Voice Assistant Development

AESP--Midwest

5/16/2019
INTRODUCTION

- Chad Gilhoi--Product Portfolio Manager with Xcel Energy
- Product Owner for Voice App
- “Hobbyist” developer
- Experience developing apps primarily Google Assistant but also Alexa
- Invited guest to Google I/O 2018 for having most heavily used app internationally
- Part of Google Assistant Community Program
- Frequent speaker locally on voice apps

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WHY NOW?

• Massive adoption of smart speakers
  – Smart speaker are the operating system of the smart home
• Commitment of tech giants to this technology
  – Google AI first strategy
  – Amazon 10,000 people working on Alexa
• Get experience early while customer expectations are low
A SAMPLING OF UTILITIES WITH VOICE APPS
HOW DID WE JUSTIFY THIS INTERNALLY

• THEORETICALLY
  – The desire to allow customers to interact with us using the channel of their choice
  – A somewhat vague promise of call-center call reductions
  – Improvement in customer satisfaction scores

• IN REALITY
  – Voice Assistants are getting a lot of press/publicity
  – We are starting to recognize/evaluate the value of “partnering” with leading companies like Google
  – Google pitched us on a unique opportunity
  – Somewhat “shiny object” syndrome
### MYSERVICES MODEL VS. DIY APP DEVELOPMENT

<table>
<thead>
<tr>
<th>MYSERVICES</th>
<th>DIY</th>
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<tbody>
<tr>
<td>+ Google develops the entire VUI</td>
<td>- You have to design the VUI (requires some experience and likely third party vendor)</td>
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<tr>
<td>+ Voice API features/libraries are changing rapidly and can be tracked/modified by Google</td>
<td>- You will have to keep up with all the feature/library changes and make sure code is up to date</td>
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<tr>
<td>+ Experience will be designed for all surfaces and updated accordingly</td>
<td>- You will have to specifically design the experience for various surfaces (now and future)</td>
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<tr>
<td>+ Knowledgeable people will help you solve your issues (for free)</td>
<td>- Less knowledgeable will help you solve your issues for $$$</td>
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<td>+ “Transactions” on Assistants fairly new and there is some benefit to standardizing the experience</td>
<td>- Possibility for disorienting customers by providing a one-off transaction experience</td>
</tr>
<tr>
<td>+ Easier to migrate from MyServices to DIY</td>
<td>- Difficult to adapt DIY to MyServices</td>
</tr>
<tr>
<td>- Currently, you are limited to two intents</td>
<td>+ You can serve up whatever intents you want</td>
</tr>
<tr>
<td>- Limited opportunity for a unique “persona”</td>
<td>+ You can develop your own persona, record audio, etc.</td>
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WHICH “INTENTS” SHOULD WE START WITH?--TOP CALL REASONS

- Bill pay (~25% of calls)
- Outage (seasonal)
- Account balance
- Credit
- High bill/bill inquiry
- Start/stop/cancel service
VOICE APP ARCHITECTURE
Get Customer Account

SEQUENCE DIAGRAM
WHERE TO BEGIN?

• Consider an initial release of a **simple app**—FAQs, Energy Tips, Partner Events Q&A etc.
  – This will allow you to familiarize yourself with the tools/process prior to embarking on a more complex project
  – Can be reasonably done in < 2 weeks

• Scout around your organization for people/systems involved in **Oauth**—you will need these people!
  – You will need to set up an Authorization Server if you don’t have one already—this can likely be handled by a system you already have in-house

• Determine what system will act as the **API gateway** (if you do not already have one set up)
  – This is the system where most of the coding will need to take place

• Get a team led by an “**Enterprise Architect**” to map the API calls Google performs to the internal services that can handle them

• Our Team:
  – Enterprise Architect, Project Manager, Product Owner, API Gateway owner/developer, Oauth owner/developer, + representatives from individual services
Evolving your Voice App

- Tips
- FAQs
- Customer service info
- Authentication
- Billing/payment
- Notifications
- Custom intents
- Insights
- 3rd party integration
- Smart home
- DSM/DR
GOOGLE OR AMAZON OR OTHER?

• Customers will expect you to have both Google and Amazon voice apps
  – No 3rd party support for Apple/Siri
• Google has a more intentional strategy for the Energy/Utility space when it comes to Voice Assistants
• Other Google advantages:
  – Native on Android phone = more surfaces
  – Implicit discovery = more users can find your app just by asking questions
  – No skills to download
  – You can use Dialogflow for chatbots if desired
  – Possible Nest or other Smart Home integrations
## Implicit Discovery

<table>
<thead>
<tr>
<th>Invocation</th>
<th>Intent</th>
<th>Impressions</th>
<th>Selections</th>
<th>Selection Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTO_MATCHED_BY_GOOGLE</td>
<td>assistant.MAIN</td>
<td>1</td>
<td>1</td>
<td>100%</td>
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<tr>
<td>How much rain did we get last $\text{SchemaOrg_Time_time-period}$?</td>
<td>assistant.MAIN</td>
<td>13</td>
<td>8</td>
<td>62%</td>
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<tr>
<td>How much did it snow $\text{SchemaOrg_Date_date}$?</td>
<td>assistant.MAIN</td>
<td>155</td>
<td>95</td>
<td>61%</td>
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<tr>
<td>How much snow did we get $\text{SchemaOrg_Date_date}$?</td>
<td>assistant.MAIN</td>
<td>426</td>
<td>248</td>
<td>58%</td>
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<tr>
<td>How much did it snow in $\text{SchemaOrg_Place_geo_city yesterday}$?</td>
<td>assistant.MAIN</td>
<td>16</td>
<td>7</td>
<td>44%</td>
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<tr>
<td>Did it rain $\text{SchemaOrg_Date_date}$?</td>
<td>assistant.MAIN</td>
<td>15</td>
<td>6</td>
<td>40%</td>
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Voice Assistant Installed Base - 2019

- Amazon Alexa Devices: 100+ Million
- Microsoft Cortana Devices: 400+ Million
- Apple Siri Devices: 500+ Million
- Google Assistant Devices: 1+ Billion

Source: Canelys, Amazon, Microsoft, Google, Apple
# CUSTOMER DIGITAL EXPERIENCE 2.0: VOICE APP ROADMAP

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<tbody>
<tr>
<td>Phase 0</td>
<td>Google Phase 0 Energy Saving Tips</td>
<td>Google Phase 1 (What's my balance, Pay my bill)</td>
<td>CIAM Upgrades</td>
<td>Google Phase 2 / Amazon Phase 1 (Report an outage, push notifications, advanced insights, telephony)</td>
<td>Phase 3 (HAN integration)</td>
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<tr>
<td>UX</td>
<td><img src="image1" alt="Xoel Energy" /></td>
<td><img src="image2" alt="Google Phase 1" /></td>
<td><img src="image3" alt="Google Phase 1" /></td>
<td><img src="image4" alt="Google Phase 2" /></td>
<td><img src="image5" alt="Phase 3" /></td>
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<td></td>
</tr>
<tr>
<td>Primary Devices</td>
<td><img src="image6" alt="Primary Devices" /></td>
<td><img src="image7" alt="Primary Devices" /></td>
<td><img src="image8" alt="Primary Devices" /></td>
<td><img src="image9" alt="Primary Devices" /></td>
<td><img src="image10" alt="Primary Devices" /></td>
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RESOURCES

- [https://voicebot.ai/](https://voicebot.ai/)  
  A great resource for news in the voice space

- [https://www.dashbot.io](https://www.dashbot.io)  
  Great analytics tools for bots and assistants

- [https://googlehome.slack.com](https://googlehome.slack.com)  
  Developer slack group

- [https://www.reddit.com/r/GoogleAssistantDev/](https://www.reddit.com/r/GoogleAssistantDev/)  
  “official” developer community page