Microsoft Azure

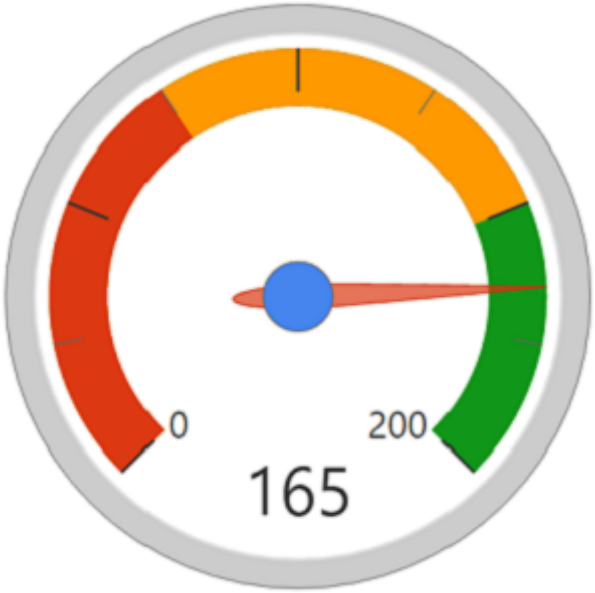
Machine Learning Fundamentals

Contents of the day

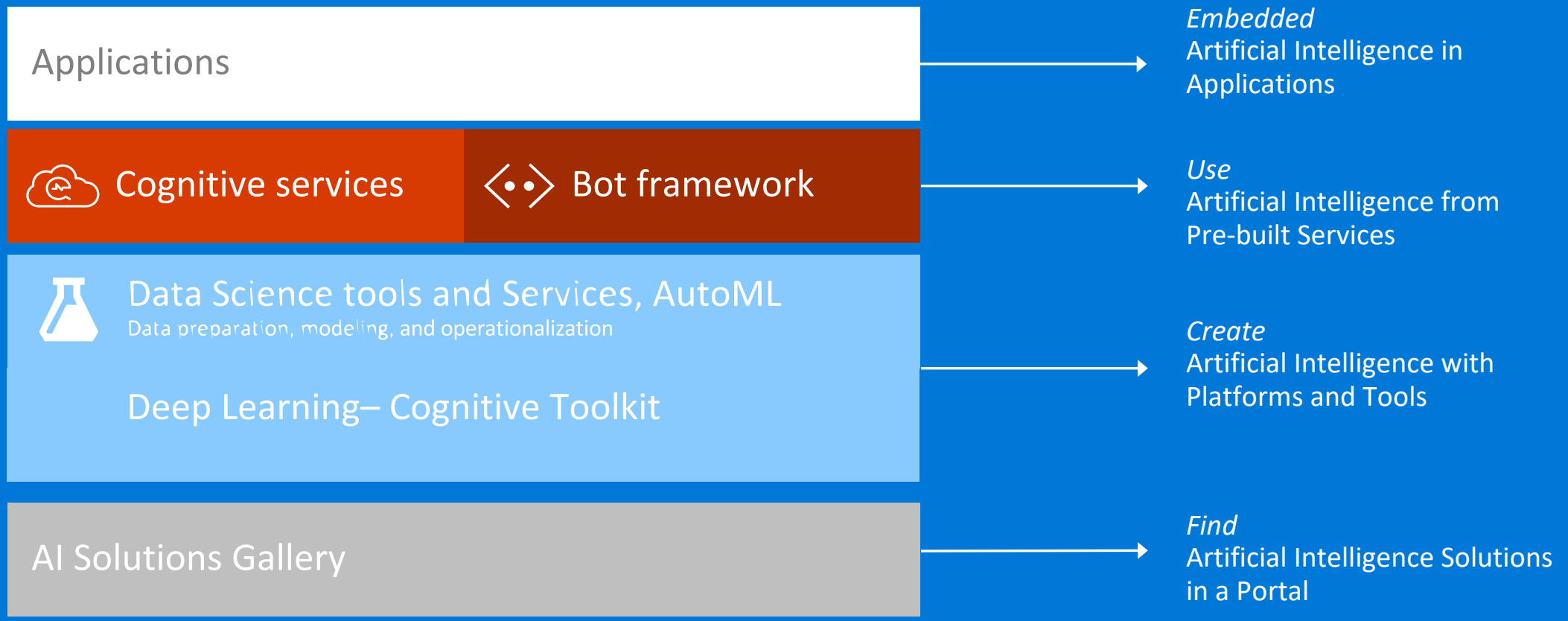
- Introduction to some data science principles for context
- Opportunity to ease into some AI/ML foundations
- Build on foundations of the pre-requisite material
- Some Data Science and Machine Learning cheat sheets
- Machine Learning Studio – additional examples
  - Subscription to fixed term deposits
  - Rental demand for a bike sharing service
- Using the Python SDK with Azure Machine Learning
  - Notebook Foundations – environment etc.
  - Image recognition example
- Using the Command Line Interface (CLI)
- DP-100 preparatory materials

Finding a level to work from…

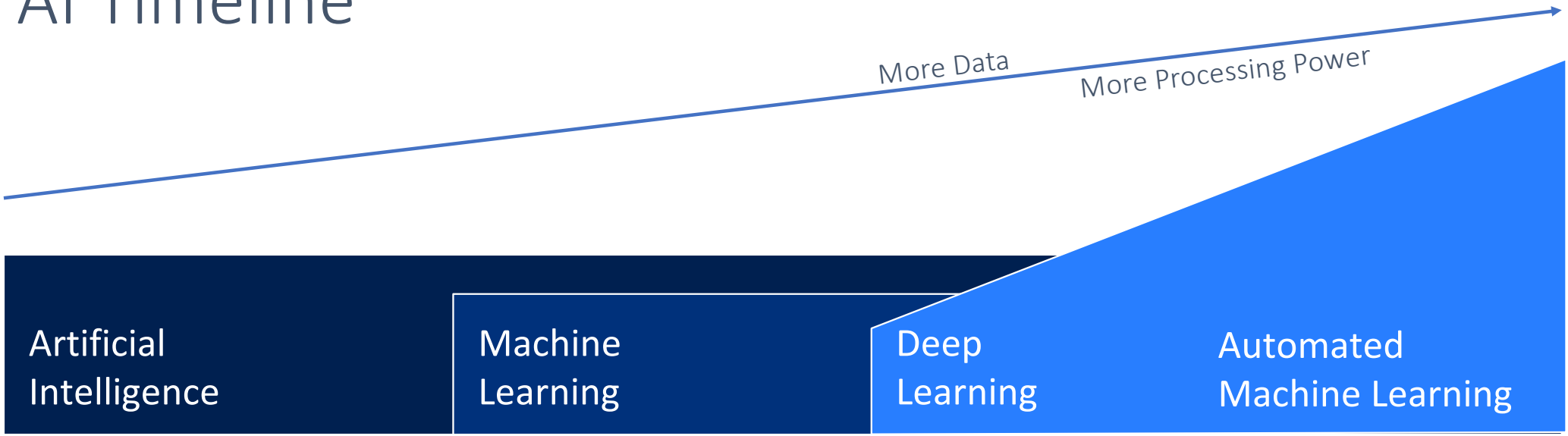
- Experience in Machine Learning / AI?
- Experience in Data Science principles
  - Training/Test data sets
  - Catering for Bias?
  - Too little / too much data?
- Experience in cloud driven ML?
- Experience coding?



The Microsoft AI Landscape



AI Timeline



1950s

AI is created in New Hampshire

1960s

Great AI expectations

1970s

Unfilled promises

1980s

AI becomes an industry

1990s

Artificial narrow intelligence

2000s

Deep Learning active research

2010s+

Big data

Major processing power

(Big Data, Cloud Computing, Powerful Algorithms)

Mid 2017

Google Brain Division

AutoML Cloud

(AutoML Vision, AutoML Natural Language Understanding, AutoML Translation)

Mid 2018-2019

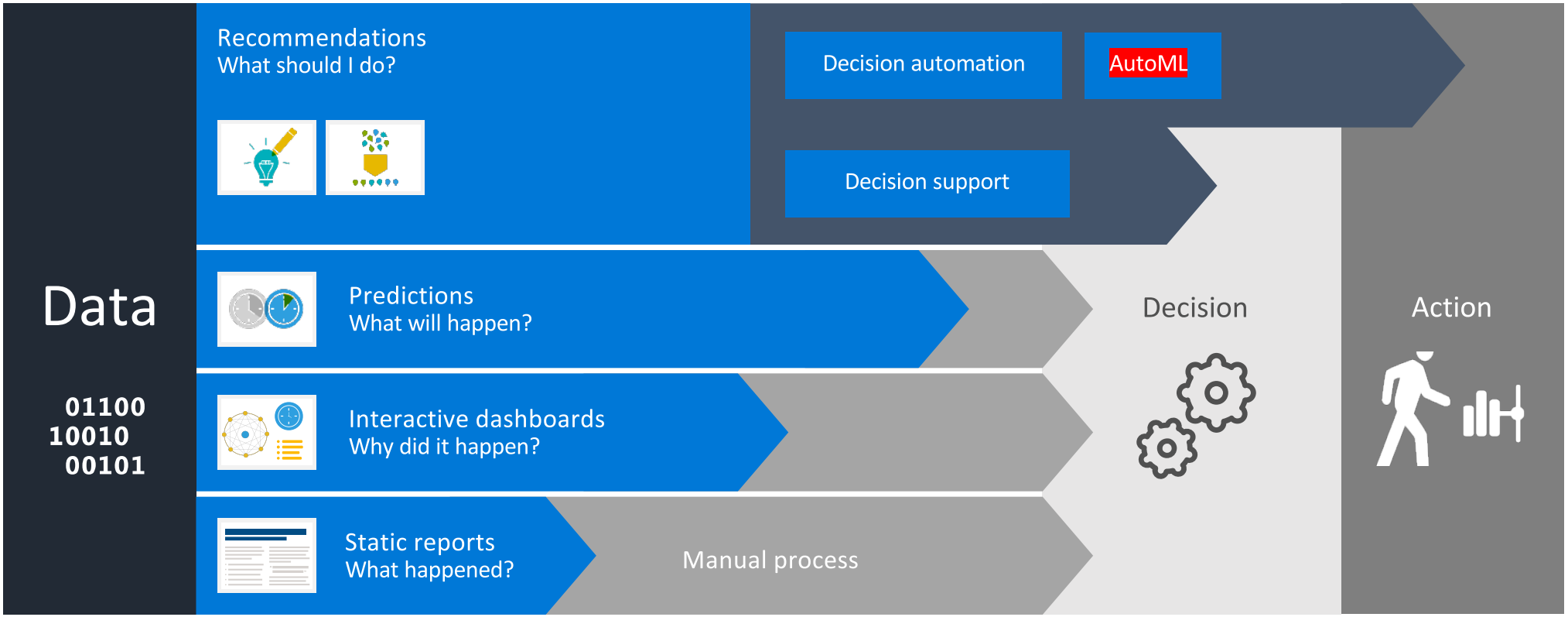
Microsoft Azure AutoML

Skit-learn Python SDK

(Classification, Regression,…)

Microsoft

An evolution of Insight…



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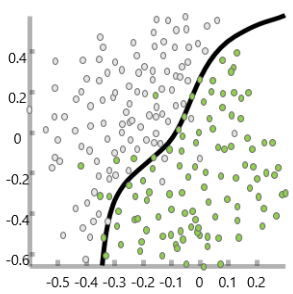
Common Machine Learning Algorithms

Classification

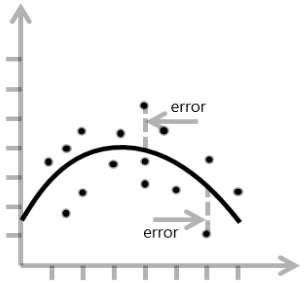
Supervised



- Will this tyre fail in the next 1,000 miles: Yes or no?
- Which brings in more customers: a $5 coupon or a 25% discount?

Regression

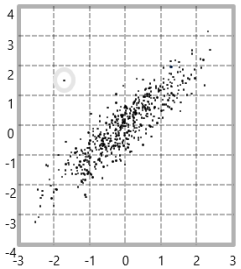
Supervised



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

Anomaly Detection

Supervised



- Is this pressure gauge reading normal?
- Is this message from tl internet typical?

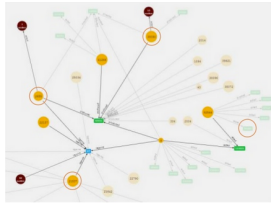
Clustering

Unsupervised

- Which viewers like the same types of movies?
- Which printer models fail the same way?

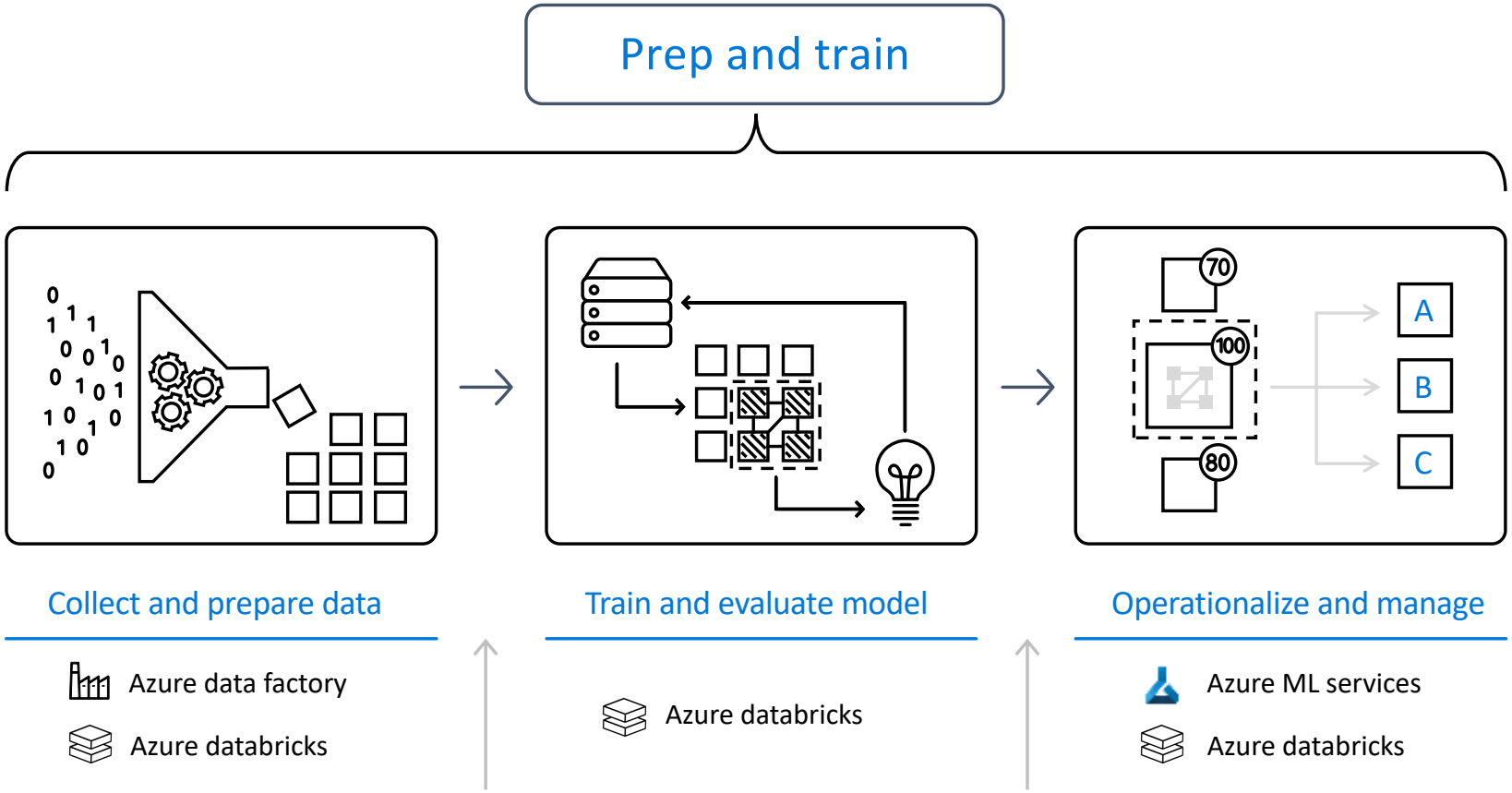
Recommendation

Semi-supervised

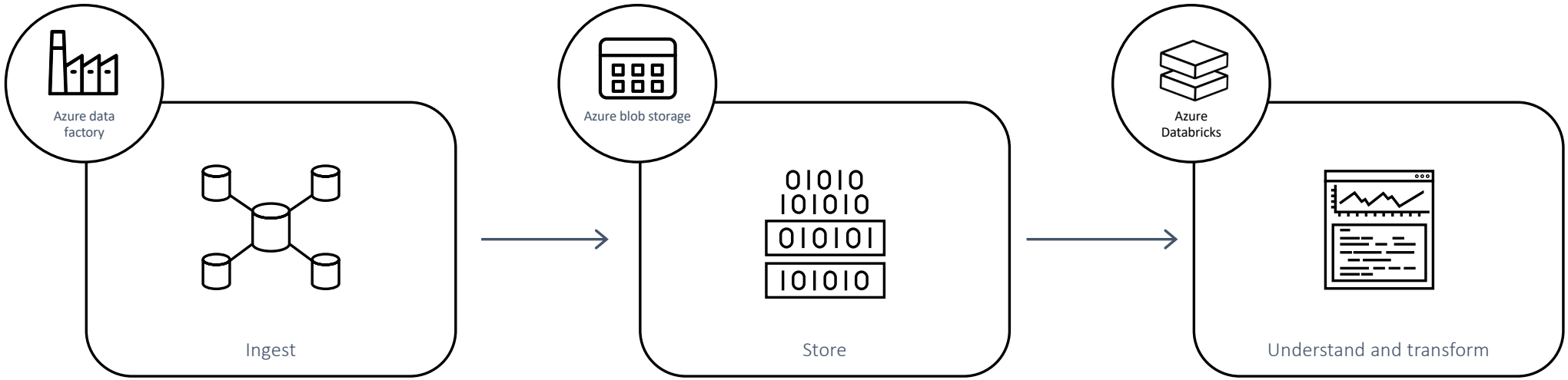


- What else are you likely to buy?
- Who else do you influence?

High level view of the process...



Collect and prepare all your data at scale



Connect to data from any source

Integrate with all your data sources

Create hybrid pipelines

Orchestrate in a code-free environment

Leverage best-in-class analytics capabilities

Leverage open source technologies

Collaborate within teams

Use ML (machine learning) on batch streams

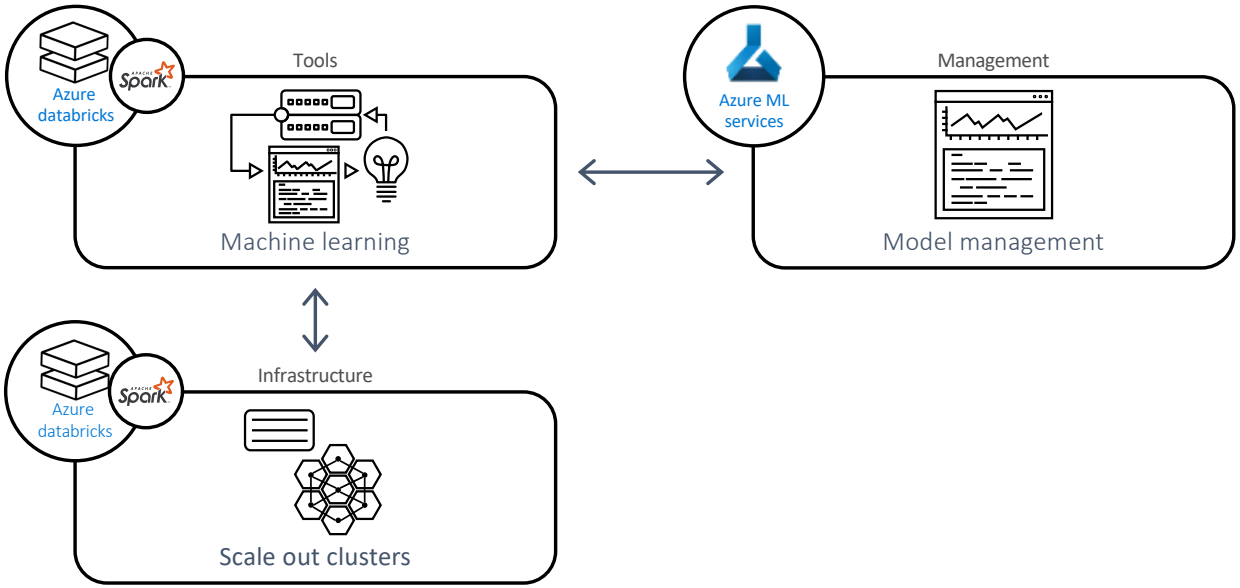
Scale without limits

Build in the language of your choice

Leverage scale out topology

Scale compute and storage separately

Train and evaluate Machine Learning models



Simplify model development

Collaborate in interactive workspaces

Access a library of battle-tested models

Automate job execution

Scale compute resources to meet your needs

Easily scale up or scale out

Autoscale on a serverless infrastructure

Leverage commodity hardware

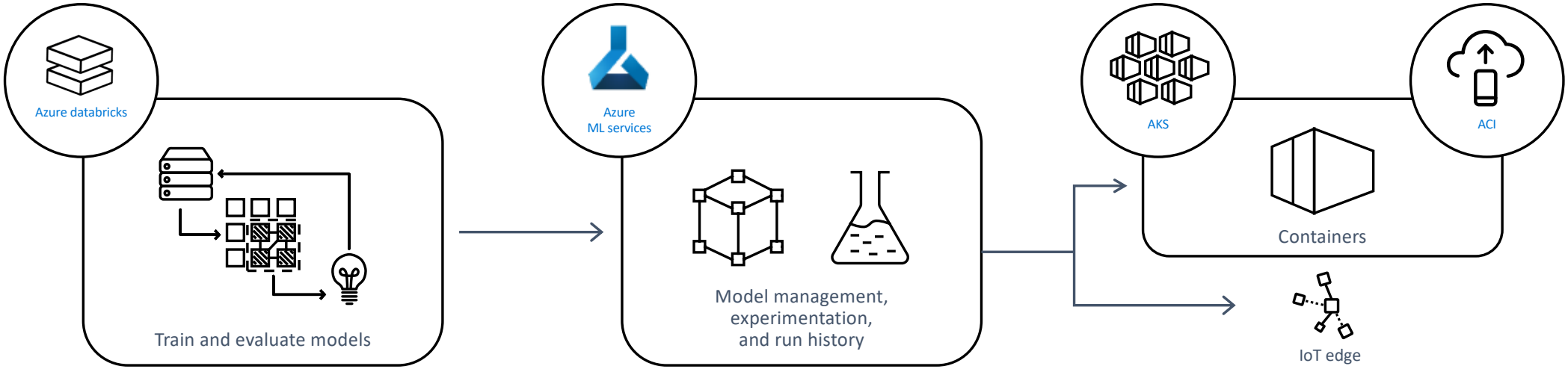
Quickly determine the right model for your data

Determine the best algorithm

Tune hyperparameters to optimize models

Rapidly prototype in agile environments

Operationalise and manage models with ease



Bring models to life quickly

Build and deploy models in minutes

Iterate quickly on serverless infrastructure

Easily change environments

Proactively manage model performance

Identify and promote your best models

Capture model telemetry

Retrain models with APIs

Deploy models closer to your data

Deploy models anywhere

Scale out to containers

Infuse intelligence into the IoT edge

Questions?