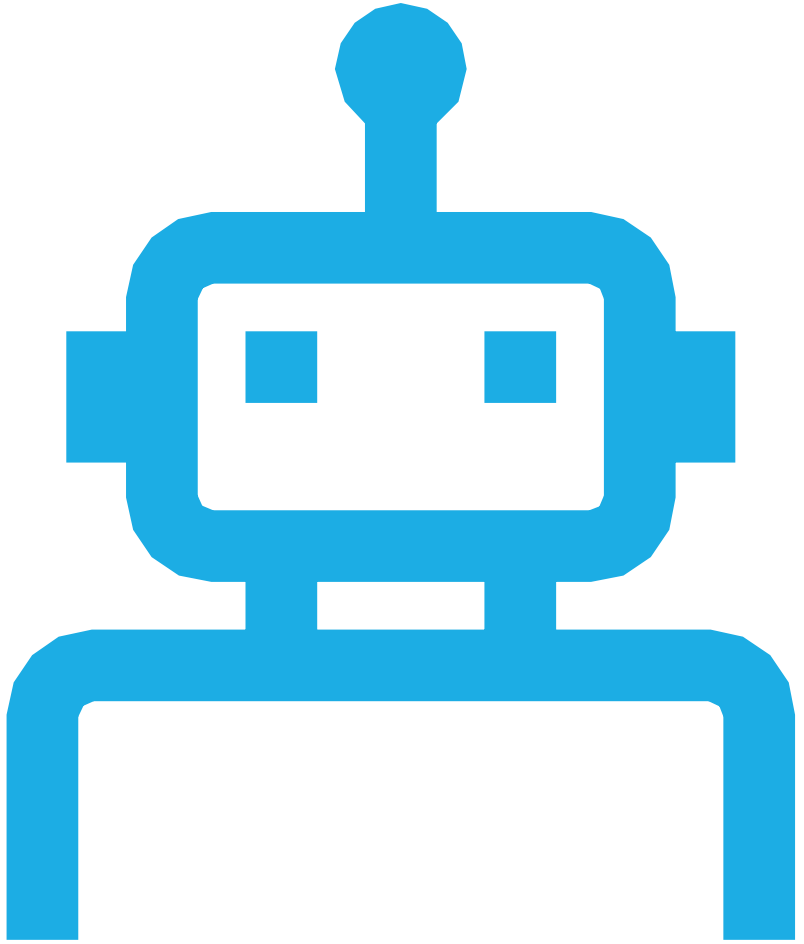
# BUILD YOUR AI BOT
## ONE CODE, ALL CHANNELS

**Arafat Tehsin**
Microsoft MVP (AI)
Technical Consultant, Velrada
@arafattehsin
github.com/arafattehsin



# AGENDA

- Introduction to the Bots
- Life cycle of the Bot Development
  - Plan & Design
  - Develop & Test (SDK 4.6)
    - Demos (so many demos)
  - Publish / Connect (Azure)
  - Evaluate
- Power Virtual Agents & Bot Framework Composer
  - Demos again
- Bot Builder Community Project
  - No demos, just sample videos ☺

# WHAT ARE BOTS?

Bots are services (powered by rules) that people interact with through conversation and messaging

Conversational AI - Set of technologies that enable computers to simulate real conversations

- Can be used in apps, browser or on IoT devices
- New user interface paradigm

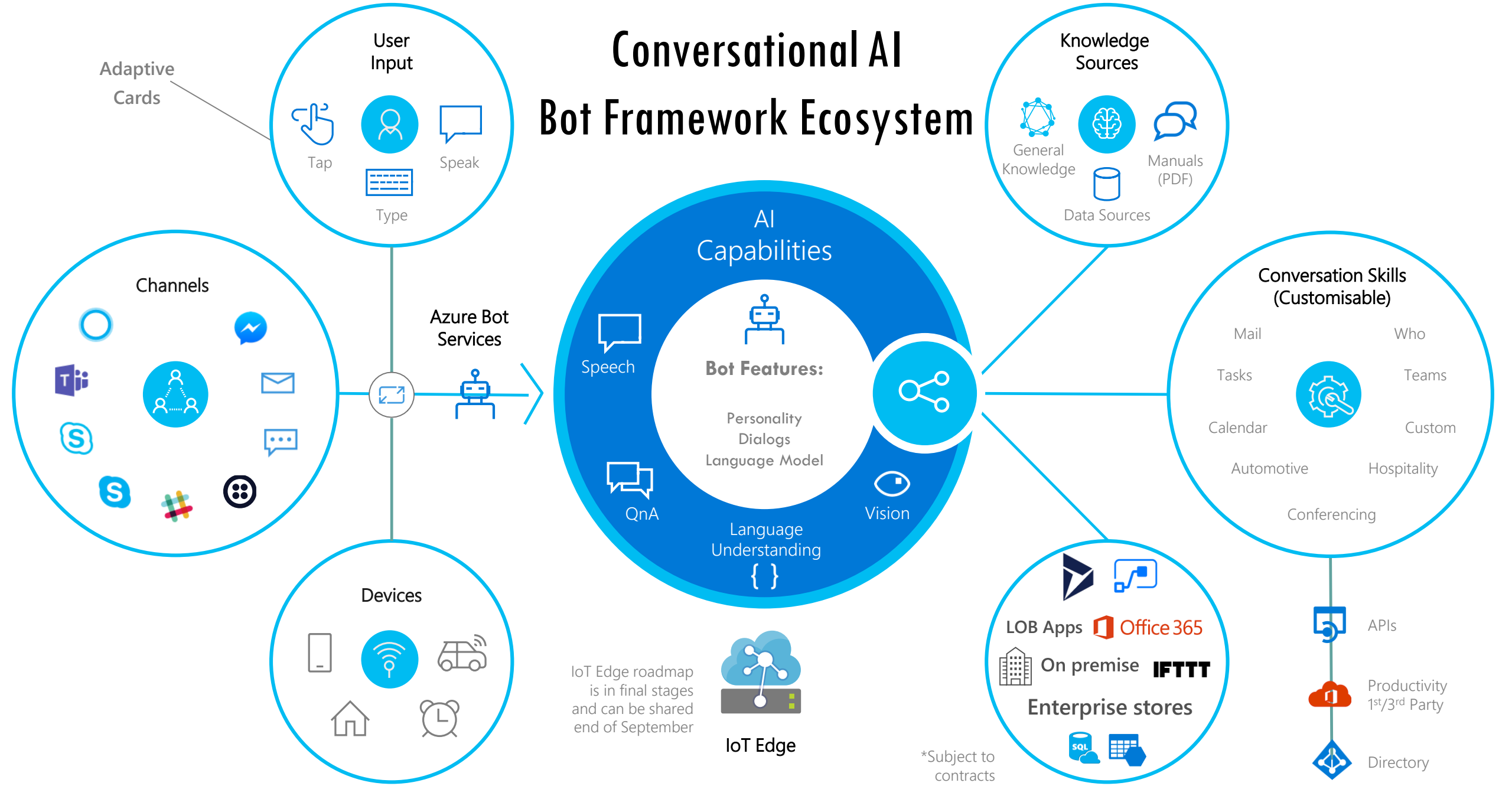
# WHY AND WHY NOW!

"25 Percent of Customer Service Operations Will Use Virtual Customer Assistants by 2020[1]" – Gartner

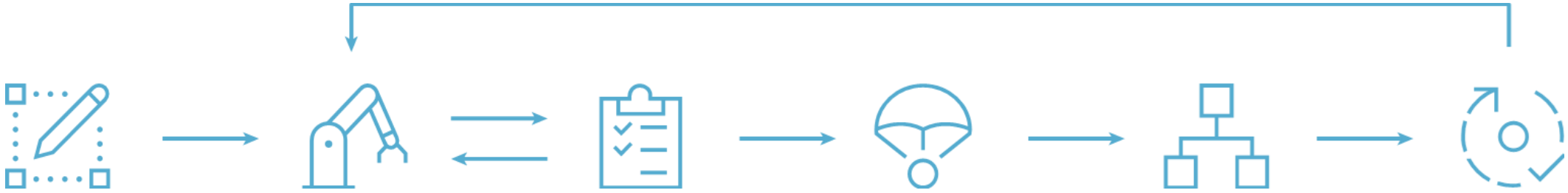
**Google Trends, Australia**

[1] - https://www.gartner.com/en/newsroom/press-releases/2018-02-19-gartner-says-25-percent-of-customer-service-operations-will-use-virtual-customer-assistants-by-2020

# Conversational AI
# Bot Framework Ecosystem



# LIFE CYCLE OF YOUR NEXT BOT



| Plan | Build | Test | Publish | Connect | Evaluate |
|---|---|---|---|---|---|
| Brainstorm | Bot Builder SDK | Emulator | DevOps Tools | WebChat, Teams, Slack, Skype, Messenger etc. | Application Insights |
| Visualize | Cognitive Services | Bot Inspector | Azure | + | LUIS Suggestions |
| Design | Quick Templates | Unit Tests | BYO Web Host | Custom (DirectLine) | |
| | Bot Framework Composer (Preview) | | | | |

***A fool with a plan can outsmart a genius without a plan!***

***T. Boone Pickens***

# PLAN

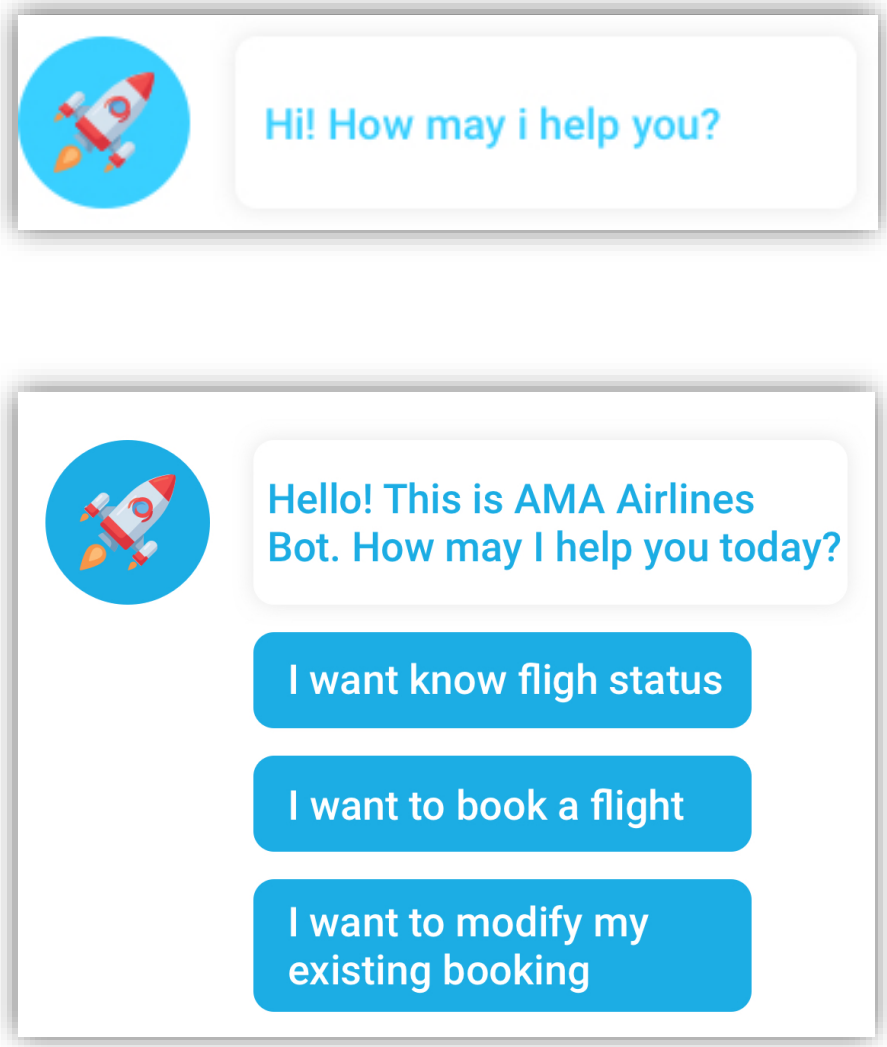
- Must be used by people
- Ability to choose over existing experiences (mobile apps, websites etc.)
- Prioritize the right factors

| Influencing Factors | !(Influencing Factors) |
| --- | --- |
| Does your bot solve the user's problem in an efficient (read: faster) way? | How AI driven your bot is. |
| Does it run on multiple platforms and devices? | Does it support NLP? |
| Is it discoverable enough? | Does it support voice or answers queries on your behalf? |

# UX – THE WELCOME MESSAGE

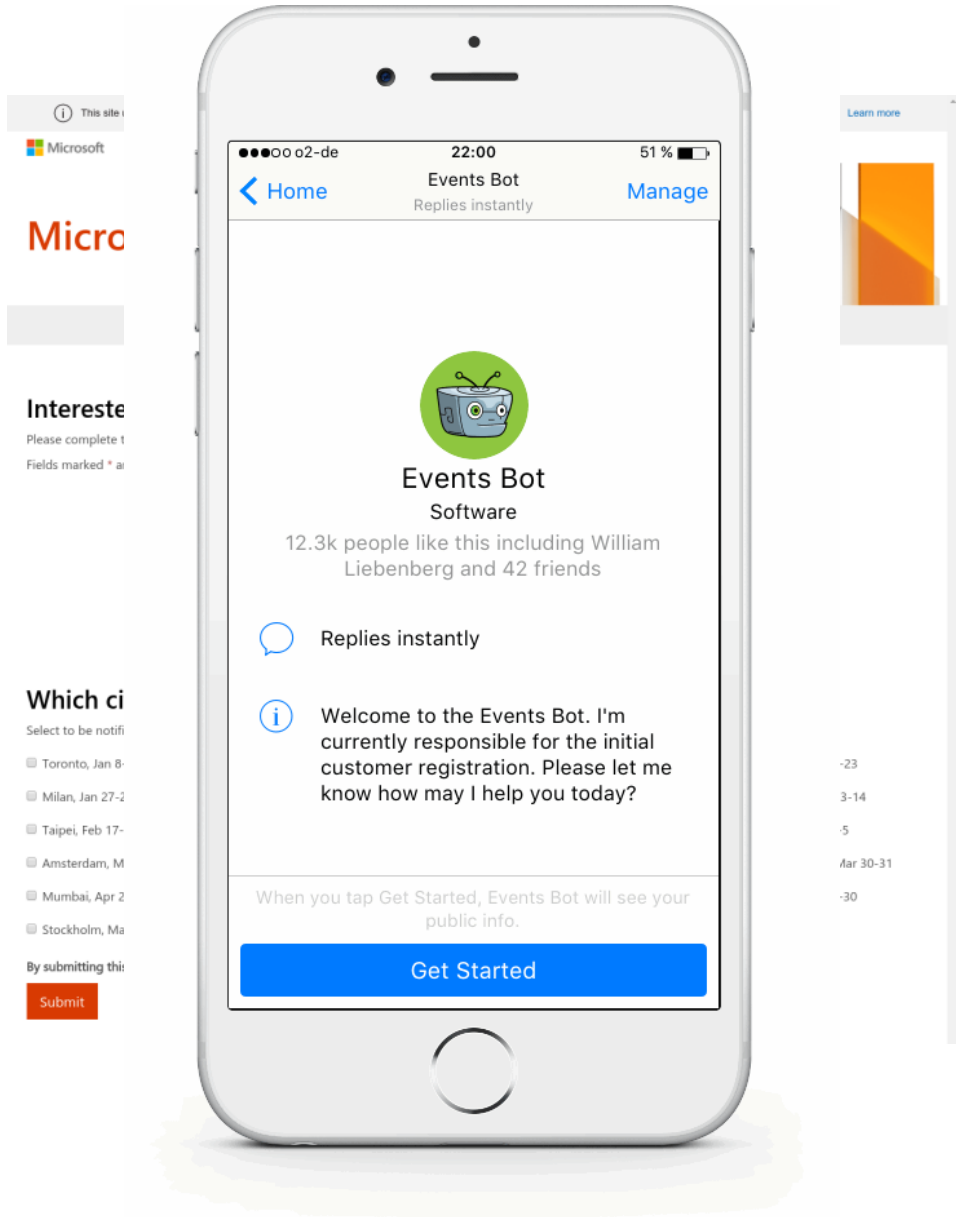
- First impression is the key for retaining customers
- Be descriptive and tell user/customer about bot's capabilities
- Menus are valuable than a simple text and they don't affect the smartness of your bot either

***Whether you're designing an app, website or a bot; UX should be your top most priority!***



# UX – TRADITIONAL VS. BOT

- Forms – Input Tools
- Messages (with rich controls) are the new UI
- Information gathering = Active Experience

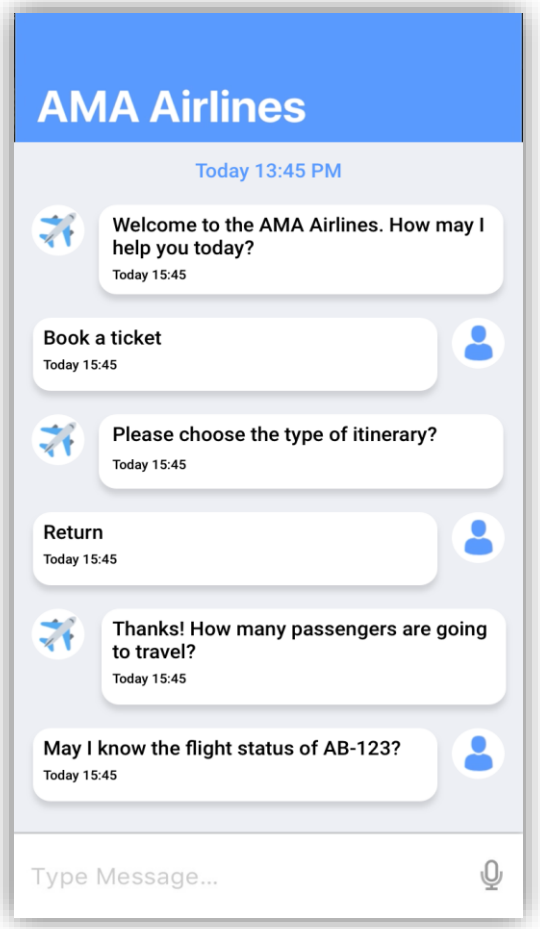


# UX – NAVIGATION PATTERNS

- Non-linear / free form
- Sequential / Guided

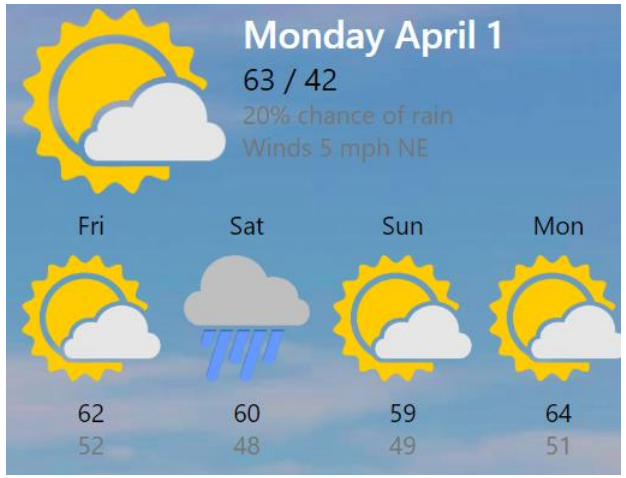
## Handle Interruptions

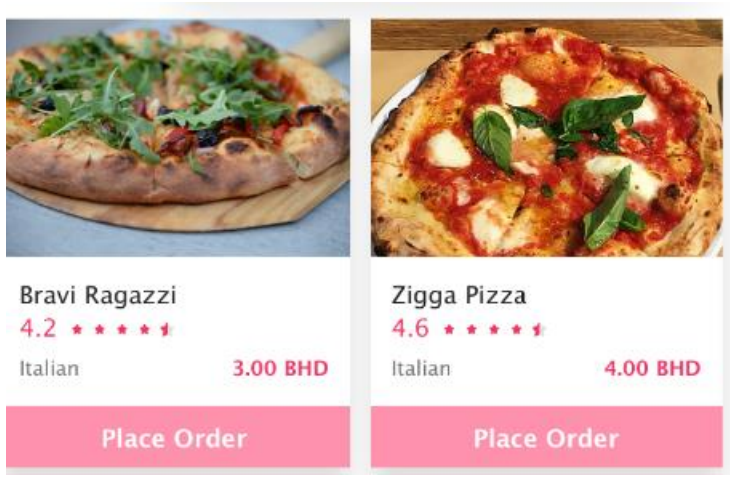
- Do you want to answer the user first?
- Discard your previous context and start from the new one?
- Resume from the previous discussion after answering this?

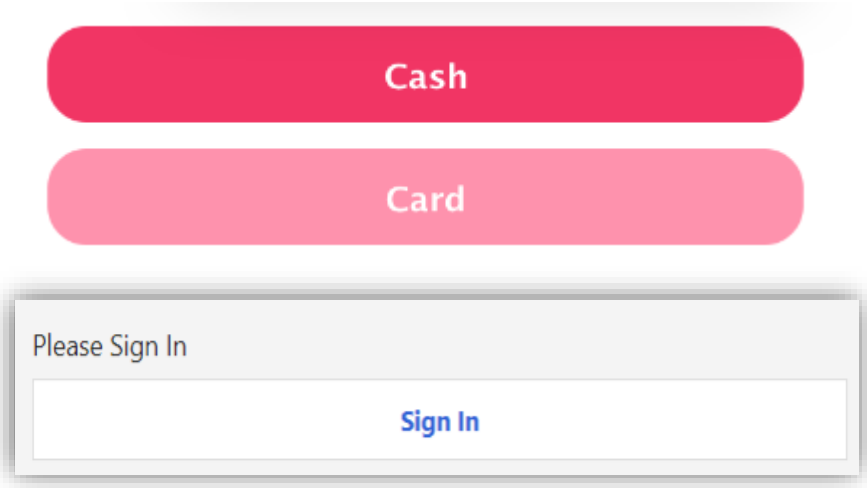


# UX – DESIGN ELEMENTS - 1

- Rich Controls
  - Buttons, Images, Carousels
  - Cards (Adaptive, Audio, Video, Sign-In, Hero, Thumbnail etc.)



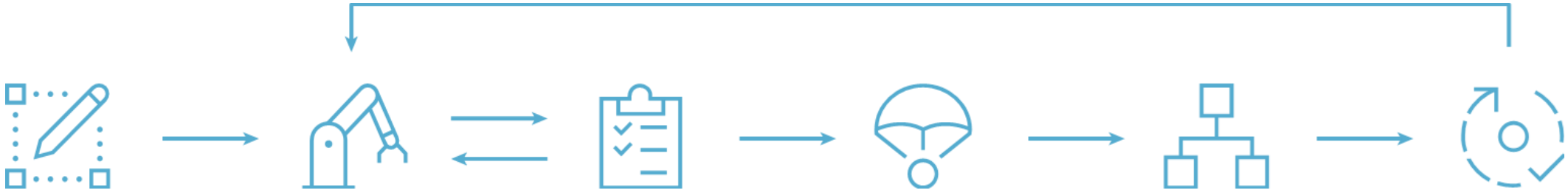
# UX – DESIGN ELEMENTS - 2

- Text and NLU (Natural Language Understanding)
  - Microsoft LUIS
  - IBM Watson API*
  - Amazon Alexa*
  - Google DialogFlow

  For e.g. /start vm “startrek 1”

- Speech
  - Cognitive Speech APIs

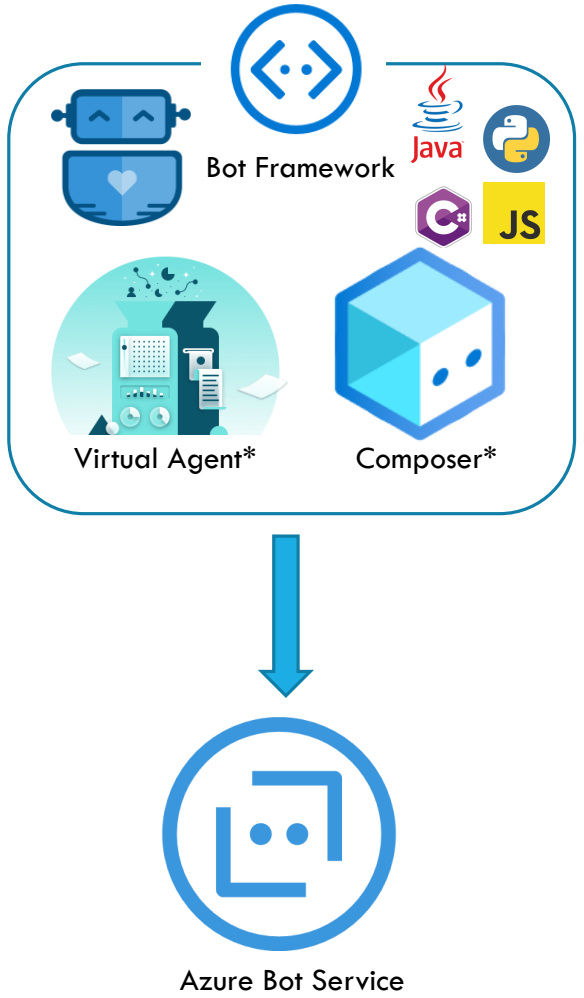
# LIFE CYCLE OF YOUR NEXT BOT



| Plan | Build | Test | Publish | Connect | Evaluate |
|---|---|---|---|---|---|
| Brainstorm | Bot Builder SDK | Emulator | DevOps Tools | WebChat, Teams, Slack, Skype, Messenger etc. | Application Insights |
| Visualize | Cognitive Services | Bot Inspector | Azure | + | LUIS Suggestions |
| Design | Quick Templates | Unit Tests | BYO Web Host | Custom (DirectLine) | |
| | Bot Framework Composer (Preview) | | | | |

# CHOOSE THE RIGHT OPTION!

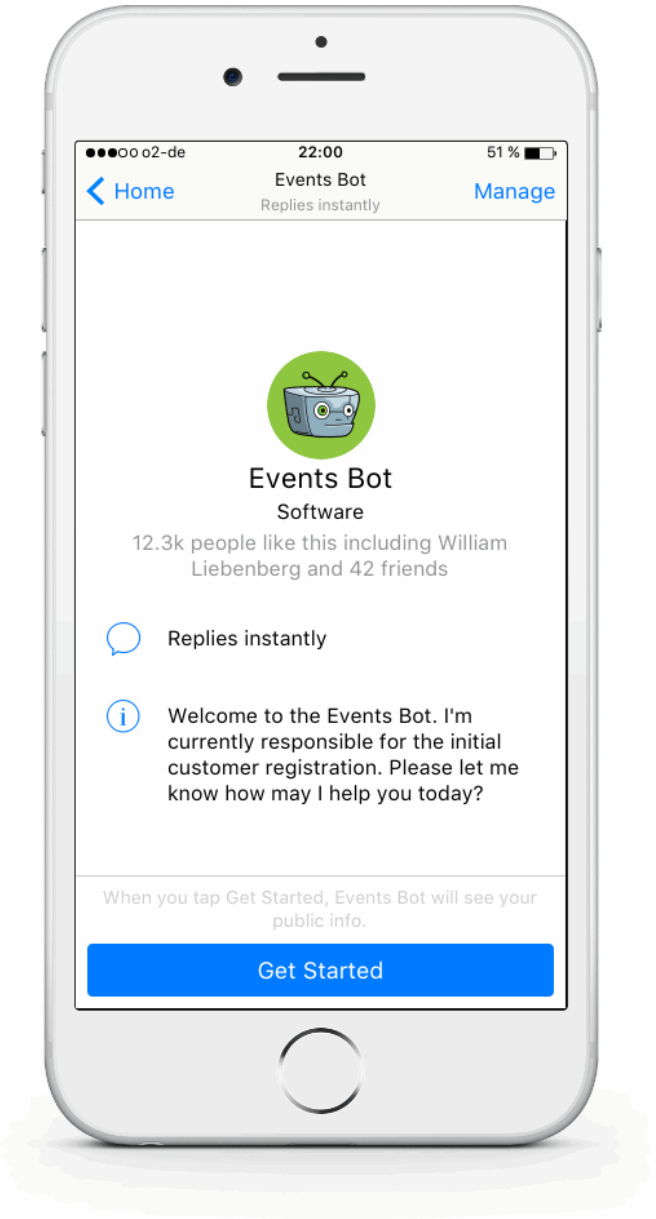
- Business objective is the key
- Code vs No-Code
- Bot Framework (or Composer*) Bot, Virtual Assistant (Enterprise) or Power Virtual Agent*?




* Preview

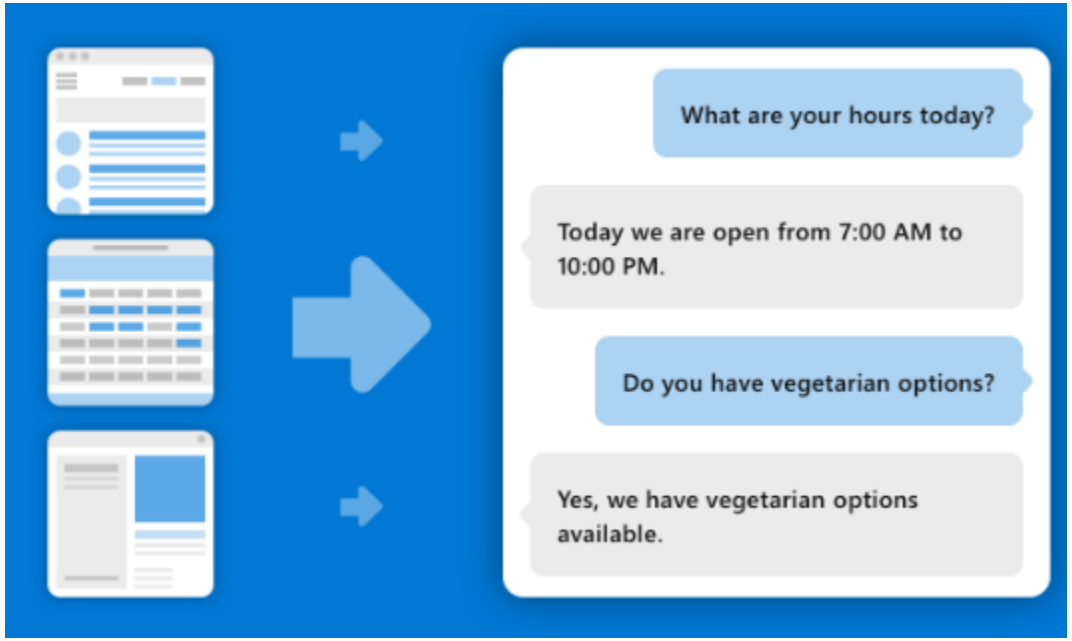
# DEMO

## ~~HELLO WORLD~~
## EVENTS BOT



# QNA MAKER

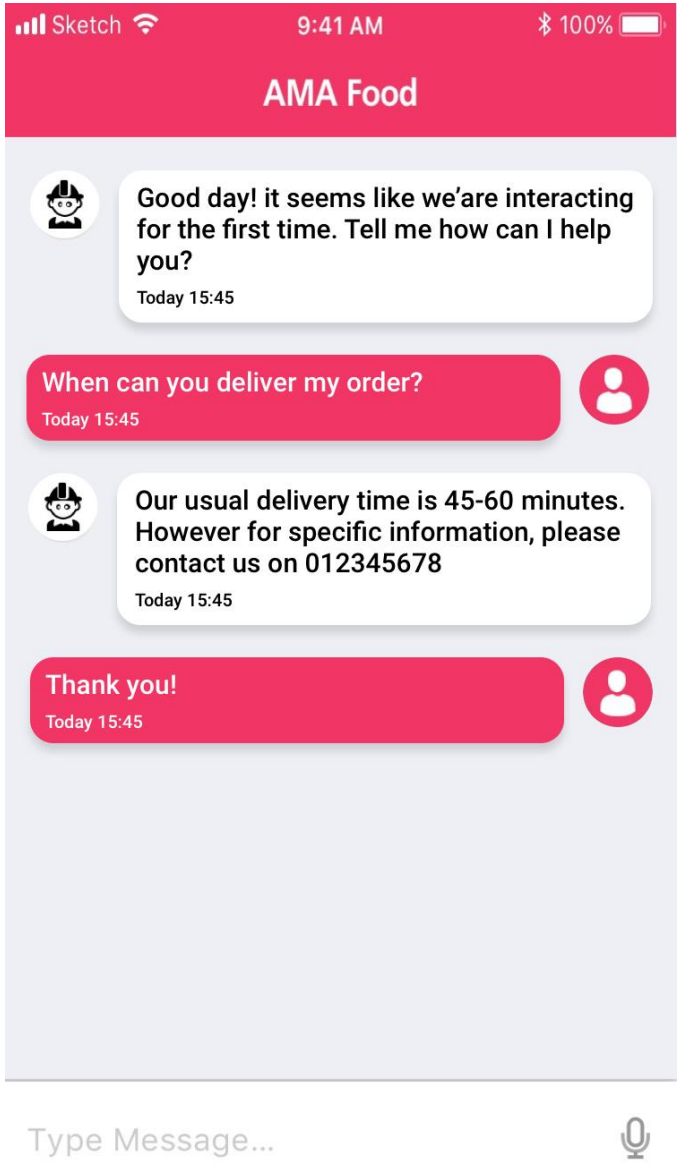
- Create conversational layer over your existing data (FAQs, product materials, manuals or support documents)
- Choose a persona for your brand that's professional, friendly, witty, caring or enthusiastic.
- Markdown support by default
- Support for more than 50 languages



# DEMO

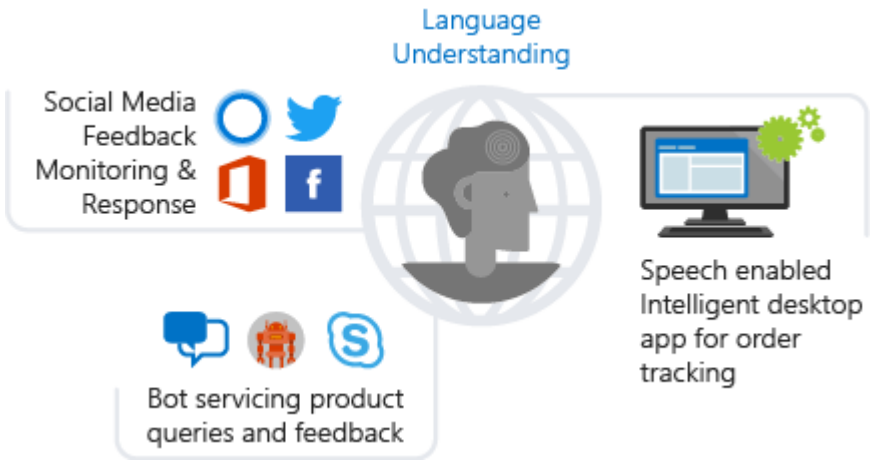
## FOOD BOT

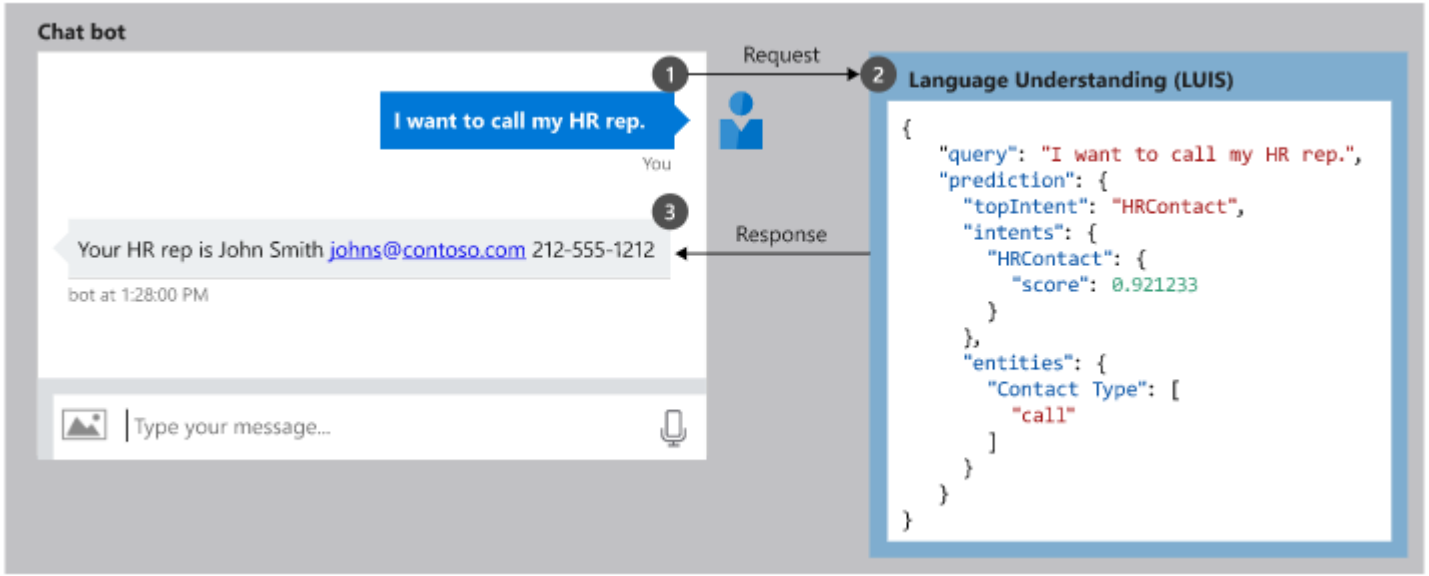
### QNA MAKER



# LUIS

- Add natural language capabilities to your bots (or in any kind of apps)
- Pre-built entities let you build custom language solution
- Big set of tools available to accelerate your dev cycle
- More than 20 languages are supported
- Text Analytics out of the box

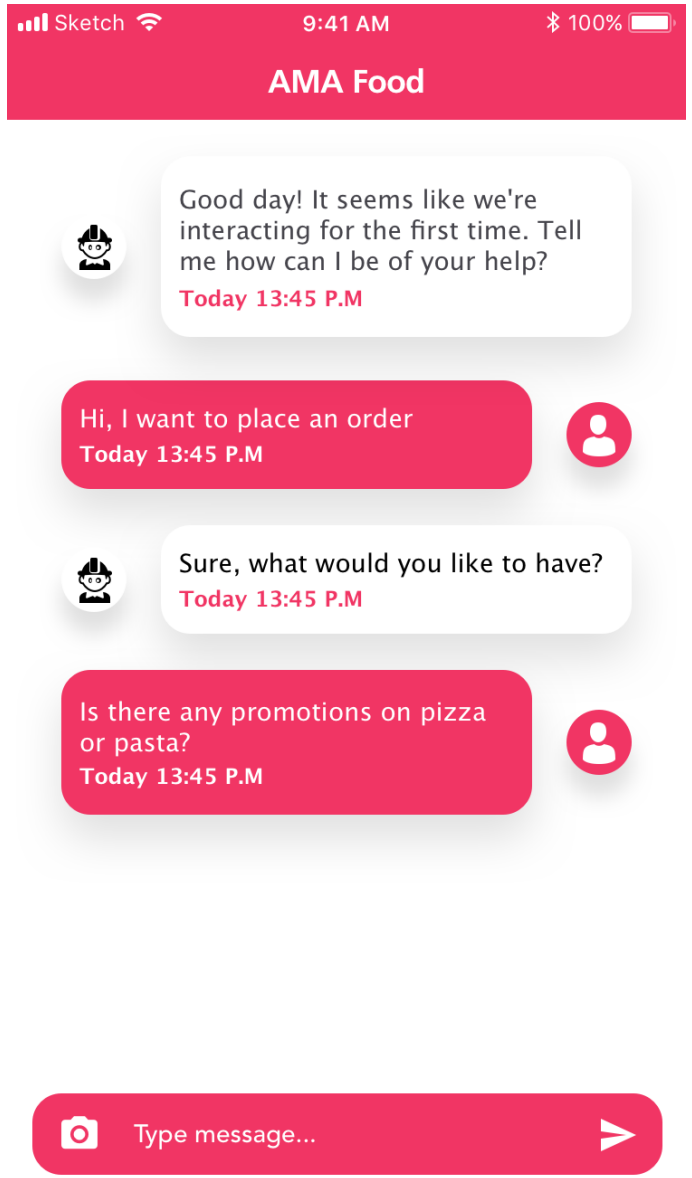


# DEMO

## FOOD BOT

### LANGUAGE UNDERSTANDING INTELLIGENT SERVICE (LUIS)



# QNA MAKER VS. LUIS

## Information Based Scenario

User query

What is your carry-on baggage policy?

Answer retrieval from QnA Maker

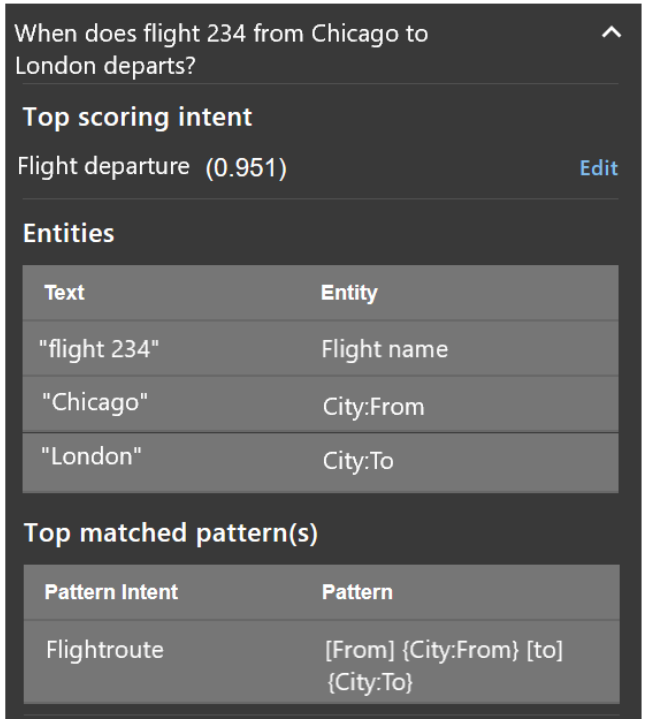
QnA Maker

Are you flying domestic or international?

Domestic

International

## Task based Scenario




User query

Intent & entity detection

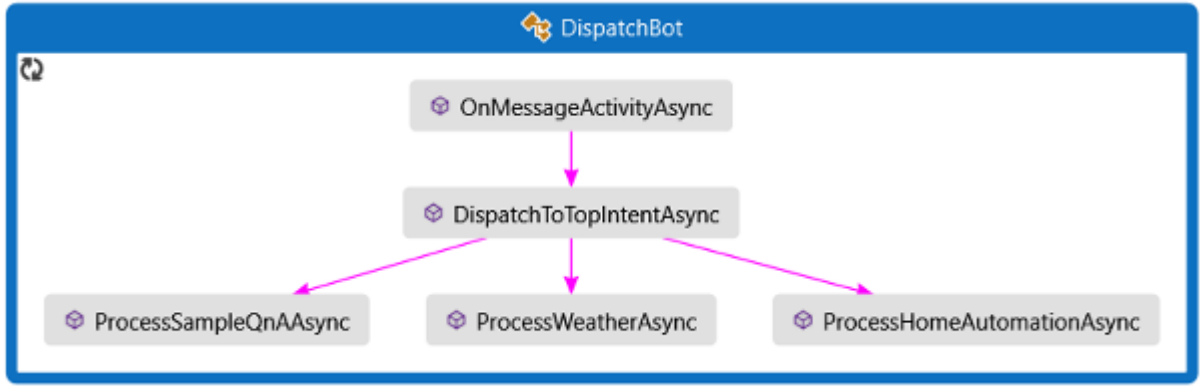
Departure time from flight API

Flight 234 leaves Chicago airport at 7.00 PM local time

Extracted from @thatmattwade's slides

# DISPATCH TOOL

- Effective bot builder tool
- Dispatch intent across multiple components (dialogs) of the bot
- Combines LUIS, QnA Maker and other knowledge bases for the bot into unified language model



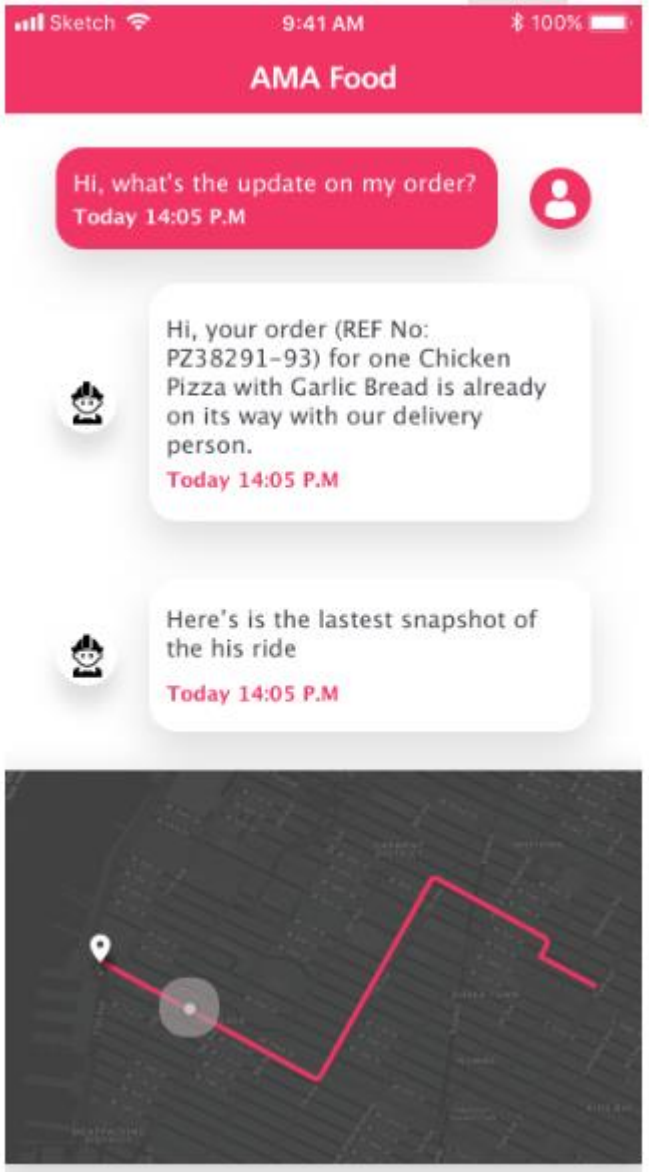
# DISPATCH TOOL

```
dispatch init -n FoodDispatch --luisAuthoringKey “<LUISkey>" --luisAuthoringRegion westus

dispatch add -t luis -i “<appId>" -n "FoodApp" -v 0.1 -k “<LUISKey>" --intentName
l_foodLUIS

dispatch add -t qna -i “<kbId>" -n "qandademoservice" -k “<QnAKey>" --intentName q_FoodQnA

dispatch create
```

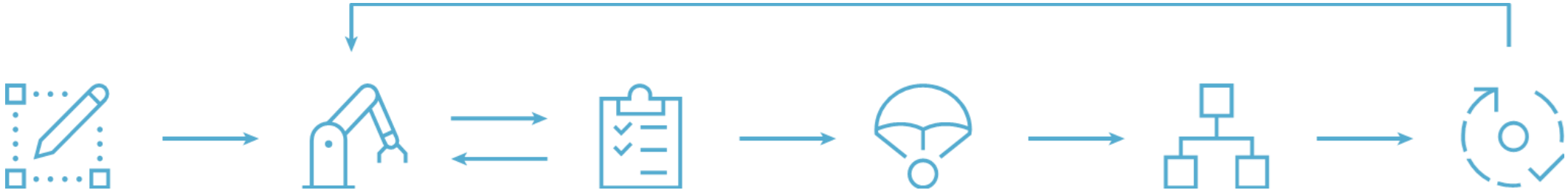
```
PS C:\Users\Arafat\source\repos\CognitiveRocket\Community\2019\Azure AI Meetup\Demos\AzureAIMeetup\FoodDispatchBot\CognitiveModels> dispatch init -n
 FoodDispatch --luisAuthoringKey "dd0e9b8d4973410f902f435f05a82028" --luisAuthoringRegion westus
>>
FoodDispatch.dispatch created
PS C:\Users\Arafat\source\repos\CognitiveRocket\Community\2019\Azure AI Meetup\Demos\AzureAIMeetup\FoodDispatchBot\CognitiveModels> dispatch add -t
luis -i "22b54256-2d94-4b24-9fa4-f6709bddc421" -n "FoodApp" -v 0.1 -k "dd0e9b8d4973410f902f435f05a82028" --intentName l_FoodLUIS
LUIS app id:22b54256-2d94-4b24-9fa4-f6709bddc421, name:FoodApp, authoring key:dd0e9b8d4973410f902f435f05a82028, version:0.1 added to FoodDispatch.di
spatch
PS C:\Users\Arafat\source\repos\CognitiveRocket\Community\2019\Azure AI Meetup\Demos\AzureAIMeetup\FoodDispatchBot\CognitiveModels> dispatch add -t
qna -i "8deab10b-b63b-4dc0-bff5-e3446745a964" -n "qandademoservice" -k "e7c64fdb-0d9b-42ba-9f50-ac0f94564f6e" --intentName q_FoodQnA
QnA kb id:8deab10b-b63b-4dc0-bff5-e3446745a964, name:qandademoservice, subscription key:e7c64fdb-0d9b-42ba-9f50-ac0f94564f6e added to FoodDispatch.d
ispatch
PS C:\Users\Arafat\source\repos\CognitiveRocket\Community\2019\Azure AI Meetup\Demos\AzureAIMeetup\FoodDispatchBot\CognitiveModels> dispatch create
Exporting services for dispatch...
Exporting FoodApp LUIS application...
Exported LUIS app JSON is at C:\Users\Arafat\source\repos\CognitiveRocket\Community\2019\Azure AI Meetup\Demos\AzureAIMeetup\FoodDispatchBot\Cogniti
veModels\data\_L_FoodApp.json
Exporting qandademoservice QnA kb...
```

# DEMO

## FOOD BOT
## DISPATCH



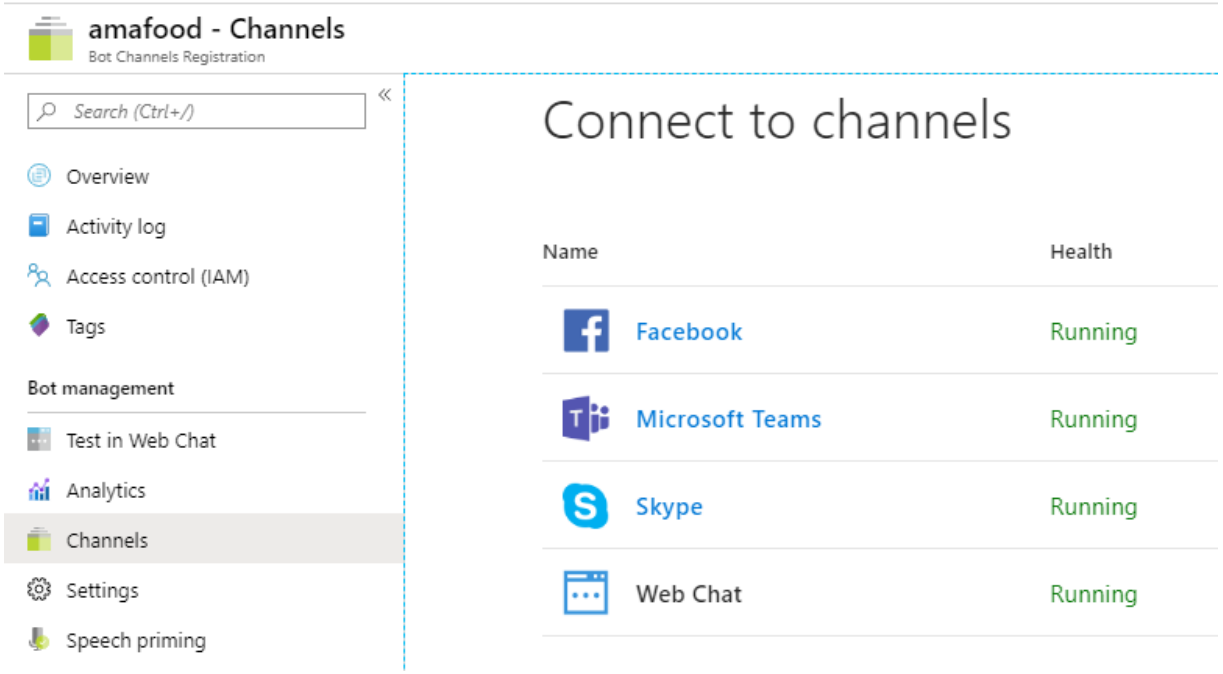
# LIFE CYCLE OF YOUR NEXT BOT



| Plan | Build | Test | Publish | Connect | Evaluate |
|---|---|---|---|---|---|
| Brainstorm | Bot Builder SDK | Emulator | DevOps Tools | WebChat, Teams, Slack, Skype, Messenger etc. | Application Insights |
| Visualize | Cognitive Services | Bot Inspector | Azure | + | LUIS Suggestions |
| Design | Quick Templates | Unit Tests | BYO Web Host | Custom (DirectLine) | |
| | Bot Framework Composer (Preview) | | | | |

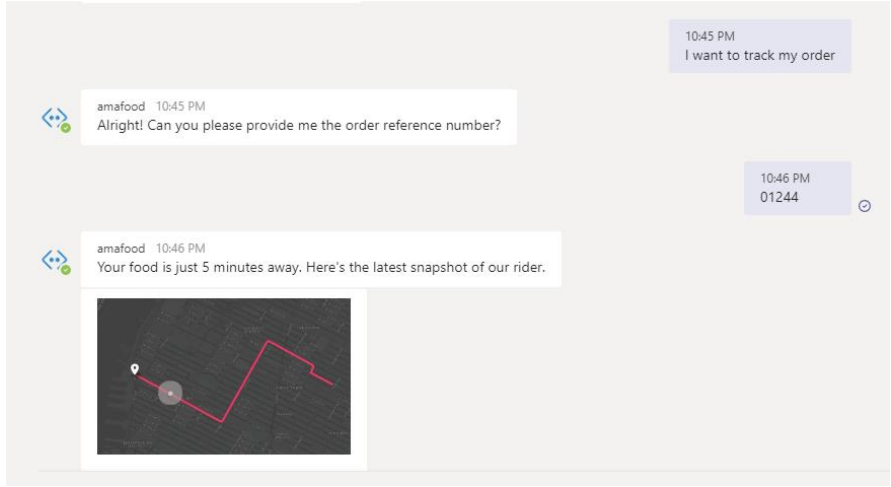
# AZURE BOT SERVICE

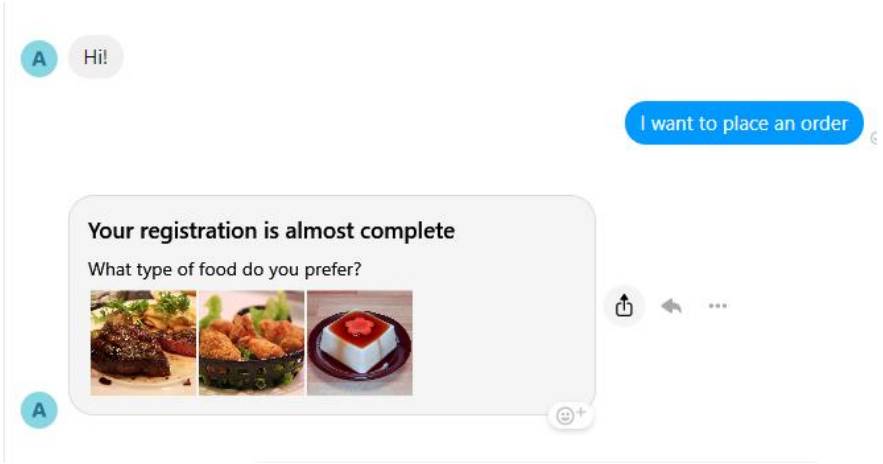
- Create Channel Registration in Bot Services
  - Note Application ID and Password (PLEASE! 🤦) and add it to your bot's appsettings.json
  - Configure the channels (they won't work right now, don't get excited)
- Publish your bot as App Service
  - CLI / VS 2019 – all your choice!
- Try out in Web Chat and then the rest..



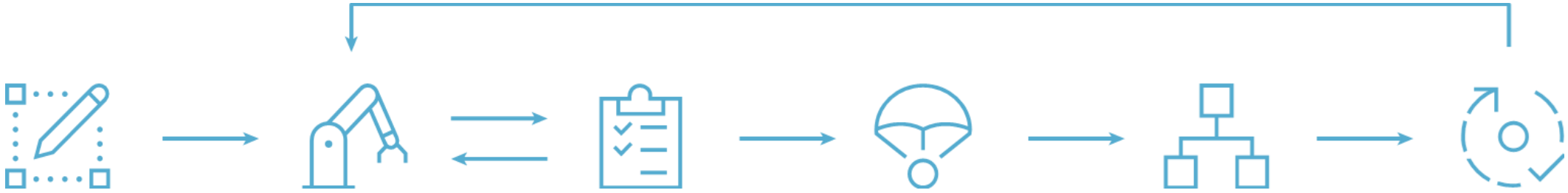
# ONE CODE: ALL CHANNELS!

- Just follow the integration guide on Azure
- Facebook Messenger, Teams, Slack and much more!
- Community Extensions (Opensource) such as WeChat, Twilio, WhatsApp etc.



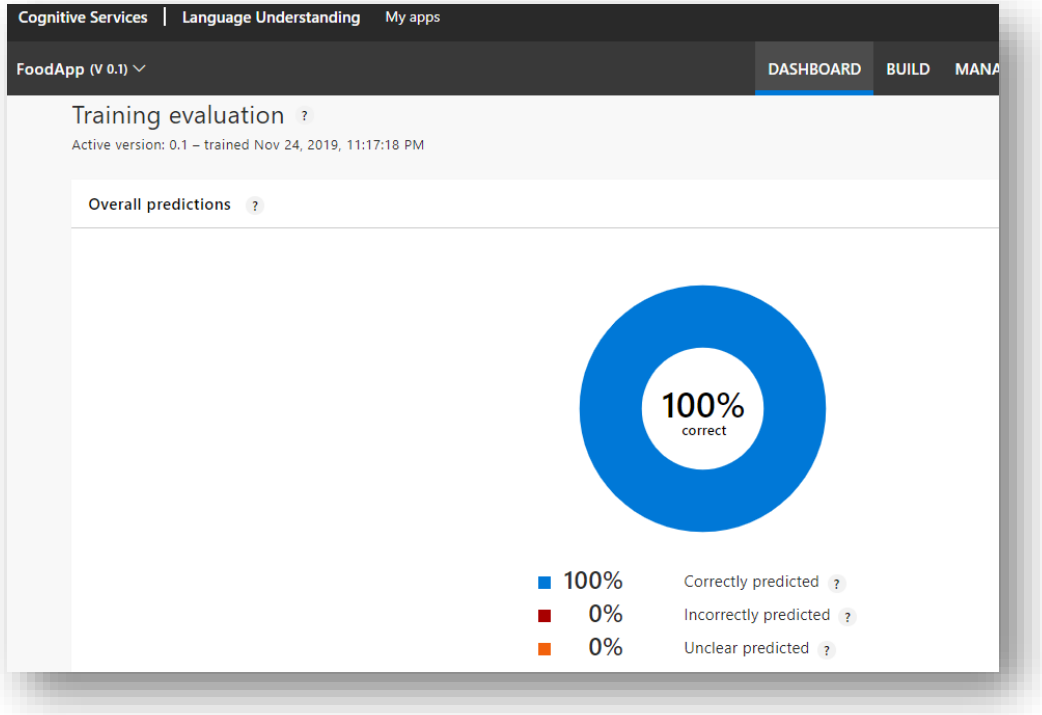
# LIFE CYCLE OF YOUR NEXT BOT



| Plan | Build | Test | Publish | Connect | Evaluate |
|---|---|---|---|---|---|
| Brainstorm | Bot Builder SDK | Emulator | DevOps Tools | WebChat, Teams, Slack, Skype, Messenger etc. | Application Insights |
| Visualize | Cognitive Services | Bot Inspector | Azure | + | LUIS Suggestions |
| Design | Quick Templates | Unit Tests | BYO Web Host | Custom (DirectLine) | |
| | Bot Framework Composer (Preview) | | | | |

# EVALUATE

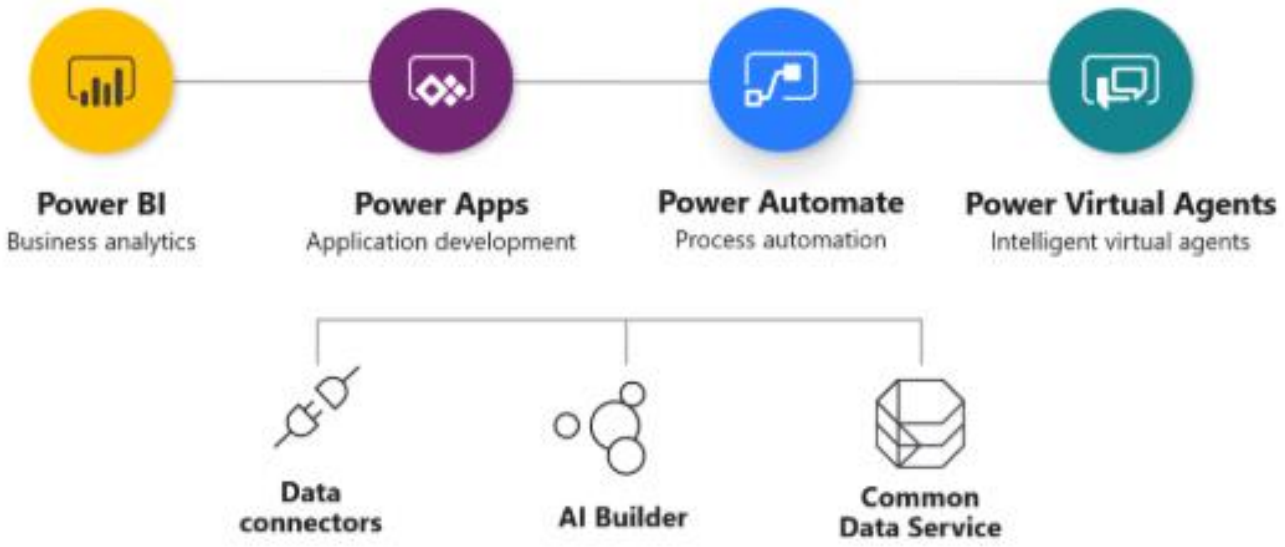
- Keep evaluating your dispatch
- Monitor performance for LUIS & QnA Maker from the portal dashboard



# *Latest Conversational AI announcements from the Microsoft Ignite, 2019*

# POWER VIRTUAL AGENTS

- Latest to the Power Platform Family
- Total No-code approach
- Create powerful bots using a guided GUI
- Empower customer support specialists / people closest to customer
- No prior knowledge of data science / developers is required

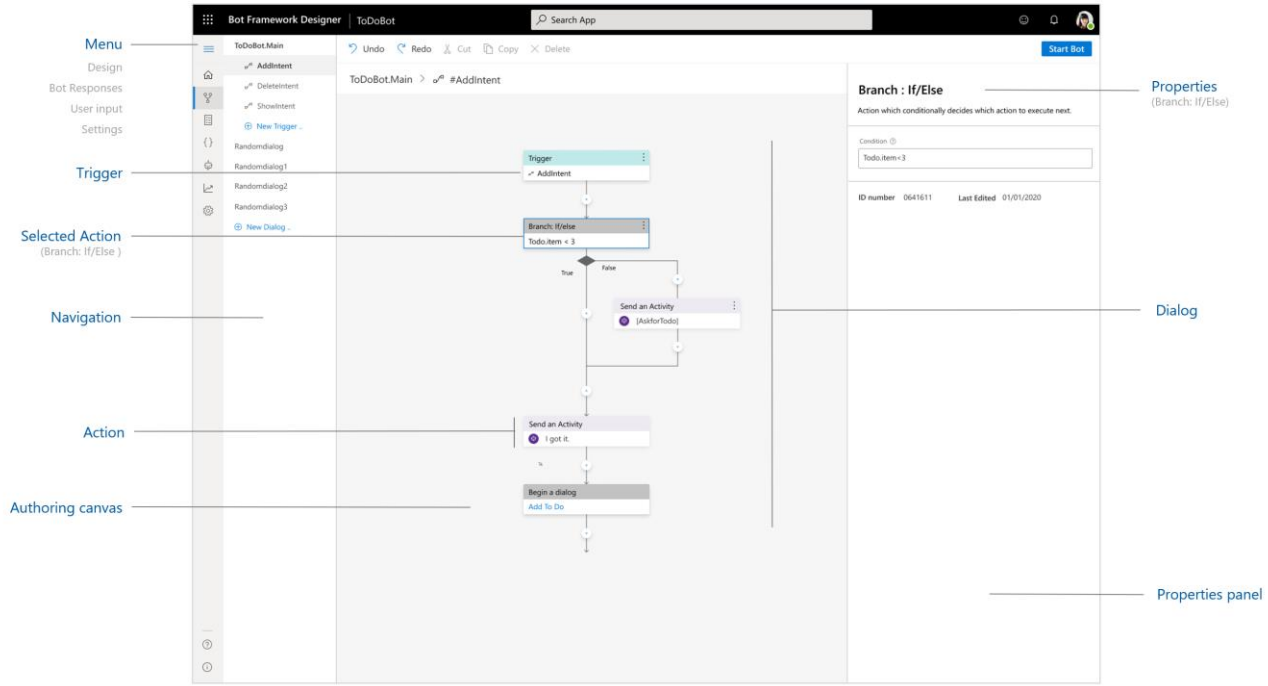


# DEMO

## POWER VIRTUAL AGENTS

# BOT FRAMEWORK COMPOSER

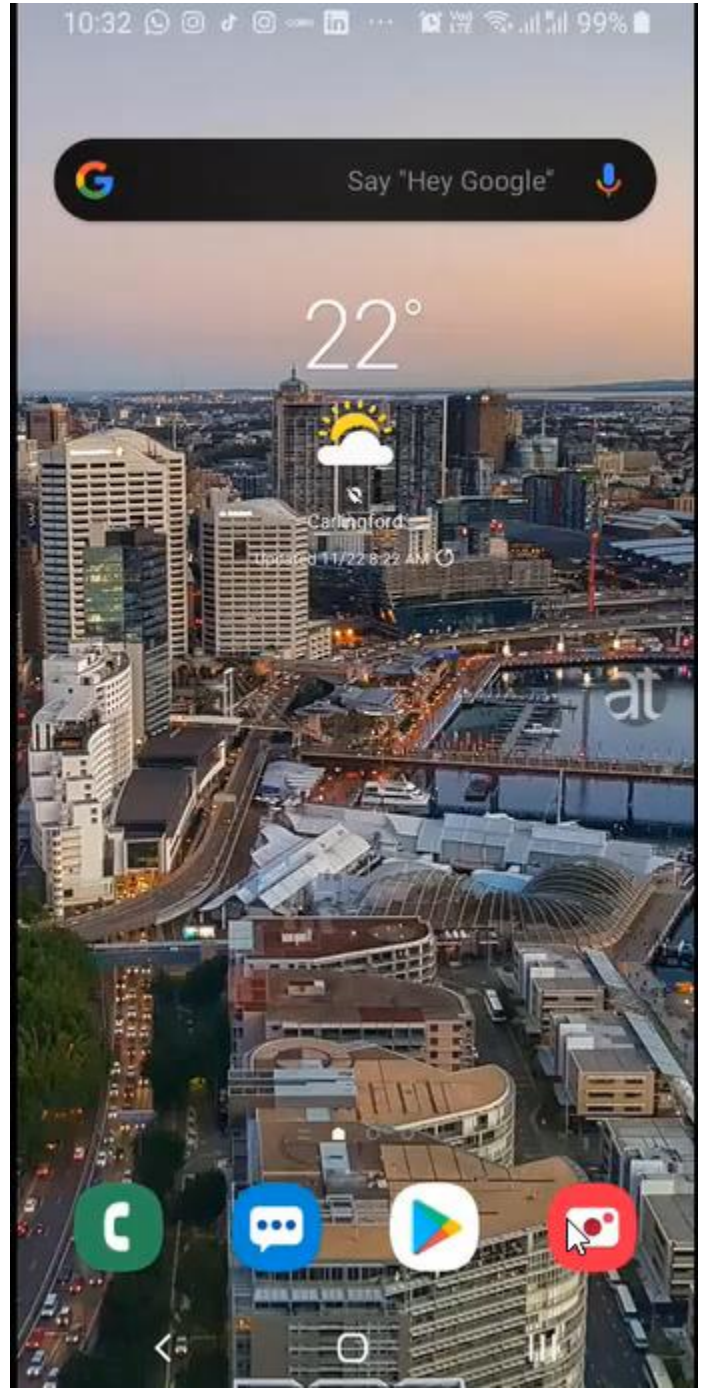
- Open source development tool
- A visual editing canvas for authoring and visualizing the conversation flow
- Language understanding (NLU) in-context of conversation authoring.
- Tools to train and manage dialog components (including NLU and QnA)
- Author Bot responses (powered by Language generation and templating system)
- A ready-to-use bot runtime

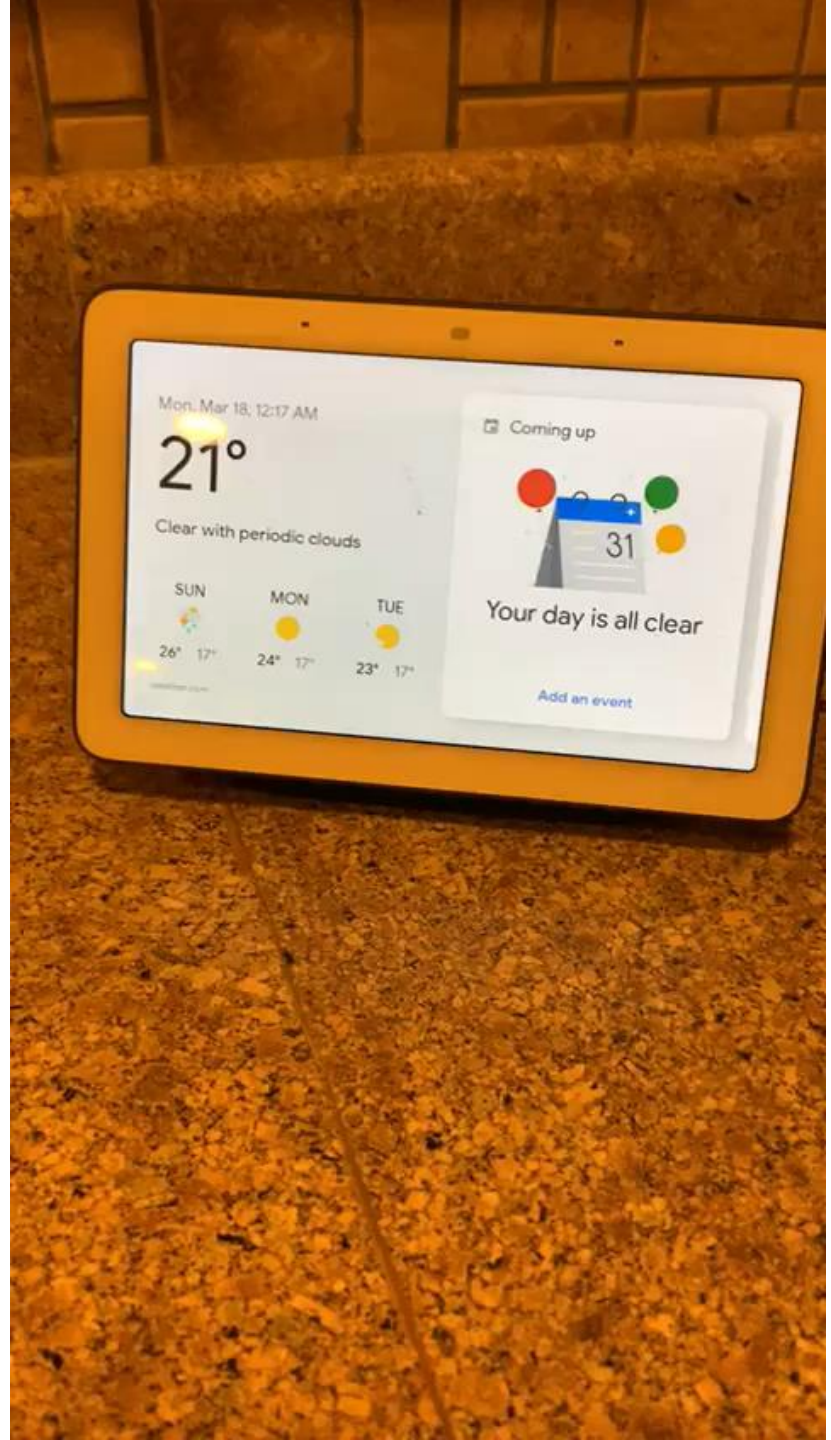



Extracted from @benbrown's slides

# DEMO

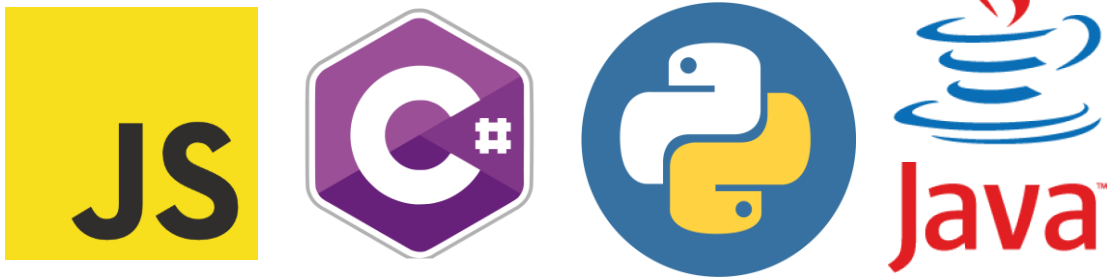
## BOT FRAMEWORK COMPOSER

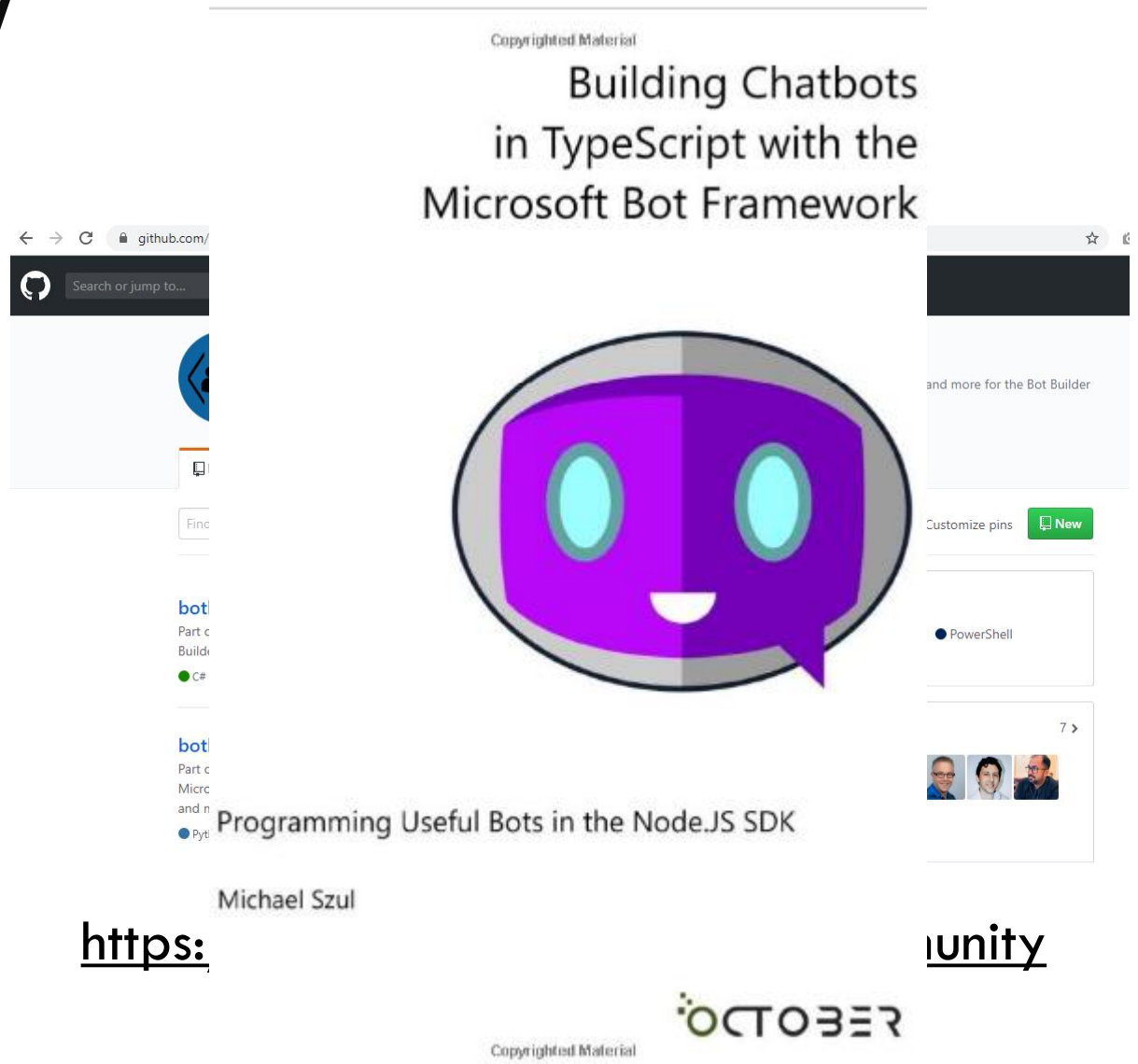

10:32
99%
Say "Hey Google"
22°
Carlingford
Updated 11/22 8:22 AM


Mon, Mar 18, 12:17 AM
21°
Clear with periodic clouds
SUN
26° 17°
MON
24° 17°
TUE
23° 17°
Coming up
31
Your day is all clear
Add an event

# BOT BUILDER COMMUNITY

- Open source, combined power
- Extensions around Middleware, Dialogs & Recognizers
- Several famous channels adapters
- Recognized by Microsoft Bot Framework product team




https: unity

# QUESTIONS?

- **WHAT WE HAVE LEARNT!**
  - Planning is essential from Welcome Message to Navigation Patterns
  - Use QnA Maker if you've got a simple task to do
  - Use LUIS & QnA if you've got a complex task to achieve
  - Power Virtual Agent is best if you want to empower your team for authoring the conversations
  - Bot Framework Composer is the NEXT BIG THING!
  - Opensource contributions matter – be a part of it!

- **LEARN**
  - https://azure.microsoft.com/en-au/services/bot-service/
  - https://docs.microsoft.com/en-us/learn/paths/create-bots-with-the-azure-bot-service/
  - https://powerva.microsoft.com/
  - https://github.com/microsoft/BotBuilder-Samples
  - https://www.arafattehsin.com/blog/
  - https://www.github.com/botbuildercommunity/
  - https://www.github.com/arafattehsin/cognitiverocket/