



Azure AI

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Agenda

Part 1: Introduction to Azure AI

- Introduction
- AI Apps Agent
- Knowledge Mining
- Machine learning
- Storage Resources

Part 2: Pre-built AI

Part 3: Custom AI

Azure Data + AI

Data



Data Modernization on premises



Data modernization to cloud



Globally distributed apps



Cloud Scale Analytics

+

AI



AI apps & agents



Knowledge mining



Machine learning

AI

Vision

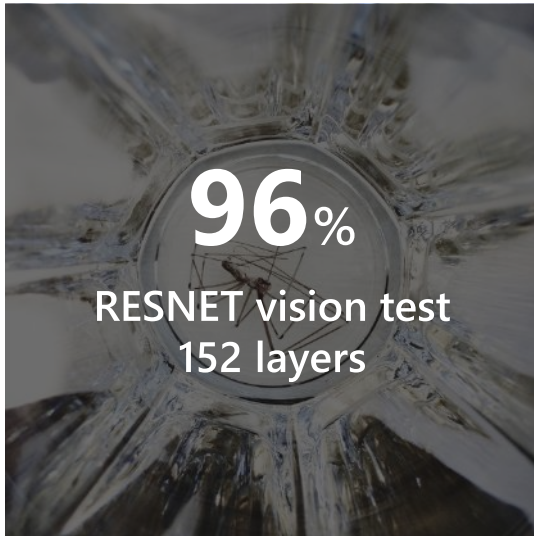
Speech

Language

Customized language understanding **Text-to-speech** Content moderation **Spell**
Speech translation check
Custom image classification
Speaker recognition Entity linking
Sentiment analysis, & augmentation
key phrase extraction **Image tagging**
Custom Object detection Text translation **Intend**
voice **OCR handwriting** analysis
Emotion detection **recognition** Custom translation
Video insights **Face** Custom speech Assisted text moderation
identification Speech transcription

Microsoft AI breakthroughs

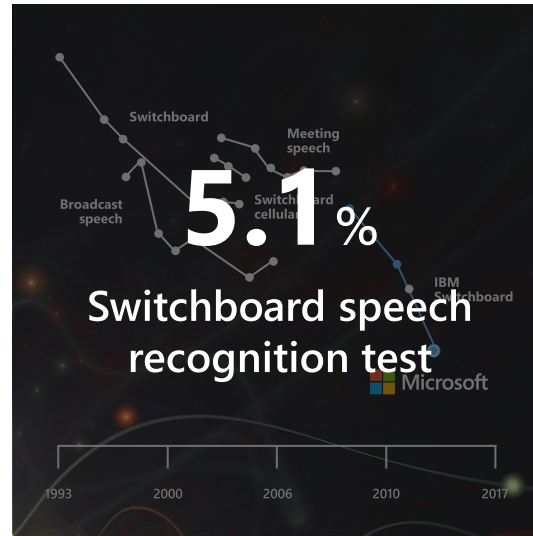
Vision



2016

Object recognition
Human parity

Speech



2017

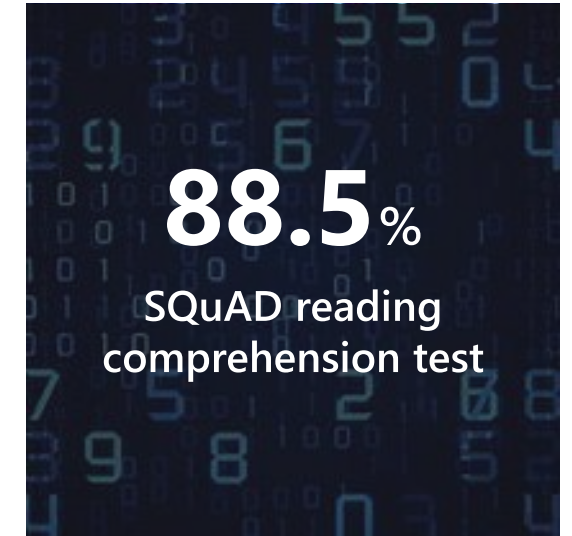
Speech recognition
Human parity

Language



March 2018

Machine translation
Human parity



January 2018

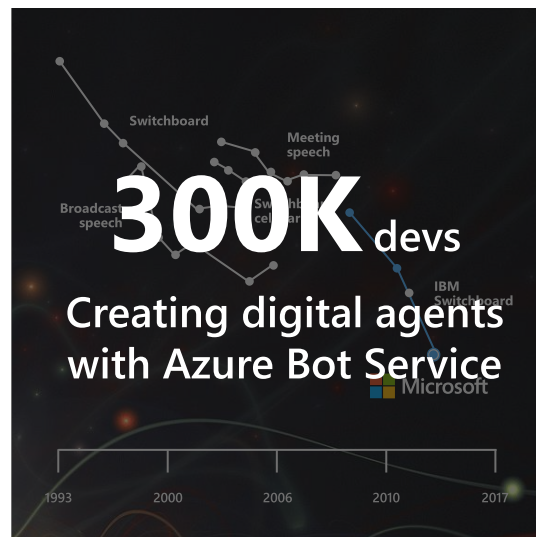
Machine reading comprehension
Human parity

AI Momentum

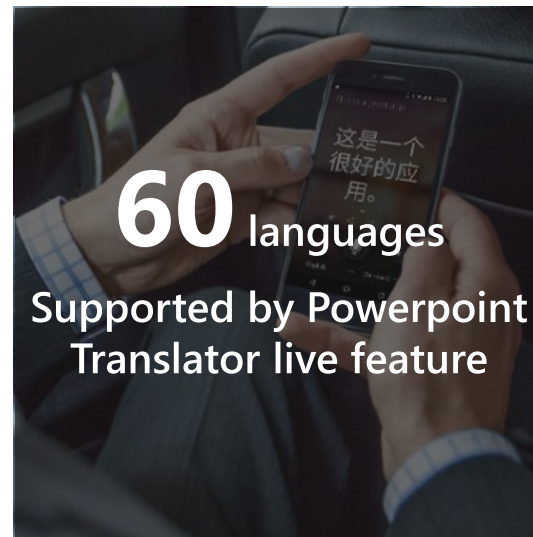
Vision



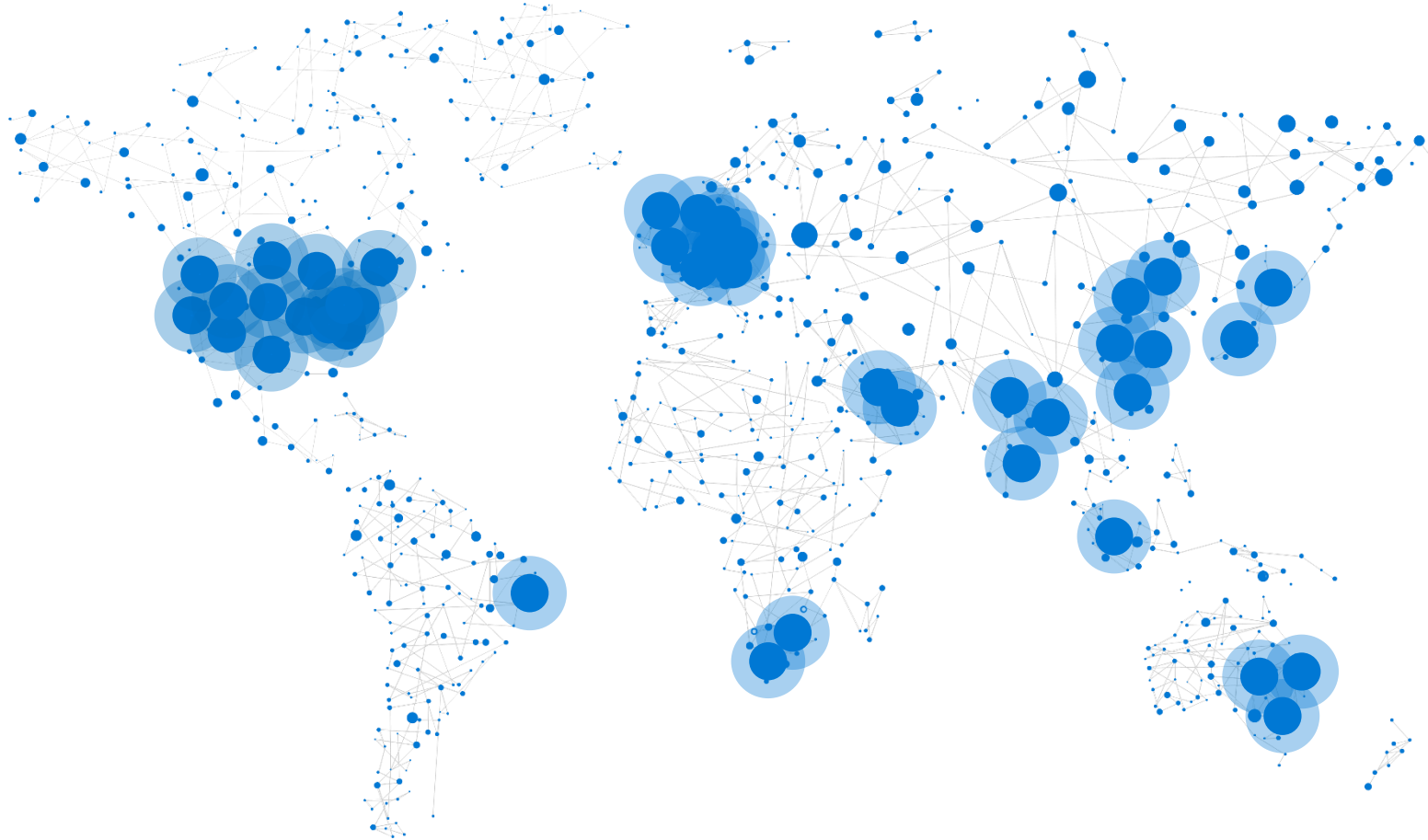
Speech



Language



Azure



Productive | Hybrid | Intelligent | Trusted

Azure is the best place for AI

Accelerate time to value
with agile tools and services



Pretrained AI
services



Powerful
tools



Comprehensive
platform

Innovate with AI everywhere –
in the cloud, at edge and on-premises



Cloud



Edge



On-premises

Use any language, any development
tool and any framework



Benefit from industry-leading security, privacy,
compliance, transparency, and AI ethics standards

>90% of Fortune 500 companies
use Microsoft Cloud

Azure AI

Azure AI

AI apps & agents



Azure Bot Service
Azure Cognitive Services

Pre-trained models

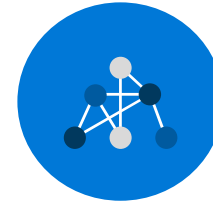
Knowledge mining



Azure Cognitive Search

*Leveraging Cognitive Services
to extract textual information*

Machine learning



Azure Databricks
Azure Machine Learning
Azure AI infrastructure

Custom AI

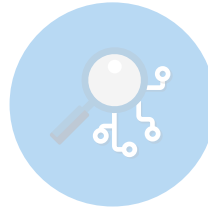
Azure AI

AI apps & agents



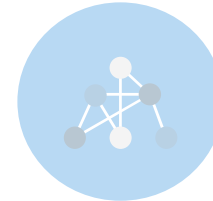
Azure Bot Service
Azure Cognitive Services

Knowledge mining



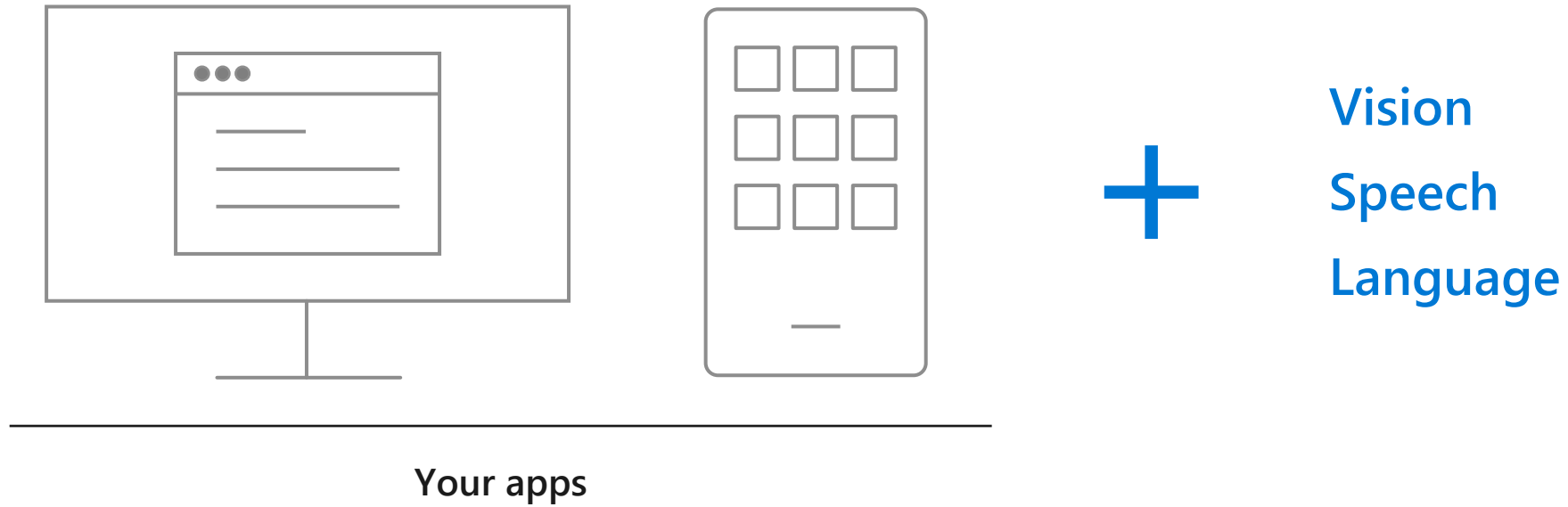
Azure Cognitive Search

Machine learning



Azure Databricks
Azure Machine Learning
Azure AI infrastructure

Building AI apps & agents





200,000 customers get information on shipments, rates, and UPS locations with the customer service chatbot



70% of the 600 million technical support cases per year are handled by AI



80% completion rate and **4% increase in views** achieved through automatic video recommendation based on article content



Cognitive Services

Infuse your apps with powerful, pre-trained AI models

Customize easily and tailor to your needs

Use language of your choice



Vision



Speech



Language



Search



Bot Service

Accelerate bot development with an integrated environment and pre-built templates

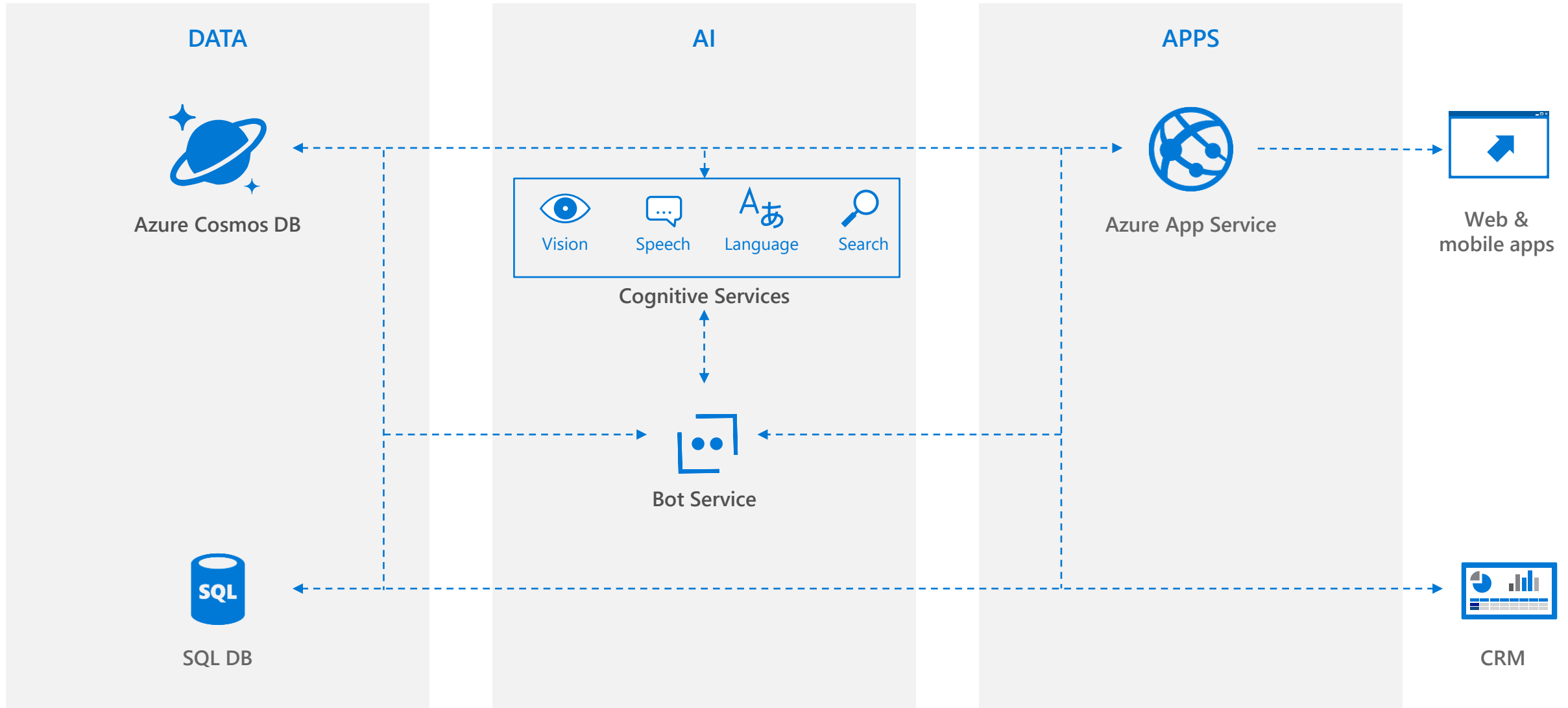
Engage your audience easily across multiple channels



Intelligent Apps & Agents Demo

Intelligent Kiosk

AI apps & agents: How the demo was built



Azure AI

AI apps & agents



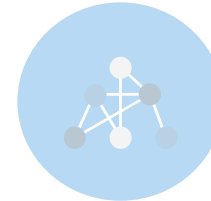
Azure Bot Service
Azure Cognitive Services

Knowledge mining



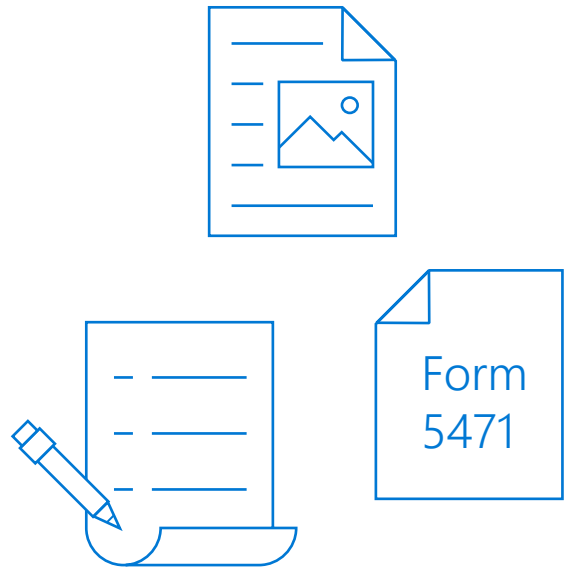
Azure Cognitive Search

Machine learning



Azure Databricks
Azure Machine Learning
Azure AI infrastructure

What is knowledge mining?



Your business documents



**Unlock valuable
information lying latent
in all your content**

Knowledge mining with Azure Search

Documents



Cutting-edge AI



Key Phrase extraction



Organization entity extraction



Face detection



Custom skills



Location entity extraction



Persons entity extraction



Celebrity recognition



Landmark detection



Sentiment analysis



Language detection

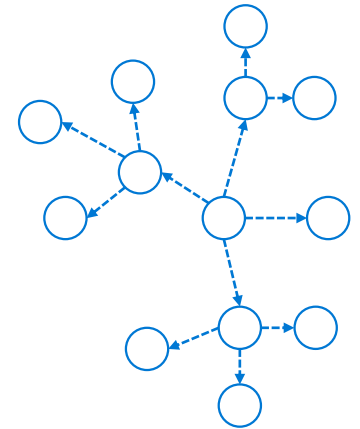


Tag extraction



Printed text recognition

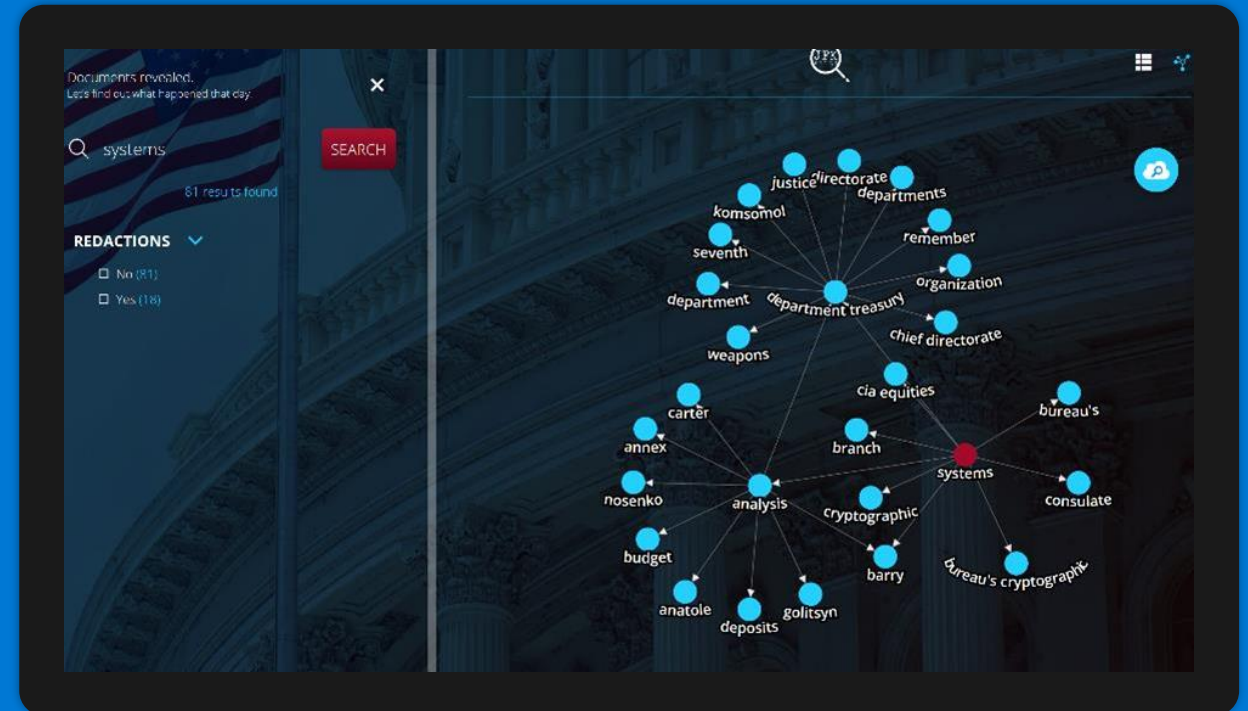
Fully text-searchable rich index



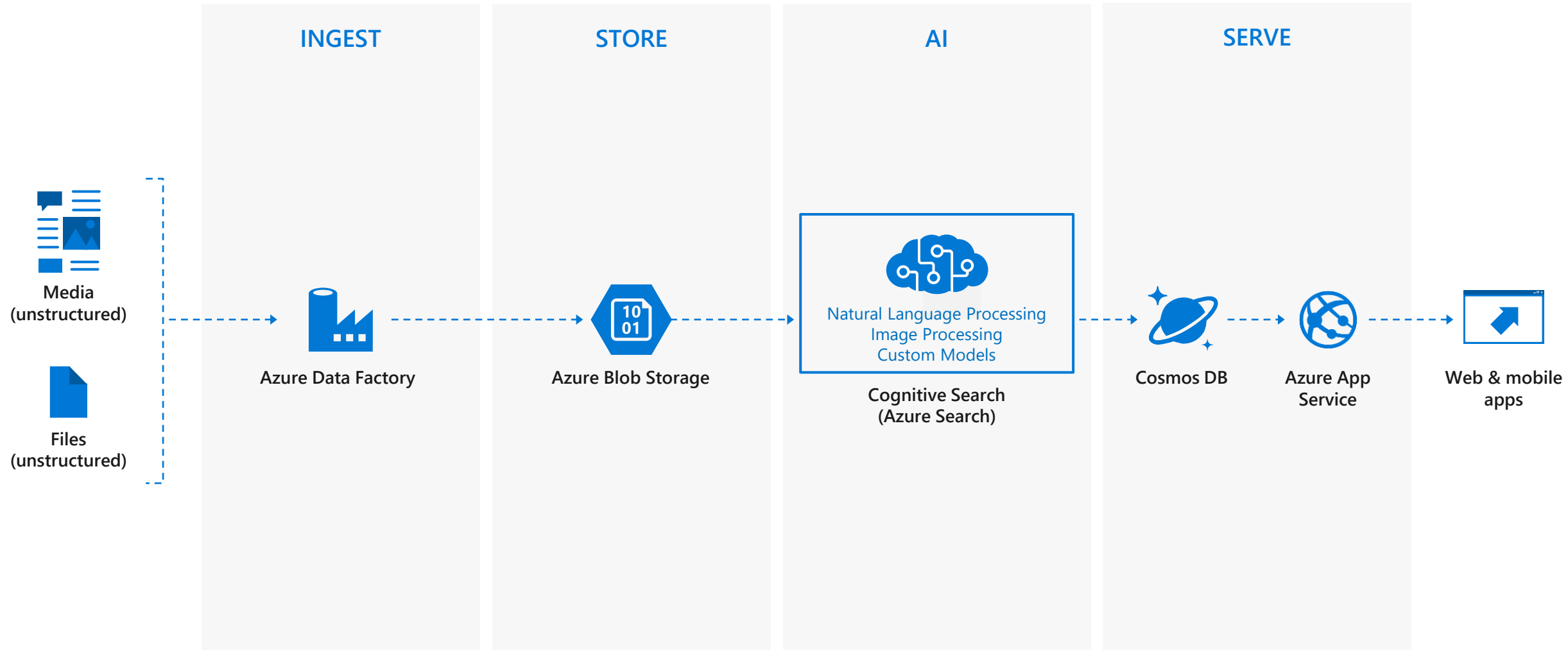
Knowledge mining Demo

JFK Files

[Link to Demo](#)



Knowledge mining: How the demo was built





Canada's largest automobile search
site drives seamless search experience

auto
TRADER.ca



Audio AI experts use cloud-based
search platform to connect listeners
to audio content

audioburst



Prime property listings site powered
by cloud-based search and analytics

JLL

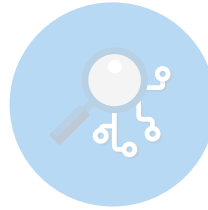
Azure AI

AI apps & agents



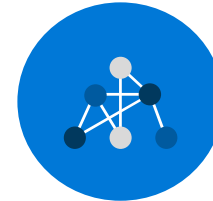
Azure Bot Service
Azure Cognitive Services

Knowledge mining



Azure Cognitive Search

Machine learning



Azure Databricks
Azure Machine Learning
Azure AI infrastructure



13M personalized experiences with
33 orders/second

asos



\$300k/day cost savings with
predictive maintenance

**Rockwell
Automation**



85% savings in risk calculation &
under-writing costs

50% lower loan defaults

quarterspot

Machine Learning

Sophisticated pretrained models

To simplify solution development



Vision



Speech



Language



Search

Popular frameworks

To build advanced deep learning solutions



Pytorch



TensorFlow



Keras



Onnx

Productive Options

To empower data science and development teams



Azure
Databricks



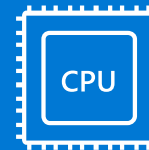
Azure
Machine Learning



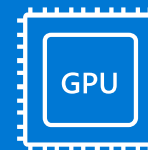
Machine Learning
VMs

Powerful Infrastructure

To accelerate deep learning



CPU



GPU



FPGA

Flexible Deployment

To deploy, manage models on intelligent cloud & edge



On-premises



Cloud



Edge

Popular frameworks

Build advanced deep learning solutions

Use your favorite deep learning frameworks



TensorFlow



PyTorch



Scikit-Learn



MXNet



Chainer



Keras



without getting locked into one framework



ONNX

Community project created by Facebook and Microsoft

Use the best tool for the job. Train in one framework
and transfer to another for inference



Productive services

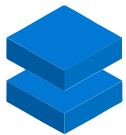
Empower data science and development teams



Integrated data science & data engineering teams

Desktop solutions not adequate

Need a unified big data & ML solution



Azure Databricks

+



Azure Machine Learning



Individual data scientists

Desktop solutions adequate

Need cloud for sporadic compute needs



Machine Learning VMs

Azure Databricks

Enable collaboration between data scientists and data engineers with an interactive productive workspace

Prepare and clean data at massive scale with the language of your choice

Build and train models with pre-configured machine learning and deep learning optimized clusters



Azure Machine Learning

Track experiments for reproducibility and auditing needs. Identify and promote your best models

Deploy and manage your models using containers to run them anywhere

Powerful infrastructure

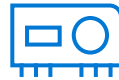
Accelerate deep learning



CPUs

General purpose machine learning

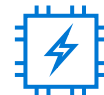
D, F, L, M, H Series



GPUs

Deep learning

N Series



FPGAs

Specialized hardware accelerated deep learning

Project Brainwave

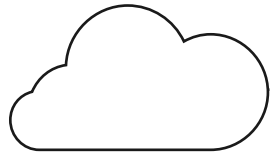
Optimized for flexibility

Optimized for performance

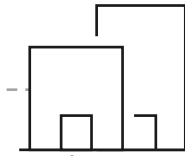
Flexible deployment

Deploy and manage models on intelligent cloud and edge

Train & deploy



Train & deploy



Track models in production
Capture model telemetry
Retrain models automatically



Deploy

Azure is the best place for machine learning

Sophisticated pretrained models

Most comprehensive set of pretrained services



Vision



Speech



Language



Search

Popular frameworks

Open & interoperable



Pytorch



TensorFlow



Keras



Onnx

Productive services

Machine learning at scale



Azure
Databricks



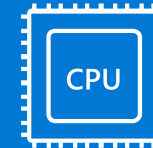
Azure
Machine Learning



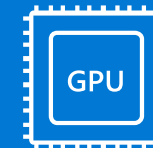
Machine Learning
VMs

Powerful Infrastructure

Most comprehensive
Lowest cost inferencing using FPGAs



CPU



GPU



FPGA

Flexible deployment

From cloud to edge



On-premises



Cloud



Edge

Azure AI

AI apps & agents



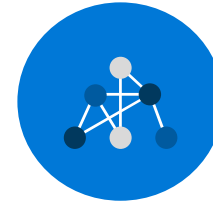
Azure Bot Service
Azure Cognitive Services

Knowledge mining



Azure Cognitive Search

Machine learning



Azure Databricks
Azure Machine Learning
Azure AI infrastructure

Data Storage Overview

Data Storage for Analytics

Provide big data infrastructure to fuel your analytics solutions

Ingestion



Azure Data Factory



Databricks



Stream Analytics



Long-term Storage & ML Scenario



Blob storage



Azure Data Lake



Azure SQL Datawarehouse



Azure Synapse



Serving



Azure Cosmo DB



Azure SQL Database

When to use what

Data Ingestion



Azure Data Factory

The organization need to build data integration pipelines to move data from on-premises to cloud or run batch jobs



Databricks

The organization needs to provide data science and engineering teams with a single platform for Big Data processing and Machine Learning, based on Apache Spark

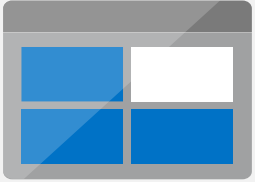


Stream Analytics

The organization must respond to data events in real time or analyze large batches of data in a continuous time-bound stream

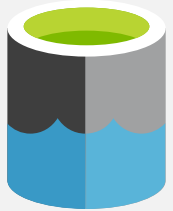
When to use what

Data Storage



Blob storage

- Used for data storage not querying.
- Good for images, unstructured and structured data
- Used for experimentation and **quick PoC setup**
- **Cheapest options** on Azure



Azure Data Lake

- Designed to store massive amounts of data (petabytes)
- **Good for all types of data formats**
- Used as data storage reference for analytics/AI departments



Azure SQL
Datawarehouse

- Predecessor of Azure Synapse



Azure Synapse

- Used for **structured data** & metadata
- Good for **heavy analytics load** (petabytes)

When to use what

Serving



Cosmo DB

- NoSQL database
- API model support
- Planet scale with low latency performance



Azure SQL Database

- For scaling up and scaling down OLTP systems on demand
- Used for daily operations, i.e create-read-update-delete (CRUD)

Thank you