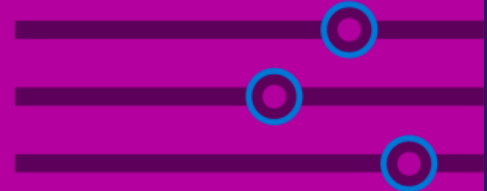


# BUILDING BOTS

## ON THE INTELLIGENT AZURE CLOUD

TIM SCARFE, DATA SOLUTION ARCHITECT / DATA SCIENTIST  
(MICROSOFT)





SESSION OVERVIEW

AZURE INTELLIGENT CLOUD

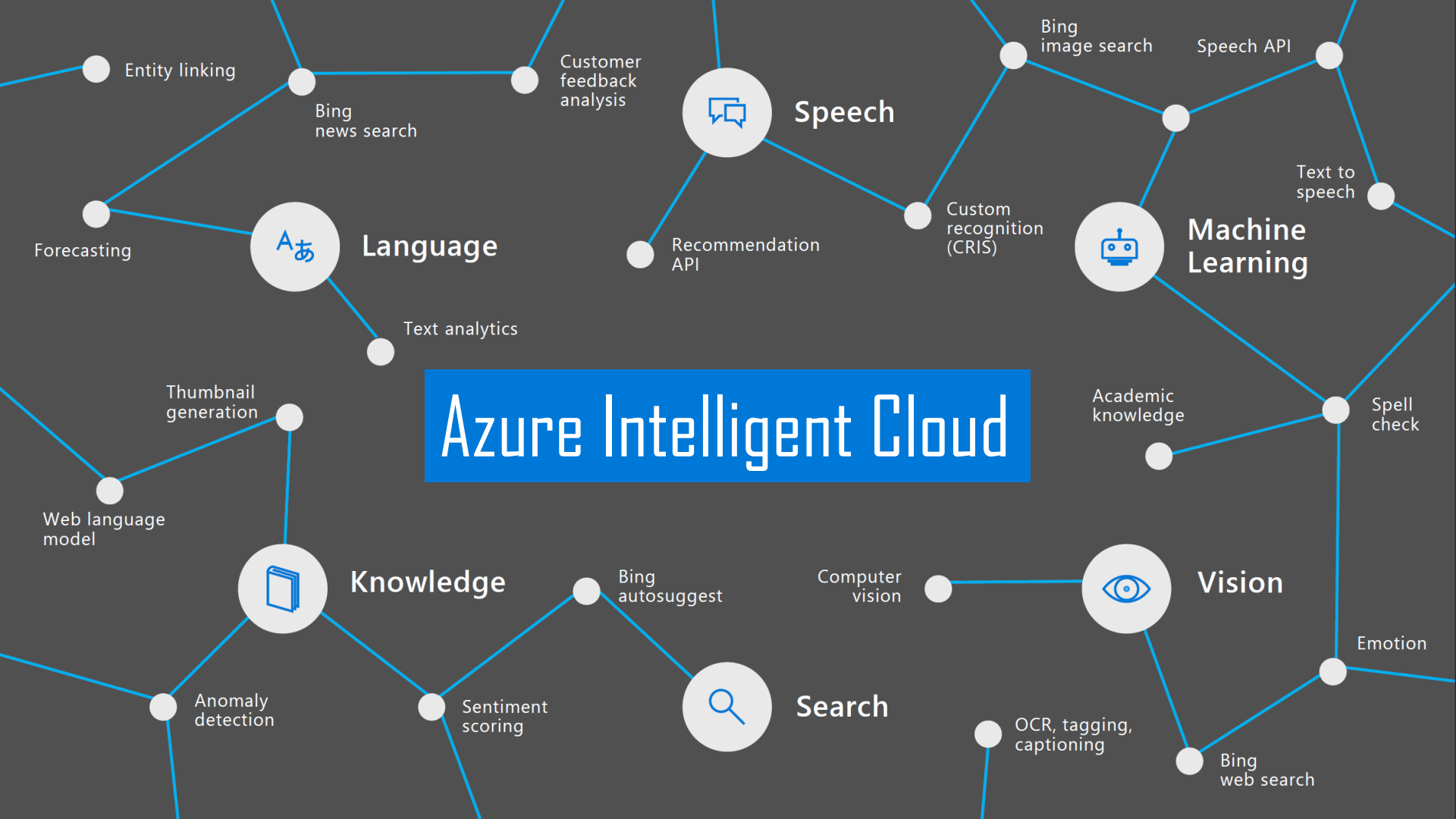
WHAT ARE BOTS?

BUILDING BOTS



"Our goal is to  
**democratise AI** to  
empower every  
person and every  
organisation to  
achieve more."

Satya Nadella



# Machine Learning/AI Stack at Microsoft



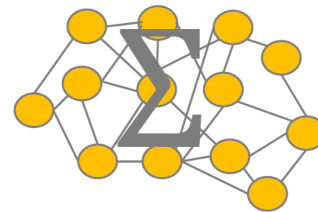
Cognitive Services



Azure  
Machine Learning



R Server  
Data Science  
Languages



Cognitive Toolkit (CNTK)

SaaS (REST)

PaaS (Drag/Drop)

Code  
(R vs Python)

# COGNITIVE SERVICES



Vision



Language



Speech



Search



Knowledge

Computer vision

Face

Emotion

Content Moderator

Video

Video Indexer

Cognitive Services Labs

Text analytics

Spell check

Web language model

Linguistic analysis

Translator

Speaker recognition

Speech

Web search

Image search

Video search

News search

Autosuggest

Academic knowledge

Entity linking service

Knowledge exploration

Recommendations

QnA maker

**Custom**

Vision Service

**Custom**

Language  
Understanding

**Custom**

Speech Service

**Custom**

Search

**Custom**

Decision Service

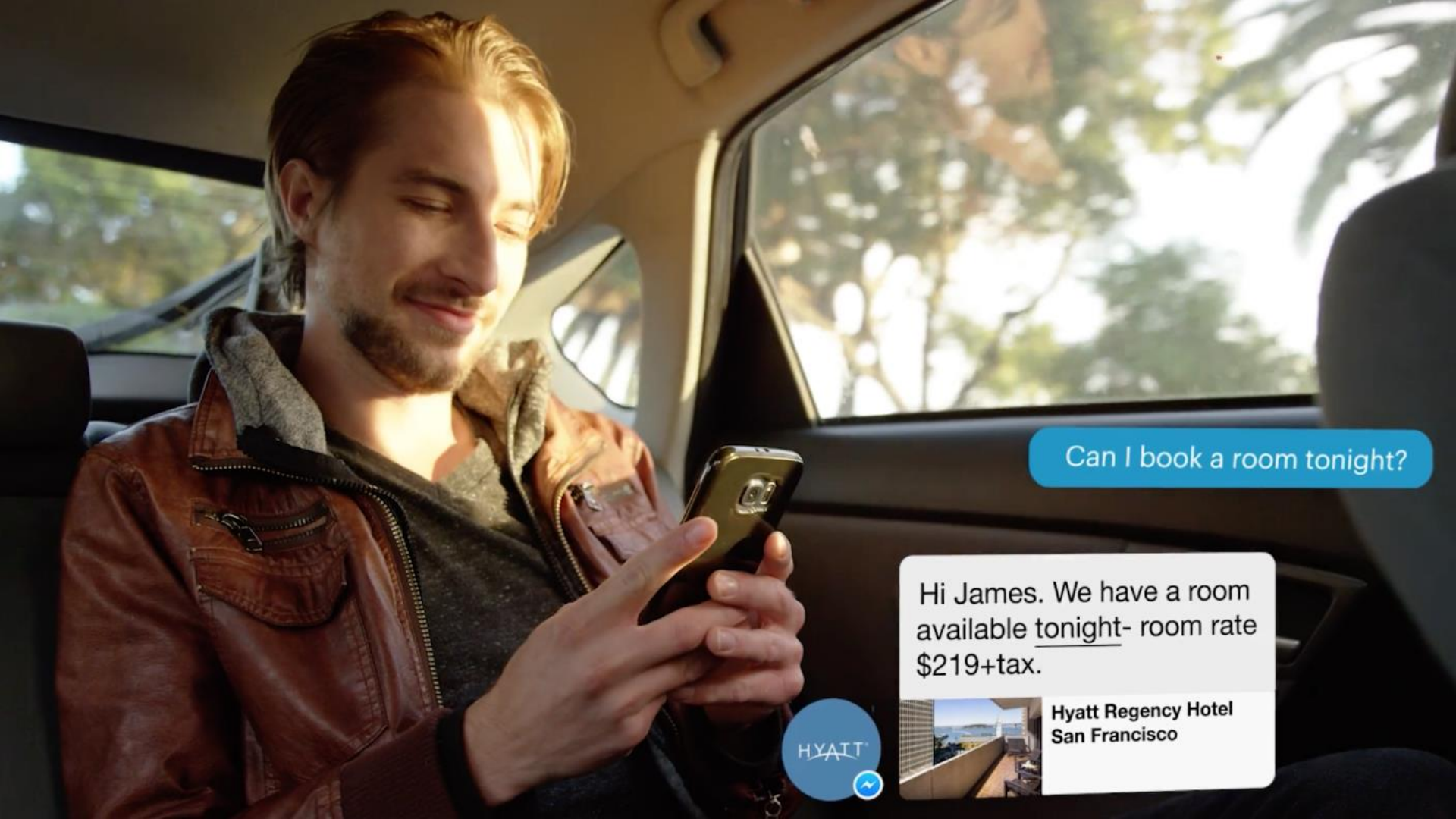
# THE QUEST FOR EFFORTLESS USER INTERFACES



- ▶ Whenever we want
- ▶ Immediate
- ▶ No effort







Can I book a room tonight?

Hi James. We have a room available tonight- room rate \$219+tax.

HYATT



Hyatt Regency Hotel  
San Francisco





# VIRTUAL ASSISTANT ECOSYSTEM



## PC (1990s)



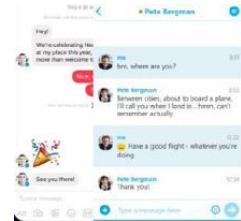
## Web (2000s)



## Smartphone (2010s)



## Conversational

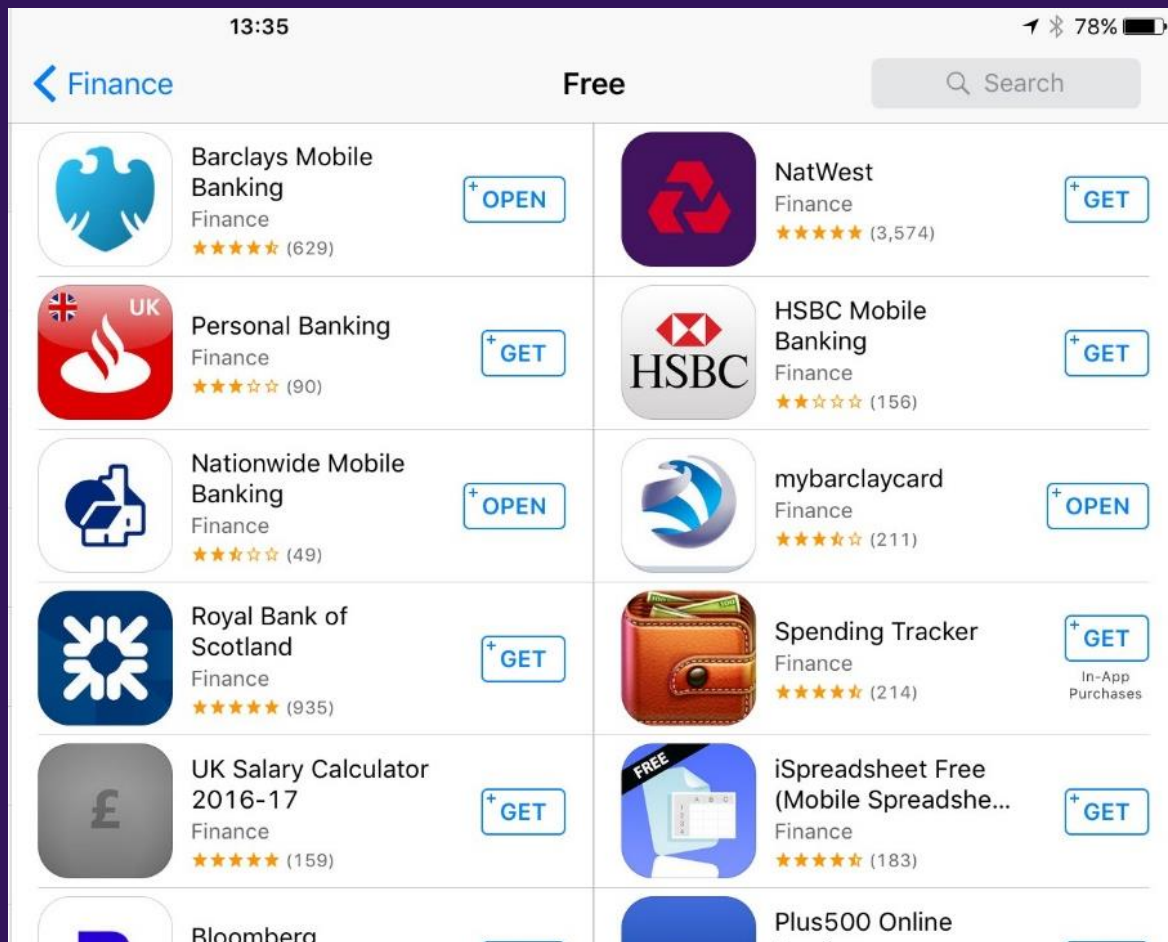


# EVOLUTION OF USER INTERFACES



# APPS

THERE ARE A  
PLETHORA OF APPS  
TODAY













# WHY NOW?



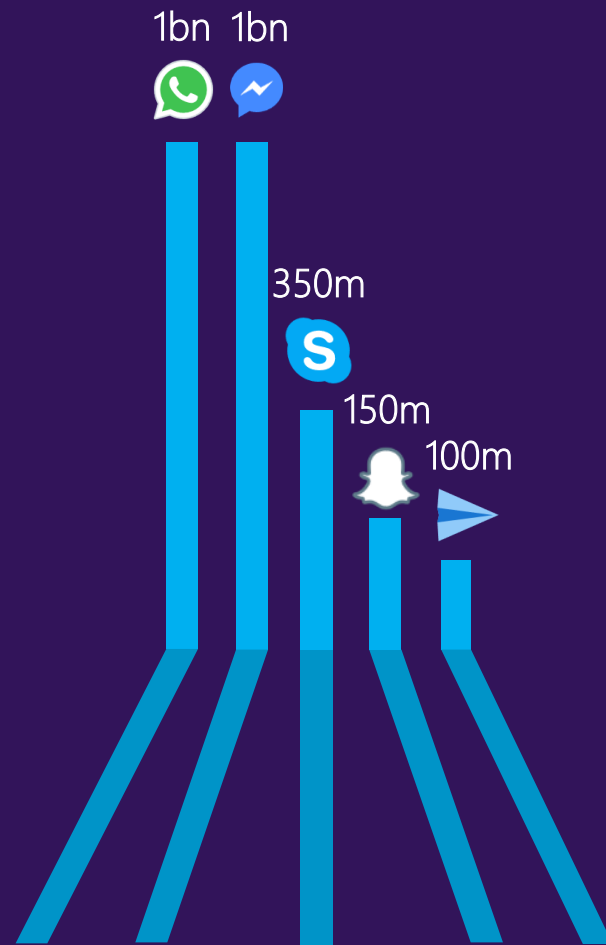
- ▶ Natural Language Processing
- ▶ Artificial Intelligence
- ▶ Messaging apps rule the world



# 7 OF THE TOP 10 APPS ARE MESSAGING APPS

- |   |   |   |    |
|---|---|---|----|
| 1 |   |   | 6  |
| 2 |  |  | 7  |
| 3 |  |  | 8  |
| 4 |  |  | 9  |
| 5 |  |  | 10 |

# MASSIVE USAGE



# WHAT'S A BOT?

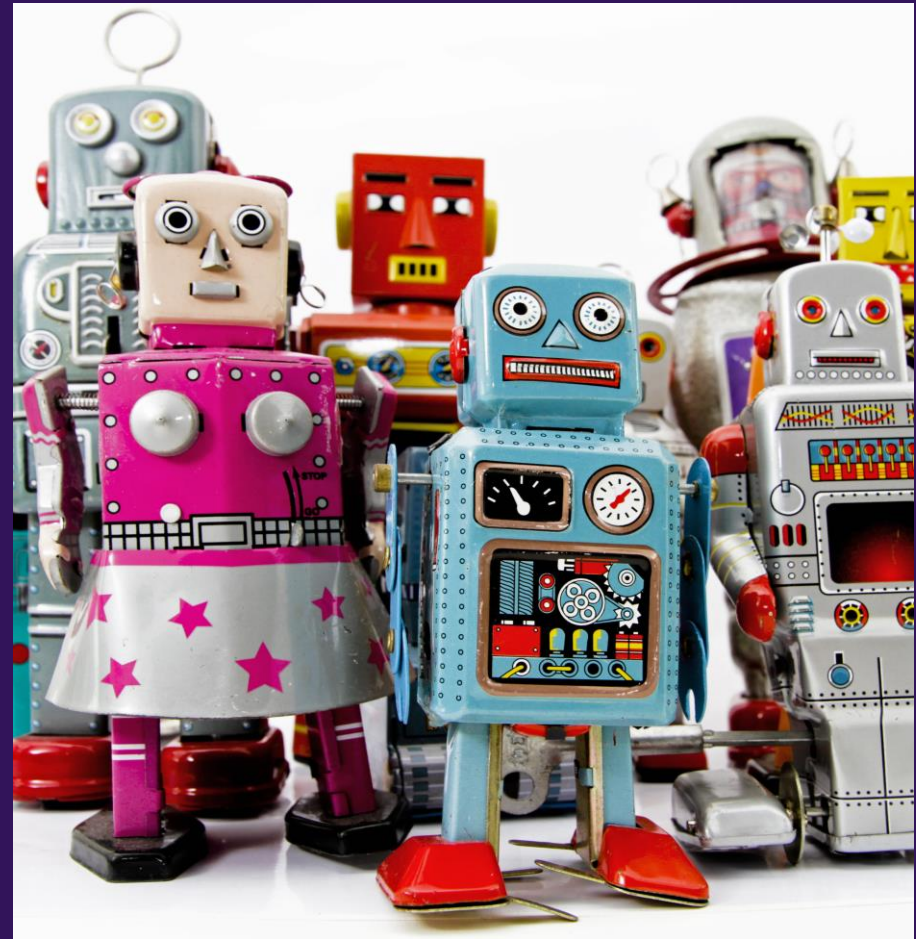




# A NEW TYPE OF APP



- ▶ Solves a problem, quickly
- ▶ Runs anywhere (really anywhere)
- ▶ Natural conversational interaction



# BOTS BRIDGE THE GAP BETWEEN APPS AND HUMANS



# WHY MICROSOFT?





- ▶ Human Language = New UI
- ▶ Bots = New Apps
- ▶ Digital Assistants



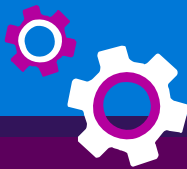
DEMO

# SKYSCANNER



# AZURE BOT SERVICE

# AZURE BOT SERVICE



- ▶ PaaS bot solution
- ▶ Serverless (like Azure Functions)
- ▶ Easy to hit the ground running














Bot

Serverless App

## Bot Connector

Routes Messages  
Manages State  
Bot registration/directory  
Session Tracking  
Per-user, per-bot storage  
APIs  
Bot Builder SDK

## Bot Channels

-  Skype
-  Web chat
-  Direct Line
-  Email O365
-  Facebook Messenger
-  GroupMe
-  Kik
-  Slack
-  SMS
-  Telegram
-  Microsoft Teams

# AZURE BOT SERVICE/Framework





### Skyscanner

Skyscanner

The world's travel search engine



### AzureBot

Microsoft

Be more productive with your own Microsoft Azure subscriptions using



### Spock

Massively

Chat with Spock, second in command of the USS Enterprise, to



### Hipmunk

Hipmunk, Inc.

Hi, hi! I'm a super-powered travel assistant Hipmunk who can dig



### Jessie Humani

PullString, Inc.

Jessie Humani's life is in your hands. Will you help her make some



### SI x GameOn...

GameOn Technology

Love the NFL? Add the SI x GameOn NFL bot to get unparalleled



### StubHub

StubHub Inc.

Finding tickets to sports, concerts and theater as easy as chatting with



### Mica, the Hips...

LIKE A HIPSTER

Hi, I'm Mica, your local hipster adviser. I help you discover the best



### Baymax

TrueCare24

Your personal healthcare companion. The service is available



### MemeBot

Fernando Galván Medina

A simple bot that will assist you in your daily meme creation. You can



### Cardea

Powered by RingMD

Meet Cardea, your personal medical aid. She will answer your health



### Solitaire

Card Lion

Solitaire is the most popular card game in the world.



### UNO

Card Lion

UNO world famous card game bot



### Trivia Master

Microsoft

A fiendish quiz hosted by Professor T. Master.



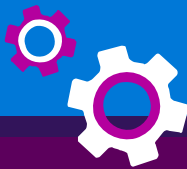
### RemitRadar

RemitRadar

Artificial Intelligence remittance assistant chatbot. Helps you to find

# BOT DIRECTORY

# BOT BUILDER SDK



▶ C#

▶ NodeJS

▶ Cross platform emulator

The screenshot shows the GitHub repository for Microsoft/BotBuilder. At the top, there's a search bar and navigation links for Pull requests, Issues, and Gist. The repository name "Microsoft / BotBuilder" is displayed. Below this, there are tabs for Code, Issues (184), Pull requests (12), Projects (0), Pulse, and Graphs. A description states: "The Microsoft Bot Builder SDK is one of three main components of the Microsoft Bot Framework, providing just what you need to build and connect intelligent bots that interact naturally whether through text/SMS to Skype, Slack, Office 365 mail and other popular services." A link to the botframework.com website is provided. Statistics show 1,655 commits, 6 branches, and 54 releases. A "New pull request" button is visible. A recent update by "Stevenic" is shown, titled "Updated to support TypeScript 2.1". Below this, a list of files and their update details is provided:

File	Update Description
CSharp	Merge pull request #1936 from brandonh-msft/promptdialog-fixes
Node	Updated to support TypeScript 2.1
.gitattributes	More documentation.
Contributing.md	Update Contributing.md
LICENSE	Update LICENSE
README.md	Update README.md

At the bottom of the repository view, the text "Bot Builder SDK" is displayed.



# BUILDING BOTS

# TO BOT OR NOT?



- ▶ Choose a small, discreet scenario
- ▶ Why is it better as a bot?
- ▶ Start small, fail fast

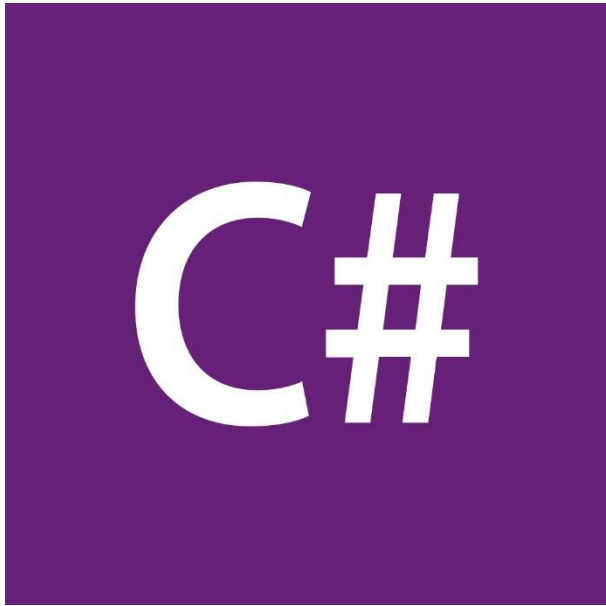


# CHOOSE YOUR CHANNELS



- ▶ Even SMS available
- ▶ API (Direct Line)
- ▶ Trade-off: Nice UI vs Reach





PROGRAMMING LANGUAGE



# GREAT UX



- ▶ Personalisation
- ▶ 'Help' and 'Start again'
- ▶ Buttons > Text > Voice
- ▶ Cards, images and rich UI
- ▶ Personality
- ▶ Digital Assistant integration



@MartinKearn



Microsoft



# BOTS DOES NOT IMPLY NATURAL LANGUAGE PROCESSING



- ▶ You don't always have to use NLP
- ▶ Users still prefer buttons & UI
- ▶ Consider your channels (i.e. SMS)



# QNAMAKER + LUIS



Vision



Language



Speech



Search



Knowledge

Computer vision  
Face  
Emotion  
Content Moderator  
Video  
Video Indexer  
Cognitive Services Labs

Text analytics  
Spell check  
Web language model  
Linguistic analysis  
Translator

Speaker recognition  
Speech

Web search  
Image search  
Video search  
News search  
Autosuggest

Academic knowledge  
Entity linking service  
Knowledge exploration  
Recommendations  
QnA maker

**Custom**  
Vision Service

**Custom**  
Language  
Understanding

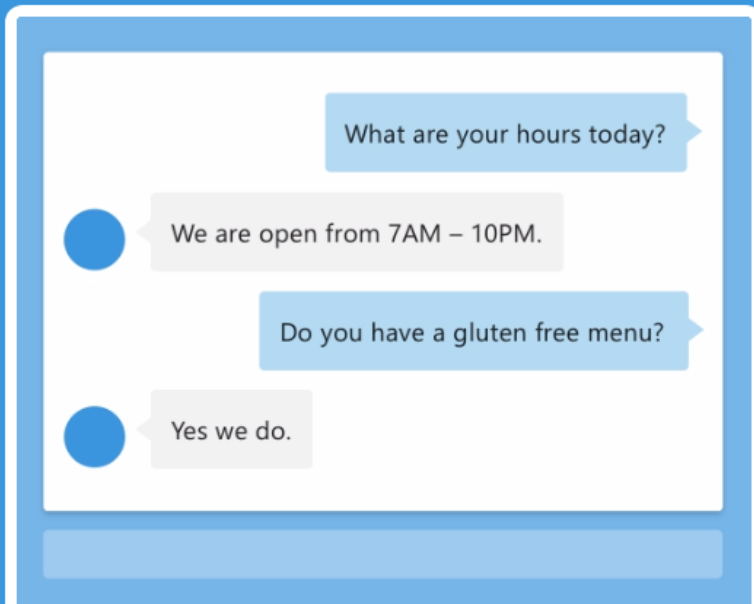
**Custom**  
Speech Service

**Custom**  
Search

**Custom**  
Decision Service

# <http://qnamaker.ai>

Build, train and publish a simple question and answer bot based on FAQ URLs, structured documents or editorial content in minutes.



## From FAQ to bot in minutes.

DEMO

# QNA MAKER

# LUIS

(LANGUAGE UNDERSTANDING INTELLIGENT SERVICE)



# LUIS

## LANGUAGE UNDERSTANDING INTELLIGENT SERVICE



- ▶ NLP Cognitive Service
- ▶ Understand Intent
- ▶ Understand Entities



Intent: **Balance**

Entity: **Account**

What's the balance on account ending 8994

Intent: **Transfer**

Entity: **Money**

Entity: **Account**

Can I move £2.50 from account ending 8994 to  
account ending 4896 tomorrow

Entity: **Account**

Entity: **DateTime**





DEMO

# LUIS DEMO

DEMO

# BUILD A BOT FROM SCRATCH!