

Building Your First Alexa Skill

Overview

Invocations, utterances, intents

AlphaVantage finance APIs

Lambdas - functions on the cloud

The Alexa Skills Kit

Building a simple Stock Market Tracker skill

Invoking an Alexa Skill



User

Open Stock Market Tracker

Welcome to the Stock Market Tracker



Alexa-enabled device

Invoking an Alexa Skill



User

Open **Stock Market Tracker**

Welcome to the Stock Market Tracker

“Invocation”

(Heard and acted upon by Echo)



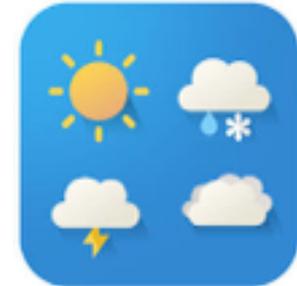
Alexa-enabled device

Invoking the Stock Market Tracker

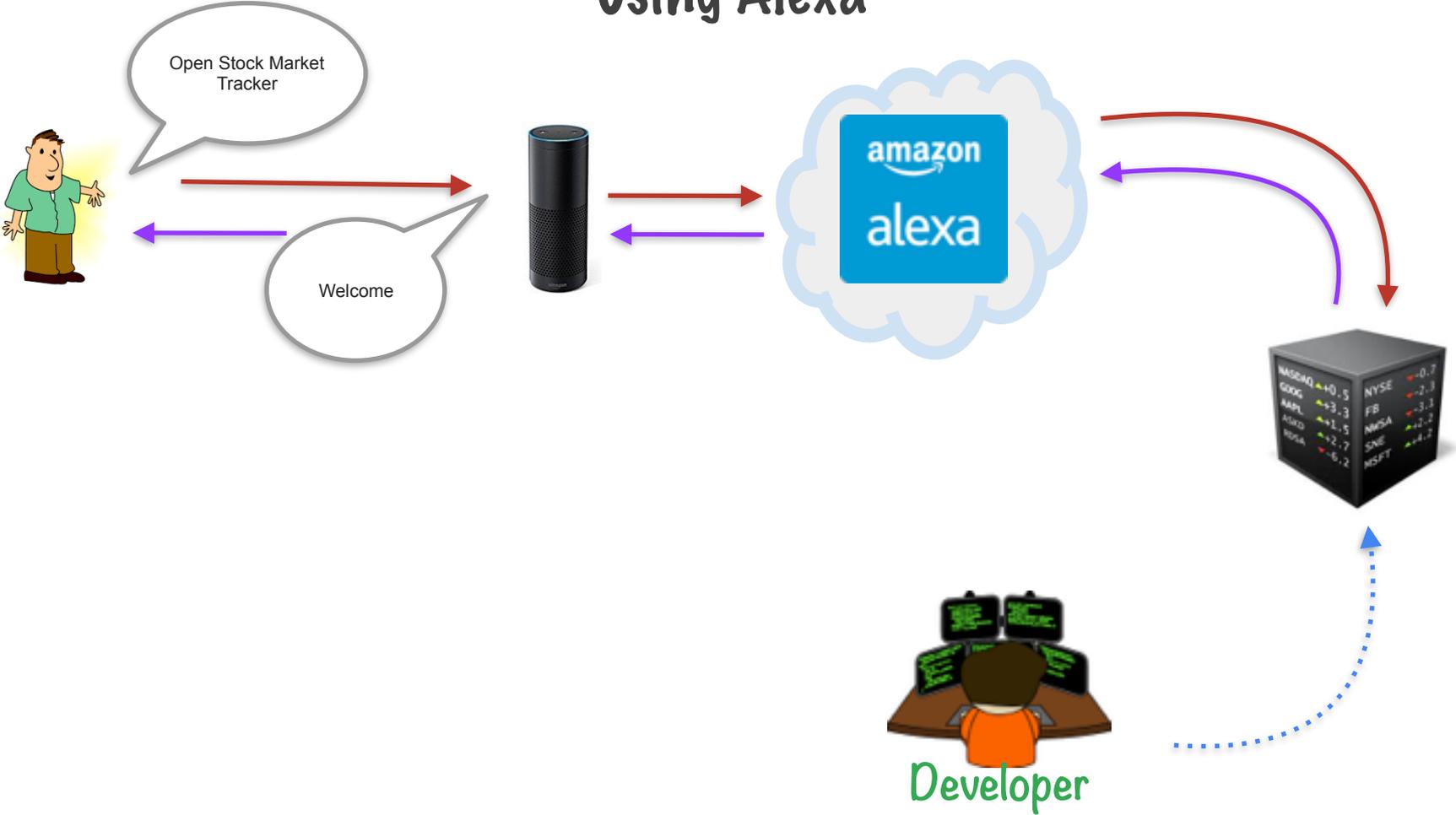


Open Stock Market Tracker

Welcome



Using Alexa



Using an Alexa Skill



User

How is the market doing today?

The Dow is at 22000



Alexa-enabled device

Using an Alexa Skill



User

How is the market doing today?

The Dow is at 22000

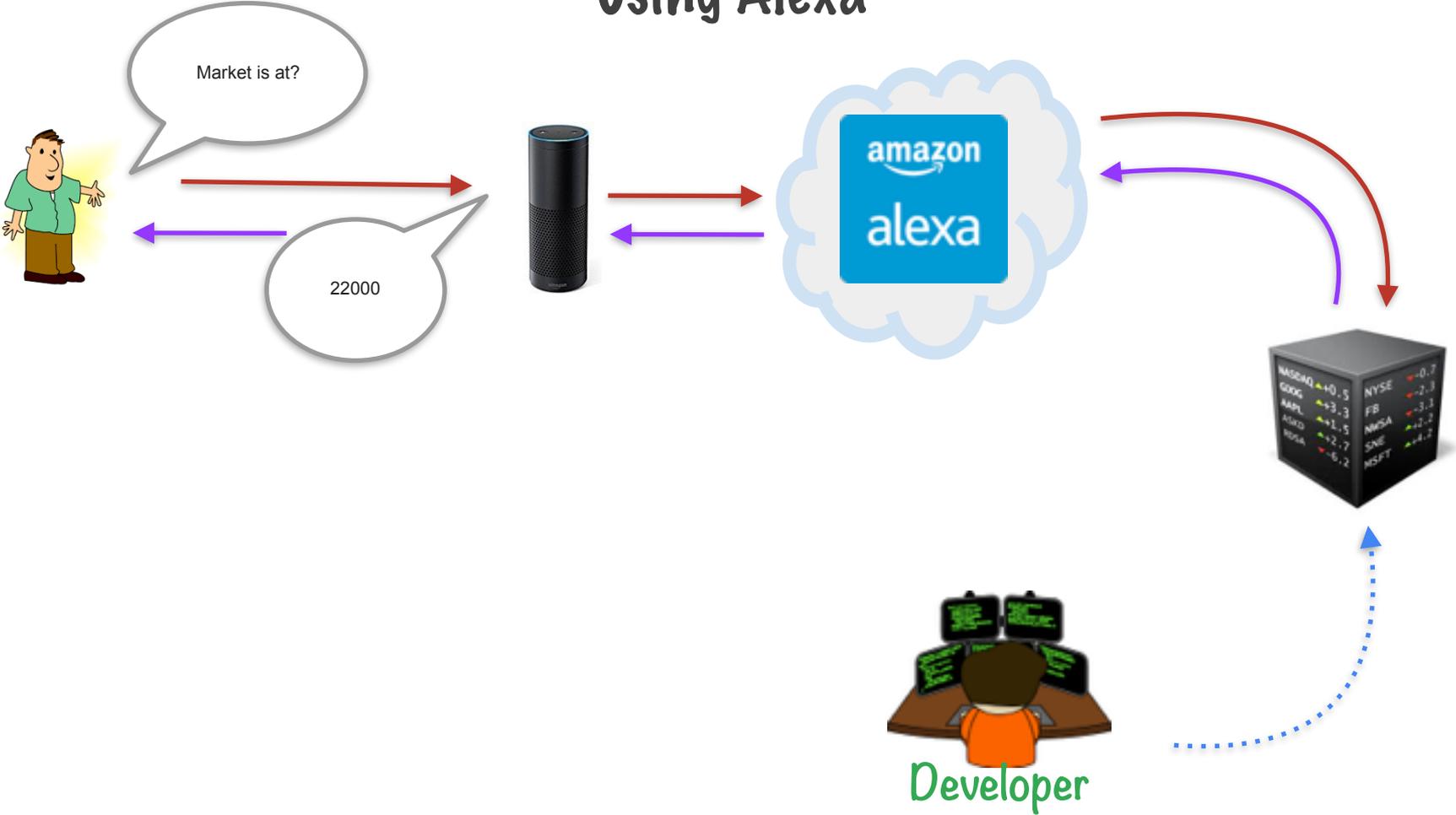
“Utterance”

(Heard and acted upon by Echo)

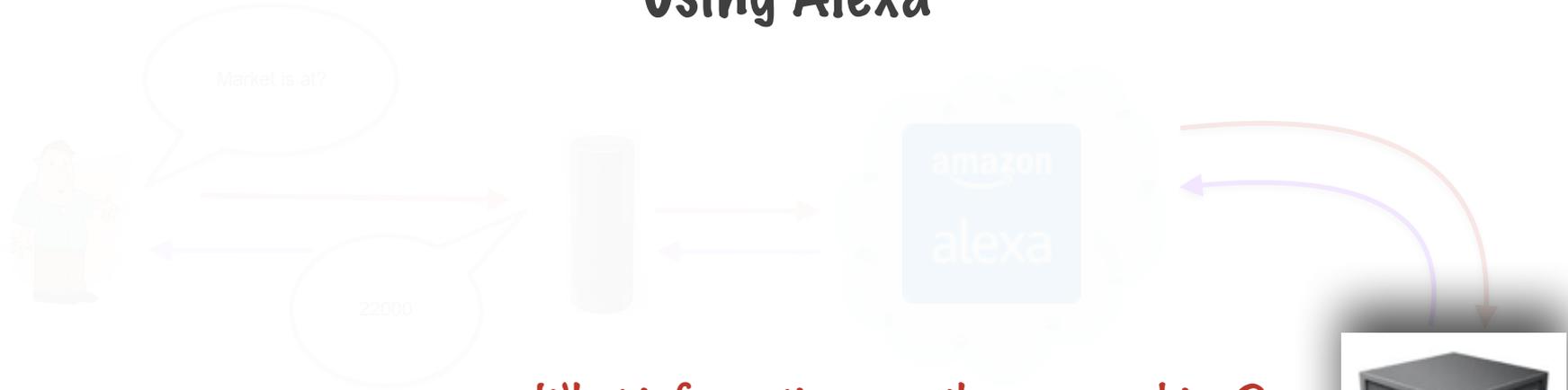


Alexa-enabled device

Using Alexa



Using Alexa



What information was the user seeking?

What code to execute?



Using Alexa

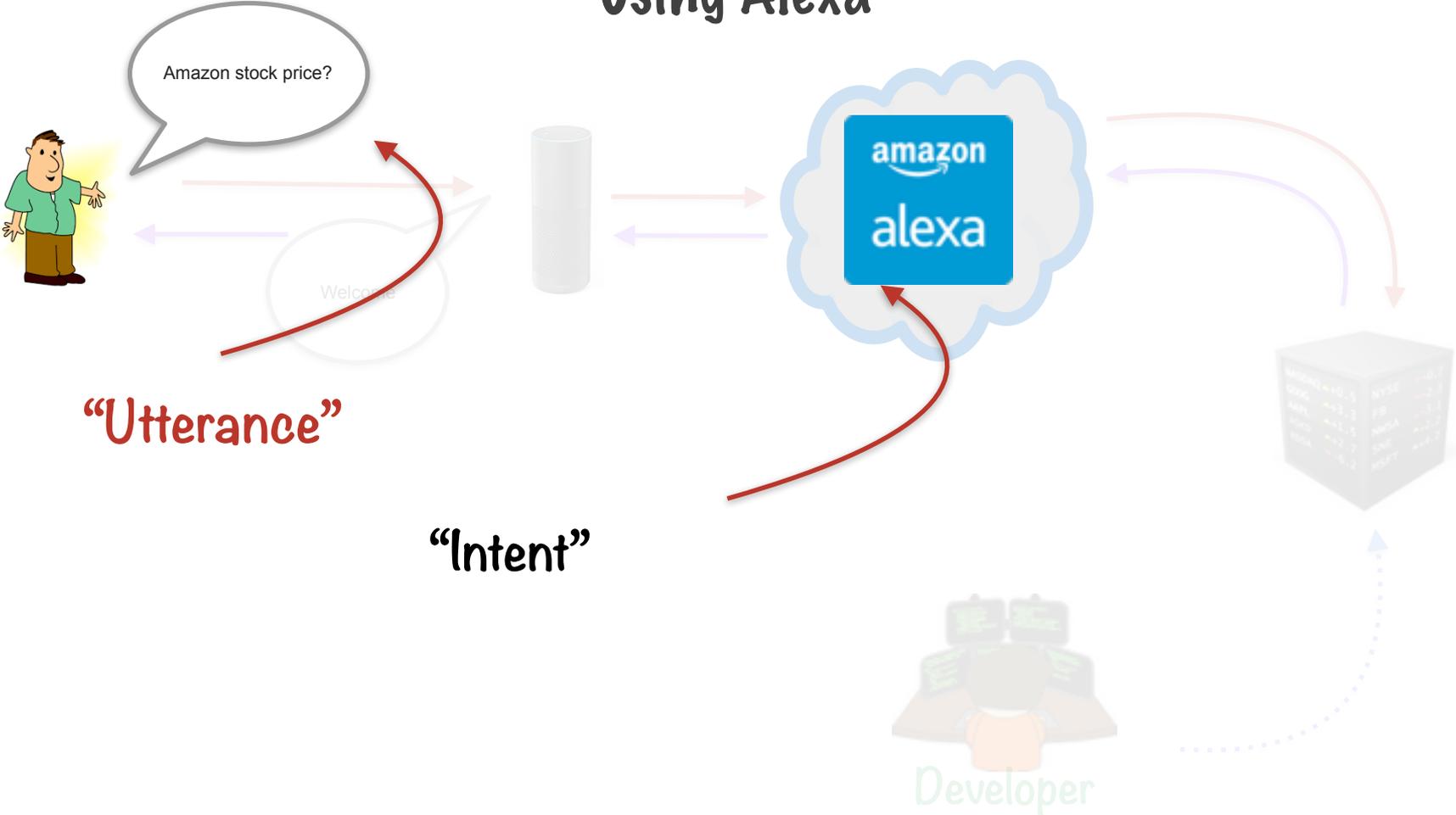


“Intent”

Voice recognition, NLP to determine what is being asked



Using Alexa



Utterances Map to Intents



Intents and Utterances

Invocation

Something the user says that invokes a specific *Alexa* skill

Invoking an Alexa Skill



User

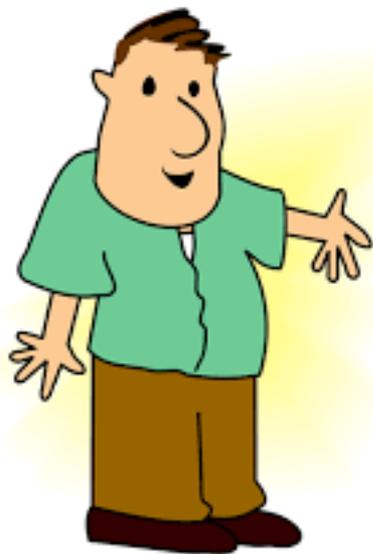
Hey Alexa, please can I talk to the Market Tracker?

Sure, welcome to the Market Tracker



Alexa-enabled device

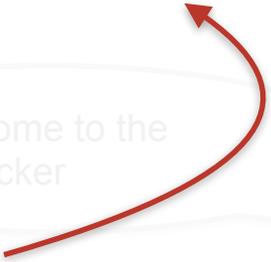
Invoking an Alexa Skill



User

Hey Alexa, please can I talk to the Market Tracker?

Sure, welcome to the Market Tracker



“Invocation”

(Heard and acted upon by Echo)

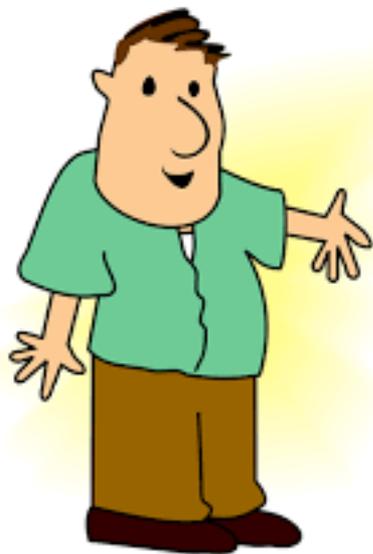


Alexa-enabled device

Utterance

Anything said by a user that requires Alexa's attention

Using Alexa



User

Hey Alexa, what is the stock price of Amazon today?

Hey, the current price is \$950

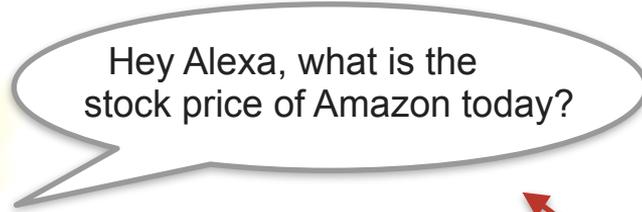


Alexa-enabled device

Using Alexa



User



“Utterance”

(Heard by Echo)



Alexa-enabled device

Intent

A specific action (similar to an API call or a method call) that is triggered by a user's utterance

Using Alexa

Hey Alexa, what is the stock price of Amazon today?



Utterance



Intent

Invoke the **getStockPrice** intent

Some API endpoint

Utterance-Intent Mapping

Hey Alexa, what is the stock price of Amazon today?

Invoke the **getStockPrice** intent

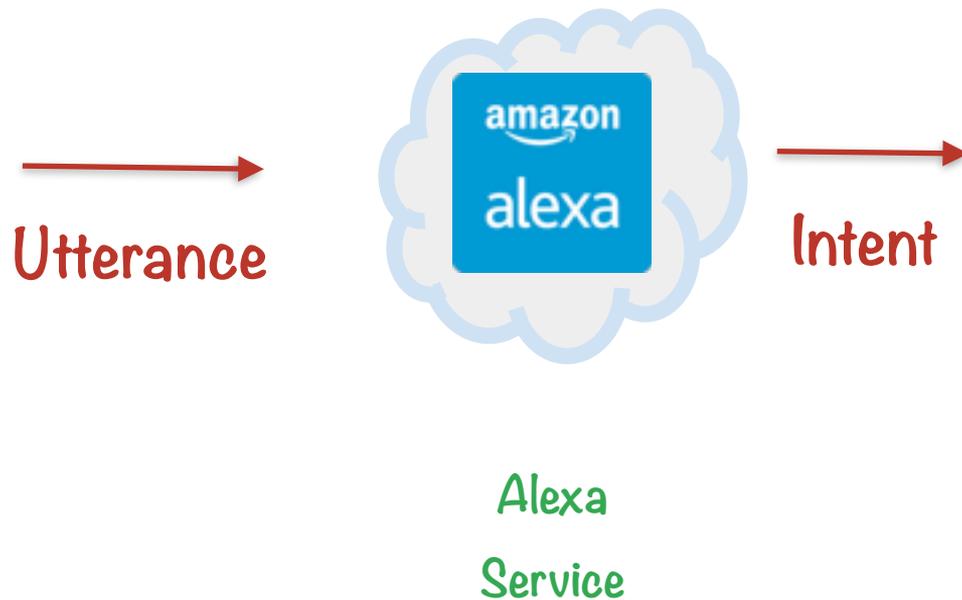


Utterance

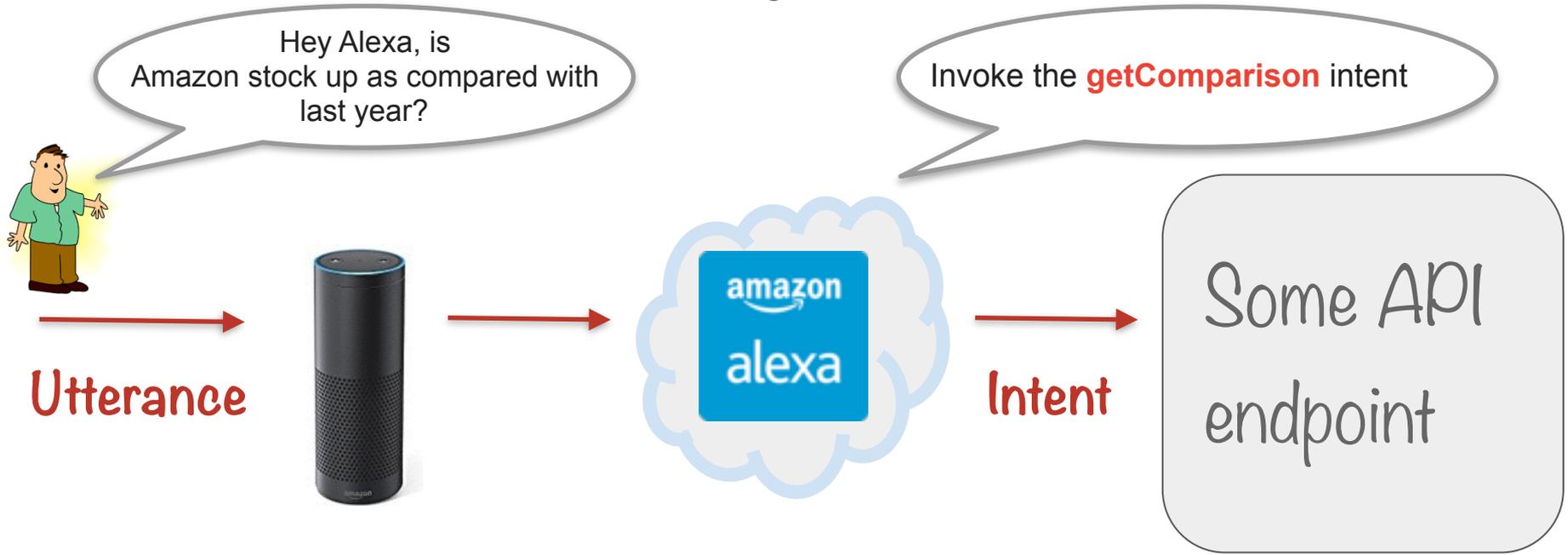
Intent

Some API
endpoint

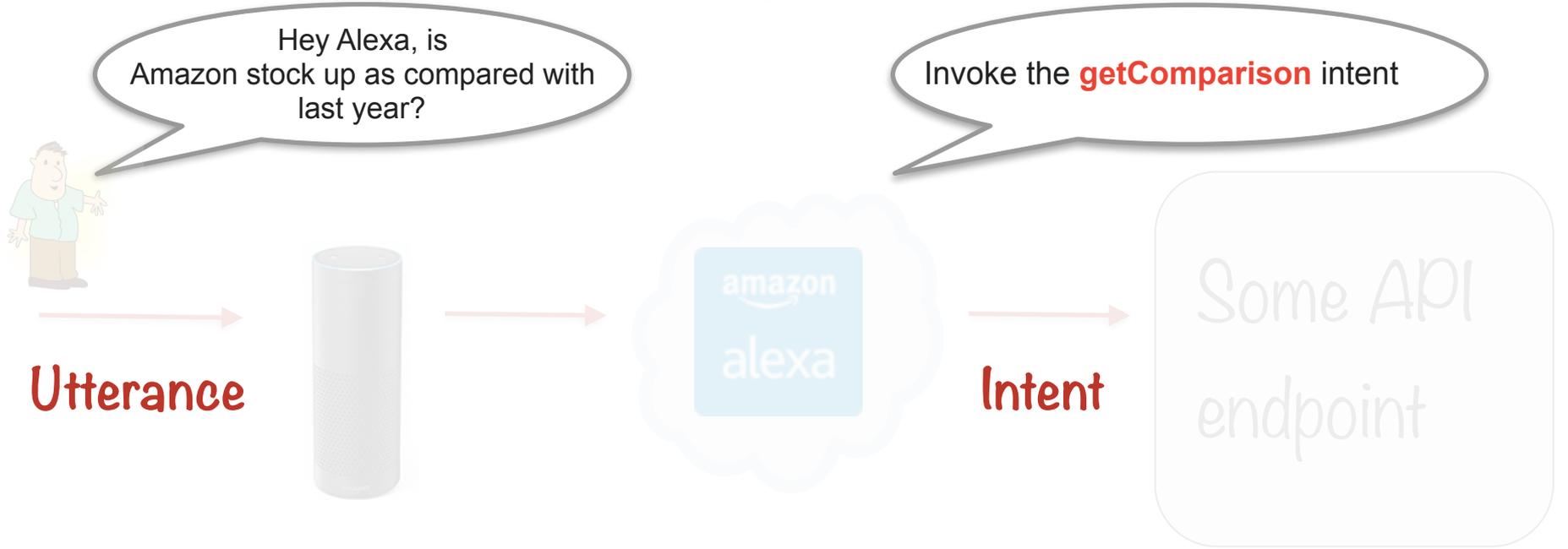
Utterance-Intent Mapping



Using Alexa

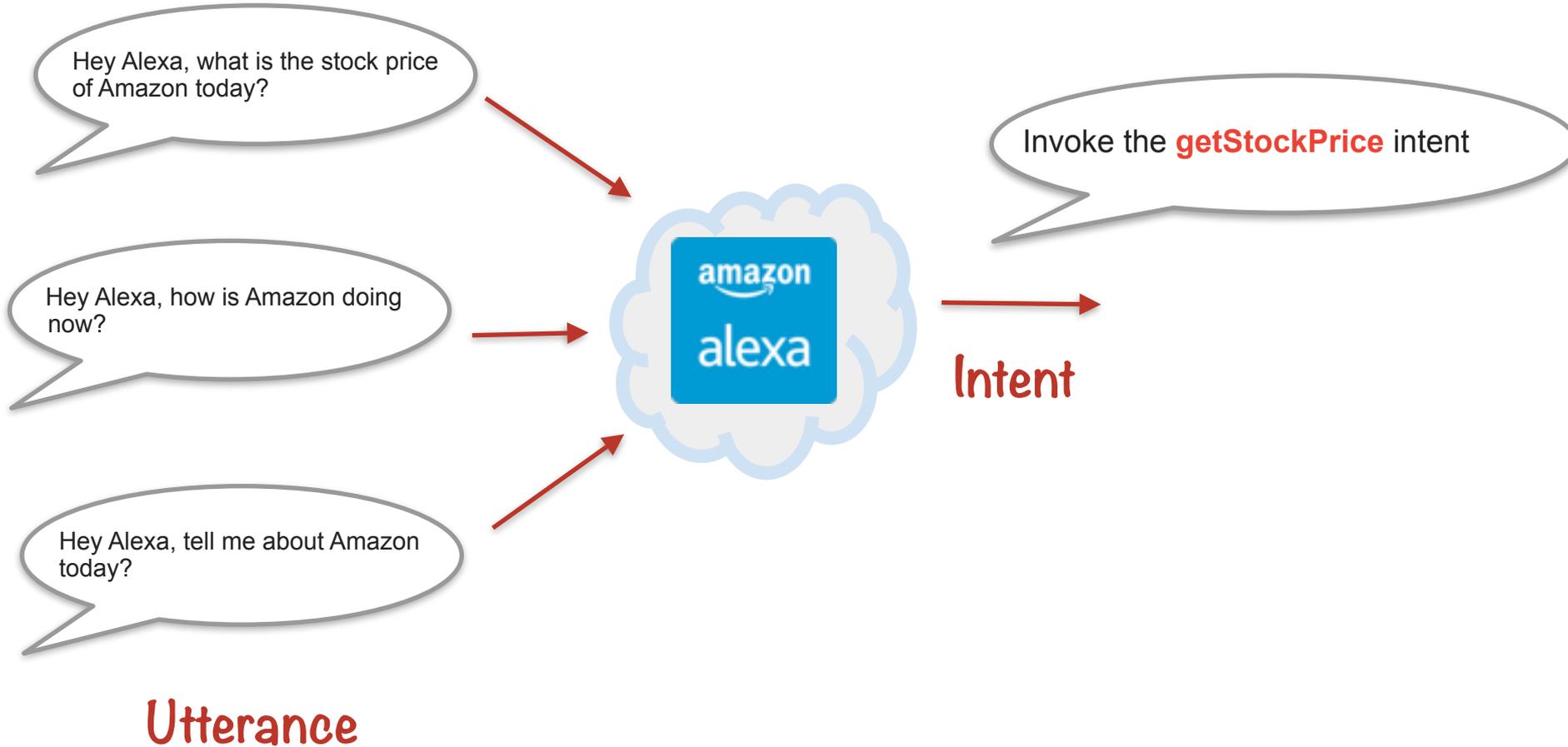


Using Alexa



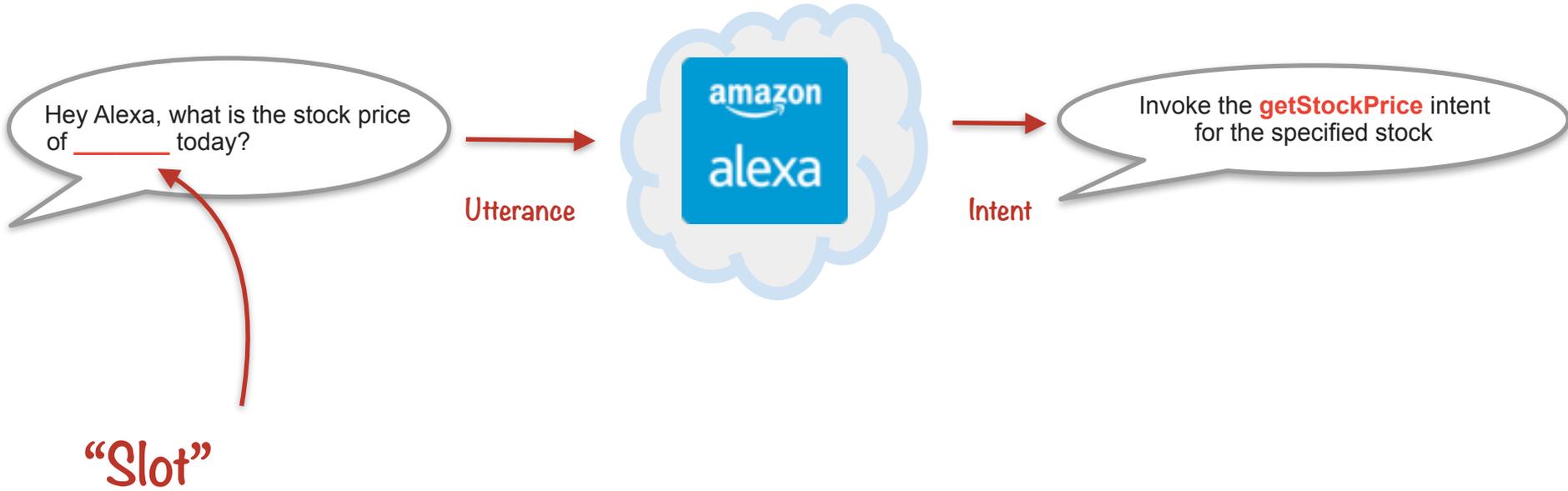
One Alexa skill can handle multiple intents i.e.
perform multiple actions based on user
utterances

Utterance-Intent Mapping



Multiple utterances can map to the same intent

Slots





Alexa
Service

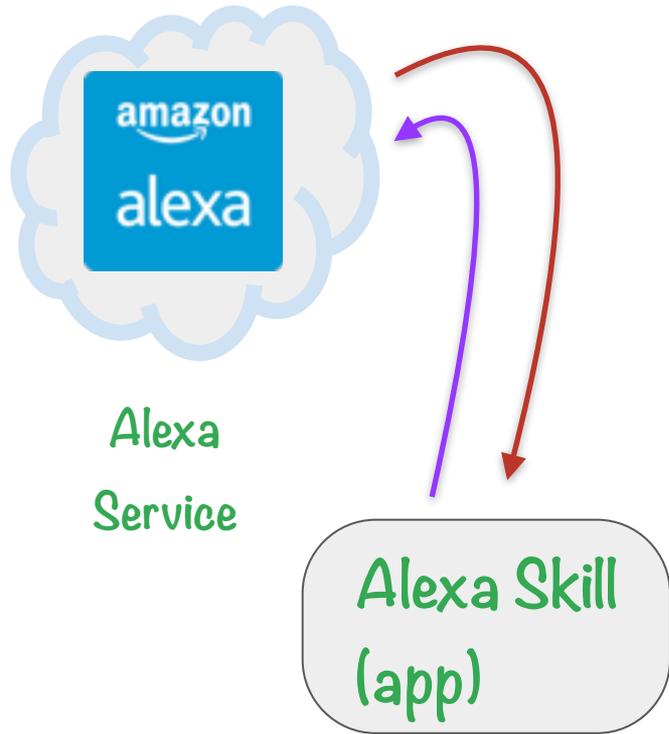
The Brains of the Operation

Sits on the cloud

Parses speech and figures out the **intent** of the speaker

Also figures out which **skill** to route the command to

Sends back the response from the skill (on the way back)

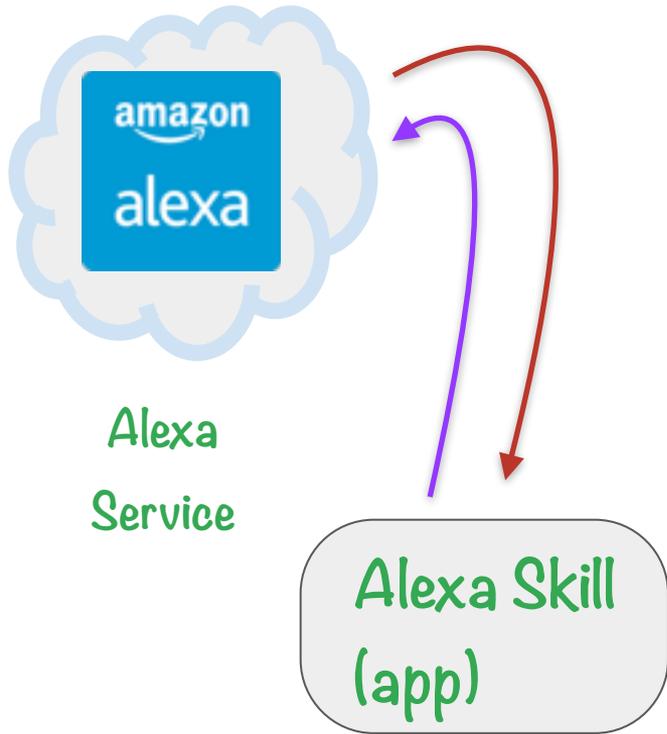


Important Questions

Which skill did the user mean to call? **“Invocation”**

What did the speaker want to ask the skill? **“Intent”**

What information, if any, did the speaker wish to pass to the skill? **“Slots”**



Important Answers

Which skill did the user mean to invoke?

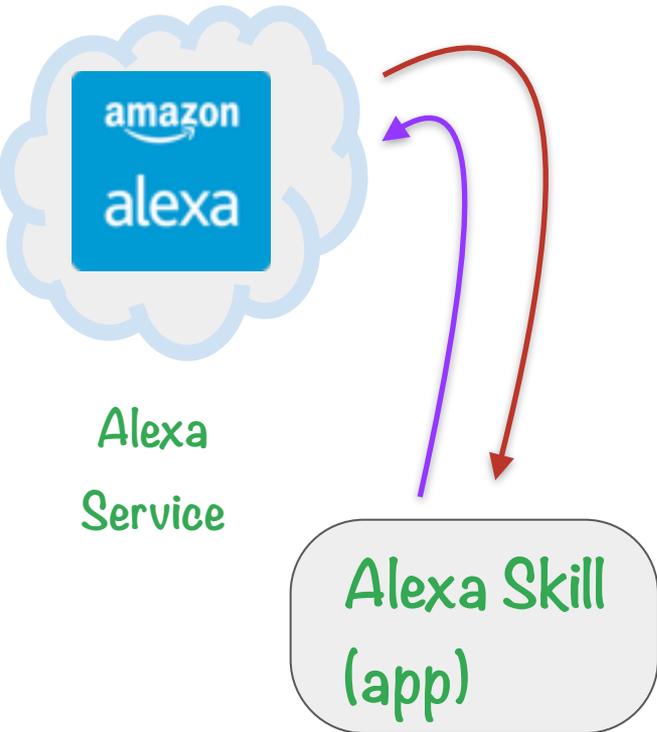
- Determined by skill **invocations**

What was the intent of the speaker?

- Determined by **intents** specified by skill developer

What information, if any, did the speaker wish to pass to the skill?

- Alexa allows skill developer to specify **slots** - parameters that will be passed into the intents



Important Answers

Invocations

Intents (Utterances)

Slots

Mapping voice utterances to intents is handled
entirely by Alexa

(relying on ML voice recognition, as well as example utterances provided by developer)

Demo

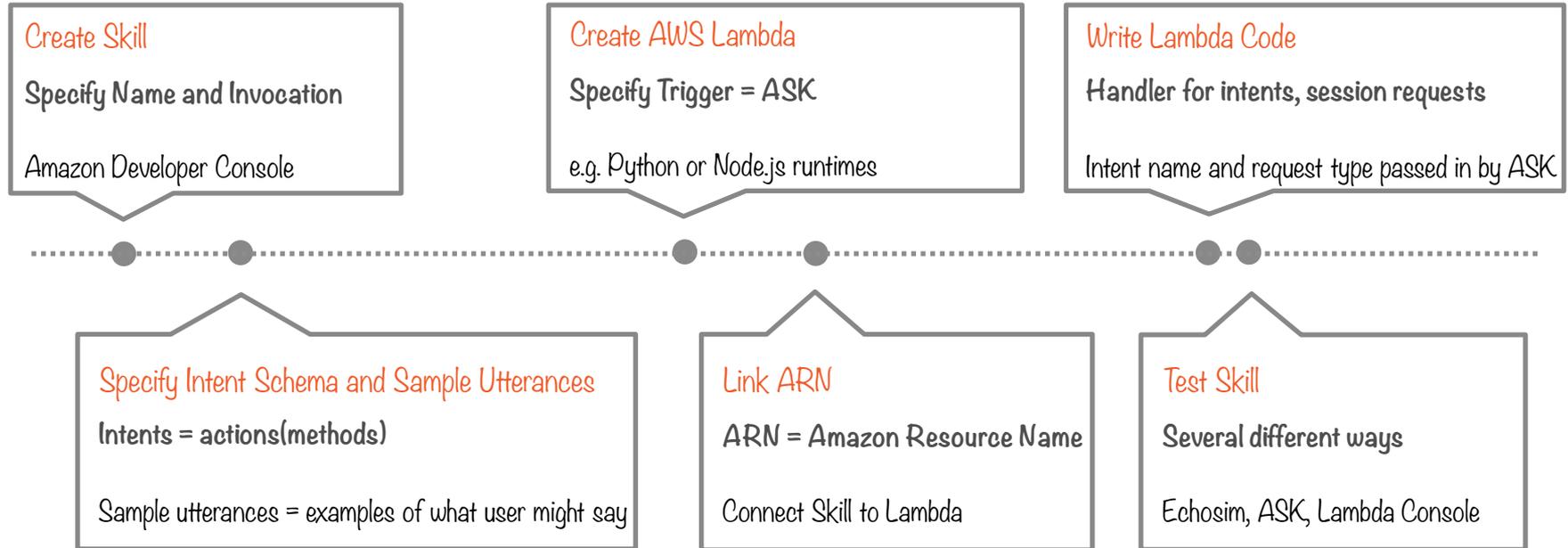
Introducing a platform for real-time stock
prices <https://www.alphavantage.co/>

Demo

Setting up an Alexa Skill

<https://developer.amazon.com/alexa-skills-kit>

Setting up an Alexa Skill



Setting up an Alexa Skill

Create Skill

Specify Name and Invocation

Amazon Developer Console



Setting up an Alexa Skill

Create Skill

Specify Name and Invocation

Amazon Developer Console

Specify Intent Schema and Sample Utterances

Intents = actions(methods)

Sample utterances = examples of what user might say

Mapping Utterances to Intents

SAMPLE UTTERANCE	INTENT
What's the Market like now?	GetIndex
Tell me how the Dow is doing?	GetIndex
How is the Dow doing now?	GetIndex
What's the Dow at?	GetIndex
What's the index at now?	GetIndex

Lambdas

Using Alexa



User

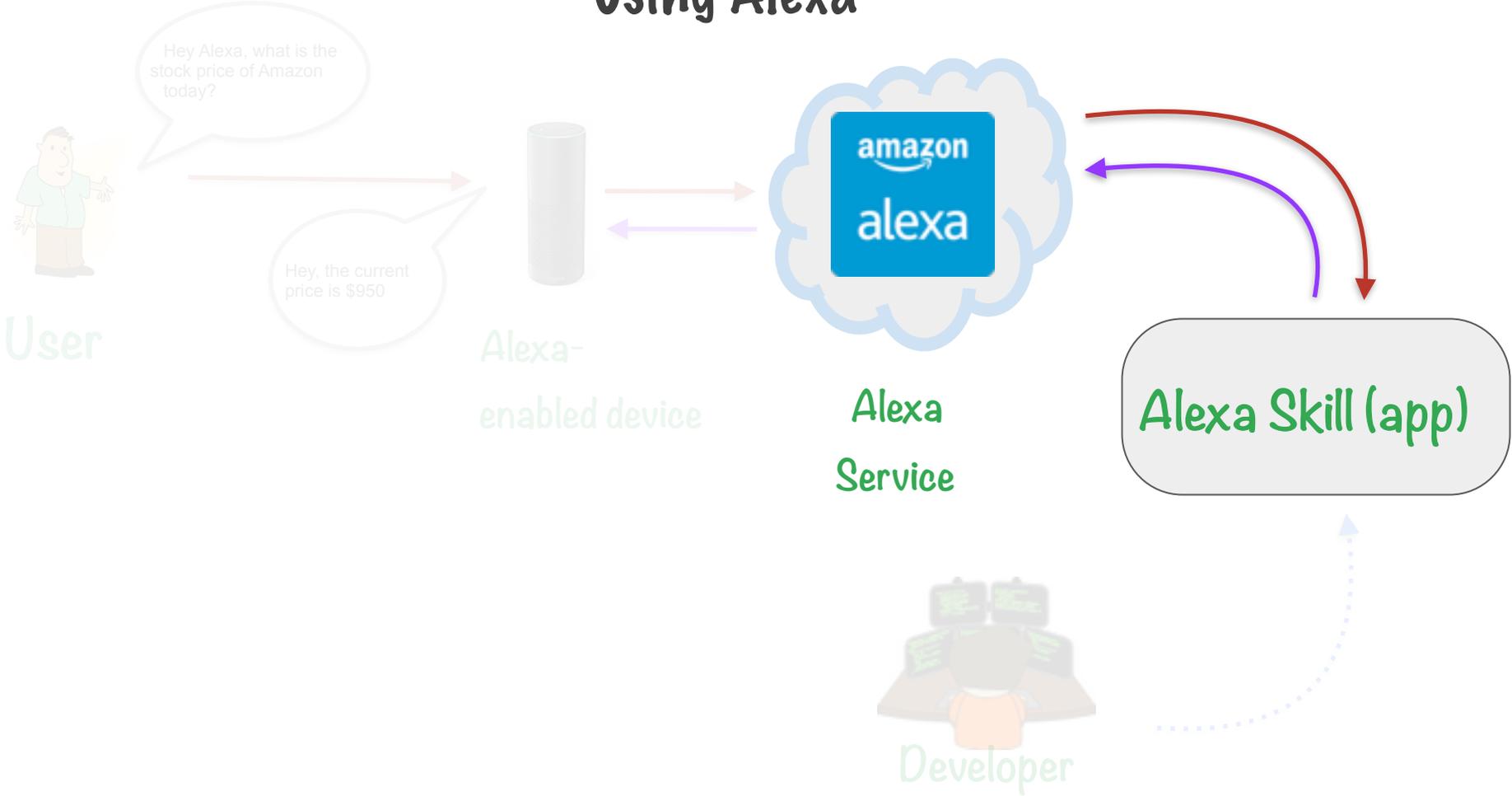
Open Stock Market Tracker

Welcome, ask me how the market is today



Alexa-enabled device

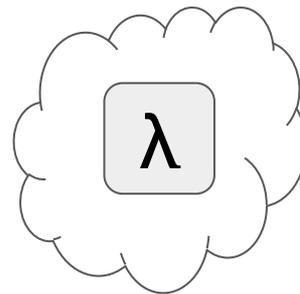
Using Alexa

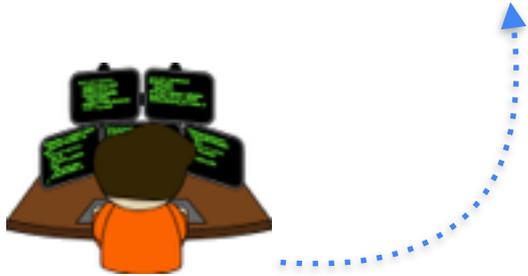
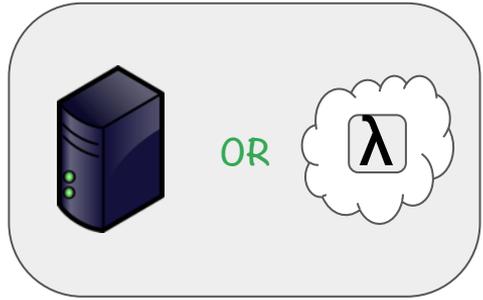


Where Does the Code Live?



Alexa Skill (app)





Alexa Skills Kit (ASK)

Code for the skill can reside in

- A webservice hosted on some machine
- Amazon Lambda function

AWS Lambda

AWS Lambda is a compute service that lets you run code without provisioning or managing servers. AWS Lambda executes your code only when needed and scales automatically, from a few requests per day to thousands per second. You pay only for the compute time you consume - there is no charge when your code is not running.

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AWS Lambda

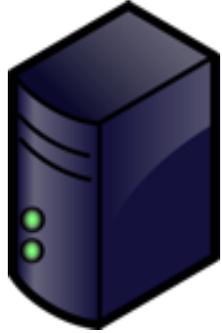
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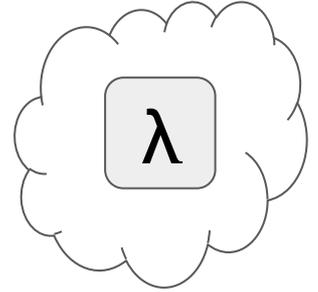
Web Service or AWS Lambda

Web Service

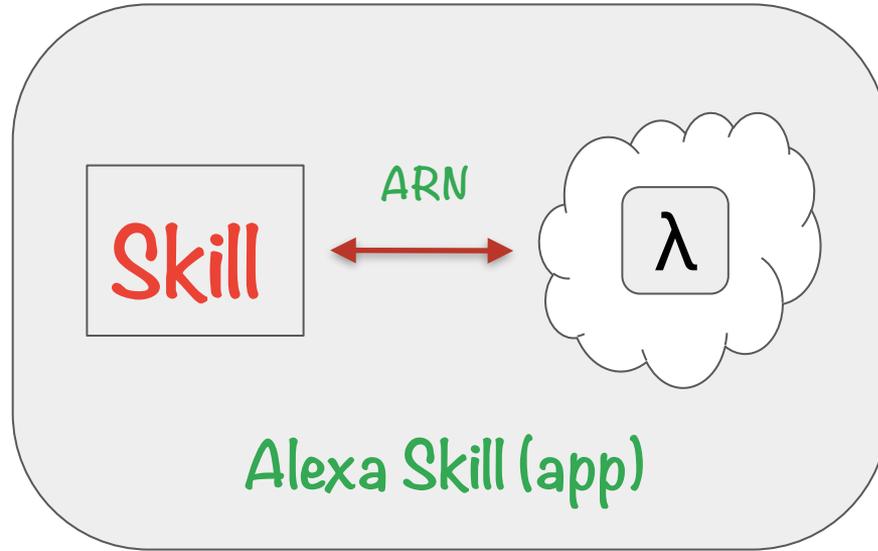
- OS, App Management
 - Scaling/Fault-Tolerance
 - Security Management
 - Pricing
- + Flexibility of Languages/Frameworks

AWS Lambda

- + Serverless Compute Service
- + Automated Scaling/Fault-Tolerance
- + Integrated Security
- + Pay-As-You-Go
- + Python, Javascript, Java, C#

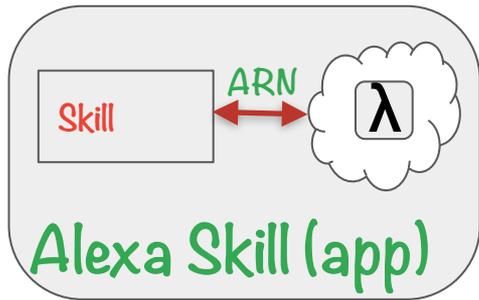


Link Lambda to an Alexa Skill



Triggering an AWS Lambda

You can use AWS Lambda to run your code in response to events, such as changes to data in an Amazon S3 bucket or an Amazon DynamoDB table; to run your code in response to HTTP requests using Amazon API Gateway; or invoke your code using API calls made using AWS SDKs.

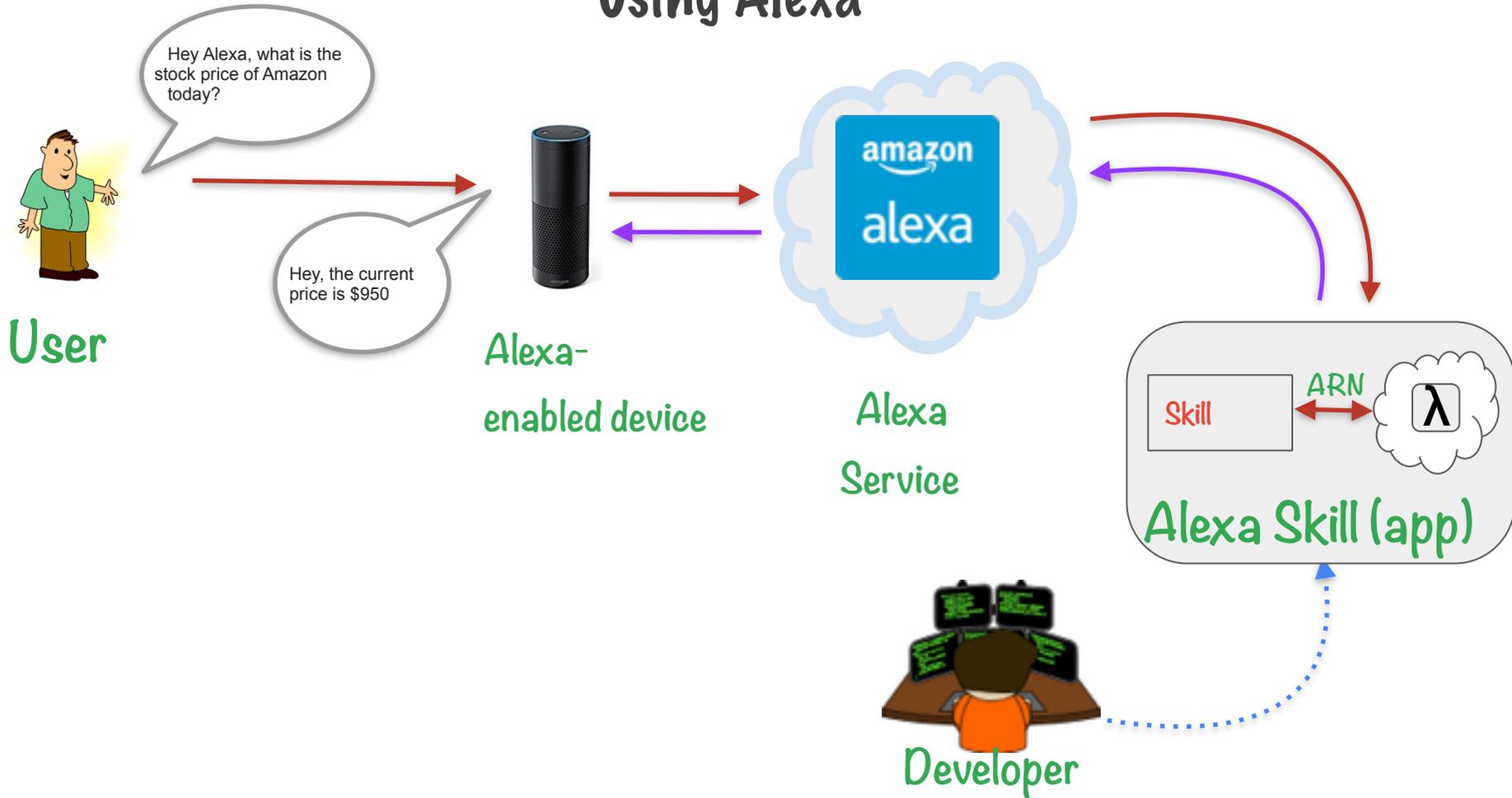


Developer

Triggering a skill

- Skill = Utterances -> Intents -> Lambdas
- Lambdas = Linked to Skill via ARNs
- ARN = Amazon Resource Name

Using Alexa



Demo

Set up and link lambda functions

<https://aws.amazon.com/lambda>

Setting up an Alexa Skill

Create Skill

Specify Name and Invocation

Amazon Developer Console

Create AWS Lambda

Specify Trigger = ASK

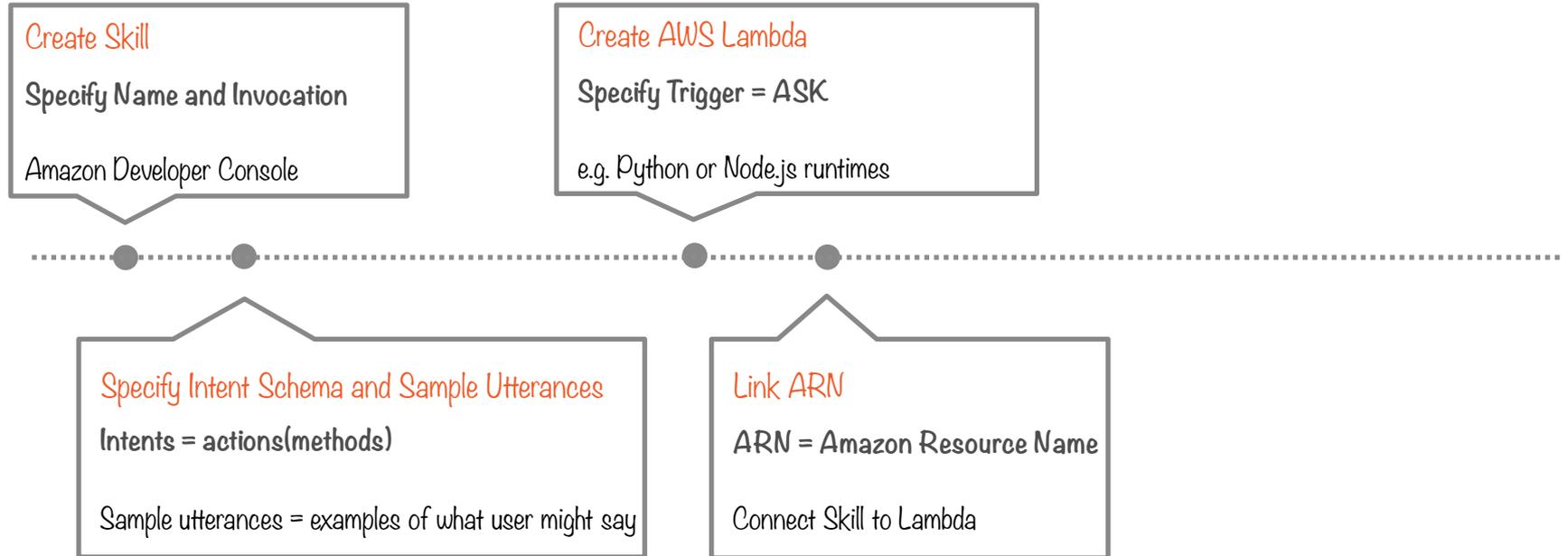
e.g. Python or Node.js runtimes

Specify Intent Schema and Sample Utterances

Intents = actions(methods)

Sample utterances = examples of what user might say

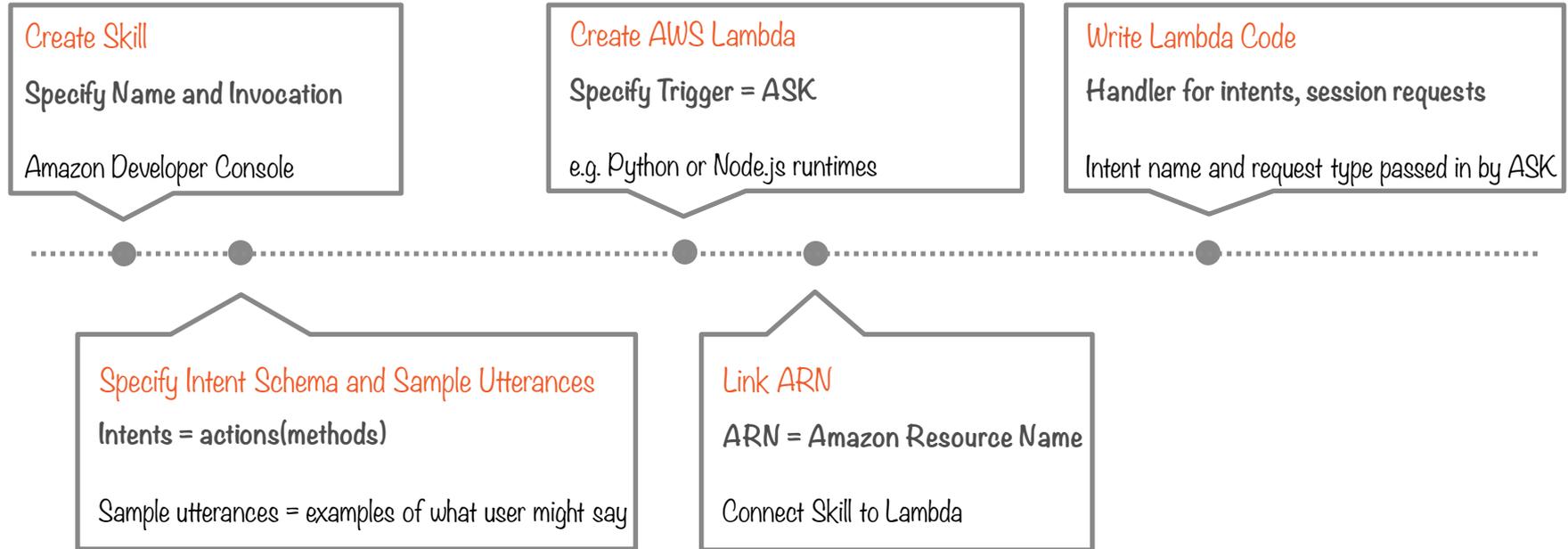
Setting up an Alexa Skill



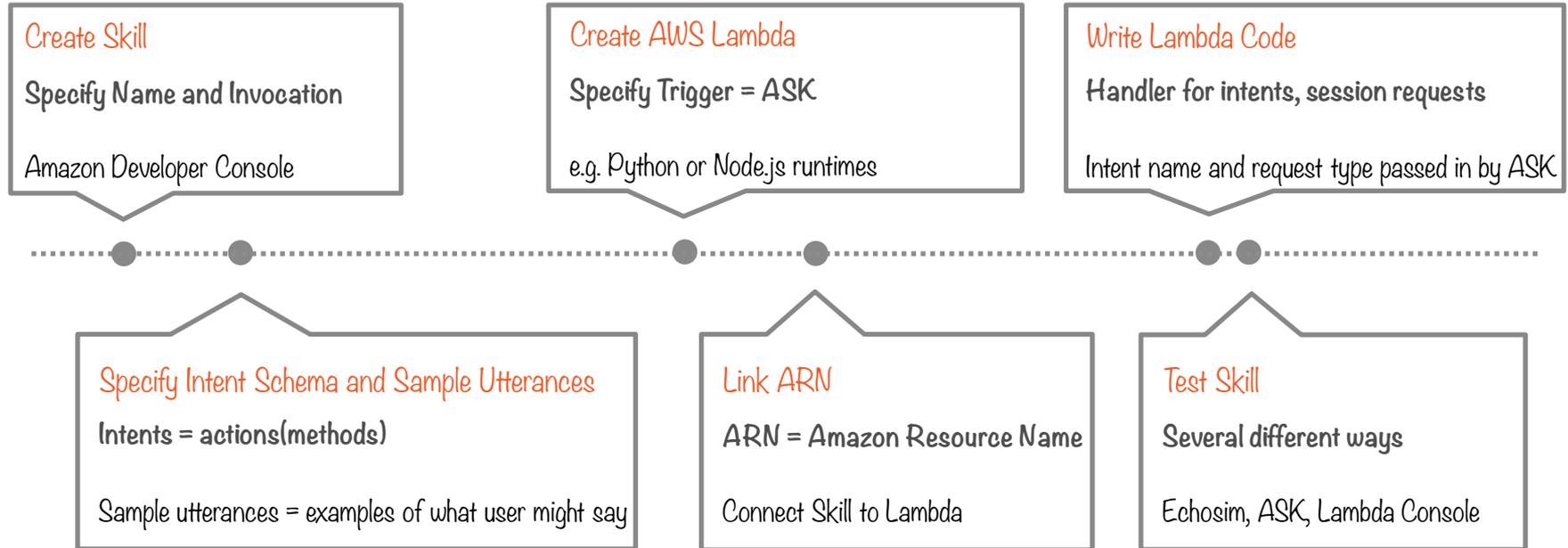
Demo

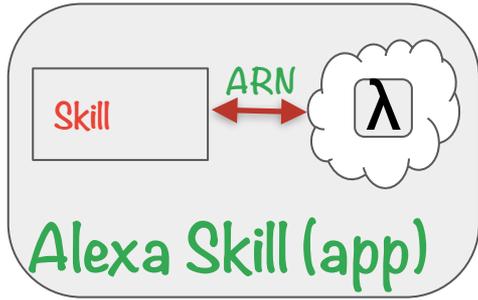
Write code to handle all the requests made as a part of an Alexa Skill

Setting up an Alexa Skill



Setting up an Alexa Skill





Developer

Testing Skills without an Echo Device

- AWS lambdas
 - Directly trigger events to test
- Amazon Skills Kit
 - Type in utterances
- Echosim.io
 - Test with actual speech