



INNOVATE2018

ONLINE CONFERENCE

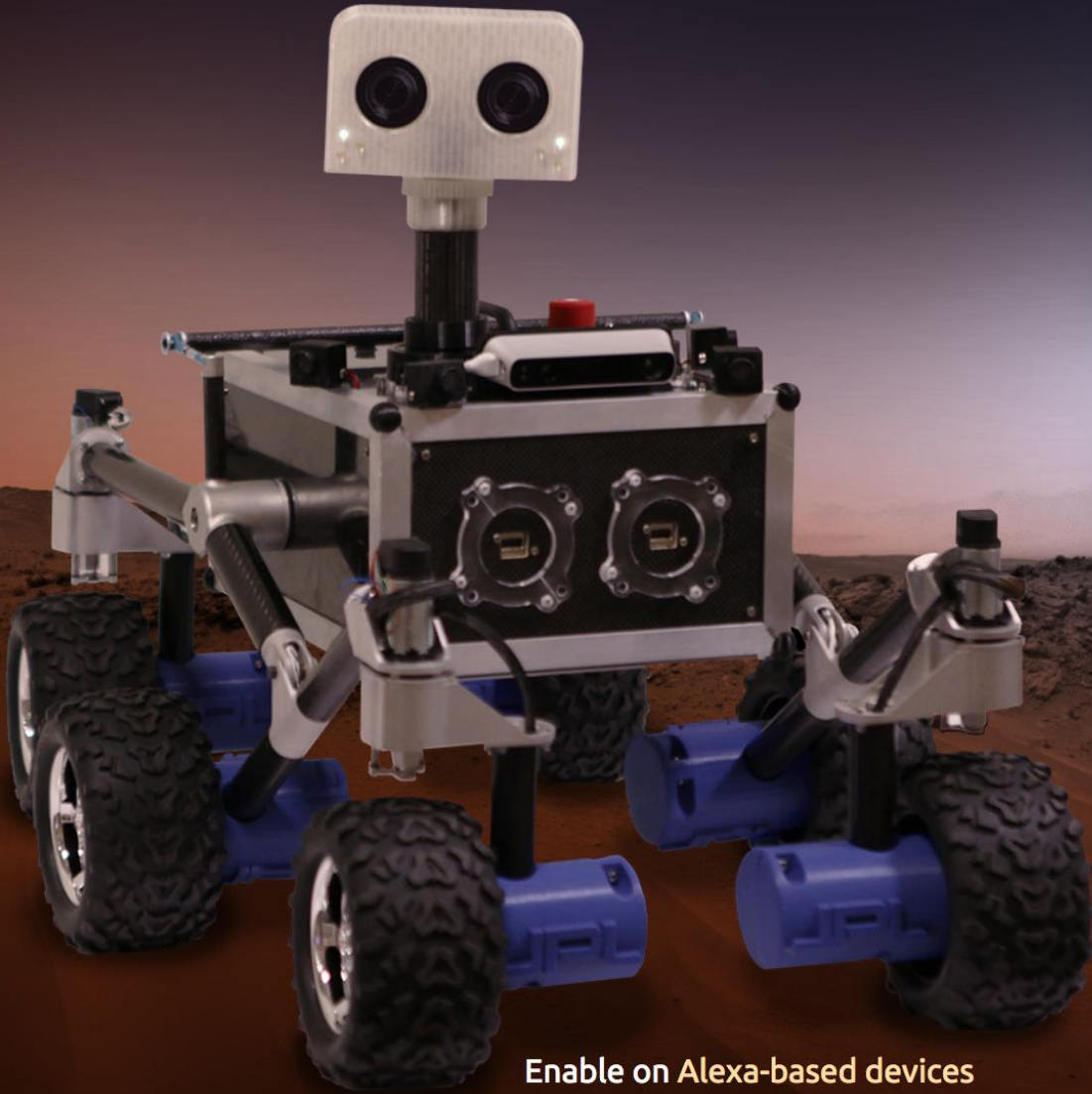


Better Customer Experiences with Chatbots and Conversational Interfaces (Level 300)

Atanu Roy, AI Specialist Solution Architect



Ask NASA Mars! BETA



Enable on Alexa-based devices

My name is ROV-E. I am a real robot with a computer brain. I'm learning to talk. Every question you ask helps me learn. If I don't know the answer yet, Mars scientists and engineers will teach me more answers for you.

Type your question here.

Clear

Ask

[voice version](#)

ROV-E: Hi there! I hope you are doing well. You can ask me any questions you would like about Mars... or even about myself.



“Alexa, ask Capital One,
what’s my balance?”

From tracking your spending to making a payment,
now you can manage your Capital One accounts
through any Amazon Alexa-enabled devices, including
the new Echo Show. Talk about convenient.

Enable the skill



Manage your Capital One accounts simply using your voice



Check Your Balance

Quickly check the balance of your
Capital One bank, credit card, auto
or home loan accounts.



Track Your Spending

Stay on top of your spending by
asking Alexa for the most recent
transactions on your Capital One
accounts.



Pay Your Bill

Find out when your next Capital
One bill is due, and then pay it with
a single voice command.

<https://www.capitalone.com/applications/alexa/>



Speech Recognition and Natural Language Understanding

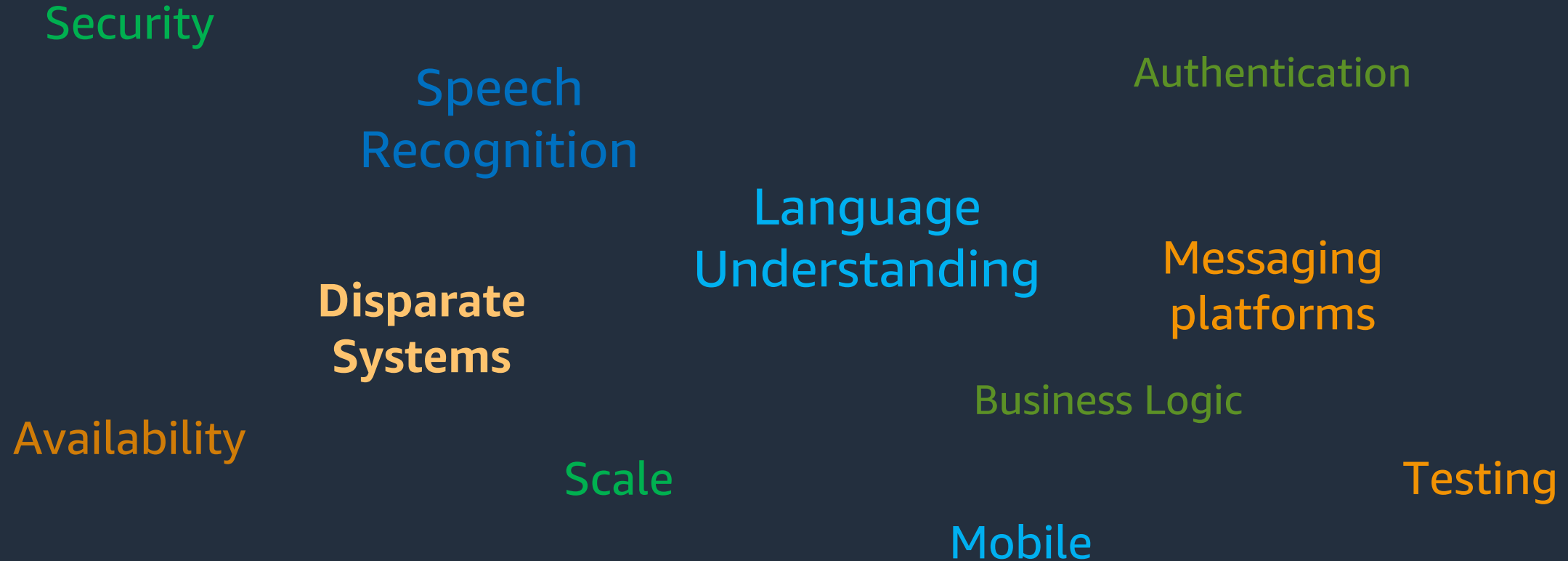
« *Amazon Lex integrates easily into our existing applications, as well as our new cloud-native serverless architectures, enabling us to rapidly take advantage of these powerful technologies to improve and extend the capabilities we can offer our employees and customers.*»

Gillian Armstrong, Technologist, Liberty Mutual

https://www.youtube.com/watch?v=TeLvFqLW_0A



Developer challenges



Conversational interfaces need to combine a large number of sophisticated algorithms and technologies

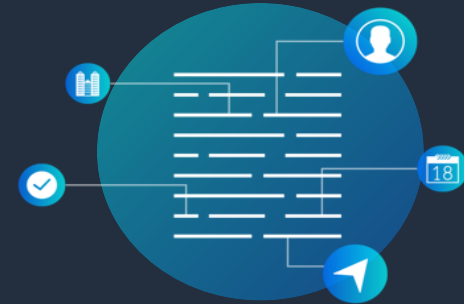
Deep Learning Models as APIs



Amazon Lex

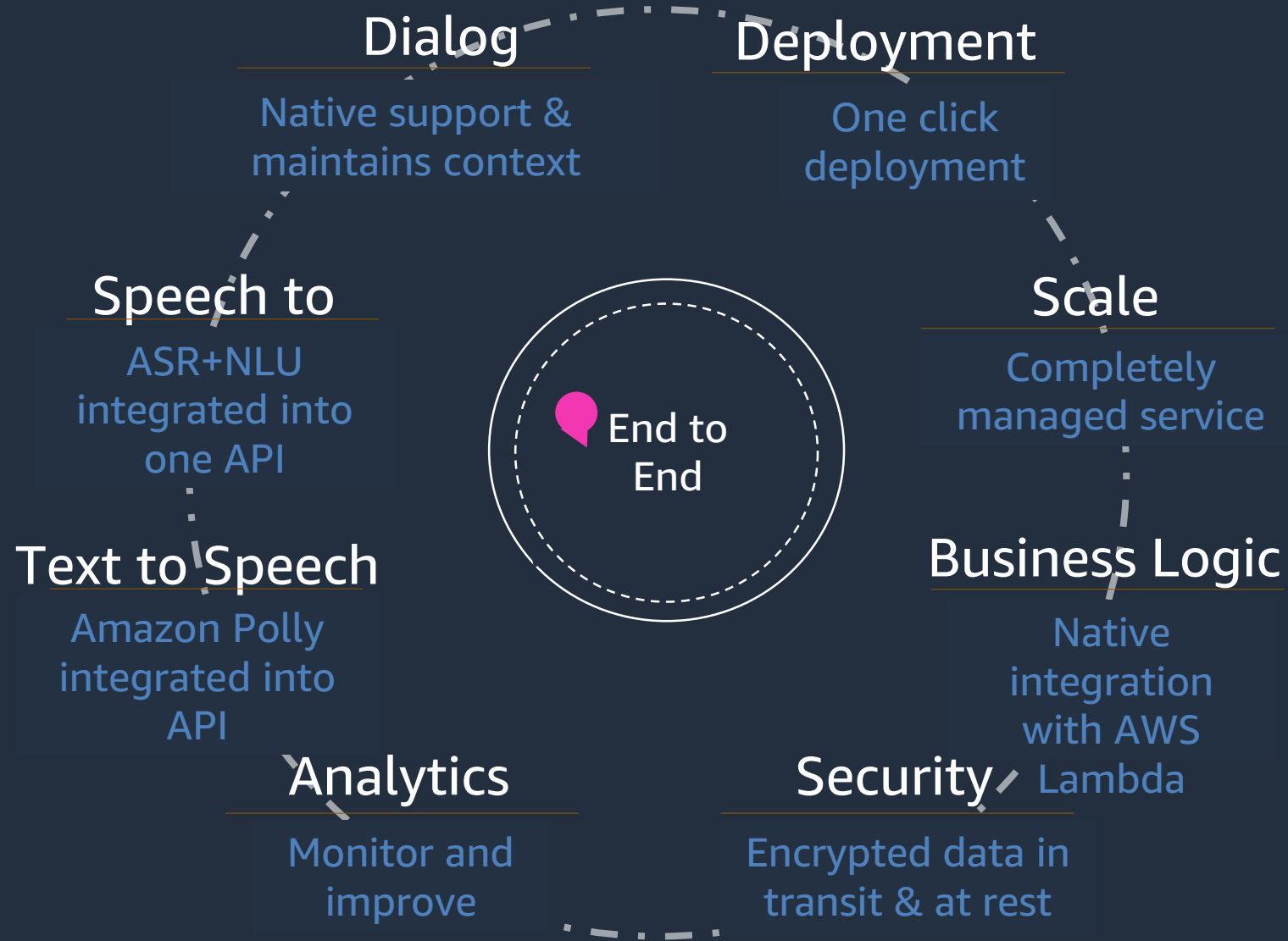


Amazon Polly



**Amazon
Comprehend**

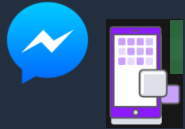
Complete solution



Amazon Lex - features



Text and speech language understanding: powered by the same technology as Alexa



Build once and deploy to multiple platforms



Designed for builders: efficient and intuitive tools to build conversations; scales automatically



Enterprise Ready: connect to enterprise systems via SaaS connectors
Versioning and alias support

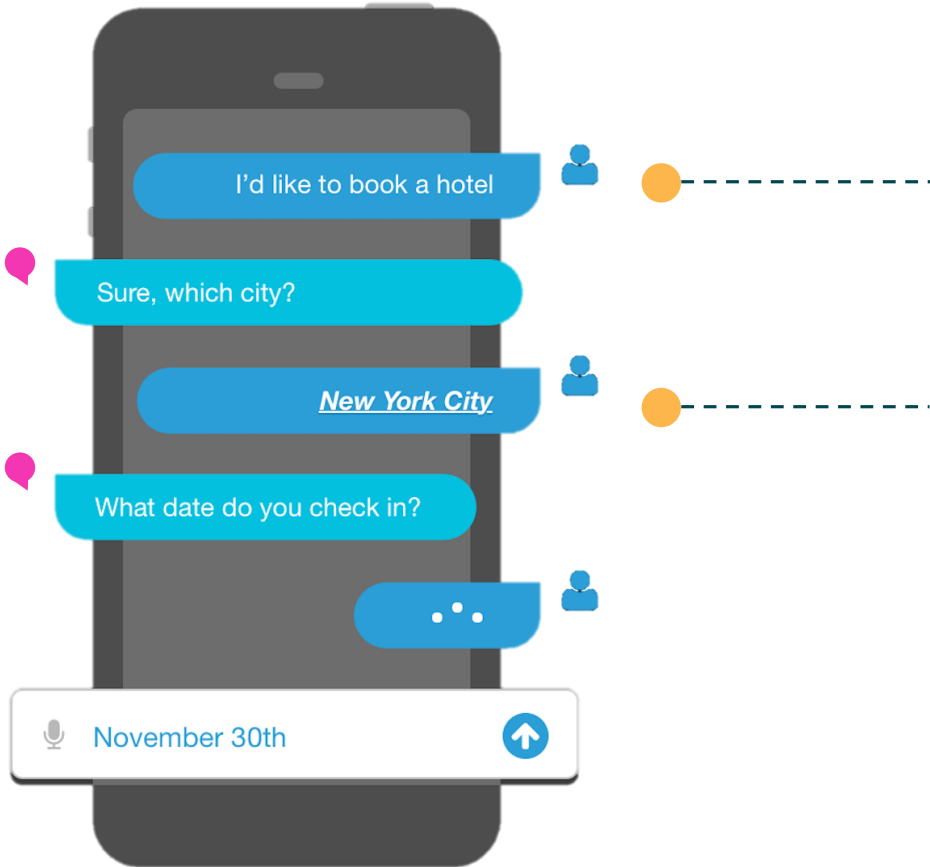


Continuous Learning: monitor and improve your bot

How do I build conversational apps using Amazon Lex?

Amazon Lex

BookHotel



Intents

An intent performs an action in response to natural language user input

Utterances

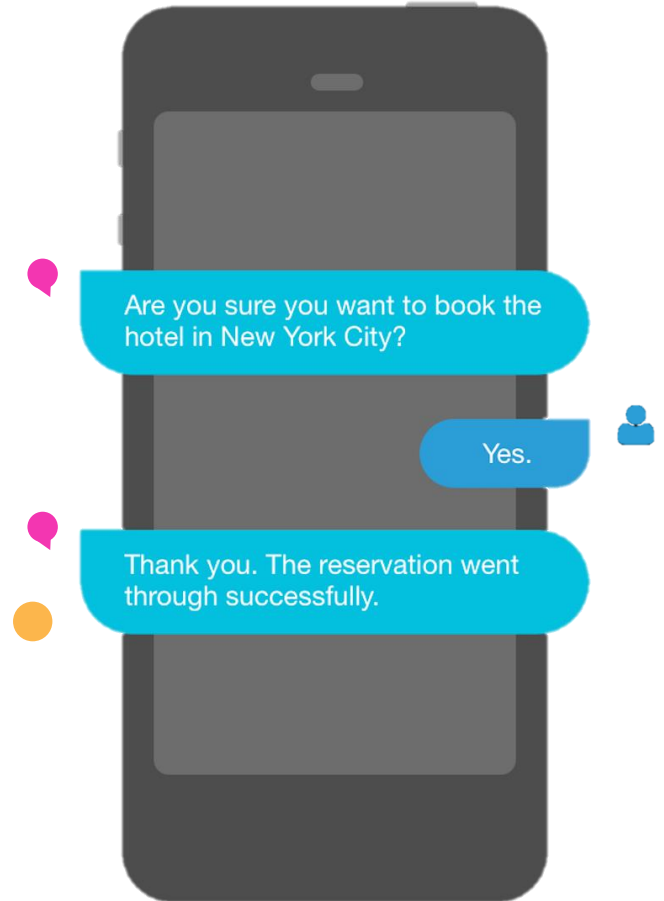
Spoken or typed phrases that invoke your intent

Slots

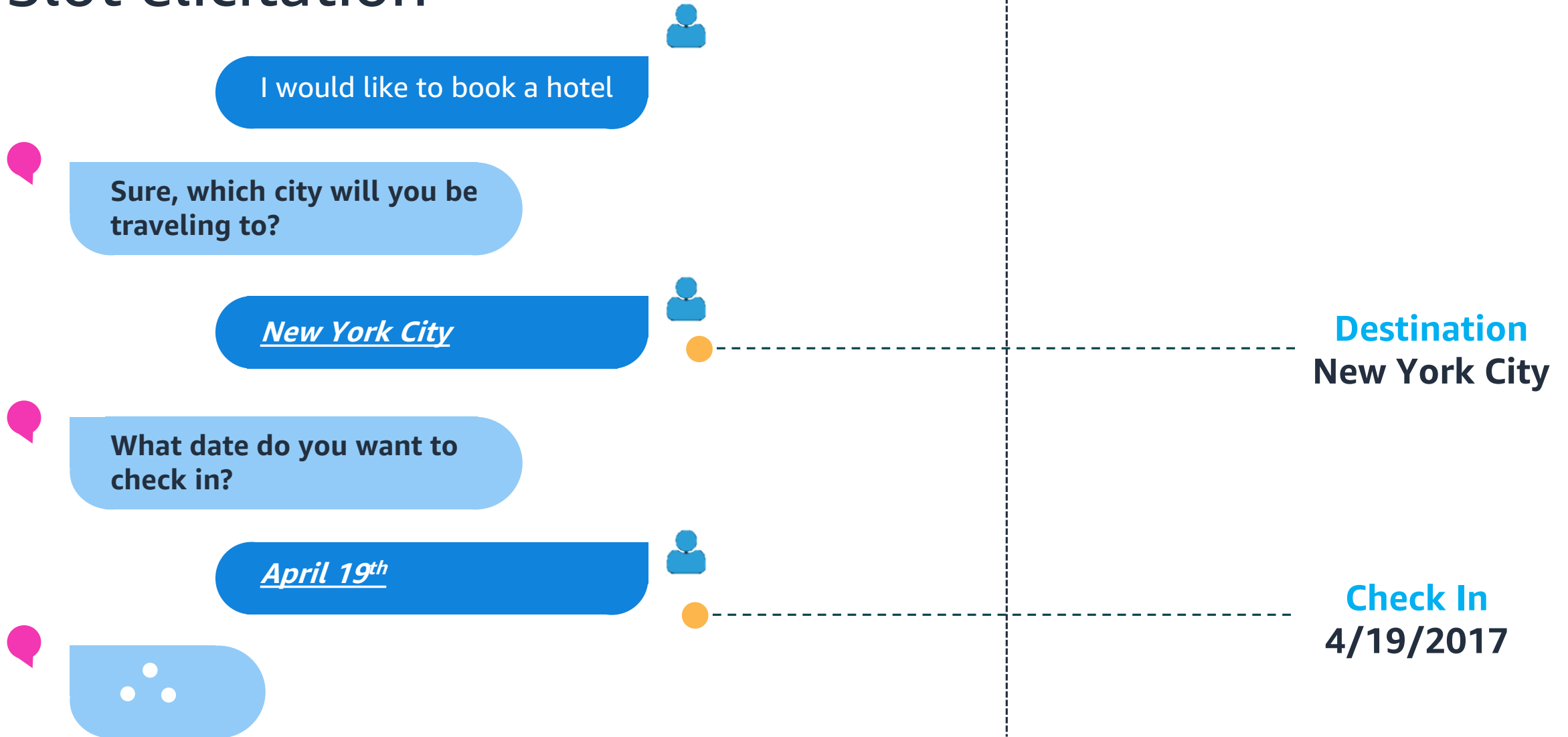
Slots are input data required to fulfill the intent

Fulfillment

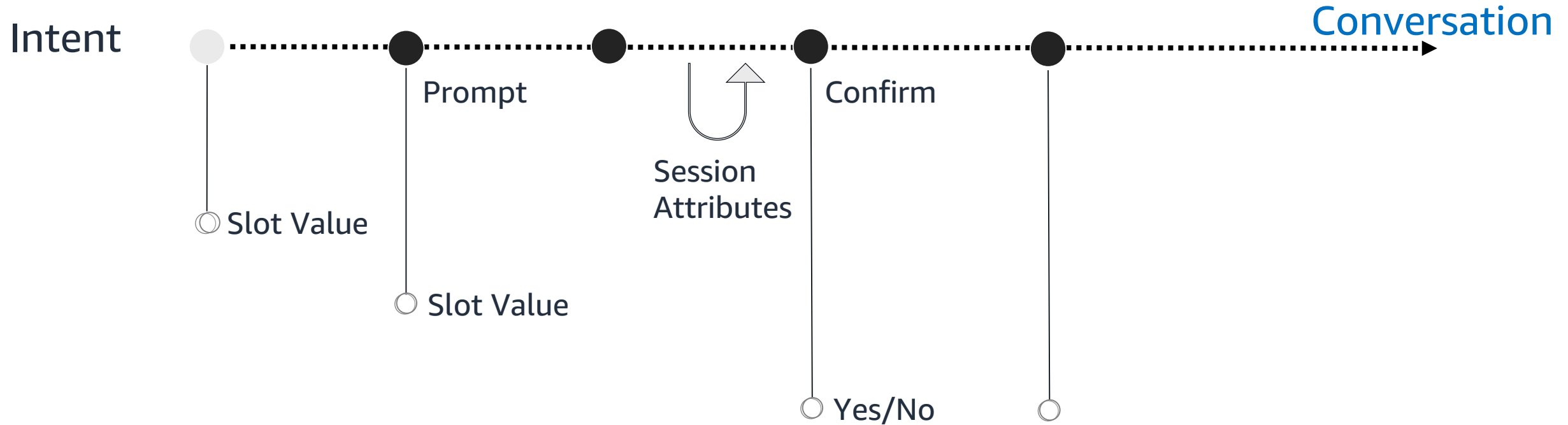
Fulfillment mechanism for your intent



Slot elicitation



Conversation context



Lex maintains context by storing data throughout the conversation

Slot Values

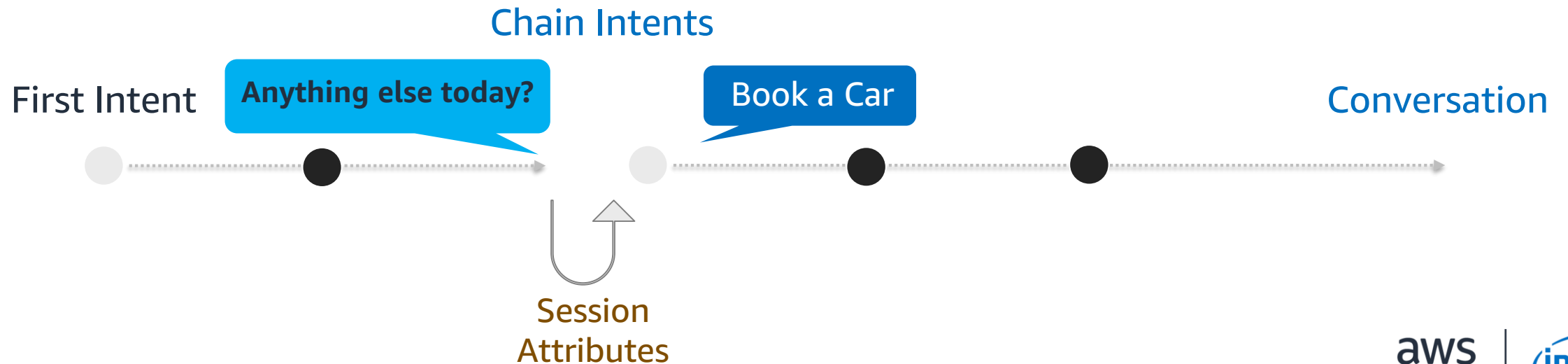
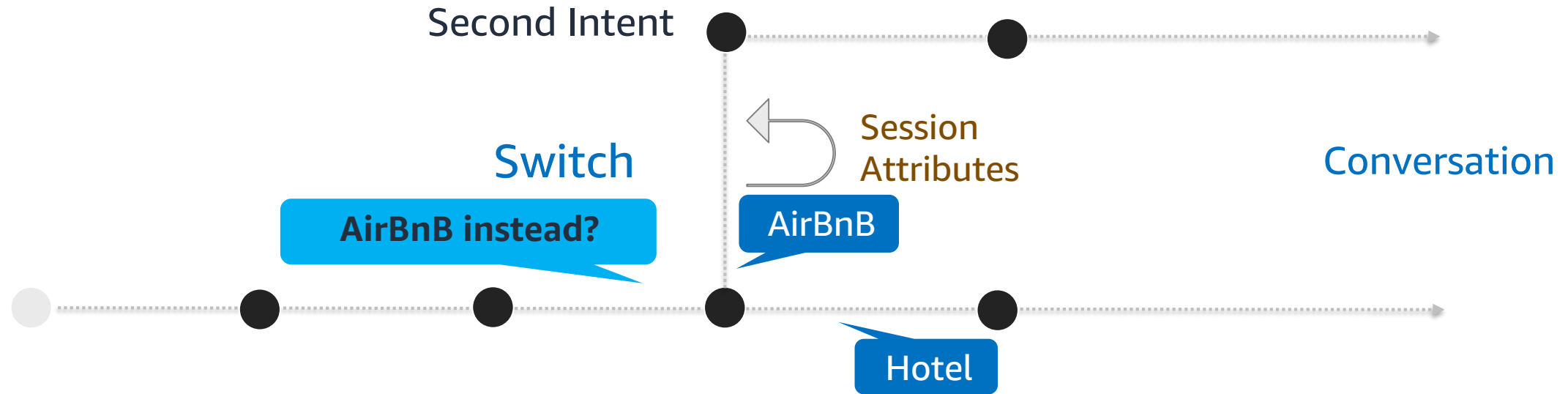
Intents

Prompts

Session
Attributes

Confirmations

Dynamic conversation flow



Input Event (Amazon Lex → AWS Lambda)

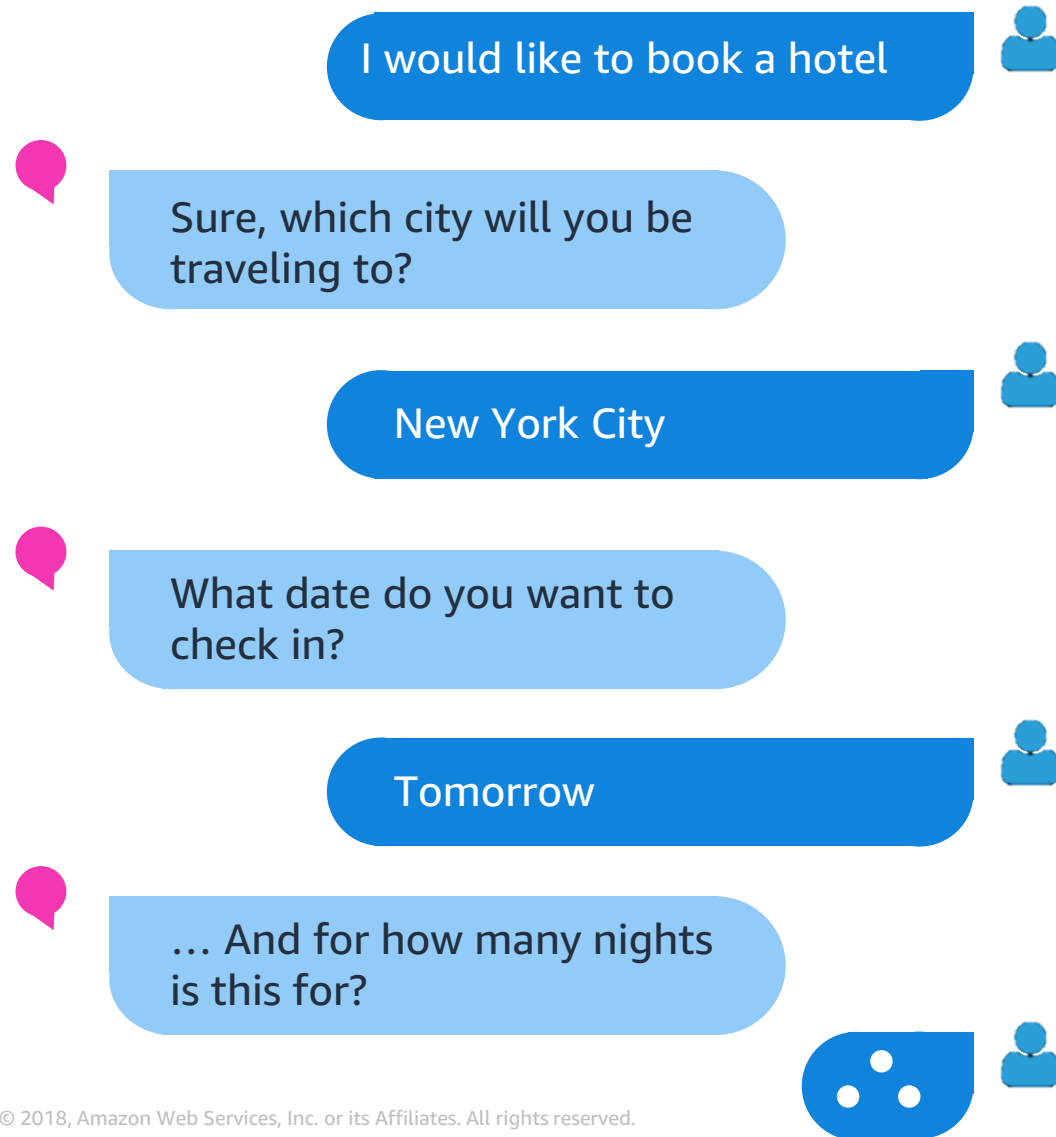


```
{
  "sessionAttributes": {},
  "bot": { "name": "TravelBot" },
  "outputDialogMode": "Text",
  "currentIntent": {
    "name": "BookHotel",
    "slots": {
      "destination": "NYC",
      "numberOfNights": "3"
    },
    "confirmationStatus": "None"
  },
  "inputTranscript": "I want something"
}
```

Response Event (AWS Lambda → Amazon Lex)

```
{  
  "sessionAttributes": {},  
  "dialogAction": {  
    "type": "ConfirmIntent",  
    "message": {  
      "contentType": "PlainText",  
      "content": "Would you like AirBnB instead?"  
    },  
    "intentname" : "BookAirBnB"  
  },  
  "slots": {  
    "destination": "NYC",  
    "numberOfNights": "3",  
  }  
}
```


Dialog management



Simple Declarative Model

City

Check-In Date

Check-Out Date

Which city will you be travelling to?

What date do you want to check in?

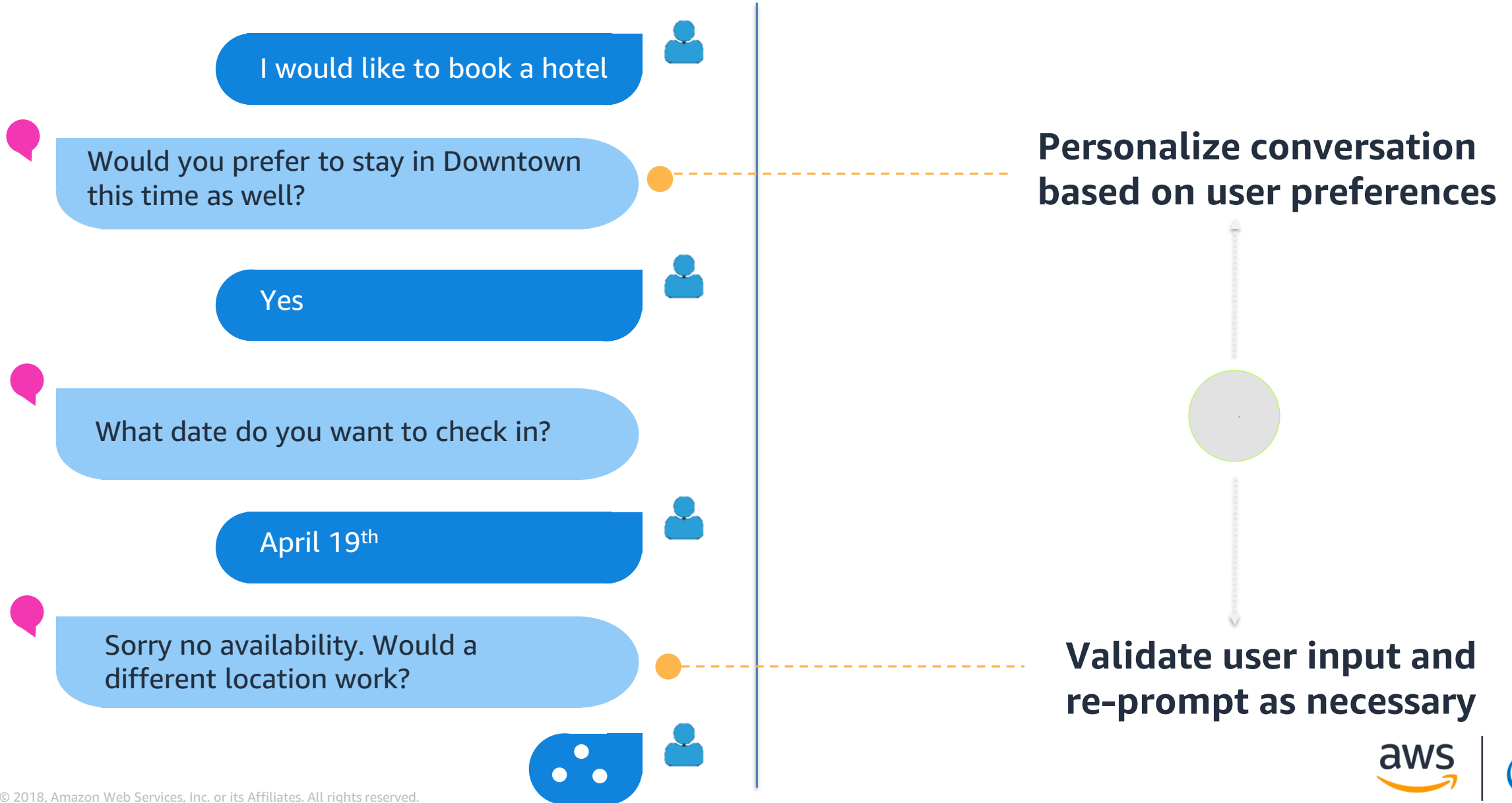
How many nights is this for?

Build Multi-turn Conversations

Easy Setup in Console



Customize conversations




Response Event (AWS Lambda → Amazon Lex)

```
{
  "sessionAttributes": {},
  "dialogAction": {
    "type": "ElicitSlot",
    "message": {
      "contentType": "PlainText",
      "content": "Would you prefer to stay in Downtown this time as well?"
    },
    "intentname": "BookHotel",
    "slotToElicit": "preferredLocality",
    "slots": {...}
  }
}
```

Analyzing User Sentiment - Amazon Comprehend




I would like to book a hotel



Hope this was useful. Would you share some feedback?



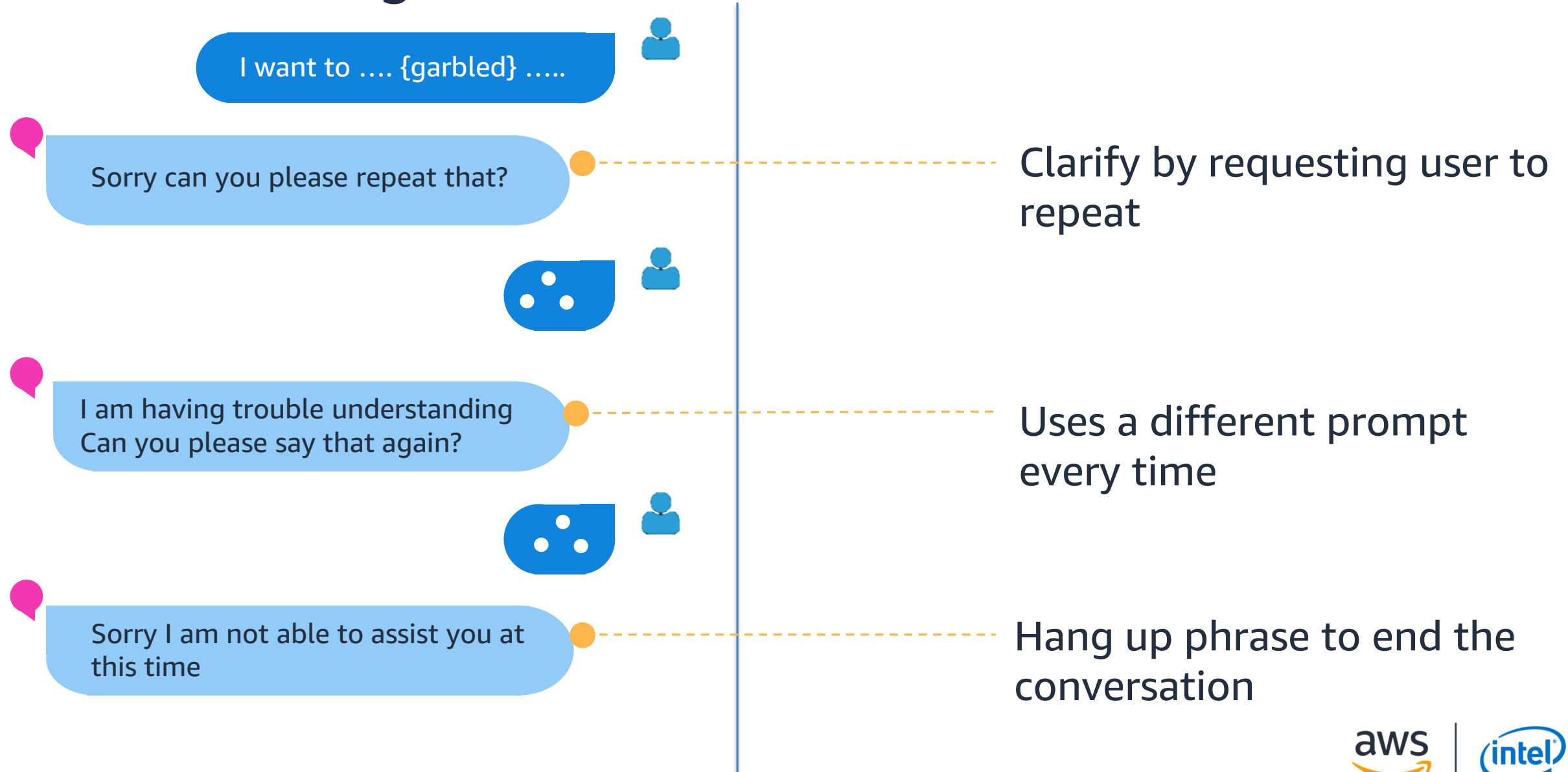
Sorry, this did not help



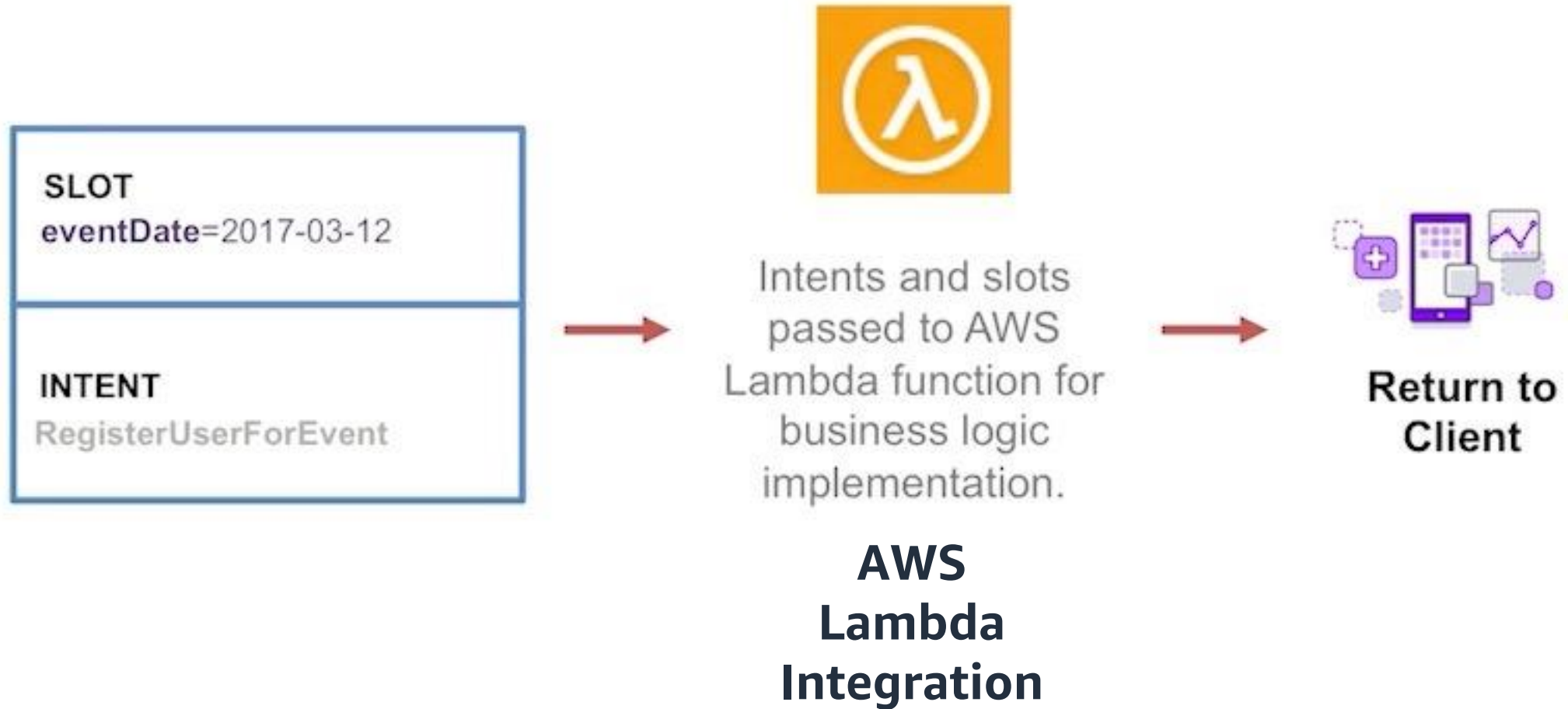
Sorry to hear that. Would you like to be transferred to the associate?

Check the sentiment of the user's feedback using **Amazon Comprehend** and respond appropriately

Error handling



Fulfillment

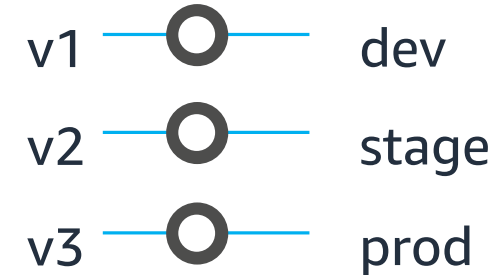


Versioning and Alias support



- Supported for Intents, Slots, and Bots
- Enables multi-developer environment
- Rollback to previous versions

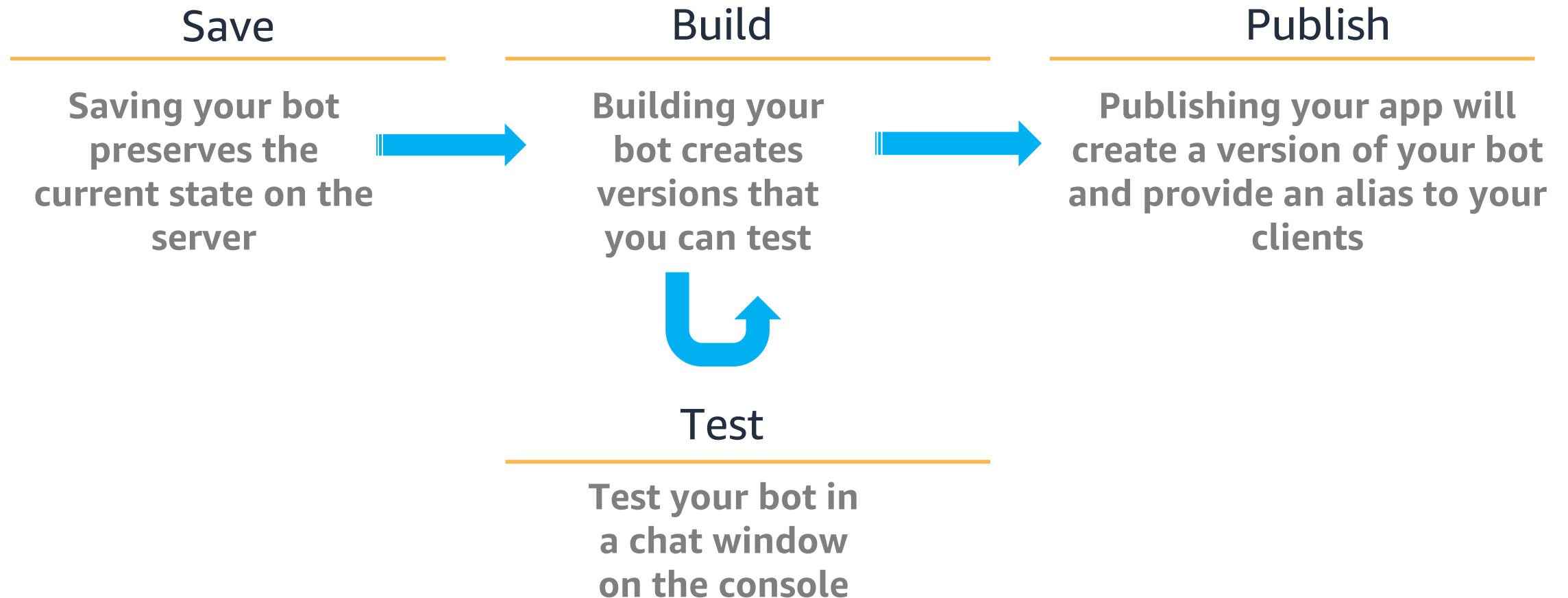
Versioning



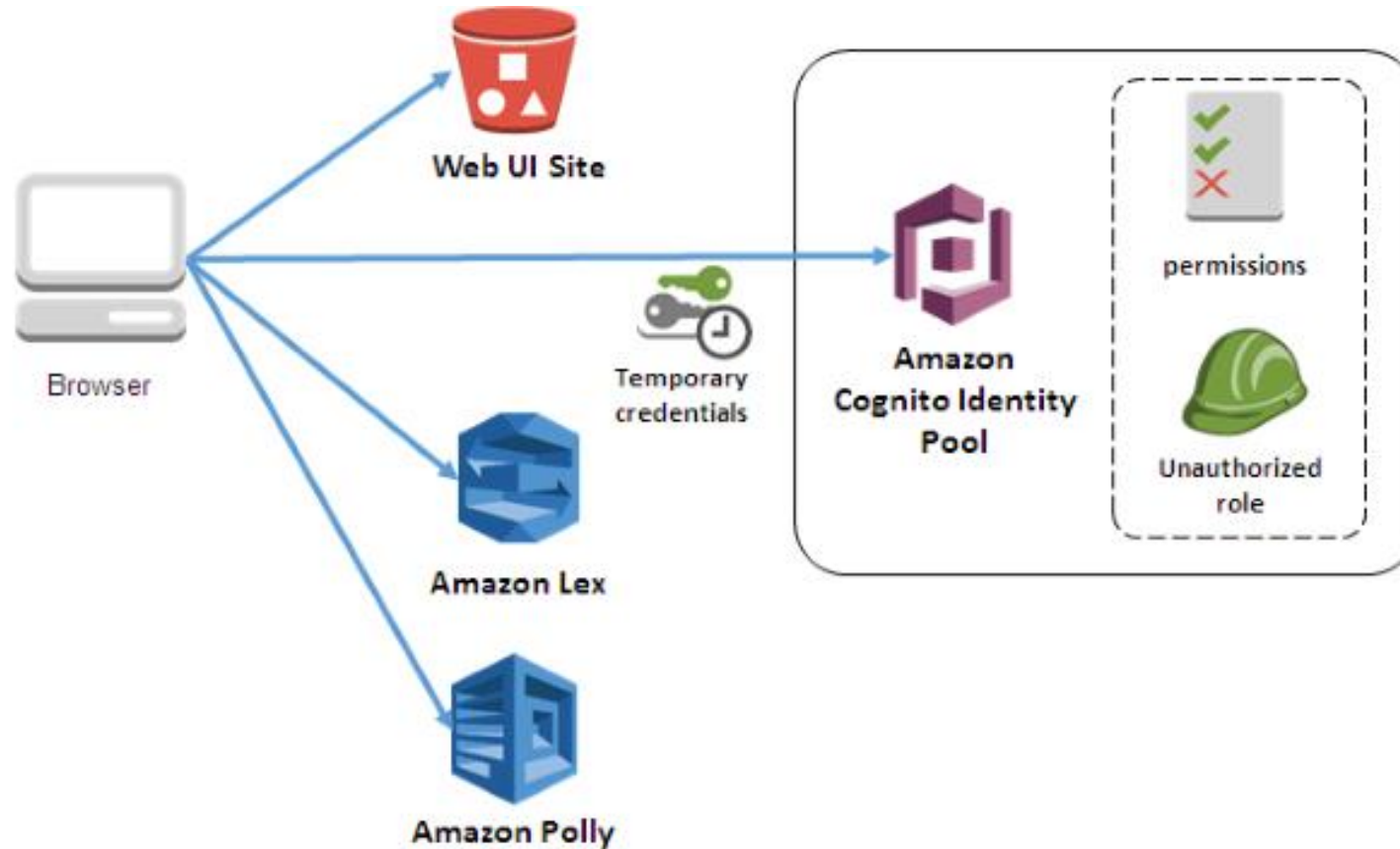
- Deploy different aliases to different platforms
- Run different stacks for dev, stage and prod environments
- Target different user groups with different aliases

Alias

Save, build and publish



Architecture



<https://github.com/aws-samples/aws-lex-web-ui>

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