

# The Intelligent Bot Framework Conversational AI

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@SMDisrupt

# Agenda

- Bot Framework
- Intelligent Bots
- Demo
- Workshop
- Feedback @Smdisrupt

# Intro – Sherin Mathew

## My Background

Cloud Solution Architect, Principal Consultant, Project Delivery  
BI Programme Delivery, Project Management  
Professional Services, Application and BI Development

## Experience

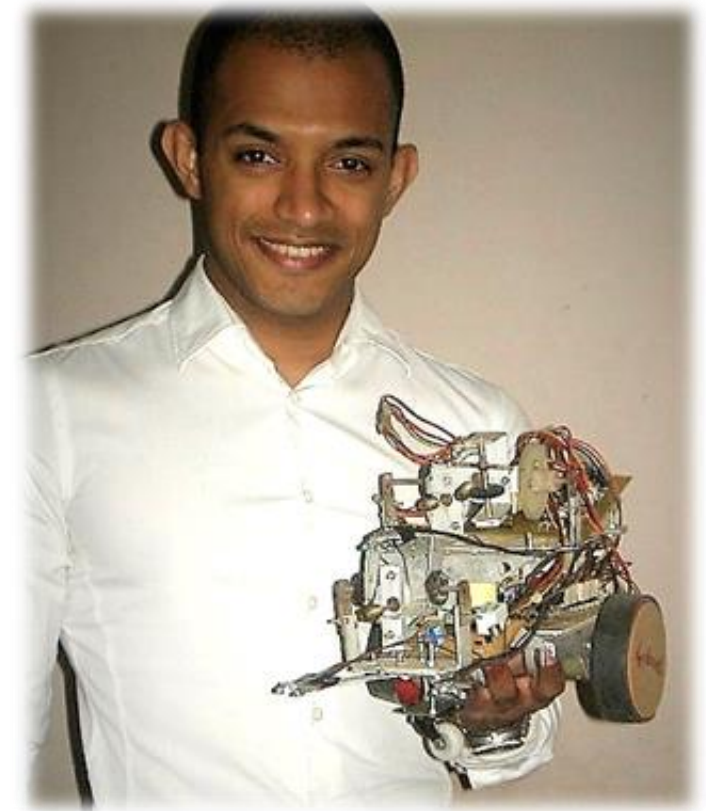
Healthcare, Telecom, Housing groups  
Higher Education, Police forces and ICO

## My Azure and AI Journey

Last 4 years feel like 20!

## Extras

AI User Group, AI Tech North 2019, SQL Pass, Speaker



@SMdisrupt *"Disrupt the disruption!"*

# Microsoft Bot Framework

# The Microsoft AI Platform

## Azure AI Services

### PRE-BUILT AI

Cognitive Services

### CONVERSATIONAL AI

Bot Service

### CUSTOM AI

Azure Machine Learning

## Azure Infrastructure

### AI ON DATA

Cosmos  
DB

SQL  
DB

SQL  
DW

Data  
Lake

Spark

DSVM

Batch  
AI

ACS

IoT  
Edge

### AI COMPUTE

CPU, FPGA, GPU

## Tools

### CODING & MANAGEMENT TOOLS

VS Tools  
for AI

Azure ML  
Studio

Azure ML  
Workbench

Others (PyCharm, Jupyter Notebooks...)

### DEEP LEARNING FRAMEWORKS

3rd Party

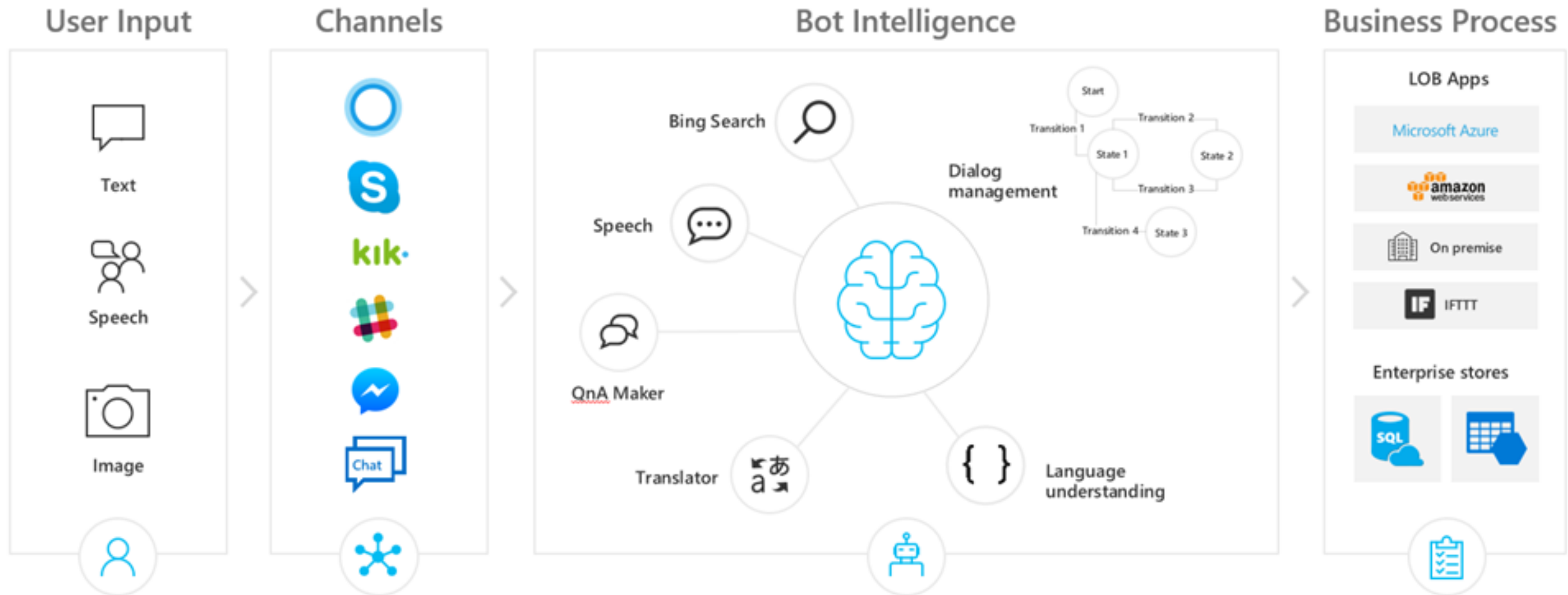
Cognitive  
Toolkit

TensorFlow

Caffe

Others (Scikit-learn, MXNet, Keras,  
Chainer, Gluon...)

# Conversational AI



Operations

Security

Logging

Auditing

Integration

# Conversational AI

- **Bot Framework**

- Accelerated development
- Bot Builder, Developer Portal, Cognitive Services
  - Quick start Templates, SDKs, Built-in editor

- **Enriched Experience**

- Added AI with Cognitive Services - LUIS, QnA, Search, etc
- Information Services, Knowledge, Search, Triage
- Engage audience on channels

- **Operational Efficiency**

- Event Driven
- Scale
- CD/CI with reduced DevOps



# Microsoft Bot Framework

Your bots — wherever your users are talking.

Build and connect intelligent bots to interact with your users naturally wherever they are, from text/sms to Skype, Slack, Office 365 mail and other popular services.

Get started

```
public Message Post([FromBody]Message message)
```

```
{  
    if (message.Type == "Message")
```

Hey Pizza bot!



Hi Jeremy, the usual tonight?

```
    = null;  
    var ConvStatus = GetConversationStatus();  
    switch (ConvStatus)
```

No thanks, I'd like to try something new.



We have added 3 new items:

- 1) Hawiian
- 2) BBQ Chicken
- 3) The Works

```
        comeUser:  
        message.CreateReplyMessage  
        (0), the usual tonight?",  
        message.Participants[0]));  
        ConvStatus(OrderStatus.ShowSpecials);  
        break;
```

```
case OrderStatus.ShowSpecials:
```

```
    replyMessage = message.CreateReplyMessage
```

```
    (string.Format("We've added (0) new items:{1}",
```

Option 3 please.



Shall I send this to your home?

```
        ConvStatus(GetSpecials());  
        ConvStatus(OrderStatus.GetAddress);  
        break;
```

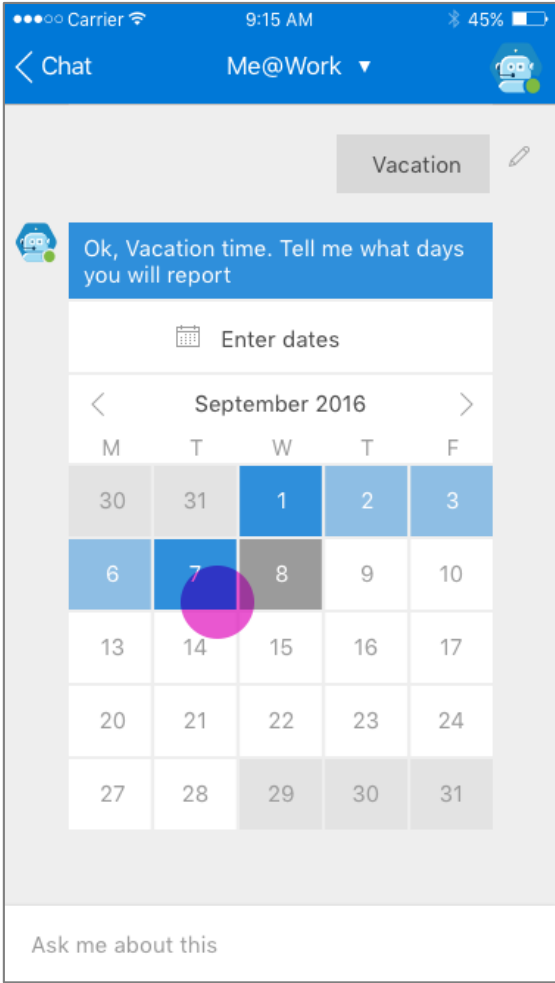
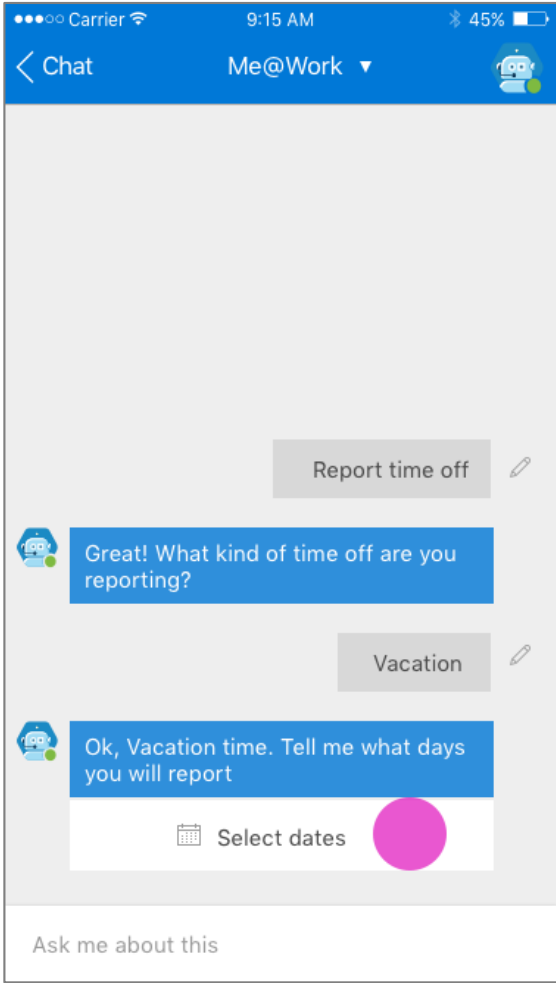
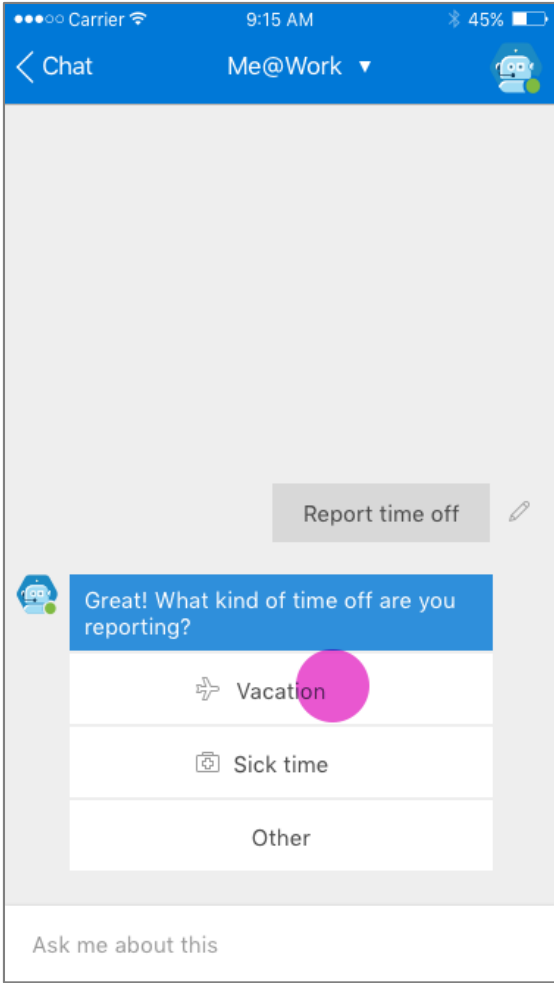
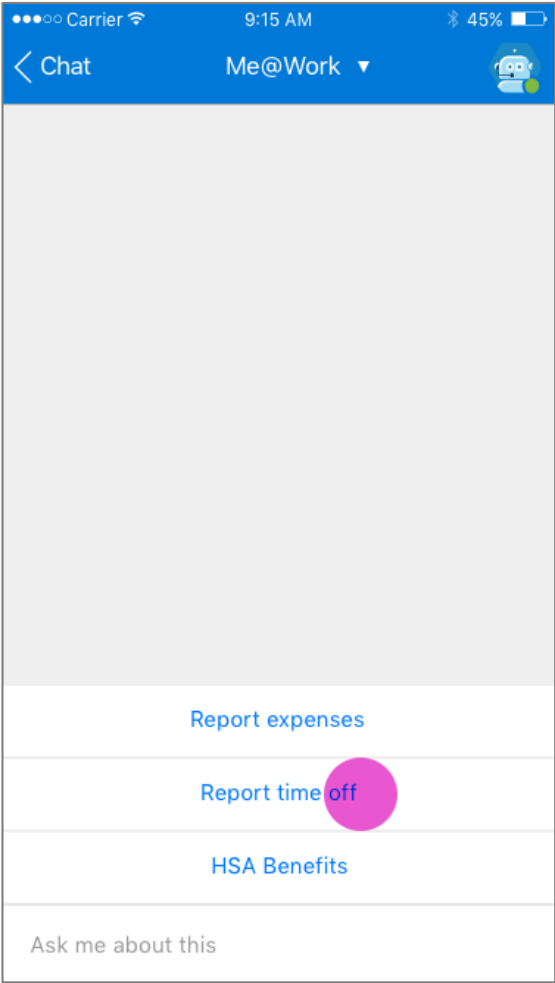
```
case OrderStatus.GetAddress:
```



[www.botframework.com](http://www.botframework.com)



# HR Holiday Bot – Holiday Reporting



# Bot Framework Components

## Your Bot Framework Bot

### Developer Portal

Connect your bot(s) to text/sms, Office 365 mail, Skype, Slack, and other services.

- Register, connect, publish and manage your bot through the bot dashboard
- Automatic card normalization across channels
- Skype channel auto-configured
- Embeddable web chat control
- Host your bot in your app using DirectLine API
- Fast, secure message routing
- Diagnostic tools

### Bot Builder SDKs

Build great dialogs within your Node.js- or C#-based bot

- Open source SDK on Github
- From simple built-in prompts and command dialogs to simple to use yet sophisticated 'FormFlow' dialogs
- Support for rich attachments (image, card, video, doc etc); support for calling Skye
- Online/offline emulator
- Add smarts with Cognitive Services

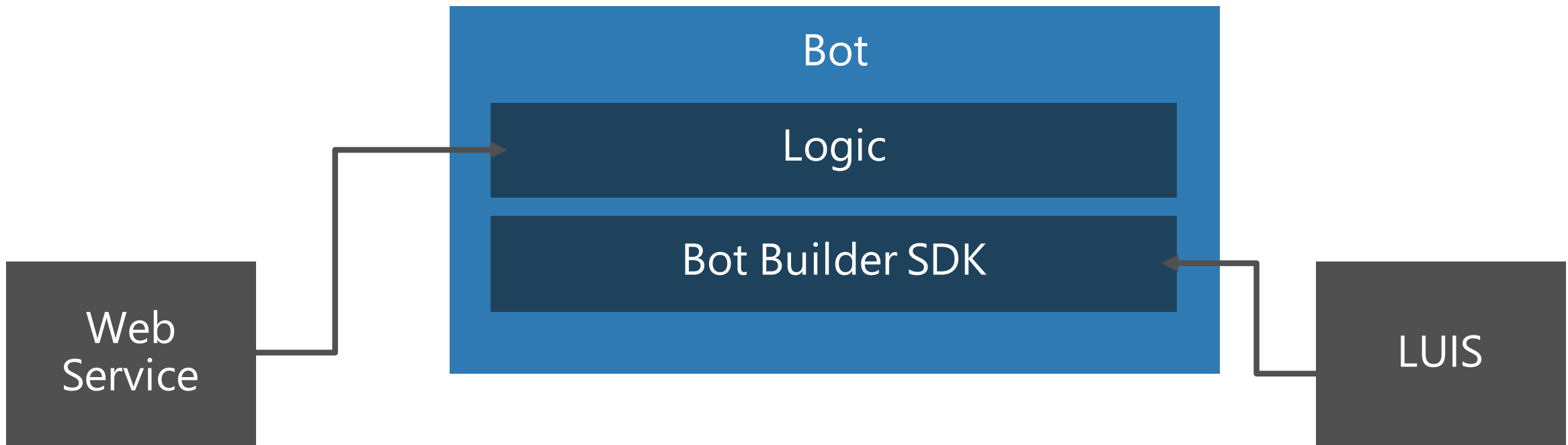
### Bot Directory

*COMING SOON* - Try, use, and add published bots to the world's top conversation experiences

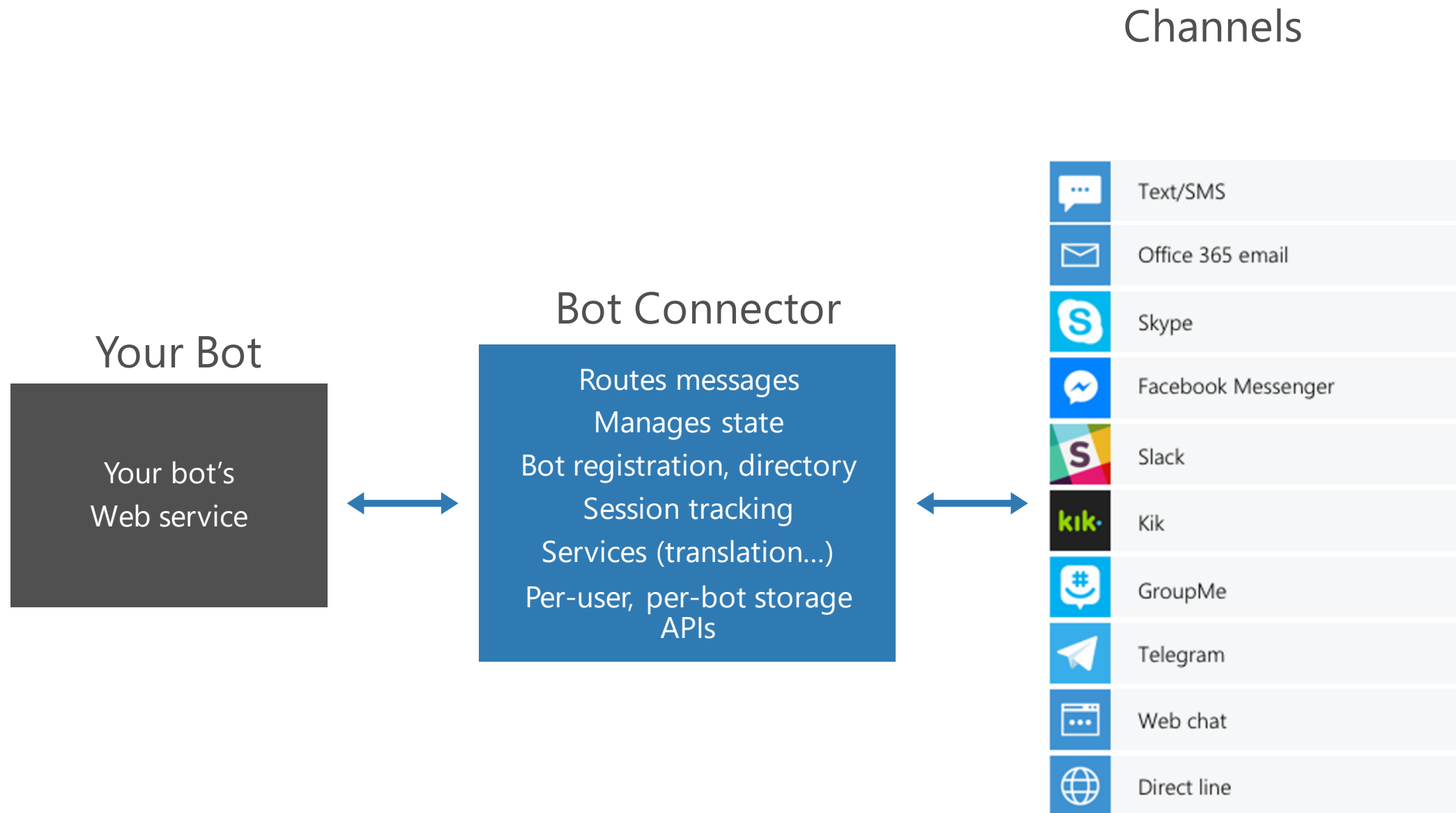
- Public directory of bots registered and approved with Bot Framework
- Users can try your bot from the directory via the web chat control
- Users can discover and add your bot to the channels on which it is configured

# Bot Builder SDK

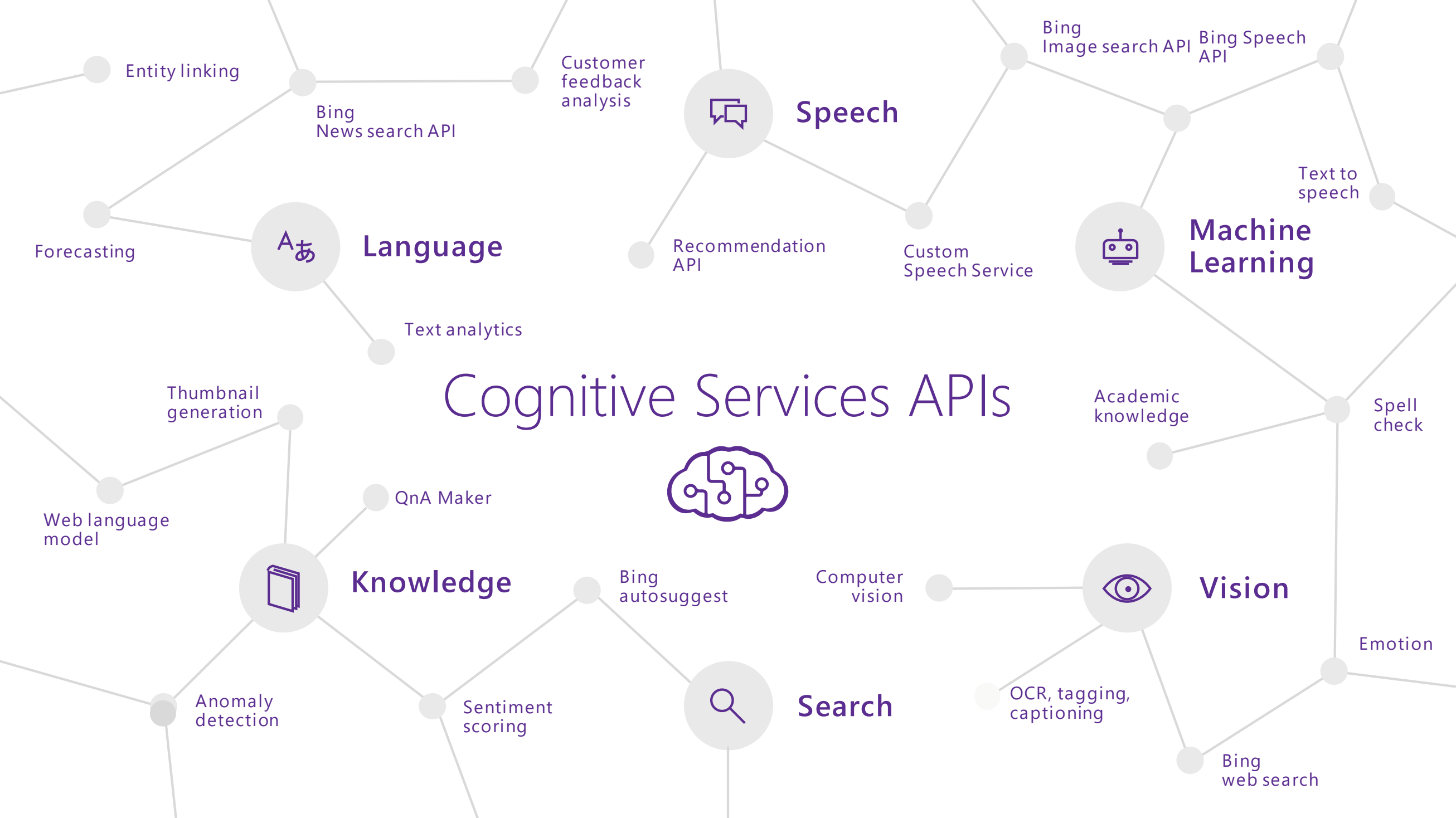
- .NET framework with C# or Node.js
- REST and REST State APIs
- Manages the conversation state



# Supported Channels



# Building Intelligence Bots – With Cognitive Services



# Microsoft Cognitive Services

Give your apps  
a human side

## Cognitive Services API Collection



### Vision

Computer Vision | Content Moderator | Emotion | Face | Video



### Speech

Bing Speech | Custom Speech Service | Speaker Recognition



### Language

Bing Spell Check | Language Understanding | Linguistic Analysis | Text Analytics | Translator | Web Language Model



### Knowledge

Academic Knowledge | Entity Linking | Knowledge Exploration | Recommendations | QnA Maker



### Search

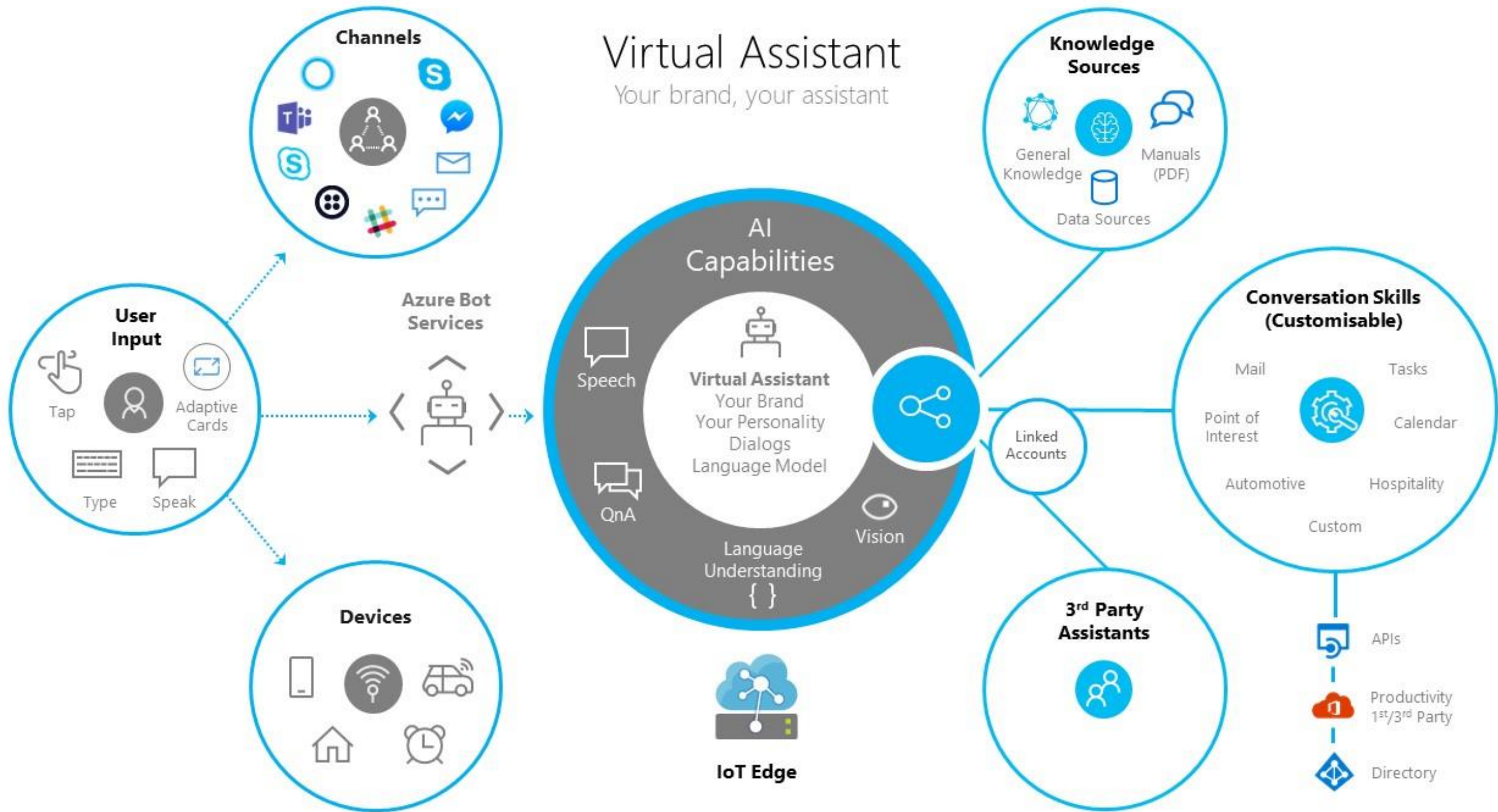
Bing Autosuggest | Bing Image Search | Bing News Search | Bing Video Search | Bing Web Search



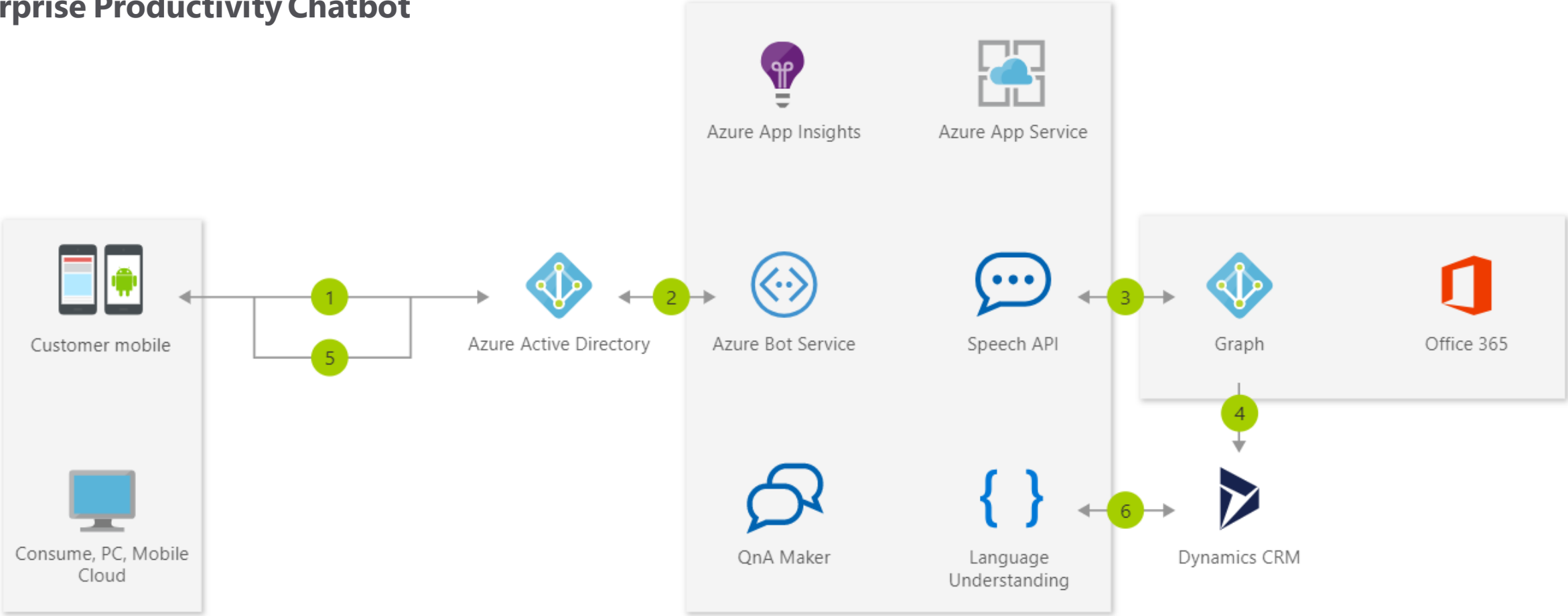
# Examples

# Virtual Assistant

Your brand, your assistant

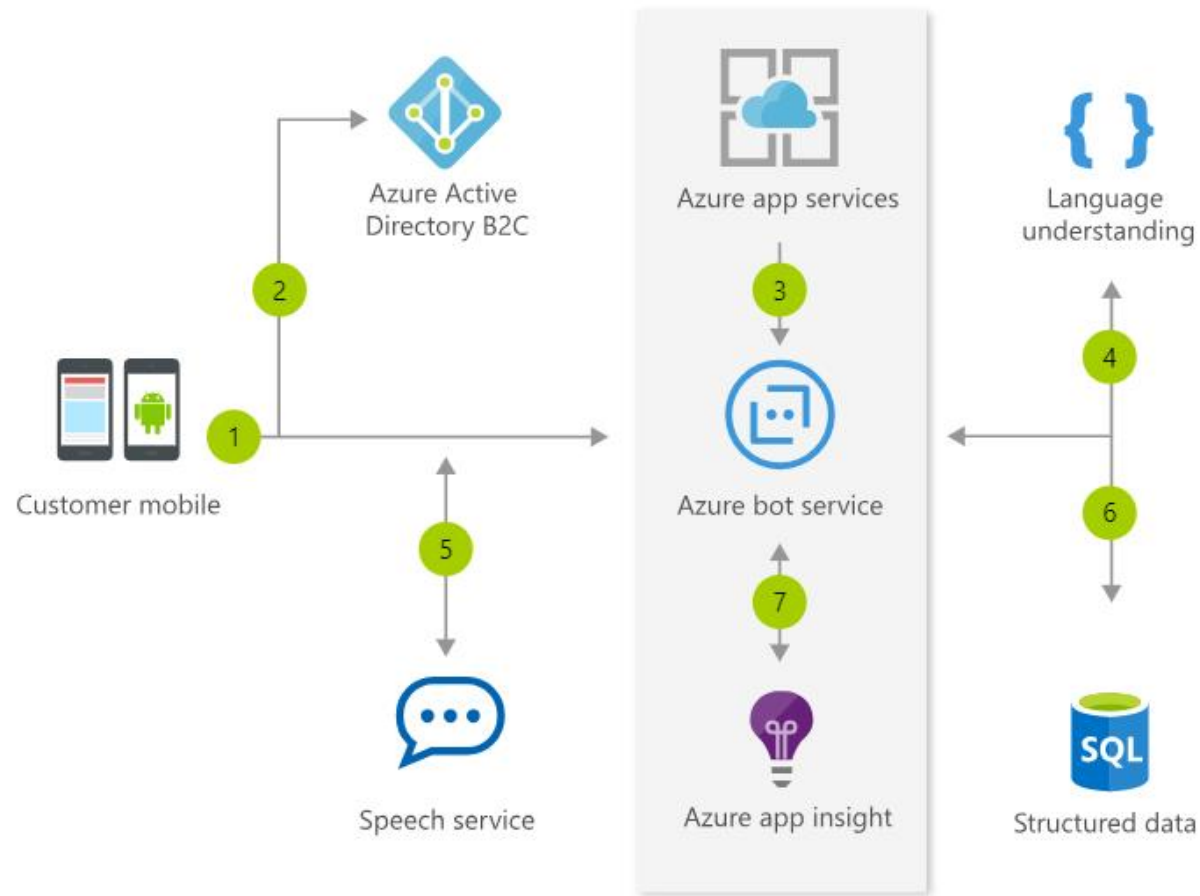


# Enterprise Productivity Chatbot



- 1 Employee access Enterprise Productivity Bot
- 2 Azure Active Directory validates the employee's identity
- 3 The Bot is able to query the employee's Office 365 calendar via the Azure Graph
- 4 Using data gathered from the calendar, the Bot access case information in Dynamics CRM
- 5 Information is returned to the employee who can filter down the data without leaving the Bot
- 6 Application insights gathers runtime telemetry to help the development with Bot performance and usage

# Commerce chatbot



1 Customer uses your mobile app

2 Using Azure AD B2C, the user authenticates

3 Using the custom Application Bot, user requests information

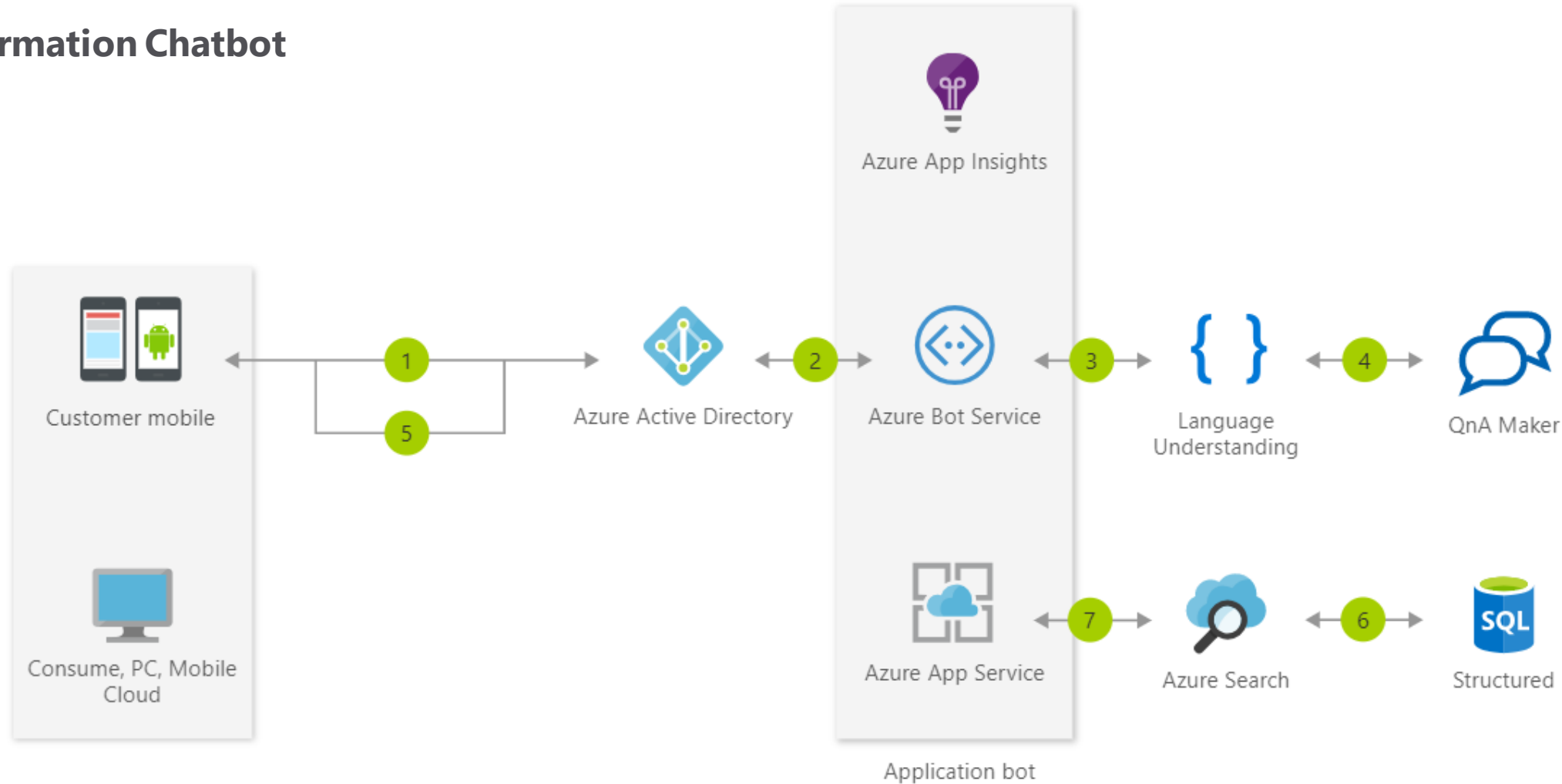
4 Cognitive Services helps process the natural language request

5 Response is reviewed by customer who can refine the question using natural conversation

6 Once the user is happy with the results, the Application Bot updates the customer's reservation

7 Application insights gathers runtime telemetry to help development with Bot performance and usage

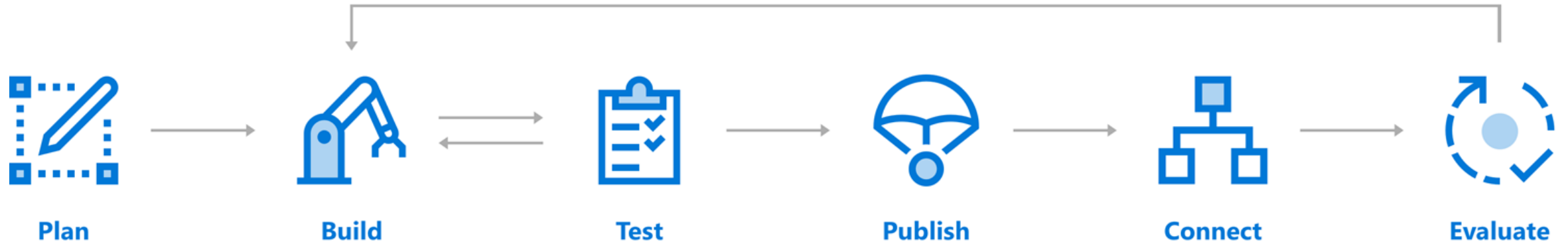
# Information Chatbot



- 1 Employee starts the Application Bot
- 2 Azure Active Directory validates the employee's identity
- 3 The employee can ask the bot what type of queries are supported
- 4 Cognitive Services returns a FAQ built with the QnA Maker
- 5 The employee defines a valid query
- 6 The Bot submits the query to Azure Search which returns information about the application data
- 7 Application insights gathers runtime telemetry to help development with Bot performance and usage

# Best Practices & Guidelines

# Bot Development Practice





# Guidelines

1. Articulate the purpose of your bot and take special care if your bot will support consequential use cases
2. Be transparent about the fact that you use bots as part of your product or service
3. Ensure a seamless hand-off to a human where the human-bot exchange leads to interactions that exceed the bot's competence.
4. Ensure it respects relevant cultural norms and guards against misuse
5. Ensure your bot is reliable
6. Ensure your bot treats people fairly
7. Ensure your bot respects user privacy
8. Ensure your bot handles data securely
9. Ensure your bot is accessible
10. Accept responsibility

# Demo

Santa Bot – QnA  
StackOverFlow – Information Bot

# Workshop

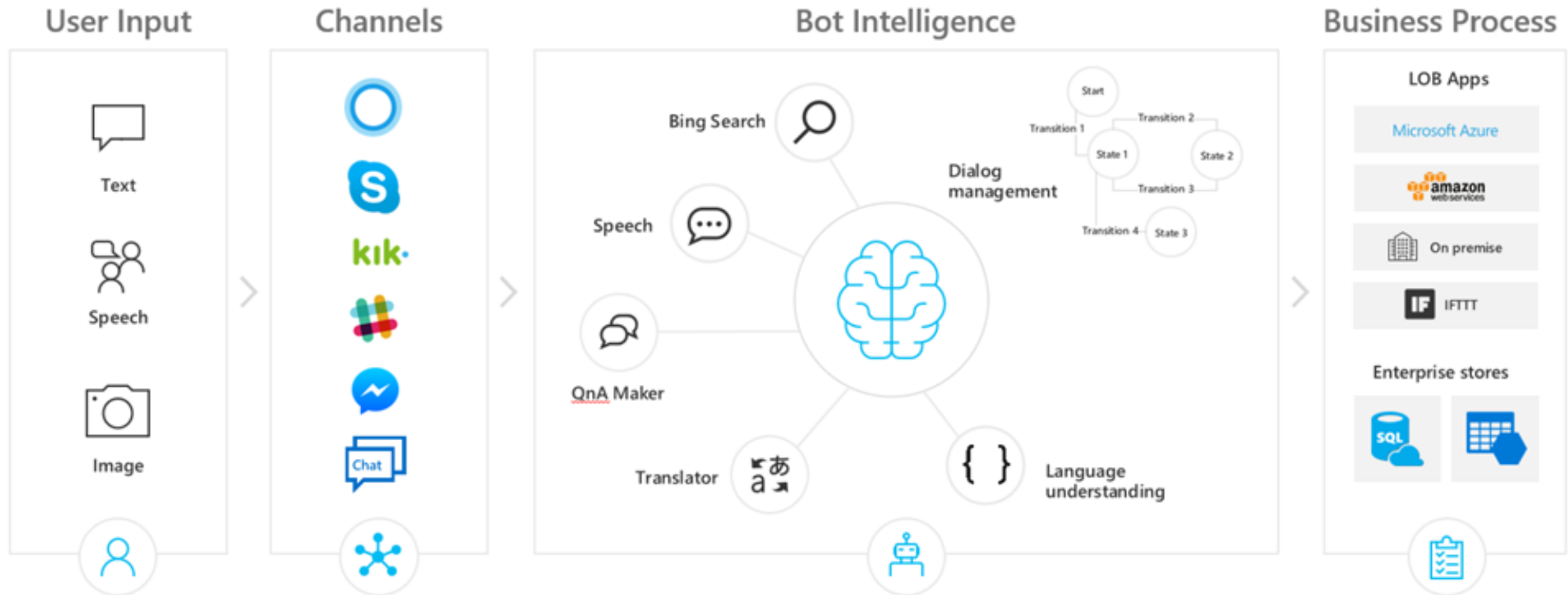
<https://github.com/Aiforall/SimpleBot>

# Getting Started with Azure Bot

[www.botframework.com](http://www.botframework.com)

[github.com/Microsoft/BotBuilder](https://github.com/Microsoft/BotBuilder)

# Conversational AI



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# Useful Links

Get Started:

<https://azure.microsoft.com/en-us/services/bot-service/>

<https://gallery.azure.ai/>

First Bot:

<https://docs.microsoft.com/en-us/azure/bot-service/bot-service-quickstart?view=azure-bot-service-4.0>

<https://azure.microsoft.com/en-us/blog/conversational-bots-deep-dive-what-s-new-with-the-general-availability-of-azure-bot-service-and-language-understanding/>

<https://azure.microsoft.com/en-us/blog/announcing-the-general-availability-of-azure-bot-service-and-language-understanding-enabling-developers-to-build-better-conversational-bots/>

<https://docs.microsoft.com/en-us/azure/bot-service/bot-service-overview-introduction?view=azure-bot-service-4.0>

Virtual Assistant:

<https://github.com/Microsoft/AI/tree/master/solutions/Virtual-Assistant>

Enterprise Bot:

<https://github.com/Microsoft/BotBuilder-Samples/blob/master/README.md>

# Bots Boot Camp

1. Intro <https://channel9.msdn.com/events/Connect/2017/AI1>
2. Bots <https://channel9.msdn.com/events/Connect/2017/AI2>
3. Language <https://channel9.msdn.com/events/Connect/2017/AI3>
4. Knowledge <https://channel9.msdn.com/events/Connect/2017/AI4>
5. Speech <https://channel9.msdn.com/events/Connect/2017/AI5>
6. Vision <https://channel9.msdn.com/events/Connect/2017/AI6>
7. [Aka.ms/learn](https://aka.ms/learn)



# Thank you!

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LinkedIn: [www.linkedin.com/pulse/ai-powered-our-choices-sherin-mathew/](https://www.linkedin.com/pulse/ai-powered-our-choices-sherin-mathew/)  
Github: AiforAll

**Coming soon**

AI Tech North 2019, AI Conference, Leeds, 20th July 2019

[www.ai-tech.uk/ai-tech-north-2019](http://www.ai-tech.uk/ai-tech-north-2019)