Microsoft

A Brief Journey from Device to Action …

hackster.io

IoT Virtual Bootcamp

December
12 – 14, 2017

http://aka.ms/IoTVirtualBootcamp

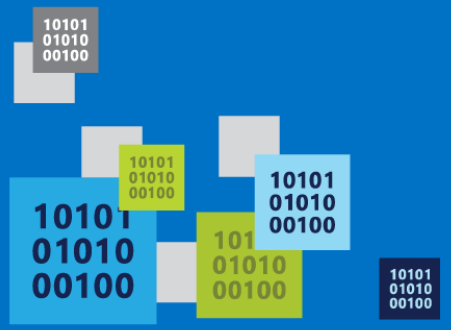
Hardware Partners :

adafruit

Microsoft Azure

Azure Machine Learning

Kevin Saye

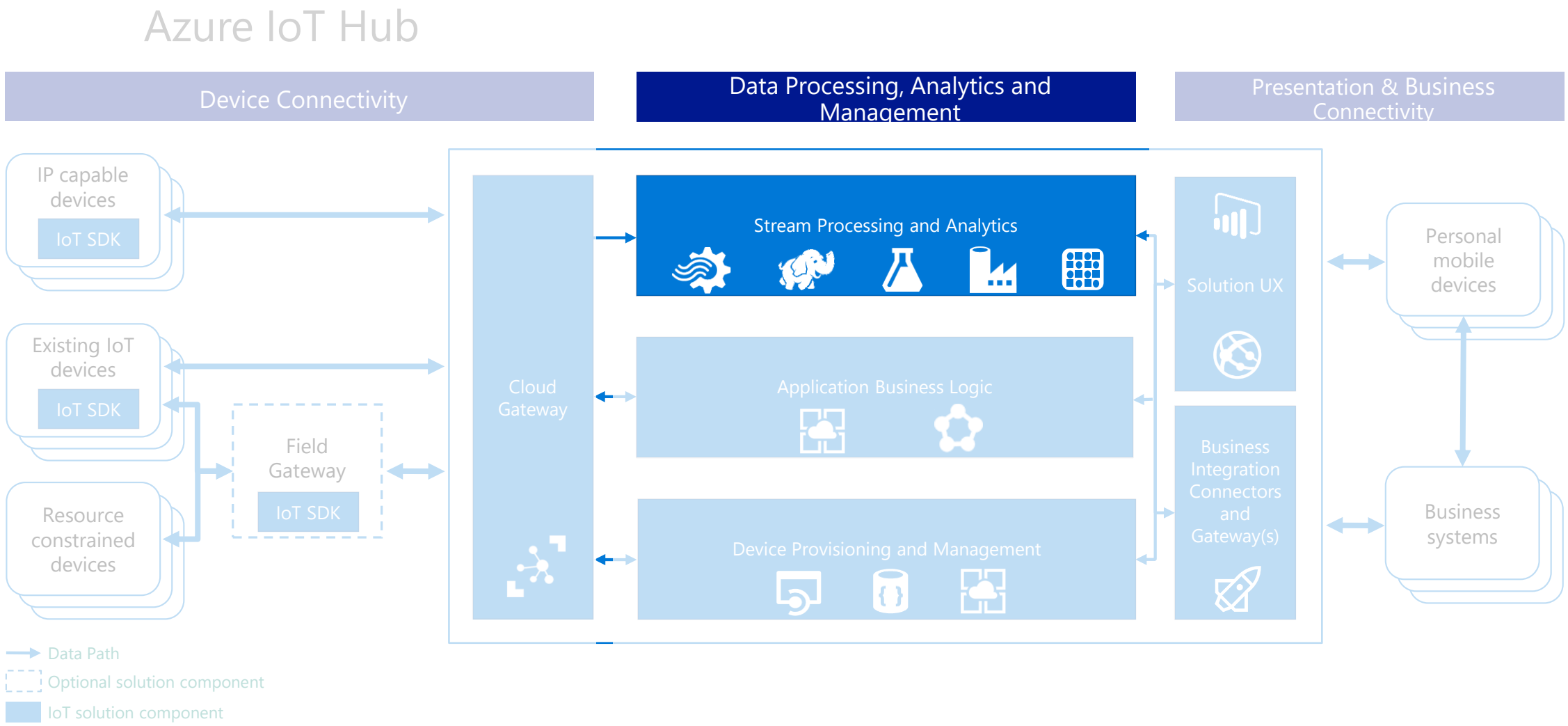


Microsoft

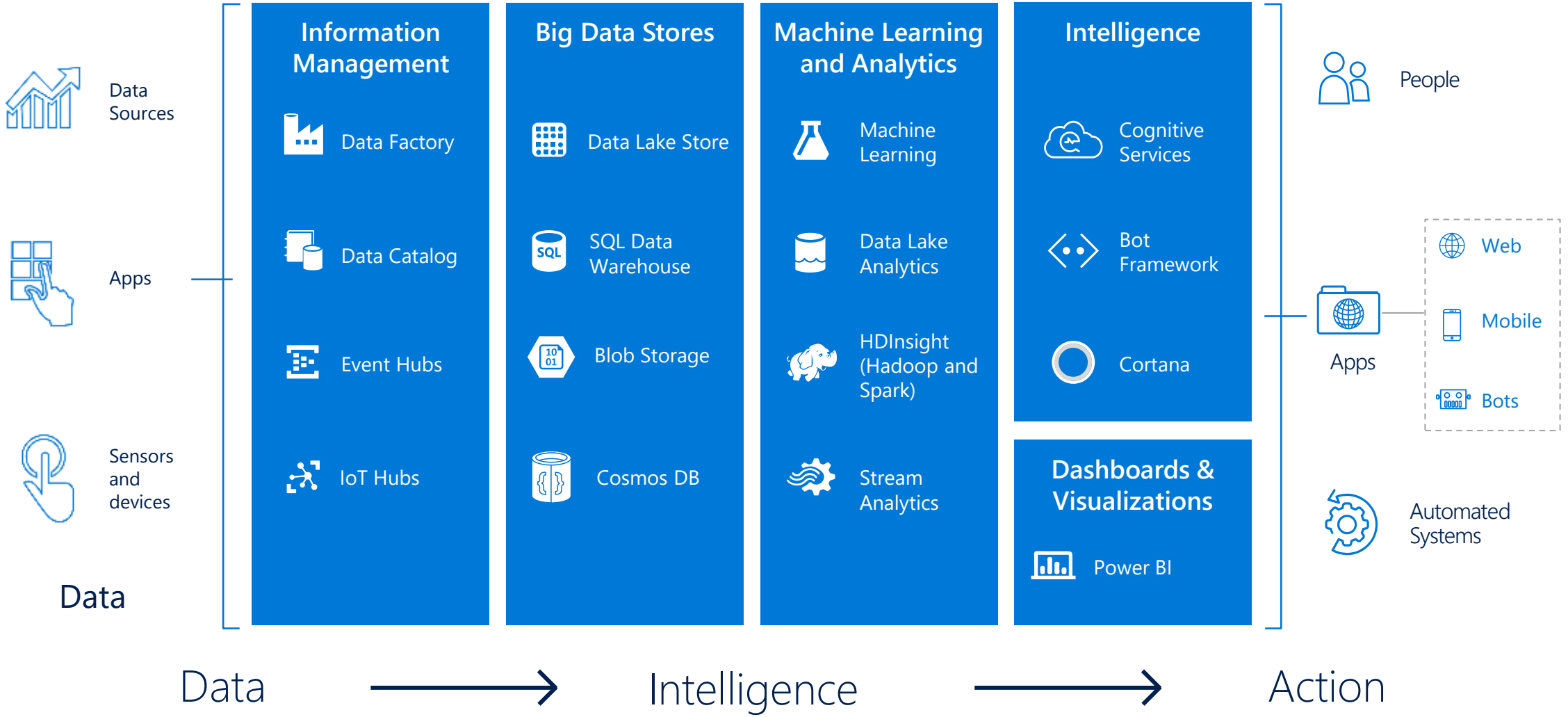
Agenda

- Describing machine learning
- Introducing Azure Machine Learning
- Demonstrating the machine learning flow
- Describing business scenarios
- Summary

Azure IoT


Azure IoT Hub
Device Connectivity
Data Processing, Analytics and Management
Presentation & Business Connectivity
IP capable devices
IoT SDK
Existing IoT devices
IoT SDK
Resource constrained devices
Field Gateway
IoT SDK
Cloud Gateway
Stream Processing and Analytics
Application Business Logic
Device Provisioning and Management
Solution UX
Business Integration Connectors and Gateway(s)
Personal mobile devices
Business systems
Data Path
Optional solution component
IoT solution component

Transform data into intelligent action



The need to know what could be…

Microsoft

Using past data to predict the future

Machine learning & predictive analytics are core capabilities that are needed throughout your business

Churn analysis

Social network analysis

Recommenda-tion engines

Location-based tracking and services

Vision Analytics

Weather forecasting for business planning

Legal discovery and document archiving

Equipment monitoring

Advertising analysis

Pricing analysis

Fraud detection

Personalized Insurance

Microsoft

Machine learning - ?

Microsoft

Machine Learning

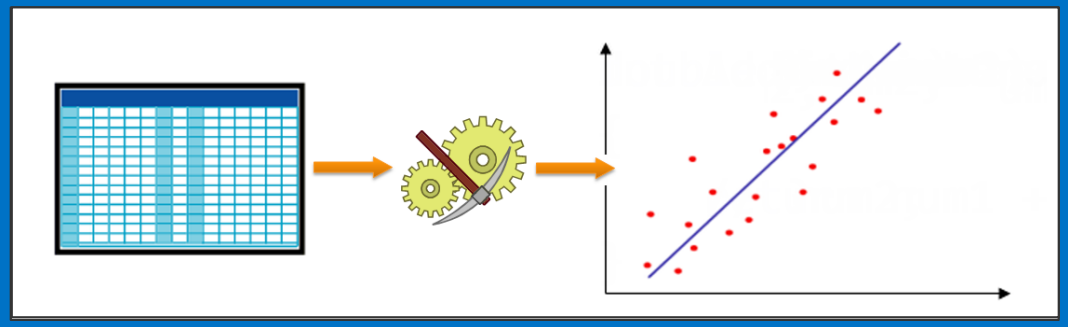
Subfield of computer science and statistics that deals with the construction and study of systems that can learn from data, rather than follow only explicitly programmed instructions

-Wikipedia

Microsoft

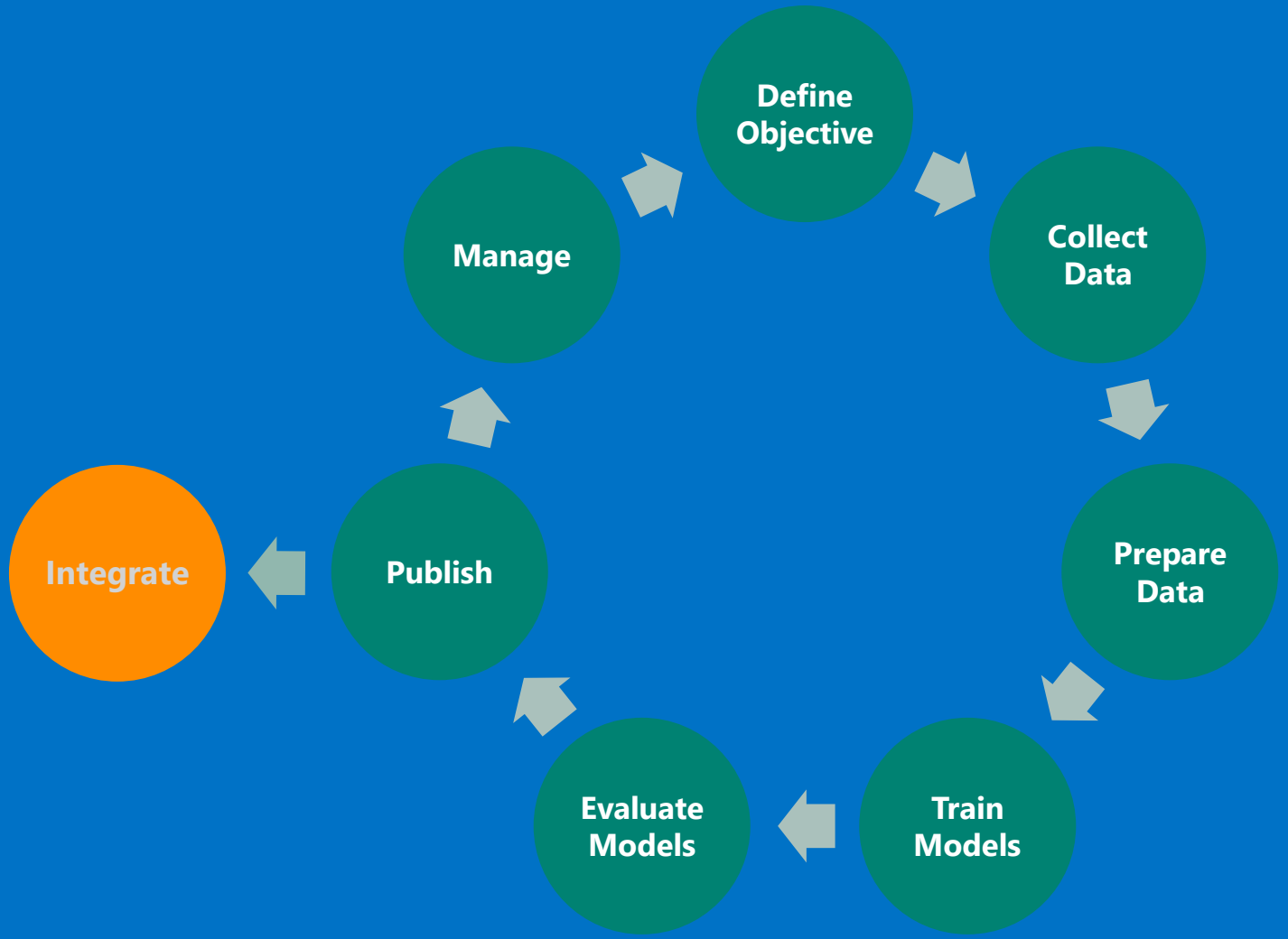
I need to predict customer profitability…

$f()$ *Age, Marital Status, Gender, Yearly Income, Total Children, Education, Occupation, Home Owner, Commute Distance*



Microsoft

Machine learning flow



Microsoft

Machine learning roles

Data scientist

A highly educated and skilled person who can solve complex data problems by employing deep expertise in scientific disciplines (mathematics, statistics or computer science)

Data professional

A skilled person who creates or maintains data systems, data solutions, or implements predictive modelling
Roles: Database Administrator, Database Developer, or BI Developer

Software developer

A skilled person who designs and develops programming logic, and can apply machine learning to integrate predictive functionality into applications

Microsoft

Introducing Azure Machine Learning

Microsoft

Azure Machine Learning

Enables powerful cloud-based predictive analytics

Professionals can easily build, deploy and share advanced analytics solutions

- Browser based, Rapid Deployment

- Connects seamlessly with other Azure data-related services, including:
  - Azure HDInsight (Big Data)
  - Azure SQL Database, and
  - Virtual Machines

Microsoft

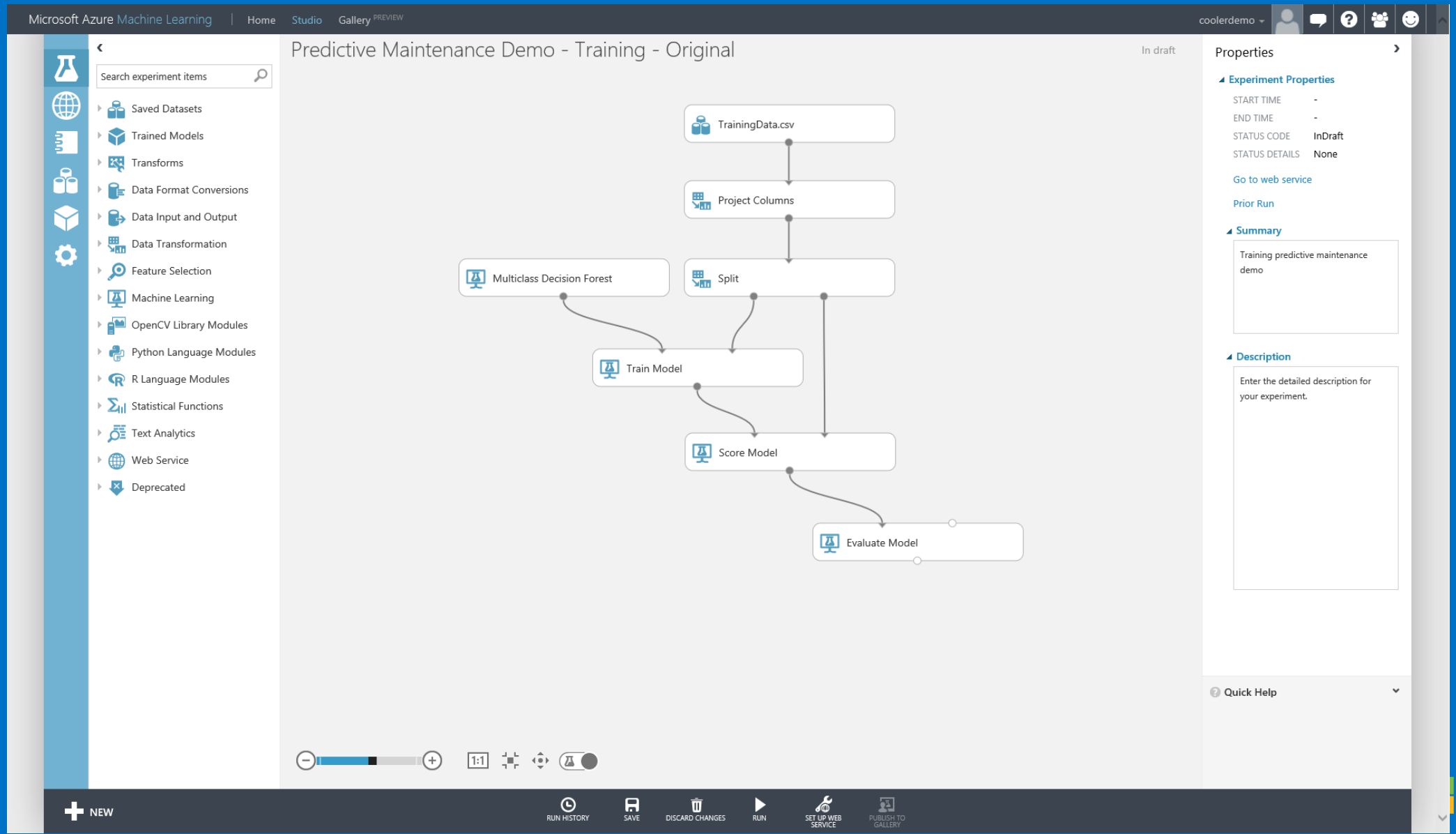
Azure Machine Learning

How it works

Azure Portal		Azure Ops team
ML Studio	+	Data professionals & Data scientists
ML API service		Software developers

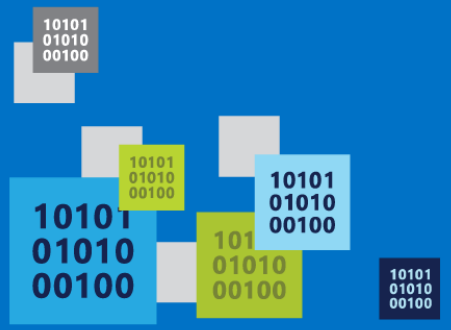
Microsoft

AML - Drag & Drop + Best in Class Algorithms

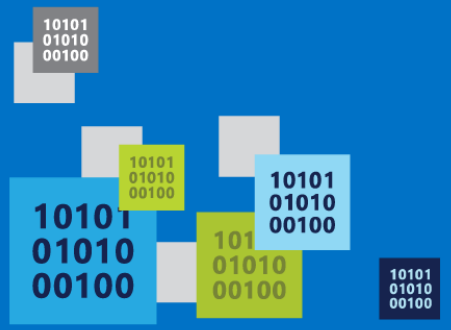


Microsoft

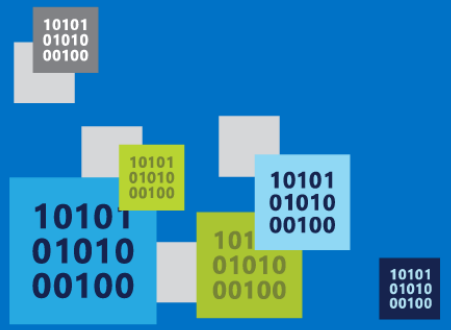
Demo: Provisioning an Azure Machine Learning workspace



Demo: Provisioning ML Experiment

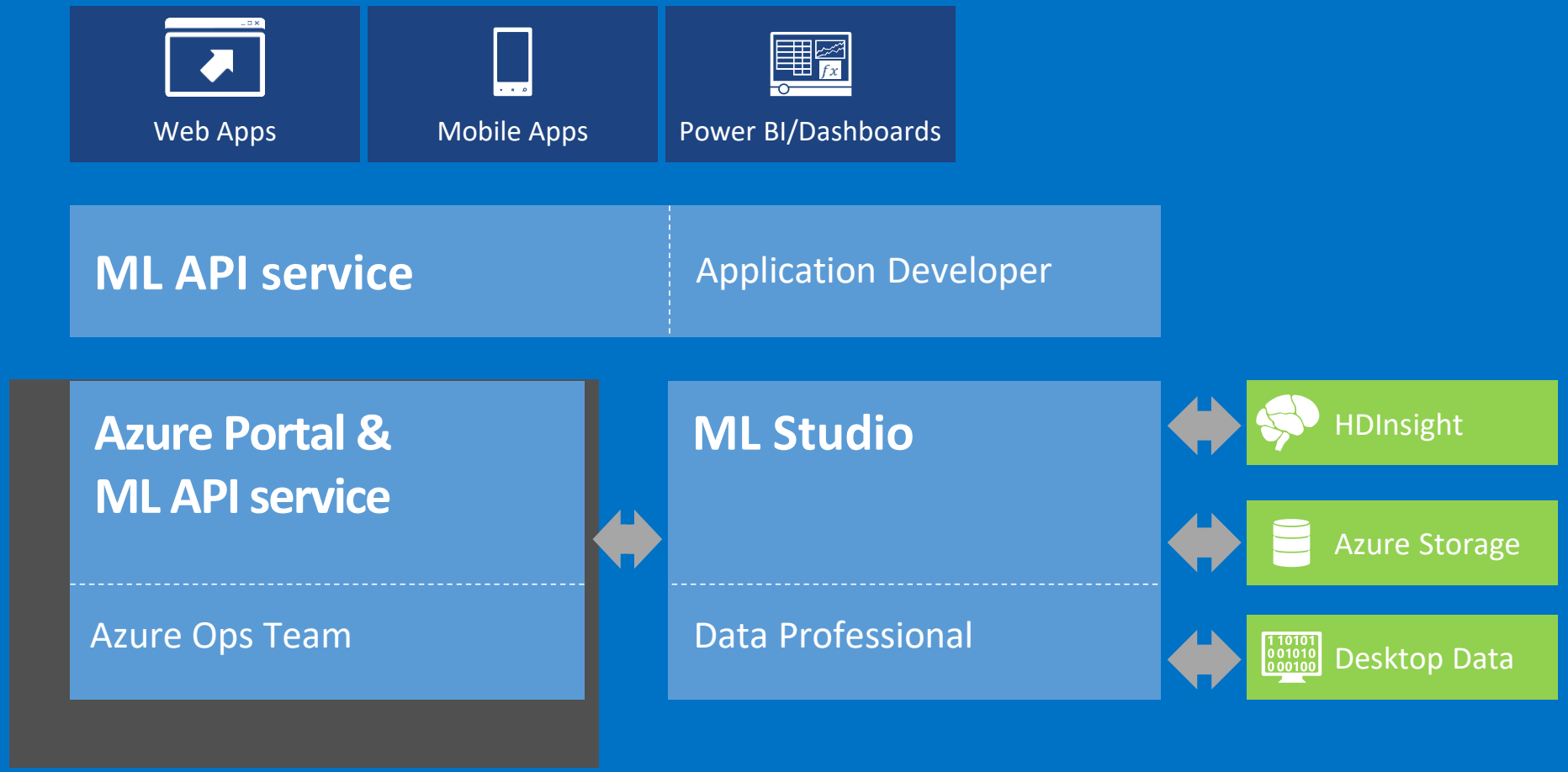


Demo: ML Web Service



Azure Machine Learning

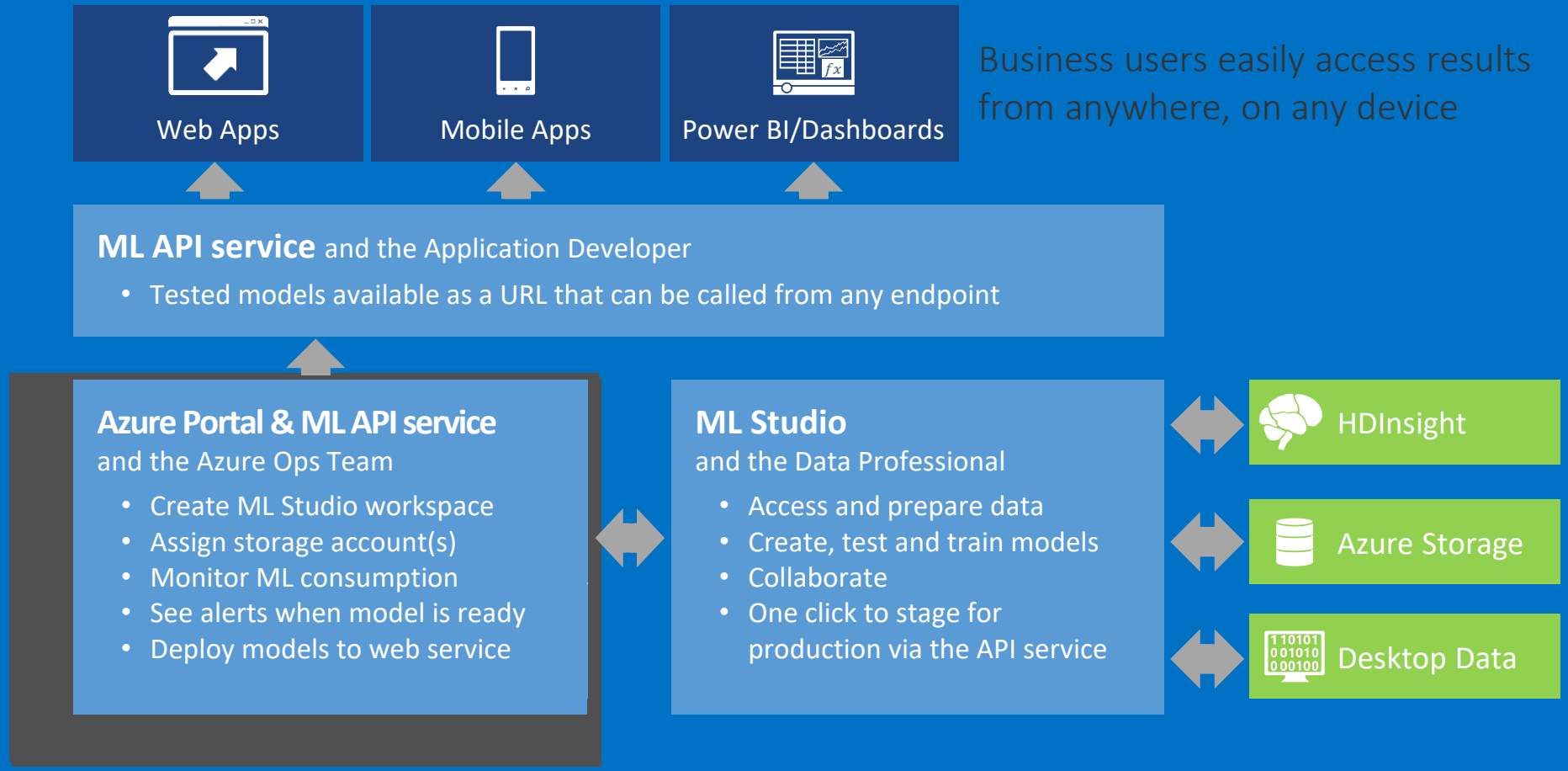
One solution for machine learning



Microsoft

Azure Machine Learning

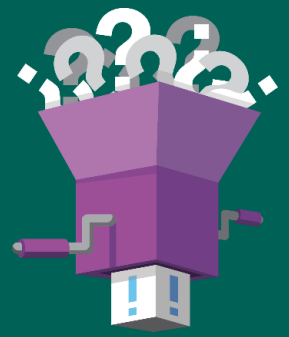
One solution for machine learning



Microsoft

Cloud-based machine learning today

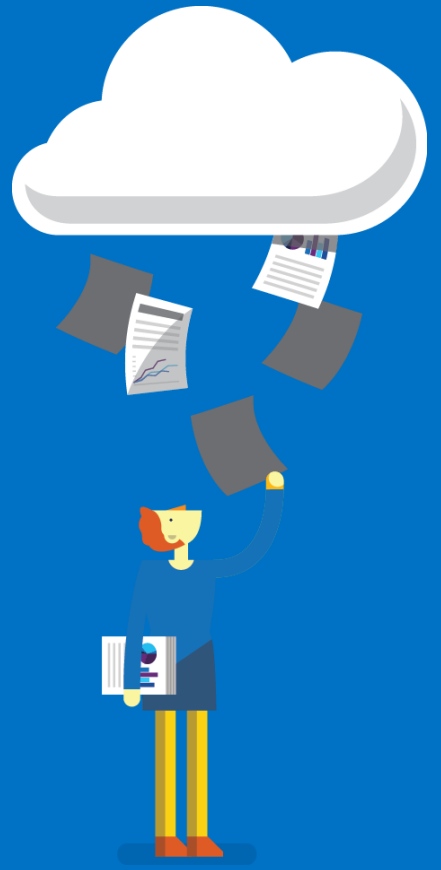
Faster towards solutions



Mashup of powerful algorithms

Elastic, pay-as-you-go model with low operative costs

Global scaling of solutions via cloud API



Quick and easy extensibility with cloud functions such as Power BI, Hadoop (Azure HDInsight) and cloud storage

Summary – Key Takeaway

Machine Learning is a subfield of computer science and statistics that deals with the construction and study of systems that can learn from data

Azure Machine Learning key attributes:

Fully managed ► No hardware or software to buy

Integrated ► Drag, drop, connect and configure

Best-in-class algorithms ► Proven solutions from Xbox and Bing

R built in ► Use over 400 R packages, or bring your own R or Python code

Deploy in minutes ► Operationalize with a click

Machine Learning is now approachable to developers

Microsoft

Additional References:

- http://azure.microsoft.com/en-us/services/machine-learning
- Azure Machine Learning documentation
- http://azure.microsoft.com/en-us/documentation/services/machine-learning
- Azure Machine Learning FAQ
- http://azure.microsoft.com/en-us/documentation/articles/machine-learning-faq
- Azure Machine Learning pricing
- http://azure.microsoft.com/en-us/pricing/details/machine-learning/

Microsoft

Summary:

Azure Machine Learning brings AI to your IoT solution including patterns/predictions/probability humans can't / don't see based on data

Machine Learning is not writing if..then.. code

Machine Learning is based on models built on data

Calling Azure Machine Learning is as simple as a API call or a wizard to a trained model

www.InternetofYourThings.com

© 2017 Microsoft Corporation. All rights reserved. Microsoft, Windows, Windows Vista and other product names are or may be registered trademarks and/or trademarks in the U.S. and/or other countries.
The information herein is for informational purposes only and represents the current view of Microsoft Corporation as of the date of this presentation. Because Microsoft must respond to changing market conditions, it should not be interpreted to be a commitment on the part of Microsoft, and Microsoft cannot guarantee the accuracy of any information provided after the date of this presentation. MICROSOFT MAKES NO WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, AS TO THE INFORMATION IN THIS PRESENTATION.