Microsoft

Azure Bot Service

Bot in a Day

[NAME]
[TITLE]
[COMPANY]

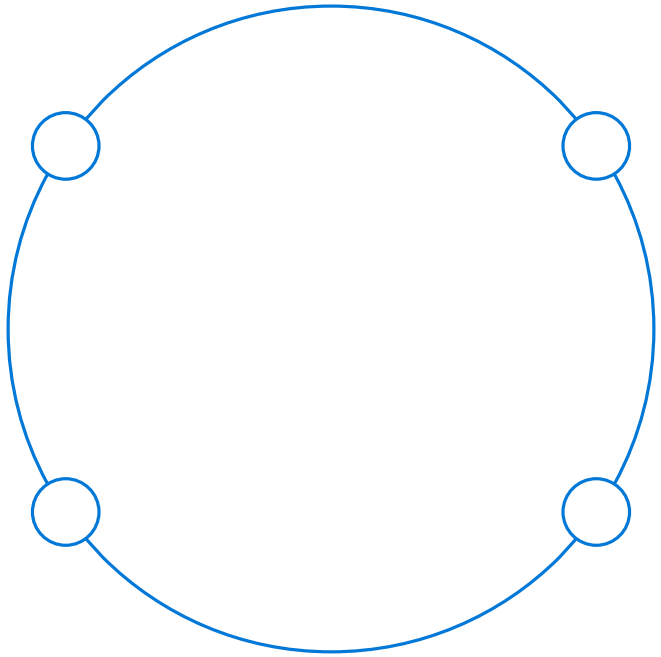
Microsoft AI

Amplifying human ingenuity with intelligent technology

Microsoft

Microsoft AI

Data → Intelligence → Experiences



Microsoft

BREADTH

Microsoft AI Platform: Azure + AI

AI SERVICES

CONVERSATIONAL AI

Azure Bot Service

AI MODULES

Cognitive Services

DEVICES

Azure IOT Edge

AI INFRASTRUCTURE

AI ON DATA

Cosmos DB | SQL DB | SQL DW | Data Lake

AI COMPUTE

Spark | DSVM | Batch AI | ACS | Edge

CPU, GPU, FPGA

AI TOOLS

CODING & MANAGEMENT TOOLS

VS Tools for Machine Learning | Azure ML Studio | Azure ML Workbench

Others (Pycharm, Jupyter notebooks...)

DEEP LEARNING FRAMEWORKS

Cognitive Toolkit | TensorFlow | Caffe

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

AI resources
Get started

OPPORTUNITIES

Cognitive Services
azure.com/cognitive

Azure Bot Service
azure.com/bots

Machine Learning
& Deep Learning
aka.ms/mldeeplearning

Get Started Guides
aka.ms/csdoc

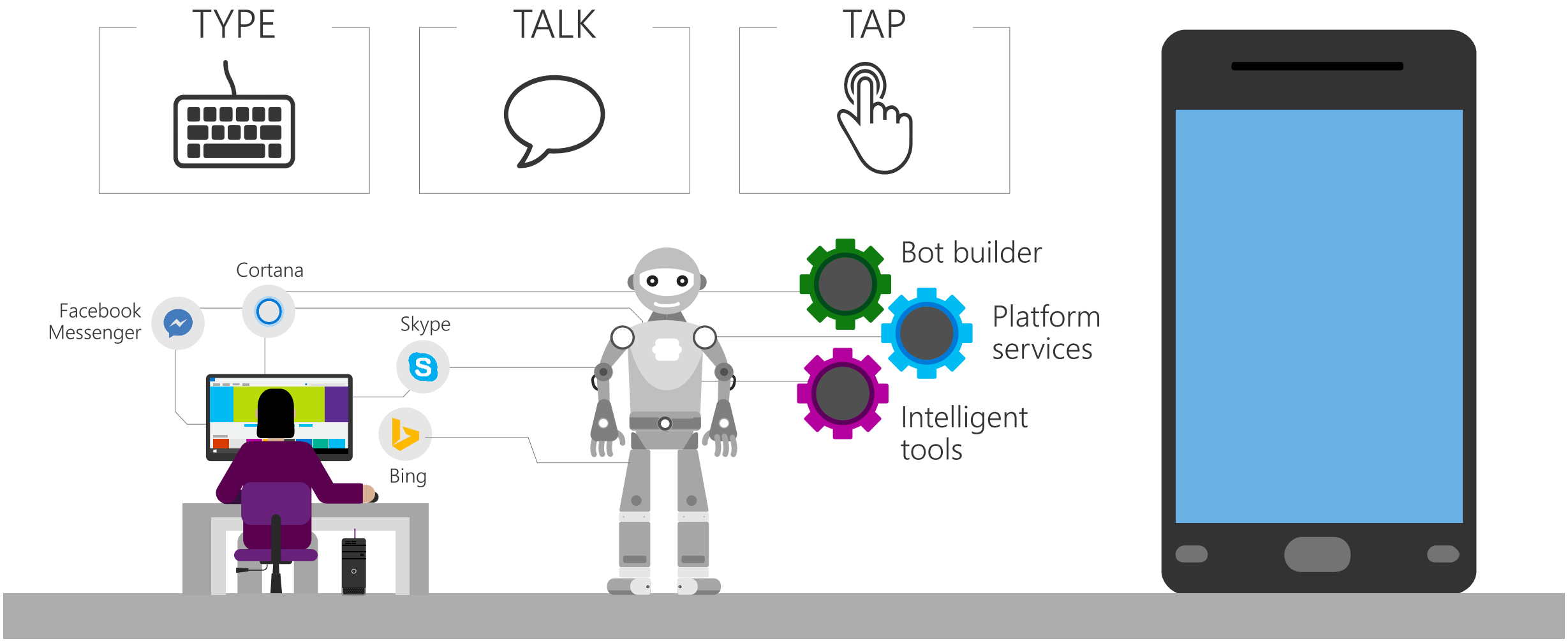
Azure Bot Service Quickstarts
aka.ms/botquickstart

AI School
aischool.microsoft.com/

AI Show
channel9.msdn.com/Shows/AI-Show

Microsoft

Why a bot?

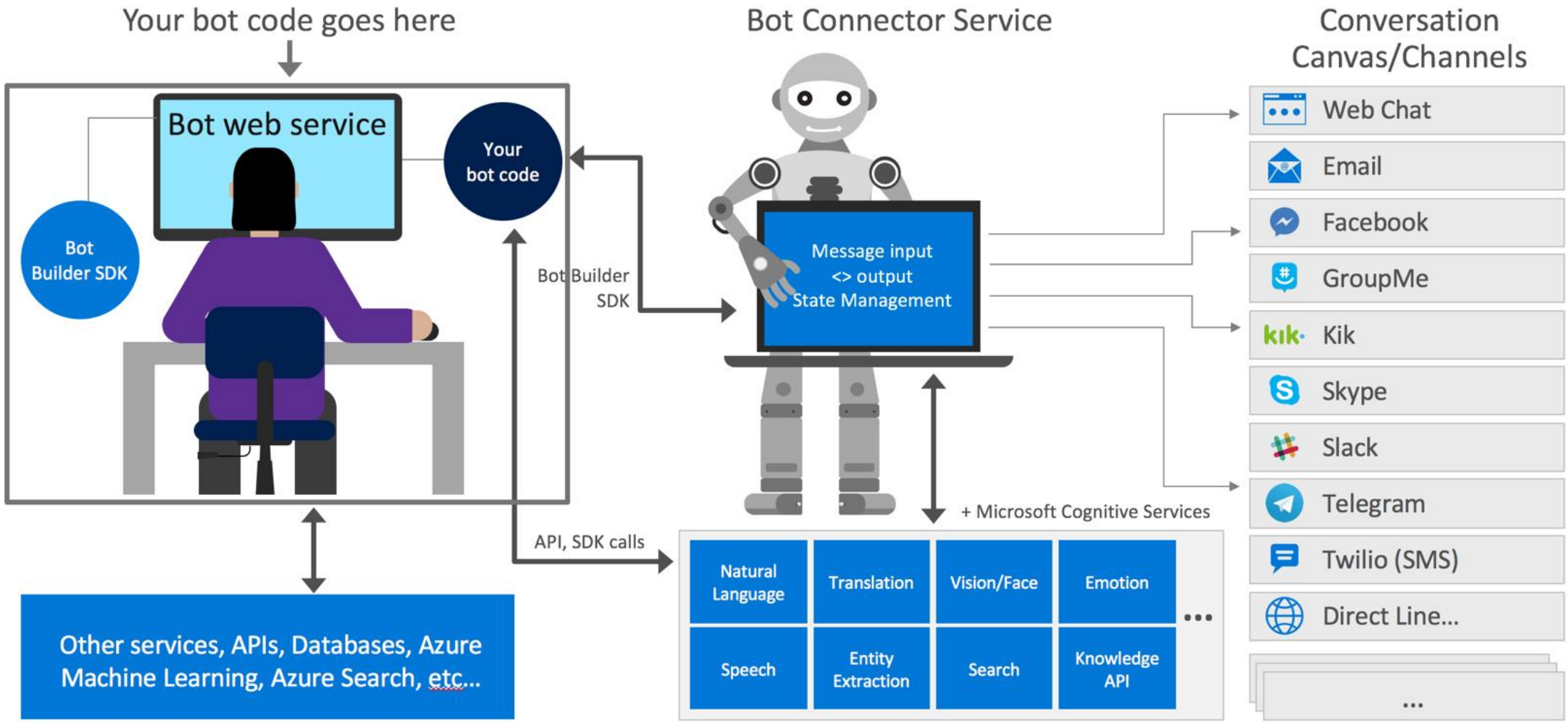

TYPE
TALK
TAP
Cortana
Facebook Messenger
Skype
Bing
Bot builder
Platform services
Intelligent tools

Kinds of bots

Scenario	Retail	Finance	Insurance	Telecoms	Government	Automotive	Manufacturing	Healthcare	Media	Events
Customer service	✓	✓	✓	✓	✓	✓	✓	✓		✓
Customer retail	✓	✓	✓	✓				✓		
Audio/speech analysis	✓	✓	✓	✓	✓				✓	
Translation		✓	✓							
Surveillance		✓			✓					
Knowledge extraction		✓	✓	✓			✓			
Video/photo analysis		✓			✓				✓	
Product identification	✓						✓	✓		
Digital assistant						✓				
Footfall analysis	✓									✓
HD maps and object detection						✓				

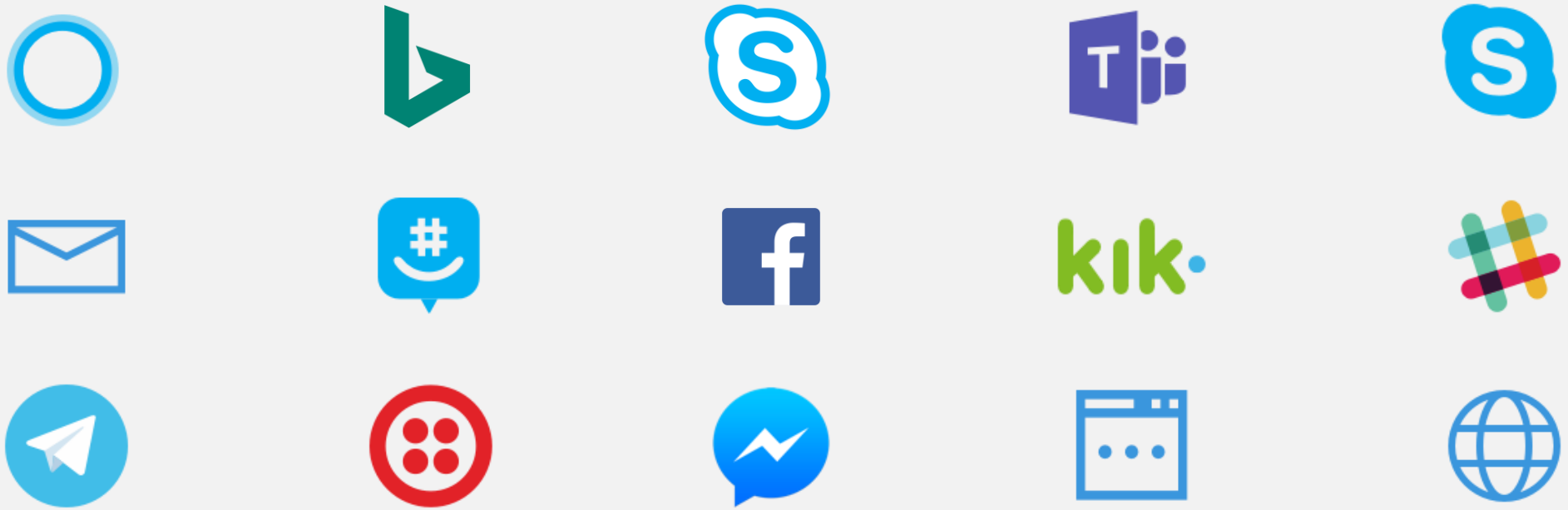
DEVELOPMENT ENVIRONMENT

Microsoft Bot Framework



UX SUPPORT

Channels



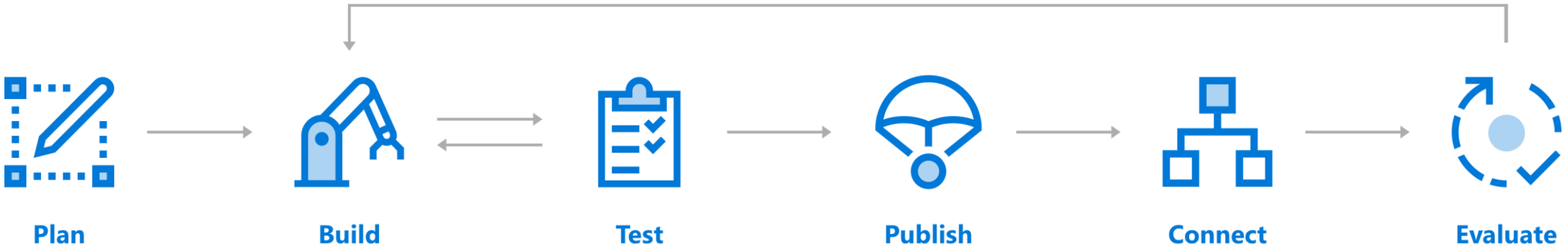
WebChat

DirectLine

Microsoft

Create a Conversation with Bot Service

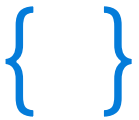
Comprehensive framework for the lifecycle of your project



Plan	Build	Test	Publish	Connect	Evaluate
Author Dialogs	Bot Builder SDK	Emulator	DevOps Tools	WebChat	Application Insights
Design Cards	Cognitive Services	Application Insights	Azure	Cortana	LUIS Suggestions
Visualize	Getting Started Templates	Emulator	BYO Web Host	Skype	
				Facebook	
				...	

BREADTH

Conversational AI tools



Language Understanding Intelligent Service

Teach your apps to understand commands from your users

Azure Search

Integrate search into a conversational experience

QnA Maker

Distill information into conversational, easy-to-navigate answers

Bing Speech API

Convert speech to text and back again, and understand its intent

Speaker Recognition API

Give your app the ability to know who's talking

Translator

Easily perform speech and text translation

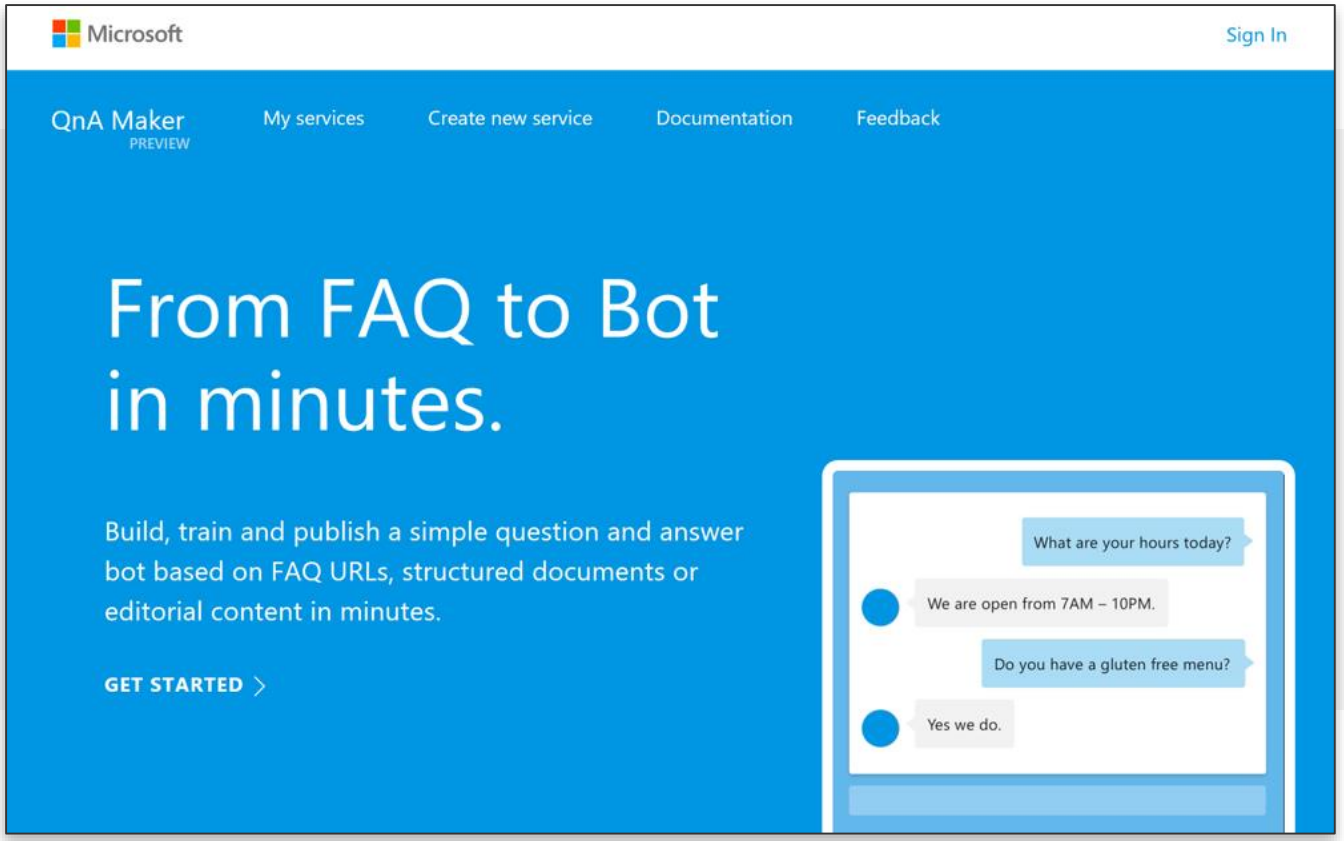
Custom Speech Service

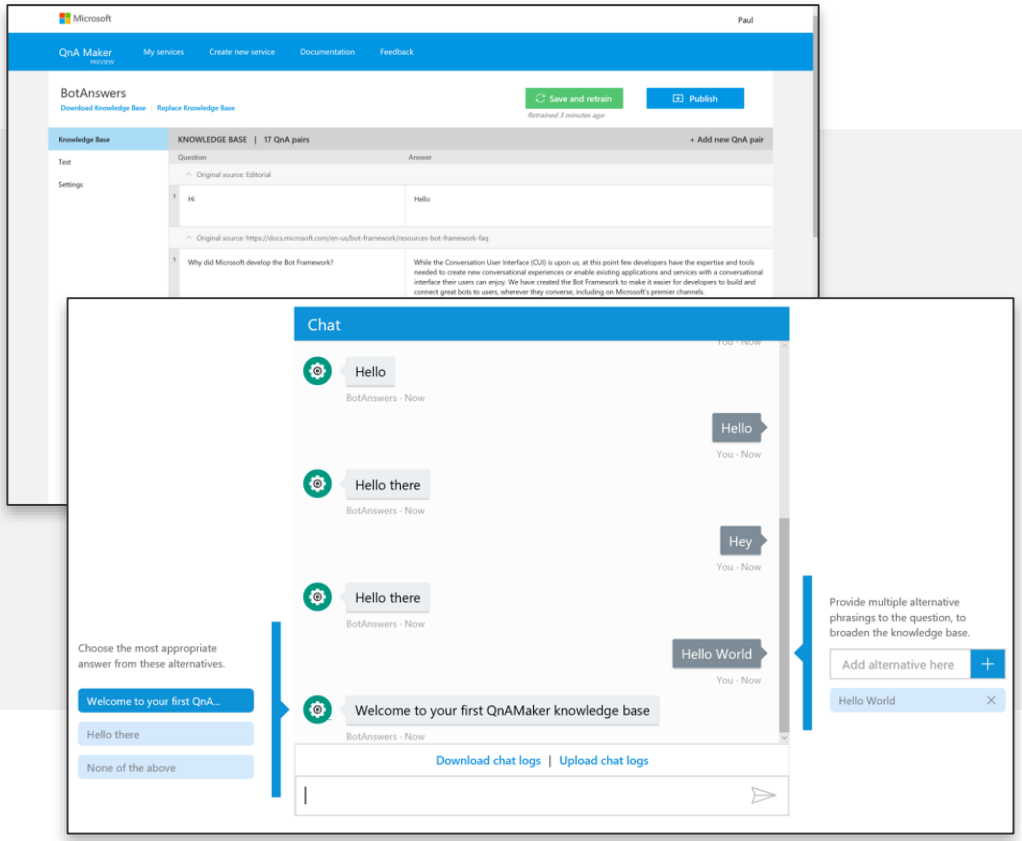
Fine-tune speech recognition for anyone, anywhere

BUSINESS USER ACCESSIBILITY

QnA Maker

Distill information into conversational, easy-to-navigate answers





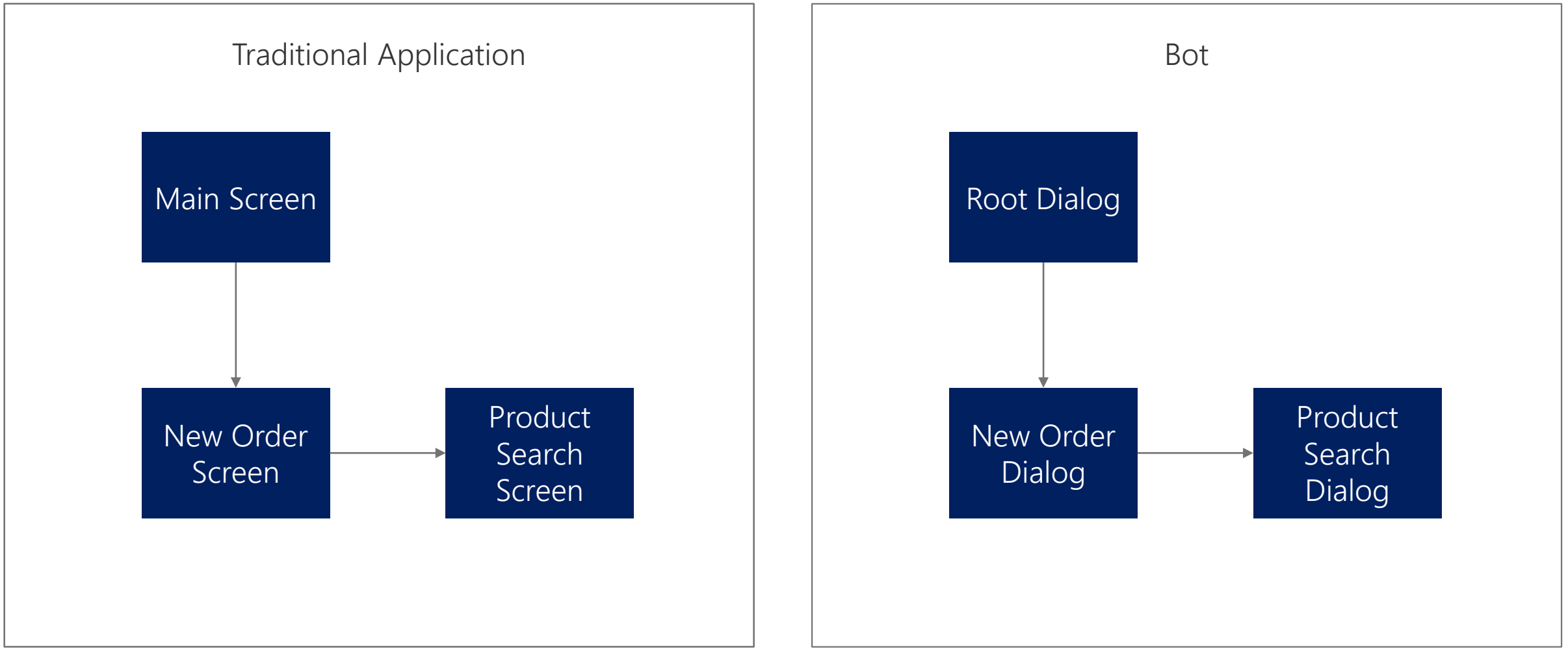
Lunch Topics

- LearnAnalytics@MS
- Microsoft AI School
- Bot Service Documentation
- Microsoft Virtual Academy
- Partner Demos

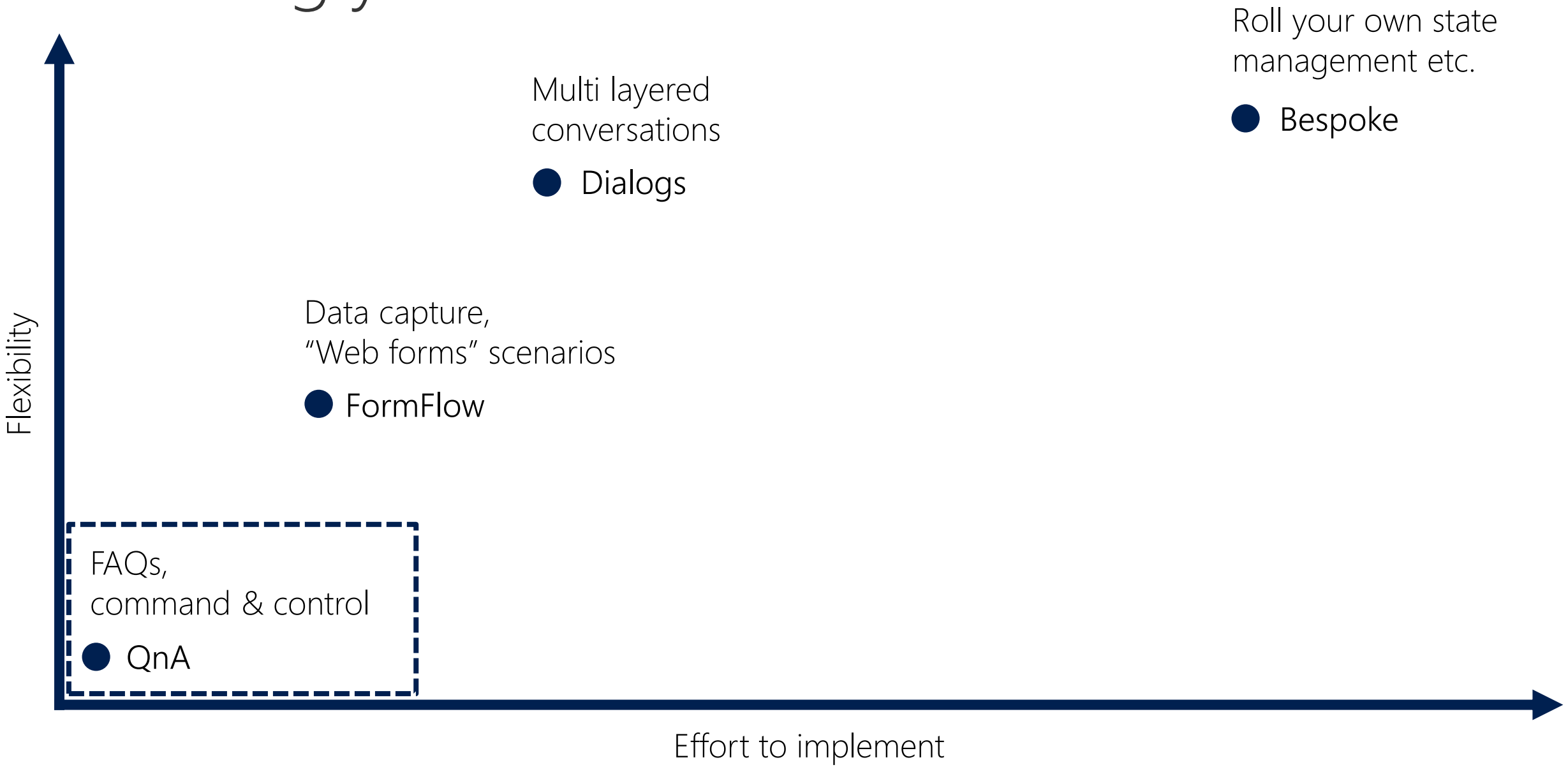
Interacting with the User

Dialogs are for bots like screens are for apps

They separate concerns and organize flows, exactly the same way:



Modelling your conversation



Forms are data binding for bots

- Best approach for guided interactions
- Define a serializable model
- SDK handles collecting, binding, and flow operations (like quit)
- Extended via declarative attributes or via code

```
[Serializable]
public class SandwichOrder
{
    public SandwichOptions? Sandwich;
    public LengthOptions? Length;
    public BreadOptions? Bread;
    public CheeseOptions? Cheese;
    public List<ToppingOptions> Toppings;
    public List<SauceOptions> Sauce;

    public static IForm<SandwichOrder> BuildForm()
    {
        return new FormBuilder<SandwichOrder>()
                .Message("Welcome to the simple sandwich order bot!")
                .Build();
    }
};
```

```
[Optional]
[Template(TemplateUsage.NoPreference, "None")]
public string Specials;
```

```
.Field(new FieldReflector<SandwichOrder>(nameof(Specials))
    .SetType(null)
    .SetActive((state) => state.Length == LengthOptions.FootLong)
    .SetDefine(async (state, field) =>
    {
```

Interacting with the User

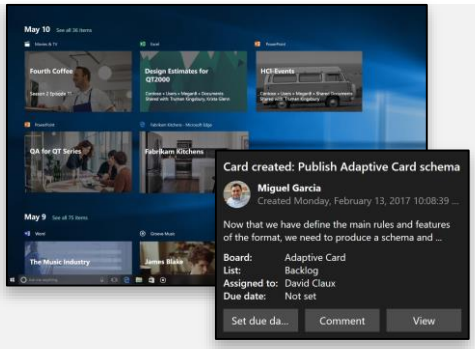
1. Prompts are how you ask user questions
   - Free form – text
   - Data type detection – number, datetime
   - List of options – confirm, choice
   - Media - attachments

2. Introducing Cards
   - Graphics are pretty
   - We want to move beyond just basic text
     - Display images
     - Formatted text
     - Add click-ability

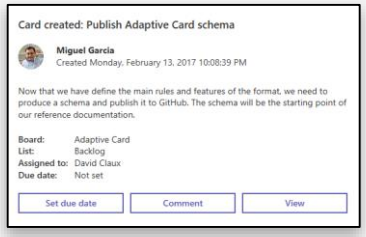
UX SUPPORT

Adaptive cards

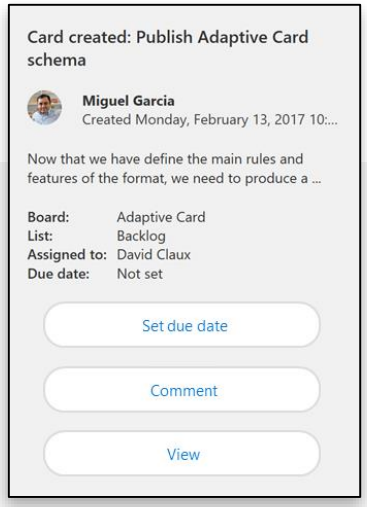
Open framework, multiple canvases



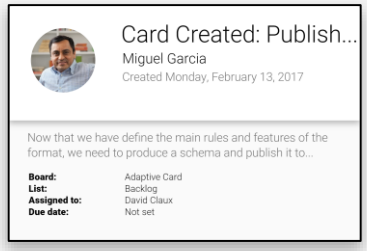
Windows



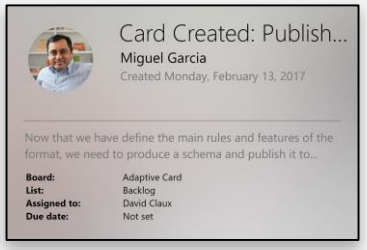
Productivity-
Microsoft Teams



Skype

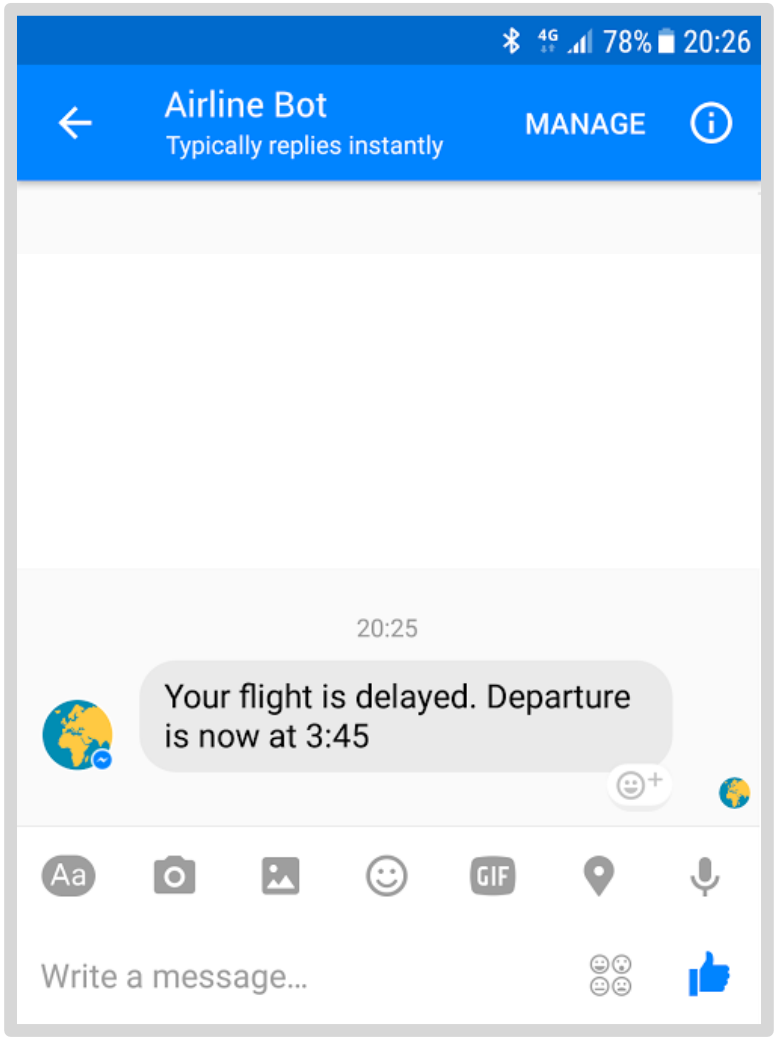


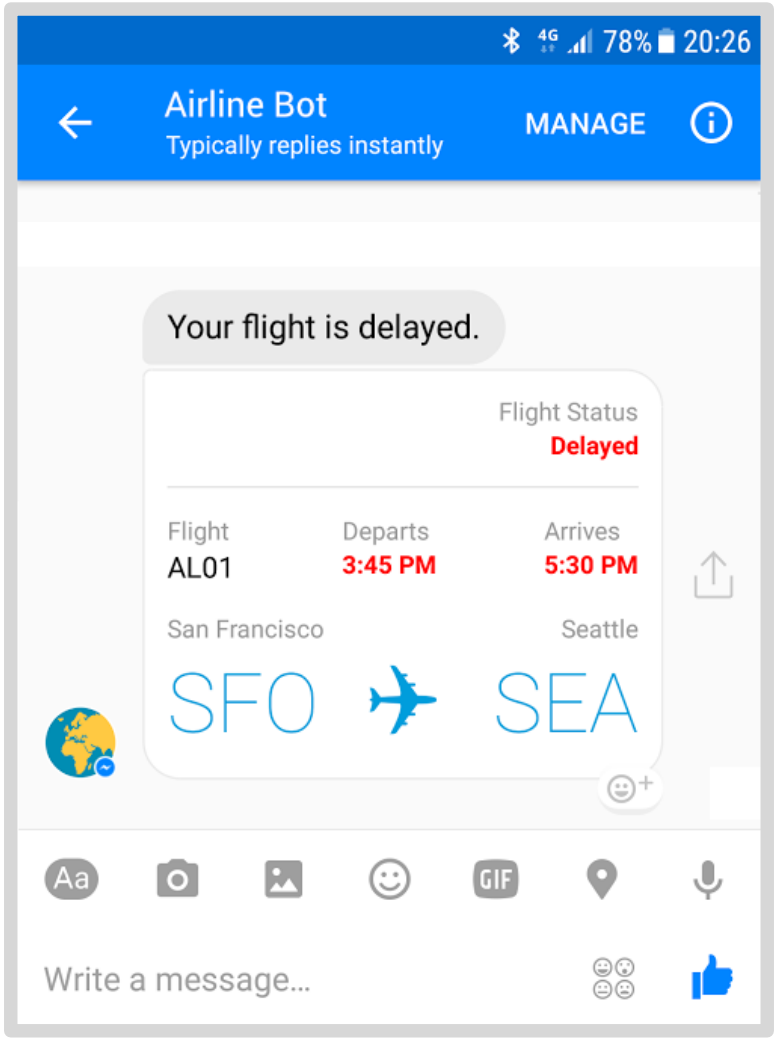
Android



iOS

Conversational mechanisms





Conversational mechanisms

Text, with optional media attachments

Traditional chat can contain media attachments
(e.g., image, video, audio, file)

Input prompts

Suggested actions: Buttons, numbered items in a list, etc.

Rich cards, rendered as a list or carousel

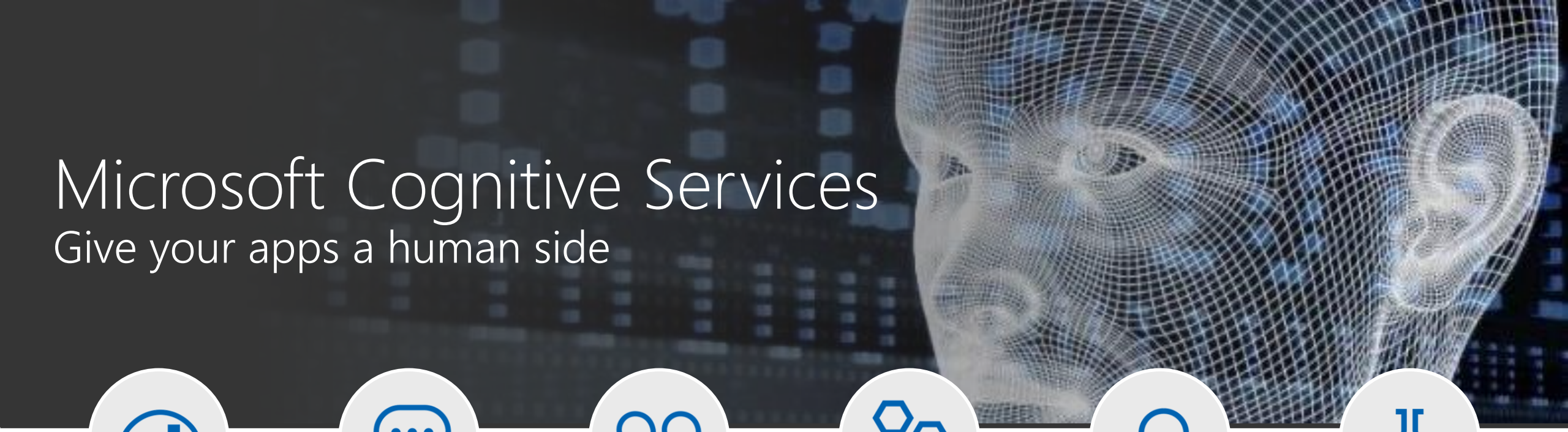
Images, buttons, audio, animations, video, user sign-in, etc.

Speech

Text-based chat using Speech Recognition & Synthesis (TTS)

Microsoft Cognitive Services

Give your apps a human side



Vision

From faces to feelings, allow your apps to understand images and video

Speech

Hear and speak to your users by filtering noise, identifying speakers, and understanding intent

Language

Process text and learn how to recognize what users want

Knowledge

Tap into rich knowledge amassed from the web, academia, or your own data

Search

Access billions of web pages, images, videos, and news with the power of Bing APIs

Labs

An early look at emerging Cognitive Services technologies: discover, try and give feedback on new technologies before general availability

Microsoft Cognitive Services

Give your apps a human side

Vision

Computer Vision

Content Moderator

Face

Video Indexer

Speech

Translator Speech

Speech

Speaker Recognition

Language

Bing Spell Check

Translator Text

Text Analytics

Knowledge

QnA Maker

Search

Bing Autosuggest

Bing Image Search

Bing News Search

Bing Video Search

Bing Web Search

Bing Entity Search

Labs

Project Gesture

Project Event Tracking

Project Academic Knowledge

Project Local Insights

Project Knowledge Exploration

Project Entity Linking

Microsoft Cognitive Services

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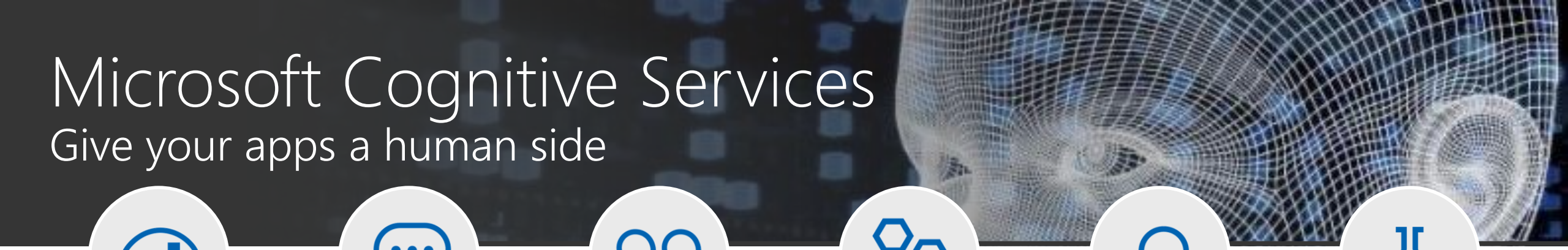

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Search

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Bing Image Search

Bing News Search

Bing Video Search

Bing Web Search

Bing Entity Search

Labs

Project Gesture

Project Event Tracking

Project Academic Knowledge

Project Local Insights

Project Knowledge Exploration

Project Entity Linking

CUSTOMIZATION

Custom Vision Service	Custom Speech Service	Language Understanding	Custom Decision Service	Bing Custom Search

Microsoft Cognitive Services

Customization

The set of cus rvices ava wing cust se their o

Vision	Speech	Language	Knowledge	Search	Labs
Custom Vision Service	Custom Speech Service	Language Understanding	Custom Decision Service	Bing Custom Search	

Natural language

Language understanding in human-computer interaction is:

Technically challenging

It's exceedingly difficult to enable a computer to understand what a person wants and to find the pieces of information that are relevant to their intent.

Costly to implement

Building and maintaining machine learning systems requires a large investment of time, money and engineering resources

Often domain specific

In the past, building your own machine learned models often required assistance of a team of data scientists that would customize the models to the specific domain.

BREADTH

Language Understanding (LUIS)

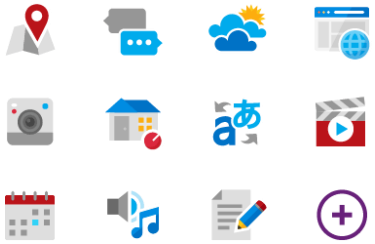
Machine learning-based service to build natural language into apps, bots, and IoT devices.
Quickly create enterprise-ready, custom models that continuously improve

Add natural language to your apps

Designed to identify valuable information in conversations, LUIS interprets user goals (intents) and distills valuable information from sentences (entities), for a high quality, nuanced language model.

Custom Models can be created based on the same technology in Azure Machine Learning.

Quickly build a custom language solution

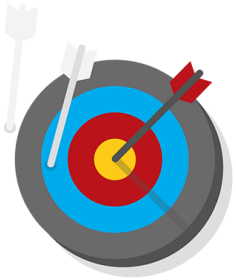


Leverages customizable pre-built apps and entity dictionaries, (e.g., Calendar, Music, Devices).

Dictionaries are mined from the collective knowledge of the web and supply billions of entries, helping your model to correctly identify valuable information from user conversations.

LUIS integrates seamlessly with the Azure Bot Service, making it easy to create a sophisticated bot.

Always learning and improving



Active learning is used to continuously improve the quality of the natural language models.

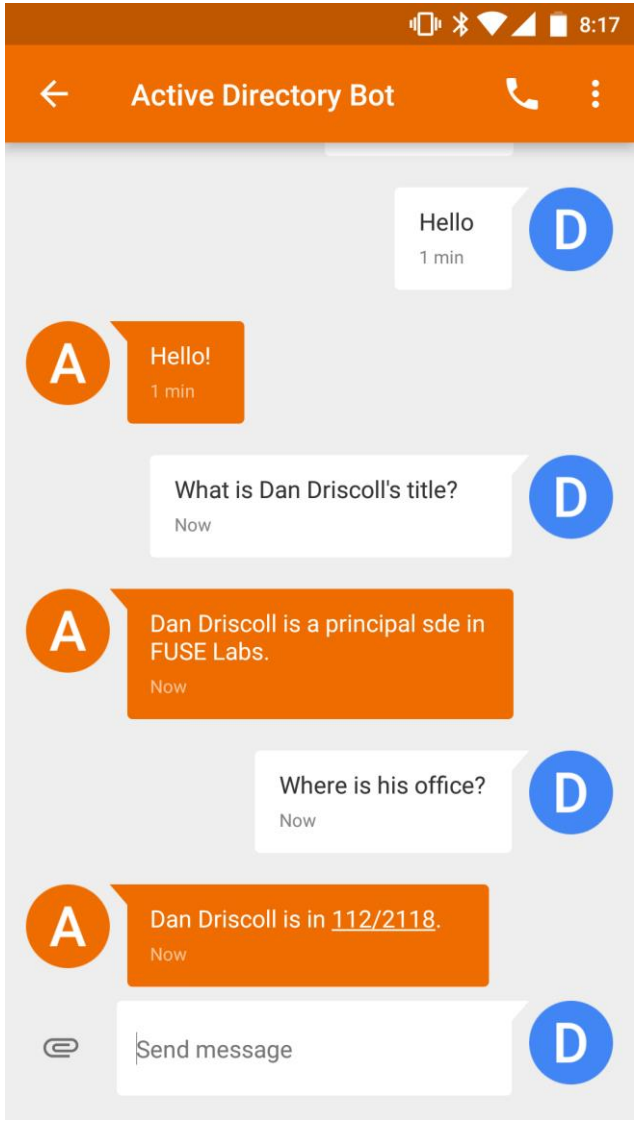
Once the model starts processing input, LUIS begins active learning, allowing you to constantly update and improve the model.

Enterprise-ready, available worldwide

The service is ready to be deployed in commercial applications and can scale with enterprise quality and performance.

The service meets international compliance standards, supports 13 languages and available worldwide, making it highly accessible around the world

LUIS: Intents & Entities

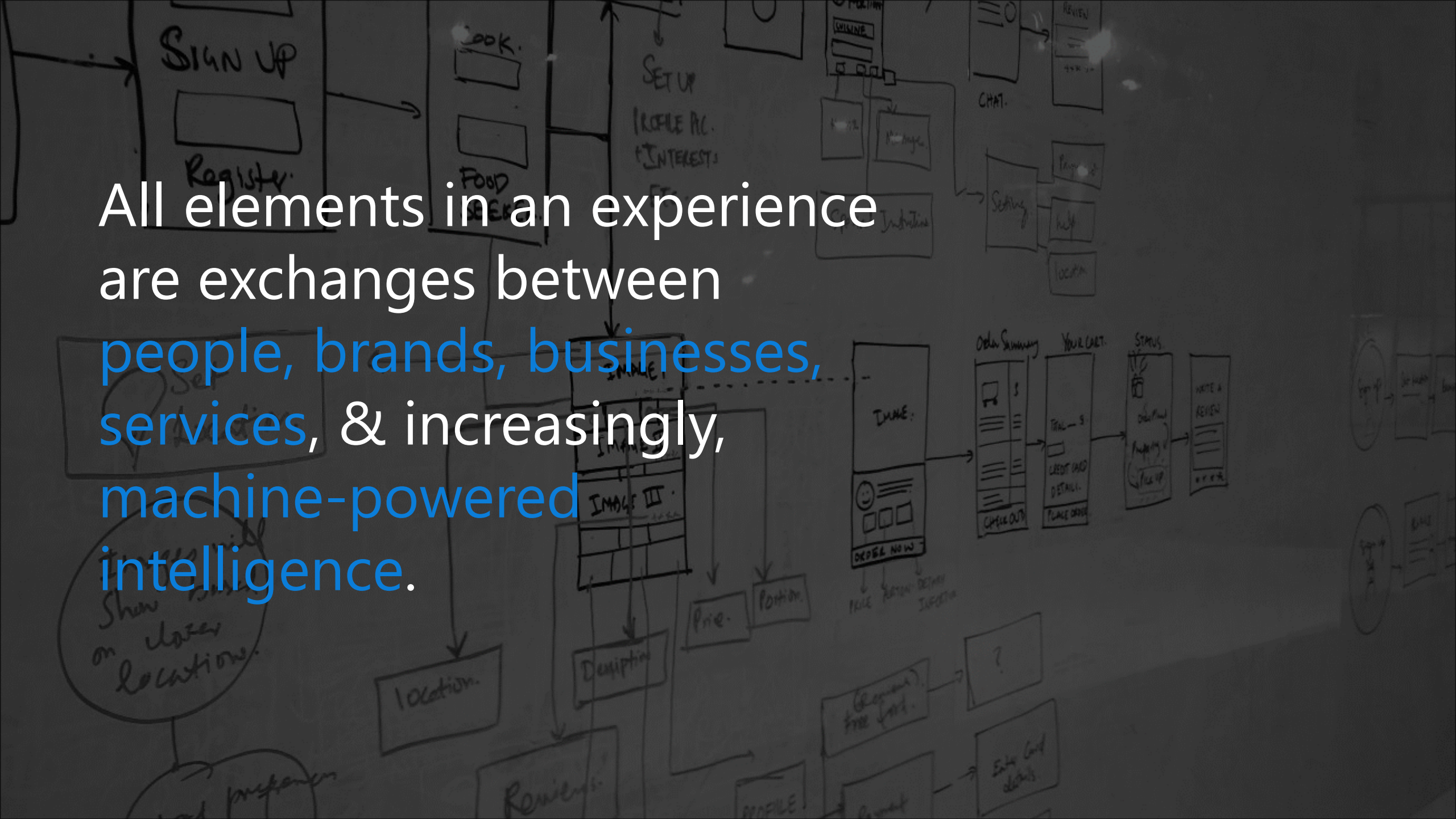


Who is John?

Where does Sue work?

What is Erika's phone number?

Examples of **intent detection**
Examples of **entity extraction**



All elements in an experience are exchanges between people, brands, businesses, services, & increasingly, machine-powered intelligence.

Call to action

- Build bots—https://dev.botframework.com/
- Docs—https://docs.microsoft.com/en-us/bot-framework/
- GitHub—https://github.com/Microsoft/BotBuilder
- Continue your education at Microsoft Virtual Academy online