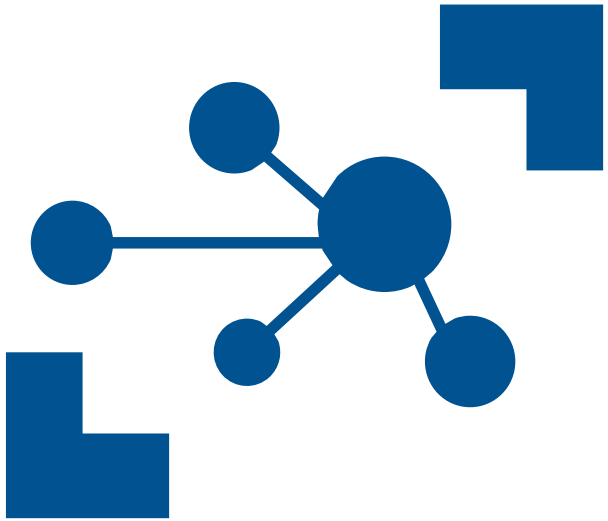
Machine Intelligence

Modern Infrastructure

http://mi2.live

Getting Started with Azure IoT Edge



What is MI2?

MI2 Webinars focus on the convergence of **machine intelligence** and **modern infrastructure**. Every alternate week, I deliver informative and insightful sessions covering cutting-edge technologies. Each webinar is complemented by a tutorial, code snippets, and a video.

MI2 strives to be an independent and neutral platform for exploring emerging technologies.

Register at http://mi2.live

Objectives

- The current state of the cloud
- The evolution of Edge
- Azure IoT Edge
- Use cases & scenarios
- Demo
- Summary

The Current State of Cloud

- Highly centralized set of resources
- Resembles 90s Client/Server computing
- Compute is going beyond VMs
  - Containers are becoming mainstream
- Storage is complemented by CDN
  - Static content is replicated and cached
- Network stack is programmable
  - SDN is enabling hybrid scenarios

Waves of Innovation

Cloud

Globally available, unlimited compute resources

IoT

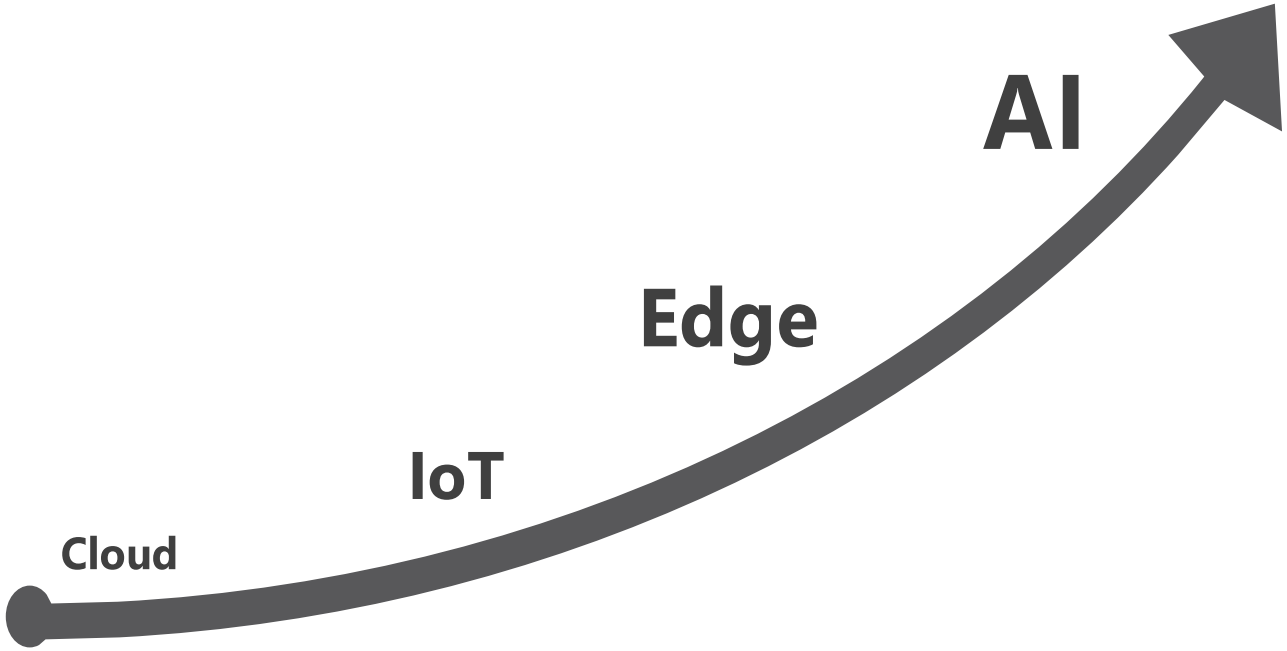
Harnessing signals from sensors and devices, managed centrally by the cloud

Edge

Intelligence offloaded from the cloud to IoT devices

AI

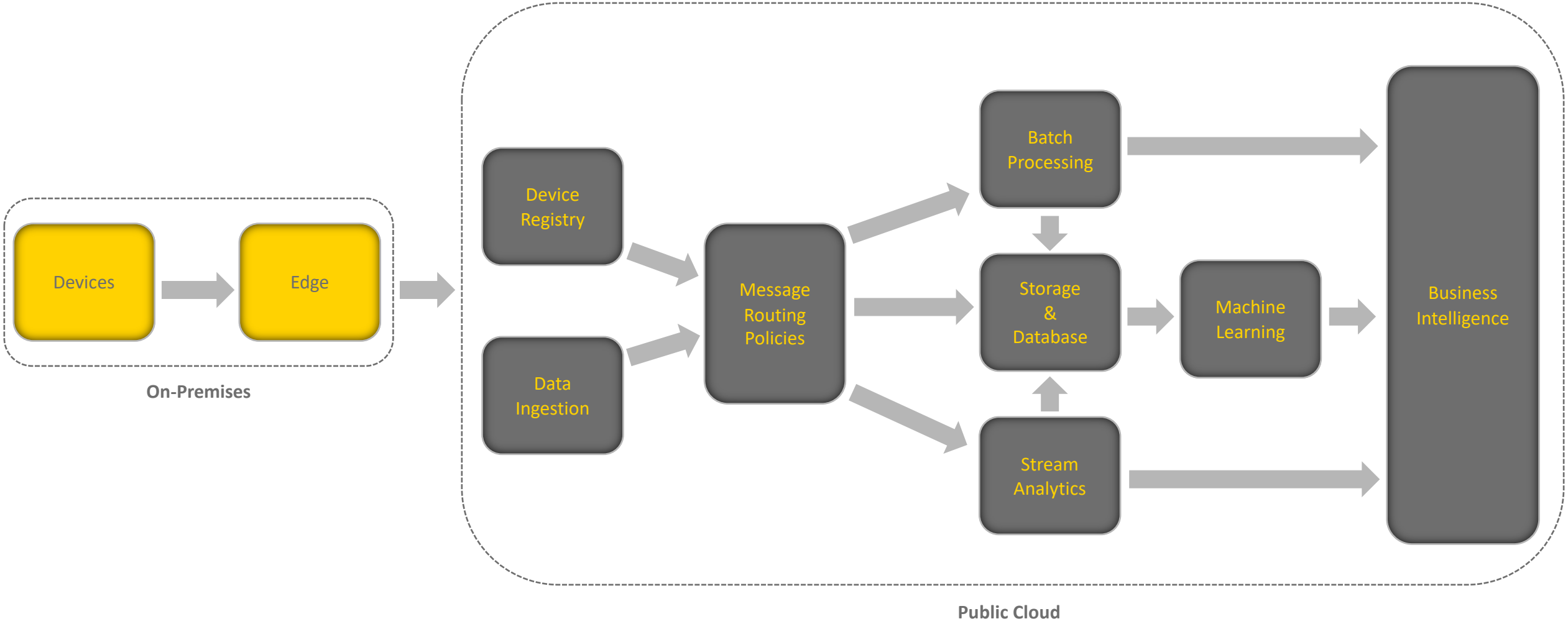
Breakthrough intelligence capabilities



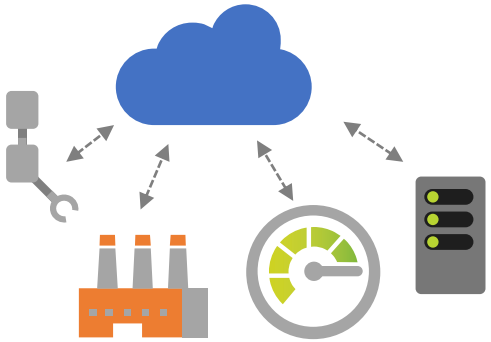
What is Edge Computing?

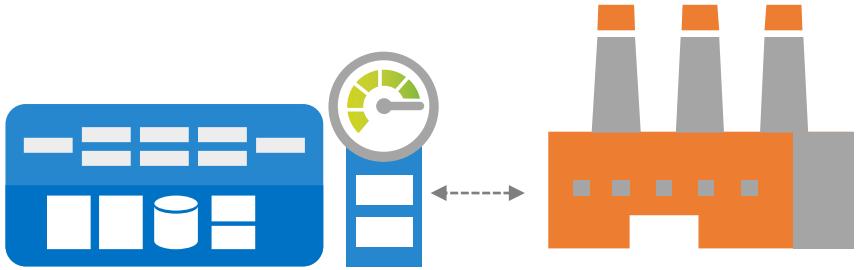
- Edge computing makes the cloud truly distributed
- Moves core cloud services closer to the origin of data
- Mimics public cloud platform capabilities
- Delivers local storage, compute, and network services
- Reduces the latency by avoiding the roundtrip to the cloud

The Big Picture of IoT Platforms



Why Edge Computing?





IoT in the Cloud

Remote monitoring and control

Merging remote data from across multiple IoT devices

Near infinite compute and storage to train machine learning and other advanced AI tools

IoT on the Edge

Low latency tight control loops require near real-time response

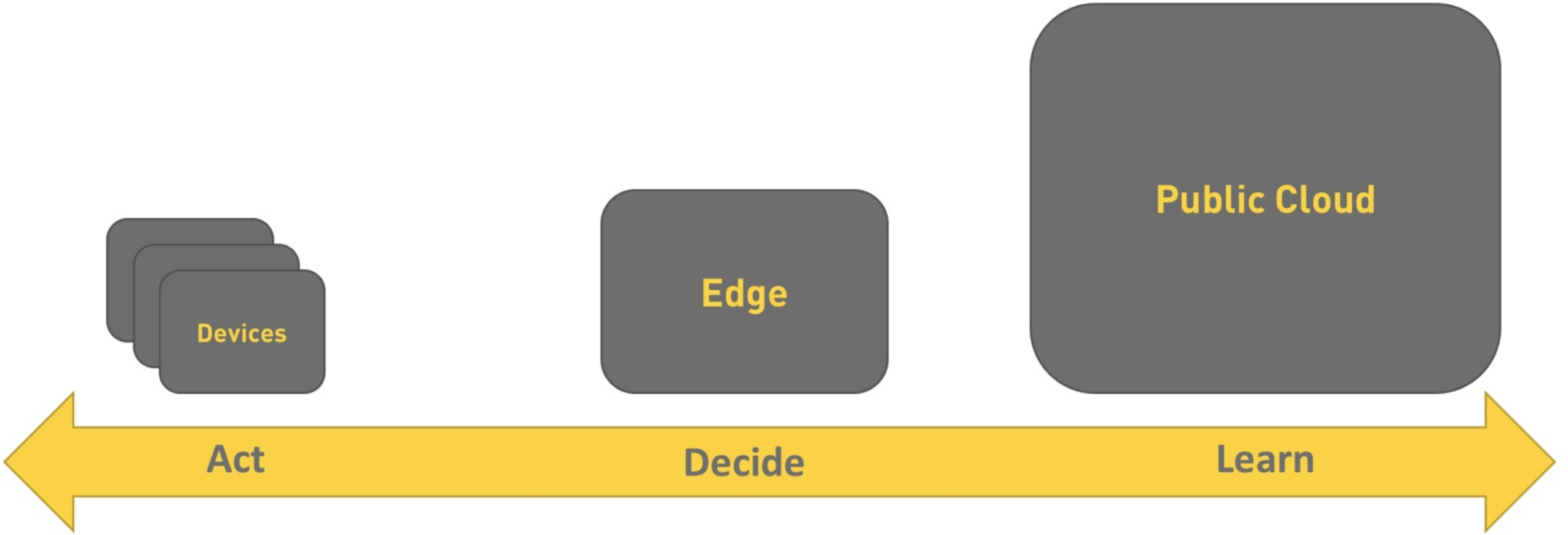
Public internet inherently unpredictable

Privacy of data and protection of IP

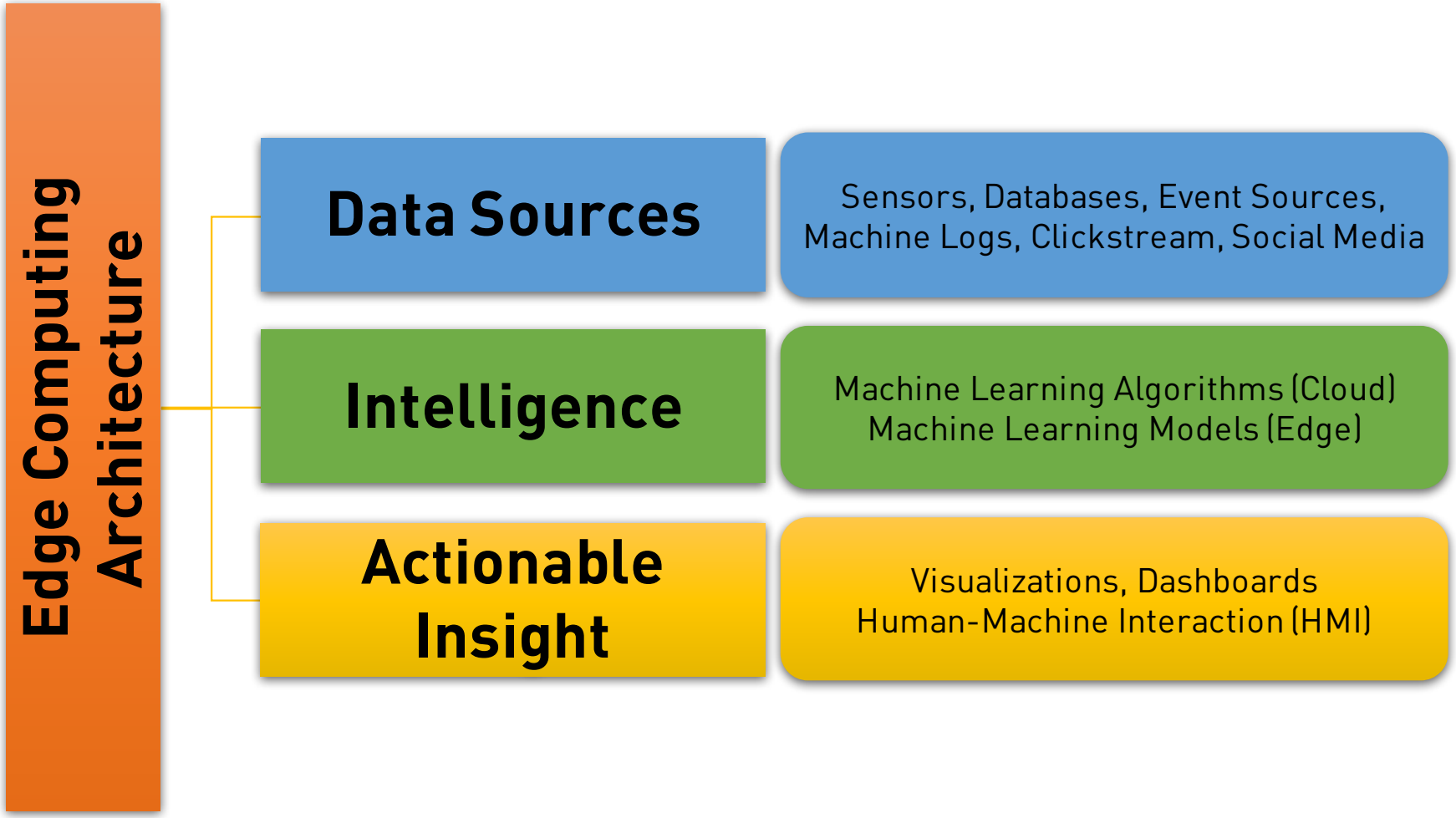
What Will Run at The Edge?

- Data Ingestion
- M2M Brokers
- Object Storage
- Functions as a Service
- NoSQL/Time-Series Database
- Stream Processing
- ML Models

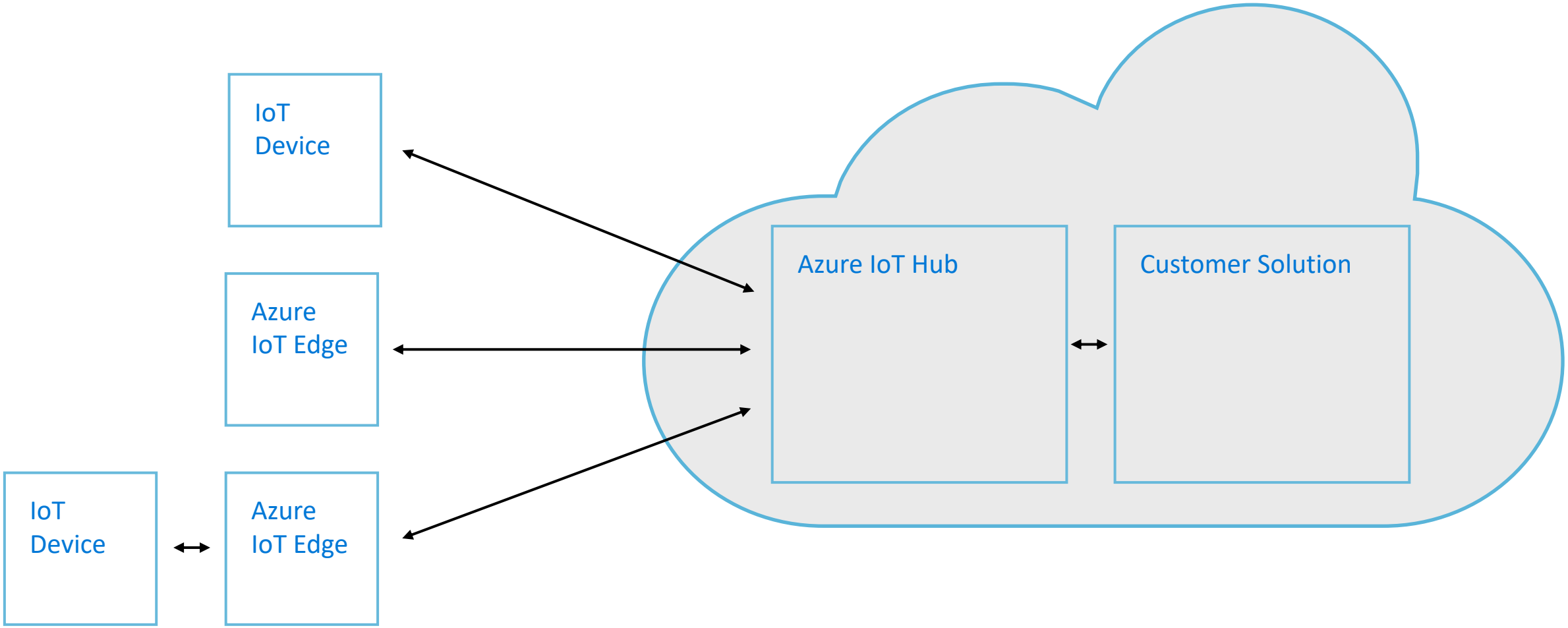
Edge Brings Intelligence to Devices



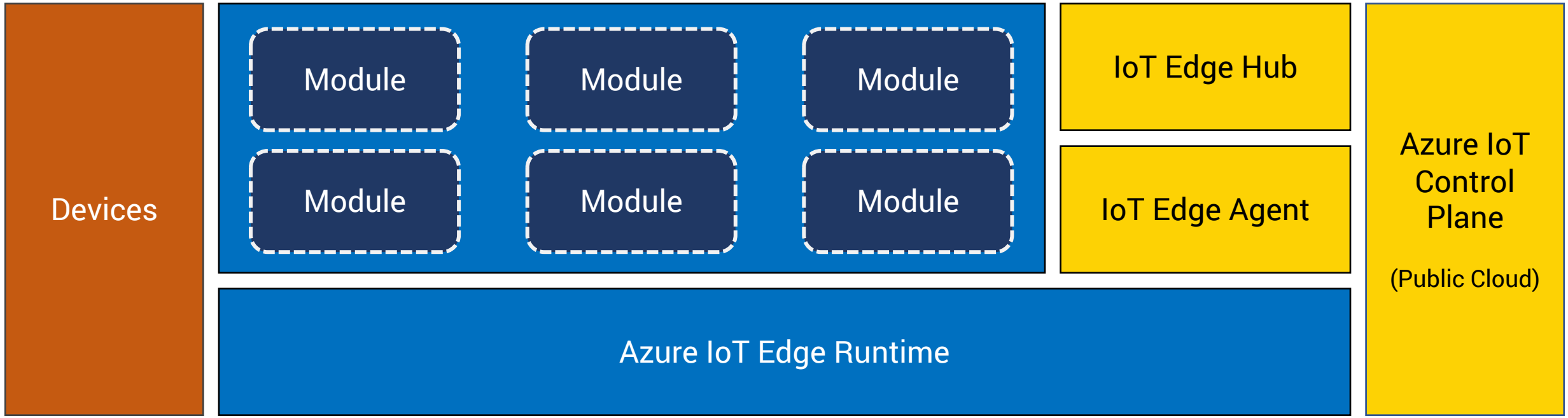
Edge Computing Architecture



Azure IoT - High level topology



Azure IoT Edge Architecture



What are we building?

- Create an Azure IoT Hub
- Create device identity for edge device (Raspberry Pi)
- Install Edge Runtime & Edge Hub
- Register edge device with Azure IoT Hub
- Build a module to control an LED matrix
- Deploy the module to the edge
- Update the module

DEMO

Configuring and Managing Edge Devices

Summary

- **Low-latency access**
  - Edge computing exposes compute, storage, and networking locally.
- **Reduced bandwidth consumption**
  - Edge layer aggregates and filters data by only ingesting what's needed to the public cloud.
- **Offline availability**
  - Applications that have intermittent access to the Internet and cloud can rely on local resources exposed by the edge computing layer.
- **Local ML inference**
  - Machine learning models that are trained in the public cloud are deployed at the edge for faster inferencing.

MI2 Sponsors

Next Webinar

Everything you want to know about Istio

Istio is an open source independent service mesh that provides the fundamentals you need to successfully run a distributed microservice architecture. It reduces complexity of managing microservice deployments by providing a uniform way to secure, connect, and monitor microservices. Attend this session to learn about the core building blocks of Istio service mesh.

Thursday, April 25th, 2019
9:00 AM PST / 9:30 PM IST

Register at http://mi2.live