

# ABOUT ME



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TECHNOLOGYEDGE >< BUSINESSEDGE®

## HEAD OF IT INFRASTRUCTURE & AUTOMATION

*22 Plus years of broad technical experience in the areas of Infrastructure, Cloud & Security architect, solution design, pre-sales & implementation in the technology platform such as Microsoft Windows, Linux, VMware, Storage and Networking Technologies. Strong technical expertise in migration of infrastructure workloads to public, private & Hybrid cloud, Infra & Application Automation, Business process Automation.*



# Building Real-World Chatbot (Azure QnA Maker)

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# Agenda



Chatbot Overview



QnA Maker for Building Chatbot



Creating Chatbot Demo



(Q)uestion & (A)nswer

# Chatbot Overview



# Chatbot Overview

Chatbot is a computer program which simulates and processes human conversation, allowing humans to interact with digital devices as if they are communicating with a real person, it can understand customer questions and automate responses through text input, audio input or both

- NLU – Natural Language Understanding
- LUIS – Language Understanding
- NLP – Natural-Language Processing
- ML – Machine Learning
- AI – Artificial Intelligence

## Types of Chatbot's

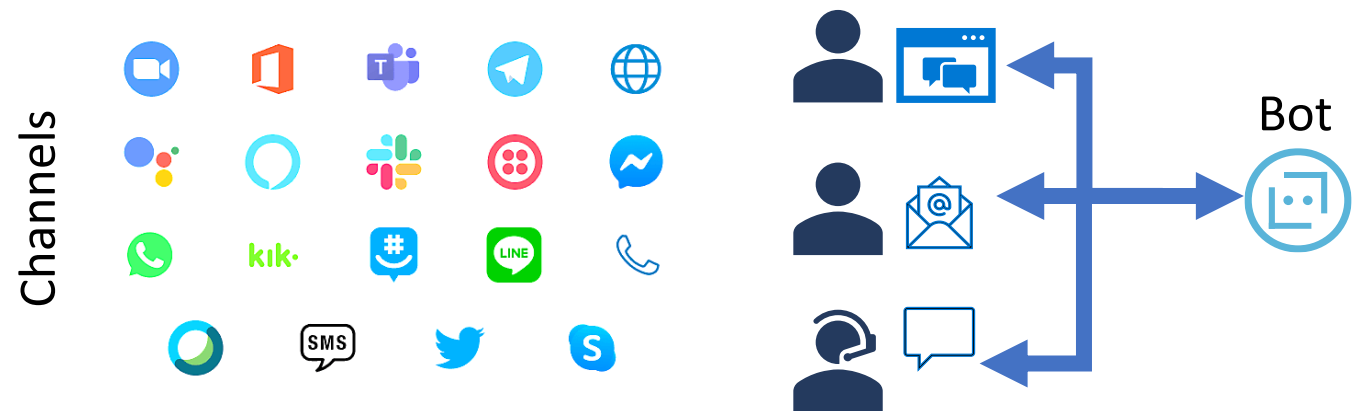
- Task-oriented (declarative) Chatbots
- Data-driven and predictive (conversational) chatbots (Virtual assistants or Digital assistants)



# Conversational AI and Bots

## Bot: An application with a conversational interface

- Users interact with a bot by initiating *activities* in *turns*
- Activities are events, such as a user joining a conversation or sending a message
- Messages can be text, speech, or visual interface elements (such as *cards* or *buttons*)
- A flow of activities can form a *dialog*, in which state is maintained to manage a multi-turn conversation
- Activities are exchanged across *channels*, such as web chat, email, Microsoft Teams, and others



# Azure Bot Service and the Microsoft Bot Framework SDK

## Azure Bot Service

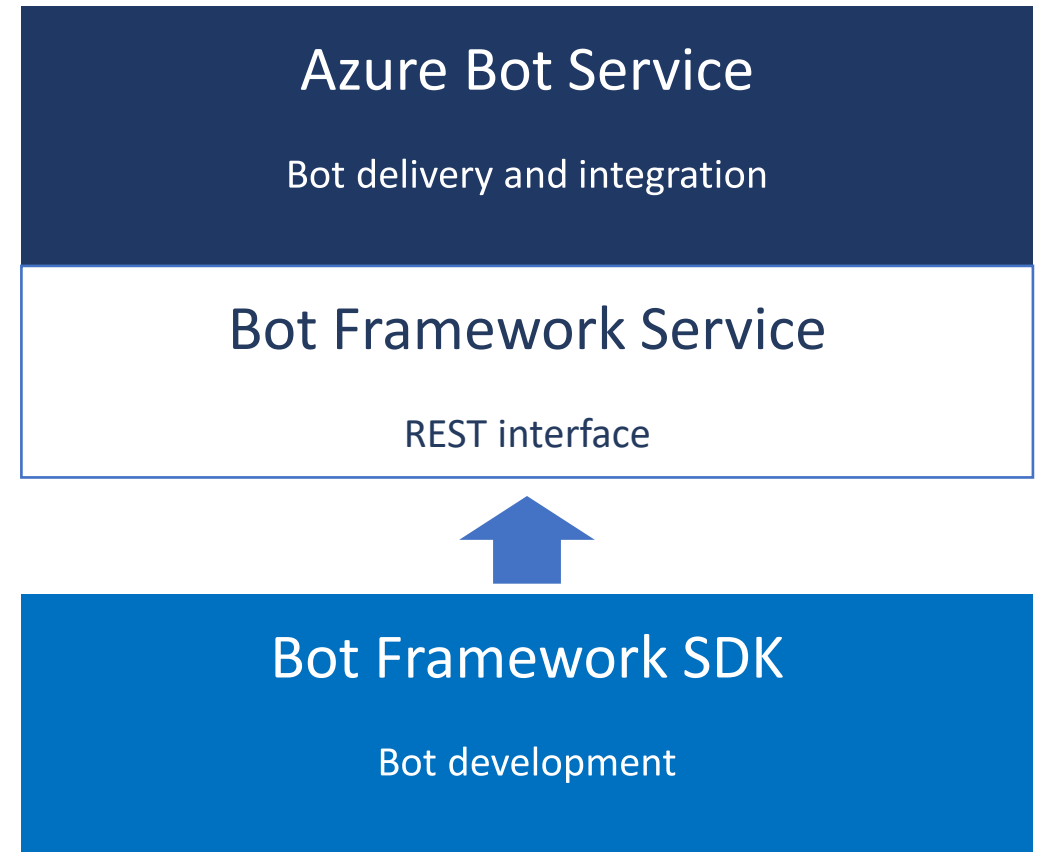
- Cloud service for bot delivery and integration

## Bot Framework Service

- A component of Azure Bot Service that provides a REST API for handling bot activities

## Bot Framework SDK

- A set of tools and libraries for end-to-end bot development that abstracts the REST interface





# Developing a Bot with the Bot Framework SDK

## Start with a template

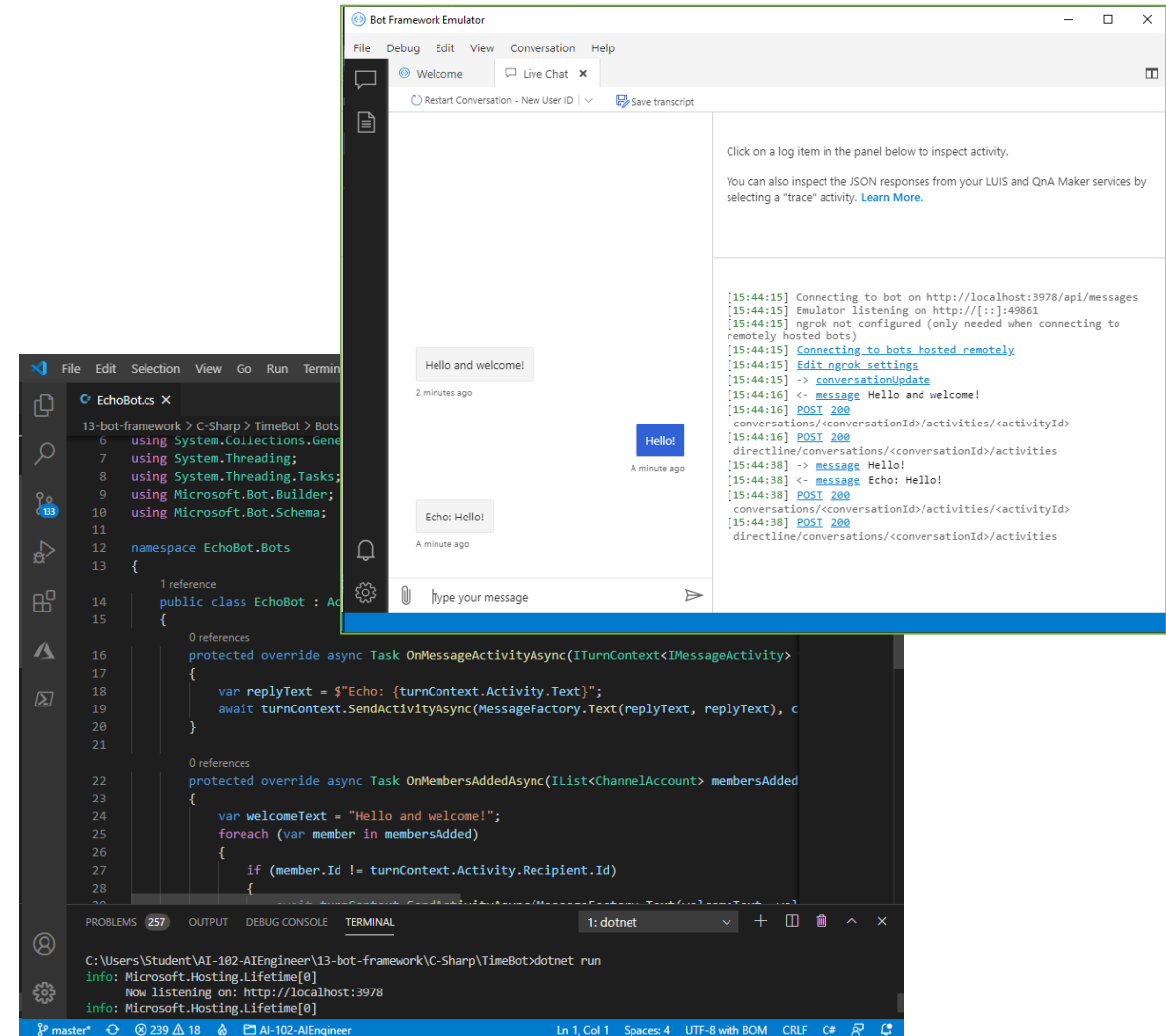
- **Empty Bot** - Basic bot skeleton
- **Echo Bot** – Simple "hello world" example
- **Core Bot** – Includes common bot functionality, like Language Understanding integration

## Bot Application Structure

- **Adapter** receives activities from channel (via Bot Framework Service), and calls bot turn handler
- **Bot** processes activities using:
  - Activity Handlers
  - Dialogs

## Test in the Bot Framework Emulator

- Interactive testing application for bots

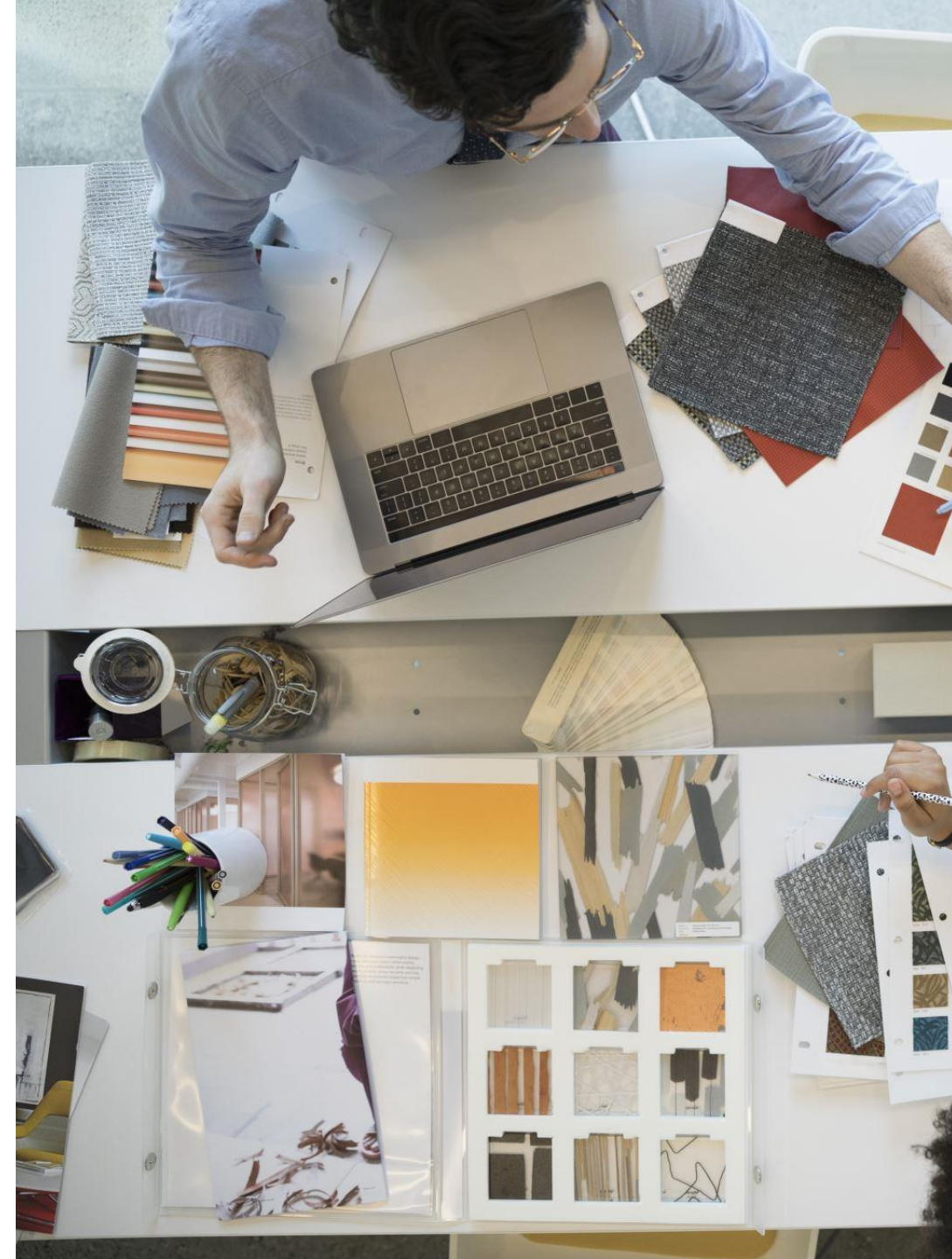
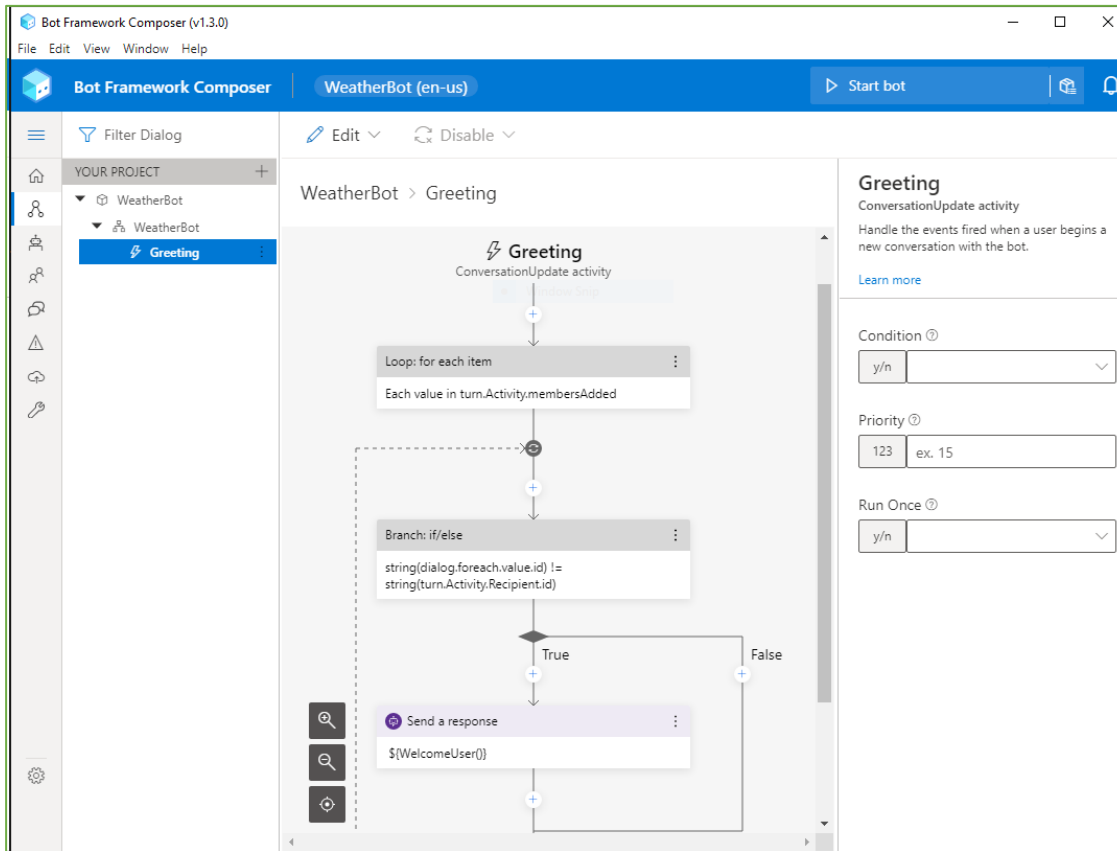




# Bot Framework Composer

## Graphical bot designer

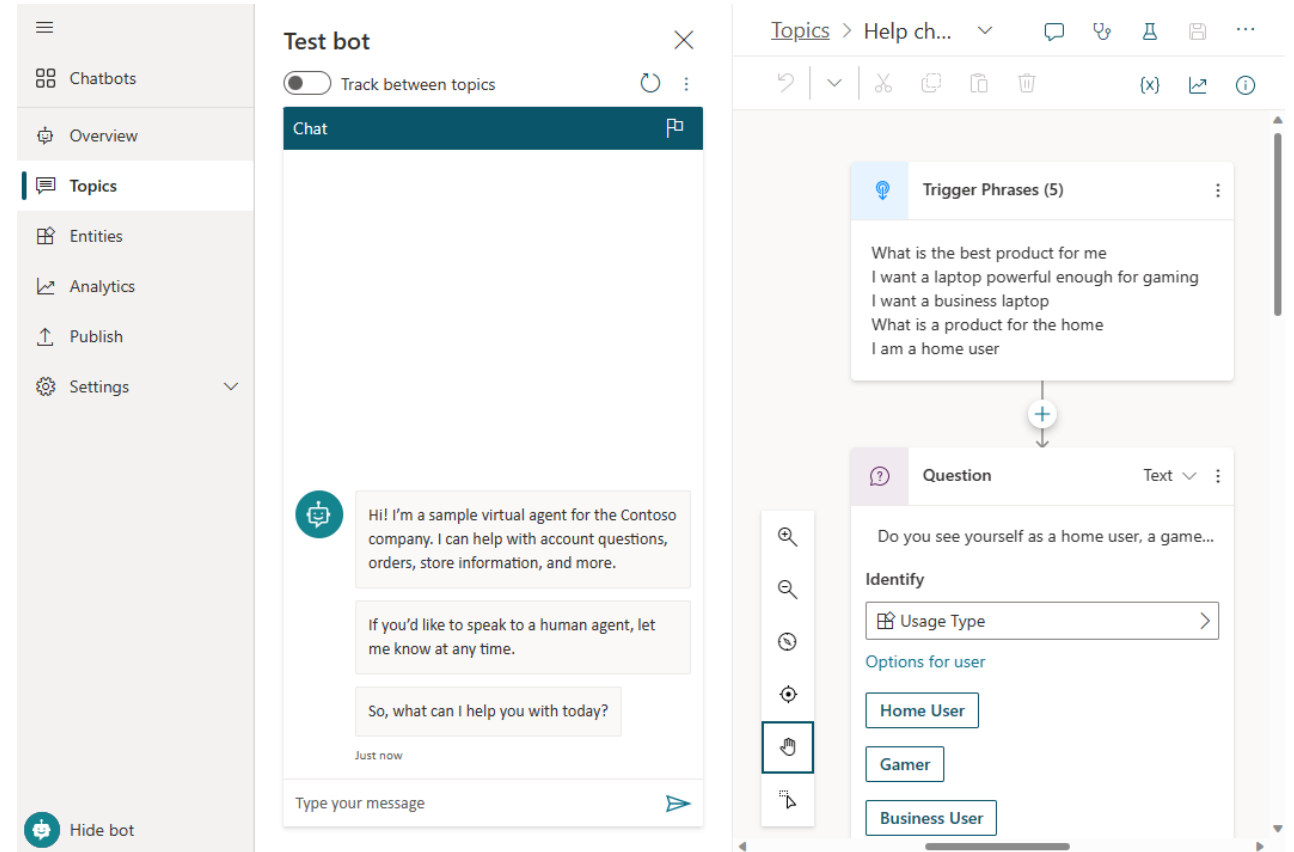
- Define dialog flows
- Create triggers to initiate child dialogs
- Built-in support for language understanding integration



# Power Virtual Agents

## Low code graphical bot designer

- Define conversation flows
- Create triggers to initiate child dialogs
- Built-in integration to other Cognitive Services
- Test and deploy within PVA app
- Different terminology than Composer (dialogs are “topics”, intents are “trigger phrases”, and so on)
- Integrates with Composer if a task isn’t possible through PVA



QnA Maker



# QnA Maker



QnA Maker is a cloud-based Natural Language Processing (NLP) service that allows you to create a natural conversational layer over your data. It is used to find the most appropriate answer for any input from your custom knowledge base (KB) of information

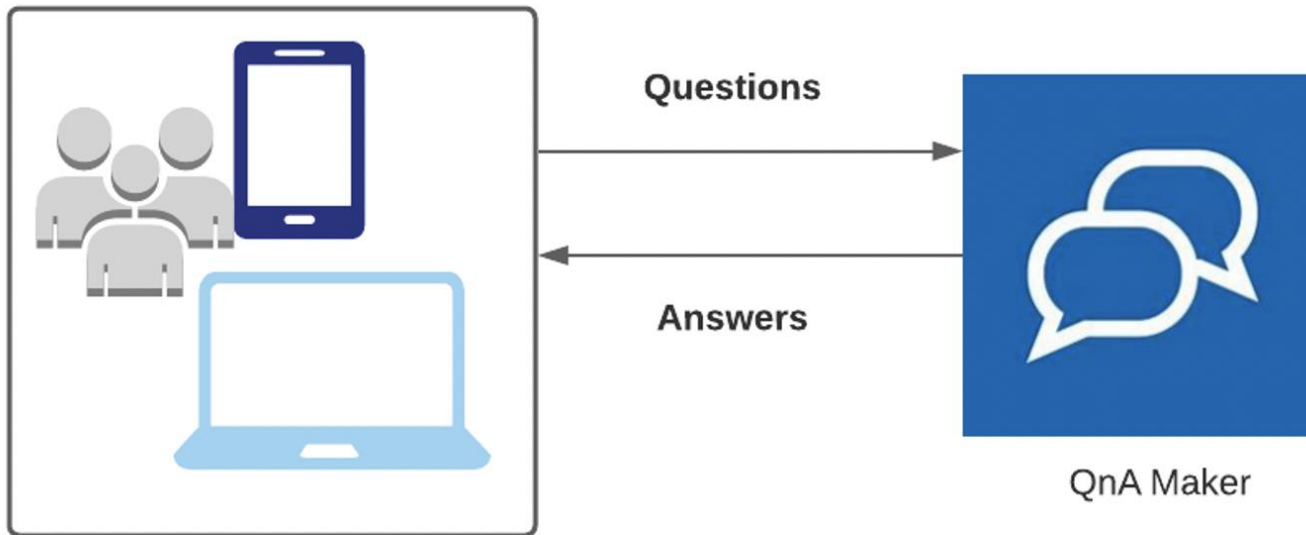
QnA Maker is commonly used to build conversational client applications, which include social media applications, chat bots, and speech-enabled desktop applications

QnA Maker doesn't store customer data. All customer data (question answers and chat logs) is stored in the region the customer deploys the dependent service instances



# When to use QnA Maker

- When you have static information
- When you want to provide the same answer to request, question, or command
- When you want to filter static information based on meta-information
- When you want to manage a bot conversation that includes static information



## From data to bot in minutes

- No code experience
- Automatic extraction
- Multi-turn conversation
- Active Learning
- Scale as per your need
- Chat in more than 50 languages



# What is a Knowledge base?

QnA Maker imports your content into a knowledge base of question and answer pairs. The import process extracts information about the relationship between the parts of your structured and semi-structured content to imply relationships between the question and answer pairs. You can edit these question and answer pairs or add new pairs

The content of the question and answer pair includes:

- All the alternate forms of the question
- Metadata tags used to filter answer choices during the search
- Follow-up prompts to continue the search refinement

Question	Answer	Metadata tags ?
Original source: <a href="https://docs.microsoft.com/en-us/azure/cognitive-services/qnamaker/faqs">https://docs.microsoft.com/en-us/azure/cognitive-services/qnamaker/faqs</a>		
I accidentally deleted a part of my QnA Maker, what should I do?	All deletes are permanent, including question and answer pairs, files, URLs, custom questions and answers, knowledge bases, or Azure resources. Make sure you export your knowledge base from the **Settings** page before deleting any part of your knowledge base.	Type : troubleshooting
Can I undo deleted questions and answers?		Format : text-only
		Nextstep : recover



# QnA Maker

## **Build low code chat bots:**

- The QnA Maker portal provides the complete knowledge base authoring experience. You can import documents, in their current form, to your knowledge base. These documents (such as an FAQ, product manual, spreadsheet, or web page) are converted into question and answer pairs. Each pair is analyzed for follow-up prompts and connected to other pairs. The final markdown format supports rich presentation including images and links

## **High quality responses with layered ranking:**

- QnA Maker's system is a layered ranking approach. The data is stored in Azure search, which also serves as the first ranking layer. The top results from Azure search are then passed through QnA Maker's NLP re-ranking model to produce the final results and confidence score

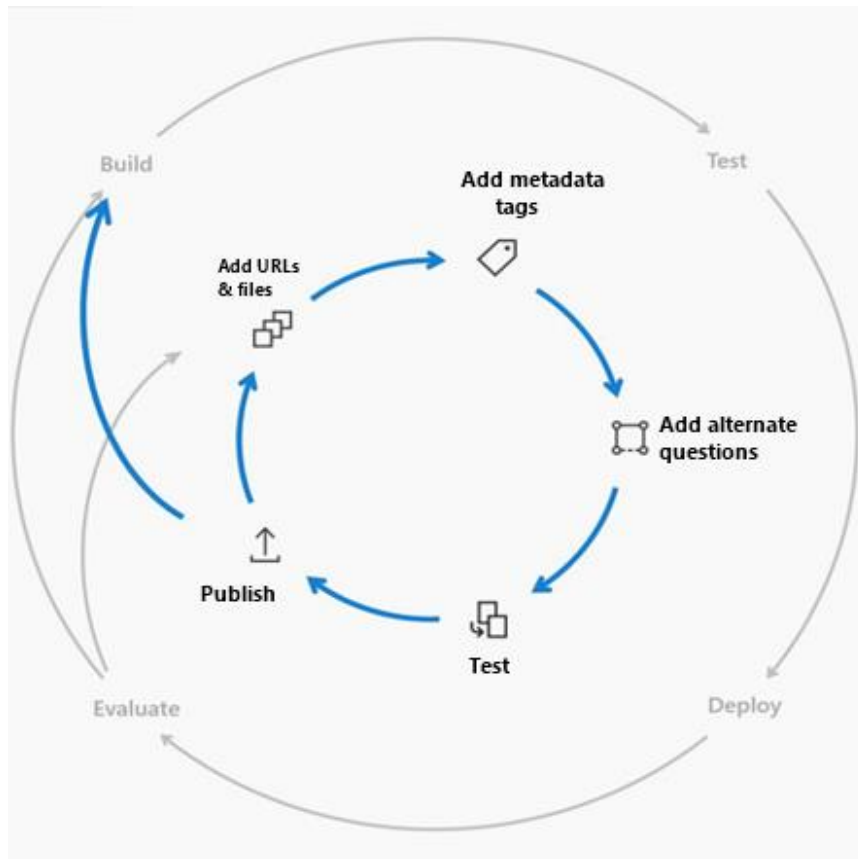
## **Multi-turn conversations:**

- QnA Maker provides multi-turn prompts and active learning to help you improve your basic question and answer pairs
- Multi-turn prompts give you the opportunity to connect question and answer pairs. This connection allows the client application to provide a top answer and provides more questions to refine the search for a final answer
- After the knowledge base receives questions from users at the published endpoint, QnA Maker applies active learning to these real-world questions to suggest changes to your knowledge base to improve the quality



# QnA Maker Development Lifecycle

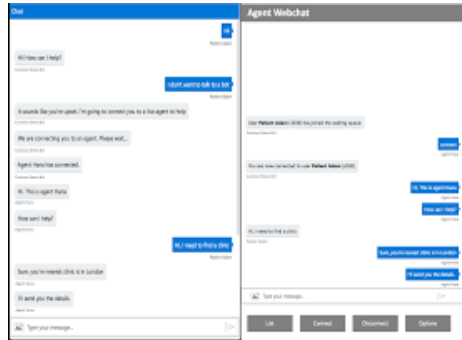
QnA Maker provides authoring, training, and publishing along with collaboration permissions to integrate into the full development life cycle.



# Creating Chatbot – Demo



# Creating Chatbot – Use Case



Web Chat Screen



End User with Web based Chatbot



Azure Cloud



Azure Bot



Azure App Service



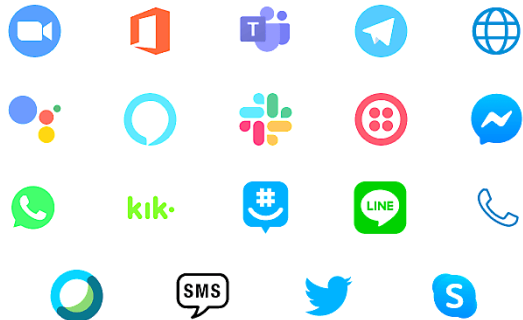
Azure Search



Azure Language Studio

## Scenario:

Creating a simple Web based FAQ Chatbot with pre-defined FAQ's



Chat Channels

## Steps for Creating Web based FAQ Chatbot

[Create, test, and deploy your question answering project - Azure Cognitive Services | Microsoft Learn](#)

[Tutorial: Create an FAQ bot with question answering and Azure Bot Service - Azure Cognitive Services | Microsoft Learn](#)

(Q)uestion & (A)nswer





**Thank you**