Microsoft

WORKSHOP: Visual Anomaly Detection over multiple cameras with NVIDIA Jetson Nano devices

Emmanuel Bertrand, ebertra@microsoft.com
Paul DeCarlo, pdecarlo@microsoft.com

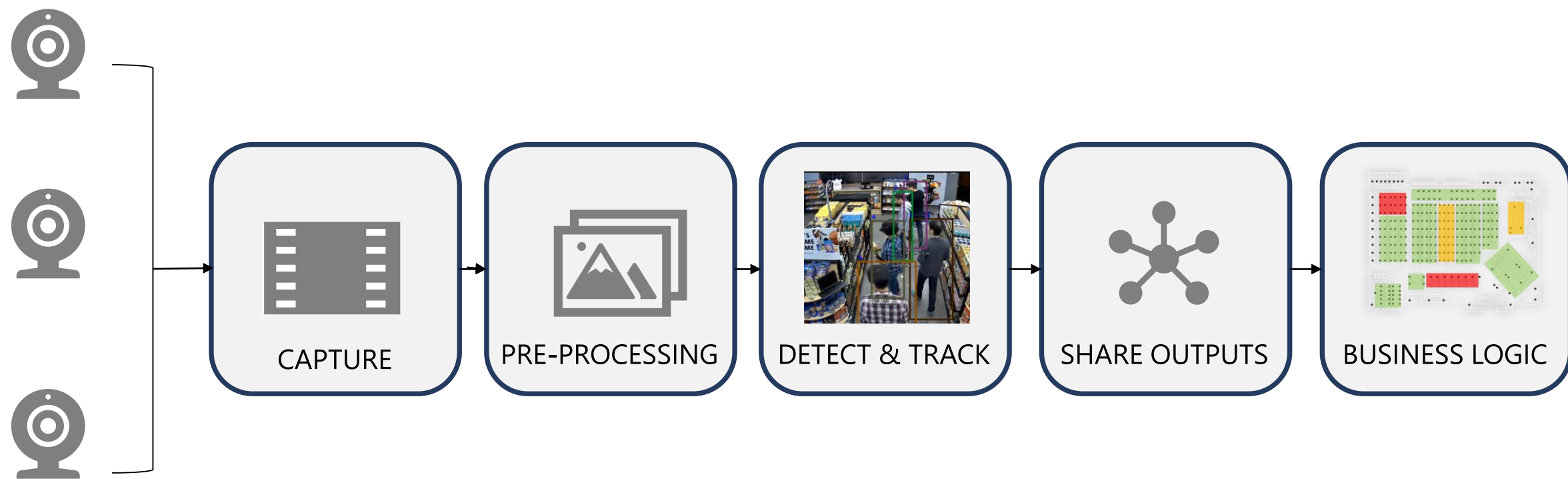# In IoT Computer Vision is about converting <u>Cameras</u> into <u>Sensors</u>
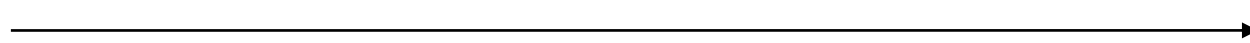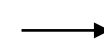
Retail

Industrial

Smart spaces

Shopper analytics

Workplace safety

Traffic

Loss prevention

Quality control

Access control

Shelf availability

Infrastructure inspection

Public safety

Anatomy of an Intelligent Video Analytics (IVA)

CAPTURE → PRE-PROCESSING → DETECT & TRACK → SHARE OUTPUTS → BUSINESS LOGIC
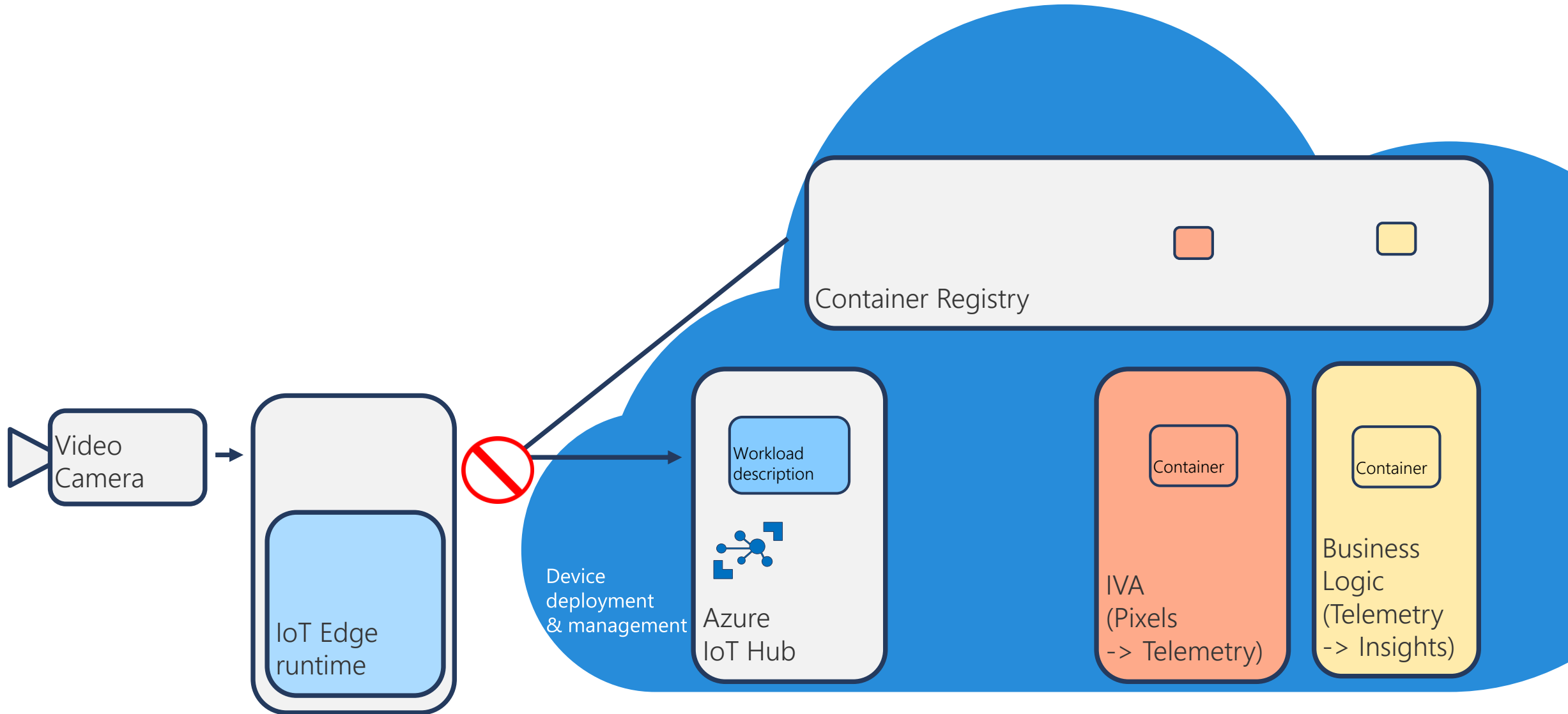
PIXELS ──────────→ TELEMETRY ──→ INSIGHTS

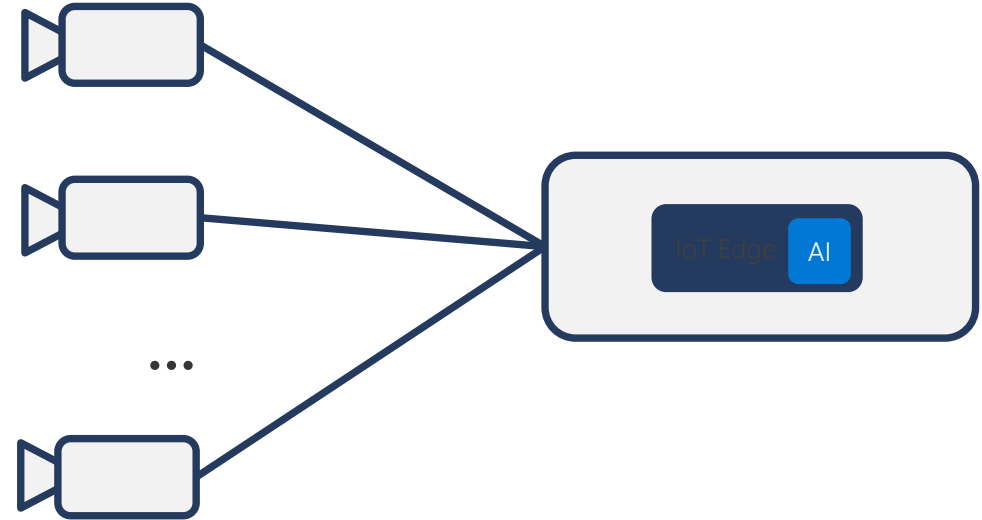# Deploy your IVA at the Edge to limit bandwidth usage

Use an intelligent camera or an intelligent gateway

Intelligent camera

- A handful of cameras per site
- Small internal bandwidth consumption
- Requires new cameras
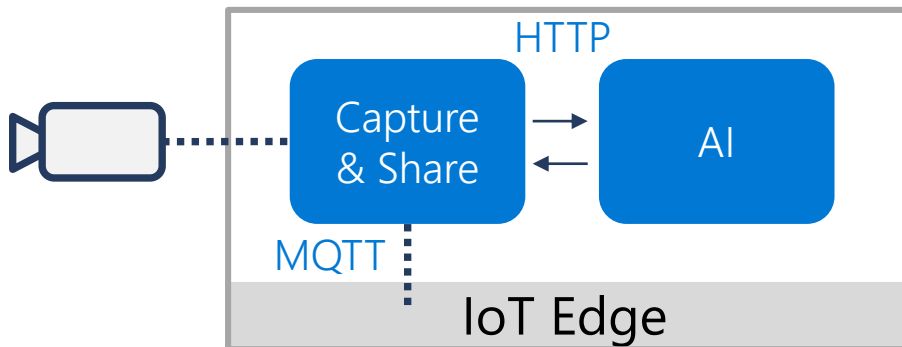- Requires AI capable cameras

Intelligent gateway

- Many cameras per site
- Heavy internal bandwidth consumption
- Works with existing CCTV networks
- Requires AI capable gateway

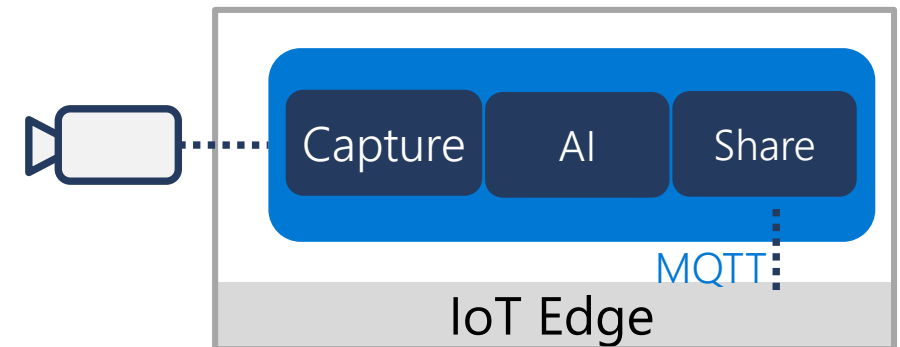# 2 architectures each with their trade-offs

Separate containers
Non real-time applications

+	• Simplicity • Modularity • Reusability (Edge/Cloud)
-	• Performances
ex	• Azure Cognitive Services

One modular container
Real-time applications

+	• Performances • Modularity
-	• Complexity
ex	• NVIDIA Deepstream

Azure IoT Central

A hosted IoT app platform that's secure, scales with you as your business grows, and integrates with your existing business apps

Get Connected

Connect IoT devices to the cloud faster than with any other platform

- Device connectivity and management
- Edge support
- Plug-and-Play
- End to End Security

Stay Connected

Reconfigure and update devices with centralized device management

- Telemetry ingestion and command & control
- Dashboards, visualization & insights
- Monitoring rules & triggered actions
- User roles and permissions

Transform

Bridge the gap with connectors and extensibility APIs

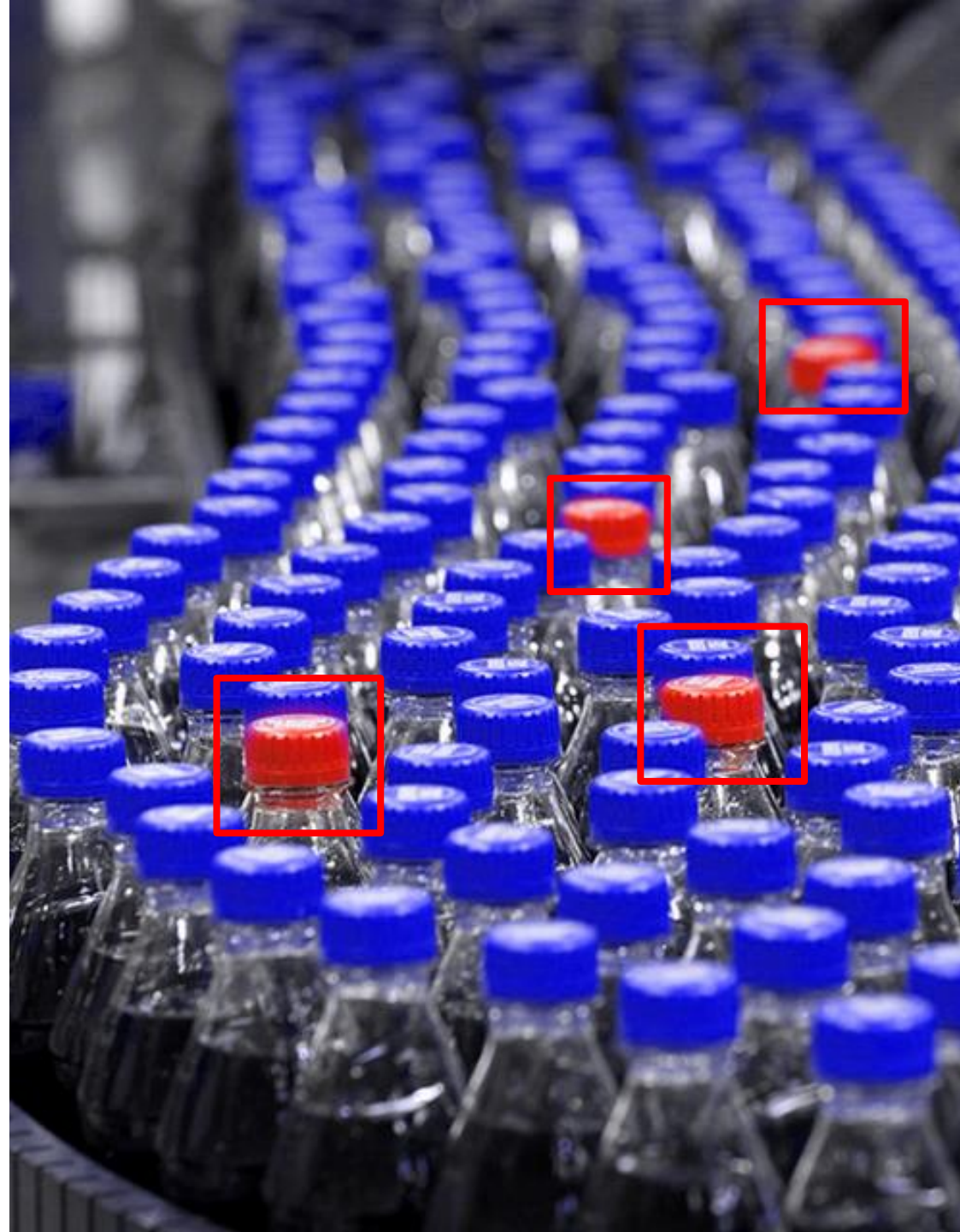- Industry-focused Application Templates
- White Labeling
- Multitenancy
- Extensibility & Customization IoT Central public APIs
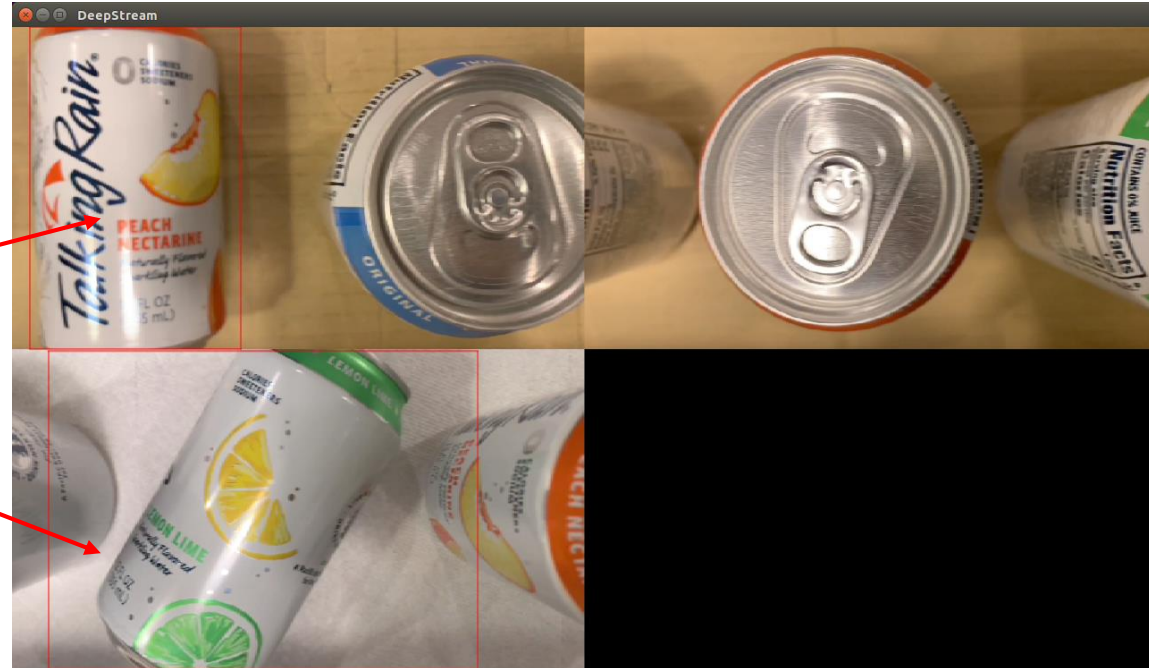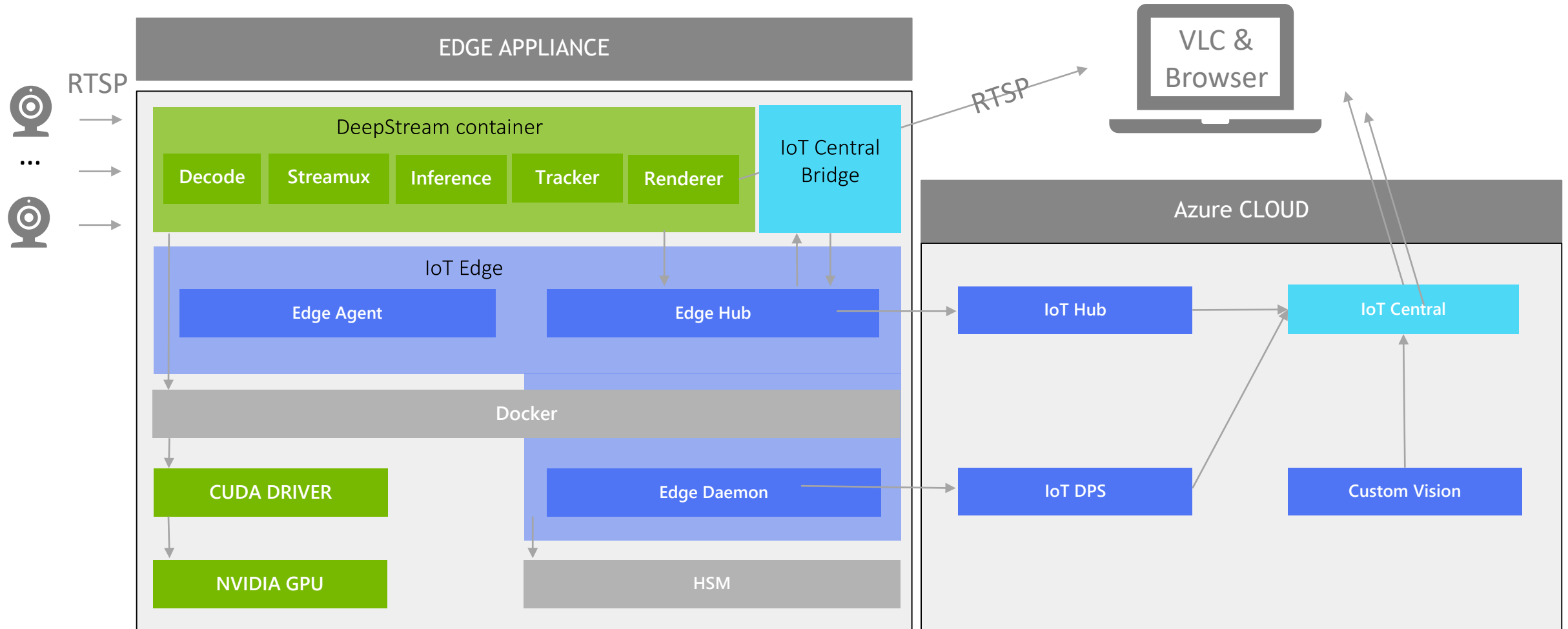
Workshop

Workshop use case

A soda can manufacturer wants to improve the efficiency of its plant. An improvement that he'd like to make is to be able to detect soda cans that fell down on his production lines, monitor his production lines from home and be alerted when this happen.
He has 3 production lines, all moving at a fairly quick speed.

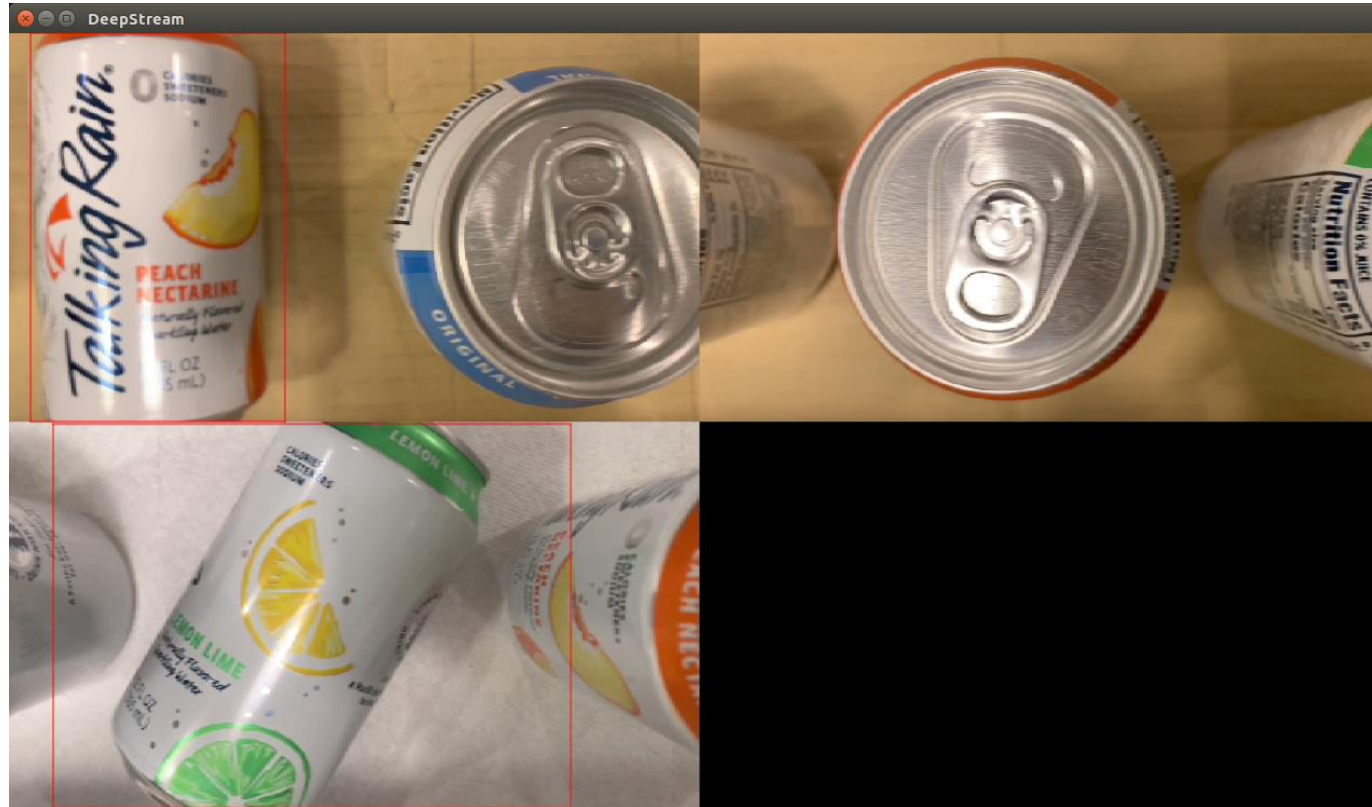**Down!**

Workshop solution overview

Workshop pre-requisites

- **NVIDIA Jetson Nano**
  - 5A power supply
  - Fan
  - Wifi or Ethernet
  - 32Gb SD card + reader
  - USB cable (MicroB->TypeA)

- **Laptop**
  - Browser
  - VLC

- **iOS or Android phone**
  - IP Camera Lite app

- **Azure subscription**

Get started!

Instructions: https://aka.ms/iotedge-iva-workshop

Thank you!

More content at:

https://aka.ms/jetson-on-azure

Contact us:

Emmanuel Bertrand, ebertra@microsoft.com
Paul DeCarlo, pdecarlo@microsoft.com