Interfacing with Today's Constituents

Greg Buckwalter, CEO
bucky@nolinio.com
1-717-572-5616

Agency and Departmental Goals

Remain fairly constant as evidenced by the DHS website

Public Service Priorities

- Increase Access to Services
- Serve More People in the Community
- Focus on Employment
- Improve Customer Service
- Modernize Program Integrity
- ADA Compliance

pennsylvania
DEPARTMENT OF HUMAN SERVICES

onolinio

Citizen Interaction
However; how Citizens interact with information has changed

Interface Paradigm Shift

Today's Customer Expectations

- Fast-paced

- User-centric

  - Personalization

- Self-serve

  - On their time

  - When they want the information

Interface Paradigm Shift

- 98% Adults Mobile Device
- 67% 6-12 year old kids Mobile Device
- Primary Internet Access - Mobile Devices
- **Mobile** Device Usage:
    Texting
    Mobile Apps
- **Voice** Interface

Today's Citizen Interfaces

- ➢ Mobile
- ➢ Text
- ➢ Voice

Mobile User Behavior Changes

Mobile User Behavior Changes

- Mobile Apps-Web Browsing
  - 80%/20% Flip

Mobile User Behavior Changes

- Primary means of accessing the Internet
  - 65% in 2016
  - 70% in 2017
  - 77% in 2018, estimate
  - (As a percentage of the Time spent using the internet)

Mobile User Behavior Changes

- Texting-Phone Calls
  - Texting Apps are the most widely-used and frequently used app
  - Americans Text twice as much as they call, on Average (Nielsen)

Mobile User Behavior Changes

- **Mobile Apps**-Web Browsing (80%/20%)
- **Texting**-Phone Calls
- Mobile 77% Means of **Accessing the Internet**
  - (As a percentage of the Time spent using the internet)

Mobile Internet is Now the Normal Internet

Mobile App Technology Changes

Mobile App Technology Changes

- First Shift – Two Dev teams
  - Objective C/Swift – iOS apps
  - Java – Android app

- App Development Costly
- App Development Timely
- App Development Resources Limited

Mobile App Technology Changes

- Second Shift – One Dev team
  - Xamarin
    - Cross-Platform Development Software

- Reduce Cost with One Team
- App Development Timely
- App Development Resources Better

Mobile App Technology Changes

- Current – One Dev team
    - Cross-Platform Language - Native Apps
    - UI: React Native (Facebook) - Open Source
    - Logic: JavaScript
- Most Cost Efficient - One Team
- App Development Best Production - Hot Reloading
- App Development Resource Best

Mobile App Technology Changes

- Who's Using React Native?

Facebook   Facebook Ads Manager
Instagram   Airbnb   Skype
Tesla   Walmart   Bloomberg
CBS Sports Franchise Football
Other React Native Apps

Mobile App Technology Changes

- 1/3rd App Development
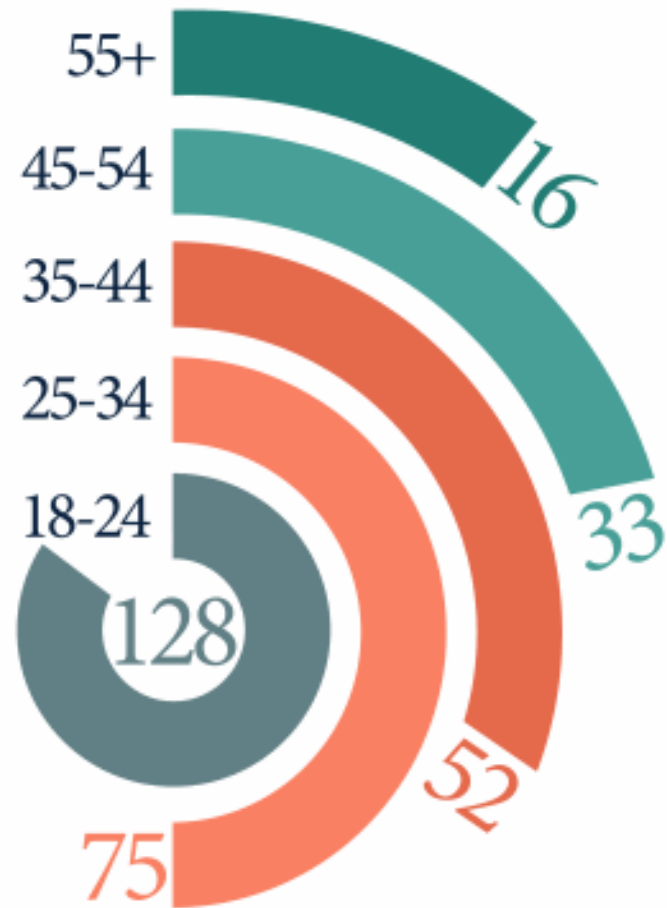- 2/3rd App Maintenance

Mobile-Enterprise Platform

- In-App Publishing (No On-Line Store)
- App Tracking (Bug/Usage)
- Code Sharing
  - React Native
  - JavaScript
- Testing
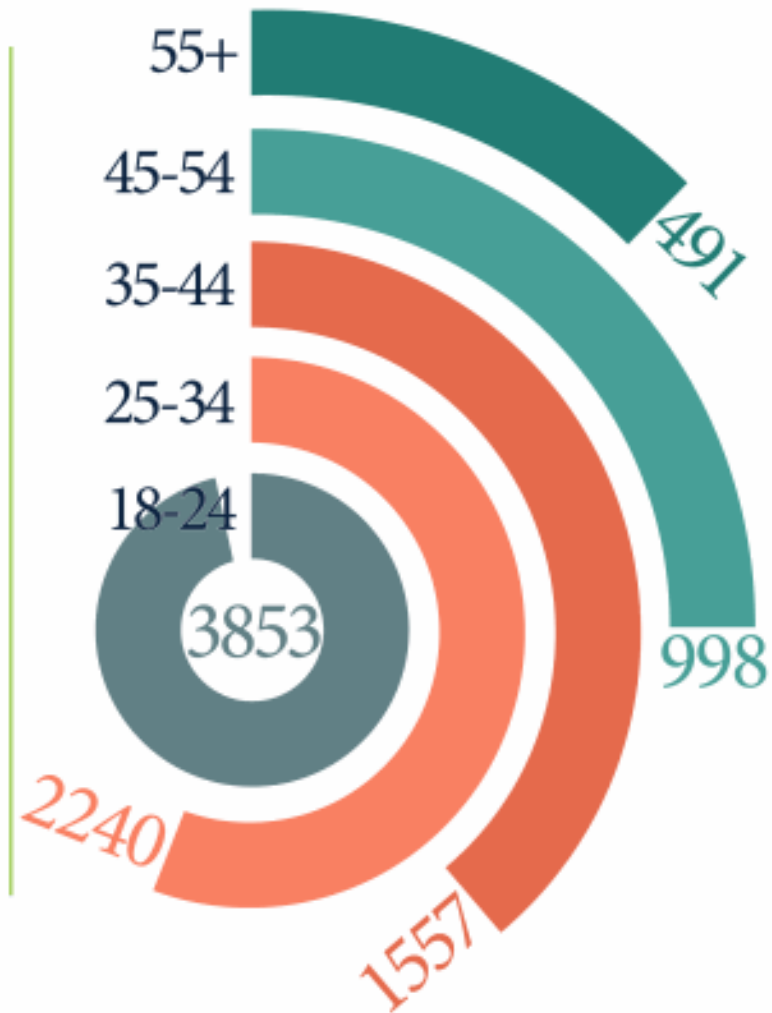
Texting Interface

- Mobile Use: Calling or Texting?
  - Texting Apps are the most widely-used and frequently used app
  - Americans Text twice as much as they call, on Average (Nielsen)

Texting Interface

Daily Texts by U.S. Adults

55+ — 16
45-54 — 33
35-44
25-34 — 52
18-24 — 128
75

Monthly Texts by U.S. Adults

55+ — 491
45-54 — 998
35-44
25-34 — 1557
18-24 — 3853
2240

Texting Interface

- Mobile Use: Calling or Texting?
- 97% of Americans Text everyday (Pew Internet)
- 89% of Citizens want to use messaging to communicate with Businesses and Government. (Twilio)
- Messaging is the #1 preferred customer support channel in the U.S. (Twilio)

Texting Interface

- Some of the Text Advantages
  - 2-3% of emails are opened
  - 20% of calls are answered
  - 99% of text messages are read
  - 95% of texts will be read within 3 minutes of being sent. (Forbes)
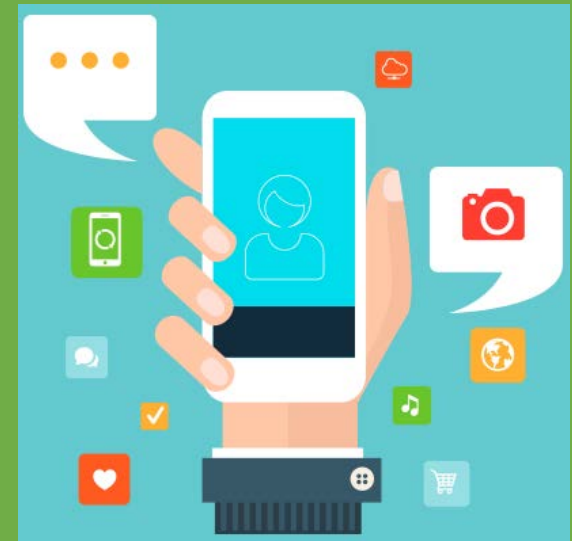
Texting Interface

- **SMS S**hort **M**essage **S**ervice
  - Send a message From one mobile to another

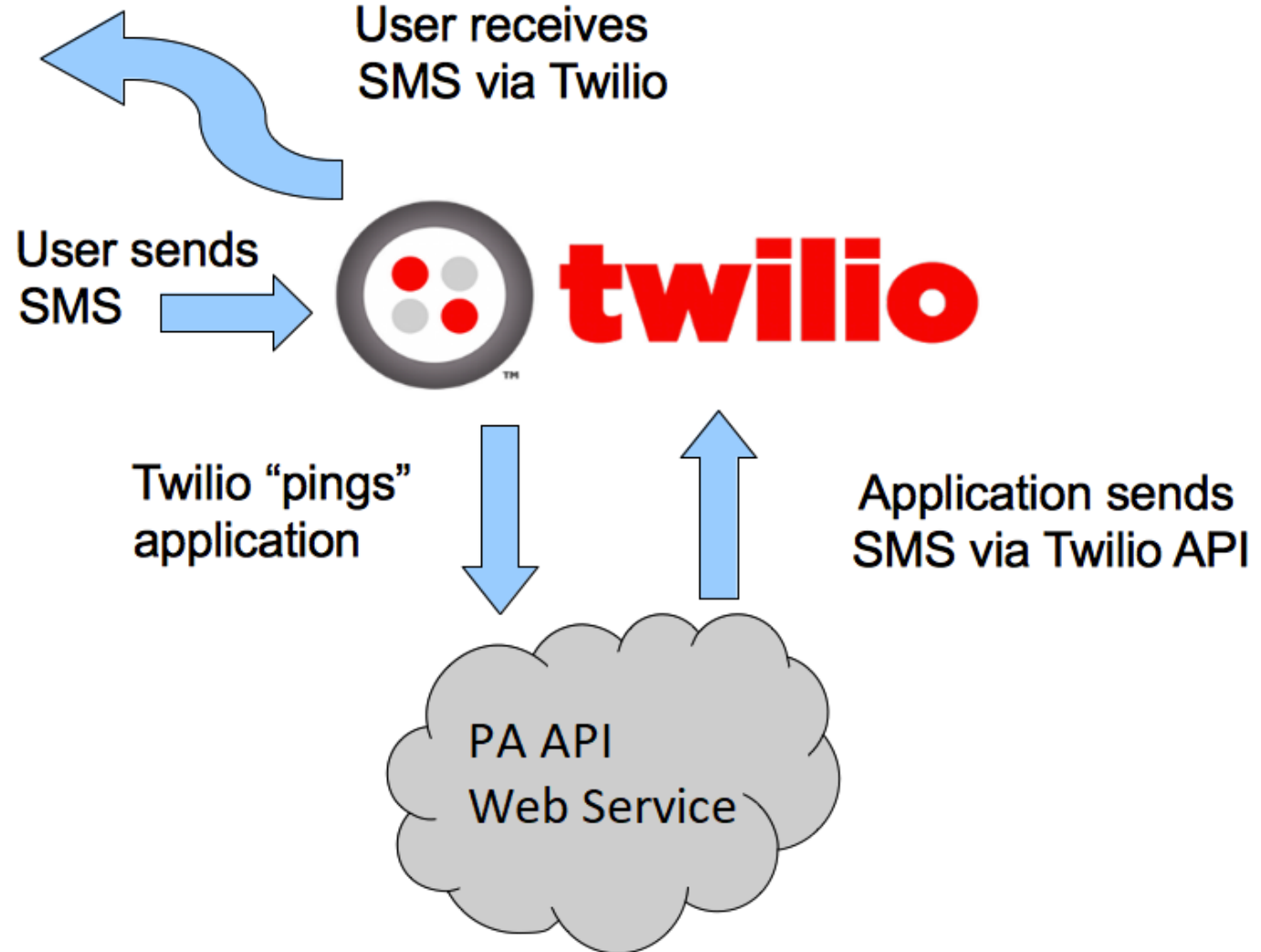# Texting Interface

- **MMS** **M**ultimedia **M**essage **S**ervice
  - Group Texting
  - >160 Characters
  - 40 seconds of Video
  - One Image
  - A Slideshow of multiple image
  - Audio

Texting Interface

- TextBots
  - Push Notifications
  - Two-Way and Conversational
  - Interface Existing Web Services
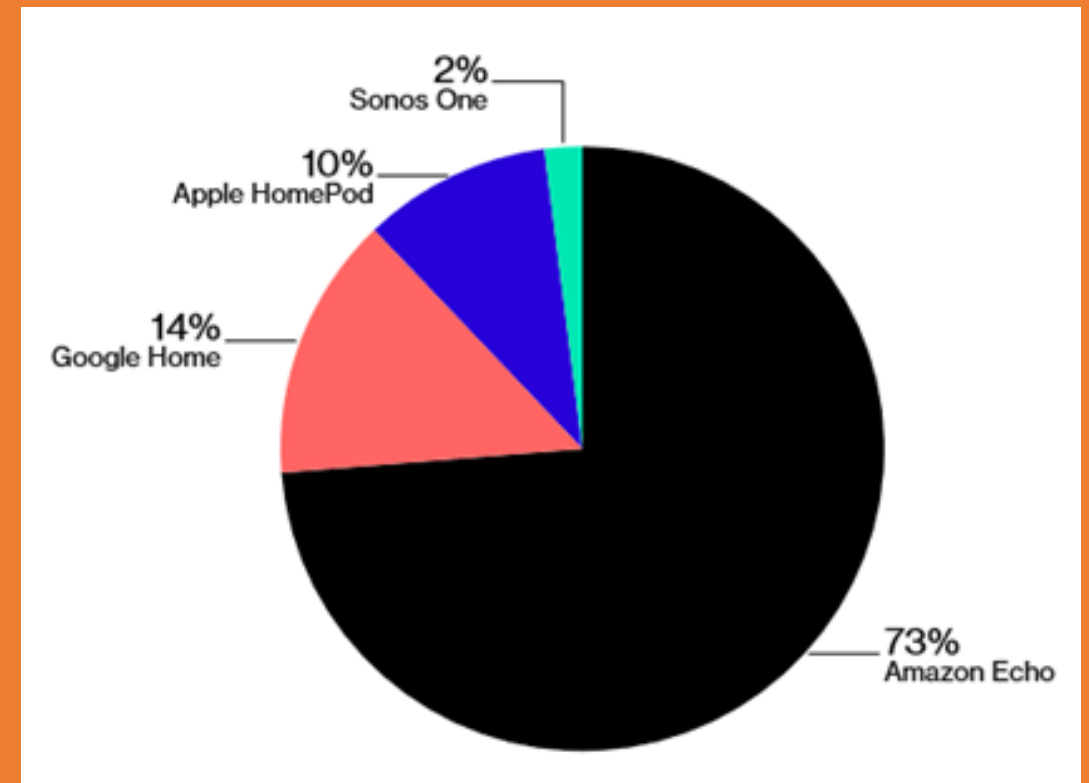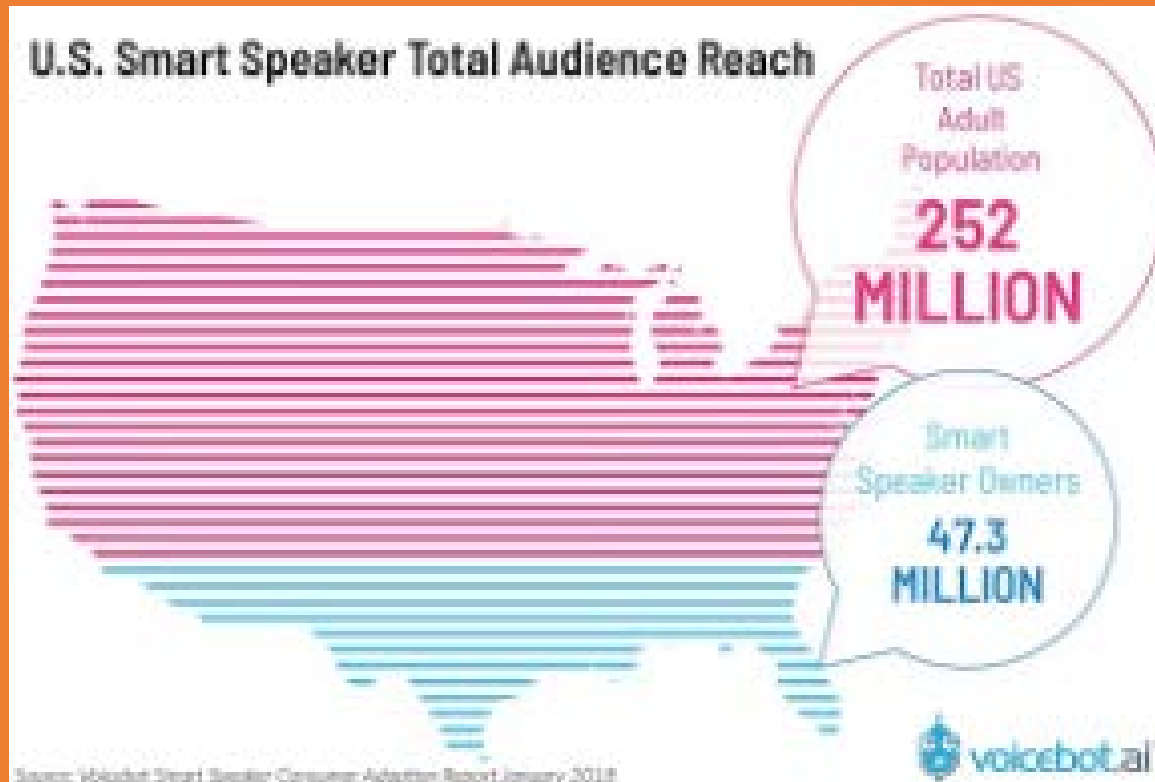
TextBot App w/Twilio Architecture Overview

Voice Interface

- Anomaly or Current Trend?

Voice Interface

- Smart home devices reach 20% of American homes in 2 years
- Gartner and Edison Research 2017 project by Q4 2020 75% of US Households will have a smart speaker.
- Desktop/laptop ownership declined to <75% (PewInternet.org)
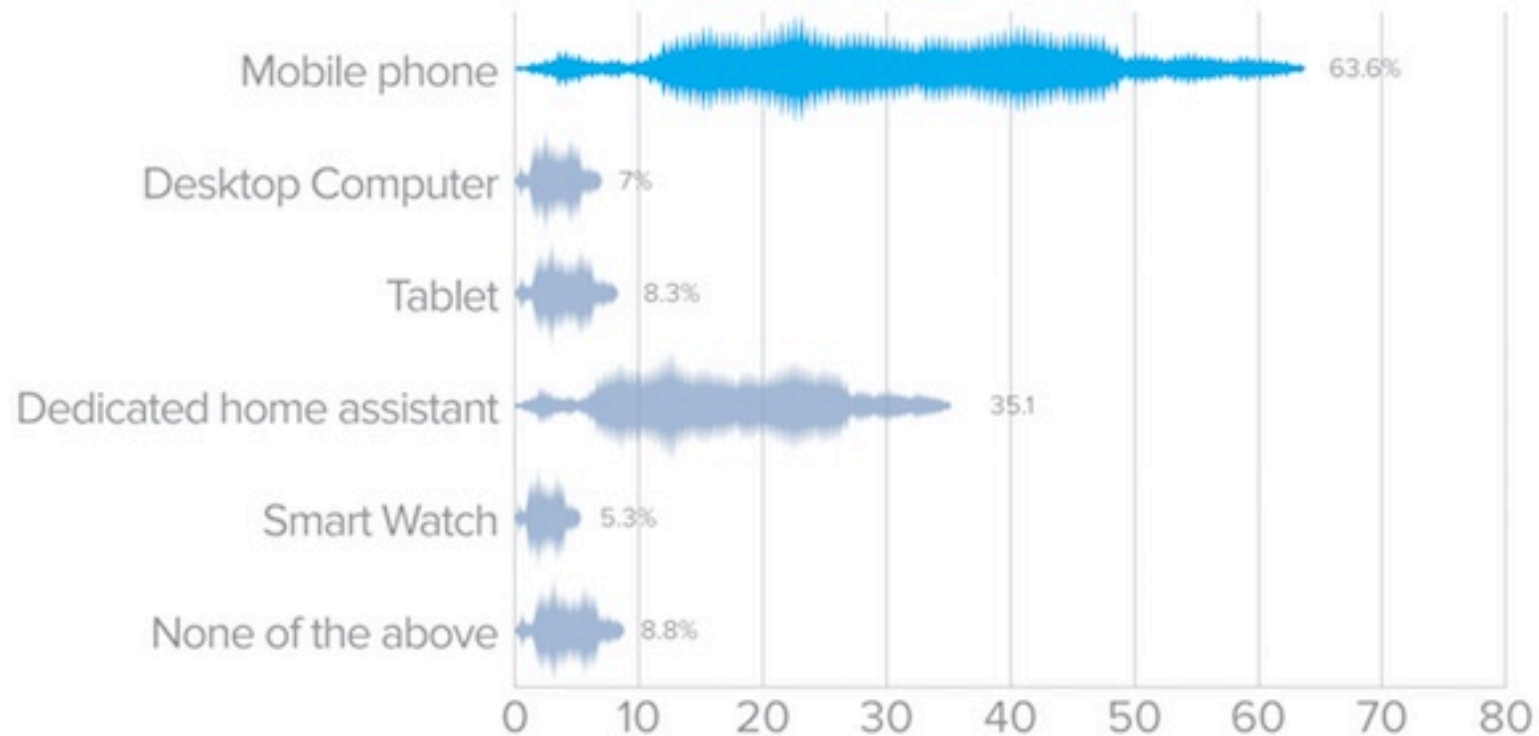
Voice Interface

Voice Interface

Source: NetElixir Search Without Screens Report April 2018

Voice Interface

- Gartner Top 10 Strategic Technology Trends 2017
  https://www.gartner.com/smarterwithgartner/gartners-top-10-technology-trends-2017/
- Intelligent Apps with Virtual Personal Assistants
- Conversational Systems
  - From people adapting to computers
  - To devices 'hearing' and adapting to the person's desired outcome

Voice App Architecture Overview

UNDER THE HOOD OF ASK

A closer look at how the Alexa Skills Kit process a request and returns an appropriate response

You Pass Back a Textual or Audio Response

User Makes a Request

Audio Stream Is Sent Up To Alexa

amazon alexa

Alexa Converts Text-to-Speech Renders Graphical Component

Alexa Identifies Skill & Recognizes Intent Through ASR & NLU

You Pass Back a Graphical Response

Your Service Processes Request

Respond to Intent Through Text & Visual

Alexa Sends Customer Intent To Your Service

ASR = Automated Speech Recognition   NLU = Natural Language Understanding

Alexa Voice Resources

Tutorials & Guides

Voice Design Guide - A great resource for learning conversational and voice user interface design.

Codecademy: Learn Alexa - Learn how to build an Alexa Skill from within your browser with this beginner friendly tutorial on Codecademy! (Free)

Amazon Alexa Tutorial: Build Your Own Skill Nice Step by Step article.

Documentation

The Official Alexa Skills Kit Node.js SDK Documentation

Official Alexa Skills Kit Documentation

Community

Amazon Developer Forums

Why Have New Interfaces?
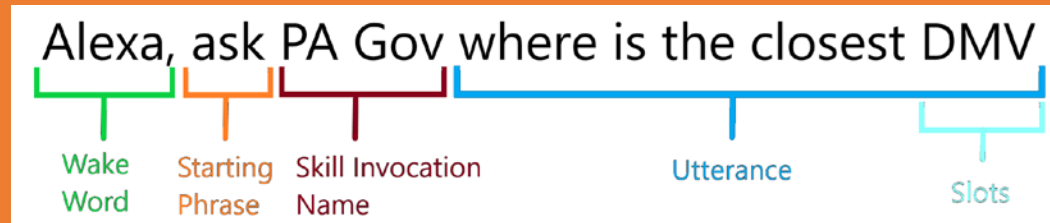
Why Have New Interfaces?

- Improve Constituents Experience
- Self-Serving – User Control
- Fast-Paced
- User-Centric
- Personalized
- **ADA Compliance**

We are naturally more inclined to engage with information we find relevant and interesting.

nolinio

Voice Demo

Alexa, ask PA Gov where is the closest DMV
Wake Word | Starting Phrase | Skill Invocation Name | Utterance | Slots

WAKE WORD
Here, "Alexa" is the default *wake word*.
It wakes up the device and tells it that the user wants to talk to Alexa.

STARTING PHRASE
Following the "Alexa" wake word, users must use a *starting phrase* — in this case "ask" — to specify the type of request they are using. Begin, Launch, Load, Open, Run, Start, Use, etc
Visit the Alexa developer documentation for a list of other starting phrases.

INVOCATION NAME
In the example above, "PA Gov" is the *invocation name*. The user says " PA Gov " to instruct Alexa to invoke the PA Gov skill.
Every skill, custom or built-in, has a unique invocation name.
As a general rule, you want the invocation name to be easy to pronounce, not too long, and at least two words. Here are some guidelines for choosing an invocation name.

Voice Demo

Email: Bucky@Nolinio.com
For Demo Code

Alexa, ask PA Gov where is the closest DMV

Wake Word | Starting Phrase | Skill Invocation Name | Utterance | Slots

Utterances

Utterances trigger Intent code. Each intent defines a specific behavior, like buttons on a web page. A Utterance triggers an Intent which takes the users input and executes some code based on it

In this case, the utterances will help Alexa map the spoken user input to the connected Intent.

"*where is the closet {SearchQuery}*"

Slots

In this case {*SearchQuery*} is the slot for user input.

Think of Slots as **Parameters** which you pass onto your Intent.

INTENTS

Utterances are mapped to intents. A typical skill will have multiple intents. Each intent defines a specific behavior, like buttons on a web page. An intent takes user input and executes some code based on it. Often you'll have multiple Utterances for any given Intent.

Demo TextBot

Text 717-208-8990

Write a Script

Storing response to Firebase DB

Code resided on Heroku

Twilio sends and received SMS

Email: Bucky@Nolinio.com
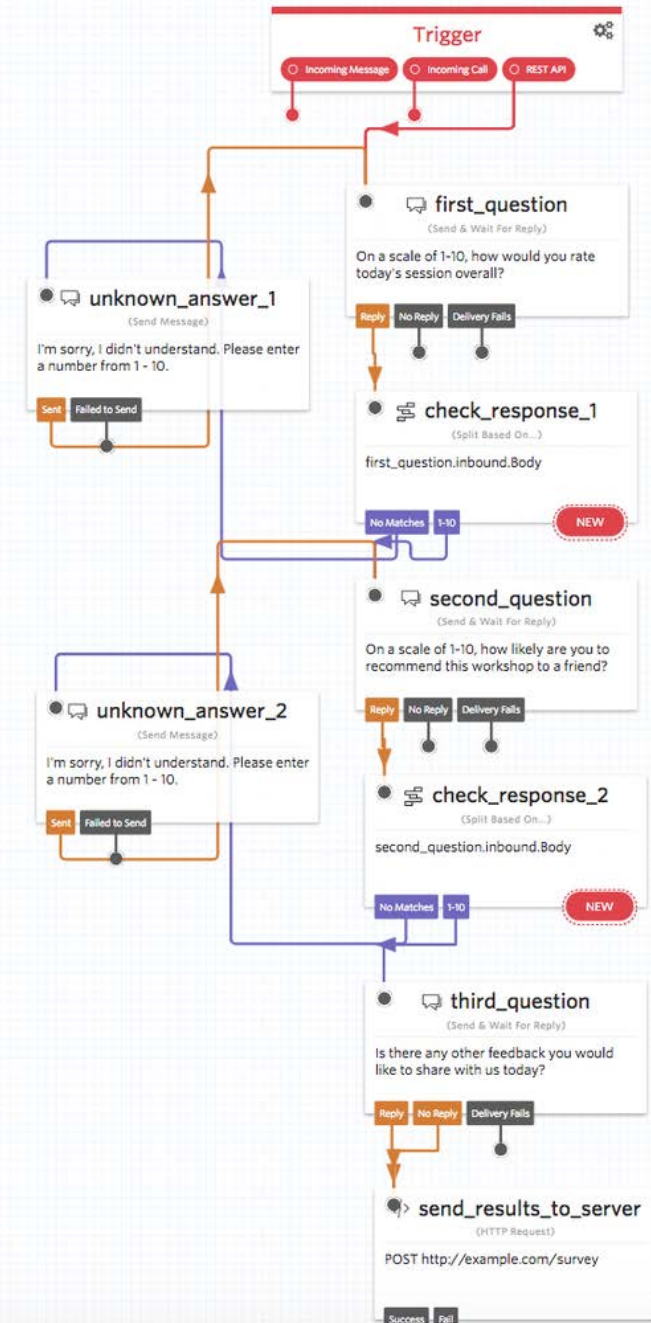
For Demo Code

Demo TextBot

Demo TextBot Results:
Http://PATECHCON.surge.sh

Email: Bucky@Nolinio.com
For Demo Code