

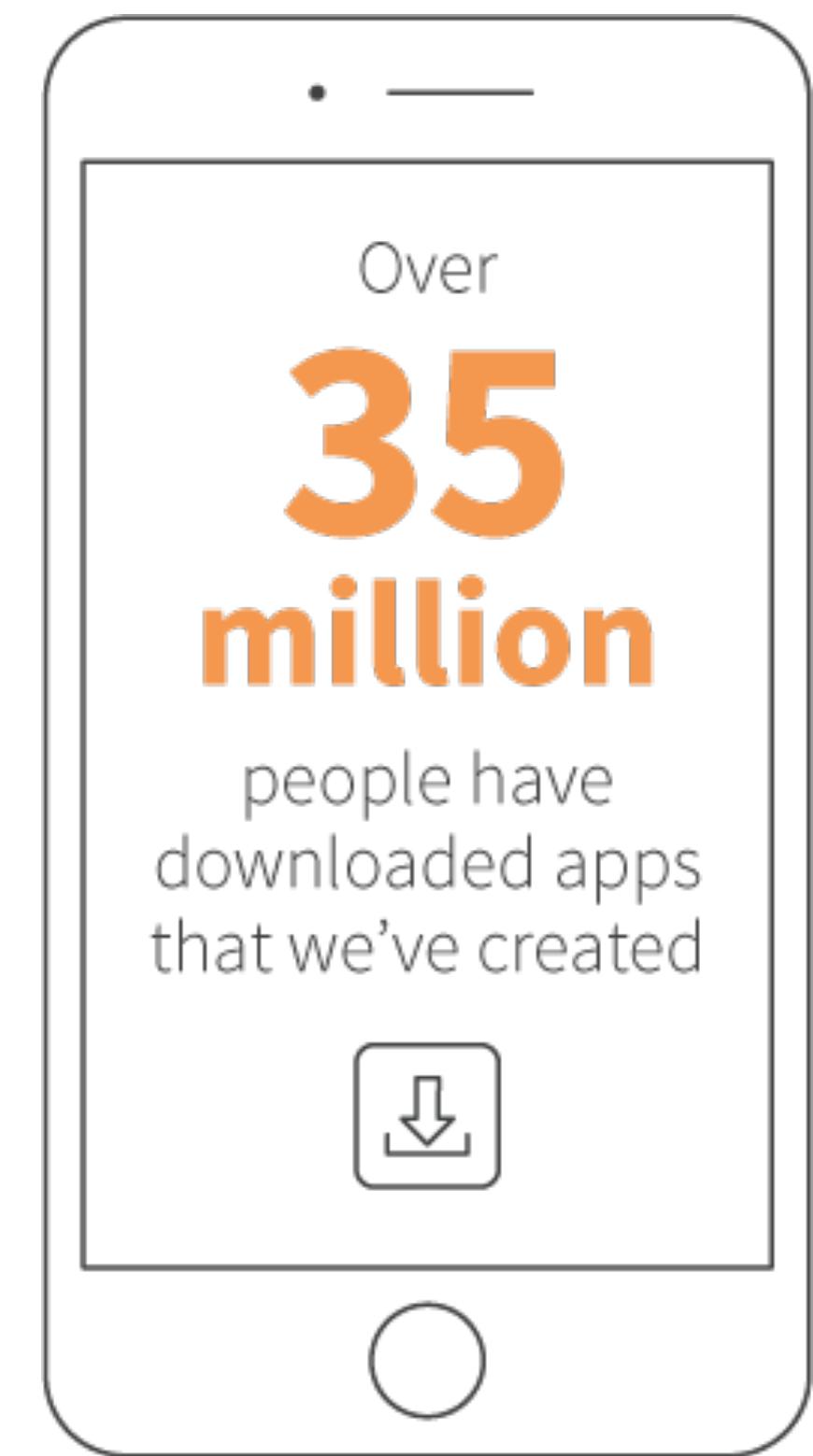
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# Alexa Skills Workshop

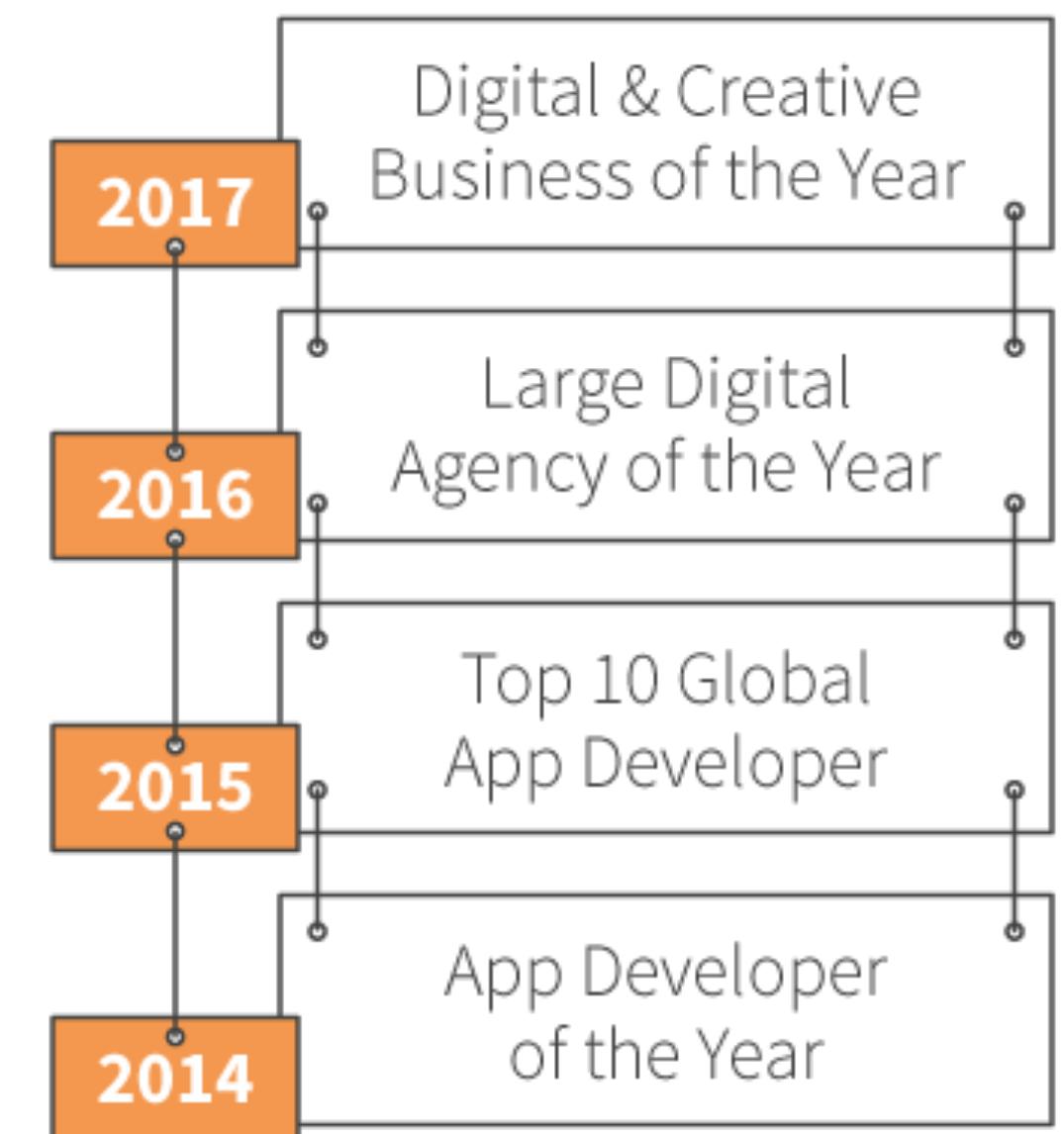
## Skill Building 201

# Apadmi at a glance

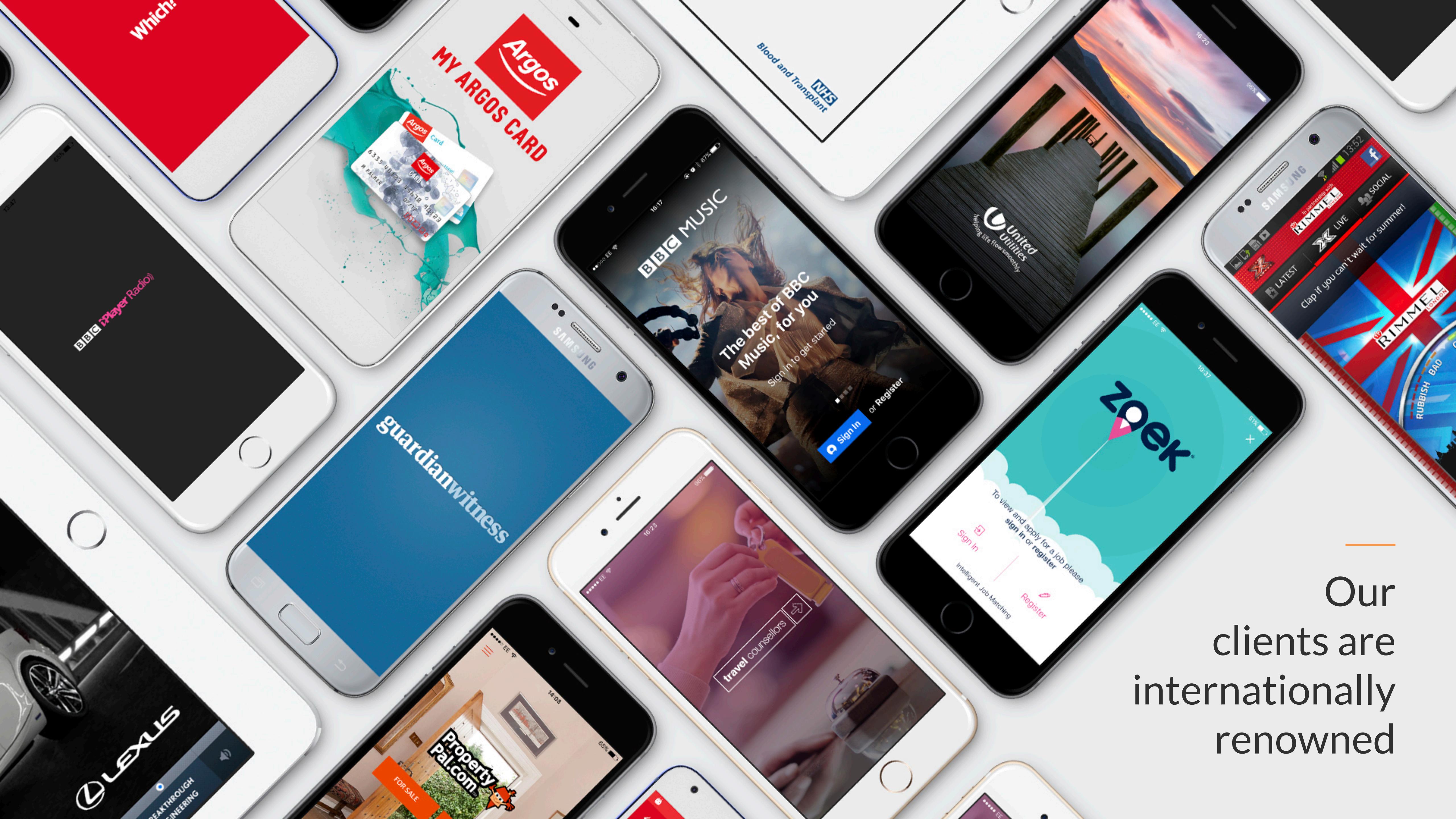
Apadmi has  
**18 years**  
experience in the  
mobile industry



**17** companies in FTSE 100 & 250 we have worked with



Our  
clients are  
internationally  
renowned



# Patrick Cavanagh

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Briefly describe your role at Apadmi  
Android & iOS developer / tea drinker

What hobbies and interests do you have outside of work?

Playing electric, acoustic and/or classical guitar, cinema/television,  
software engineering, science & technology, craft beer

What type of music do you like?

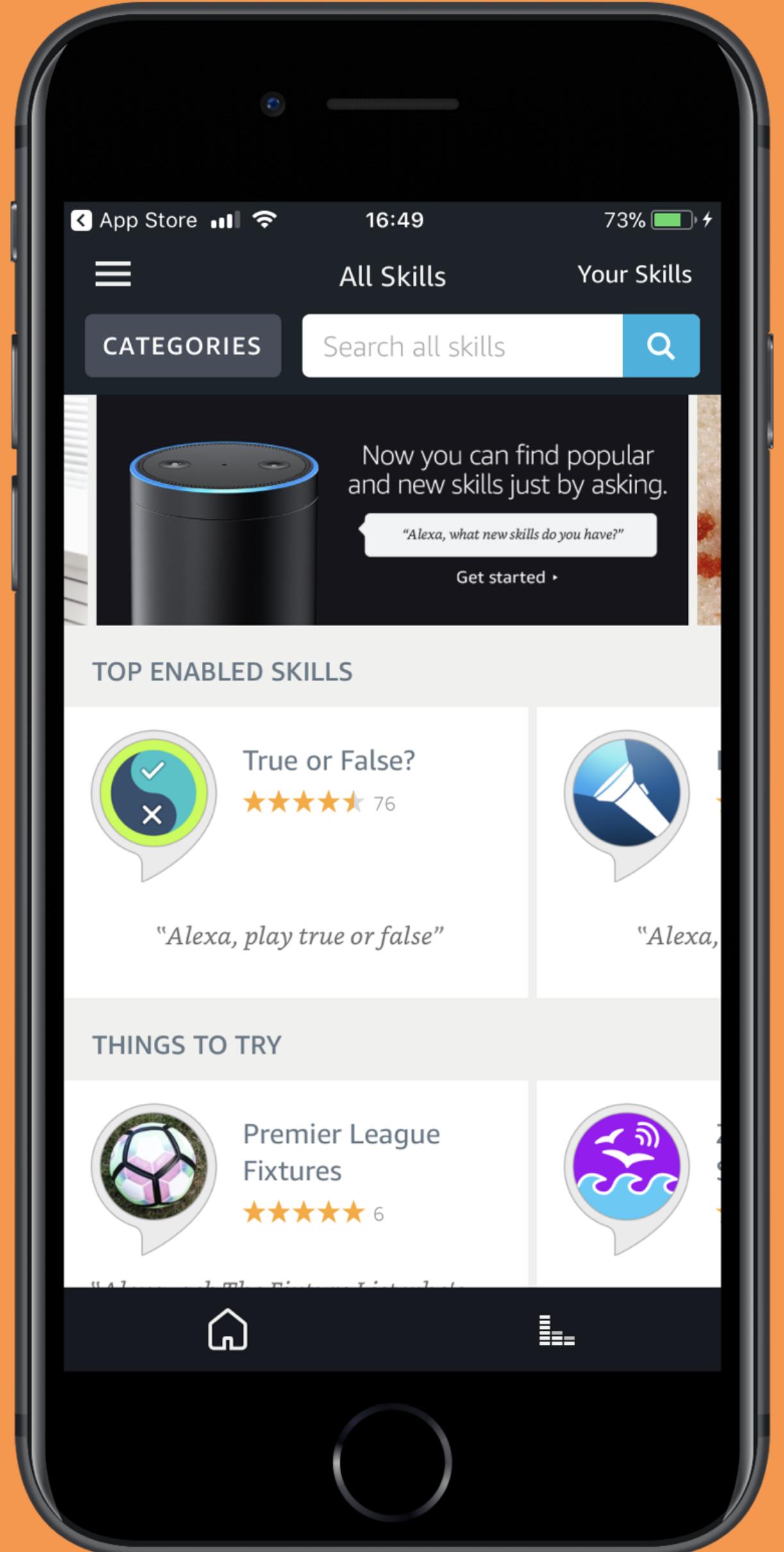
Rock, metal, indie, classical

Who is your personal hero/icon?

Richard Feynman

What can't you live without?

Terrible puns



# Custom Alexa Skills

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**Dedicated wake word**

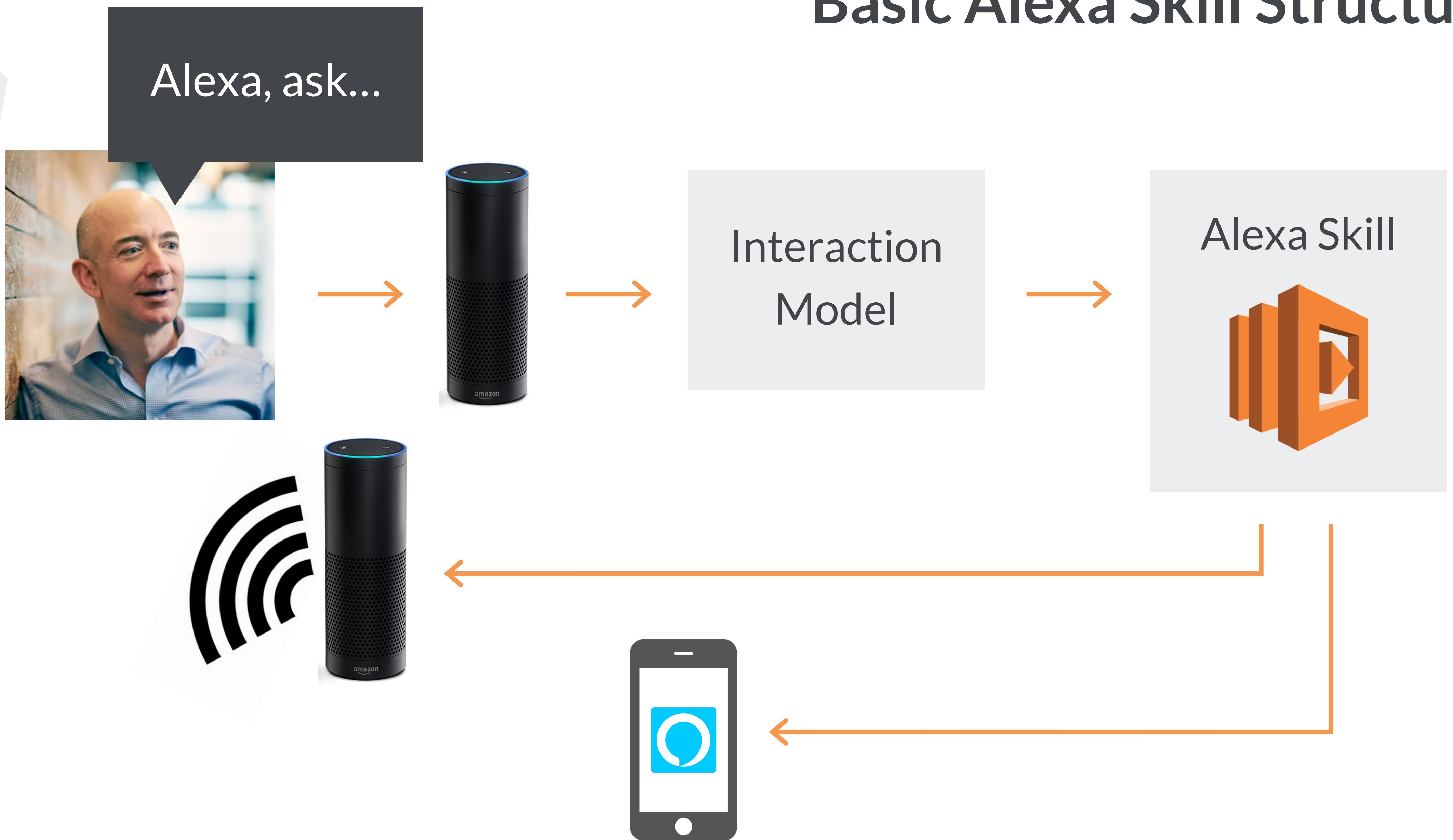
Alexa, ask \_\_ ...

Alexa, talk to \_\_ and...

Alexa, open \_\_

Start, begin, load, run, launch, use...

# Basic Alexa Skill Structure



# Custom skill

## Interaction Model

### Intent A

- Sample Utterances

Words and phrases  
to invoke intent

### Intent B

- Sample Utterances
- Slot Values
- Confirmation Required

Arguments in intents

# Sample utterances

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- Who, what, why, when, where, which, how
- Do, did, does
- Can, could, should, would, may, must, shall
- Have, has, had

```
{  
  "name": "TramTime",  
  "samples": [  
    "when is the next tram",  
    "what time will the next tram be here",  
    "how long until the next tram",  
    "when is the next met",  
    "what time will the next met be here",  
    "how long until the next met"  
  ],  
  "slots": []  
},
```

# Slot values

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- Input data
- Date, Time, Duration, Number
- Extensive selection of provided list type slot values

AMAZON.Actor  
AMAZON.AdministrativeArea  
AMAZON.AggregateRating  
AMAZON.Airline  
AMAZON.Airport  
AMAZON.Animal  
AMAZON.Artist  
AMAZON.AT\_CITY  
AMAZON.AT\_REGION  
AMAZON.Athlete  
AMAZON.Author  
AMAZON.Book  
AMAZON.BookSeries  
AMAZON.BroadcastChannel  
AMAZON.CivicStructure  
AMAZON.Color  
AMAZON.Comic  
AMAZON.Corporation  
AMAZON.Country  
AMAZON.CreativeWorkType  
AMAZON.DayOfWeek  
AMAZON.DE\_CITY  
AMAZON.DE\_FIRST\_NAME

# Slot Values

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- Fit in with sample utterances to define data input.
- Required or optional

```
{  
  "name": "PlannedMaintenance",  
  "samples": [  
    "is there any planned maintenance",  
    "is there any planned maintenance on {date}"  
  ],  
  "slots": [  
    {  
      "name": "date",  
      "type": "AMAZON.TIME",  
      "samples": []  
    }  
  ]  
},
```

# Custom slot values

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- Developer defined set of options
- 50,000 possible options
- Cover all bases!

```
{  
  "name": {  
    "value": "deansgate castlefield",  
    "synonyms": []  
  },  
  {  
    "name": {  
      "value": "shudehill",  
      "synonyms": []  
    },  
    {  
      "name": {  
        "value": "piccadilly gardens",  
        "synonyms": []  
      },  
      {  
        "name": {  
          "value": "victoria",  
          "synonyms": []  
        }  
      },  
    }  
},  
{
```

# AWS Lambda Function

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**In:**

- Intent Type
- Slot Values
- Current State
- Session
- Authentication Token?

**Out:**

- Speech Output
- Cards for Alexa App
- End State

# Alexa Skills Kit

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- Node.js library
- Abstracts all details handling Lambda function I/O
- Define handlers for all intents

```
exports.handler = function(event, context, callback) {  
    var alexa = Alexa.handler(event, context, callback);  
    alexa.registerHandlers(handlers);  
    alexa.execute();  
};
```

```
var handlers = {  
    'LaunchRequest': function () {  
        this.emit('HelloWorldIntent');  
    },  
  
    'HelloWorldIntent': function () {  
        this.emit(':tell', 'Hello World!');  
    }  
};
```

# Alexa Skills Kit

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- Handle all intents
- Change the state and use it to your advantage
- Tell Alexa how to respond!

```
this.emit(':askWithCard', speechOutput, ...  
  
this.emit(':tellWithCard', speechOutput, ...  
  
this.emit(':tellWithLinkAccountCard', ...  
  
this.emit(':askWithLinkAccountCard', ...  
  
this.emit(':tellWithPermissionCard', ...  
  
this.emit(':elicitSlot', slotToElicit, ...  
  
this.emit(':elicitSlotWithCard', slotToElicit, ...  
  
this.emit(':confirmSlot', slotToConfirm, speechOutput, ...  
  
this.emit(':confirmSlotWithCard', slotToConfirm, ...  
  
this.emit(':confirmIntent', speechOutput, repromptSpeech, ...  
  
this.emit(':confirmIntentWithCard', speechOutput, repromptSpeech, ...
```

# SSML - Speech Synthesis Markup Language

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## Read vs Read

```
<speak> Yesterday I <w role="amazon:VBD">read</w> a book</speak>
<speak> I like to <w role="amazon:VB">read</w> books</speak>
```

## Numbers

```
<say-as interpret-as="cardinal">12345</say-as>
```

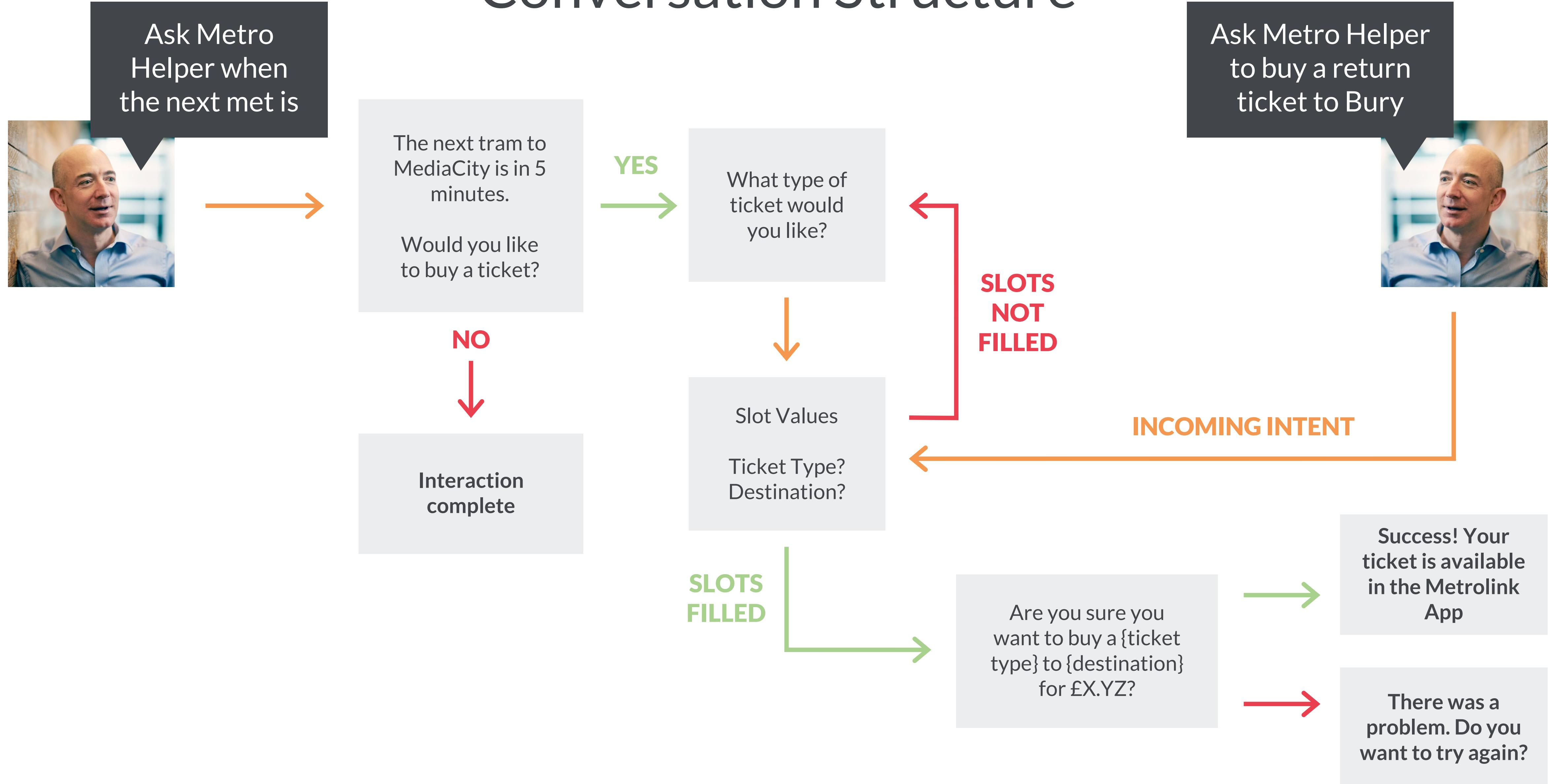
## Dates

```
<say-as interpret-as="date" format="ymd">2017-10-06</say-as>
```

## Emphasis & Prosody

```
<emphasis level="strong">stronger</emphasis>
<prosody pitch="x-high">higher</prosody>
```

# Conversation Structure



# Testing & Deployment

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## Interaction Model:

- Alexa Skills console
- Voice Simulator
- Service Simulator

## Lambda Function:

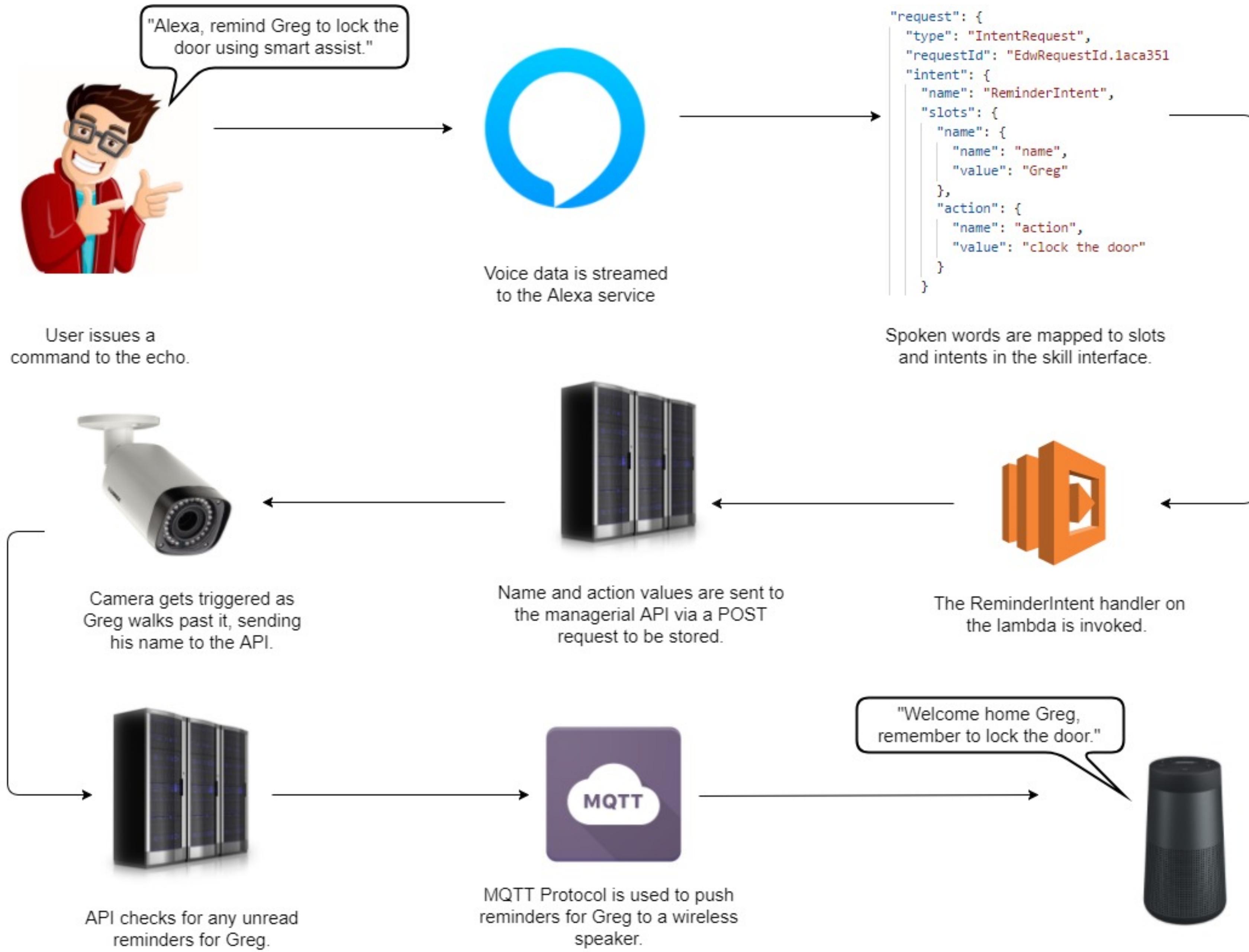
- Test locally using AWS SDK
- Upload to AWS console
- Deploy using AWS CLI
- Test lambda output with CLI

IoT Example

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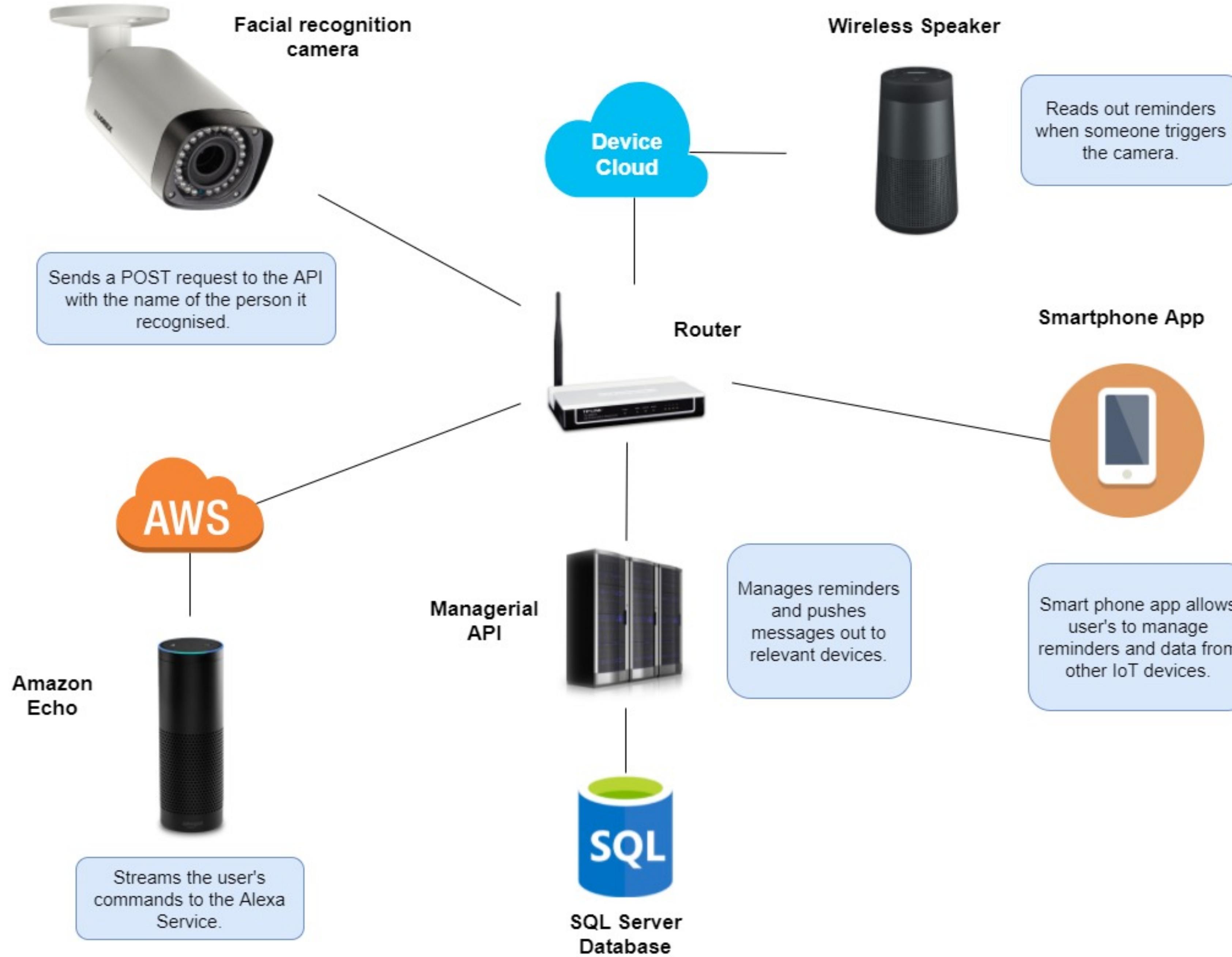
# Alexa integration with wider Internet of Things

# IoT example Flow



# Overview

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THANK YOU!

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Questions?