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## User interface for modular conversational assistant

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## **User interface for modular conversational assistant**

### **ABSTRACT**

Conversational assistants are available on various computing devices, e.g., smartphones. With greater popularity, conversational assistants are being deployed in multiple different computing devices such as televisions, laptops, tablets, speakers, Internet-of-Things (IoT) devices, etc. Per techniques of this disclosure, user interface state of a conversational assistant is adjusted as appropriate for the device and the conversational context. Such adjustment can include dynamically adjusting the display of the conversational assistant, e.g., to one of a set of predetermined states and/ or dynamically scaling the display of the conversational assistant.

### **KEYWORDS**

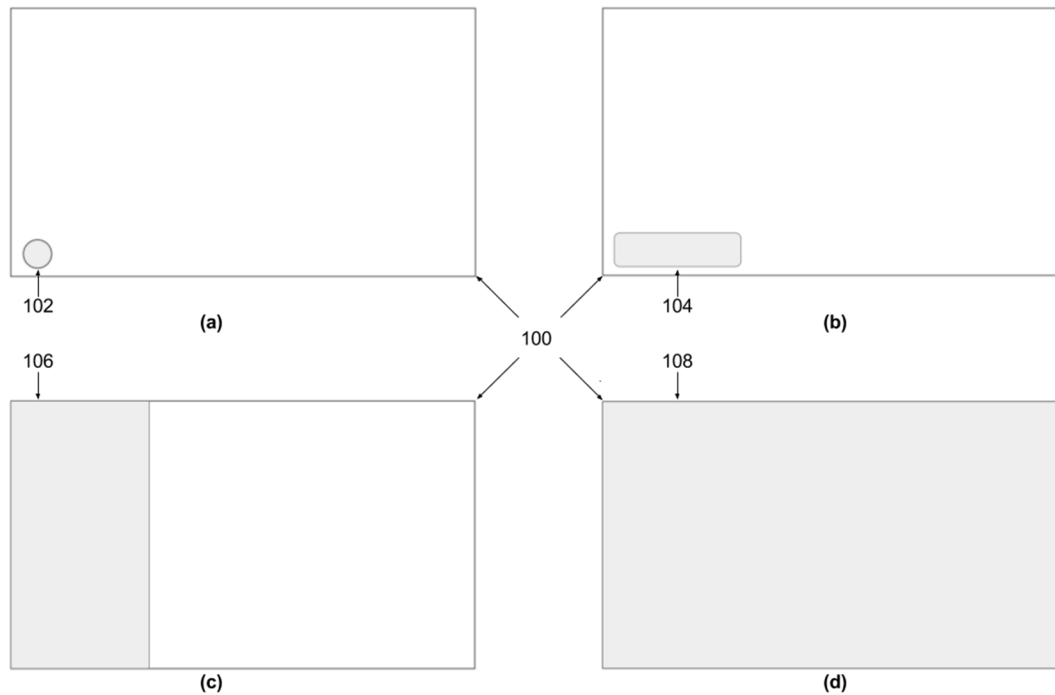
- Conversational assistant
- User interface
- Responsive design
- Dynamic UI

### **BACKGROUND**

A conversational assistant supports many kinds of tasks, from the very simple to the very complex. On devices that have large screens with large display area available, there are many possible window sizes for an assistant. However, no single window size is appropriate for the various tasks that an assistant supports. Specifically, larger, more complex tasks can benefit from a larger user interface size, while smaller tasks are better suited to smaller size.

## DESCRIPTION

A modular conversational assistant user interface as described herein scales in size to match the complexity of the task at hand. The conversational assistant can scale dynamically, e.g., to match task complexity. The conversational assistant can also switch between predefined states such as minimized, small box, vertical bar, and full-screen. The complexity of the task can be based on factors such as number of inputs, number of outputs, and number of steps, etc.



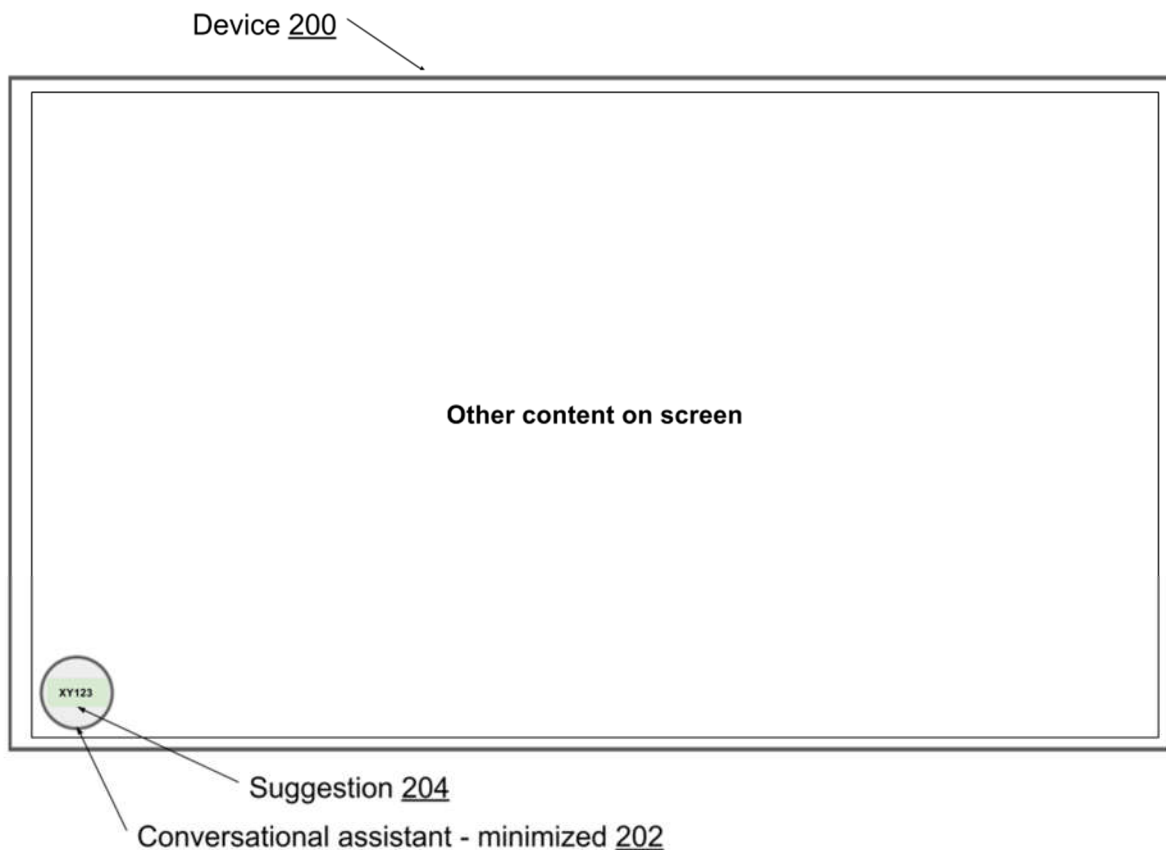
**Fig. 1:** Example predefined states for a conversational assistant

Figs. 1(a)-(d) illustrate various predefined states (e.g., window size) for a conversational assistant. The device, e.g., a smartphone, tablet, laptop or desktop computer, television, speaker, etc. has a screen size (100). In Fig 1(a), the conversational assistant is in a minimized state (102). In Fig. 1(b), the conversational assistant is in a small box state (104). In Fig. 1(c), the conversational assistant is in a vertical bar state (106). In Fig. 1(d), the conversational assistant is in a full-screen state (108), e.g., occupies the entire screen of the device.

Based on task complexity, the conversational assistant can switch between any of the states illustrated in Fig. 1. Further, the conversational assistant can be scaled dynamically, e.g., to an intermediate size between the various states illustrated in Figs. 1(a)-(d), to match task complexity.

Display of the conversational assistant in various states is illustrated with reference to several examples below

#### Example 1: Conversational assistant - minimized state

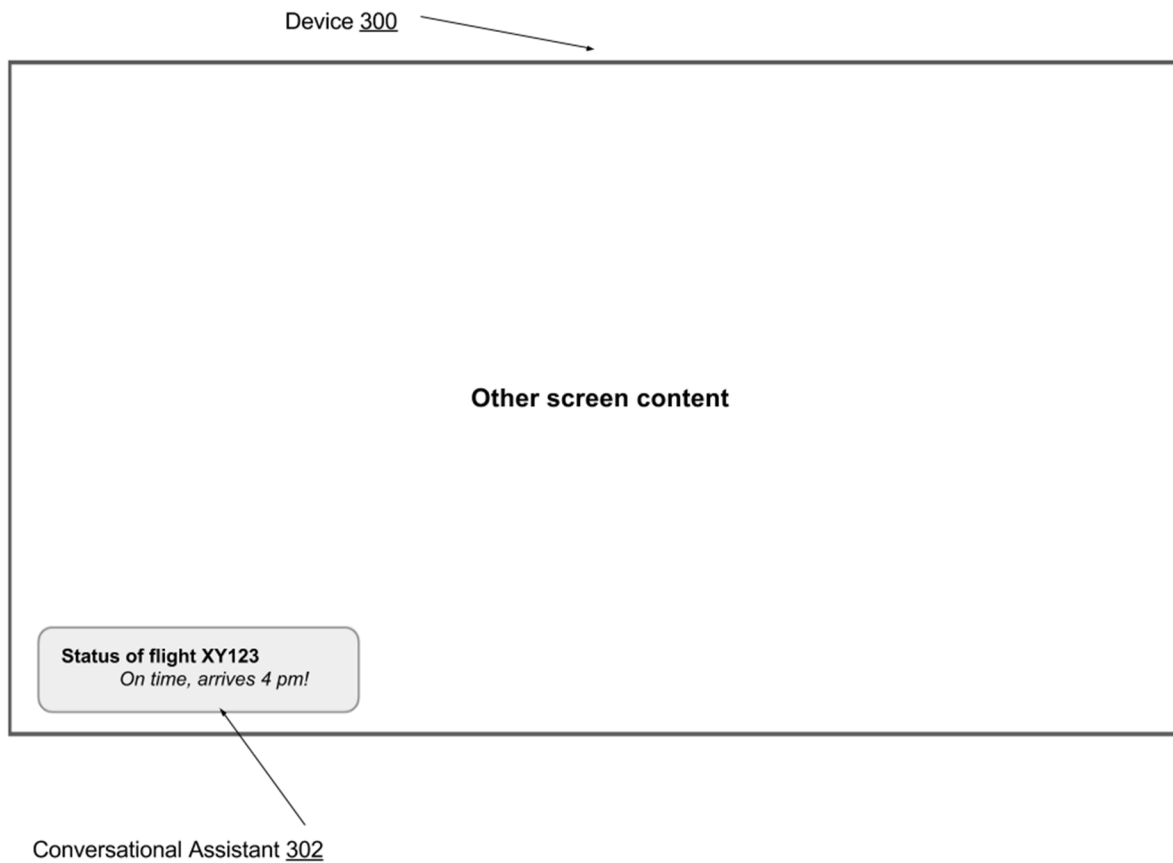


**Fig. 2:** Conversational assistant in minimized state

Fig. 2 illustrates a device 200 on which a conversational assistant (202) is displayed in a minimized state. As shown in Fig. 2, a suggestion (204) is shown in the conversational assistant

user interface. When the user permits access to user data, e.g., contextual data, conversational assistant can display a suggestion.

Example 2: Conversational assistant - small box state



**Fig. 3:** Conversational assistant in small box state

Fig. 3 illustrates a device 300 on which a conversational assistant (302) is displayed in a small box state. As shown in Fig. 3, a user has started a conversation with the conversational assistant with the text “Status of flight XY123” and in response, the conversational assistant provides the information “On time, arrives 4 pm!” Since the conversation between the user and the conversational assistant is short, the small box state is used to display the conversational assistant.

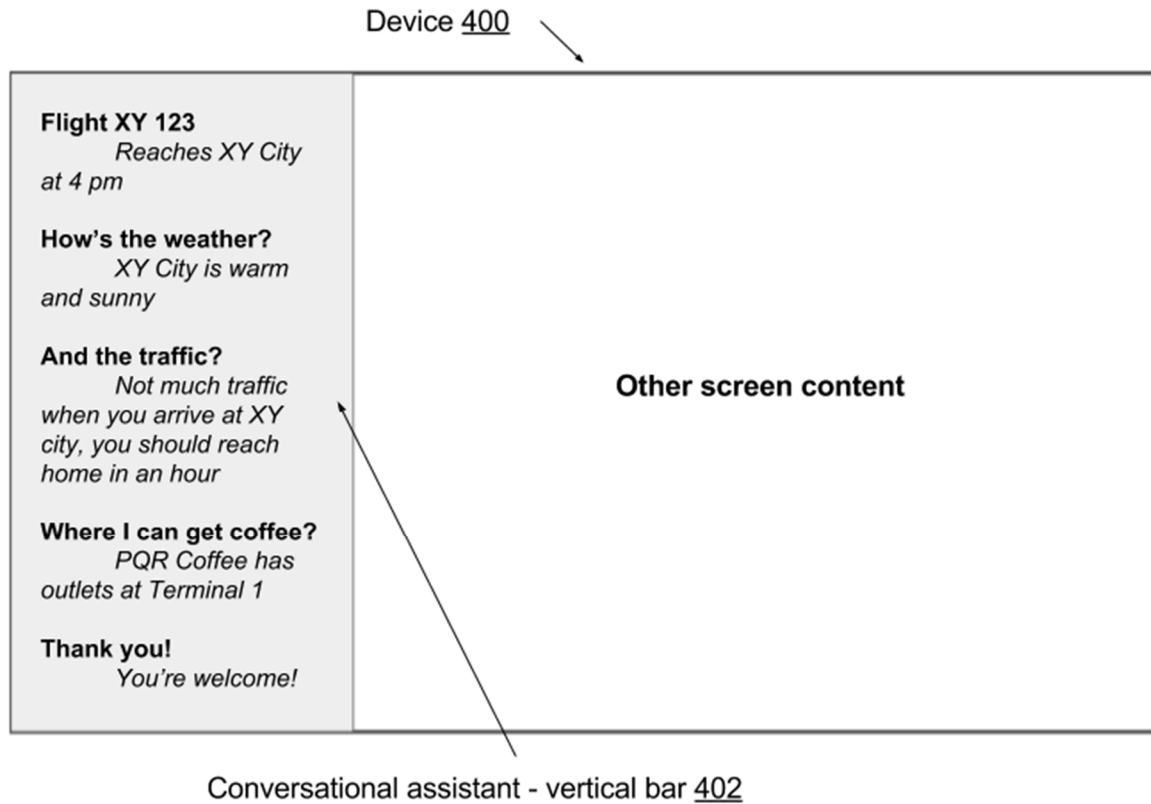
Example 3: Conversational assistant - vertical bar state**Fig. 4:** Conversational assistant in vertical bar state

Fig. 4 illustrates a device 400 on which a conversational assistant (402) is displayed in a vertical bar state. As can be seen in Fig. 4, the conversation is a back and forth conversation between a user (boldface text) and the conversational assistant (italicized text). The conversation includes the user querying the conversational assistant about a flight, weather and traffic at a destination, and locations of coffee shops. Owing to the complexity of the conversation, the conversational assistant is in a vertical bar state, permitting the user to see multiple answers in a single user interface.

Example 4: Conversational assistant - full screen state

Device 500

| Flight No. | Departs | Arrives | Stopovers | Price |
|------------|---------|---------|-----------|-------|
| AAA11      | 19:00   | 04:00   | 0         | \$300 |
| AAA12      | 19:50   | 05:20   | 0         | \$412 |
| BBB11      | 20:15   | 09:15   | 1         | \$355 |
| BBB 12     | 21:00   | 05:45   | 0         | \$600 |
| CCC11      | 18:00   | 09:40   | 1         | \$220 |
| DDD11      | 19:10   | 04:00   | 0         | \$660 |

Conversational assistant - full screen 502

**Fig. 5:** Conversational assistant in vertical bar state

Fig. 5 illustrates a device 500 on which a conversational assistant (502) is displayed in a full screen state. As can be seen in Fig. 5, the user has asked the conversational assistant to find a flight to XY city. In response, the conversational assistant displays flight options with details of flight number, departure time, arrival time, stopovers, and price. In this example, the conversational context is complex, since the response from the conversational assistant has a large amount of information to display. Therefore, the conversational assistant is displayed in full-screen state such that the user can view the response from the conversational assistant in the user interface.

In situations in which certain implementations discussed herein may collect or use personal information about users (e.g., user data, information about a user's social network, user's location and time at the location, user's biometric information, user's activities and demographic information), users are provided with one or more opportunities to control whether information is collected, whether the personal information is stored, whether the personal information is used, and how the information is collected about the user, stored and used. That is, the systems and methods discussed herein collect, store and/or use user personal information specifically upon receiving explicit authorization from the relevant users to do so. For example, a user is provided with control over whether programs or features collect user information about that particular user or other users relevant to the program or feature. Each user for which personal information is to be collected is presented with one or more options to allow control over the information collection relevant to that user, to provide permission or authorization as to whether the information is collected and as to which portions of the information are to be collected. For example, users can be provided with one or more such control options over a communication network. In addition, certain data may be treated in one or more ways before it is stored or used so that personally identifiable information is removed. As one example, a user's identity may be treated so that no personally identifiable information can be determined. As another example, a user's geographic location may be generalized to a larger region so that the user's particular location cannot be determined.

## CONCLUSION

Conversational assistants that assist users in performing tasks are available on a variety of platforms, e.g., smartphones, tablets, televisions, IoT-devices, etc. Techniques of this disclosure provide for the conversational assistant to be displayed in a state that matches the



complexity of a task. User interface of the conversational assistant is matched to the task, and can be sized to match a predetermined state, or scaled dynamically based on task complexity.