. For example, in the figure below, the dialog can be configured with multiple different triggers by which the dialog may invoke, including: check my order status, where is my order, it's been too long, where is my food, etc. The dialog may also account for menu selection of "Order status."
- [0030]** In an embodiment, the bot builder UI may enable a user to set a matching threshold by which to system would not need to find all the words to trigger the dialog, but a particular percentage may be good enough. Or for example, phrases such as "Where order," or "were ordeeer" may be close enough to trigger the dialog based on the customer intent. Words may be misspelled or missing letters, and the dialog may still be invoked. A natural language processing engine may be able to determine which dialog to invoke.
- [0031]** In Figure 8, a user may have multiple orders, and may be prompted (by menu) to select one of the listed orders (as designed via the bot builder UI). Or, for example, the user response may include an order number, in which case the bot builder may enable the admin to design that the order request dialog may be skipped, and instead the order status dialog may be called directly without first requesting order status dialog.
- [0032]** The bot builder UI enables an admin to design and preview in real-time a customer interaction with a bot, using different dialogs with the ability to visually call or reference different dialogs based on user input or responses to prompts or menus.
- In an embodiment, a dialog may include a function or module that runs when a particular keyword or menu item is detected or triggered. A dialog may include responses, including actions that are performed by the bot. In an embodiment, a single conversation with a user may include calling multiple different dialogs. Dialogs may include a backend actions and do not have to be user facing. In an embodiment, dialogs may be designed to enable a user to change a password. In an embodiment, the dialog may link the user to a change password webpage or otherwise provide in-bot, in-window functionality to change password.

Dynamic Conversation Flow Building

- [0033]** The bot builder UI may enable an admin to keep a natural flow to building of the conversation which may simulate the real-time user conversation. For example, the bot builder UI may track sequences, interactions, and back-and-forths between different dialogs which may be called or referenced in a conversational thread. The bot builder UI may visually display the tracked sequences of entry and exit dialogs for the administrator.
- [0034]** Figure 8 illustrates a bot builder UI in which a list of previously built or named dialogs appears on the left side. The user input or intent may be "Select Destination," which may correspond to a destination dialog. The destination dialog may be an admin-constructed menu of options including: Europe, Asia, North America, Promotions, and enabling the admin to add another menu option or dialog. The pencil marker may enable the administrator to change the name of the corresponding dialog, and/or jump to the dialog to edit the interaction with the user. The bottom of the screen includes a list of the various menu options.
- [0035]** The bot builder UI can track as the admin or conversation goes in and out of different dialogs depending on interaction flow, tracking the ordering of what came before and after or the order in which the admin edited or accessed the various dialogs.
- [0036]** The bot builder UI may include shortcuts that display or allow the admin to access the entry dialog and exit dialog. The customer may for example, enter that the user wants to "Select destination." Then for example, the UI bot builder may enable a user to build a selection list of the various options the user is able to select from. The building process may be interaction. The system may keep track of which dialogs the administrator and/or workflow is entering and exiting from.
- [0037]** If you want to build the Europe dialog, then the bot builder UI may provide a shortcut to different "destinations" responsive to the user input/request. The admin does not need to remember where he/she came from, because the system tracked an entry point or previous dialog from which the admin/user came in the conversation/interaction. At the end of the Europe dialog, the admin may be directed back to the list of destinations.
- [0038]** Here with destination want to go to Europe, whole panel slides up. This is when you are designing an experience for customers/users. The bottom menu shows an example dialog flow.

[0039] Figure 10 illustrates is a link to the Europe dialog. Figure 11 shows an example of dynamic linking of entry and exit points from various dialogs.

The bot builder interface tracks and enables a simulation of an interaction, consistent with the chat experience. Some dialogs may not connect to anything. As shown, in the figure above, the admin can select and automatically go to any of the linked dialogs pertaining to the conversational flow.

Bot Intent Management Within Dialogs

[0040] As referenced above, a user can type in any different number of responses or messages to convey the same intent. The bot builder UI allows an admin to visually configure, define, and manage what a user's intent may be. The admin may define what user responses call which dialog of a bot, or whether additional information/clarification is required.

[0041] The bot builder UI may display the user intent as a message (as opposed to one of the variations on the intent the user may actually type in). For example, see Figure 12, the intent may be "Desserts." But the user may type in any number of different messages to convey this intent such as "something sweet," "desert," or "ice cream."

[0042] The bot builder UI system may discern and display the intent for the administrator, thus avoiding the need to configure a separate dialog for each of multiple strings of varying messages as directed to the same intent. The bot builder UI may allow the admin to build flow from there, based on exact or inexact wording of a user. This can trigger a dialog or flow.

[0043] The bot builder enables an admin to visually interact with different user entries and/or intents. The power of visually seeing the user input or intent and the bot response enables for faster building and less processing resources (in the back and forth compiling and execution that may be required without the real-time preview).

[0044] Figure 13 illustrates an example of response options to a particular customer intent, enabling customer intent management.

Computer System Implementation

[0045] Various embodiments may be implemented, for example, using one or more well-known computer systems, such as computer system 1000 shown in FIG. 14. One or more

computer systems 1000 may be used, for example, to implement any of the embodiments discussed herein, as well as combinations and sub-combinations thereof.

[0046] Computer system 1000 may include one or more processors (also called central processing units, or CPUs), such as a processor 1004. Processor 1004 may be connected to a communication infrastructure or bus 1006.

[0047] Computer system 1000 may also include user input/output device(s) 1003, such as monitors, keyboards, pointing devices, etc., which may communicate with communication infrastructure 1006 through user input/output interface(s) 1002.

[0048] One or more of processors 1004 may be a graphics processing unit (GPU). In an embodiment, a GPU may be a processor that is a specialized electronic circuit designed to process mathematically intensive applications. The GPU may have a parallel structure that is efficient for parallel processing of large blocks of data, such as mathematically intensive data common to computer graphics applications, images, videos, etc.

[0049] Computer system 1000 may also include a main or primary memory 1008, such as random access memory (RAM). Main memory 1008 may include one or more levels of cache. Main memory 1008 may have stored therein control logic (i.e., computer software) and/or data.

[0050] Computer system 1000 may also include one or more secondary storage devices or memory 1010. Secondary memory 1010 may include, for example, a hard disk drive 1012 and/or a removable storage device or drive 1014. Removable storage drive 1014 may be a floppy disk drive, a magnetic tape drive, a compact disk drive, an optical storage device, tape backup device, and/or any other storage device/drive.

[0051] Removable storage drive 1014 may interact with a removable storage unit 1018. Removable storage unit 1018 may include a computer usable or readable storage device having stored thereon computer software (control logic) and/or data. Removable storage unit 1018 may be a floppy disk, magnetic tape, compact disk, DVD, optical storage disk, and/ any other computer data storage device. Removable storage drive 1014 may read from and/or write to removable storage unit 1018.

[0052] Secondary memory 1010 may include other means, devices, components, instrumentalities or other approaches for allowing computer programs and/or other instructions and/or data to be accessed by computer system 1000. Such means, devices,

components, instrumentalities or other approaches may include, for example, a removable storage unit 1022 and an interface 1020. Examples of the removable storage unit 1022 and the interface 1020 may include a program cartridge and cartridge interface (such as that found in video game devices), a removable memory chip (such as an EPROM or PROM) and associated socket, a memory stick and USB port, a memory card and associated memory card slot, and/or any other removable storage unit and associated interface.

- [0053]** Computer system 1000 may further include a communication or network interface 1024. Communication interface 1024 may enable computer system 1000 to communicate and interact with any combination of external devices, external networks, external entities, etc. (individually and collectively referenced by reference number 1028). For example, communication interface 1024 may allow computer system 1000 to communicate with external or remote devices 1028 over communications path 1026, which may be wired and/or wireless (or a combination thereof), and which may include any combination of LANs, WANs, the Internet, etc. Control logic and/or data may be transmitted to and from computer system 1000 via communication path 1026.
- [0054]** Computer system 1000 may also be any of a personal digital assistant (PDA), desktop workstation, laptop or notebook computer, netbook, tablet, smart phone, smart watch or other wearable, appliance, part of the Internet-of-Things, and/or embedded system, to name a few non-limiting examples, or any combination thereof.
- [0055]** Computer system 1000 may be a client or server, accessing or hosting any applications and/or data through any delivery paradigm, including but not limited to remote or distributed cloud computing solutions; local or on-premises software (“on-premise” cloud-based solutions); “as a service” models (e.g., content as a service (CaaS), digital content as a service (DCaaS), software as a service (SaaS), managed software as a service (MSaaS), platform as a service (PaaS), desktop as a service (DaaS), framework as a service (FaaS), backend as a service (BaaS), mobile backend as a service (MBaaS), infrastructure as a service (IaaS), etc.); and/or a hybrid model including any combination of the foregoing examples or other services or delivery paradigms.
- [0056]** Any applicable data structures, file formats, and schemas in computer system 1000 may be derived from standards including but not limited to JavaScript Object Notation

(JSON), Extensible Markup Language (XML), Yet Another Markup Language (YAML), Extensible Hypertext Markup Language (XHTML), Wireless Markup Language (WML), MessagePack, XML User Interface Language (XUL), or any other functionally similar representations alone or in combination. Alternatively, proprietary data structures, formats or schemas may be used, either exclusively or in combination with known or open standards.

[0057] In some embodiments, a tangible, non-transitory apparatus or article of manufacture comprising a tangible, non-transitory computer useable or readable medium having control logic (software) stored thereon may also be referred to herein as a computer program product or program storage device. This includes, but is not limited to, computer system 1000, main memory 1008, secondary memory 1010, and removable storage units 1018 and 1022, as well as tangible articles of manufacture embodying any combination of the foregoing. Such control logic, when executed by one or more data processing devices (such as computer system 1000), may cause such data processing devices to operate as described herein.

[0058] Based on the teachings contained in this disclosure, it will be apparent to persons skilled in the relevant art(s) how to make and use embodiments of this disclosure using data processing devices, computer systems and/or computer architectures other than that shown in FIG. 10. In particular, embodiments can operate with software, hardware, and/or operating system implementations other than those described herein.

[0059] It is to be appreciated that the Detailed Description section, and not any other section, is intended to be used to interpret the claims. Other sections can set forth one or more but not all exemplary embodiments as contemplated by the inventor(s), and thus, are not intended to limit this disclosure or the appended claims in any way.

[0060] While this disclosure describes exemplary embodiments for exemplary fields and applications, it should be understood that the disclosure is not limited thereto. Other embodiments and modifications thereto are possible, and are within the scope and spirit of this disclosure. For example, and without limiting the generality of this paragraph, embodiments are not limited to the software, hardware, firmware, and/or entities illustrated in the figures and/or described herein. Further, embodiments (whether or not

explicitly described herein) have significant utility to fields and applications beyond the examples described herein.

[0061] Embodiments have been described herein with the aid of functional building blocks illustrating the implementation of specified functions and relationships thereof. The boundaries of these functional building blocks have been arbitrarily defined herein for the convenience of the description. Alternate boundaries can be defined as long as the specified functions and relationships (or equivalents thereof) are appropriately performed. Also, alternative embodiments can perform functional blocks, steps, operations, methods, etc. using orderings different than those described herein.

[0062] References herein to “one embodiment,” “an embodiment,” “an example embodiment,” or similar phrases, indicate that the embodiment described can include a particular feature, structure, or characteristic, but every embodiment can not necessarily include the particular feature, structure, or characteristic. Moreover, such phrases are not necessarily referring to the same embodiment. Further, when a particular feature, structure, or characteristic is described in connection with an embodiment, it would be within the knowledge of persons skilled in the relevant art(s) to incorporate such feature, structure, or characteristic into other embodiments whether or not explicitly mentioned or described herein. Additionally, some embodiments can be described using the expression “coupled” and “connected” along with their derivatives. These terms are not necessarily intended as synonyms for each other. For example, some embodiments can be described using the terms “connected” and/or “coupled” to indicate that two or more elements are in direct physical or electrical contact with each other. The term “coupled,” however, can also mean that two or more elements are not in direct contact with each other, but yet still co-operate or interact with each other.

[0063] The breadth and scope of this disclosure should not be limited by any of the above-described exemplary embodiments, but should be defined only in accordance with the following claims and their equivalents.

[0064] Additional views and embodiments are illustrated within Appendix A submitted herewith.

WHAT IS CLAIMED IS:

1. A method, comprising:
 - visually displaying, within a user interface, a user response to a bot;
 - providing a visual indication of a plurality of response options by the bot to the user response, wherein the response options include one or more of: requesting information, performing an action, or executing a subsequent dialog;
 - determining that the subsequent dialog response option has been selected;
 - visually providing, within the user interface, a link to one or more previously created dialogs from which to choose, wherein each previously created dialogs includes a preview of an interaction with the user;
 - receiving a selection of one of the previously created dialogs; and
 - displaying the preview corresponding to the selection within the user interface, wherein the preview includes the user response.
2. A method, comprising:
 - receiving, via a user interface, an indication to call a second dialog from a first dialog responsive to a user input, wherein a bot executes the first dialog and the second dialog;
 - tracking the call from the first dialog to the second dialog; and
 - visually displaying the second dialog on the user interface including an indication that the second dialog was called from the first dialog.
3. A method, comprising:
 - determining a customer intent associated with a plurality of associated keywords;
 - visually displaying the customer intent in a user interface;

providing a plurality of response options to the customer intent;

visually receiving, via the user interface, a selected one of the plurality of response options; and

creating an association between the response option and each of the plurality of keywords of the intent, wherein the keywords trigger an execution of the response option based on the association.

ABSTRACT

Disclosed herein are embodiments for user interface elements for calling dialogs, for dynamic conversation flow building, and for bot intent management using dialogs.

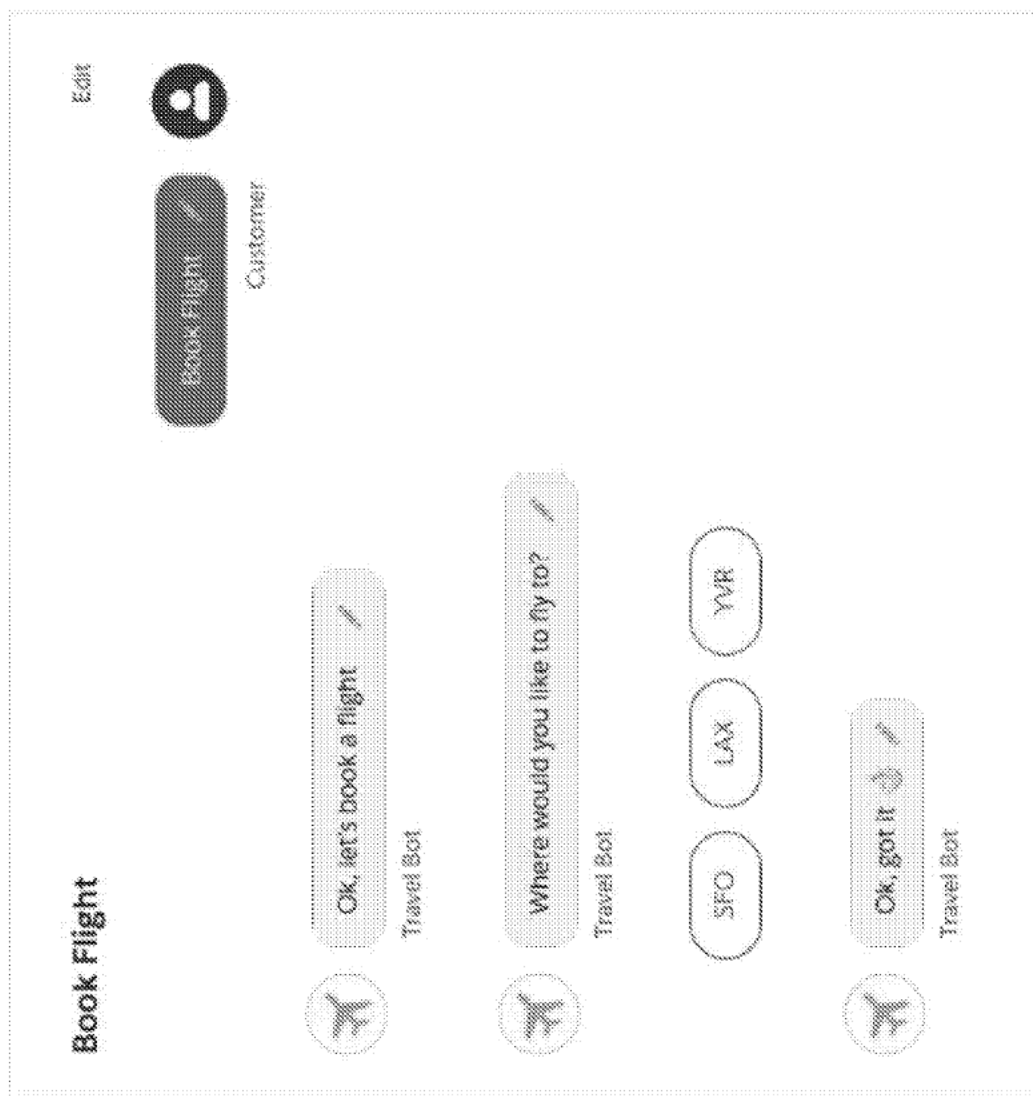


FIG. 1

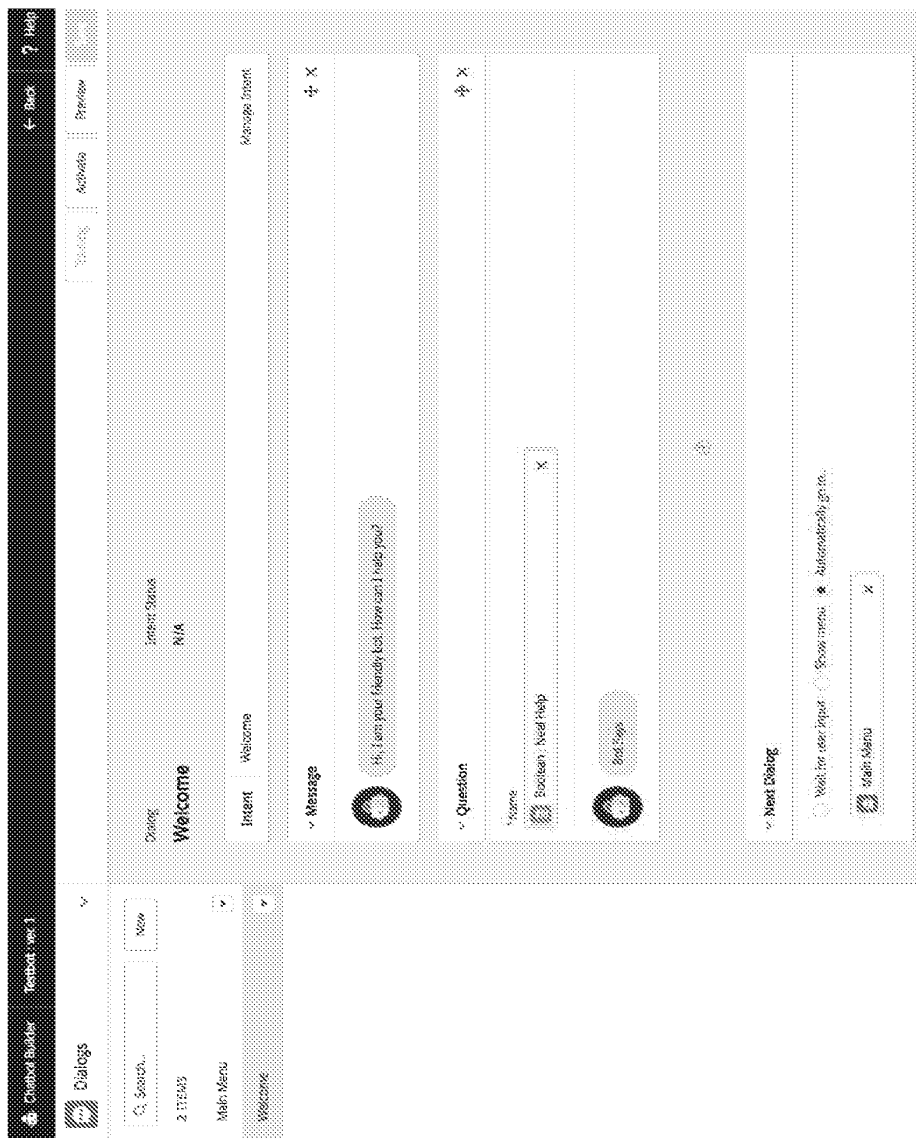


FIG. 2

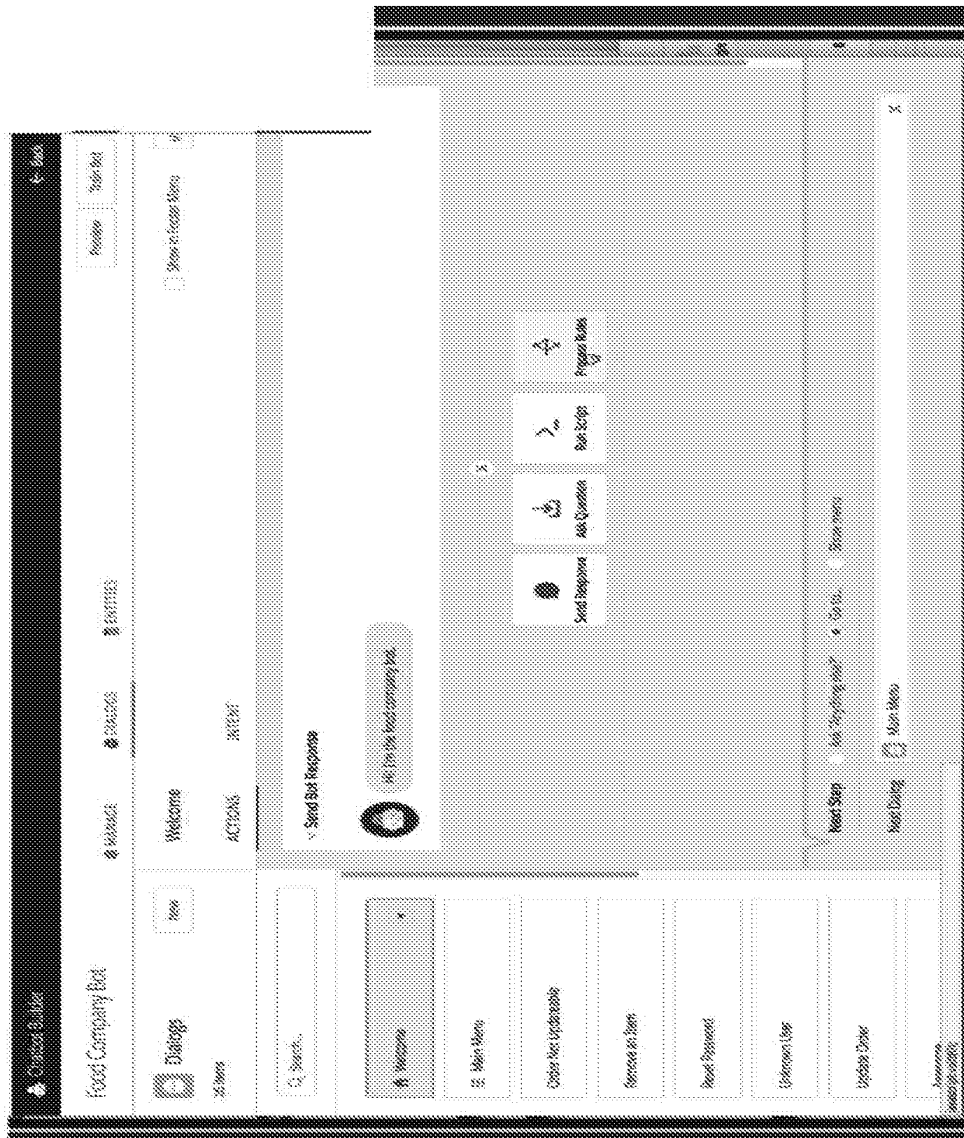


FIG. 4

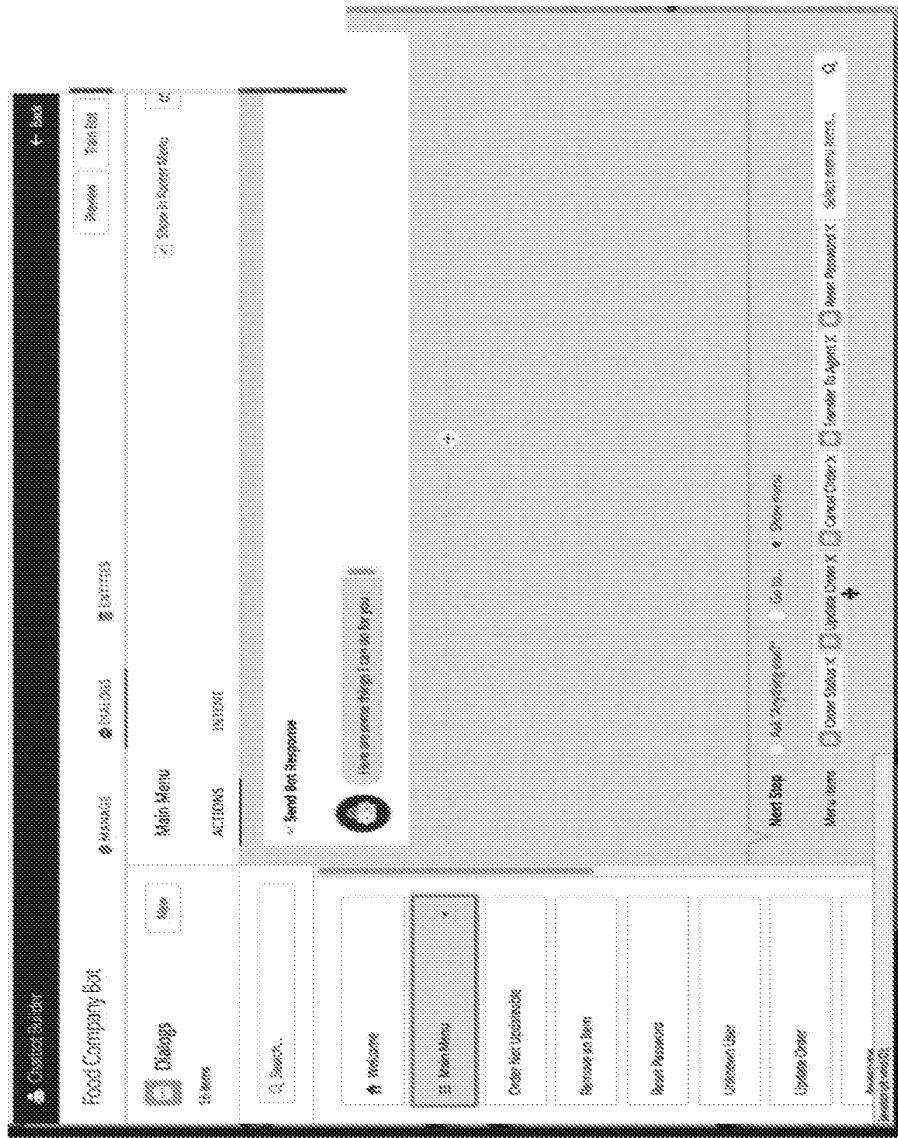


FIG. 5

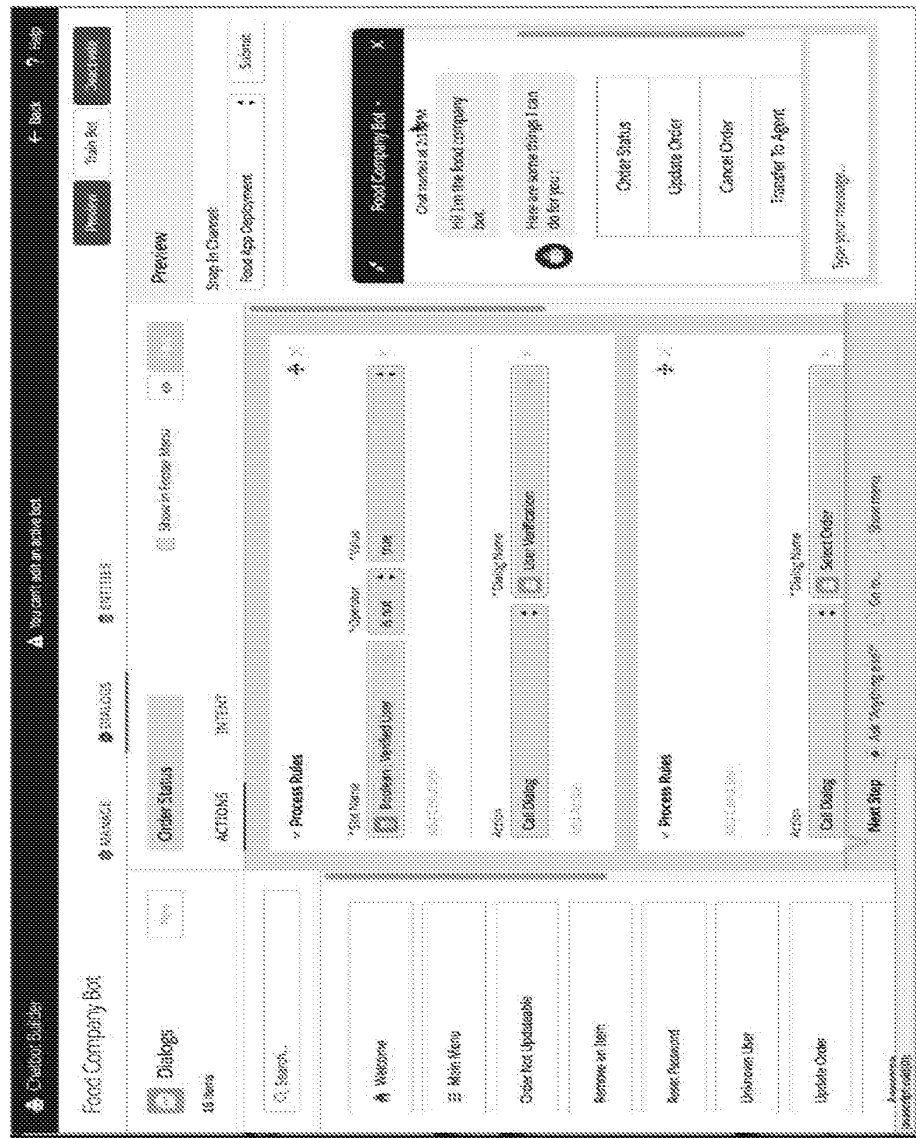


FIG. 6

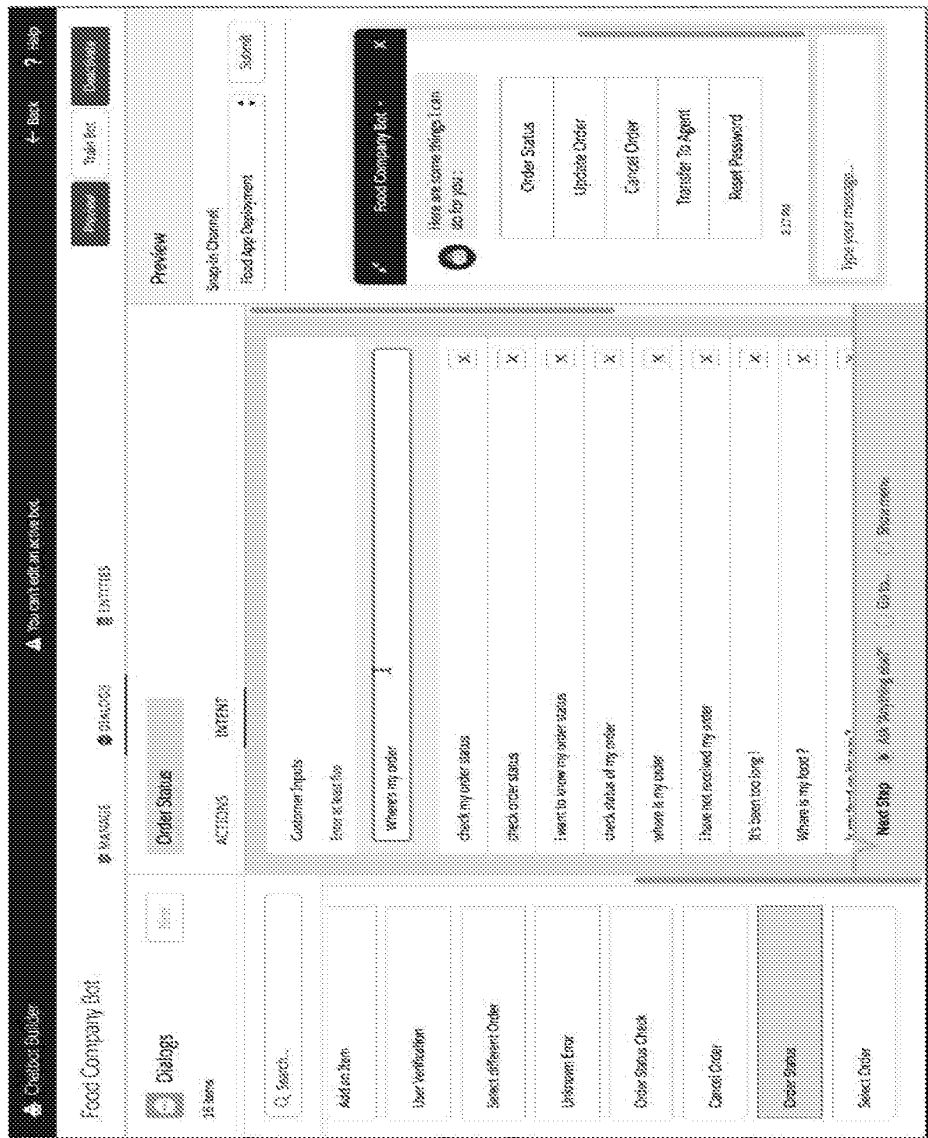


FIG. 7



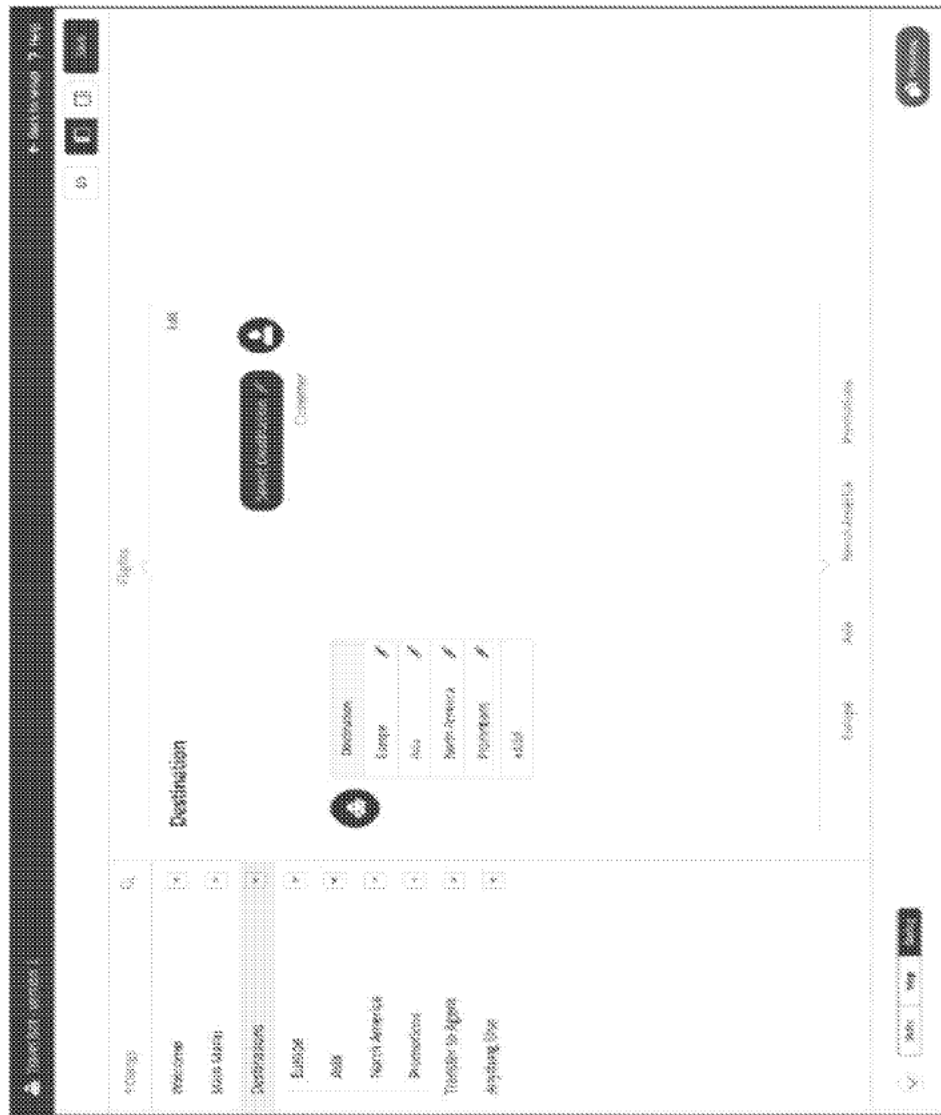


FIG. 9

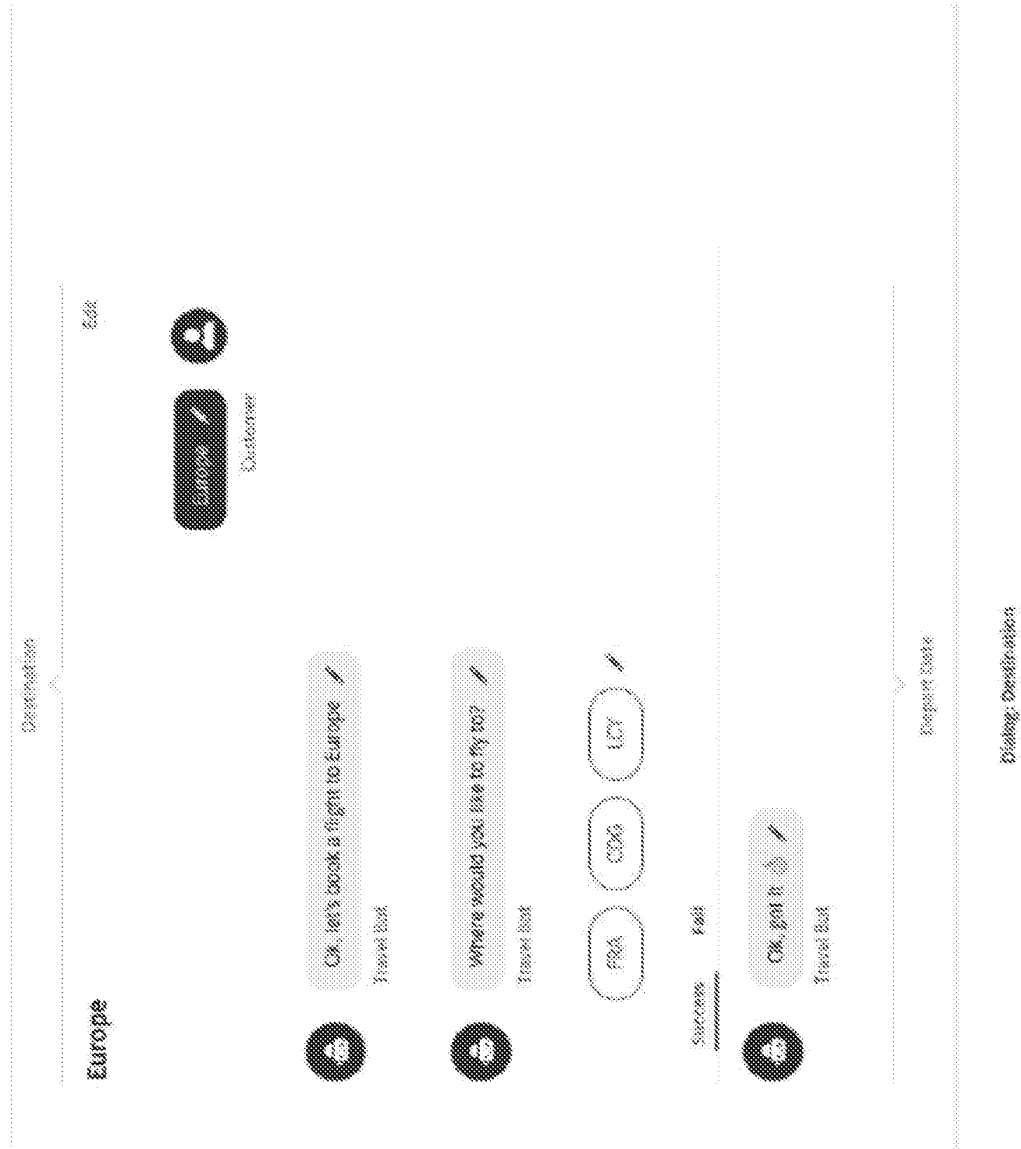


FIG. 10

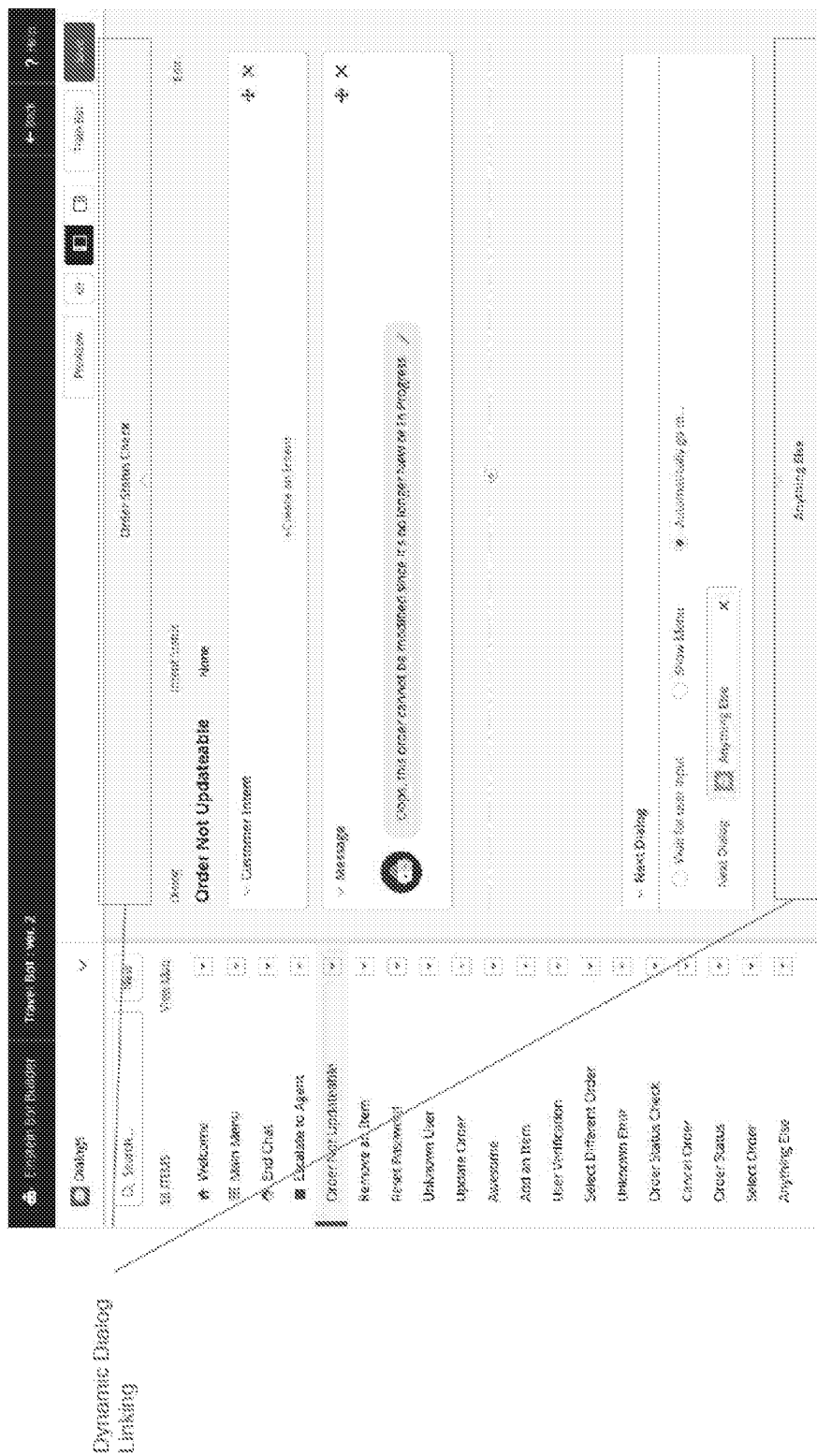


FIG. 11

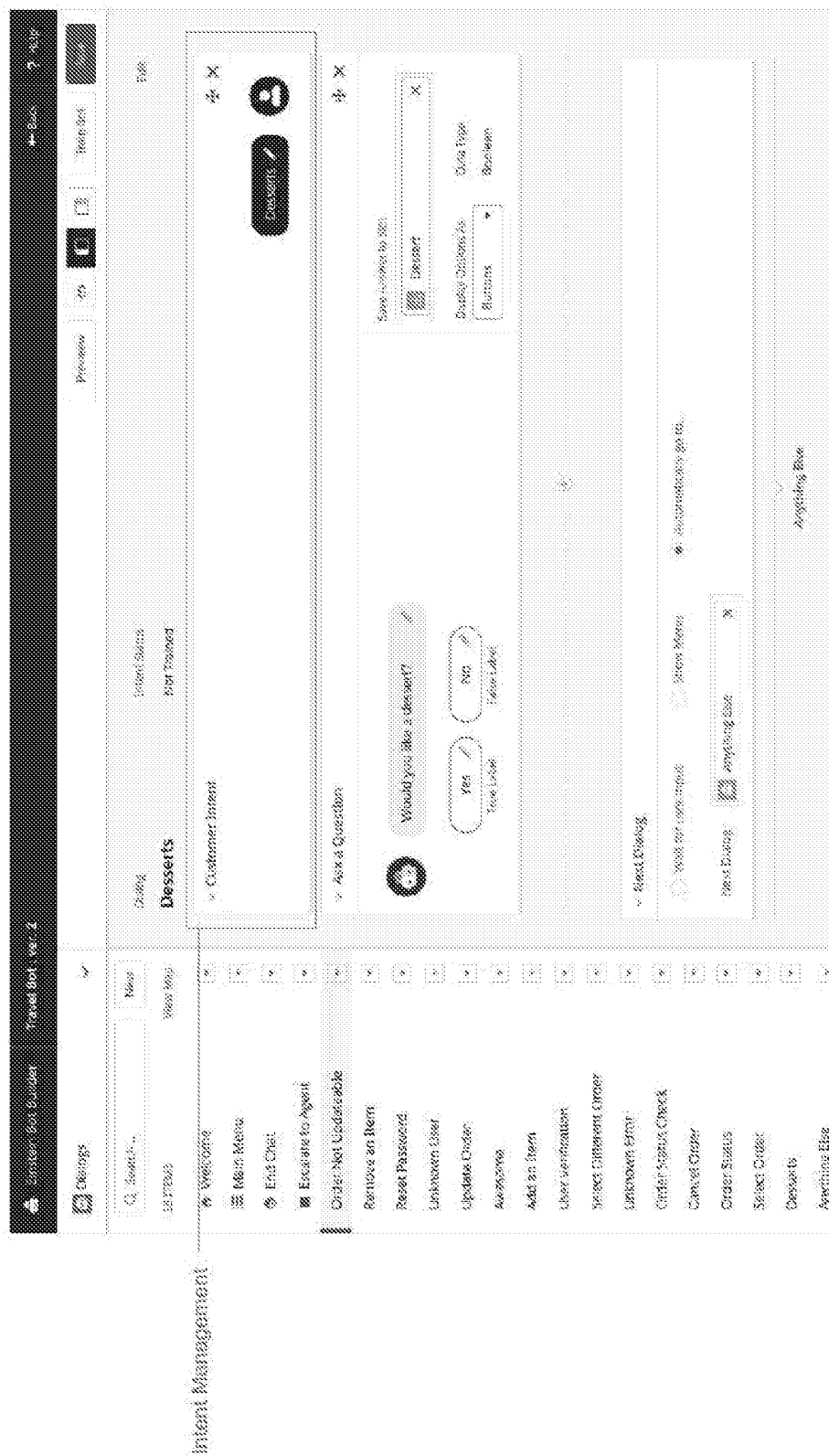


FIG. 12

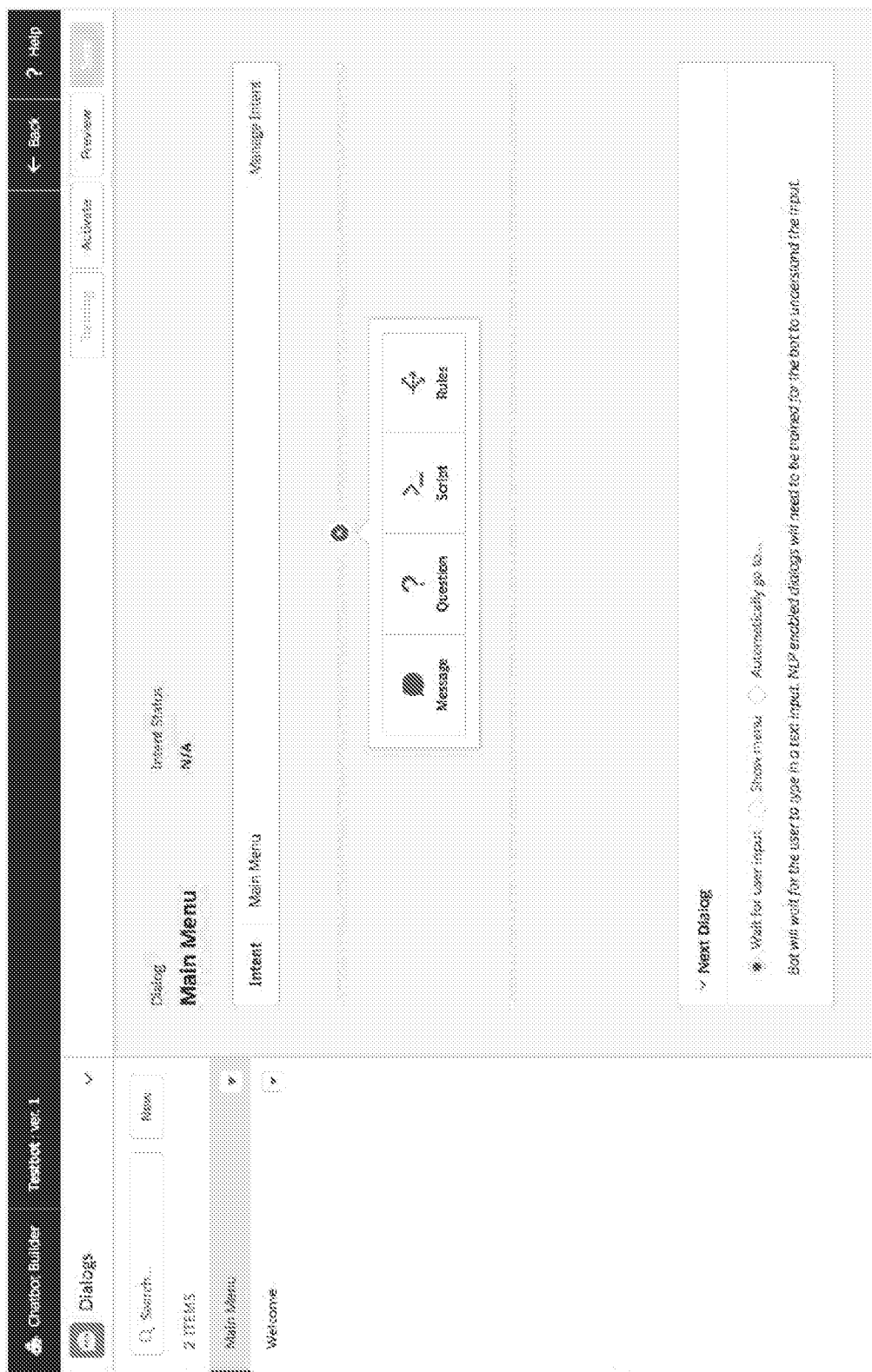


FIG. 13

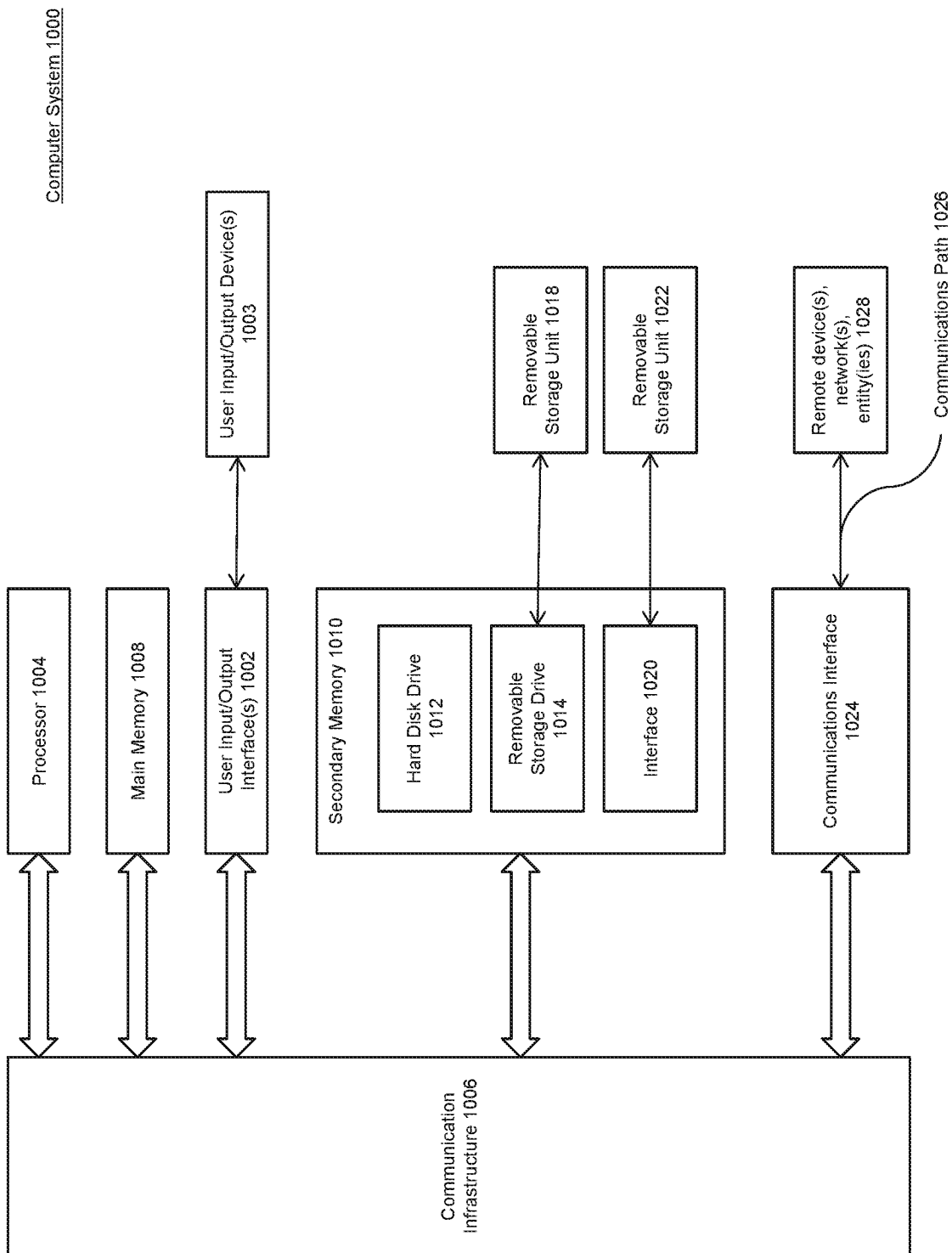


FIG. 14