

WaiterBot: Automated Catering Solution

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A **Generalizable Conversational** robot that takes and delivers food orders enabled with Alexa-powered **Interactivity** and Complex Navigational **Behaviors**

Front-End Powered by Alexa and Flask State Constrained Multi-Turn Dialog

Alexa skill is integrated as an ROS node. This allows the robot to respond to the user based on the robot's current state and physical limitations.

Robot is ready to take orders

User: Hey Alexa, tell WaiterBot I'd like to order.

Alexa: Hello, what would you like?

Robot is busy with many orders

User: Hey Alexa, tell WaiterBot I'd like to order.

Alexa: Sorry, I'm a little busy right now, I'll be right back for your order.

Entity Recognition is powered by Alexa, so the robot can accurately recognize a variety of food and drink items. The menu for the event can be quickly customized. The application references the menu to ensure the user can only order menu items.

User: Alexa, tell WaiterBot I'd like a burger.

Alexa: Sure, and would you like a drink?

User: A can of Pepsi.

Alexa: Sorry, we don't have Pepsi. Would you like something else?

User: Coke, then.

Alexa: Sure, and what's your name?

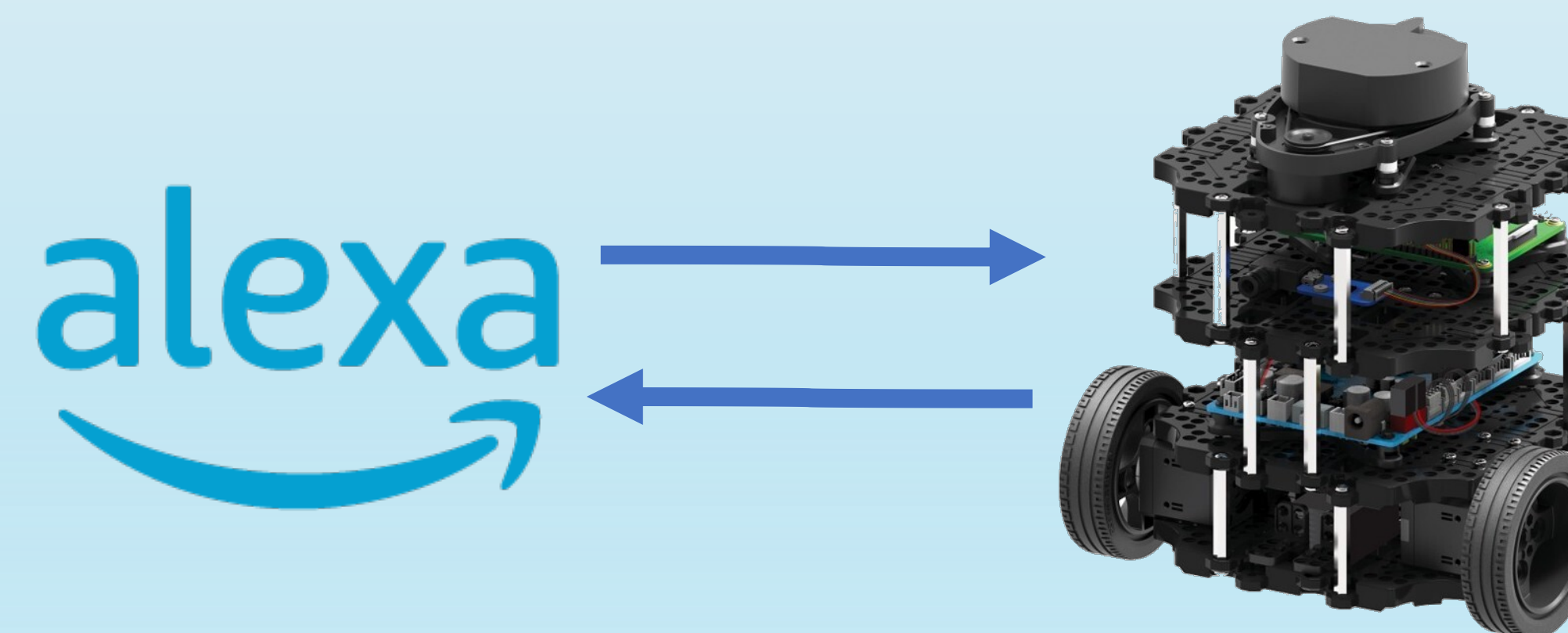
User: Harry

Alexa: Okay, Harry, I'll be right back with your burger and Coke

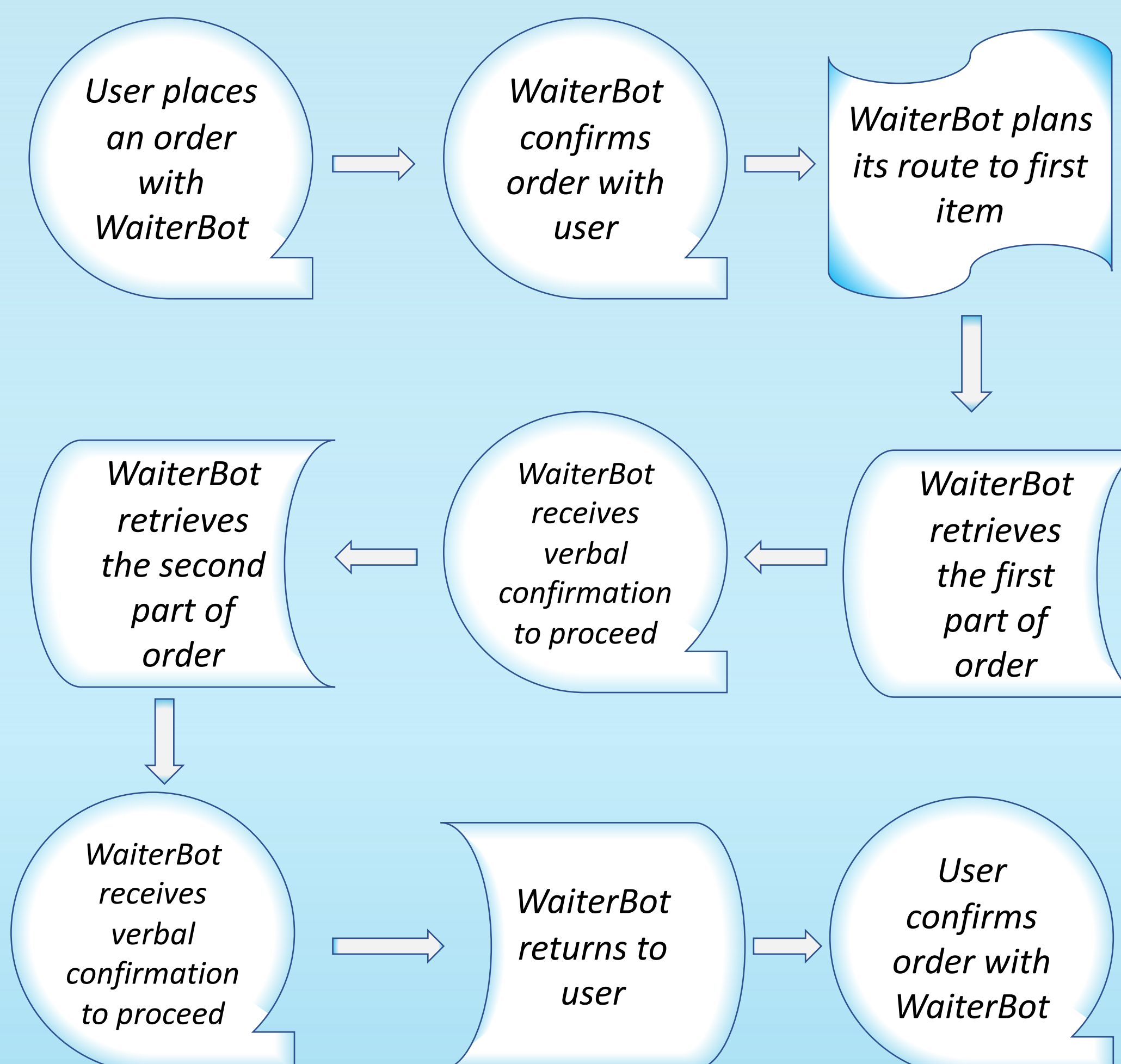
WaiterBot promptly retrieves the order and returns to original location of the request.

User: Alexa, ask WaiterBot, is that my order?

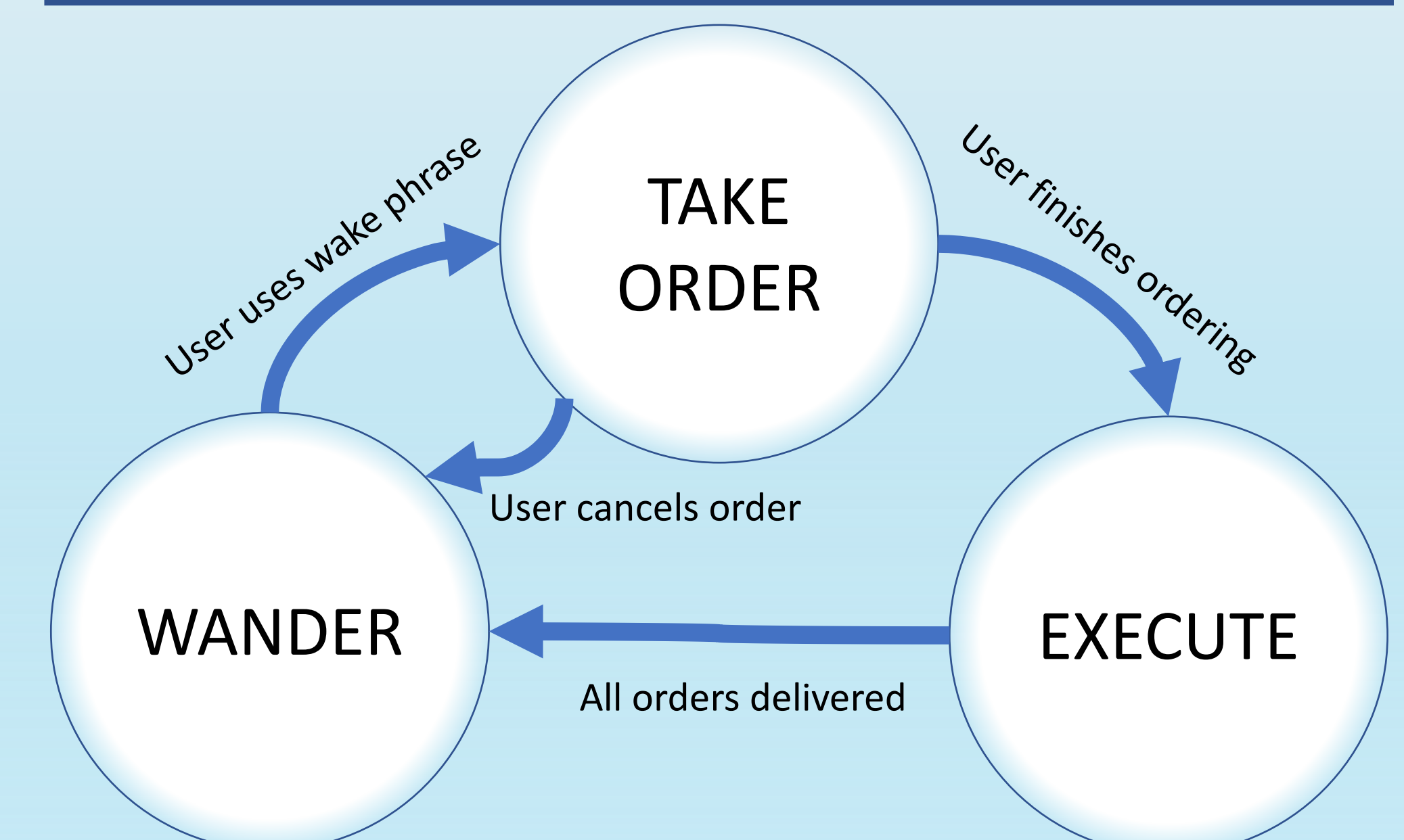
Alexa: Hi again Harry! I have your burger and Coke.



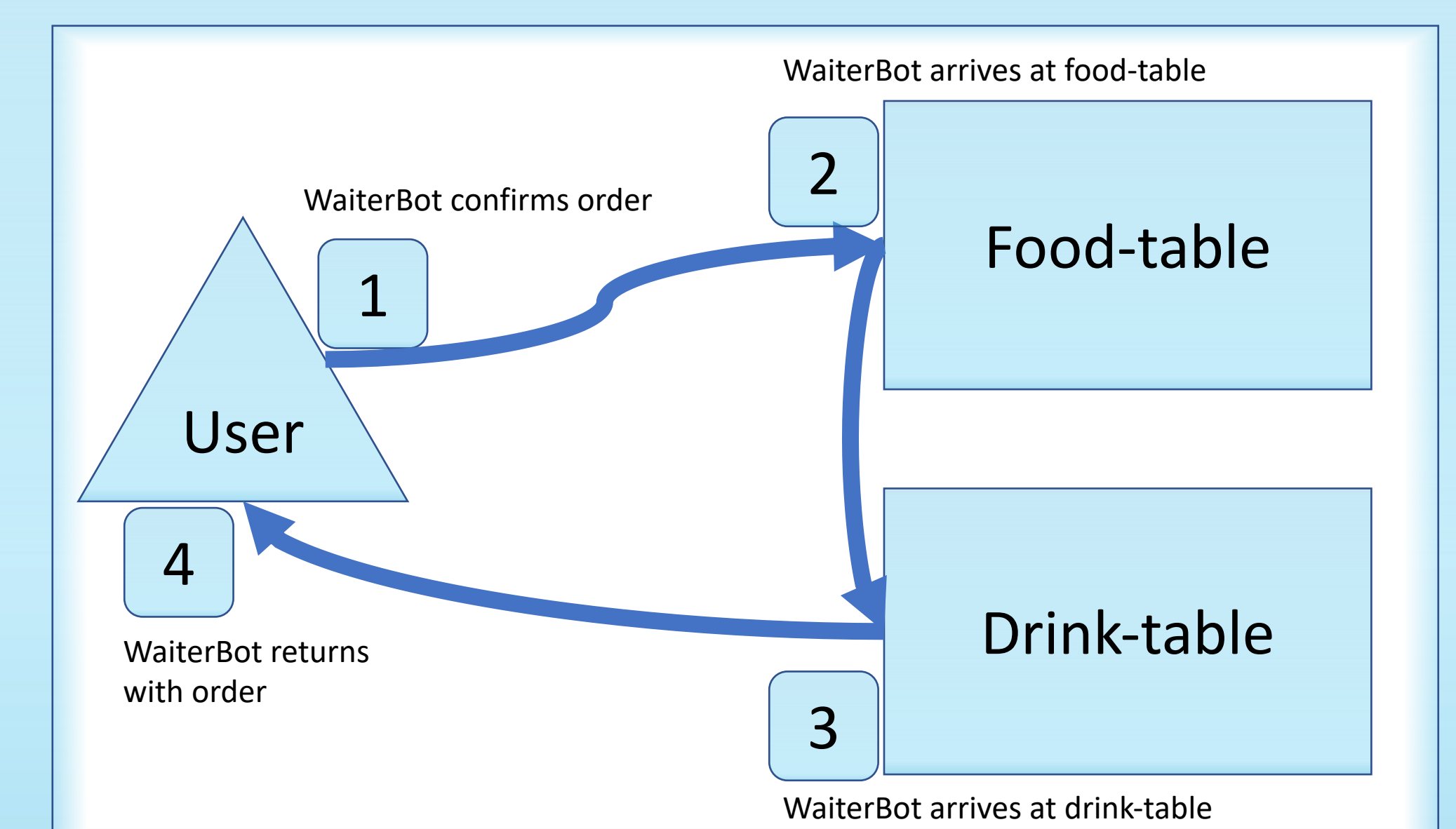
Application Workflow



Back-End States and Navigation



WaiterBot transitions between states based on the topics published by the Alexa skill node as well as actionlib's SimpleActionClient's navigation results.



During EXECUTE state, WaiterBot moves between User, Food-table and Drink-table till it finishes all orders. Then it transitions to WANDER state.