

Telco and Cloud Convergence at the Edge

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Agenda

Market Dynamics

Integrated Mobile Edge Computing Solution Overview

MobiledgeX Platform

Use cases for MEC Application Platform

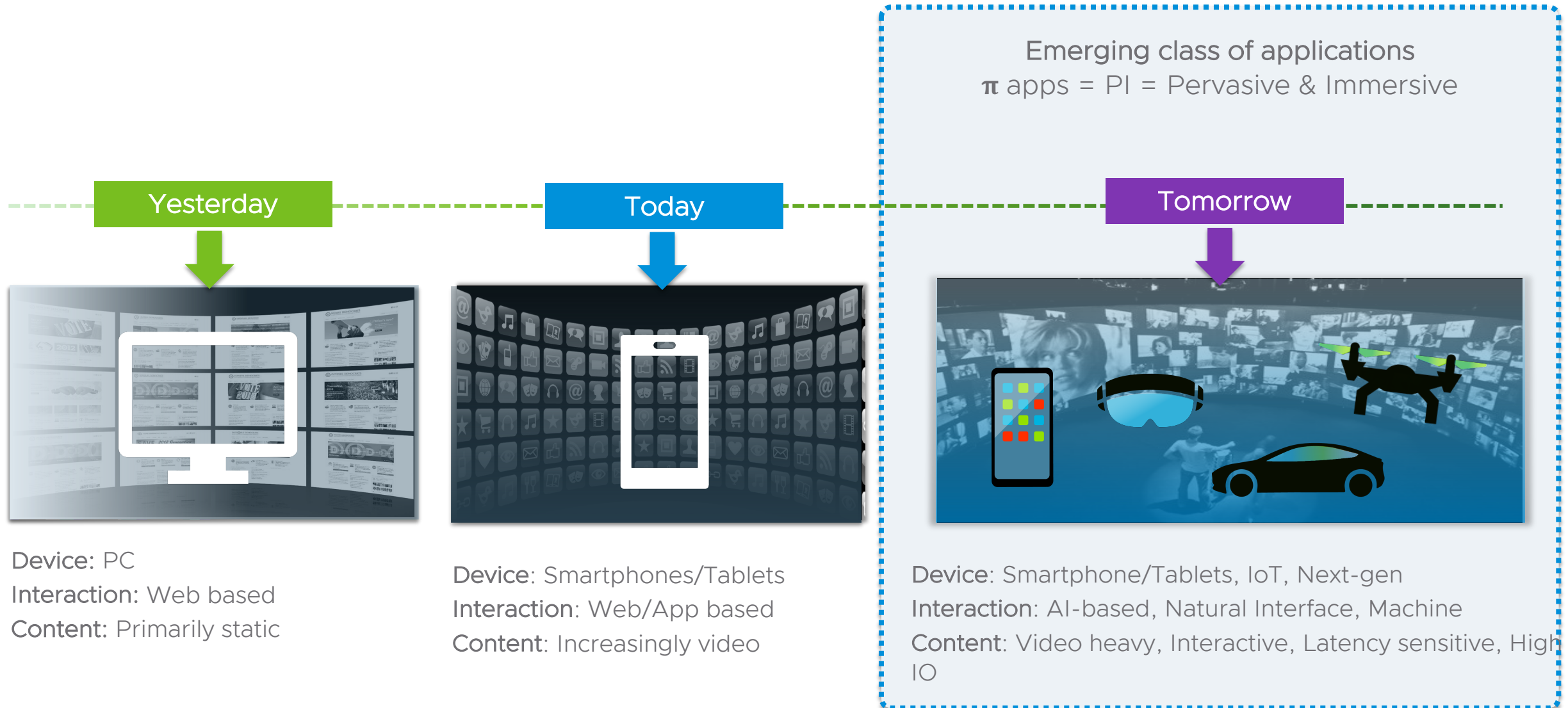
VMware Telco Cloud for MEC

Market Dynamics






Opportunities and Challenges

Applications that need Edge

Pervasive and Immersive



Telco Edge Drivers

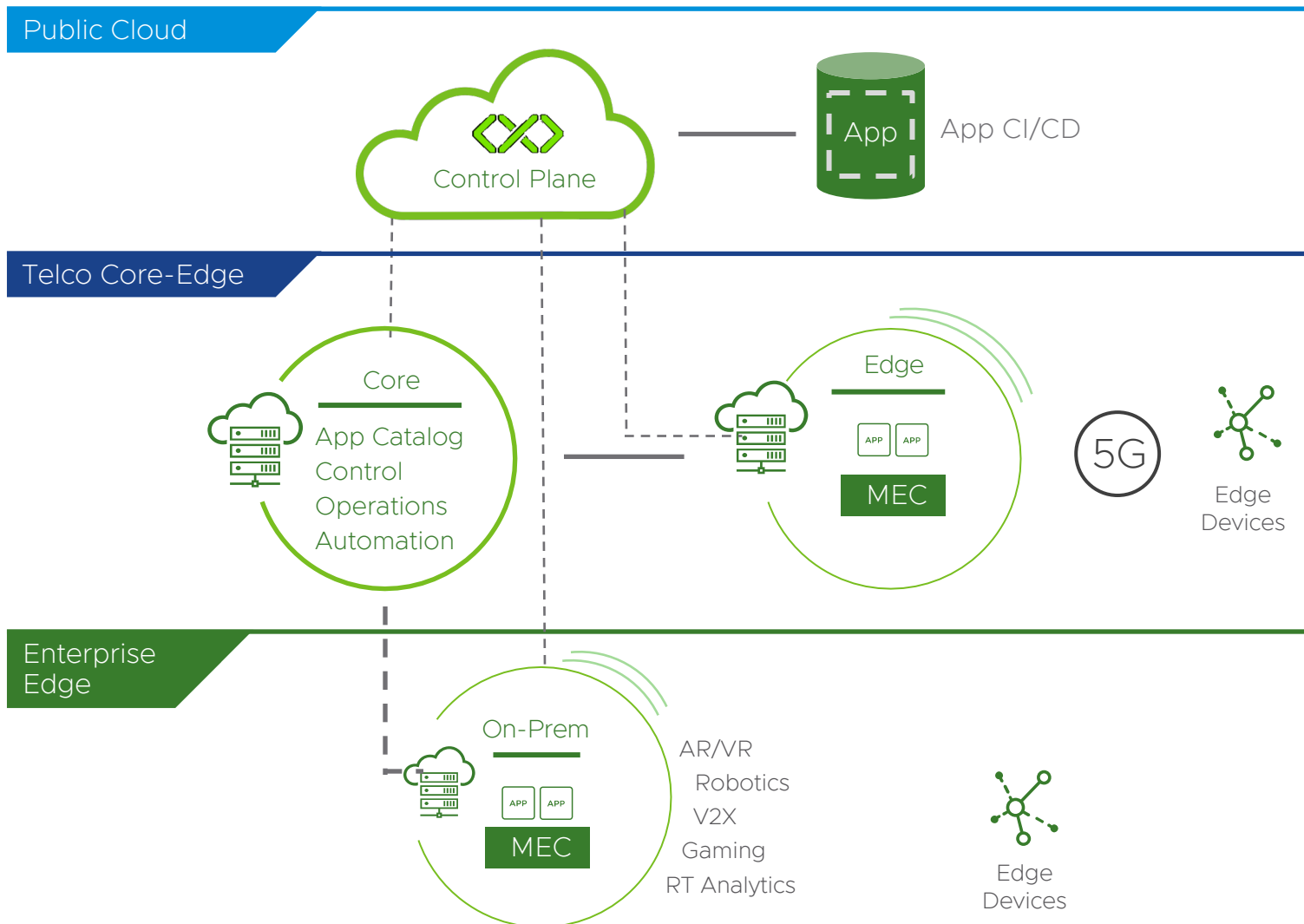
	 Location Based Services	 AR / VR	 Video / Media streaming	 Drones	 Data processing / Analytics
Why CSPs are moving to the Edge	Real-time analysis of location data	Offload processing power / Real-time interaction	Live streaming and capacity bursting	Autonomous Navigation	Reduce backhaul cost of moving data to central cloud
Low Latency	✓ ✓	✓ ✓ ✓	✓ ✓	✓ ✓ ✓	✓
Heavy I/O	✓ ✓ ✓	✓ ✓ ✓	✓ ✓	✓ ✓	✓ ✓ ✓
Geo-Spatial				✓ ✓	
Hyper-Local Grouping			✓	✓ ✓ ✓	✓
Data Residency	✓ ✓	✓ ✓		✓ ✓	✓ ✓

Integrated Mobile Edge Computing Solution Overview

Pre-validated Solution Delivering Instant Value

Mobile Edge Application Delivery through Service Providers

Application Instances Deployed in Distributed Telco Edges and On-Premise



Target

AR/VR, Gaming, Industrial/Environment, Analytics, Content Delivery, Security, V2X, UC

Solution

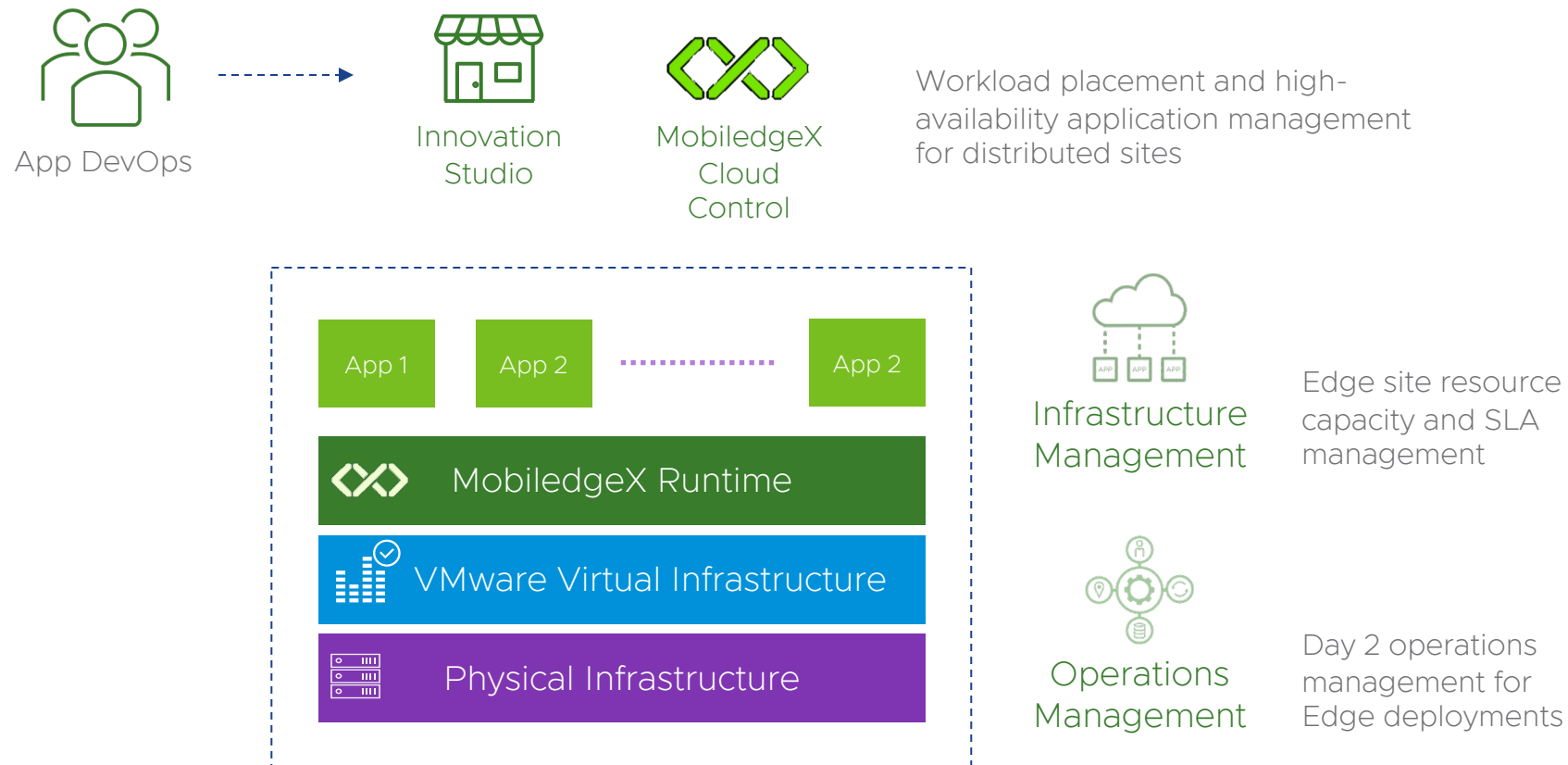
- Edge computing delivered from the Telco Edge or On-Premise
- Edge offload for low-latency, real-time applications; 5G experience
- Multi-carrier federated Edge Application platform
- Generic 5G App Architecture capable of self monitoring and scaling
- Open application developer marketplace
- Capability and contextual aware application placement - location, geospatial, security, identity, traffic
- Centrally managed and operated
- Data residency to meet regulatory GDPR

Partners

MobiledgeX, WWT, ISVs (for MEC Apps)

Joint Integrated MEC Solution for Telco Edge Deployments

Hardware to Software Infrastructure to MEC Applications to Operations



Full End to End
Managed Lifecycle
Deployment

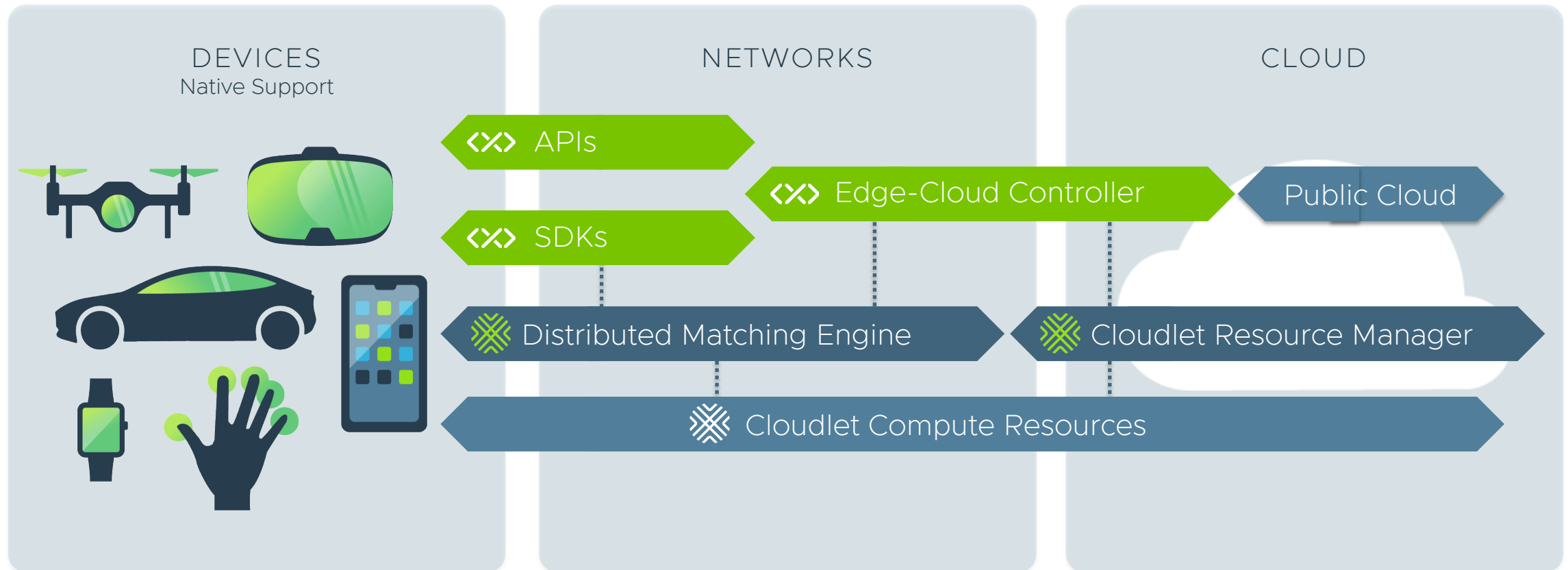


MobiledgeX Platform

Capabilities, Architecture, and Solution Construction

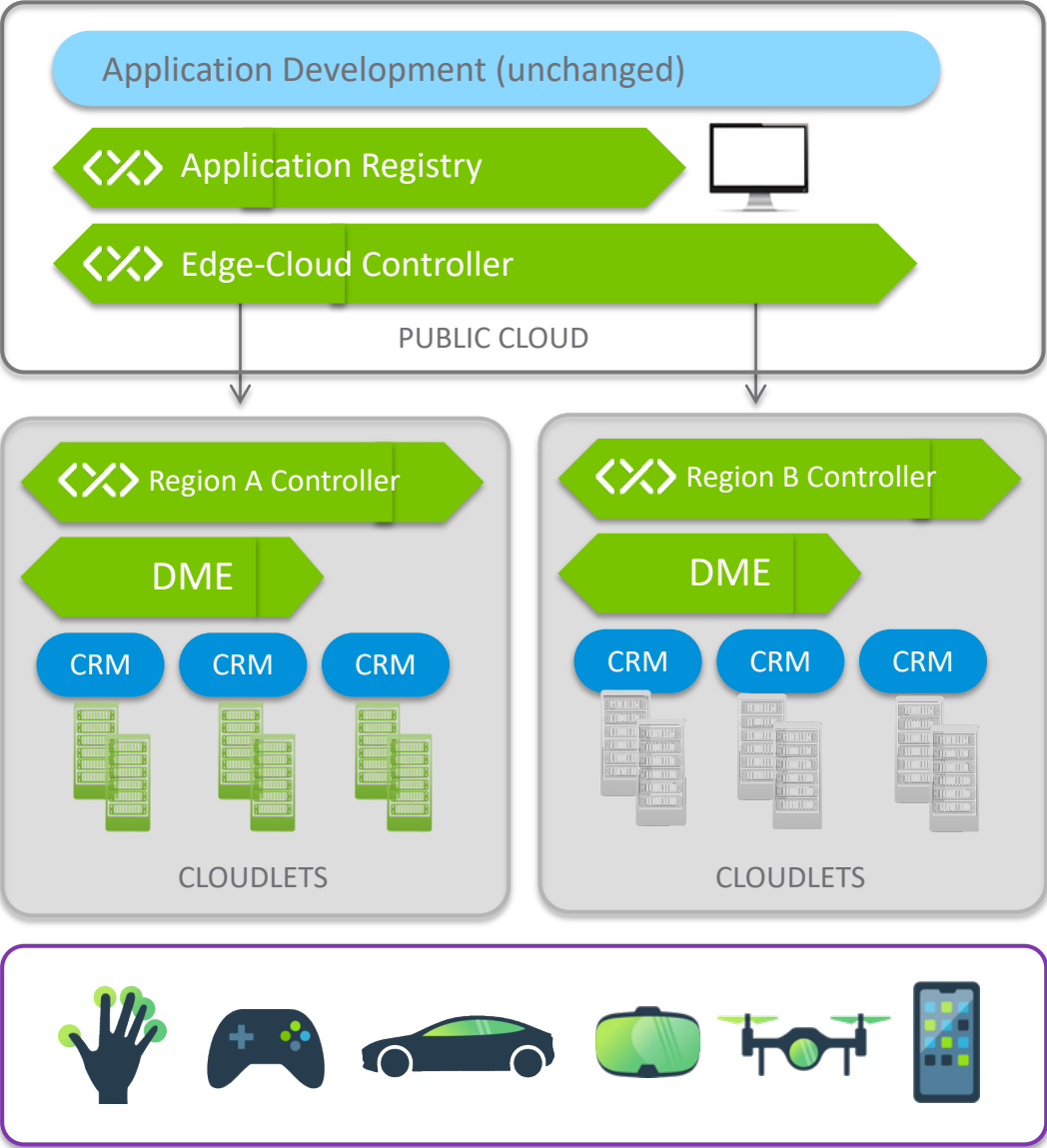
The MobileEdgeX Edge-Cloud

Cloud Operations Primitives



Distributed Federated Kubernetes

Privacy-Centric Cross-Domain Orchestration



One Distributed Federated Global Control Plane

Developer and Operator enablement Edge-Console, introspection, settlement, global policies, applications registry.

1K Regions – Per Region Control Plane/Matching Engine

Country/Operator Specific Edge-Cloud Service, User/Device specific data stays here, local compliance and policies

10K Cloudlets – Per Cloudlet IaaS and Resource Manager




Compute and Specialized Infrastructure – Application Run-time, status, instantiation, performance, usage, etc.

20-100M Devices Across Planet Discovering Edge

Devices enabled with Edge-Cloud SDK discover and request resources for specific Edge enabled applications

MobiledgeX Edge-Cloud R2.0 – April 2020

MobiledgeX Edge-Cloud R2.0 aggregates edge processing power across multiple enterprise on-premise and telecom operator network locations and presents them through one common interface that enterprise developers and operations can use to design, deploy and manage their applications.

		
Independent Software Vendors Faster time to market/revenue with local execution and global distribution	Cloudlet Operating Partners Accelerated monetization of existing edge investments with maximized yield	Application Developers Cloud-native development with simple (policy-based), scalable deployment



Unified Self-Service Console



Distributed Matching Engine (DME)



Declarative Autonomous Deployment



Support for Enterprise-Class Applications



Orchestration and Application Deployment

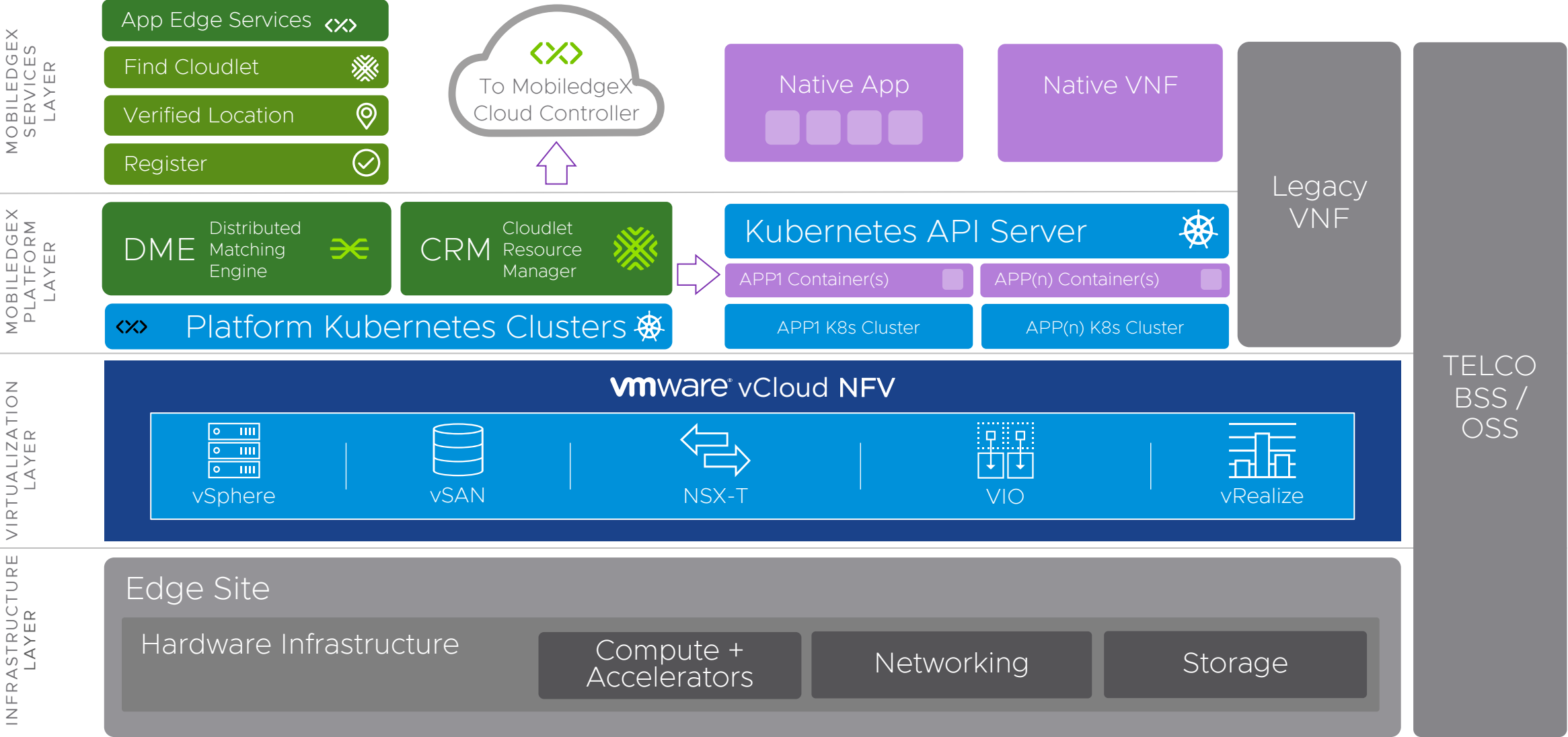


Support for Hybrid On-Premise/Telco Edge Deployments

New R2.0 Features:

- VMware support
- GPU support
- Private pools
- Added Monitoring capabilities
- Added Deployment policies

MobiledgeX Deployment Architecture Explained

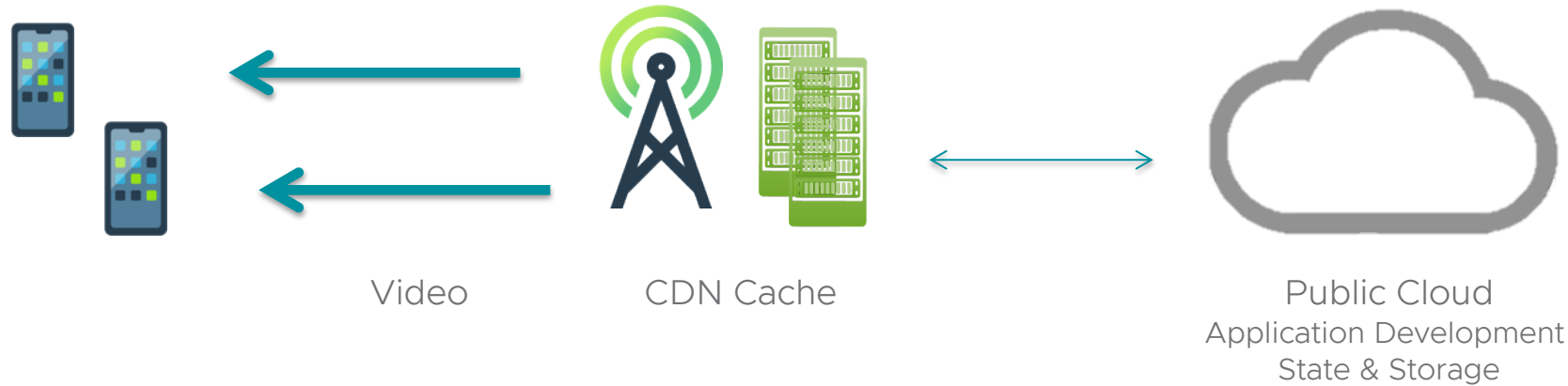


Use Cases

Key Drivers for Early Use Cases and Initial PoCs

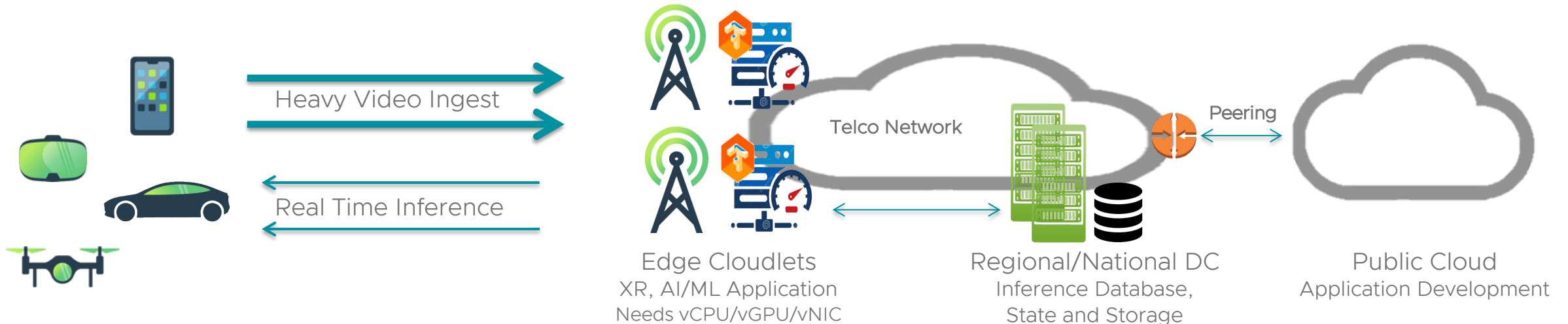
Transformation of the Network Edge

Changing from CDN to AI/ML Pipeline



Today

Tomorrow



100% Demand-Side Driven

Retail

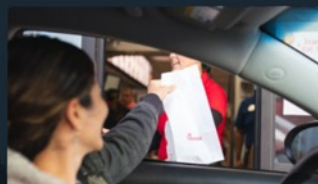


AnyVision Visitor Analytics

Facial recognition technology can be used to visually track visitors in a public space (e.g., a retail store or mall) and build a detailed and integrated view of what they did, that can then be mined, for example, for retail optimization (store layout, use of digital signage, etc).

[View Use Case](#)

Image Processing, Machine Learning, AI

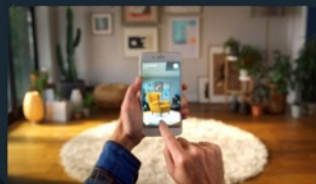


Chick-fil-A

Fast food retailing can be improved by adding more sensors, analysis and automation into the retail store, but only if that can be done without creating complexity or availability issues for the store operator.

[View Use Case](#)

Remote Operation



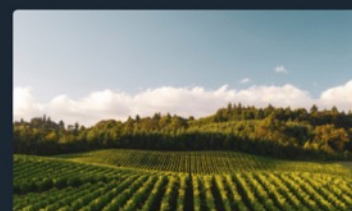
IKEA Place

Retail is rapidly changing driven by the challenge of e-Commerce (Amazon). Traditional retail brings the advantage of an in-store experience with the ability to see and touch a subset of the available products.

[View Use Case](#)

AR, Video Capture, Image Processing, High-bandwidth, Low-latency, IoT

Agriculture



Localized Weather Modeling

Weather prediction is limited by the "resolution" of the computational weather models (the granularity of the grid of points in the model).

[View Use Case](#)

IoT, Computational Modeling

Smart Cities



Nvidia NoTraffic

The same technology advances that enable safer and self-driving vehicles can be used to improve traffic control systems by dynamically analyzing local traffic flows with sophisticated image analysis, and then co-optimizing operation with adjacent control systems.

[View Use Case](#)

Image Processing, Machine Learning, AI



Unmanned Life

Drones provide many new opportunities for on-demand video feeds (in this case for support of disaster response).

[View Use Case](#)

Video Processing, GPS, High-bandwidth, Low-latency

Comms



AT&T Drones

The availability of powerful, inexpensive consumer drones has created a lot of excitement about commercial drone applications.

[View Use Case](#)

Drones

Gaming



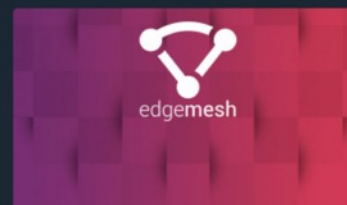
Niantic

Because of the phenomenal success of Niantic (Pokémon Go) there is growing interest in games that are played outdoors within the local context, necessarily often using cellular links to a cloud backend that provides the digital form of the local context, augmented with game content (e.g., tokens or prizes).

[View Use Case](#)

AR, High-bandwidth, Low-latency

eComm



EdgeMesh

Modern websites have increasing complex pages. CDN technology only works when content has been recently loaded by another user which is diminishingly probable as content becomes more personalized.

[View Use Case](#)

Low-latency, IoT

Manufacturing

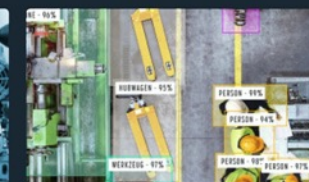


Cloud SLAM

Augmented Reality solutions often depend on a 3D model of the surroundings so they (1) can associate what the user is looking at with specific physical equipment (e.g., for diagnostic purposes) and (2) can generate an augmented image that can be accurately overlaid over the physical image the user sees.

[View Use Case](#)

3D Modeling, Image Processing, AR

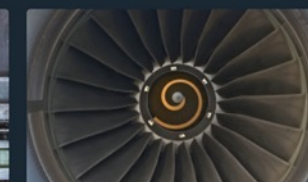


Gestalt Robotics

Industrial automation is transforming rapidly, building on progress in IoT (connection into the Internet), image processing, machine learning and artificial intelligence, and high-performance networking technology.

[View Use Case](#)

Image Processing, Machine Learning, AI, Low-latency



Rolls-Royce Engineering

Modern turbine engines are complex, but may require in-person maintenance in non-factory or service depot locations, creating a need for access to comprehensive engineering information and collaboration systems wherever the work is done.

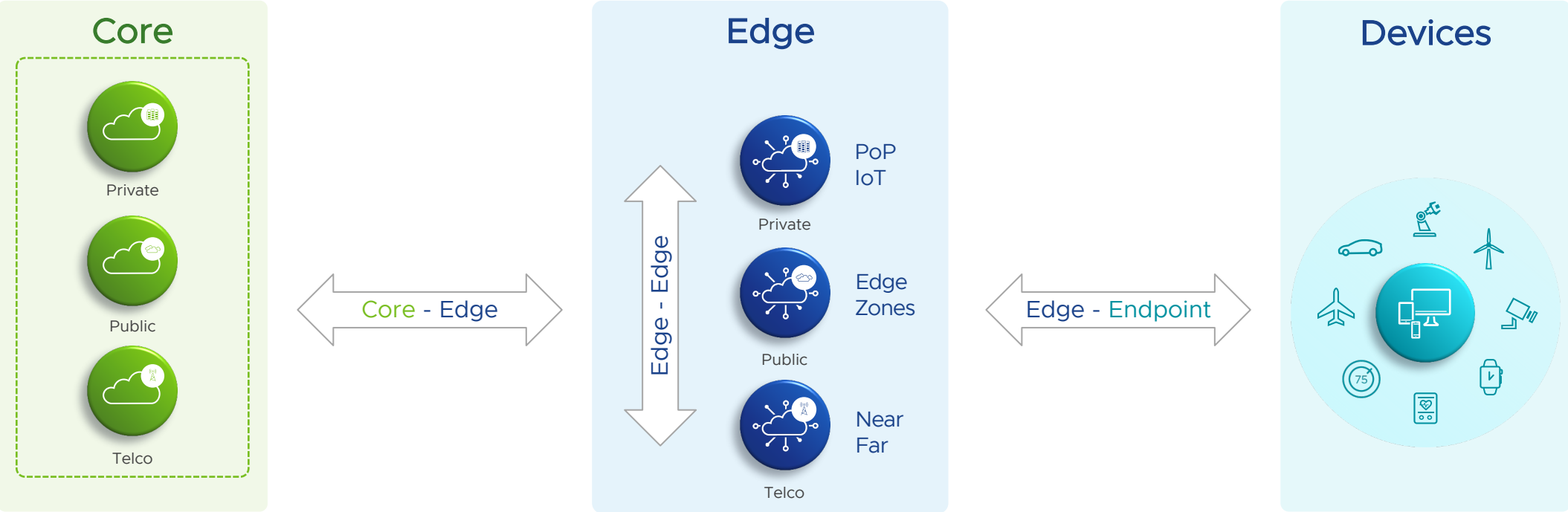
[View Use Case](#)

Global Deployment

VMware Telco Cloud for MEC

Realizing the VMware Edge

Consistent management, automation and infrastructure



Modern Applications Platform

Consistent Operations

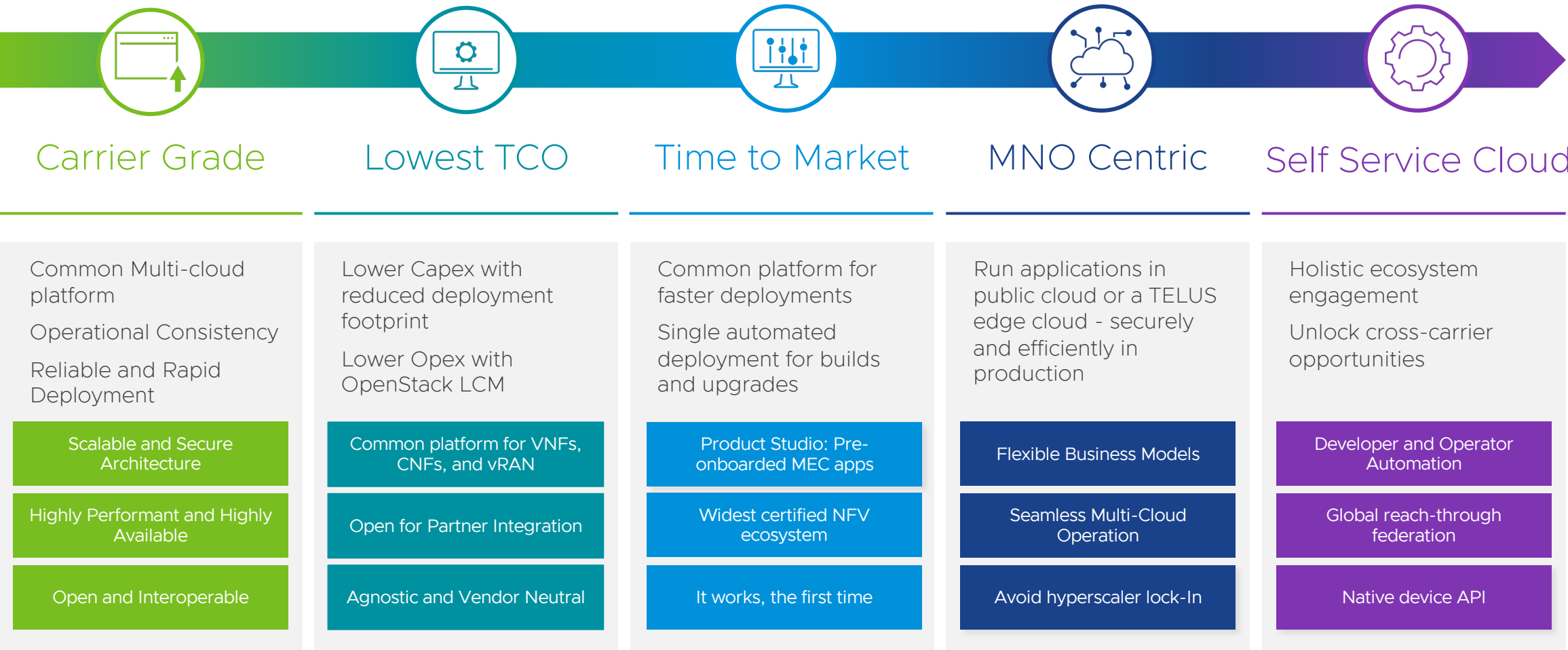
Consistent Management

Consistent Infrastructure

Intrinsic Security

Integrated MEC Solution: Key Value Proposition

How VMware, MobileEdgeX and WWT collaborate to deliver a superior MEC solution





Thank You