Cortana Intelligence Suite

Technical overview

Microsoft

Agenda – Day 1

Who	When	What	How	Lab Code
All	09:30-09:45	Coffee, introductions and getting logged on	-	-
Instructors	09:45-11:00	The Cortana Intelligence Suite	Presentation	-
You	11:00-12:00	Introduction to Azure Machine Learning	Lab	AALAB01
All	12:00-13:00	Lunch	-	-
You	13:00-13:45	Deploying a predictive model with Azure Machine Learning	Lab	AALAB02
You	13:45-14:45	Text Analytics with R and Azure Machine Learning	Lab	AALAB03
You	14:45-16:15	Free Lab: Azure Machine Learning	Lab	AALAB10
You	16:15-17:30	Operationalizing R with Azure Machine Learning	Lab	AALAB11

Agenda – Day 2

Who	When	What	How	Lab Code
Instructors	09:00-09:30	Azure Stream Analytics	Presentation	-
You	09:30-10:45	Introduction to Azure Stream Analytics	Lab	AALAB05
You	10:45-12:00	Enabling a Real-Time Microsoft Power BI Dashboard with Azure Stream Analytics Or Sentiment analysis using Azure Stream Analytics and Azure ML	Lab	AALAB06 Or AALAB13
All	12:00-13:00	Lunch	-	-
Instructors	13:00-13:30	Azure Data Factory	Presentation	-
Instructors	13:30-14:00	Microsoft R Server on Spark	Presentation	-
You	14:00-16:00	R Server on Spark Or Create Predictive Pipelines using Azure Data Factory and Azure Machine Learning Web-Services	Lab	AALAB04 Or AALAB09
All	16:00-16:30	Wrap up	-	

Microsoft

Getting the best out of the labs

- Worksheet format

- Follow the instructions

- Explore!

- Ask questions as you are working through

- http://aka.ms/aafellows - Linked in Group

Read in External Data

Get Data from Azure Blob Storage

The data you will use in this lab is stored in Azure Blob storage. The next series of steps will pull this data into ML Studio so you can work with it.

1. In the **modules** pane click and expand **Data Input and Output.**

▲ Data Input and Output

Enter Data

Reader

Writer
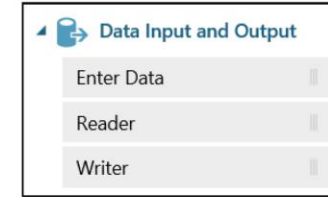
2. Click and drag the **Reader** module onto the canvas.

Reader
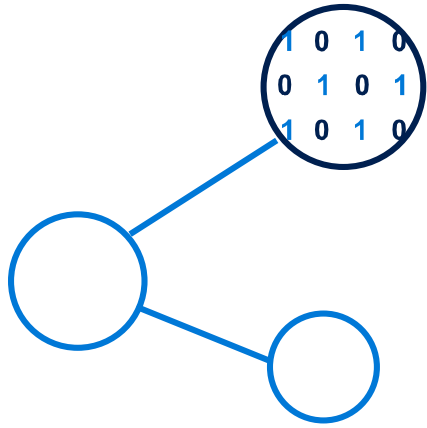
Notice the parameters in the Properties pane for the Reader module. We will modify these to pull a specific Blob from Azure Blob Storage.
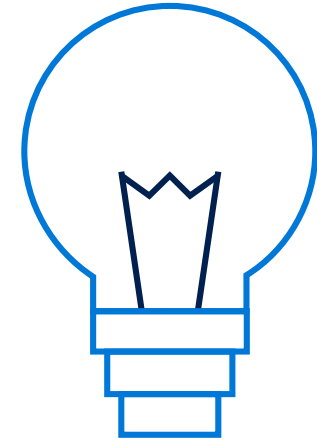
Properties

▲ Reader

Data source

Azure Blob Storage

Authentication type

Account

Account name

Account key
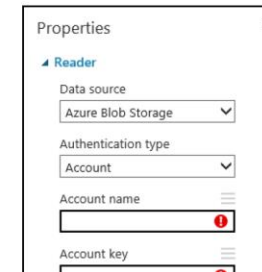
Getting the Lab content

https://aka.ms/aalab

Business is being transformed by three trends

Big Data

Cloud

Intelligence

Microsoft

Stay ahead of the curve with Cortana Intelligence Suite

Business apps

Custom apps

Sensors and devices

Cortana Intelligence

People

Apps

Automated systems

Data ⟶ Intelligence ⟶ Action

Microsoft
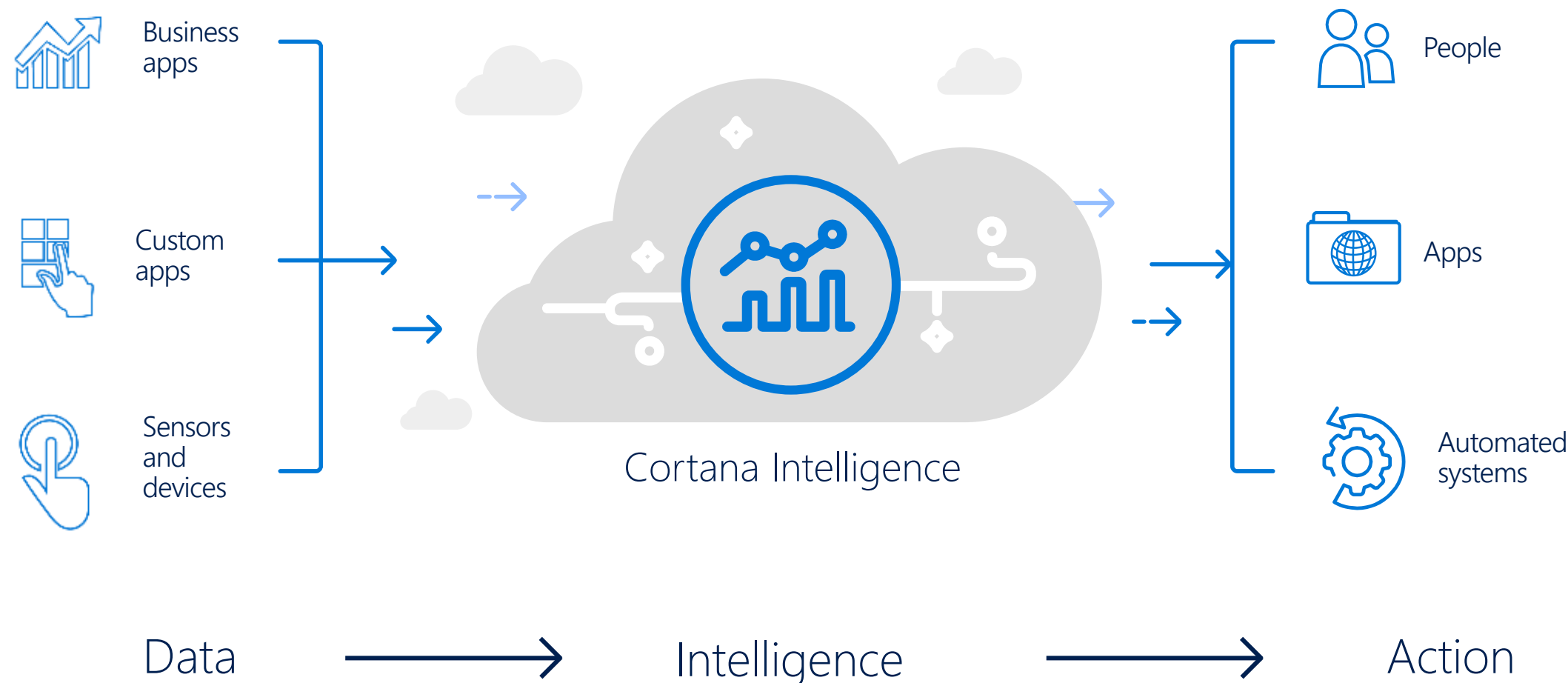
Here are some examples of how our customers are staying ahead

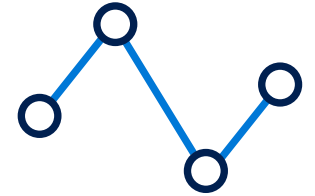Improving visibility and making accurate predictions with **remote monitoring**

Getting the right products to the right places with **inventory management**

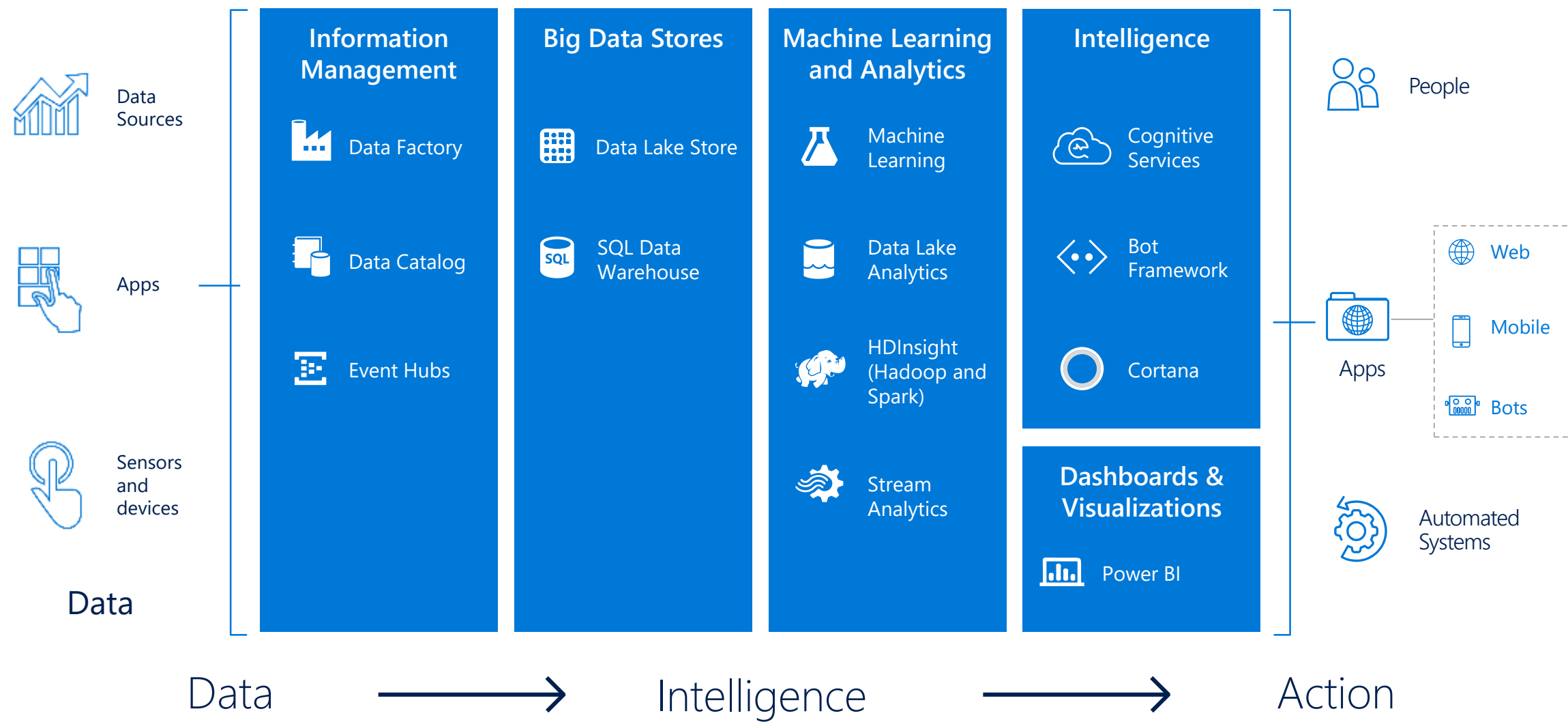Offering customers exactly what they want, when they want it, with **personalization**

Fixing problems proactively before they start with **predictive maintenance**
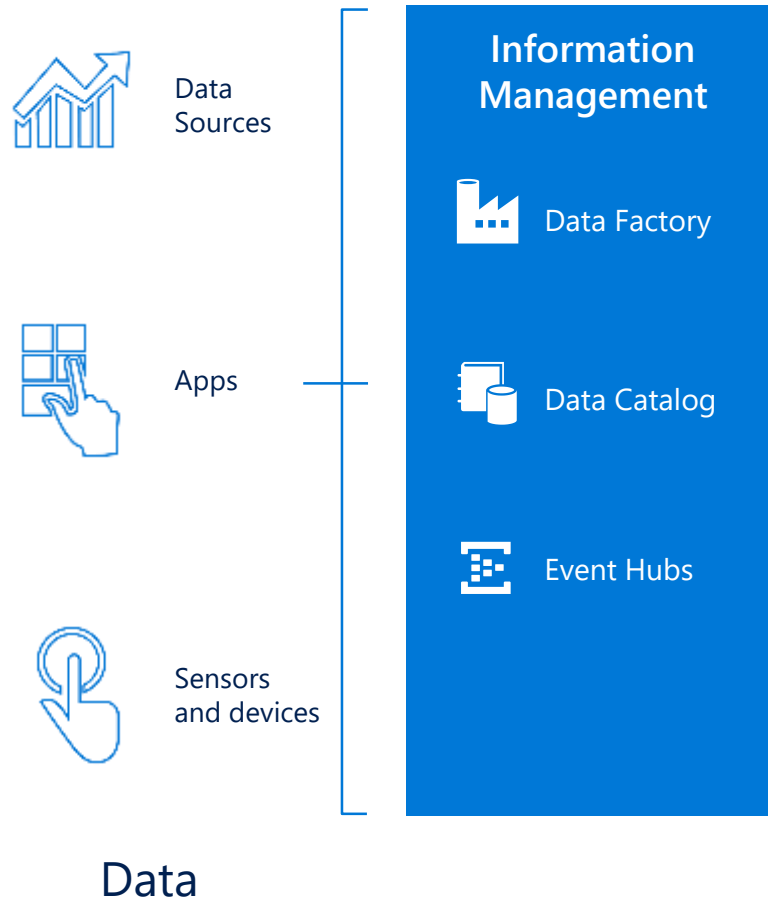
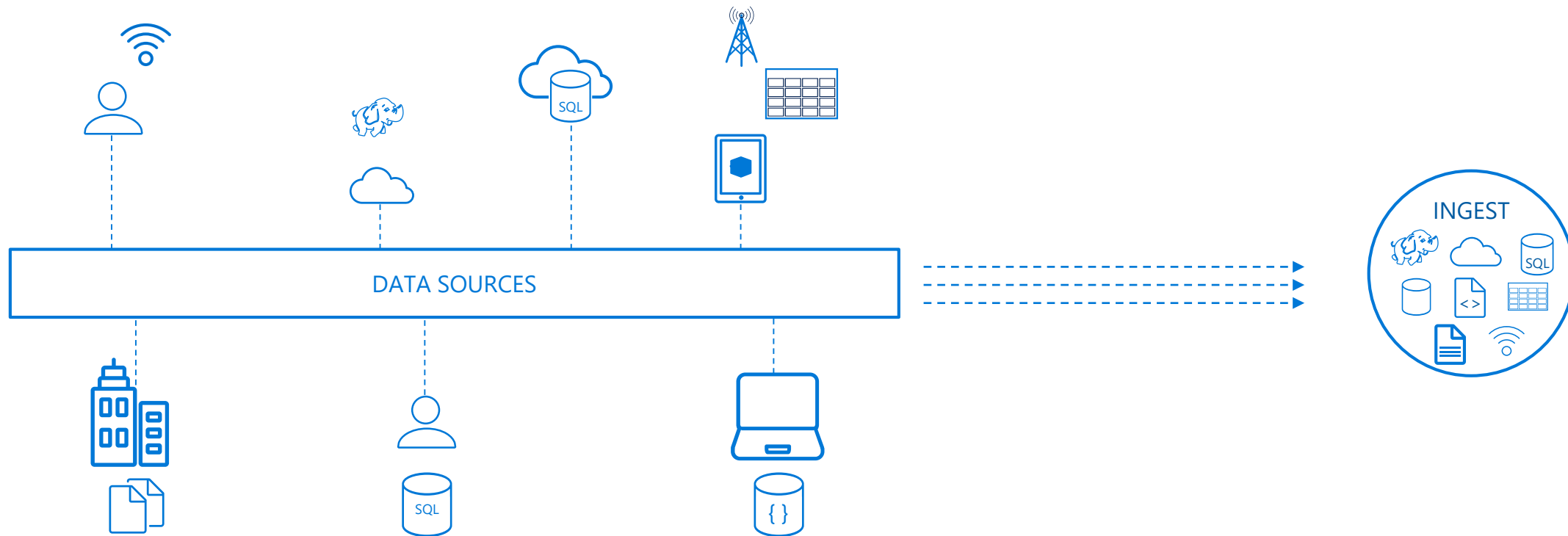Exploring new business opportunities with **data-driven services**

Microsoft

Transform data into intelligent action

Data

- Data Sources
- Apps
- Sensors and devices

Information Management
- Data Factory
- Data Catalog
- Event Hubs

Big Data Stores
- Data Lake Store
- SQL Data Warehouse

Machine Learning and Analytics
- Machine Learning
- Data Lake Analytics
- HDInsight (Hadoop and Spark)
- Stream Analytics

Intelligence
- Cognitive Services
- Bot Framework
- Cortana

Dashboards & Visualizations
- Power BI

- People
- Apps
  - Web
  - Mobile
  - Bots
- Automated Systems

Data → Intelligence → Action

Microsoft

Information Management

Data Sources

Apps

Sensors and devices

Information Management

Data Factory

Data Catalog

Event Hubs

Data

Microsoft

Compose and orchestrate data services at scale

Information Management

Data Factory

Data Catalog

Event Hubs

DATA SOURCES

INGEST

- Create, schedule, orchestrate, and manage data pipelines
- Visualize data lineage
- Connect to on-premises and cloud data sources
- Monitor data pipeline health

- Automate cloud resource management
- Move relational data for Hadoop processing
- Transform with Hive, Pig, or custom code

Microsoft

Get more value from your enterprise data assets

Information Management

Data Factory

Data Catalog

Event Hubs
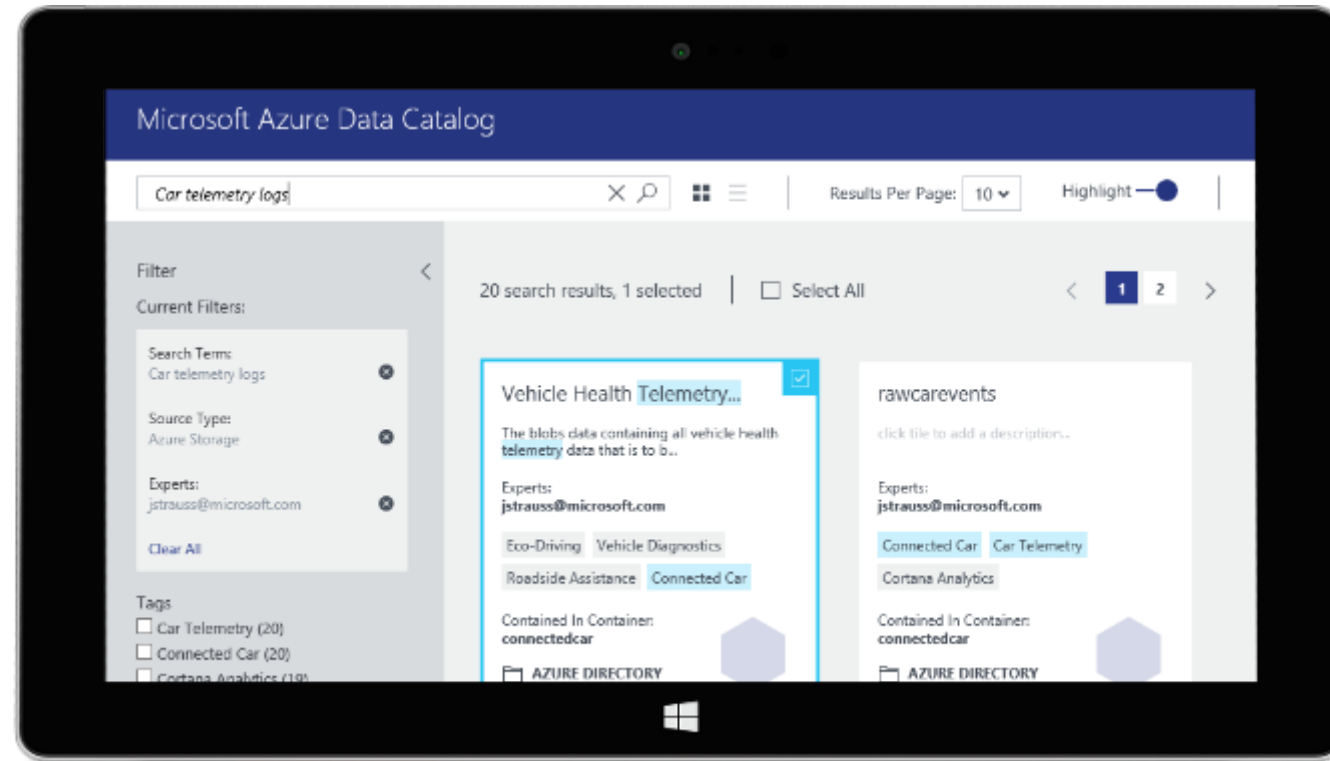
- Spend less time looking for data, and more time getting value from it
- Register enterprise data sources, discover data assets and unlock their potential, and capture tribal knowledge to make data understandable
- Bridge the gap between IT and the business, allowing everyone to contribute their insights, tags, and descriptions

- Intuitive search and filtering to understand the data sources and their purpose
- Let your data live where you want; connect using tools you choose
- Integrate into existing tools and processes with open REST APIs

Microsoft

Ingest events from websites, apps and devices at cloud scale

Information Management

- Data Factory
- Data Catalog
- Event Hubs

Data sources

Apps

Sensors and devices

Data

Azure API Management

Backend Services

Event Hubs

SQL Database → Machine Learning

Storage → HDInsight

Stream Analytics → Power BI
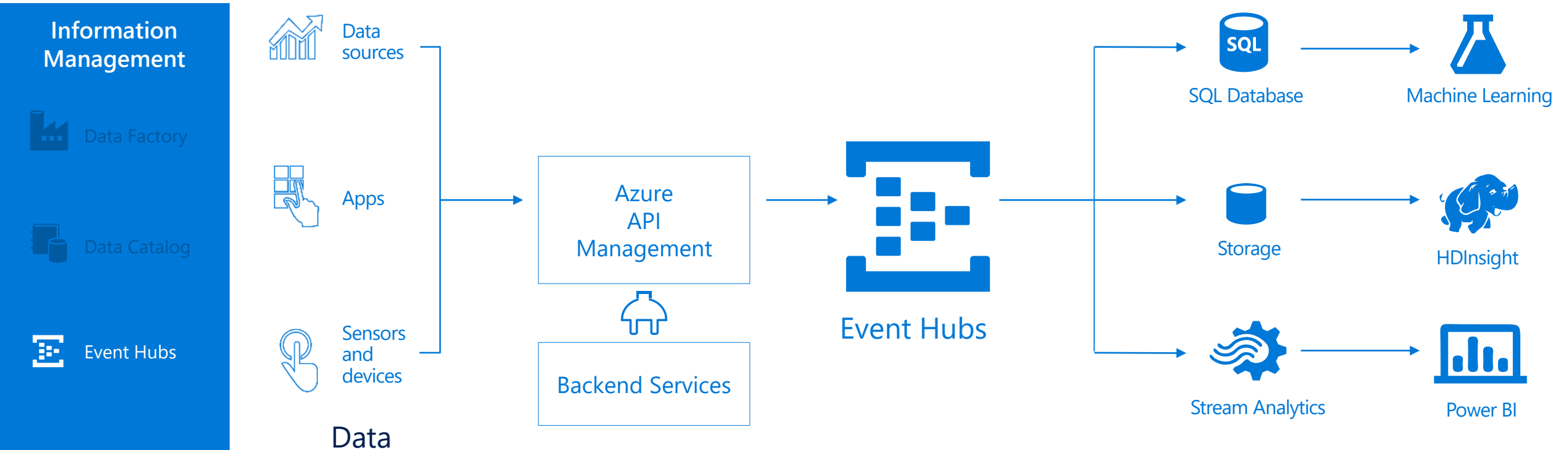
- Log millions of events per second in near real time
- Connect devices using flexible authorization and throttling
- Use time-based event buffering
- Get a managed service with elastic scale

- Get a managed service with elastic scale
- Reach a broad set of platforms using native client libraries
- Pluggable adapters for other cloud services

Microsoft
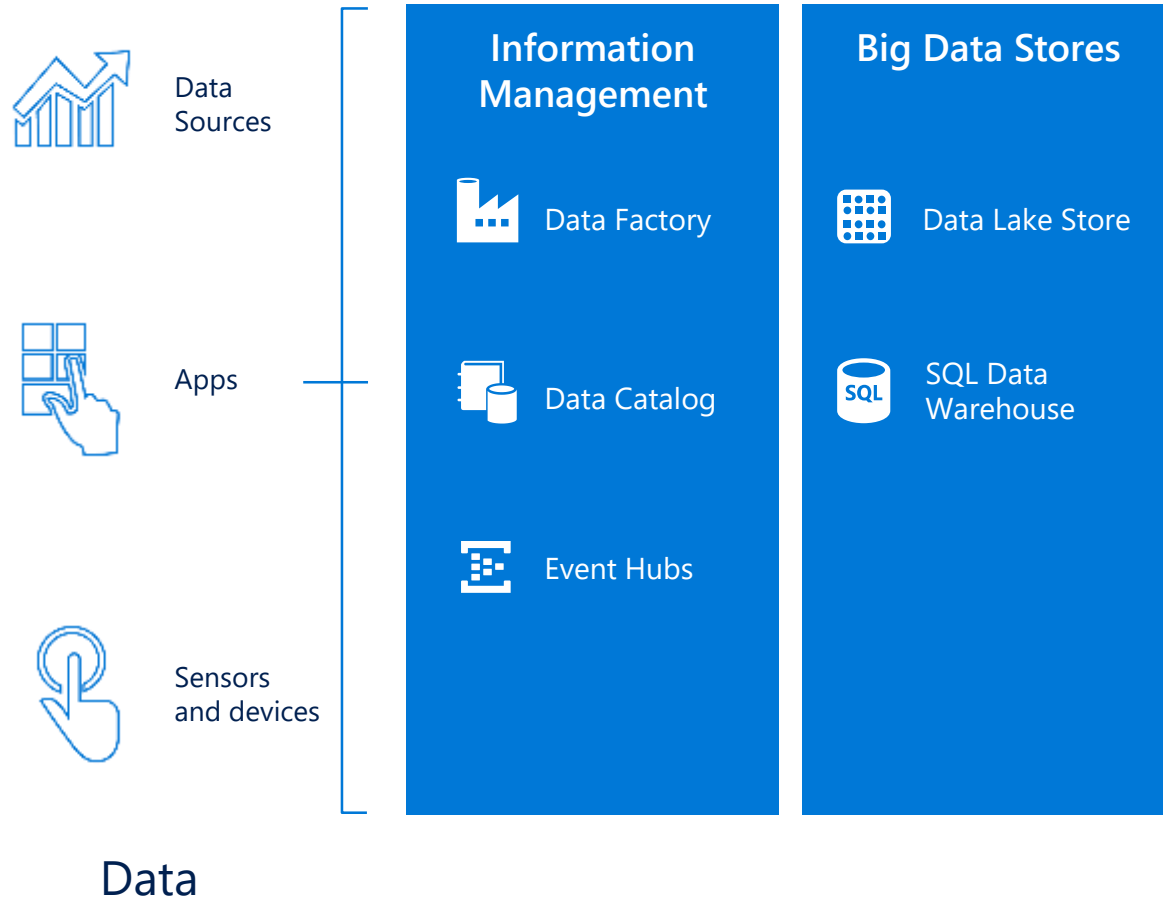
A hyper-scale repository for big data analytics workloads

Big Data Stores

Data Lake Store

SQL Data Warehouse

Devices

Social

LOB Applications

Video

Web

Sensors

Relational

Clickstream

ADL Store

ADL Analytics

HDInsight

R

Spark

Machine Learning
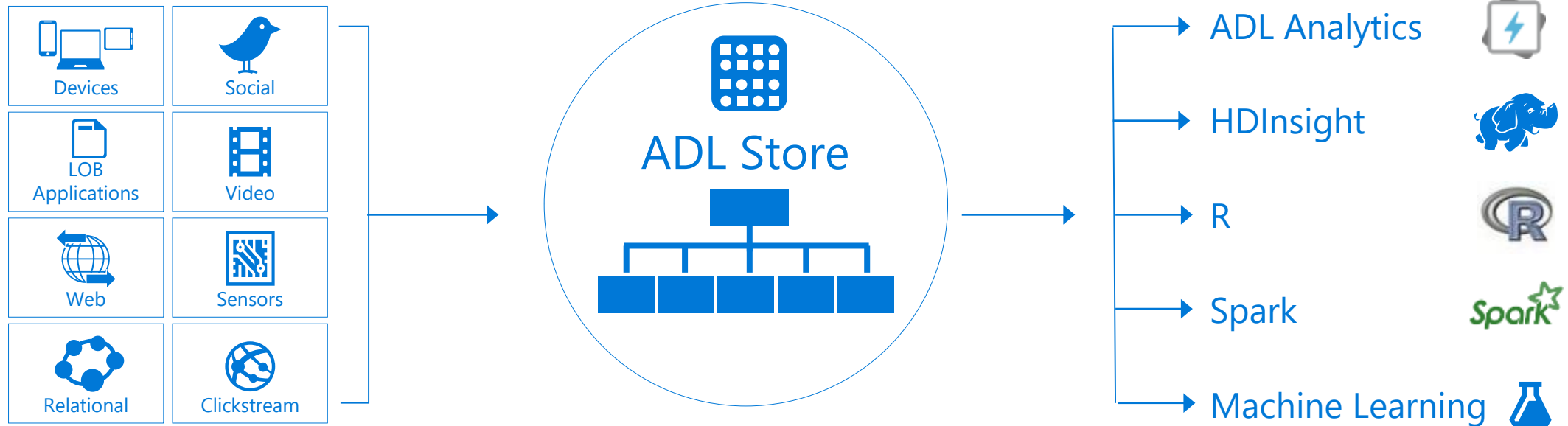
- A Hadoop Distributed File System for the cloud
- No fixed limits on file size
- No fixed limits on account size
- Unstructured and structured data in their native format

- Massive throughput to increase analytic performance
- High durability, availability, and reliability
- Azure Active Directory access control

Microsoft

Elastic data warehouse as a service with enterprise-class features

Big Data Stores

Data Lake Store

SQL Data Warehouse

Power BI

App Service

Hadoop

SQL Database

SQL Data Warehouse

Intelligent App

Machine Learning
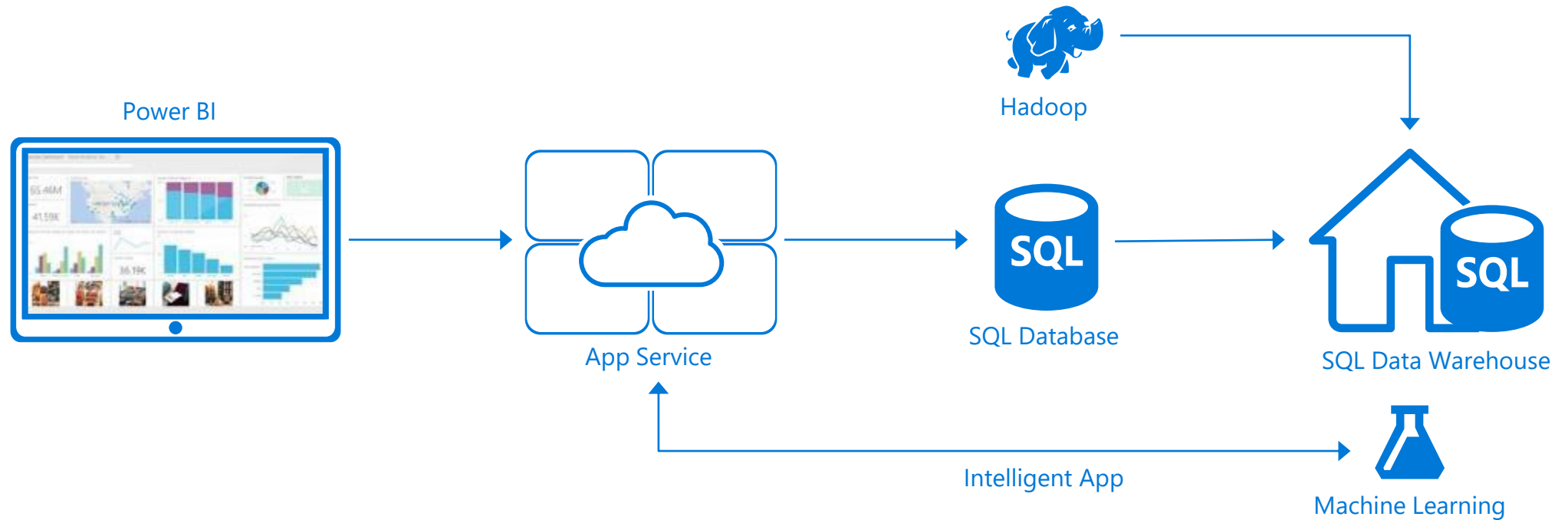
- Petabyte scale with massively parallel processing
- Independent scaling of compute and storage—in seconds
- Transact-SQL queries across relational and non-relational data

- Full enterprise-class SQL Server experience
- Works seamlessly with Power BI, Machine Learning, HDInsight, and Data Factory

Microsoft

Machine Learning and Analytics

Data Sources

Apps

Sensors and devices

Information Management

Data Factory

Data Catalog

Event Hubs

Big Data Stores

Data Lake Store

SQL Data Warehouse

Machine Learning and Analytics

Machine Learning

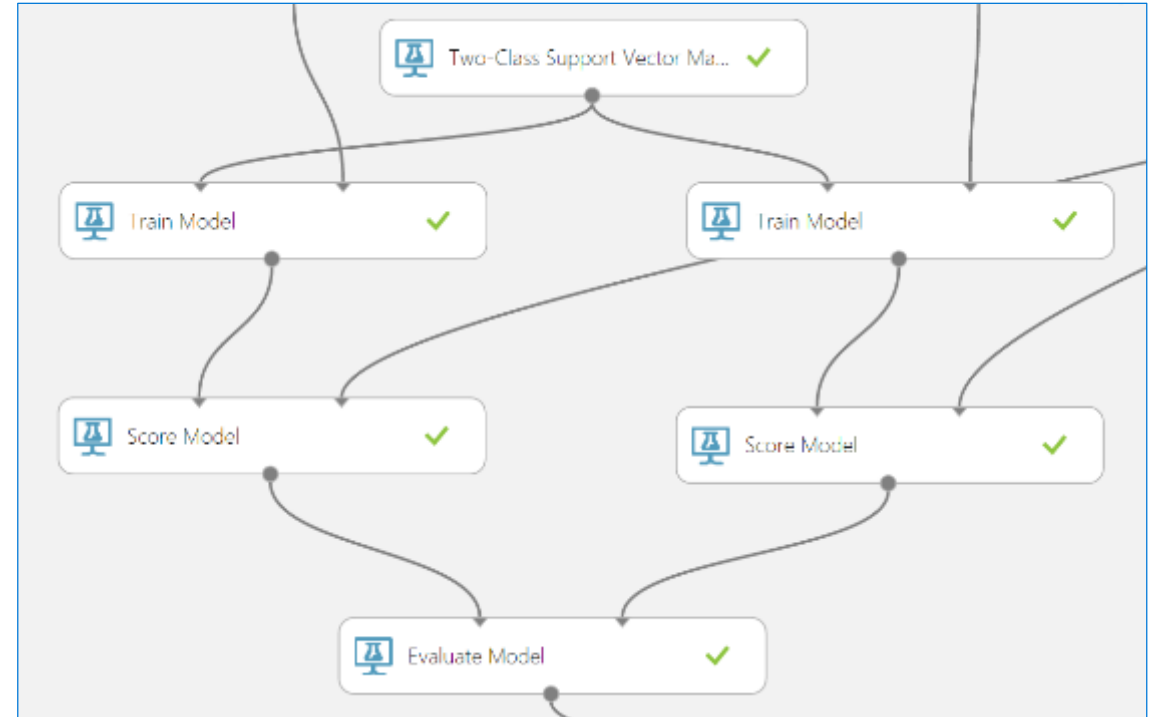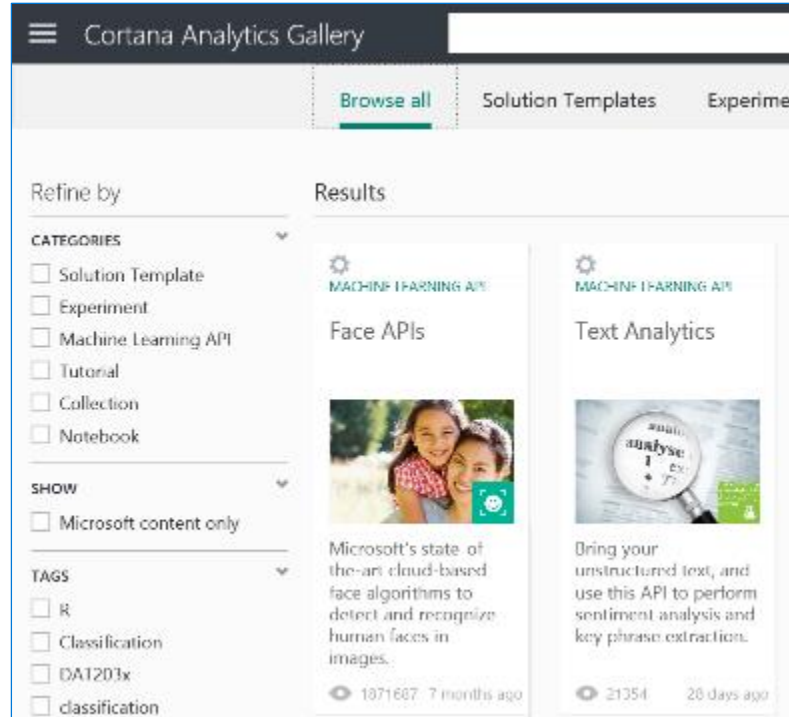Data Lake Analytics

HDInsight (Hadoop and Spark)

Stream Analytics

a

Intelligence

Microsoft
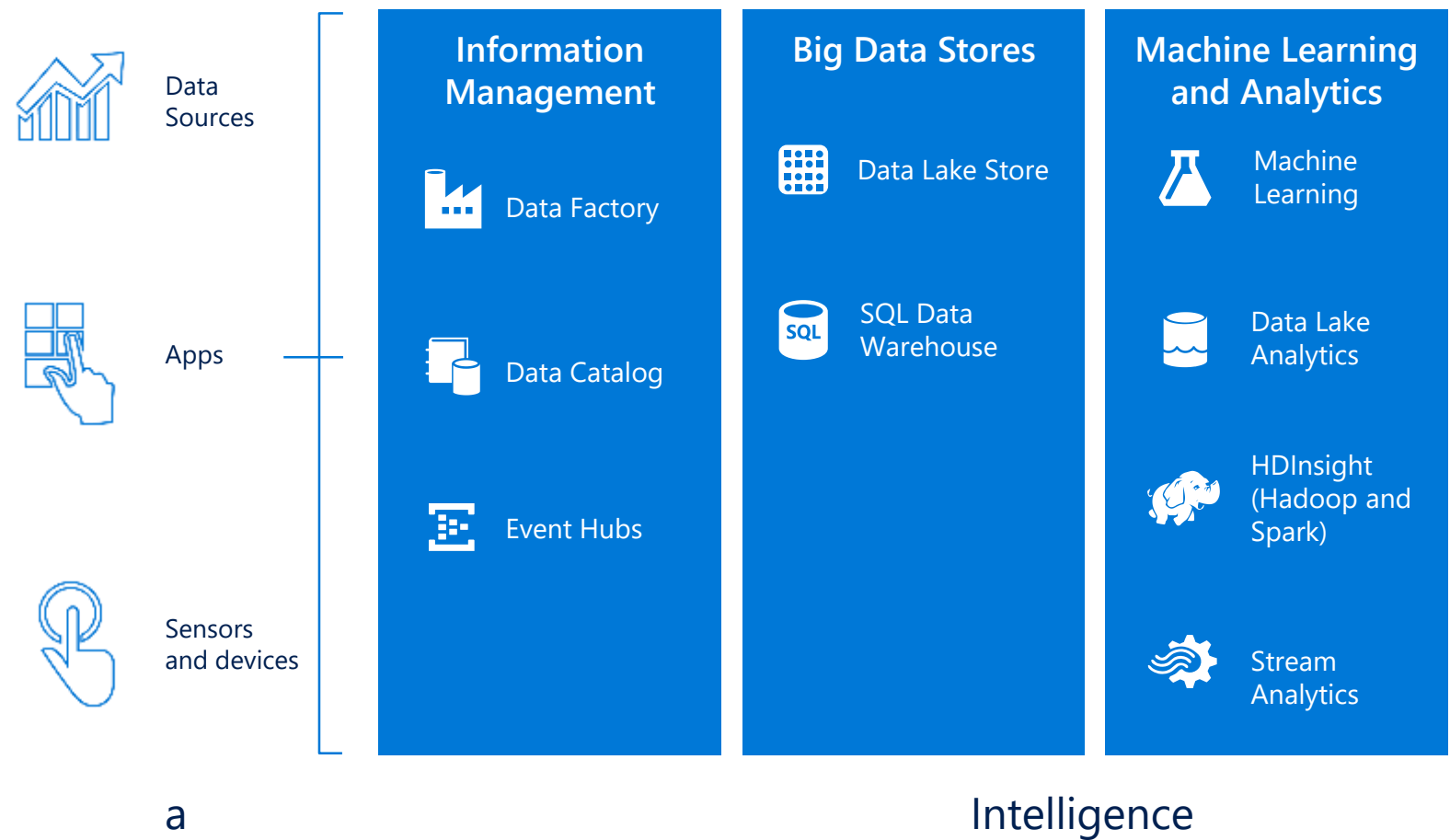
Easily build, deploy, and share predictive analytics solutions

Machine Learning and Analytics

- Machine Learning
- Data Lake Analytics
- HDInsight (Hadoop and Spark)
- Stream Analytics

- Simple, scalable, cutting edge. A fully managed cloud service that enables you to easily build, deploy, and share predictive analytics solutions.

- Deploy in minutes. Azure Machine Learning means business. You can deploy your model into production as a web service that can be called from any device, anywhere and that can use any data source.

- Publish, share, monetize. Share your solution with the world in the Gallery or on the Azure Marketplace.

Microsoft

Big data analytics made easy

Data Lake Analytics

Machine Learning and Analytics

- Machine Learning
- Data Lake Analytics
- HDInsight (Hadoop and Spark)
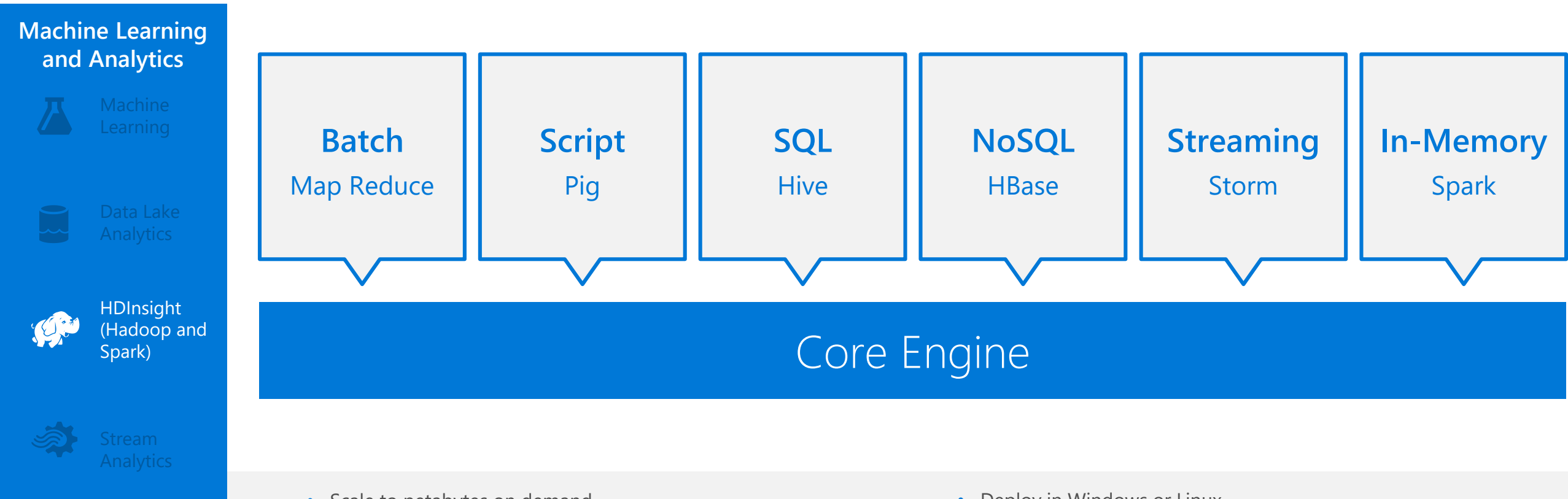- Stream Analytics

SQL DW

SQL DB

Data Lake Store

Storage Blobs

SQL DB in a VM

- Analyze data of any kind and size
- Develop faster, debug and optimize smarter
- Interactively explore patterns in your data
- No learning curve—use U-SQL, Spark, Hive, HBase and Storm

- Managed and supported with an enterprise-grade SLA
- Dynamically scales to match your business priorities
- Enterprise-grade security with Azure Active Directory
- Built on YARN, designed for the cloud

Microsoft

Comprehensive set of managed Apache big data projects

Machine Learning and Analytics

Machine Learning

Data Lake Analytics

HDInsight (Hadoop and Spark)

Stream Analytics

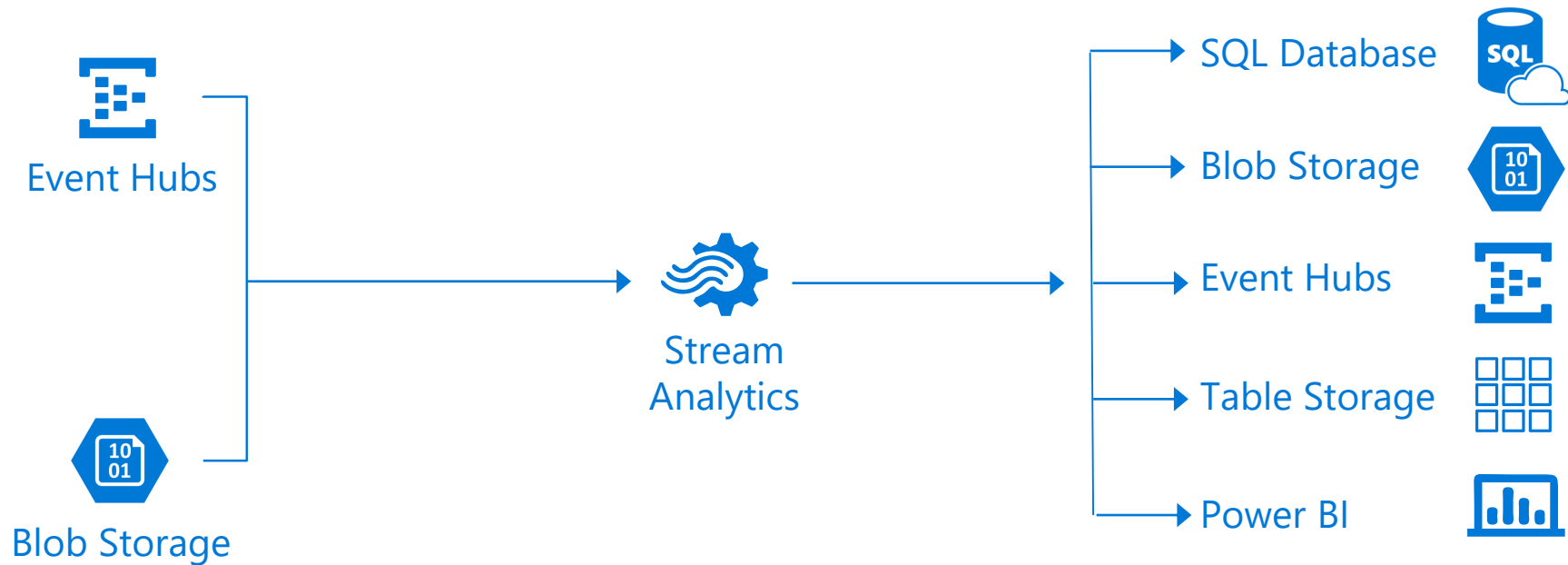| **Batch** Map Reduce	**Script** Pig	**SQL** Hive	**NoSQL** HBase	**Streaming** Storm	**In-Memory** Spark

Core Engine

- Scale to petabytes on demand
- Process unstructured and semi-structured data
- Develop in Java, .NET, and more
- Skip buying and maintaining hardware

- Deploy in Windows or Linux
- Spin up an Apache Hadoop cluster in minutes
- Visualize your Hadoop data in Excel
- Easily integrate on-premises Hadoop clusters

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Real-time stream processing in the cloud

Machine Learning and Analytics

Machine Learning

Data Lake Analytics

HDInsight (Hadoop and Spark)

Stream Analytics

Event Hubs

Blob Storage

Stream Analytics

SQL Database

Blob Storage

Event Hubs

Table Storage

Power BI

- Perform real-time analytics for your Internet of Things solutions
- Stream millions of events per second
- Get mission-critical reliability and performance with predictable results

- Create real-time dashboards and alerts over data from devices and applications
- Correlate across multiple streams of data
- Use familiar SQL-based language for rapid development

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Demo

Intelligence

Data Sources

Apps

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Microsoft
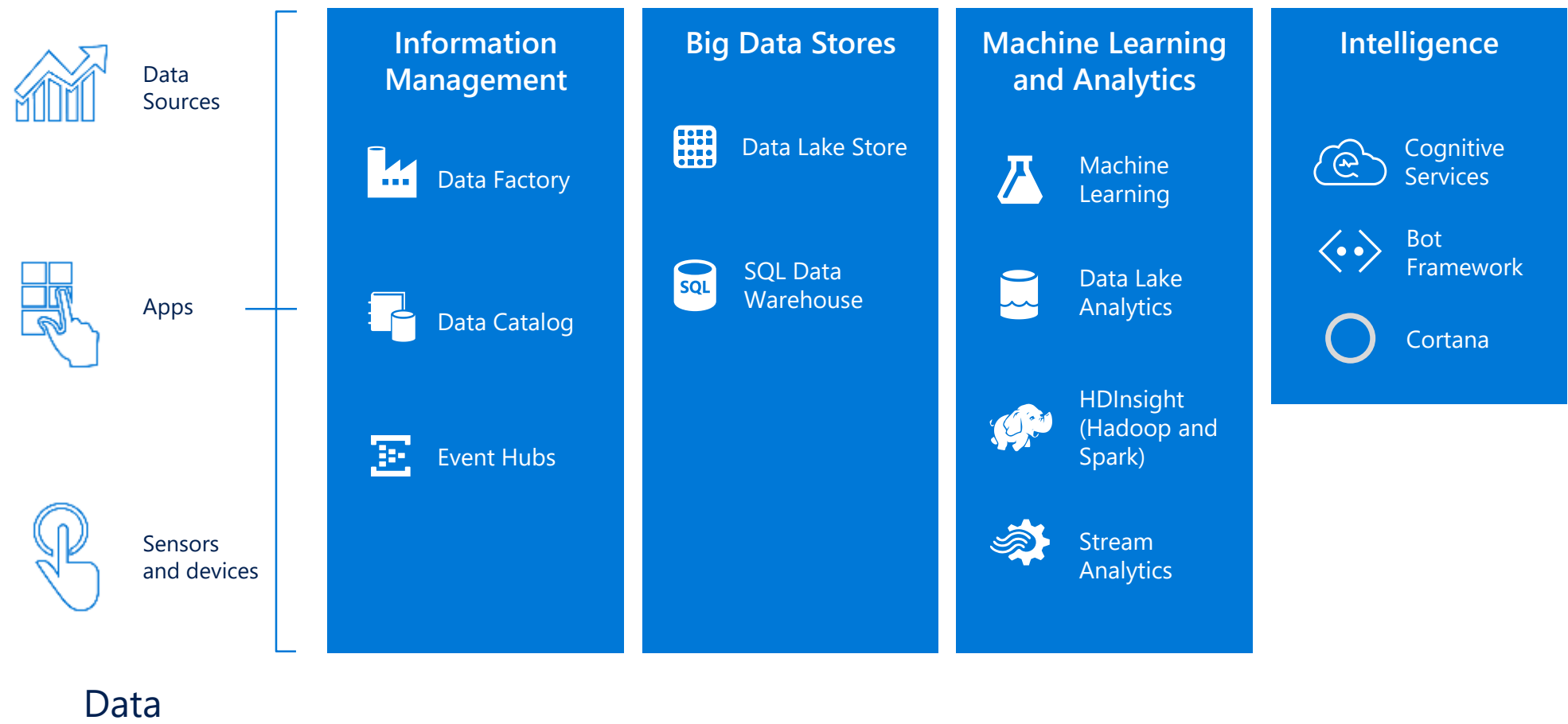
Build applications that understand people

Intelligence	Vision	Speech	Language	Knowledge	Search
Cognitive Services	Computer Vision	Speaker Recognition	Text Analytics	Academic Knowledge	Bing Search API
Bot Framework	Face	Speech	Bing Speller	Entity Linking Service	Bing Image Search API
Cortana	Emotion	CRIS	Web Language Model	Knowledge Exploration Service	Bing Video Search API
	Video		Linguistic Analysis	Recommendations	Bing News Search API
			Language Understanding Intelligent Service		Bing Auto Suggest API

- Faces, images, emotion recognition and video intelligence
- Spoken language processing, speaker recognition, custom speech recognition
- Natural language processing, sentiment and topics analysis, spelling errors

- Complex tasks processing, knowledge exploration, intelligent recommendations
- Bing engine capabilities for Web, Autosuggest, Image, Video and News

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Your bots – wherever your users converse

- Bot Connector Service: A service to register your bot, configure channels and publish to the Bot Directory. Connect your bot(s) seamlessly to text/sms, Office 365 mail, Skype, Slack, Twitter, and more.
- Bot Builder SDK: An open source SDK hosted on GitHub. Everything you need to build great dialogs within your Node.js or C# bot
- Bot Directory: A public directory of bots registered through the Bot Connector Service. Discover, try, and add bots to conversation experiences

Microsoft

Get things done in more helpful, proactive and natural ways

Intelligence

Cognitive Services

Bot Framework

Cortana

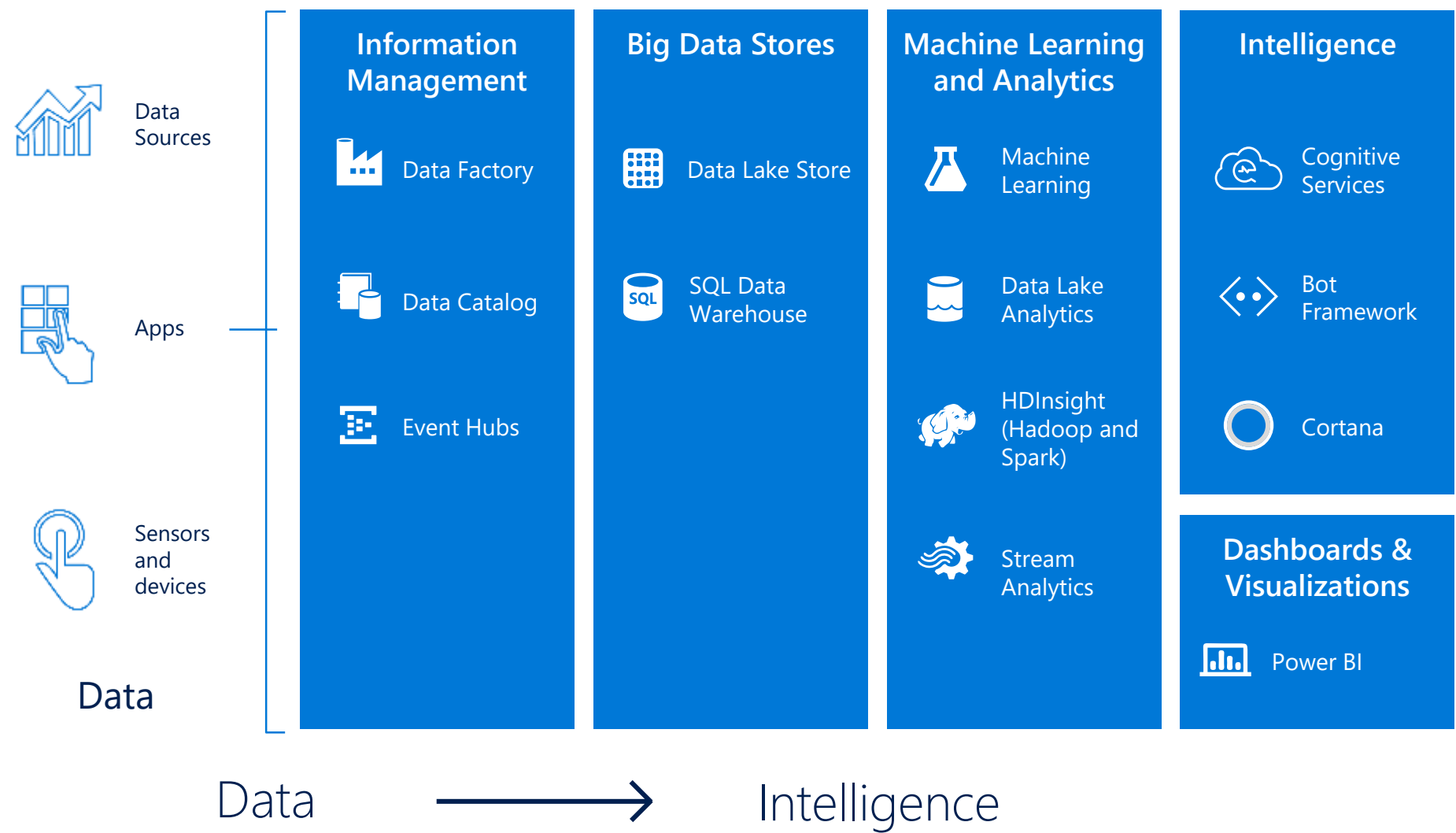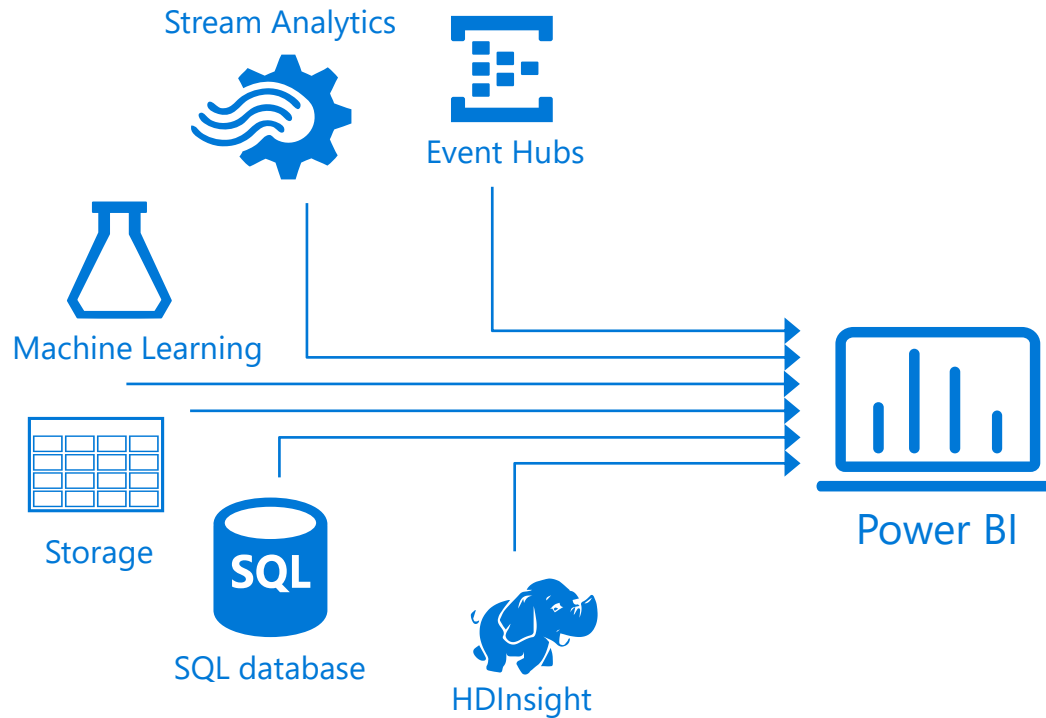| Here are some of the things I can help you with...	Cortana for Consumers (today)	With the Cortana Intelligence Suite
Answers	Public reference data answers – *"How far is it from Los Angeles to San Francisco?"*	Answers from organizational data in Power BI *"What were our biggest deals that closed last month?"*
Predictions	Event predictions – *"Who do you think is going to win the Germany Italy game?"*	Integration with prediction solutions *"Which of our customers are most likely to churn in the next quarter?"*
Monitoring & Alerts	Flight status, traffic conditions, changes in weather, ...	Monitoring KPIs and preemptive alerting *"Alert me if this customer ever has a 90% chance of churn in the next 30 days"*
Task Completion	Setting reminders, scheduling meetings, getting directions, ...	Line of business process integration *Assistance with expense report submission on-time within policy*

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Dashboards & Visualizations

Data Sources

Apps

Sensors and devices

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Intelligence

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Dashboards & Visualizations

- Power BI

Data ⟶ Intelligence

Keep a pulse on your business with live, interactive dashboards

Stream Analytics

Event Hubs

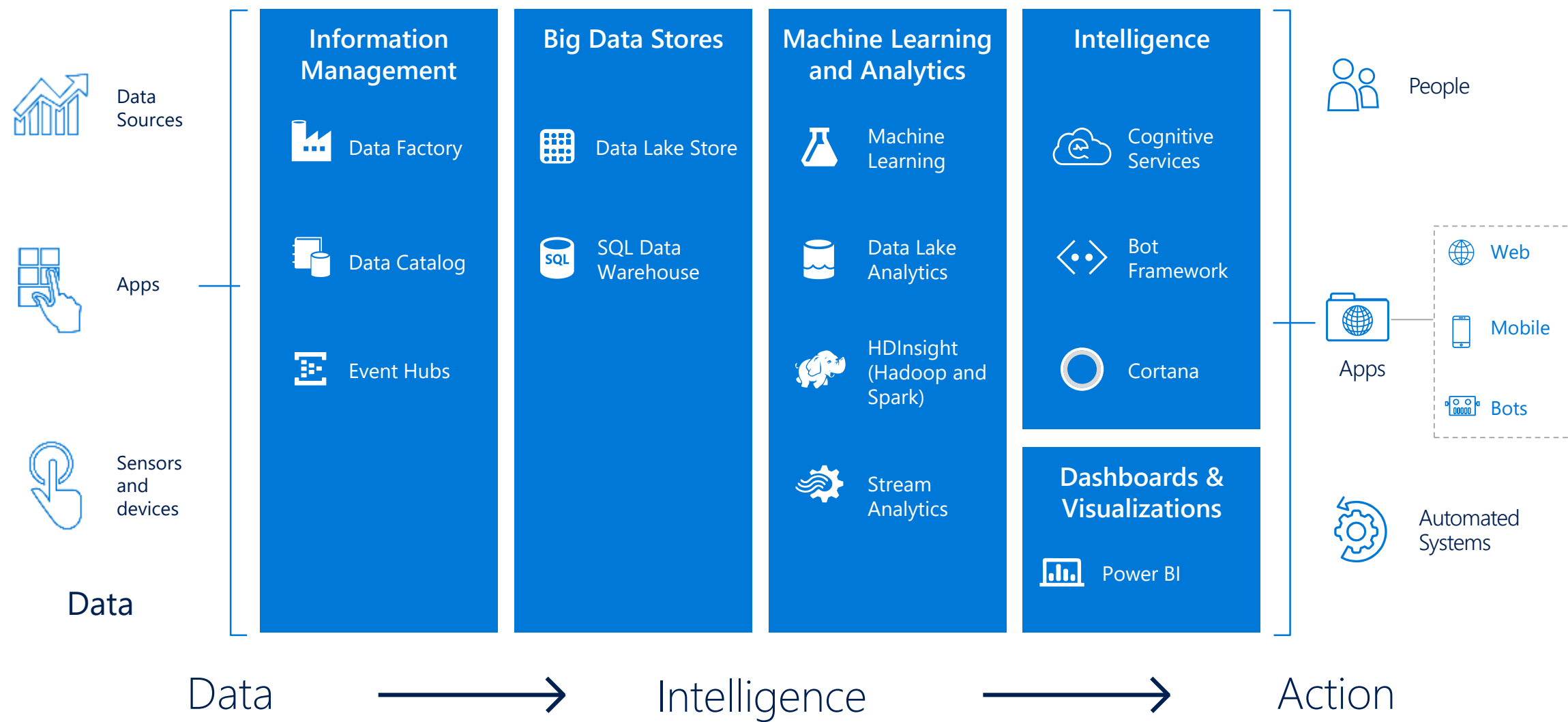Machine Learning

Storage

SQL database

HDInsight

Power BI

Dashboards & Visualizations

Power BI

- Analytics for everyone, even non-data experts
- Your whole business on one dashboard
- Create stunning, interactive reports

- Drive consistent analysis across your organization
- Embed visuals in your applications
- Get real-time alerts when things change

Microsoft

Microsoft