Empower Edge AI:

Sfruttare Kubernetes e la Magia dell'Open Source

Marco Dal Pino

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The future of edge computing: guided journeys

Manufacturing

- Predictive maintenance
- Field service
- Worker safety & loss prevention
- Factory automation & defect detection
- Incident response
- Automated supply chain & assembly

Smart City/ Buildings

- Security & surveillance
- Access control via custom command
- Energy management
- Transportation & traffic management
- Utilities management
- Monitoring & workplace safety

Automotive / Transportation

- Factory automation
- Cabin intelligence
- Driver distraction
- Passenger detection
- Conversational AI
- Command & control
- Sensor data efficiency

Retail

- Space & assortment
- Traffic patterns
- Personalization
- Inventory management
- Shrinkage reduction
- Optimal product placement

Healthcare

- Patient recognition & monitoring
- Supply chain & operational efficiency
- Identification of patient issues
- Waiting room prioritization
- Scheduling & reminders

Safety Scenario: worker under heavy load in motion

Ready-to-use Azure Computer Vision Spatial Analysis

Robust AI under harsh conditions

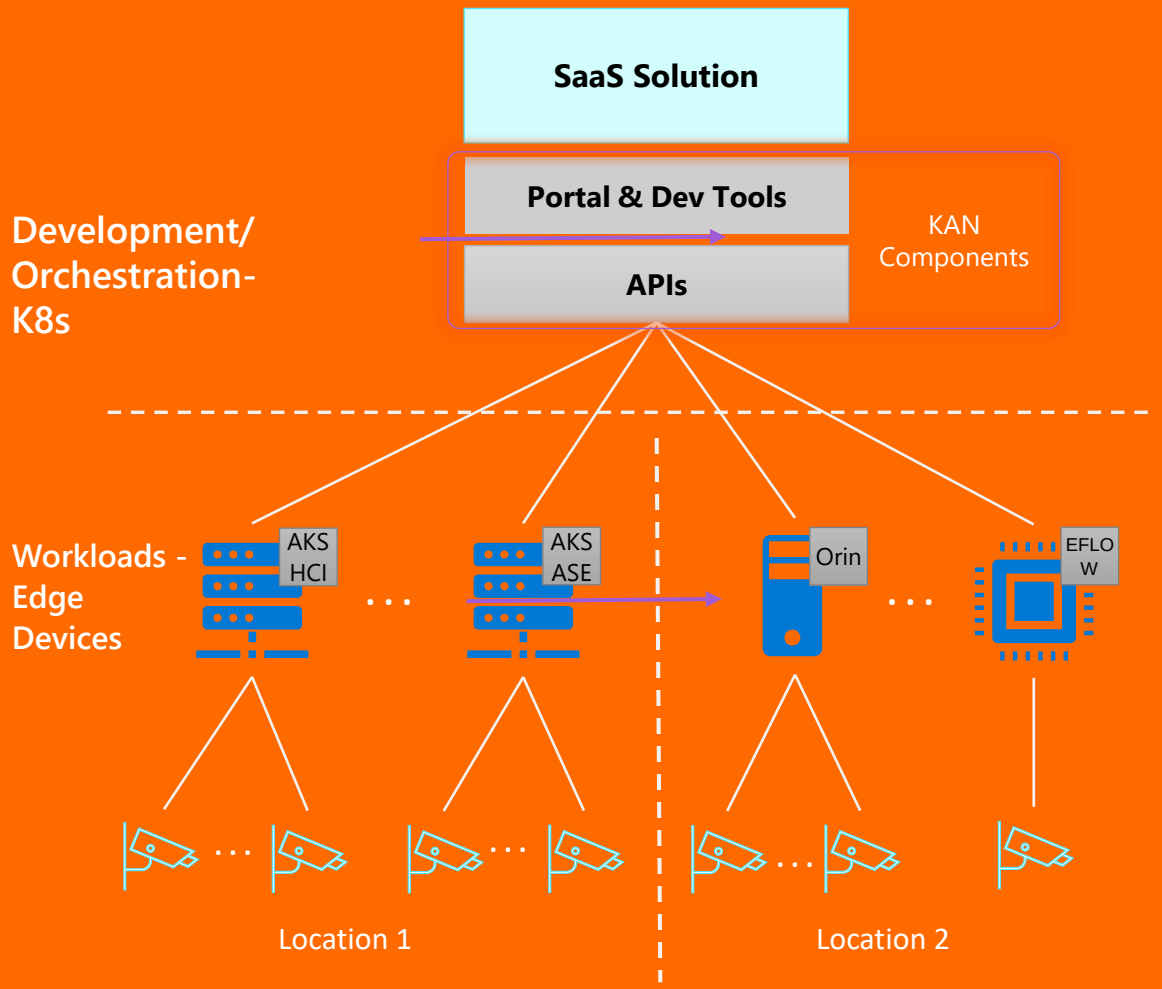
Alert fired: Dangerous condition, worker under heavy moving object

Multiple **moving object** detection

Fine detail detection

KubeAI Application Nucleus for the edge (KAN)

Open-source Edge AI accelerator



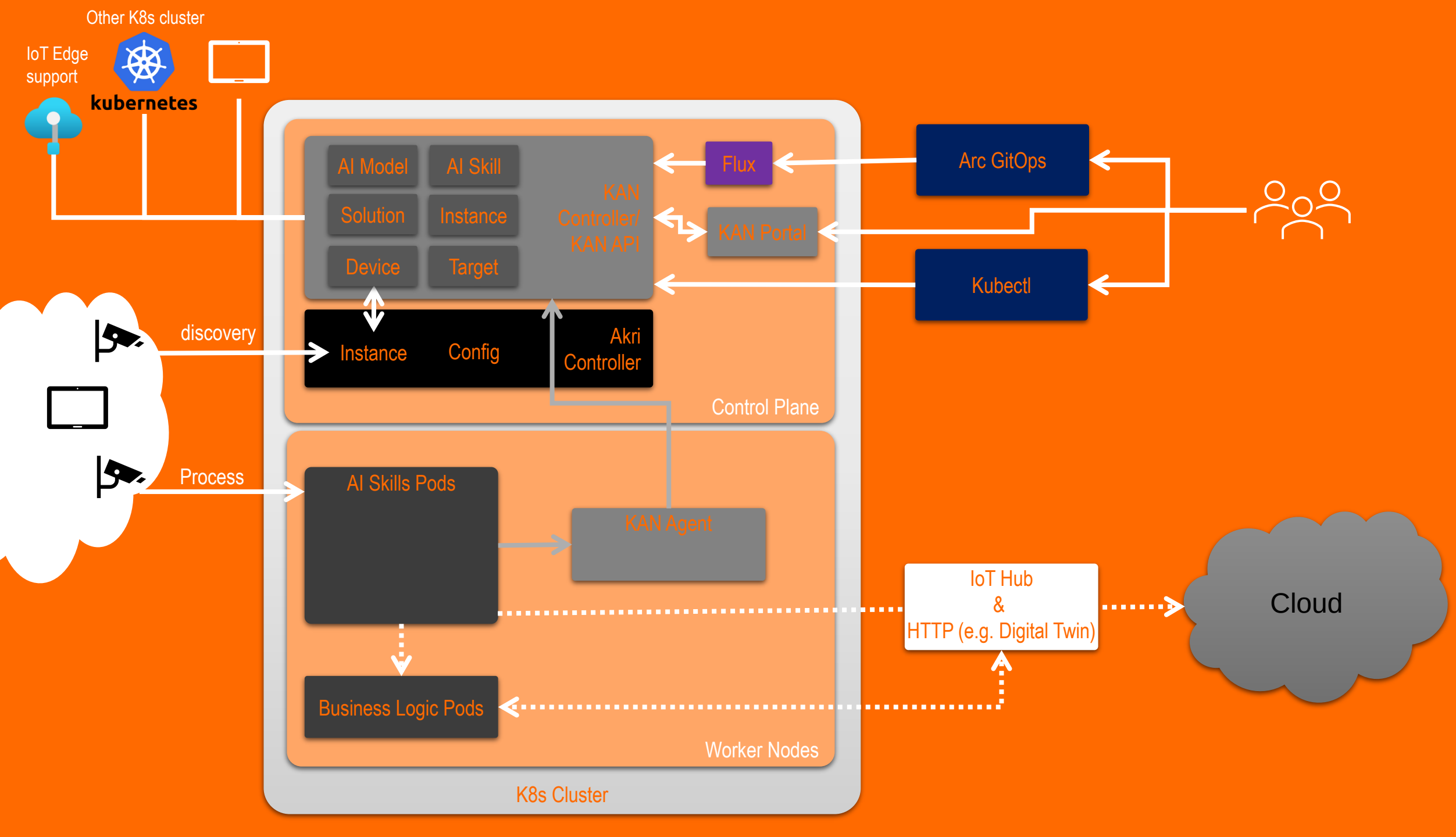
AI Apps & Assets are represented/projected and managed as Kubernetes objects

AI Apps are running on many different type of edge devices, generating insights from sensor data that can be sent for actions, aggregation and reporting to the location of your choice:

- Locally, other edge devices or Azure

Can be

- K8s Clusters (ex. AKS-HCI),
- K3s Clusters (ex. AKS-lite)
- IoTEdge Devices (DDK, EFLOW, Percept VM)
- Testing with smaller form factors (MCU grade Cortex-M7)


Other K8s cluster
IoT Edge support
kubernetes
AI Model
AI Skill
Solution
Instance
Device
Target
KAN Controller/ KAN API
Flux
KAN Portal
Arc GitOps
Kubectl
discovery
Instance
Config
Akri Controller
Control Plane
Process
AI Skills Pods
KAN Agent
Business Logic Pods
Worker Nodes
K8s Cluster
IoT Hub & HTTP (e.g. Digital Twin)
Cloud

KAN DEMO

- Home
- Compute Devices
- Cameras
- Models
- AI Skills
- Deployments

Utilize the Power of Edge AI

A low-code, no-code experience to easily build, deploy, and manage Edge AI solutions.

Add compute device

Connect your own device to power your solution

Add >

Connect video feed

Add and configure your choice of camera streams

Connect >

Add a model (optional)

Use models to detect and classify objects in your streams

Add >

Build an AI skill

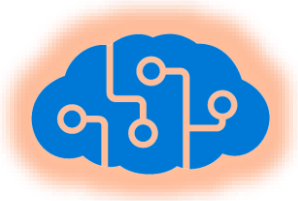
Transform your unstructured streams into structured insights

Build >

Deploy!

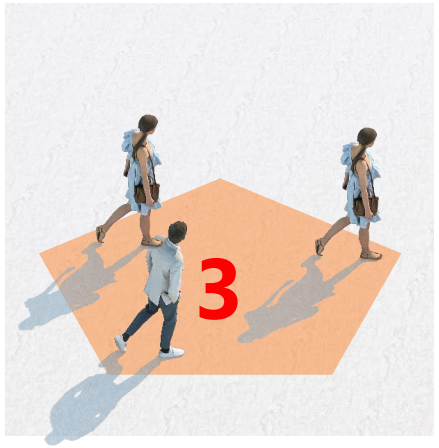
Connect your AI skills to your compute devices and cameras

Deploy >



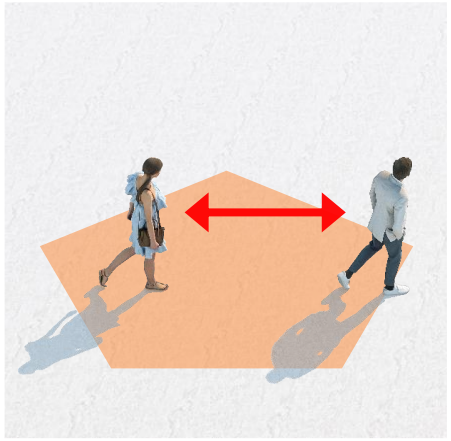
Edge AI Skills: People and Vehicle Detection/Tracking

Vision Platform Primitives

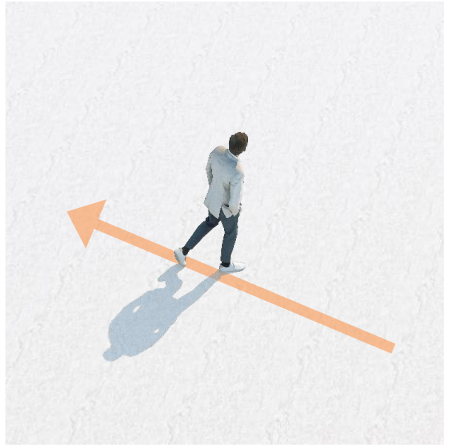


Person Count in a Polygon

Person Crossing In/Out of a Polygon



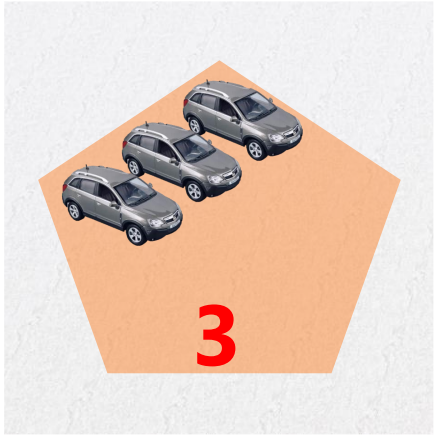
Social Distance Threshold



Person Crossing Directional Line - Entry/Exit

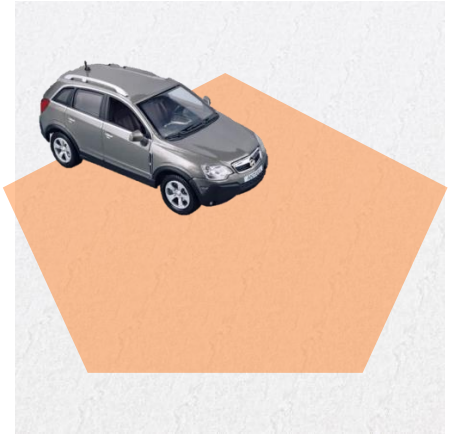
Person Classification (PPE or Uniform Classification)

Vehicle in Polygon



Vehicle Count

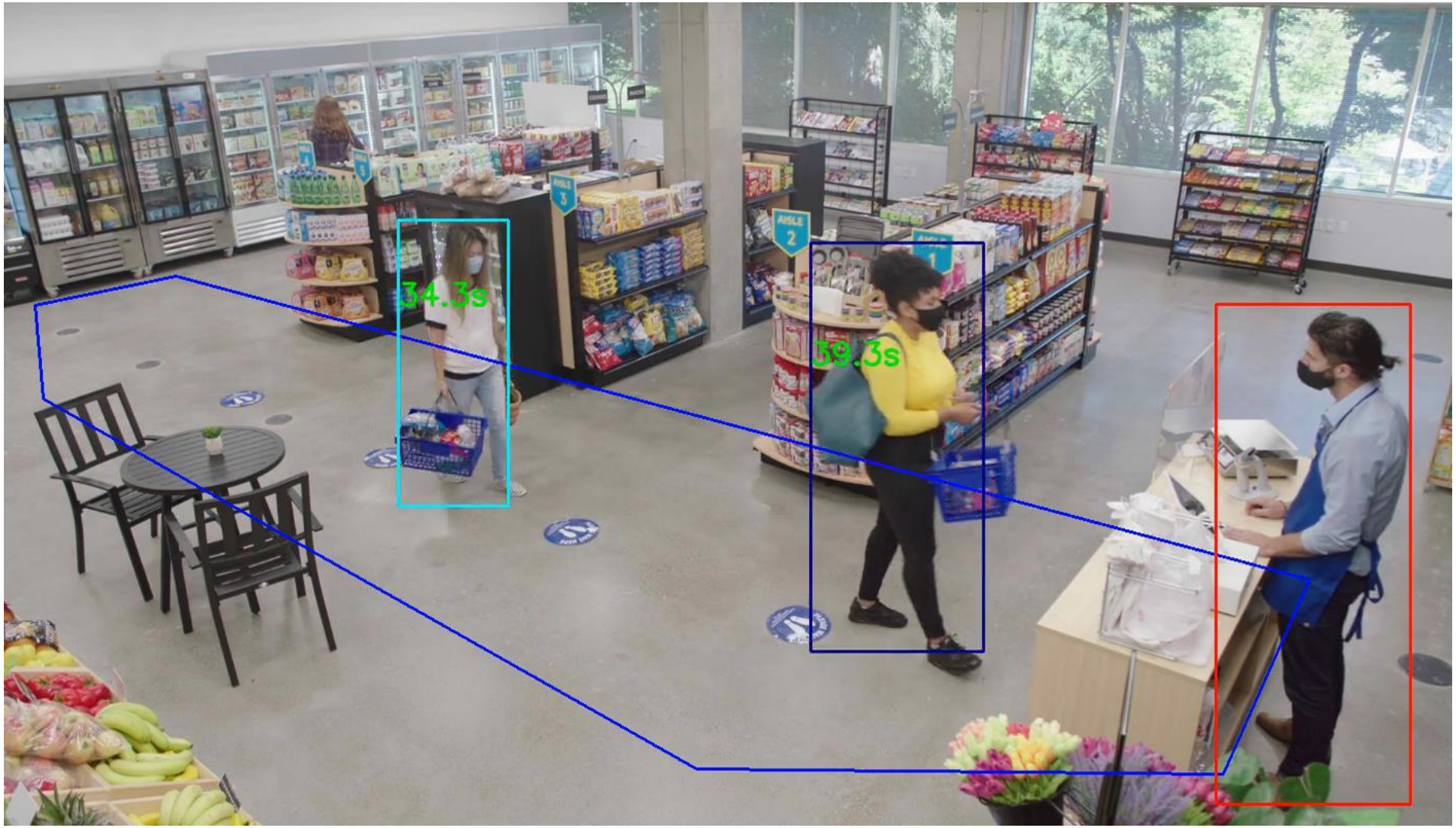
Person Near Moving Vehicle



Vehicle Type Classification

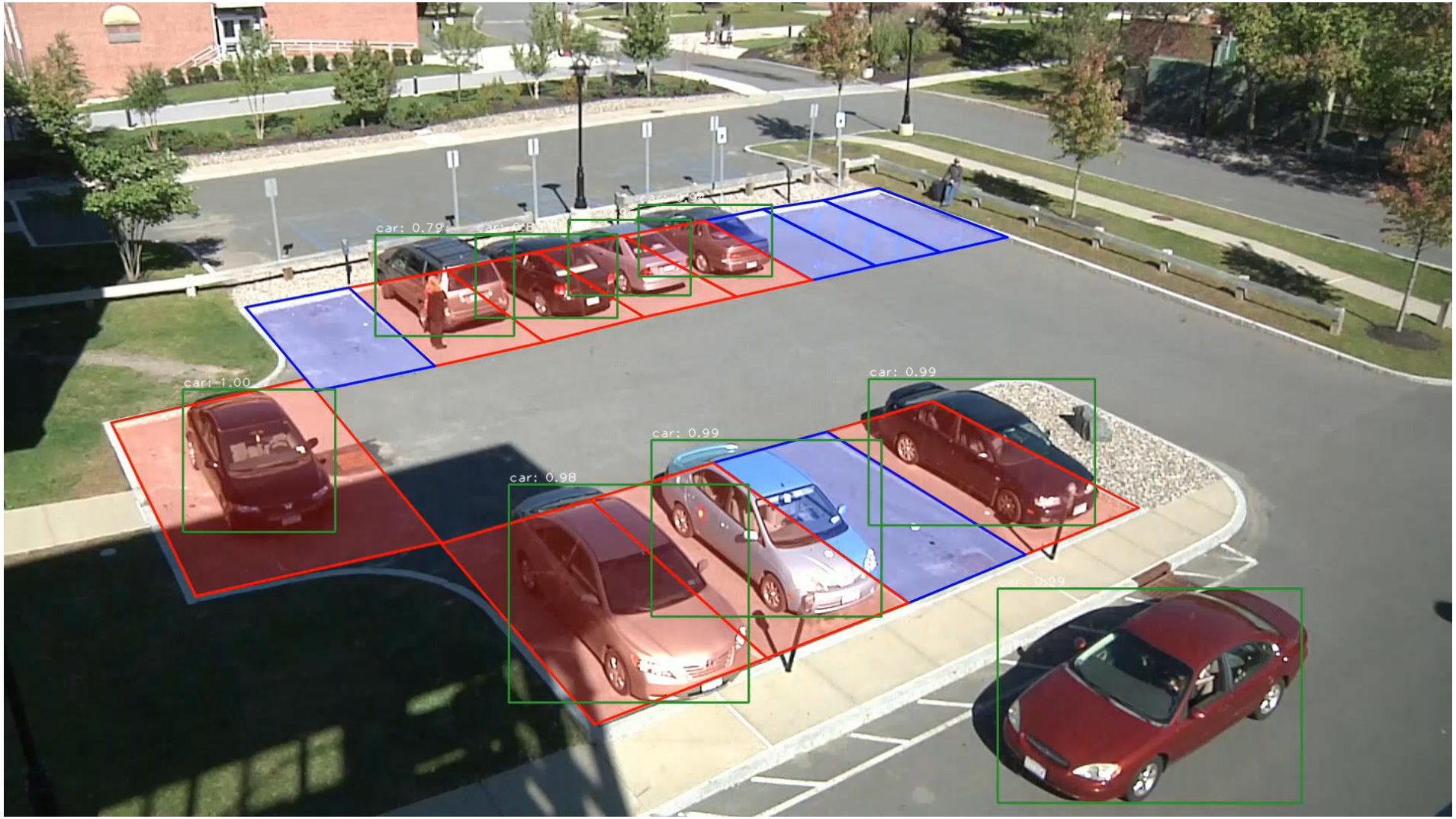
People Detection and Tracking

Wait/Dwell Time Tracking

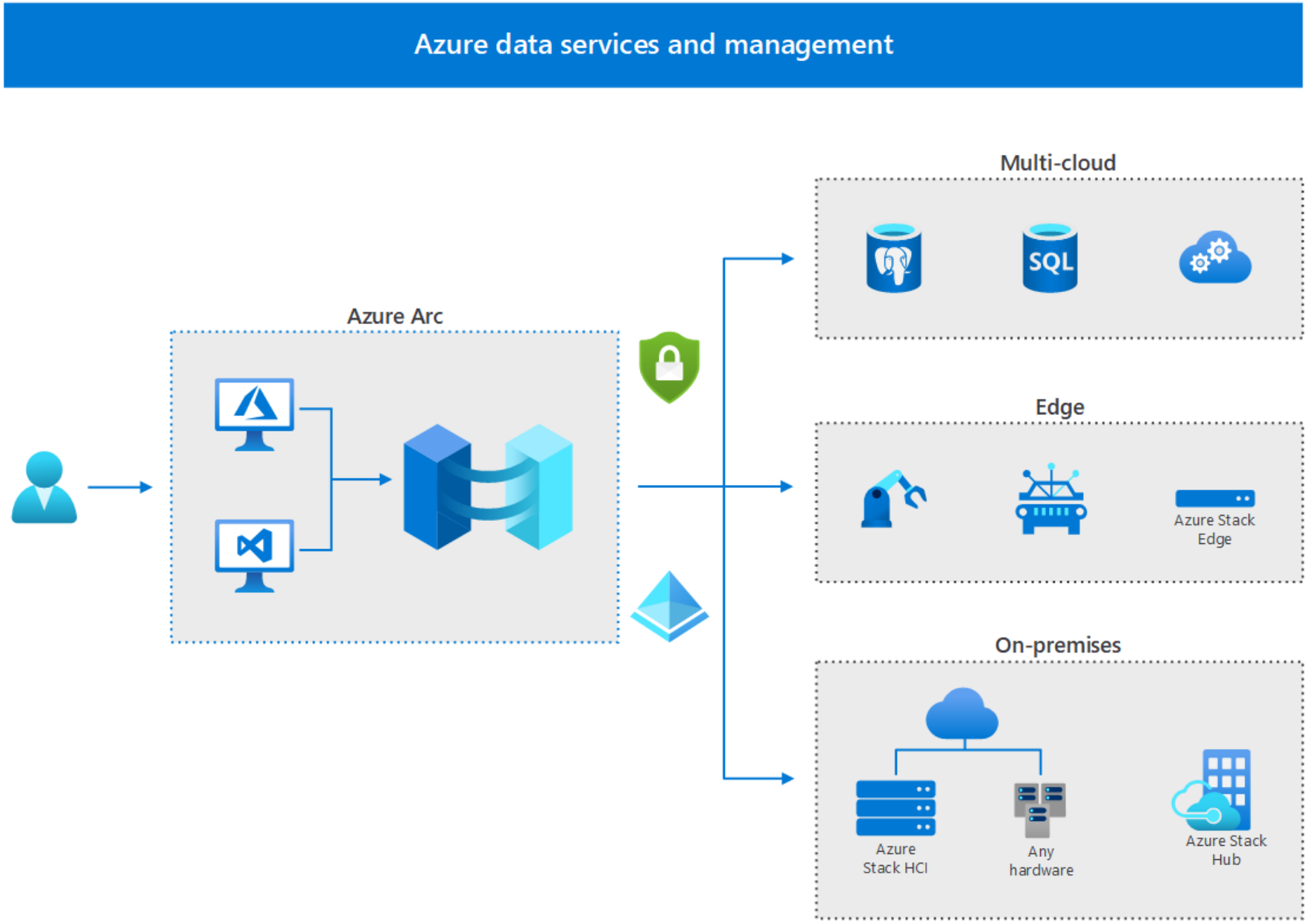


Vehicle Detection

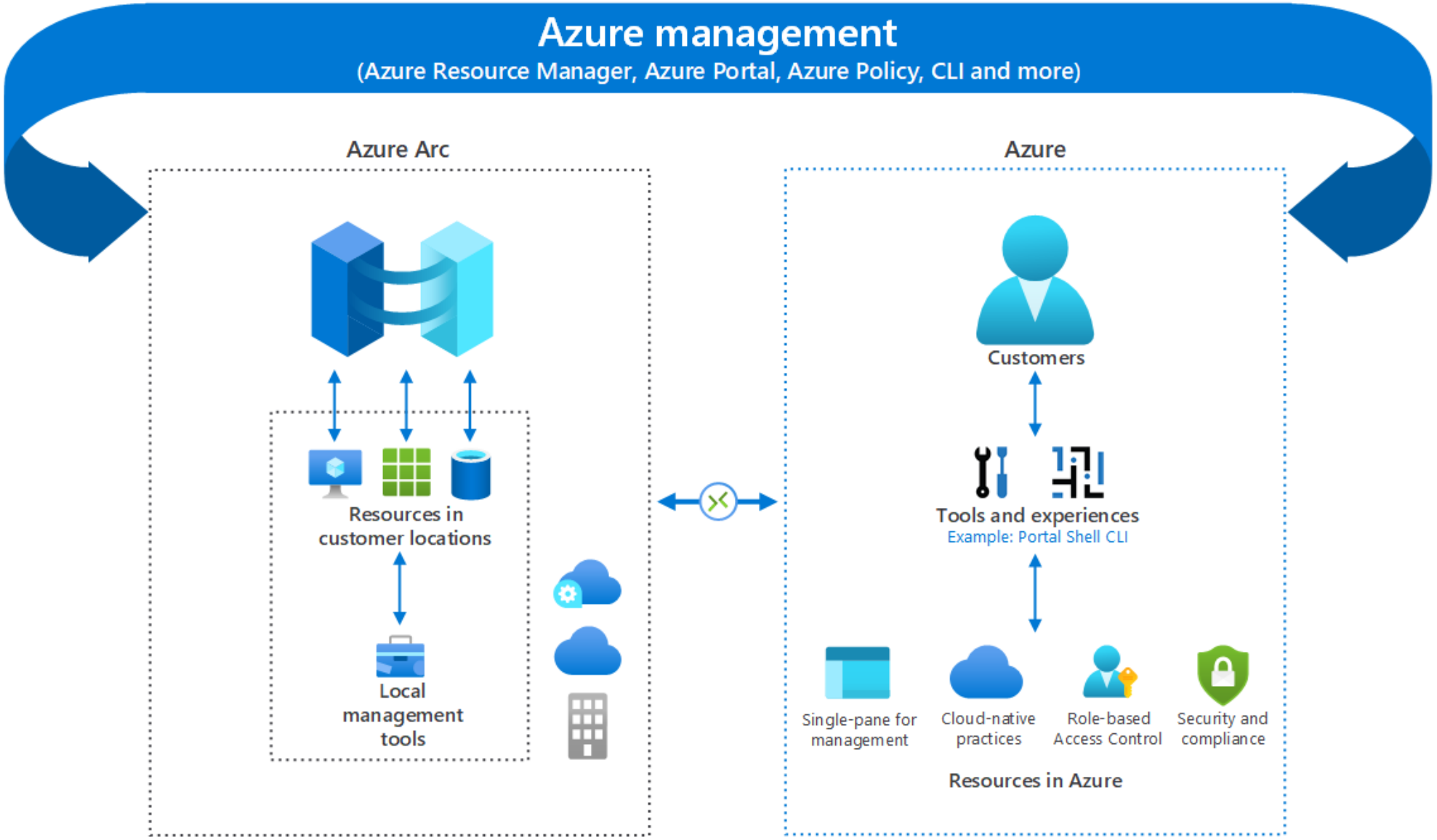
Parking Lot - Curbside & Vehicle in Zone



Azure Arc


Azure data services and management
Multi-cloud
SQL
Azure Arc
Edge
Azure Stack
Edge
On-premises
Azure
Stack HCI
Any
hardware
Azure Stack
Hub

Azure Arc


Azure management
(Azure Resource Manager, Azure Portal, Azure Policy, CLI and more)
Azure Arc
Resources in customer locations
Local management tools
Azure
Customers
Tools and experiences
Example: Portal Shell CLI
Single-pane for management
Cloud-native practices
Role-based Access Control
Security and compliance
Resources in Azure

Announcing – Arc Jumpstart vNext

Azure Arc Jumpstart

Resources

Learn about Azure Arc

Azure Arc | Microsoft Learn

Overview | Azure Arc Jumpstart

Azure Arc-enabled data services | Microsoft Learn

Introduction to Kubernetes compute target in Azure Machine Learning - Azure Machine Learning | Microsoft Learn

Azure Video Indexer

Form

Azure Video Indexer – Video Analyzer for Media | Microsoft Azure

Azure Computer Vision

Computer Vision | Microsoft Azure

What is Spatial Analysis? - Azure Cognitive Services | Microsoft Learn

KubAI Application Nucleus for edge (KAN) - blog GitHub IoTShow

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- 30+ years in IT (Developer, Architect, Consultant, PM, Trainer, MCT)
- Speaker, Community addicted
- IoT Influencer

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