

Alexa, Let's Build a Serverless Skill

Chris Munns - AWS

goto; chicago



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and ask questions.**

About me:

Chris Munns - munns@amazon.com, [@chrismunns](https://twitter.com/chrismunns)

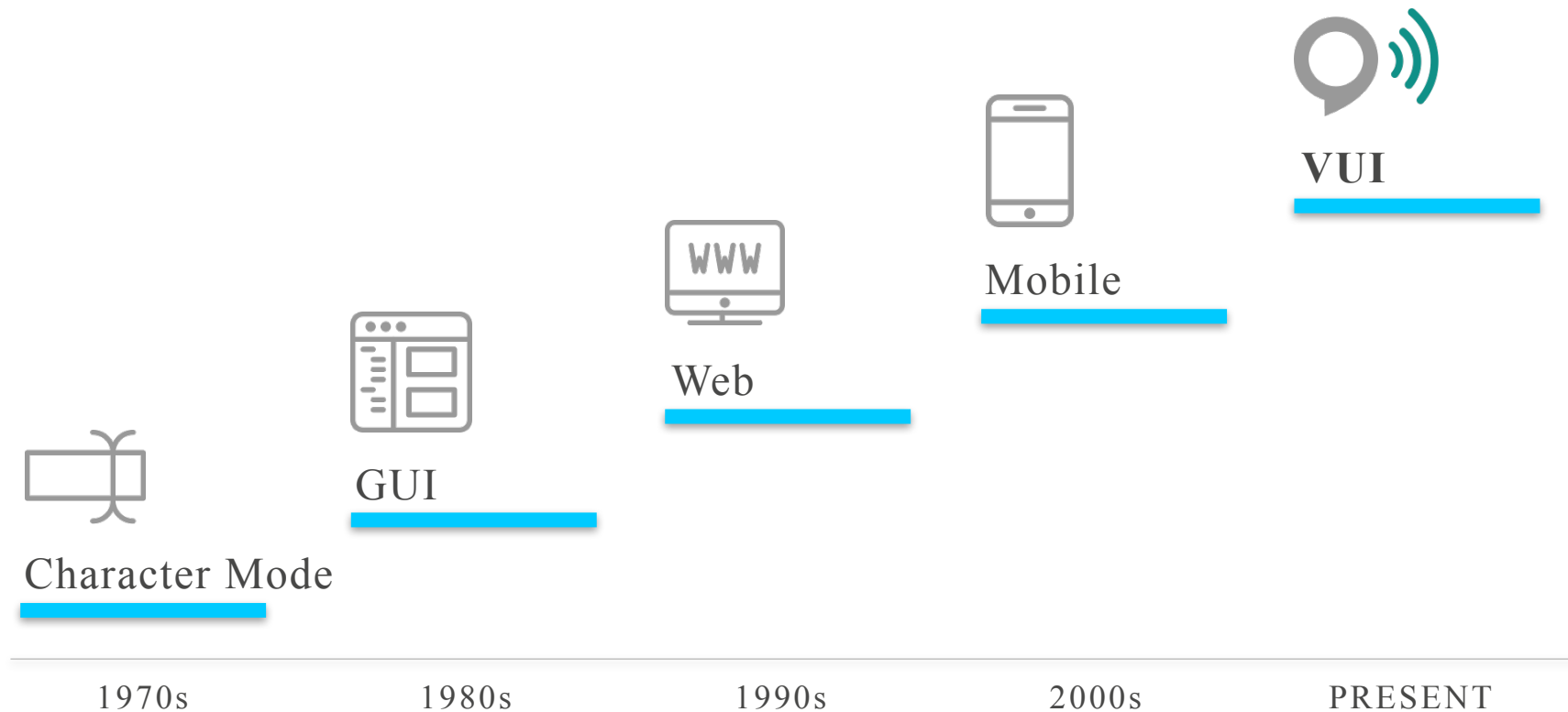
- Senior Developer Advocate - Serverless
- New Yorker
- Previously:
 - AWS Business Development Manager – DevOps, July '15 - Feb '17
 - AWS Solutions Architect Nov, 2011- Dec 2014
 - Formerly on operations teams @Etsy and @Meetup
 - Little time at a hedge fund, Xerox and a few other startups
- Rochester Institute of Technology: Applied Networking and Systems Administration '05
- Internet infrastructure geek



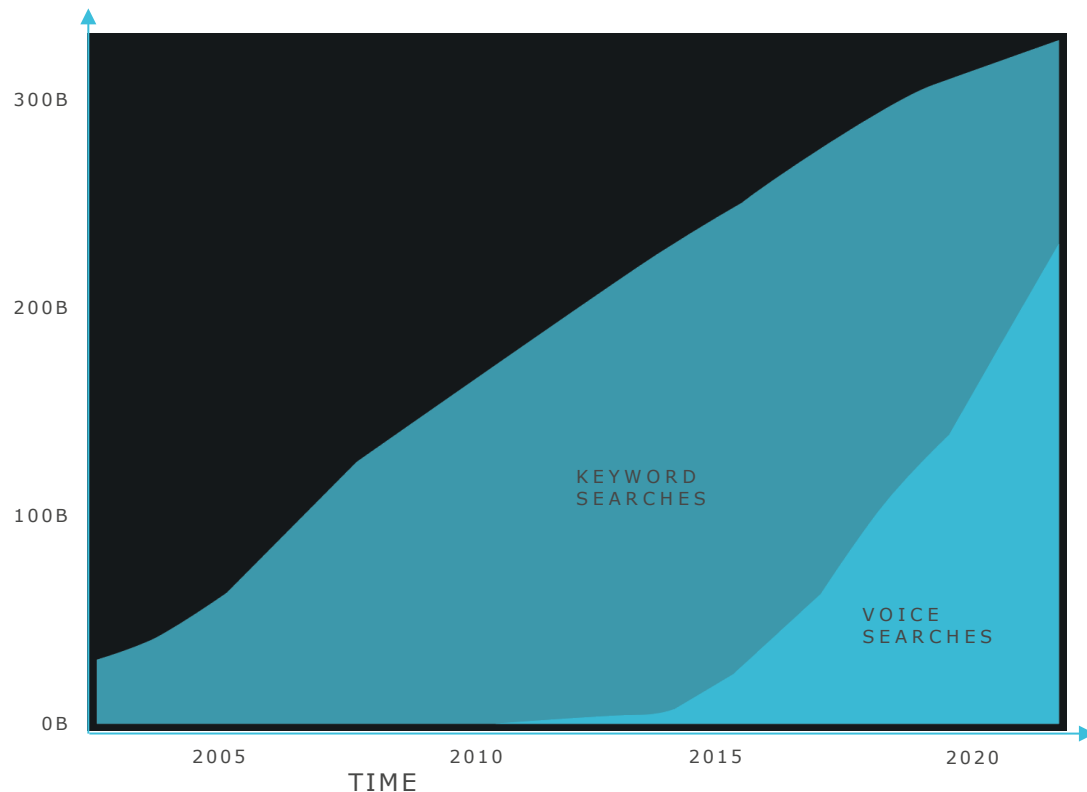
A photograph of a weathered brick wall. On the wall is a large, faded mural of a person, possibly a soldier or a worker, in a dark uniform. The text "Why are we here today?" is superimposed in large, white, sans-serif font over the mural. In the background, a modern building with balconies and laundry is visible. A white pipe runs vertically on the right side of the wall.

**Why are we
here today?**

UI's Have Evolved Over the Past 5 Decades



Voice Is Now THE NEW STANDARD



WORLD WIDE SEARCHES PER MONTH

Massive shift in voice has already begun.

- In 2014, voice search traffic was negligible. Today it **exceeds 10% of all search traffic**.
- Virtual assistants exceed **50B voice searches** per month.
- **By 2020, over 200 billion searches** per month will be done with voice.

Alexa Made Voice the Mainstream UI at Home

"Alexa, dim the lights"

"Alexa, call Jane"

"Alexa, order a pizza"

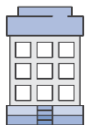
"Alexa, Start my TV"

"Alexa, lower the temperature"



Alexa for Business

Transform your workplace with voice

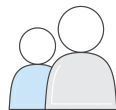


Smarter Workplace

Conference Rooms

Warehouses

Front Desks



Workplace Productivity

Business Calling

Calendar Management

3rd Party Enterprise Application



Centralized Admin Control

Device Deployment & Management

User Management

Private Skills

Improved Productivity

At work or at home...



Alexa,
what's on
my
calendar?

Alexa, start
my meeting.

Alexa, call
Rich Green

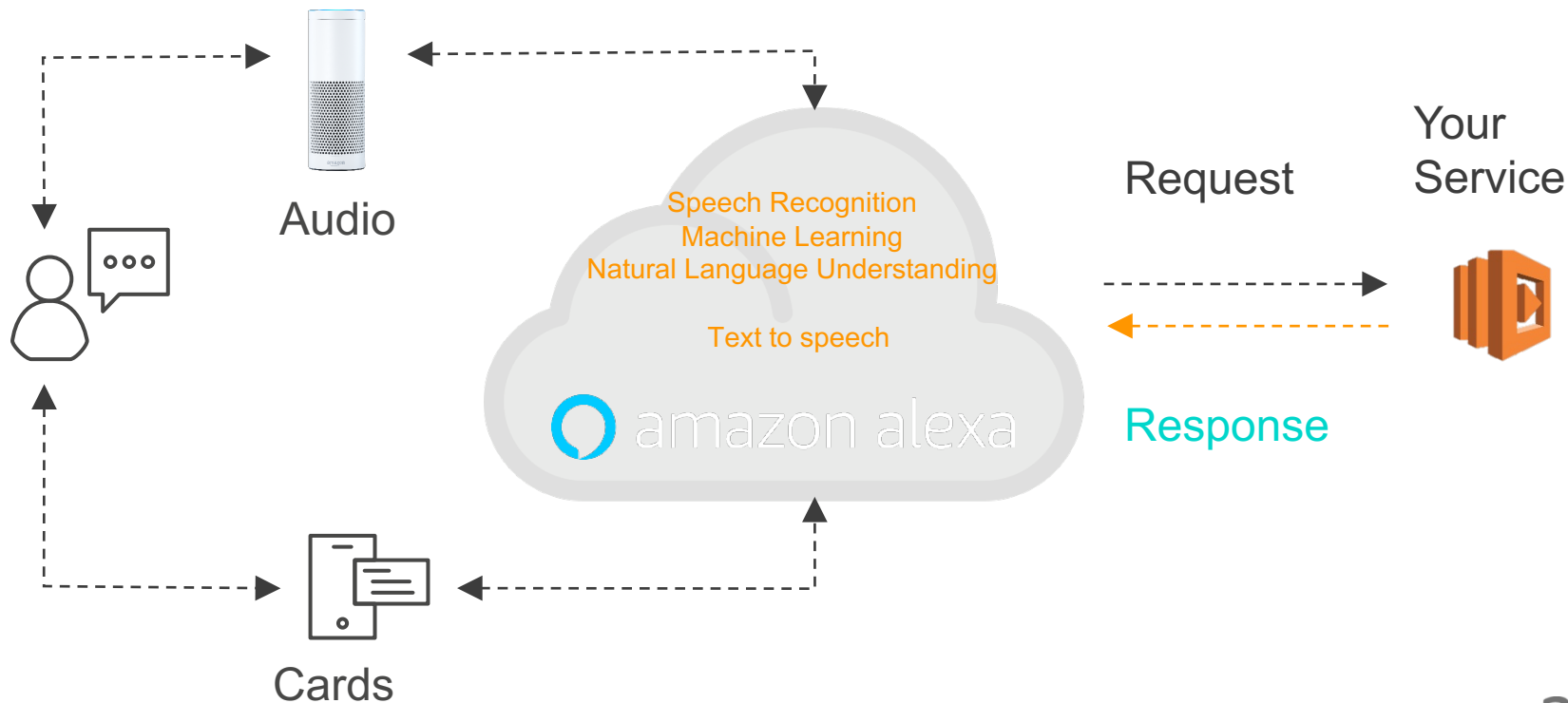
Alexa, ask
Salesforce
for today's
sales.

Alexa, play
Concentrate
playlist.

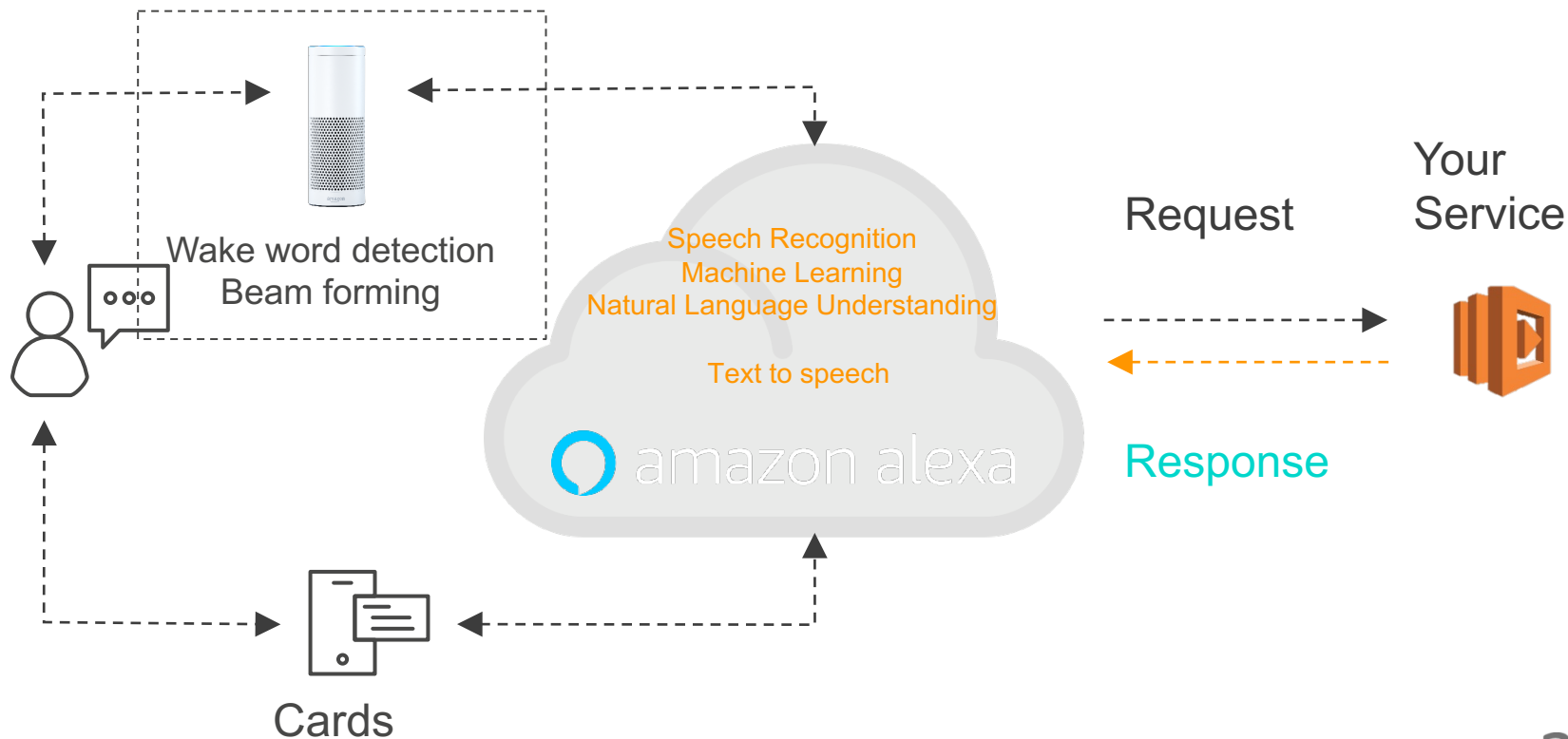
Alexa, ask
Concur my
flight
number.

How Alexa Works

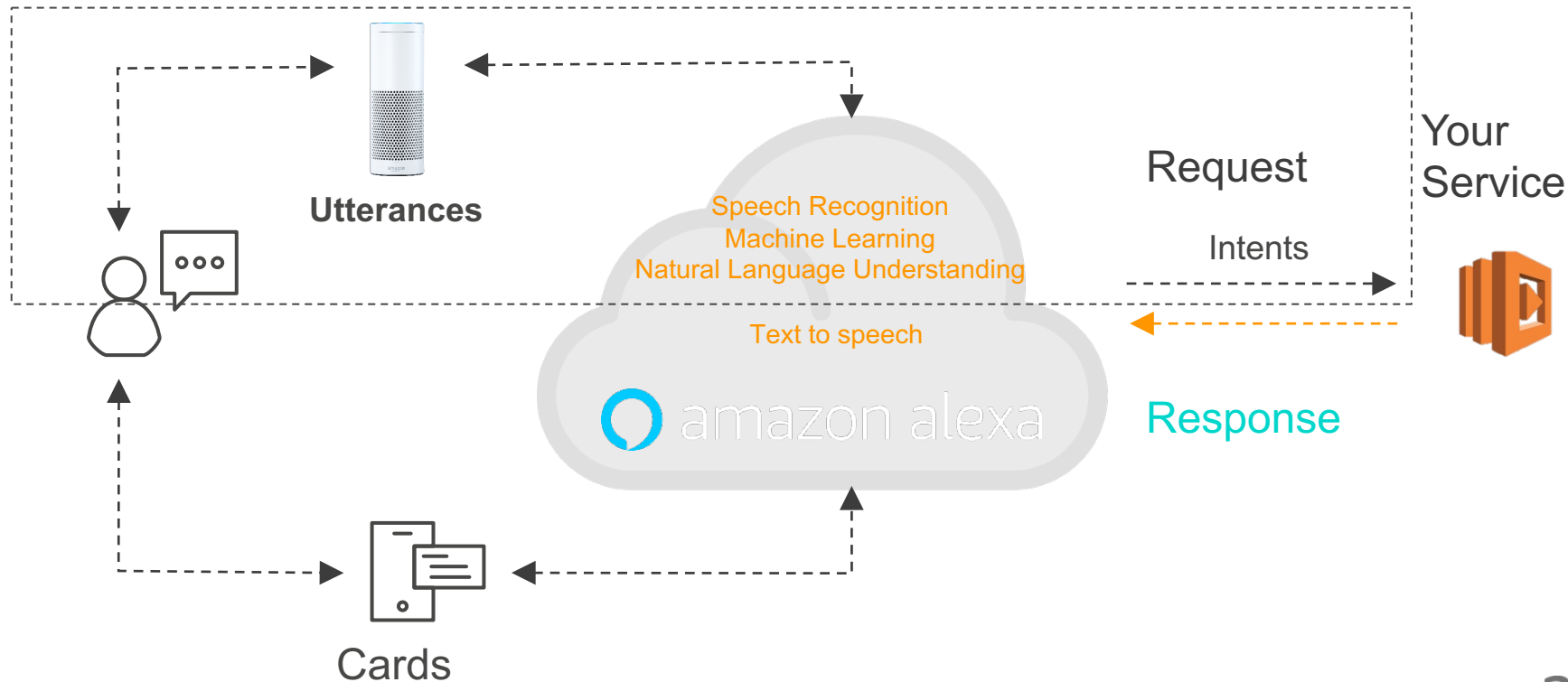
Alexa Skills Kit



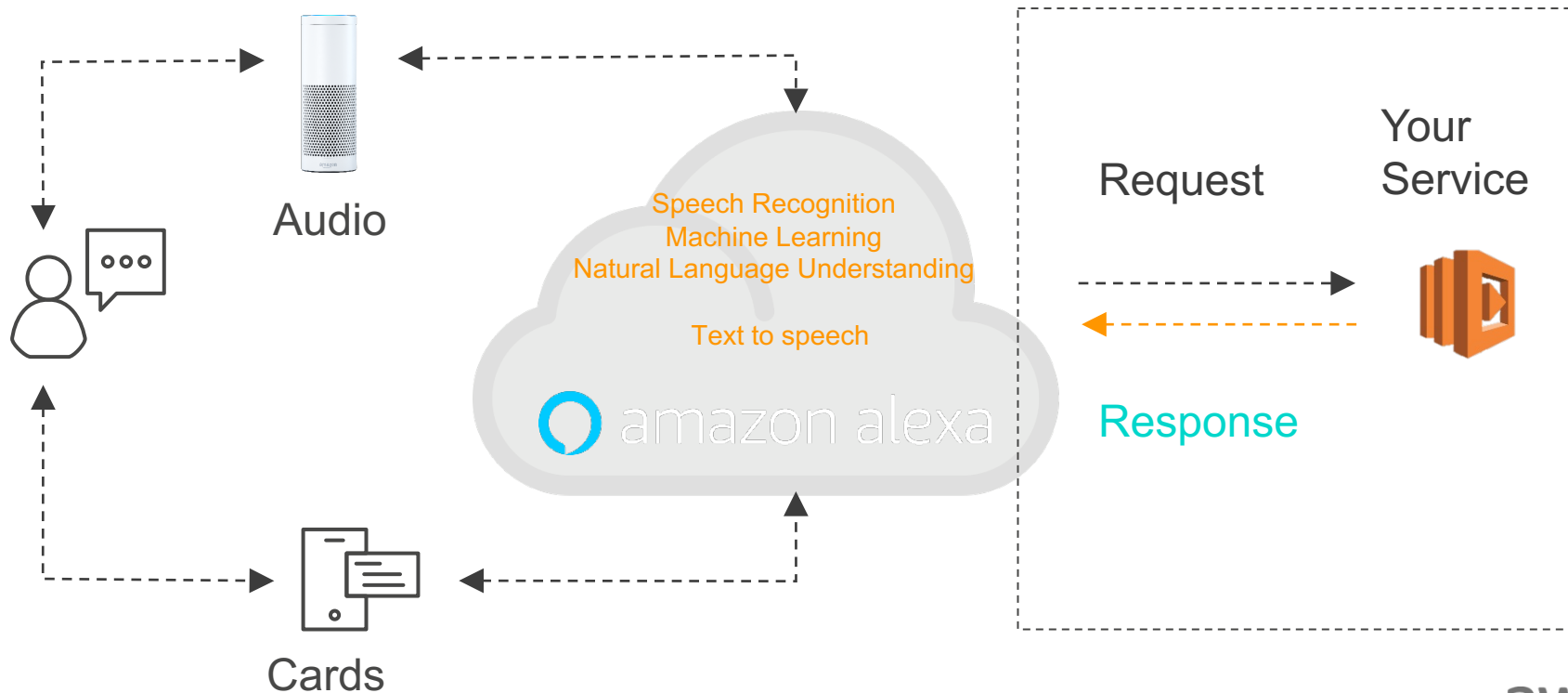
Alexa Skills Kit: Signal Processing



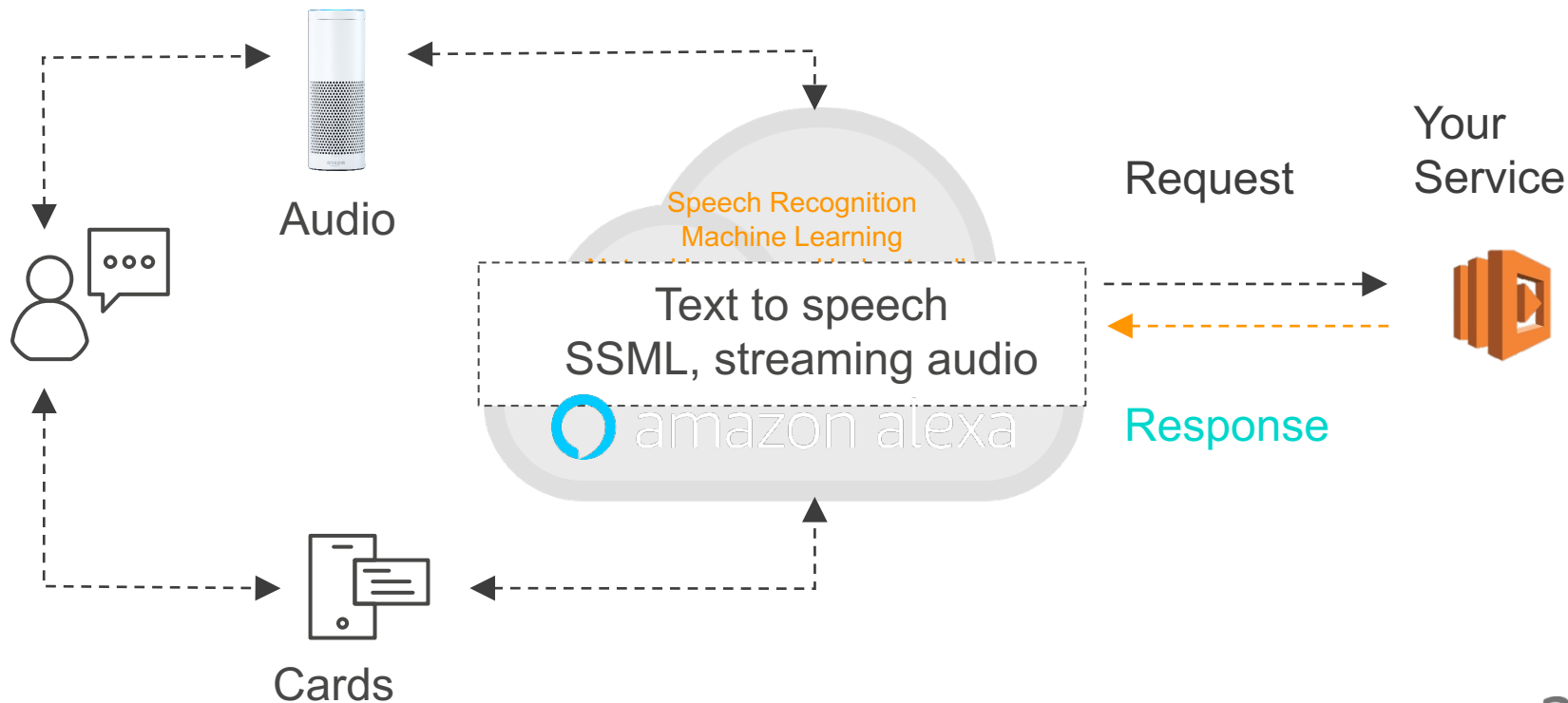
Alexa Skills Kit: Utterances Into Intents



Alexa Skills Kit: Requests and Responses



Alexa Skills Kit: Output



Amazon Lex

Service for building conversational interfaces into any application using voice and text



Automatic speech recognition (ASR) for converting speech to text

Natural language understanding (NLU) to recognize the intent of messages

Powered by the same deep learning technology as Alexa

Fully managed service

Utterances

I'd like to book a hotel

I want to make my hotel reservations

Can you help me book my hotel?

I want to book a hotel in New York City

Slots

| Slot | Type | Values |
|-------------|------|-------------------------------------|
| destination | City | New York City, Seattle, London, ... |
| Check In | Date | Valid dates |
| Check Out | Date | Valid dates |

Slot Elicitation

I'd like to book a hotel

Sure what city do you want to book?

New York City

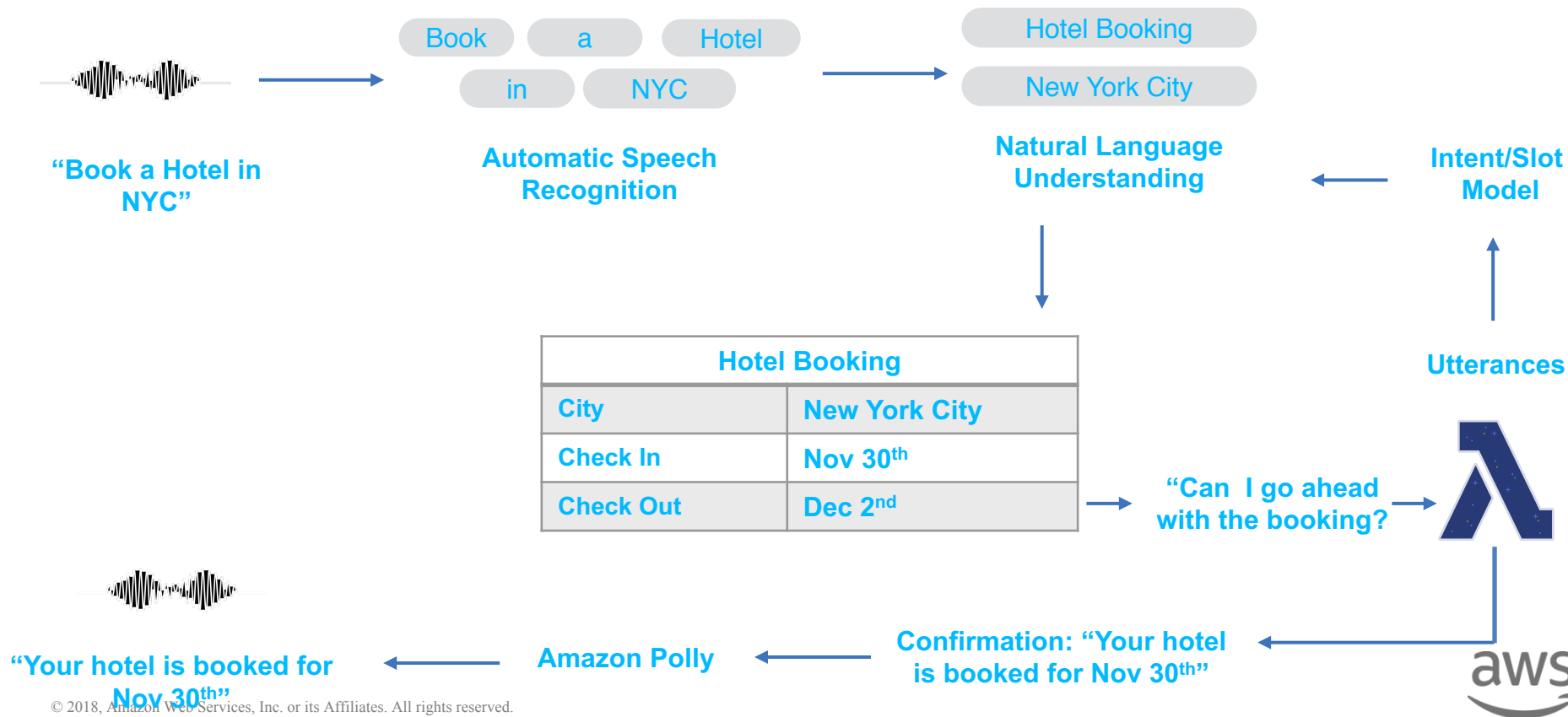
City
New York City

What date do you check in?

Nov 30th

Check In
11/30/2017

“Book a Hotel”



Creating an Alexa Skill

Voice User Interface



Programming Logic

Alexa Skills Kit

Collapse All | Expand All

- ☒ Build Skills with the Alexa Skills Kit
- ☒ Use the Developer Console Beta
- ☒ Custom Skills
 - ☐ Understand Custom Skills
 - ☐ Steps to Build a Custom Skill
 - ☒ Build Skills for Echo Devices With a Screen
 - ☒ Get Sample Code
 - ☒ Voice Design
 - ☒ Configure a Custom Skill
 - ☒ Host the Service for a Custom Skill
 - ☐ Host a Custom Skill as an AWS Lambda Function
 - ☐ Host a Custom Skill as a Web Service
 - ☒ Build the Interaction Model (Intents, Slots, and Dialogs)
 - ☒ Use Built-in Intents and Slot Types

Host a Custom Skill as an AWS Lambda Function

The easiest way to build the cloud-based service for a custom Alexa skill is by using [AWS Lambda](#), an [Amazon Web Services](#) offering that runs your code only when it's needed and scales automatically, so there is no need to provision or continuously run servers. You upload the code for your Alexa skill to a Lambda function and Lambda does the rest, executing it in response to Alexa voice interactions and automatically managing the compute resources for you.

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- [Create a Lambda Function for an Alexa Skill](#)
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- [Configure the Alexa Skills Kit Triggers](#)
 - [Add an Alexa Skills Kit Trigger](#)
 - [Remove an Alexa Skills Kit Trigger](#)
 - [Change an Existing Trigger](#)
 - [Configure Triggers with the AWS CLI or](#)

Creating an Alexa Skill

Voice User Interface



Programming Logic



developer.amazon.com



aws.amazon.com



Serverless means...



**No servers to provision
or manage**



Never pay for idle



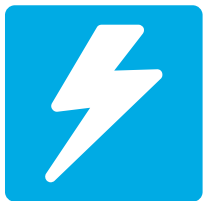
Scales with usage



**Availability and fault
tolerance built in**

Serverless applications

EVENT SOURCE



Changes in
data state



Requests to
endpoints



Changes in
resource state



FUNCTION



Node.js
Python
Java
C#
Go

SERVICES (ANYTHING)



Anatomy of a Lambda function

Handler() function

Function to be executed
upon invocation

Event object

Data sent during Lambda
Function Invocation

Context object

Methods available to
interact with runtime
information (request ID,
log group, etc.)

```
public String handleRequest(Book book, Context context) {  
    saveBook(book);  
  
    return book.getName() + " saved!";  
}
```



Meet
SAM!

AWS Serverless Application Model (SAM)



Template driven resource management model optimized for serverless

Serverless resource types: functions, APIs, and tables

Supports anything CloudFormation supports

NEW: Engine completely open sourced!

<https://github.com/awslabs/serverless-application-model>

SAM template

```
AWSTemplateFormatVersion: '2010-09-09'  
Transform: AWS::Serverless-2016-10-31  
Resources:  
  mySkillFunction:  
    Type: AWS::Serverless::Function  
    Properties:  
      CodeUri: s3://my-code-bucket/alexaSkill.zip  
      Handler: index.handler  
      Runtime: nodejs4.3  
      Policies: AmazonDynamoDBReadOnlyAccess  
      Events:  
        AlexaSkillEvent:  
          Type: AlexaSkill  
  
  ListTable:  
    Type: AWS::Serverless::SimpleTable
```

SAM template

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  ListTable:
    Type: AWS::Serverless::SimpleTable
```

Tells CloudFormation this is a SAM template it needs to “transform”

Creates a Lambda function with the referenced managed IAM policy, runtime, code at the referenced zip location, and handler as defined. Configures the function to receive invocations from Alexa

Creates a DynamoDB table with 5 Read & Write units

Introducing SAM Local

CLI tool for local testing of serverless apps

Works with Lambda functions and “proxy-style” APIs



Response object and function logs available on your local machine

Uses open source docker-lambda images to mimic Lambda’s execution environment:

- Emulates timeout, memory limits, runtimes

Start with AWS CodeStar



Services ▾

Resource Groups ▾



Chris Munns ▾

Oregon ▾

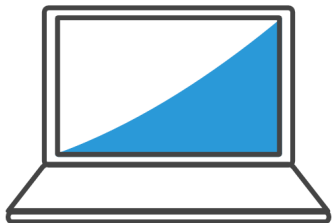
Support ▾



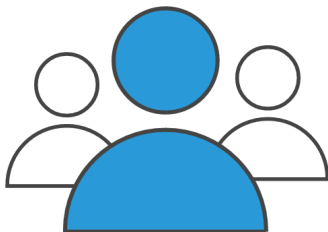
AWS CodeStar

AWS CodeStar lets you quickly develop, build and deploy applications on AWS.

[Start a project](#)



Create new applications

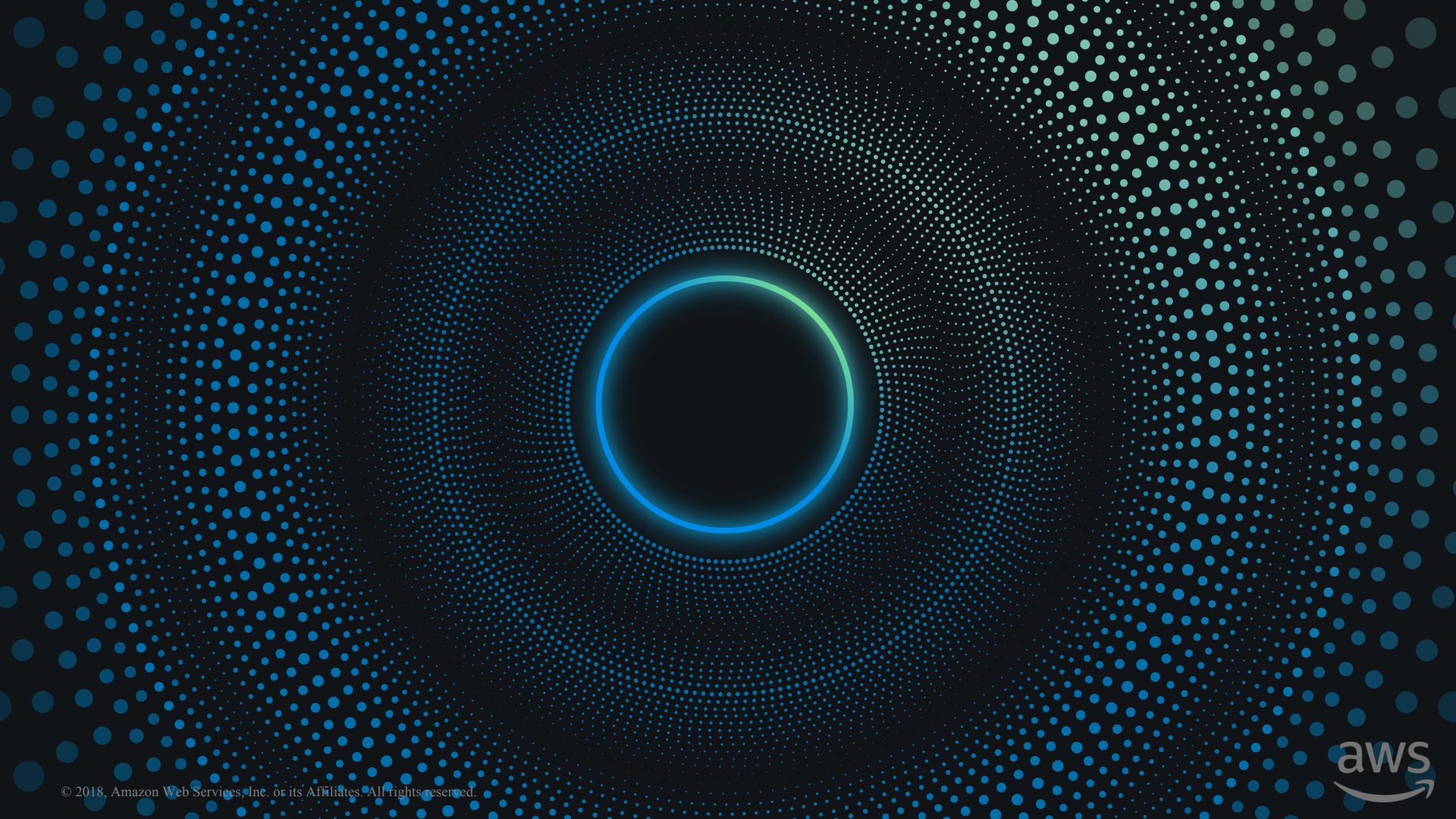


Work across your team securely



Manage software delivery easily





AWS Serverless Application Repository

Discover, deploy, and publish serverless applications

< 1 2 3 4

alex-anagram

Alexa responds with the count and anagrams for a requested word

evanchiu

3 deployments

anagram

alex

nodejs

alex-random-restaurant

A basic python based back-end for an Alexa skill that randomly gives you an open restaurant in a specified city using the Yelp API.

Harsha Warrdhan Shar...

3 deployme...

alex-smart-home-skill-adapter

Provides the basic framework for a skill adapter for a smart home skill.

AWS

6 deployments

alex-skills-kit-color-expert

Demonstrates a basic skill built with the Amazon Alexa Skills Kit.

AWS

26 deployments



Serverless Computing and Applications

Build and run applications without thinking about servers

[Find serverless applications](#)

Serverless computing allows you to build and run applications and services without thinking about servers. Serverless applications don't require you to provision, scale, and manage any servers. You can build them for [nearly any type of application](#) or backend service, and everything required to run and scale your application with high availability is handled for you.

Building serverless applications means that your developers can focus on their core product instead of worrying about managing and operating servers or runtimes, either in the cloud or on-premises. This reduced overhead lets developers reclaim time and energy that can be spent on developing great products which scale and that are reliable.

DANKE MERCI THANK YOU GRACIAS ARIGATO
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