

# A DEEP DIVE INTO CONVERSATIONAL AI WITH MICROSOFT BOT FRAMEWORK





# HELLO!

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# AGENDA

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- X WHY and WHY NOW
- X Microsoft Conversational AI Stack
- X Language Capabilities
- X Bot Framework Composer
  - X Webchat
  - X Teams
  - X Alexa
- X Custom Adapters
- X Skills



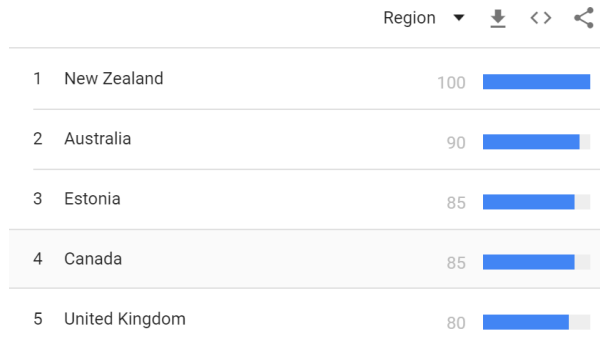
# Bots are the new apps

– Satya Nadella

# WHY AND WHY NOW?



“Bots / Agent Interfaces are the top 3<sup>rd</sup> trend for Digital Technology in 2020<sup>[1]</sup>” – Gartner



< Showing 1–5 of 66 regions >

Google Trends, Worldwide

[1] - <https://www.gartner.com/smarterwithgartner/5-digital-technology-trends-for-2020/>





## Customer Onboarding or KYC process

## Retail / Shopping



## Find the right product

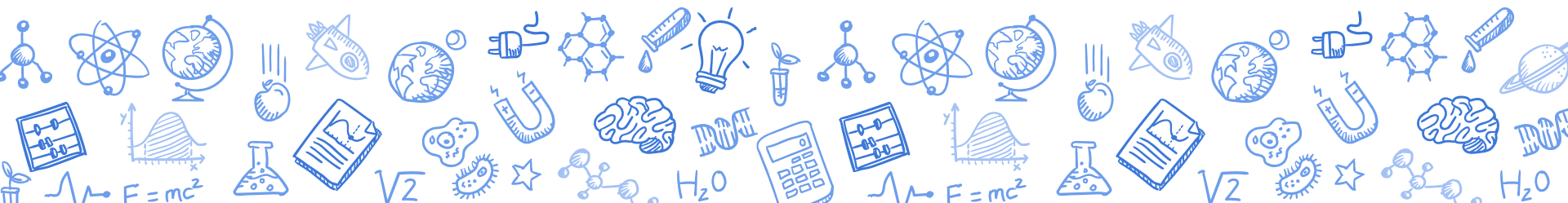
## Retail / Shopping



## HR – booking holiday, fault reporting

## In-house Support

## RICH TOOLS / FEATURES



## Software as a service, SaaS solutions

To enable out-of-the-box Conversational AI services for key solutions

## Solution accelerators and templates, PaaS

To extend and enable key Conversational AI solutions

## Pre-trained AI, Cognitive Services

To add and customize language, speech, knowledge & vision

## Managed Bot Service, Azure Bot Service

To accelerate building, management and deployment of conversational AI

## Popular open source frameworks on GitHub

To fully integrate and customize your solution, with any AI technology



Enterprise Assistant



Power Virtual Agents



Virtual Assistant  
Solution Accelerator



Vision



Speech



Language



Decision



Web Search



Azure Bot Service

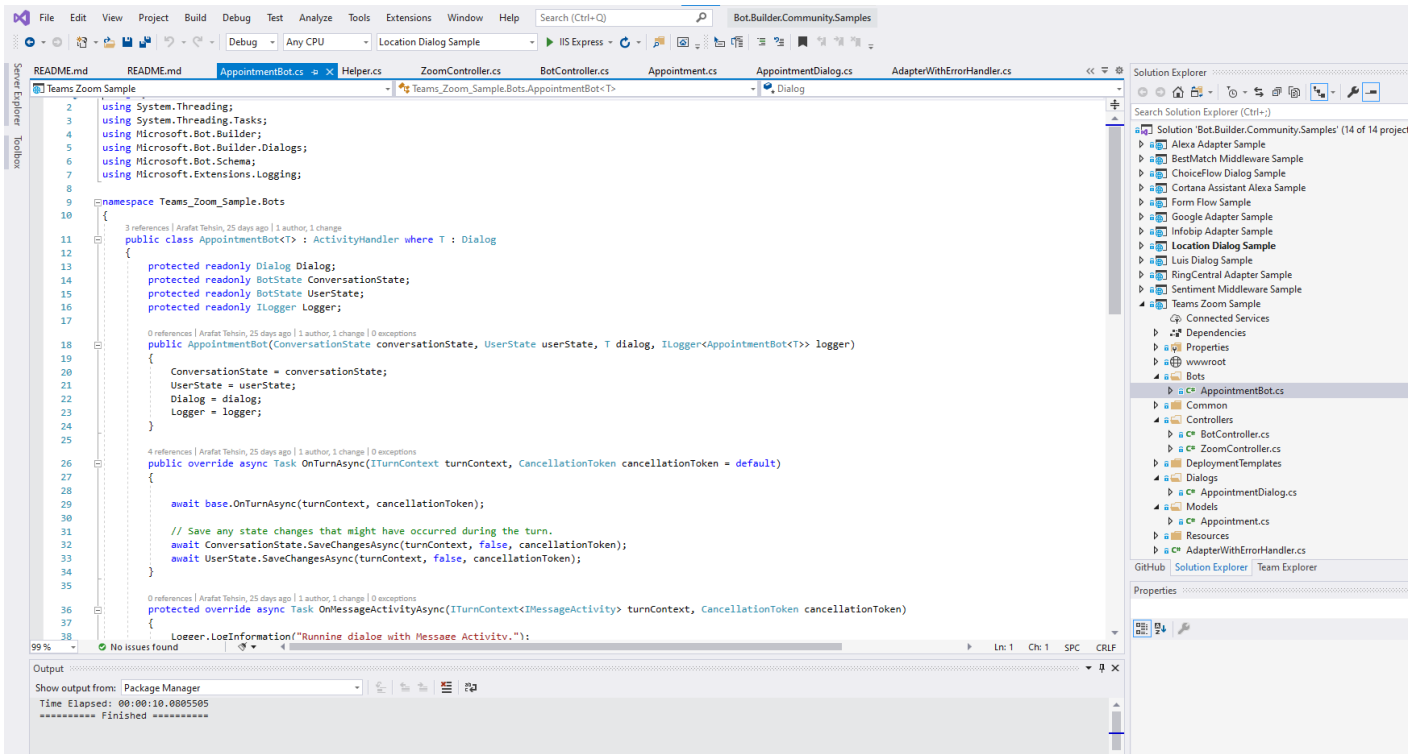


Bot Framework





# The Pro-Code



```
using System.Threading;
using System.Threading.Tasks;
using Microsoft.Bot.Builder;
using Microsoft.Bot.Builder.Dialogs;
using Microsoft.Bot.Schema;
using Microsoft.Extensions.Logging;

namespace Teams_Zoom_Sample.Bots
{
    3 references | Arafat Tahir, 25 days ago | 1 author, 1 change
    public class AppointmentBot<T> : ActivityHandler where T : Dialog
    {
        12
        {
            protected readonly Dialog Dialog;
            protected readonly BotState ConversationState;
            protected readonly BotState UserState;
            protected readonly ILogger Logger;

            0 references | Arafat Tahir, 25 days ago | 1 author, 1 change | 0 exceptions
            public AppointmentBot(ConversationState conversationState, UserState userState, T dialog, ILogger<AppointmentBot<T>> logger)
            {
                ConversationState = conversationState;
                UserState = userState;
                Dialog = dialog;
                Logger = logger;
            }

            4 references | Arafat Tahir, 25 days ago | 1 author, 1 change | 0 exceptions
            public override async Task OnTurnAsync(ITurnContext turnContext, CancellationToken cancellationToken = default)
            {
                29
                await base.OnTurnAsync(turnContext, cancellationToken);

                31
                // Save any state changes that might have occurred during the turn.
                32
                await ConversationState.SaveChangesAsync(turnContext, false, cancellationToken);
                33
                await UserState.SaveChangesAsync(turnContext, false, cancellationToken);
                34
            }

            0 references | Arafat Tahir, 25 days ago | 1 author, 1 change | 0 exceptions
            protected override async Task OnMessageActivityAsync(ITurnContext<IMessageActivity> turnContext, CancellationToken cancellationToken)
            {
                38
                Logger.LogInformation("Runnine dialow with Messaage Activitv.-");
            }
        }
    }
}
```

Solution Explorer

Search Solution Explorer (Ctrl+)

- Solution 'Bot.Builder.Community.Samples' (14 of 14 projects)
- Alexa Adapter Sample
- BestMatch Middleware Sample
- ChoiceFlow Dialog Sample
- Cortana Assistant Alexa Sample
- Form Flow Sample
- Google Adapter Sample
- Infobip Adapter Sample
- Location Dialog Sample
- Luis Dialog Sample
- Ring-Central Adapter Sample
- Sentiment Middleware Sample
- Teams Zoom Sample
- Connected Services
- Dependencies
- Properties
- wwwroot
- Bots
  - AppointmentBot.cs
- Common
  - Common
- Controllers
  - BotController.cs
- ZoomController.cs
- DeploymentTemplates
- Dialogs
  - AppointmentDialog.cs
- Models
  - Appointment.cs
- Resources
- AdapterWithErrorHandler.cs

GitHub | Solution Explorer | Team Explorer

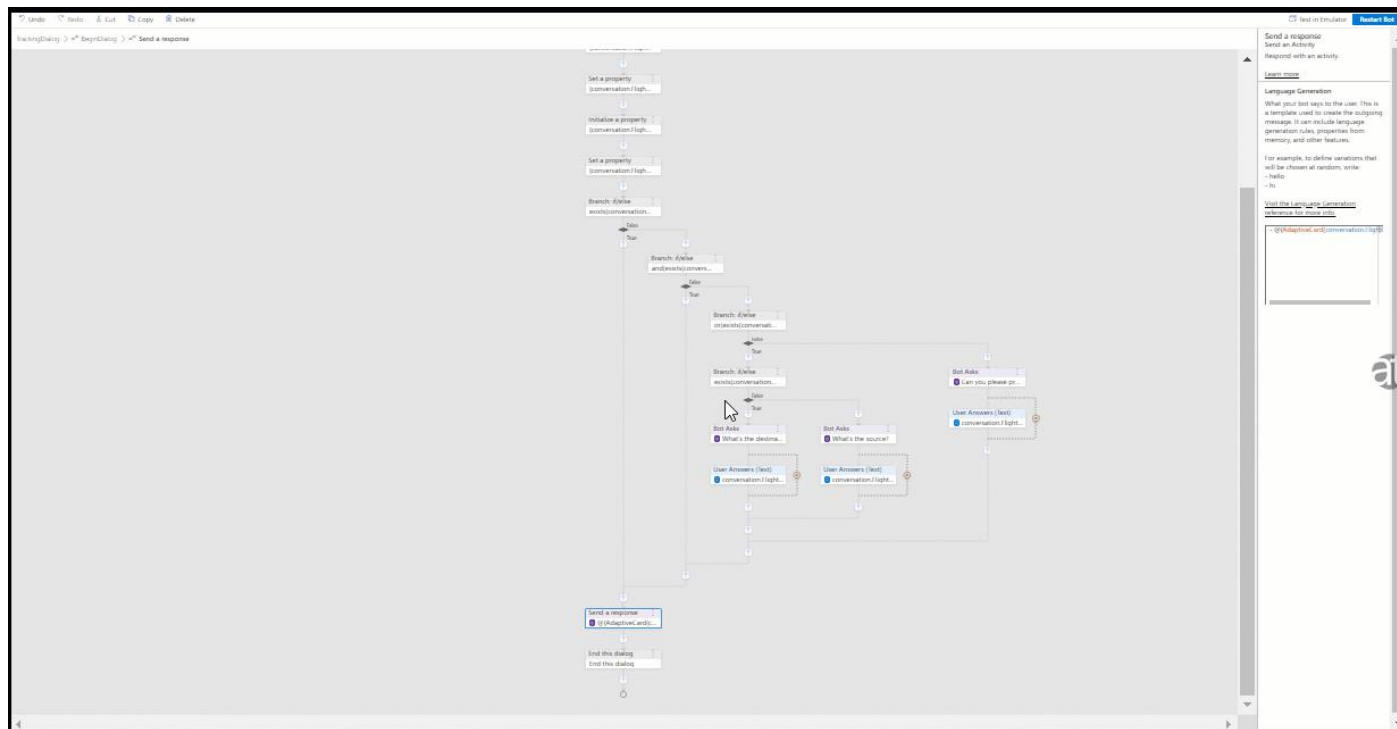
Properties

Output

Show output from: Package Manager

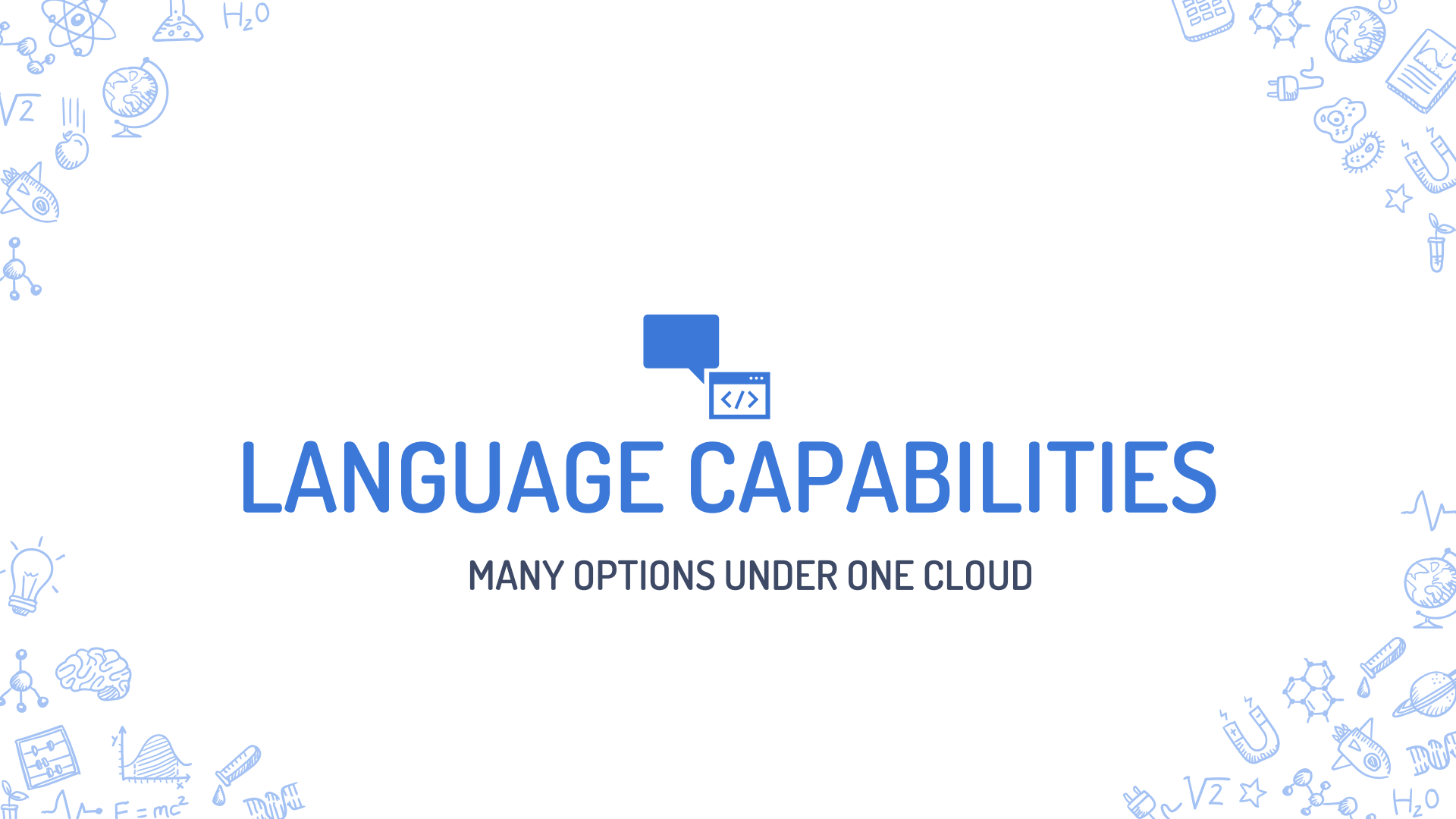
Time Elapsed: 00:00:10.0805505

\*\*\*\*\* Finished \*\*\*\*\*



## A collection of 30 hand-drawn icons representing various scientific fields. The icons include: a beaker with bubbles, a calculator, an atom with a central nucleus and three elliptical orbits, a cell with a nucleus, a microorganism with cilia, a line graph with a bell curve, a globe, a molecular structure with three spheres, a globe with a grid, a rocket ship, a globe with a grid, a test tube with a plant sprout, a lightbulb, a plug, an apple, a book, a pi symbol, a sine wave, a lightbulb, a star, a beaker with a flame, a battery, a hexagonal molecular structure, a planet with a ring, a brain, a DNA double helix, and a water molecule (H2O).





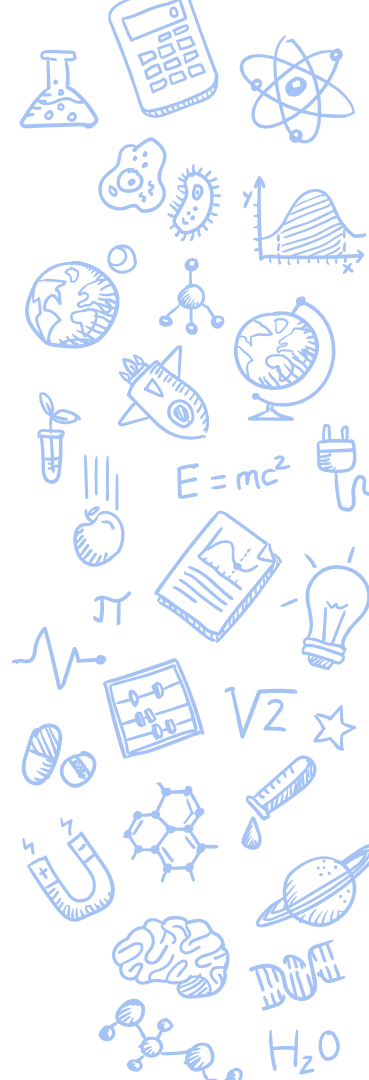
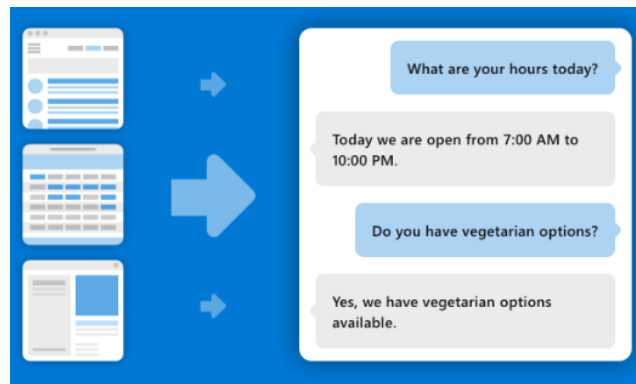
# LANGUAGE CAPABILITIES

## MANY OPTIONS UNDER ONE CLOUD

# QnA Maker

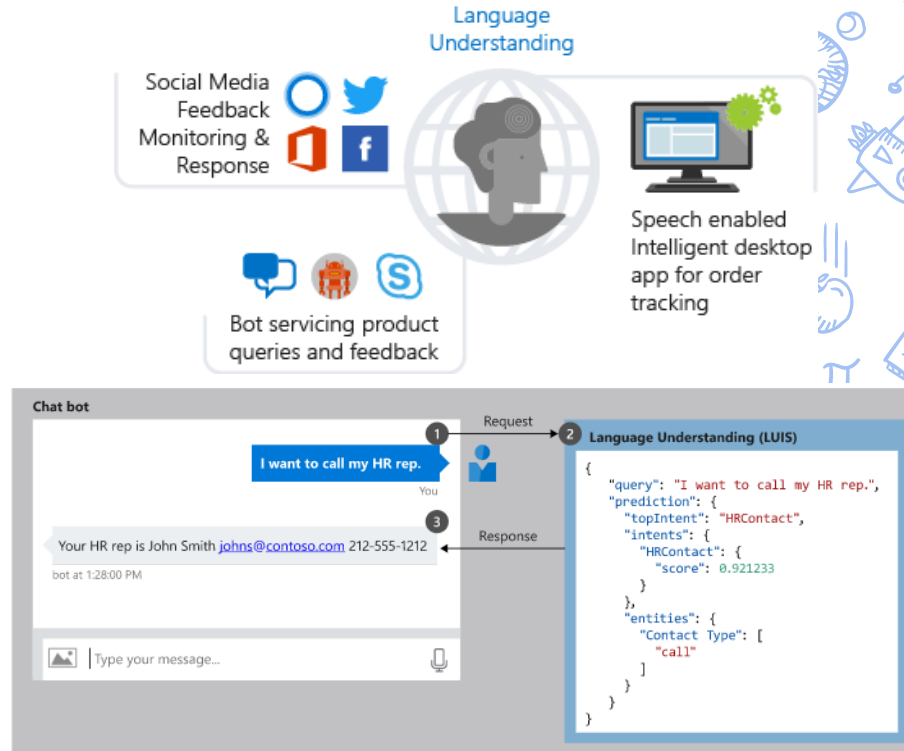
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- X Create conversational layer over your existing data (FAQs, product materials, manuals or support documents)
- X Choose a persona for your brand
- X Active Learning
- X Multi-turn experience
- X Rich Content support
- X Support for more than 50 languages



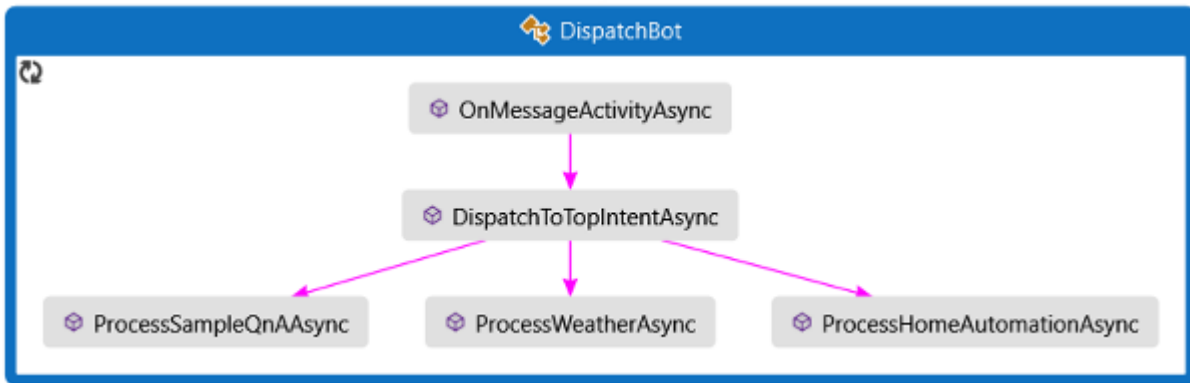
# LUIS (Language Understanding Intelligent Service)

- ✗ 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



- 
- ```

graph TD
    A[OnMessageActivityAsync] --> B[DispatchToTopIntentAsync]
    B --> C[ProcessSampleQnAAsync]
    B --> D[ProcessWeatherAsync]
    B --> E[ProcessHomeAutomationAsync]
  
```



# Language Generation (LG)

- X Multiple variations of a response without having to write any complex code
- X Separate business logic from presentation
- X Rich response such as Adaptive Cards support

| Name         | Responses                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #WelcomeUser | <ul style="list-style-type: none"><li>- Welcome to AMA Airlines. I'm currently responsible for the general questions and answers and flight status. Please let me know how may I help you today?</li><li>- Hello! It looks like we're interacting for the first time. I'm AMA Airlines Bot. I am responsible for your general questions and flight statuses. How may I help you today?</li></ul> |

Hello! It looks like we're interacting for the first time. I'm AMA Airlines Bot. I am responsible for your general questions and flight statuses. How may I help you today?

Type your message



## Language Understanding (LU)

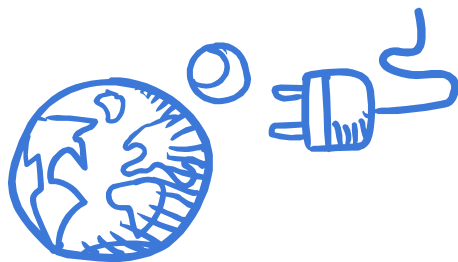
- X Core component of Bot Framework Composer
- X Adds natural language capabilities to your bot through LUIS / Recognizers
- X Supports LG format
- X Auto-train the language model from within Bot Framework Composer

- i want to know the status of flight from {Source=Mandala}
- let's track the flight to {Destination=Brisbane}
- what's the update flight {FlightNumber=AT 437}
- can you please update me about the status of {FlightNumber=AT 911}
- flight {FlightNumber=AT 911}
- flight to {Destination=bahrain} {FlightNumber=AT-123}
- {FlightNumber=AT 219}
- has the flight {FlightNumber=AT 372} {FlightNumber=AT 372}
- i want to track ek {FlightNumber=234}
- i want to track flight {FlightNumber=AT573}
- is flight from {Source=london} to {FlightNumber=bahrain}
- please book a flight from {Source=london} to {Destination=Brisbane}
- tell me about {FlightNumber=AT 124} to {Destination=Brisbane}
- tell me about {FlightNumber=at 810}



# BOT FRAMEWORK COMPOSER

A LOW-CODE MARVEL



# CUSTOM ADAPTERS

SURFACE YOUR BOT ANYWHERE

# Custom Adapters

---

- X Connect a bot to an endpoint
- X Implements `IBotFrameworkHttpAdapter`

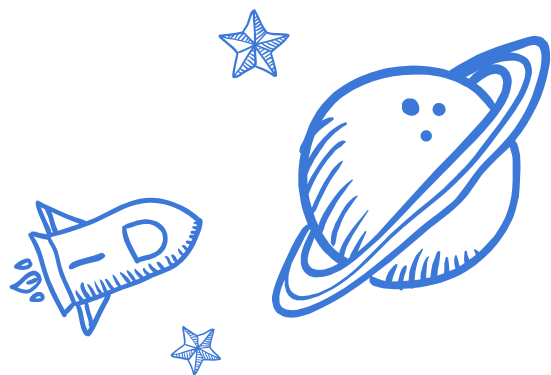


## Bot Builder Community

- X Custom Adapters
- X Extensions
- X Middleware
- X Samples & Docs
- X Tools & Utilities





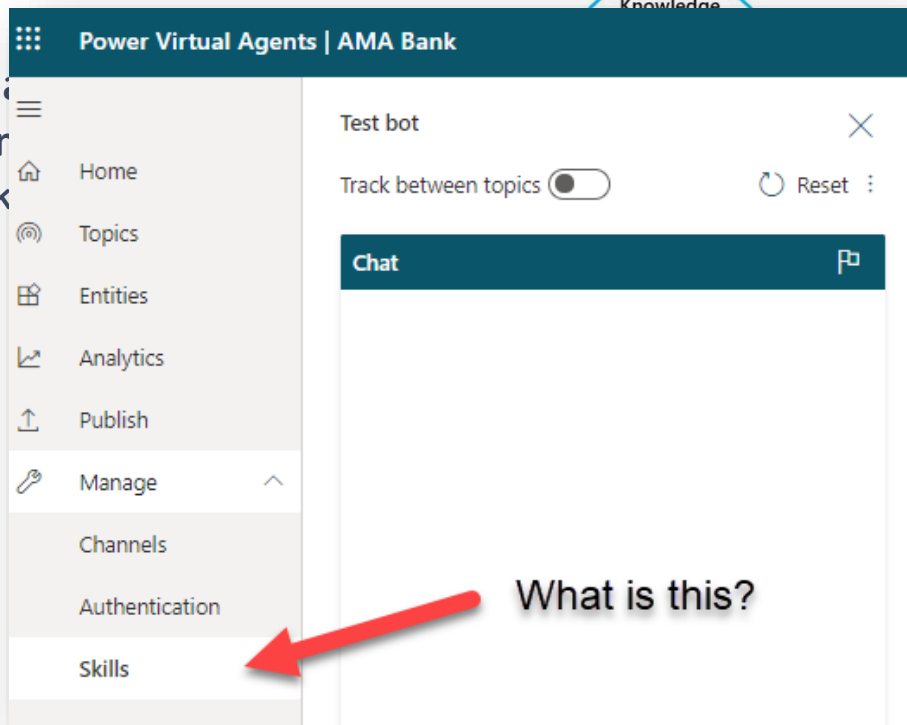


# SKILLS

BUILD PLUG & PLAY BOTS

# What is a Skill?

X Skill is a  
perform  
X Skill



What is this?

Skills  
(Customizable)



Tasks

Calendar

Other Bots

Custom



APIs



Office Graph



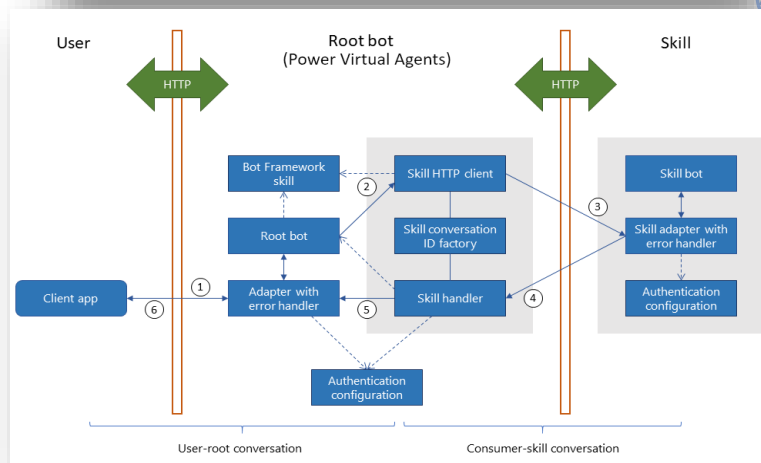
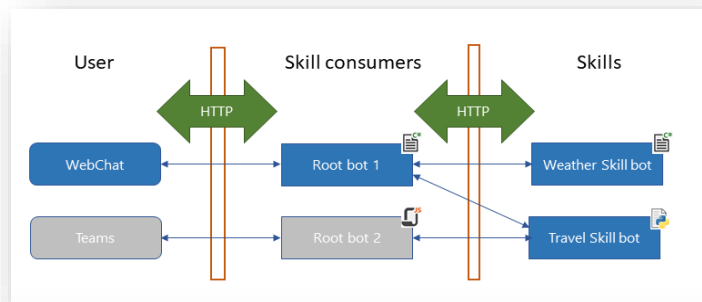
Active Directory

# Skill Consumer

X Skill consumer aka *Root Bot* can consume one more skills

X Language / Platform Interoperability

X Python skill can be used by a C# bot or PVA





## X Skills manifest

X JSON that keeps the metadata of that skill

```
{
  "$schema": "https://schemas.botframework.com/schemas/skills/skill-manifest-2.1.preview-1.json",
  "$id": "HelpDesk",
  "name": "HelpDesk",
  "version": "1.0",
  "publisherName": "Arafat Tehsin",
  "description": "HelpDesk bot to help you with anything except for food!",
  "privacyUrl": "https://www.arafattehsin.com/blog",
  "copyright": "https://www.arafattehsin.com/blog",
  "iconUrl": "https://www.arafattehsin.com/wp-content/uploads/2018/09/logo.png",
  "tags": [
    "helpdesk",
    "assistant"
  ],
  "endpoints": [
    {
      "name": "default",
      "protocol": "BotFrameworkV3",
      "description": "Default endpoint for the skill",
      "endpointUrl": "https://a06d587b12bc.au.ngrok.io/api/messages",
      "msAppId": "80386418-0c5d-48c6-8623-995c0d76bc50"
    }
  ]
}
```

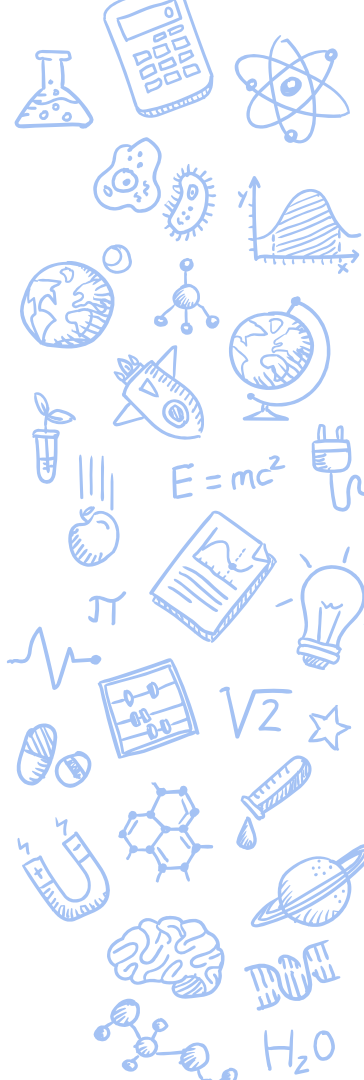
# How can I build a Skill?

---

## X Pro-code: Bot Framework SDK,

- X Empty / Echo template
- X Virtual Assistant Skill Templates
- X Skill CLI

## X Low-code: Bot Framework Composer



AMAAirlines

- Greeting
- TrackFlight
- Help
- BookFlight


FlightBookingDialog

HelpDialog

TrackingDialog

AMAAirlines

Show code



Select a trigger on the left navigation to see actions

### Adaptive dialog

Adaptive dialog

This configures a data driven dialog via a collection of events and actions.

[Learn more](#)

Language Understanding ⓘ

Recognizer Type

LUIS

Auto end dialog ⓘ

true

Default result property ⓘ

dialog.result

> Dialog Interface

## A collection of 30 hand-drawn icons representing various scientific fields. The icons include: a beaker with bubbles, a calculator, an atom with a central nucleus and three elliptical orbits, a cell with a nucleus, a microorganism with cilia, a line graph with a bell curve, a globe, a molecular structure with three spheres, a globe with a grid, a rocket ship, a globe with a grid, a test tube with a plant sprout, a lightbulb, a plug, an apple, a book with a graph on its cover, a pi symbol, a heartbeat line, a lightbulb, a star, a beaker with a drop, a planet with a ring, a brain, a DNA double helix, a water molecule (H2O), a magnet, a hexagonal molecular structure, a pi symbol, a lightbulb, a book with a graph on its cover, a pi symbol, an apple, a test tube with a plant sprout, a globe, a rocket ship, a molecular structure with three spheres, a globe with a grid, a globe, a cell with a nucleus, a microorganism with cilia, a line graph with a bell curve, an atom with a central nucleus and three elliptical orbits, a calculator, and a beaker with bubbles.

## Learn Bot Framework

## Learn Bot Framework Skills

## Bot Framework Community

## My Blog

# Dev Community Newsletter

## Learn Azure for FREE

## Try Azure for FREE

SWAG CODE: TEHS19



# THANKS!

## Any questions?

You can find me at

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X arafat@outlook.com