# Advanced Analytics with the Cortana Intelligence Suite

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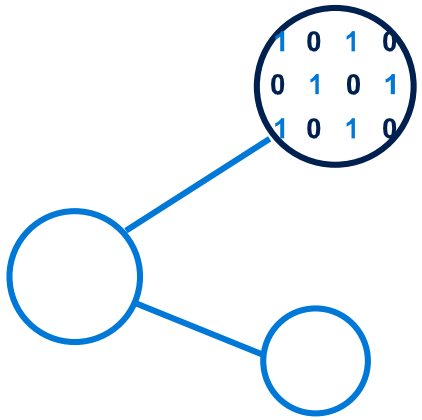
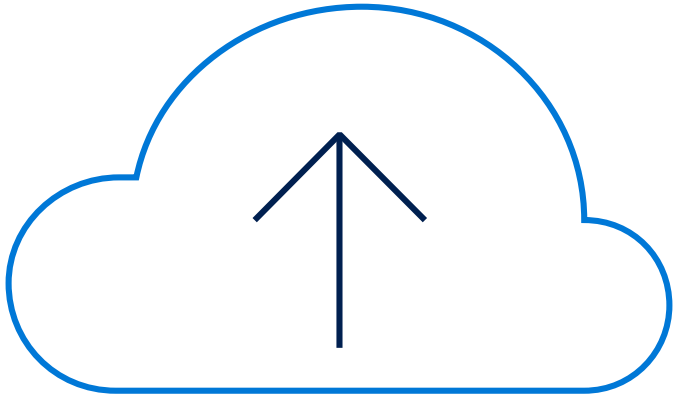
Microsoft

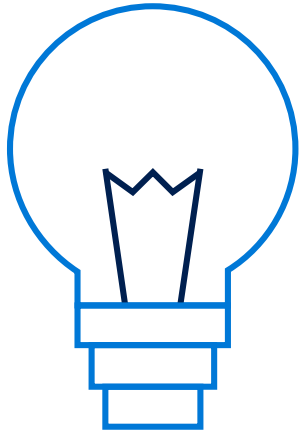
# Businesses are being transformed by three trends




Big Data

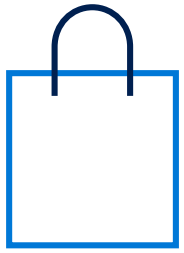


Cloud



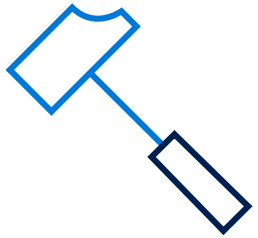
Intelligence

# Opportunities exist across functional areas



## Retail

- Real Time Offers & Personalized Services
- Demand Forecasting
- Sentiment Analysis



## Manufacturing

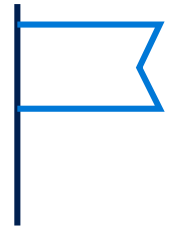
- Manufacturing Ops
- Connected Cars

## Financial Services

- Customer Experience
- Risk Assessment

## Health

- Remote Health Monitoring
- Population Health Management



## Government

- Smart Buildings
- Transit & Traffic Optimization

BREAKTHRU BEVERAGE GROUP

thyssenkrupp

Tangerine Forward Banking™

Dartmouth-Hitchcock MEDICAL CENTER

iDA INFOCOMM DEVELOPMENT AUTHORITY OF SINGAPORE

# Democratizing AI

## For every person and organization

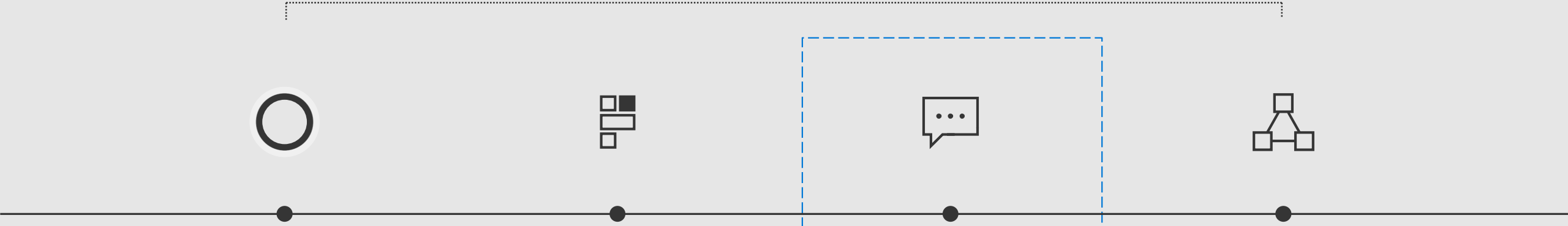
Agents

Applications

Services

Infrastructure

# Microsoft AI Portfolio



## Agent

Cortana

## Applications

Office 365

Dynamics 365

SwiftKey

Pix

Customer Service and Support

Skype

Calendar.help

## Services

Bot Framework

Cognitive Services

Cortana Intelligence

Cognitive Toolkit

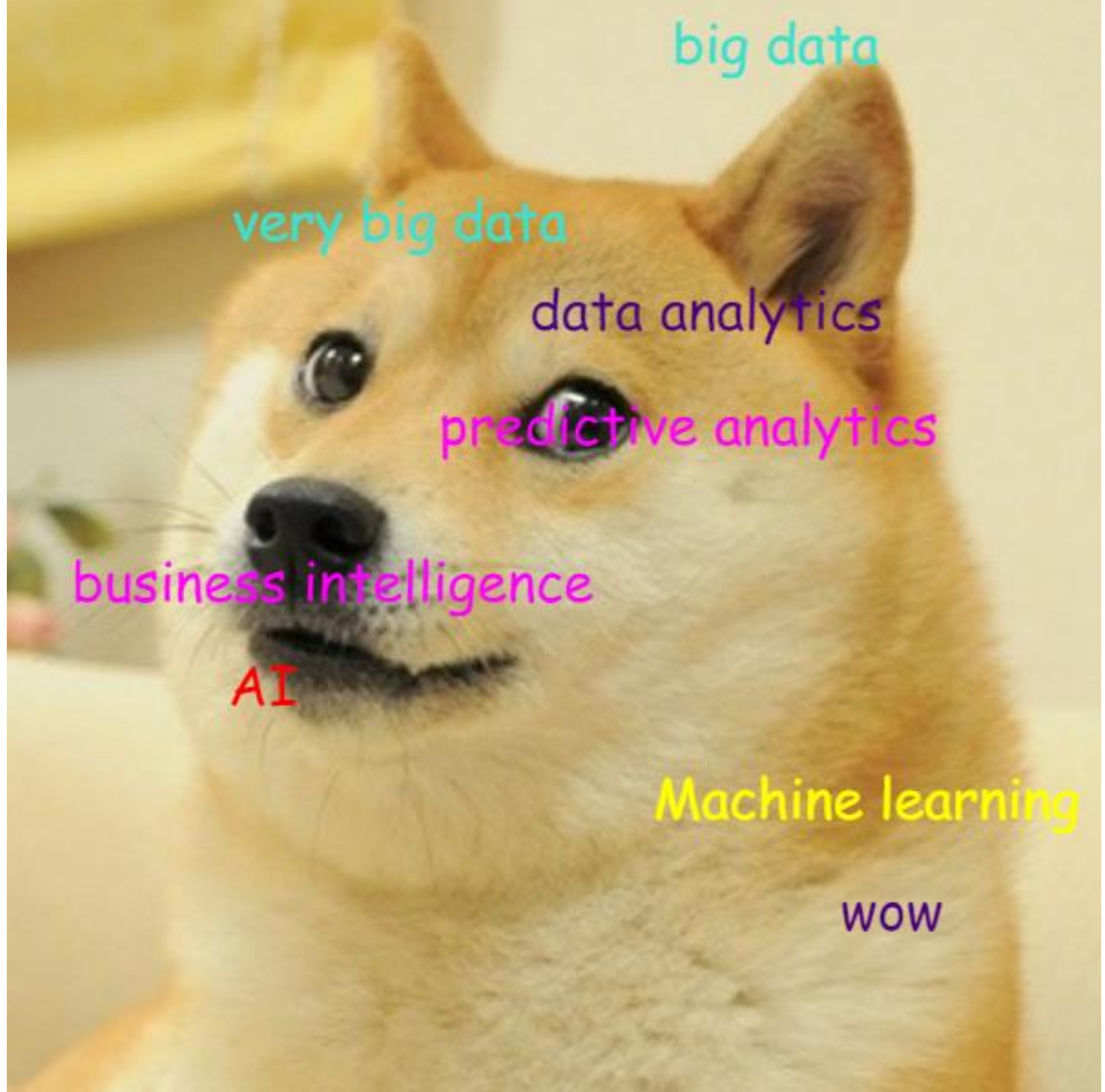
## Infrastructure

Azure N Series

FPGA

# What exactly is big data analytics???

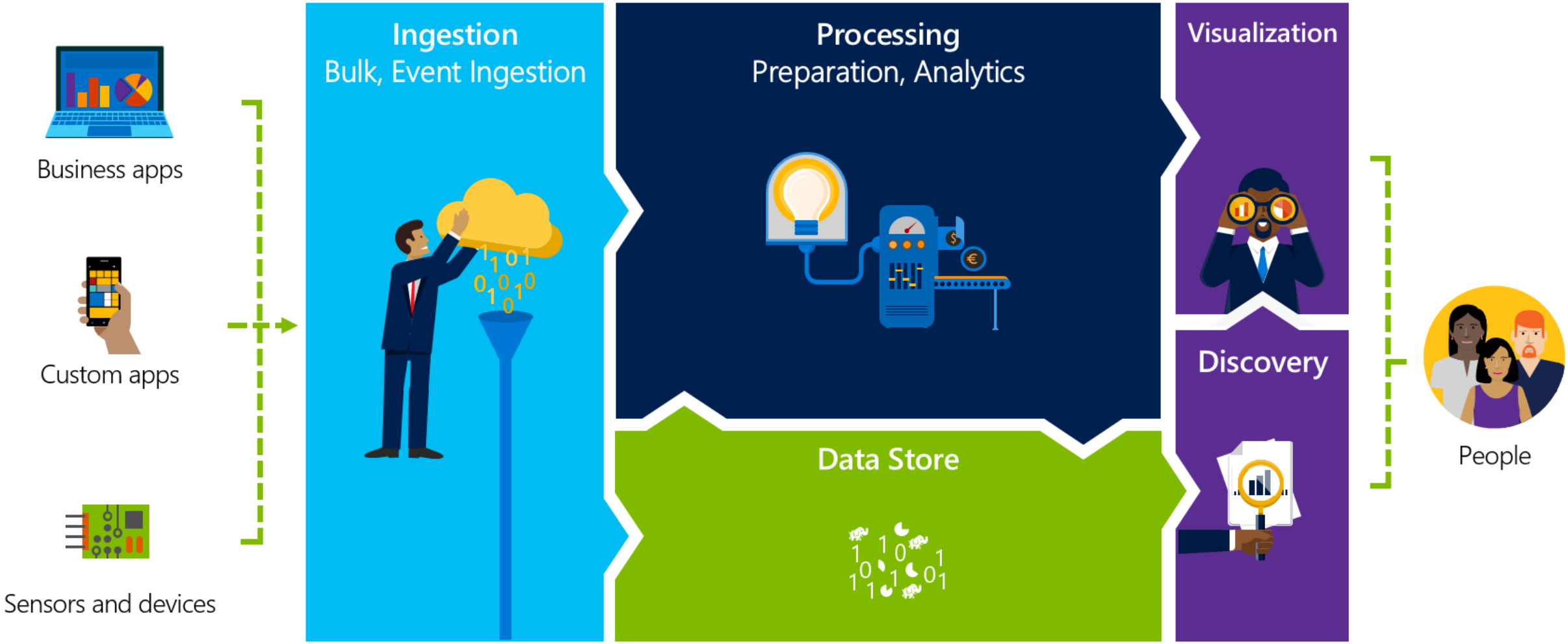
What does it entail?


big data
very big data
data analytics
predictive analytics
business intelligence
AI
Machine learning
wow

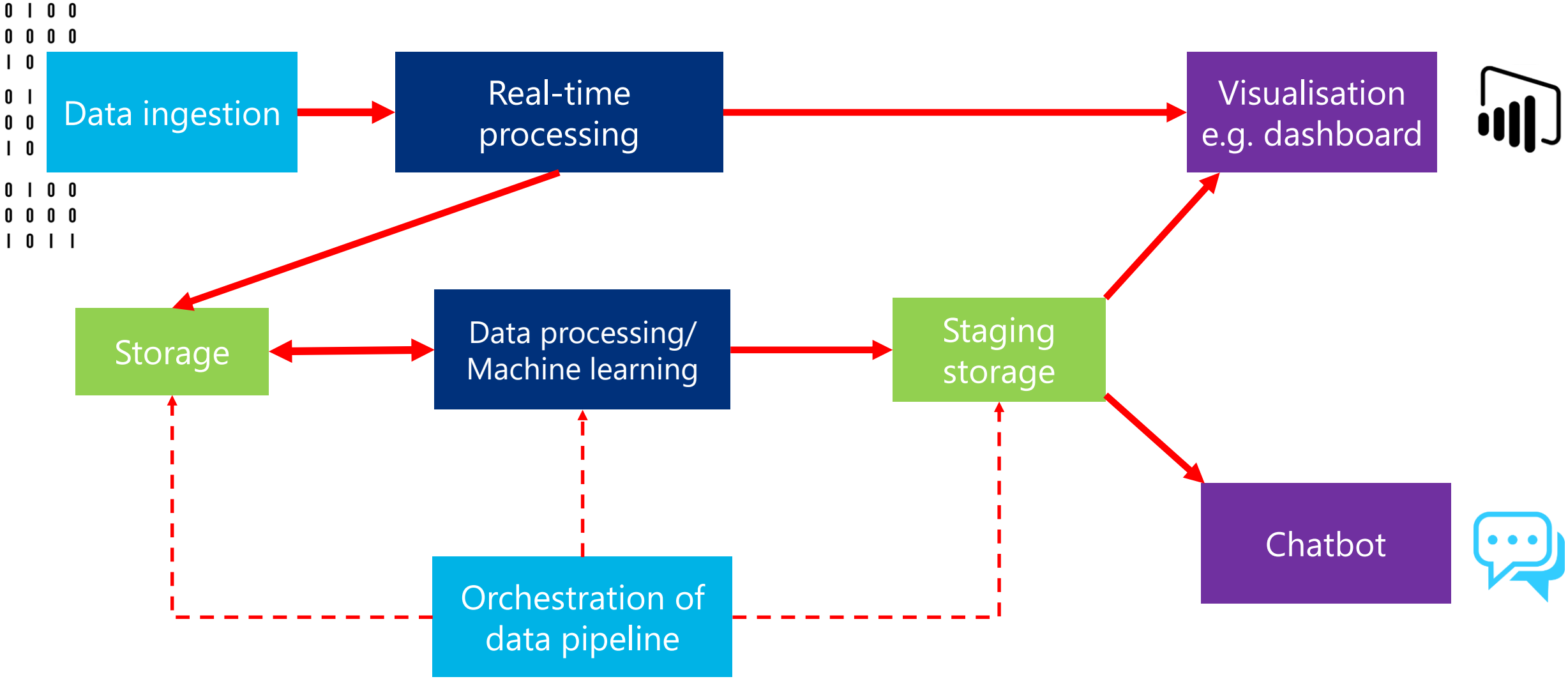
# Let’s break it down a little.

A TON of data you need to process, analyse and get intelligence from.

# Big Data Analytics flow



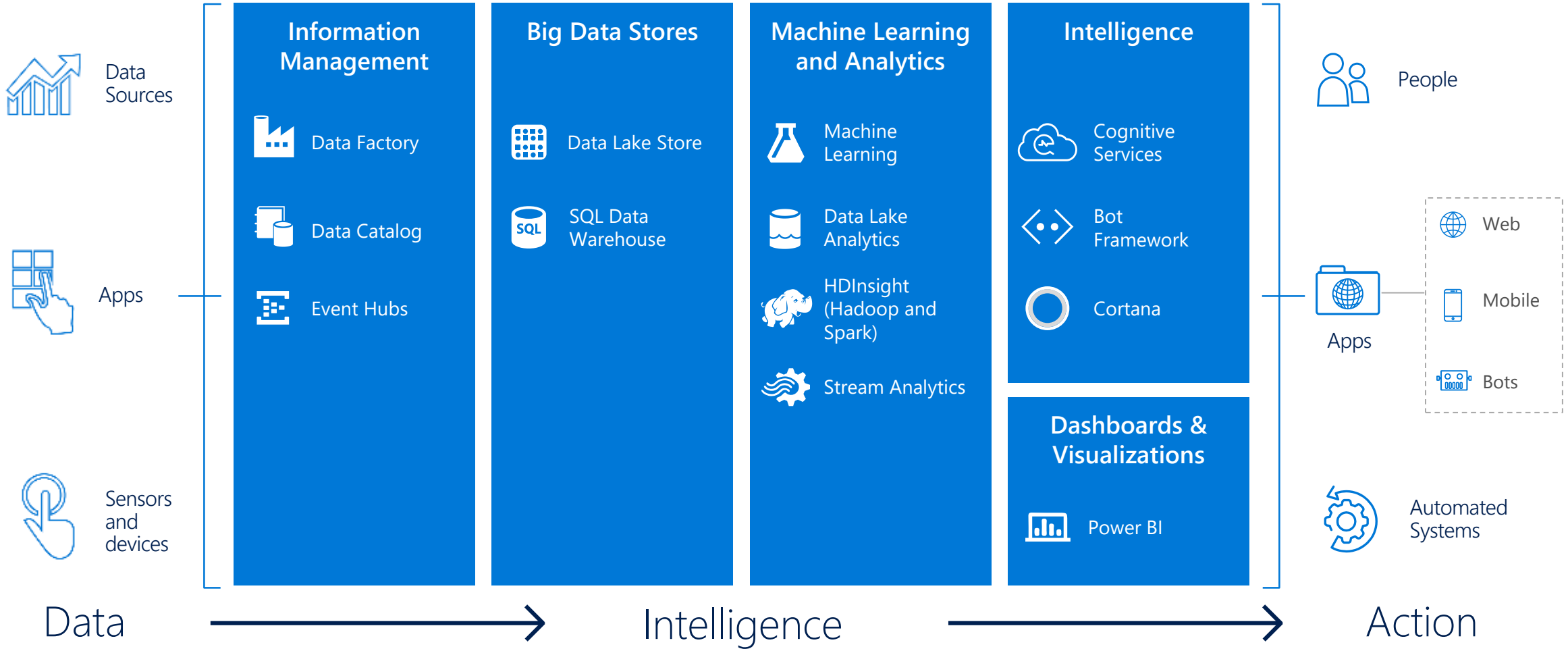
# An example of a big data analytics process…



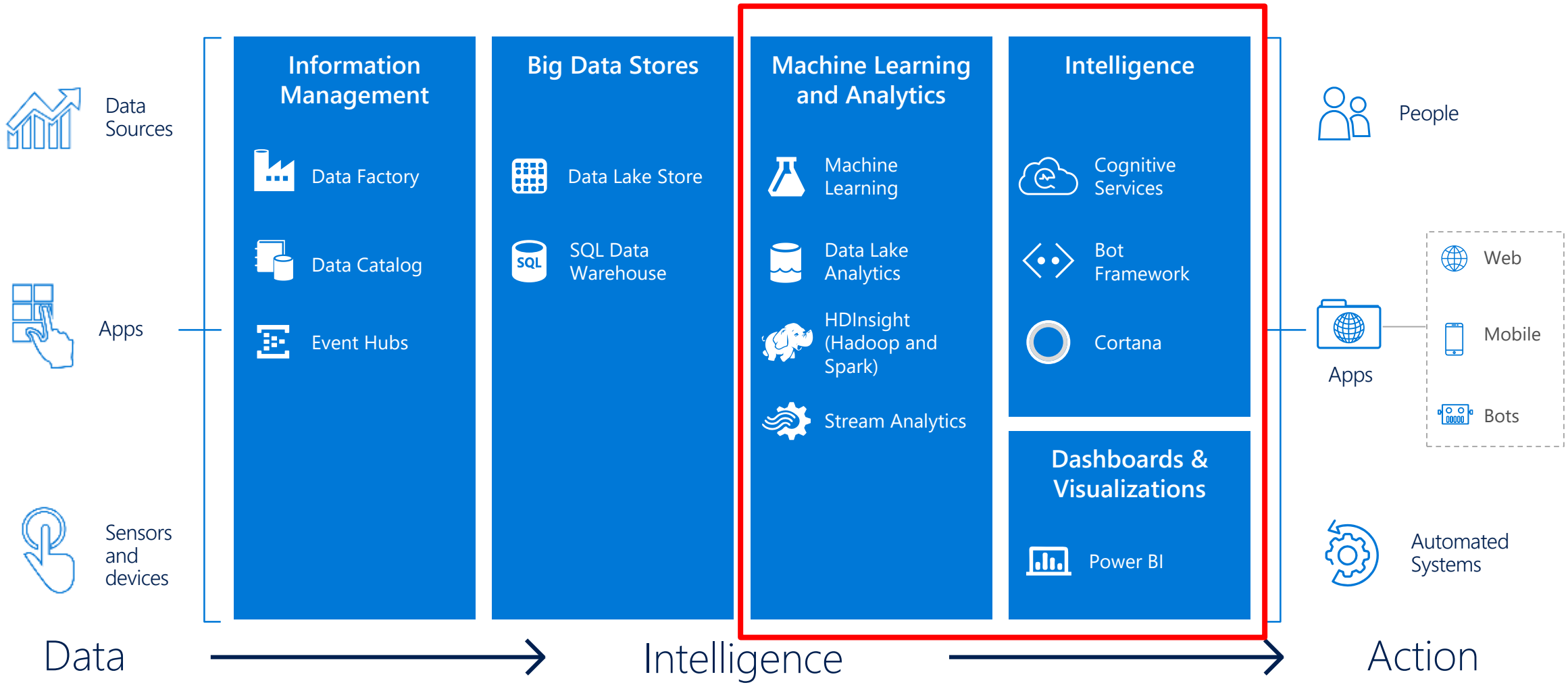
# Cortana Intelligence Suite = Microsoft's Big Data toolkit

# Stay ahead of the curve with Cortana Intelligence Suite

# Easily turn data into intelligent action



# Easily turn data into intelligent action



# Machine Learning

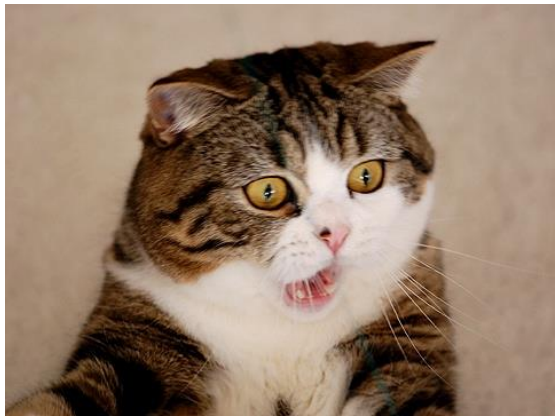
# ML can answer these main types of questions:

- **Classification** – is this group A, B, C or D?
- **Anomaly detection** – is this weird?
- **Regression** – how much? Or how many?
- **Clustering** – how is this organized?

# Classification

- Will this tire fail in the next 1,000 miles: Yes or no?
- Which brings in more customers: a $5 coupon or a 25% discount?
- What breed of cat is this? A, B, C or D?



# Anomaly detection

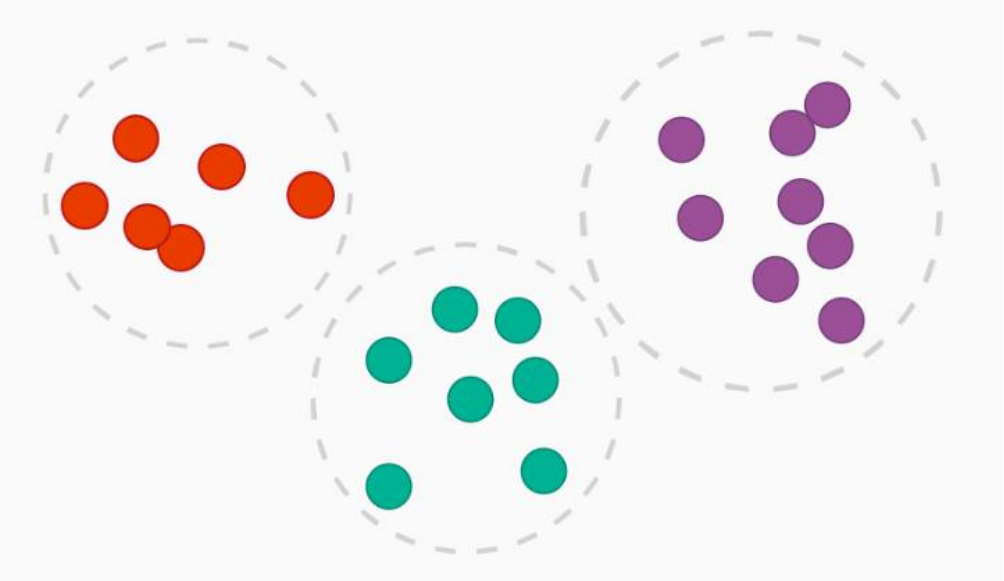
- Flags unusual events
- Is this credit card transaction normal?
- Is this pressure gauge reading normal?


# Regression

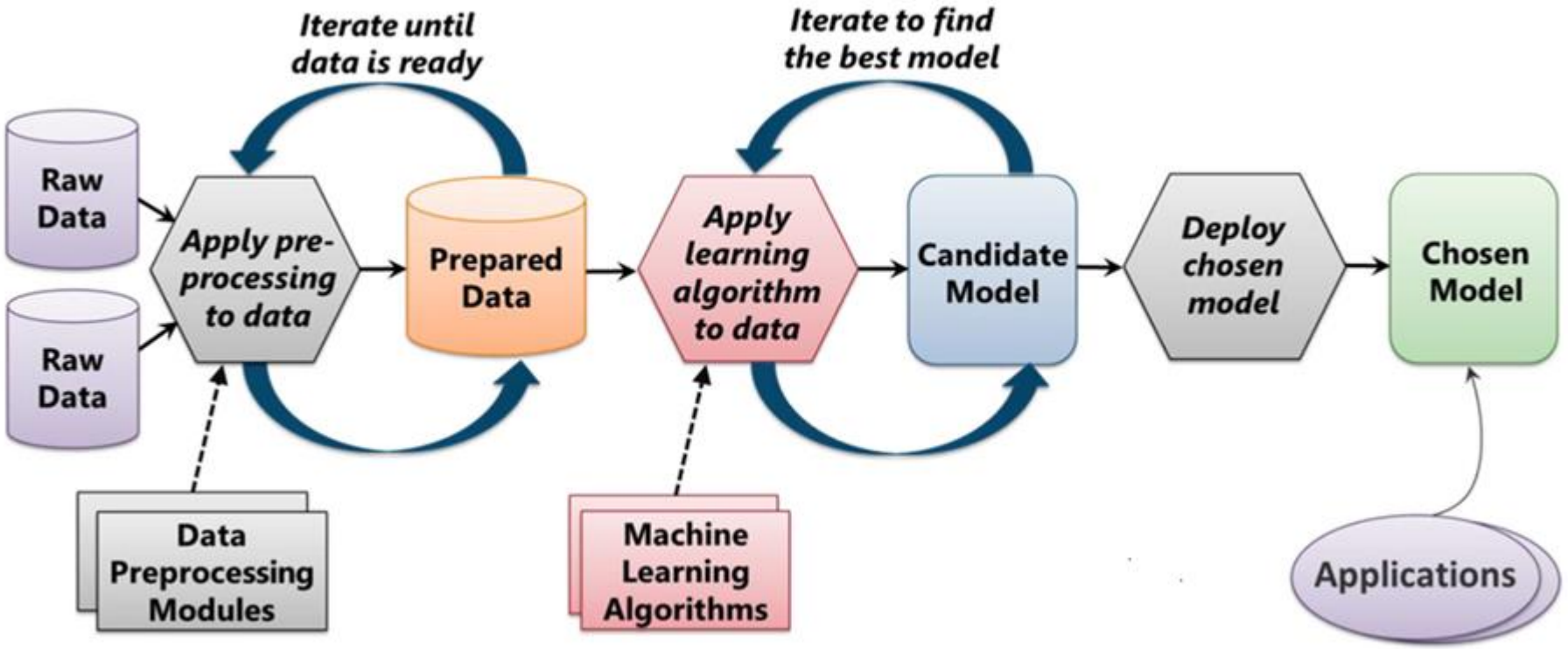
- Numerical predictions
- What will the temperature be next Tuesday?
- What will my fourth quarter sales be?

# Clustering

- Understand how data is organized
- Which viewers like the same types of movies?
- Which phone models explode?



# The Machine Learning Process




From "Introduction to Microsoft Azure" by David Chappell

# Azure Machine Learning

- Fully managed cloud service for building and operationalizing ML models

## Fully managed

No software to install, no hardware to manage, and one portal to view and update.

## Integrated

Simple drag, drop and connect interface for Data Science. No need for programming for common tasks.

## Best in Class Algorithms + R

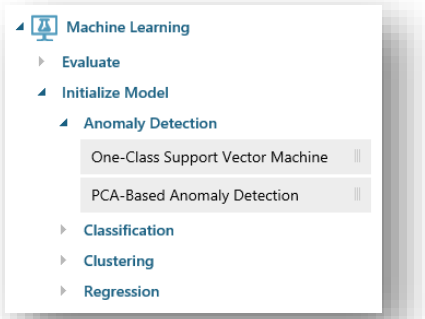
Built-in collection of best of breed algorithms. Support for R and popular CRAN packages.

## Deploy in minutes

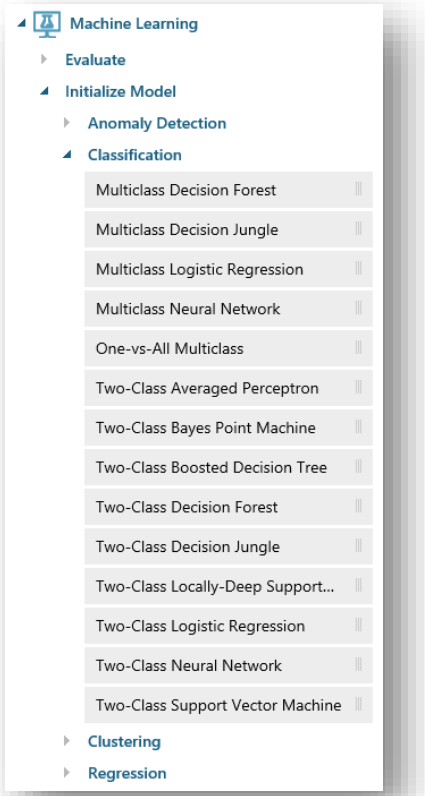
Operationalize models with a single click. Monetize in Machine Learning Marketplace.

# Azure Machine Learning Algorithms

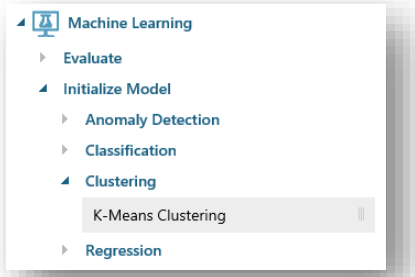
## Anomaly



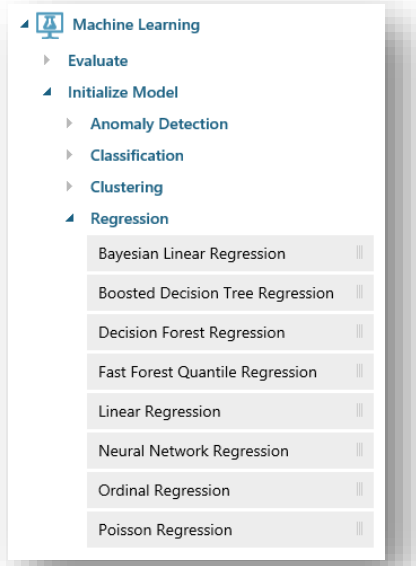

## Classification




## Clustering




## Regression



# Why Azure ML?

- Data Science is complex
  - Cost of accessing/using efficient ML algorithms is high
  - Comprehensive knowledge required on different tools/platforms to develop a complete ML project
  - Difficult to put the developed solution into a scalable production stage

- Azure Machine Learning provides an easier and faster solution

# Azure Machine Learning Service

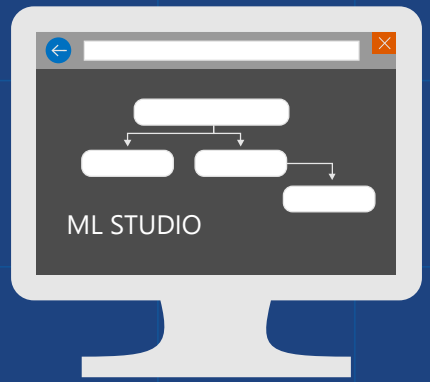
Data -> Predictive model -> Operational web API in minutes

Data

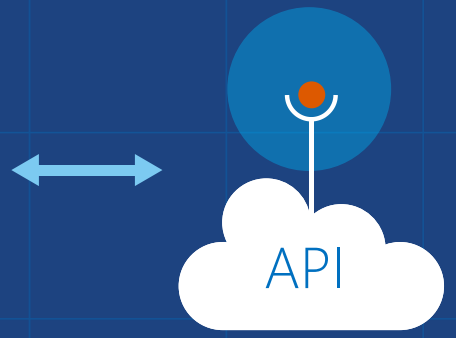
Blobs and Tables

Hadoop (HDInsight)

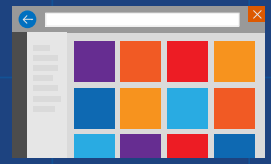
Relational DB (Azure SQL DB)




Integrated development environment for Machine Learning




Model is now a web service that is callable



Monetize the API through our marketplace

Clients

# What can Azure ML do for you…?

Telemetry data analysis

Buyer propensity models

Social network analysis

Predictive maintenance

Web app optimization

Churn analysis

Natural resource exploration

Weather forecasting

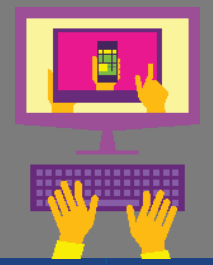
Healthcare outcomes

Fraud detection

Life sciences research

Targeted advertising

Network intrusion detection



Smart meter monitoring

# Azure ML studio

# Cognitive Services

## Give your solutions a human side

## Microsoft Cognitive Services preview

### 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

# Cognitive Services

## Give your solutions a human side

## Microsoft Cognitive Services preview

### Vision

**Computer Vision | Emotion | Face | Video | Content Moderator**

### Speech

**Custom Recognition | Speaker Recognition | Speech**

### Language

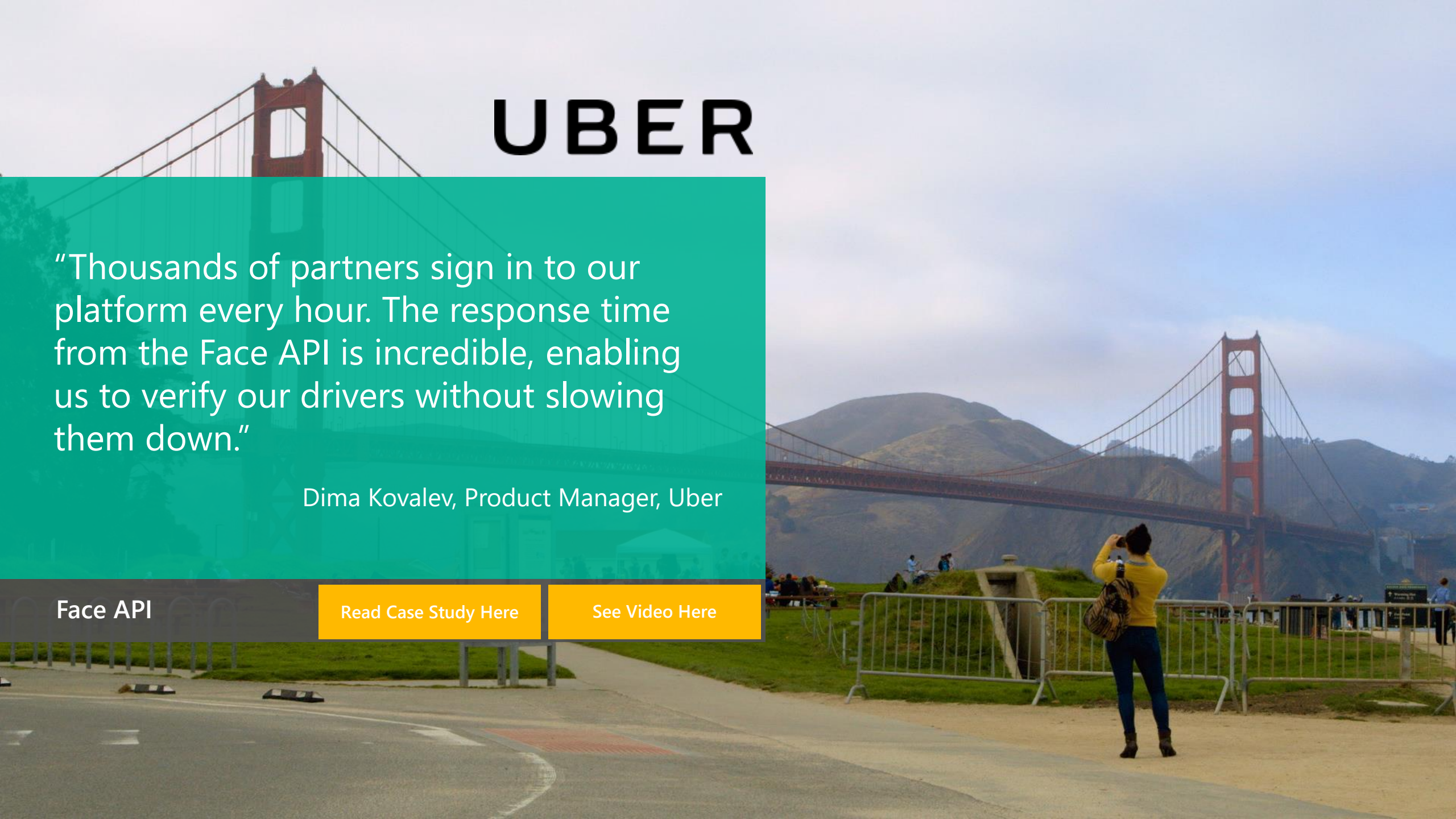
**Bing Spell Check | Language Understanding | Linguistic Analysis | Text Analytics | Web Language Model | Translator Text and Speech**

### Knowledge

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

### Search

**Bing Auto Suggest | Bing Image Search | Bing News Search | Bing Video Search | Bing Web Search**



UBER

"Thousands of partners sign in to our platform every hour. The response time from the Face API is incredible, enabling us to verify our drivers without slowing them down."

Dima Kovalev, Product Manager, Uber

Face API

Read Case Study Here

See Video Here

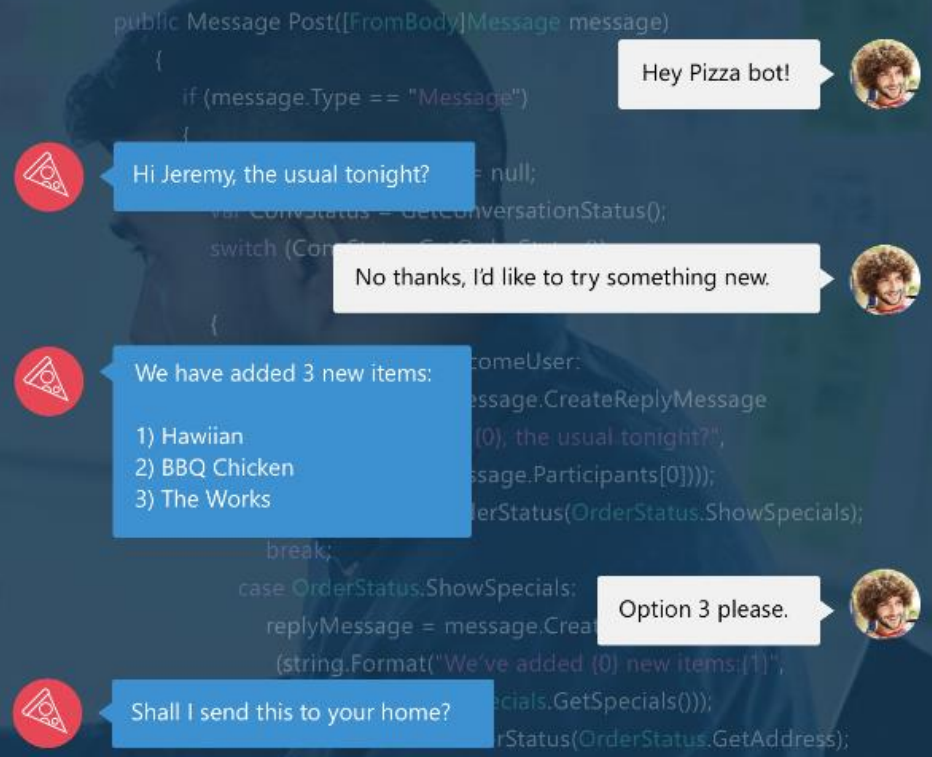
Microsoft

# 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

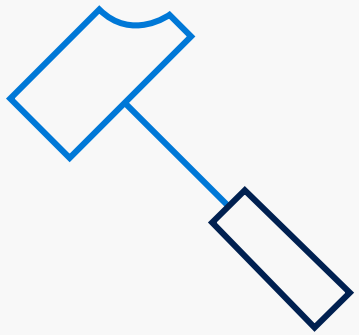



www.botframework.com

# Bot Framework Components

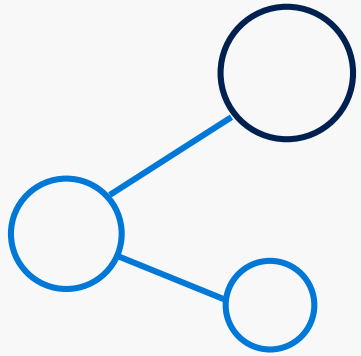
Your Bot Framework Bot

## Bot Builder SDKs



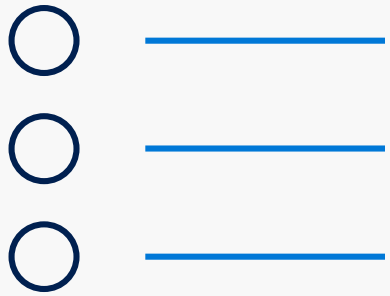
Build great dialogs within your Node.js- or C#-based bot. Open source.

## Bot Connector

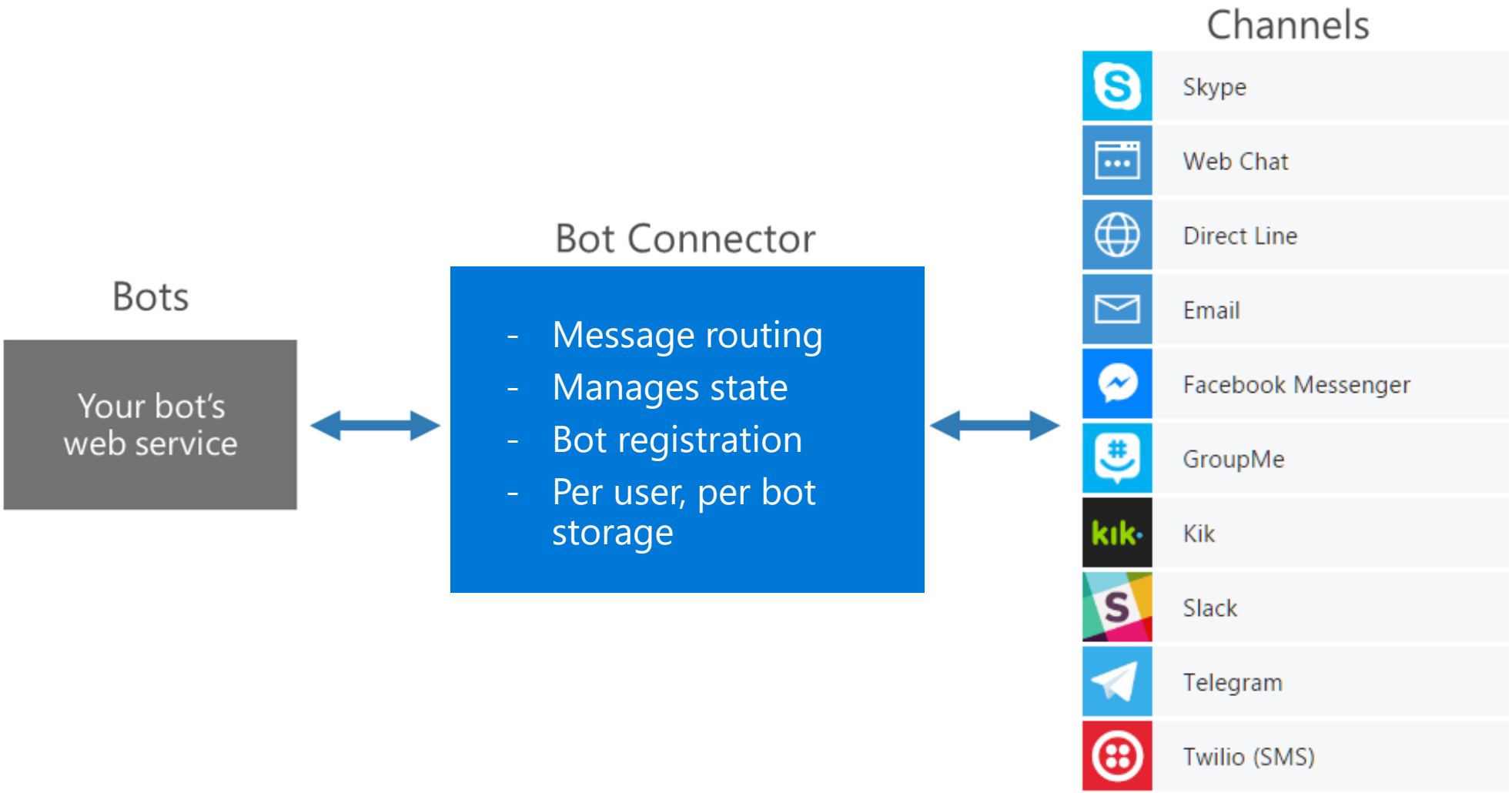


Connect your bot to sms, Office 365 mail, Skype, Slack, etc.

## Bot Directory



Publish bots and try others on the bot directory


Bots
Your bot's web service
Bot Connector
- Message routing
- Manages state
- Bot registration
- Per user, per bot storage
Channels
Skype
Web Chat
Direct Line
Email
Facebook Messenger
GroupMe
Kik
Slack
Telegram
Twilio (SMS)

# Bots built using Bot Framework




# Demo – Car Insurance Bot

# Useful links to get you started

- Cortana Intelligence Suite - https://www.microsoft.com/en-us/cloud-platform/cortana-intelligence-suite
- Bot Framework - https://dev.botframework.com/
- Cognitive Services - https://www.microsoft.com/cognitive-services
- Azure Machine Learning - https://azure.microsoft.com/en-us/services/machine-learning/
- Azure Services - https://azure.microsoft.com/en-us/

# Hands on labs to get you started

- Azure Machine Learning - https://github.com/Azure-Readiness/hol-azure-machine-learning
- Bot Framework and Cognitive Services - https://github.com/alyssaong1/Bot-Framework-HOL
- Cortana Intelligence Suite end to end - https://github.com/toddkitta/CortanaIntelligenceSuiteWorkshopManual

# What did we cover today?

- General architecture for Big Data
- Cortana Intelligence Suite – Microsoft's tools for Big Data
- Azure Machine Learning
- Cognitive Services
- Bot Framework

# Thank you

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