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# Follow Mec

The Surveillance Drone Application

# Agenda

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## 01 Context

- The Edge phenomenon
- Technology and business standardization
- Use cases needs
- The perfect storm

## 02 The application

Description and functionality

## 03 Architecture

Architecture that supports the demonstration

## 04 Demo

Video demonstration that shows how the application works in a real environment

# Context

The Edge Phenomenon

Technology and Business Standardization

Use Cases Needs

Perfect Storm

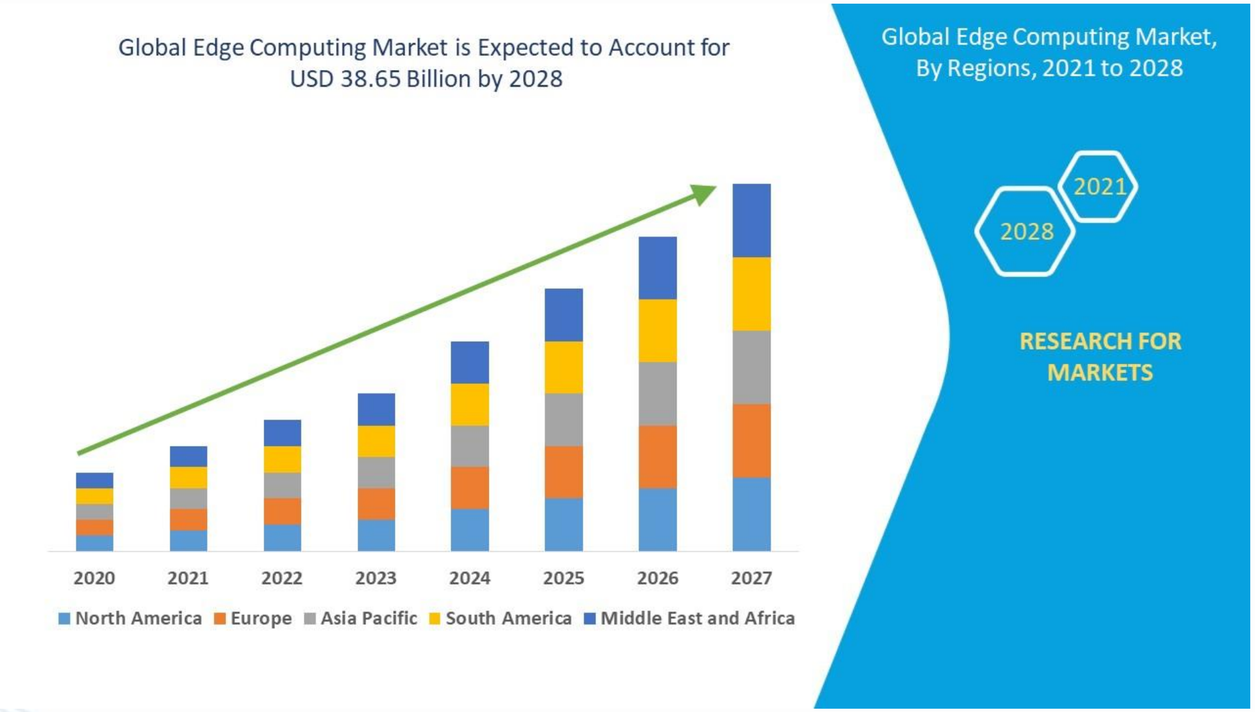
# Edge Phenomenon

High market expectatives created around Edge Computing market

Digitalization create intensive compute needs

5G arrival create channels with high bandwidth and low latency

Cloud computing has  established best practices for use of IT resources




Source: databridgemarketresearch

# Tech and business standardization

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ETSI MEC

3GPP

GSMA

ISO/IEC JTC1

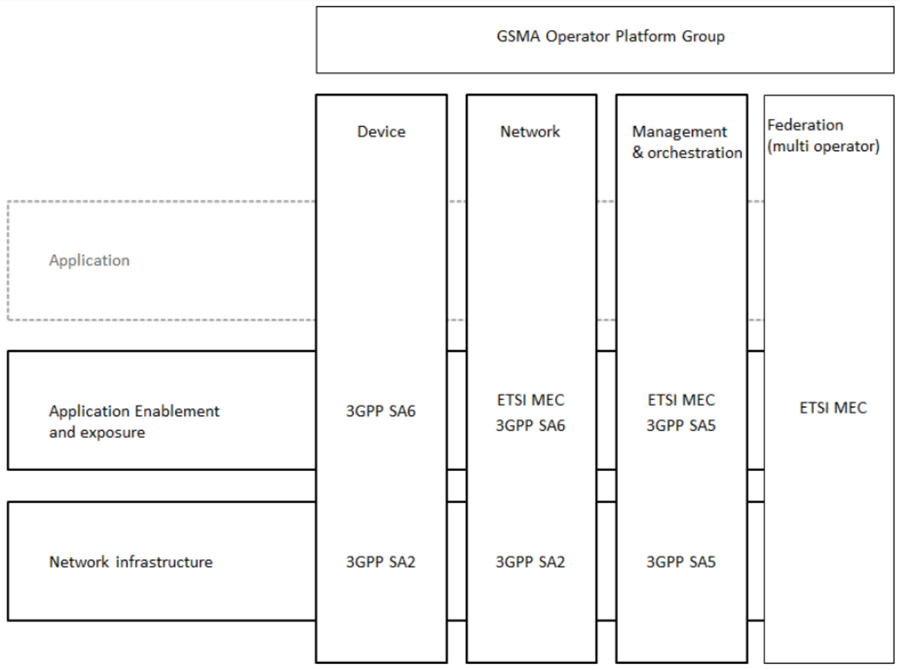
LF EDGE

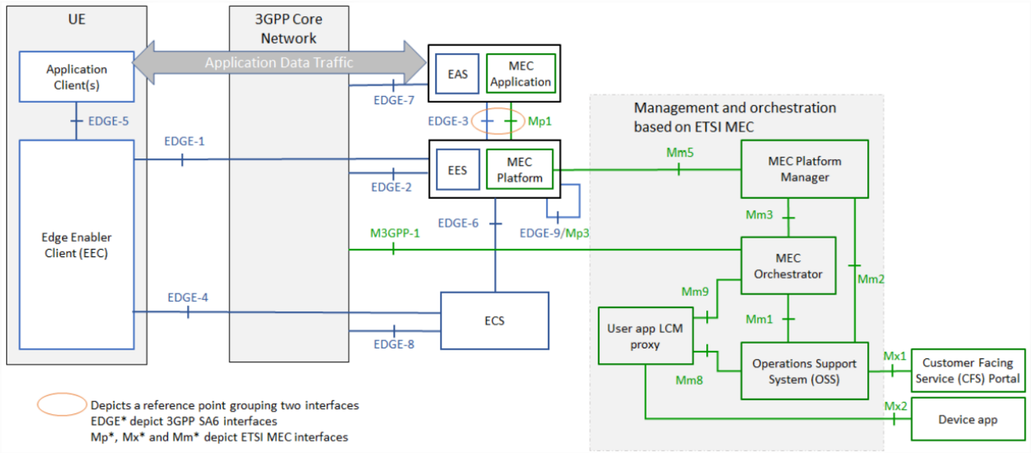
5GAA

TMFORUM

5G FORUM

...



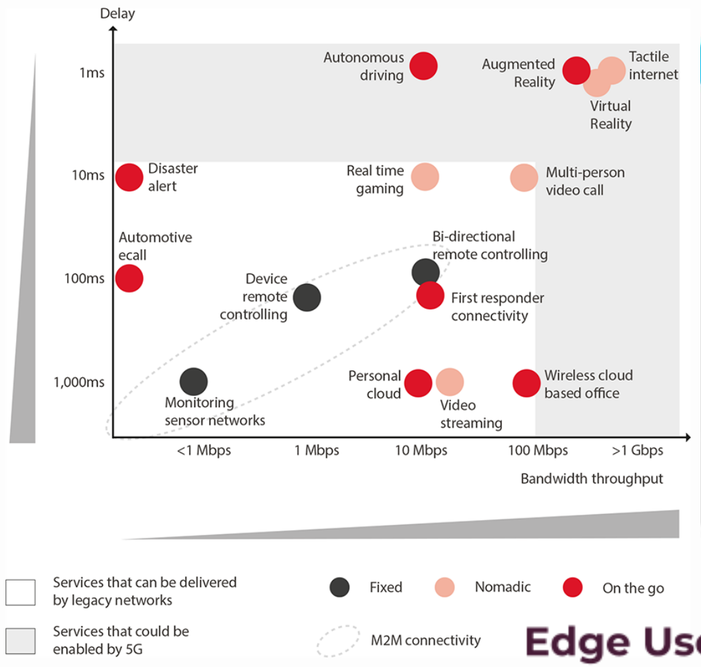

Source: https://www.etsi.org/images/files/ETSIWhitePapers/ETSI_wp36_Harmonizing-standards-for-edge-computing.pdf

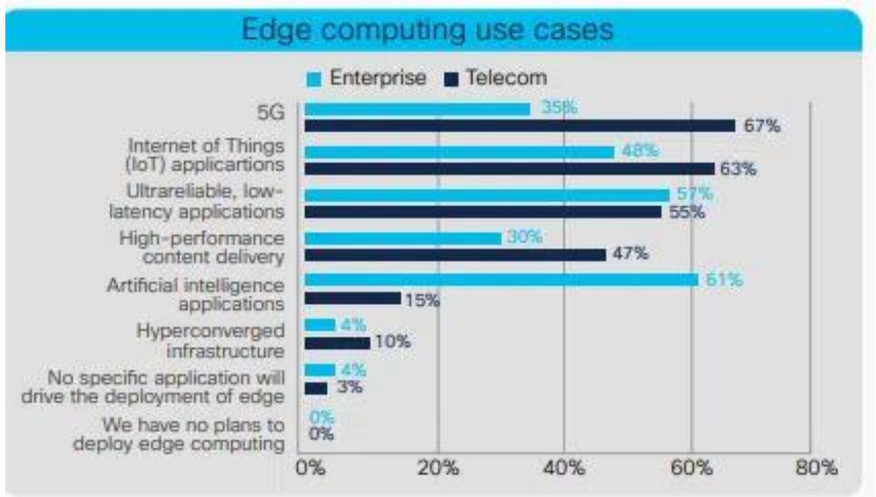
# EDGE Use case needs

- Service Latency
- Factory Cibersecurity
- Private mobile network
- Video analytics
- UAVs
- Intensive Analytics

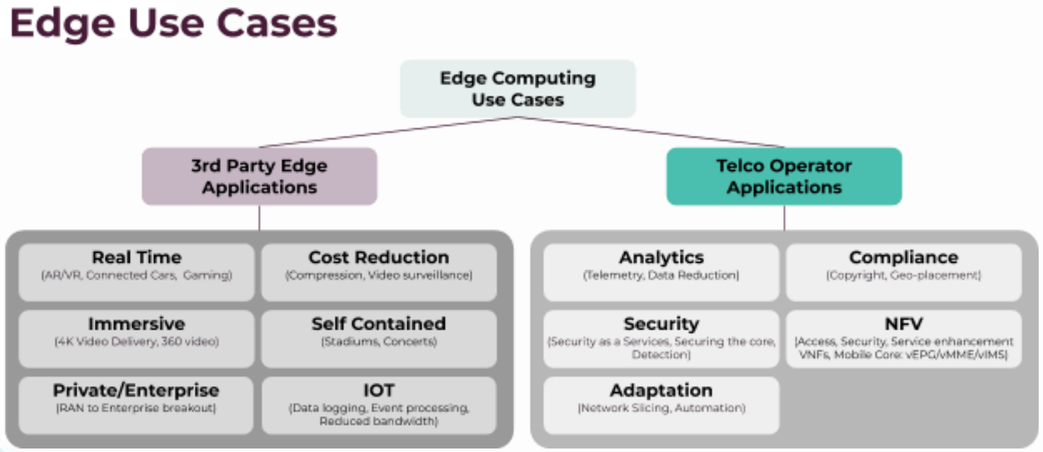
All these new services and needs become the edge computing technology as a key resource for offer viable products.

**“CLOSER” COMPUTE RESOURCES**



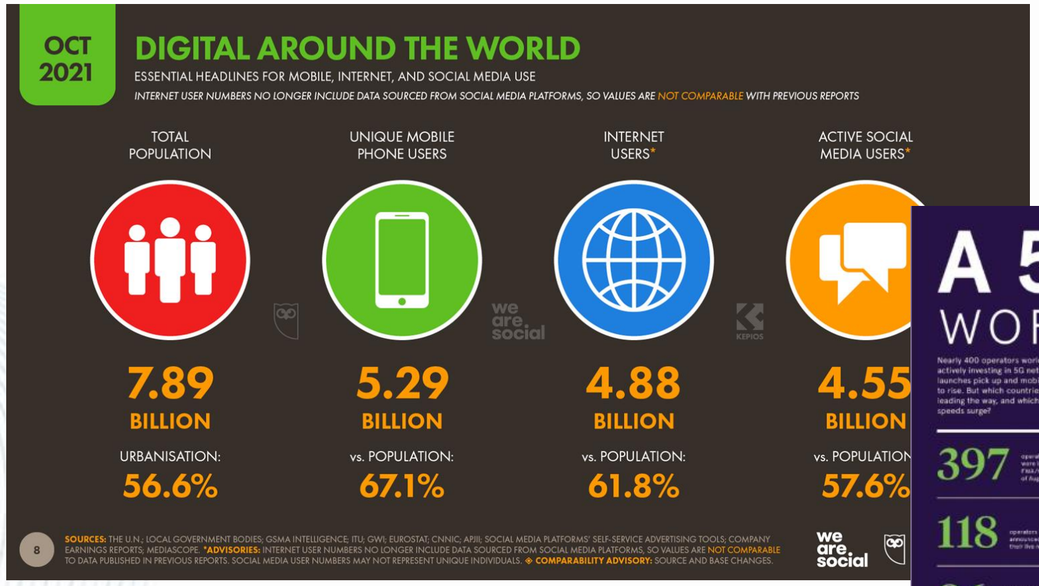




Source: GSMA Intelligence use cases

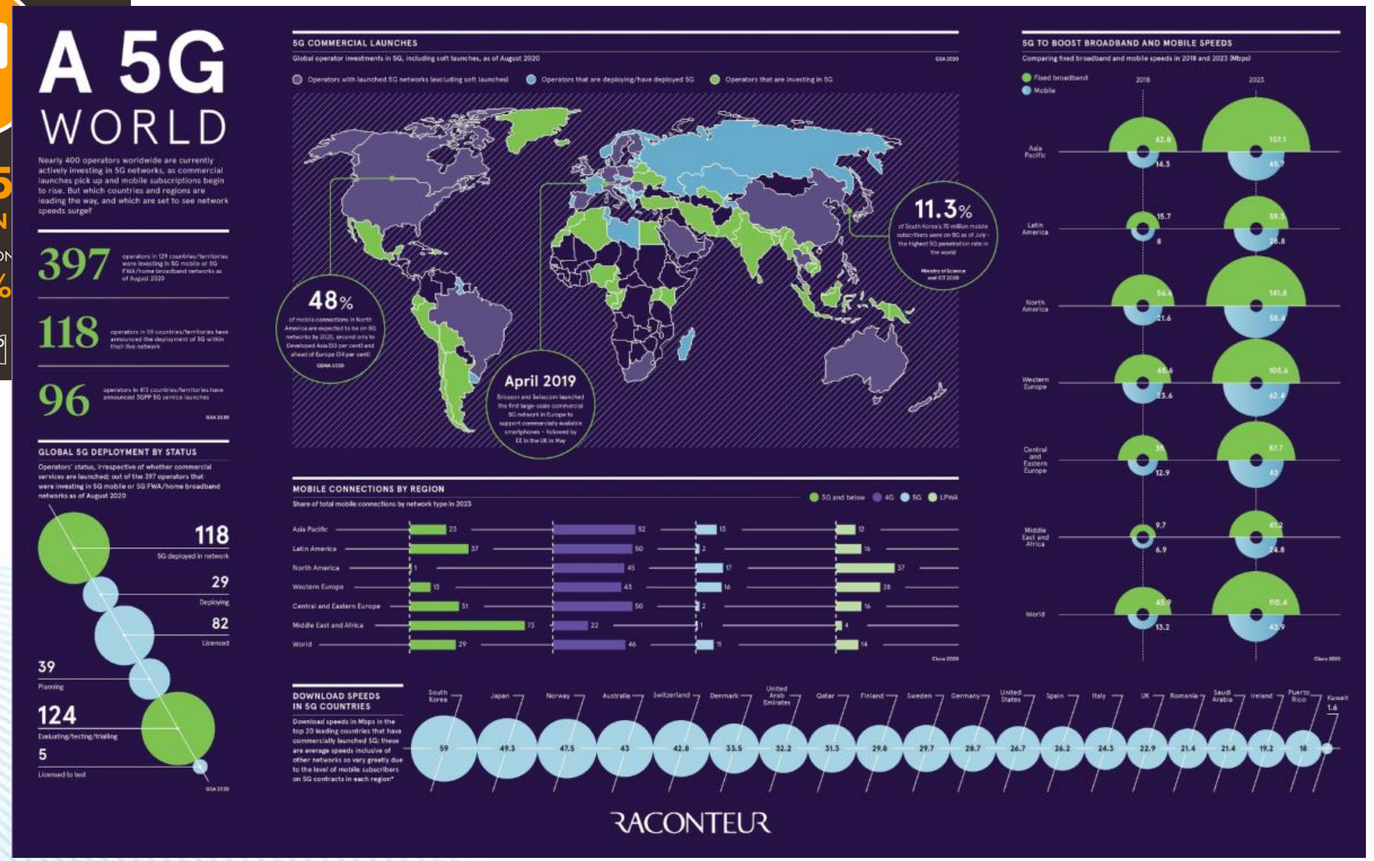



Source: Mirantis

# The perfect storm




Source: Datareportal




Source: Visual Capitalist

# The Application

Description and functionality

# The Flex Drone Concept

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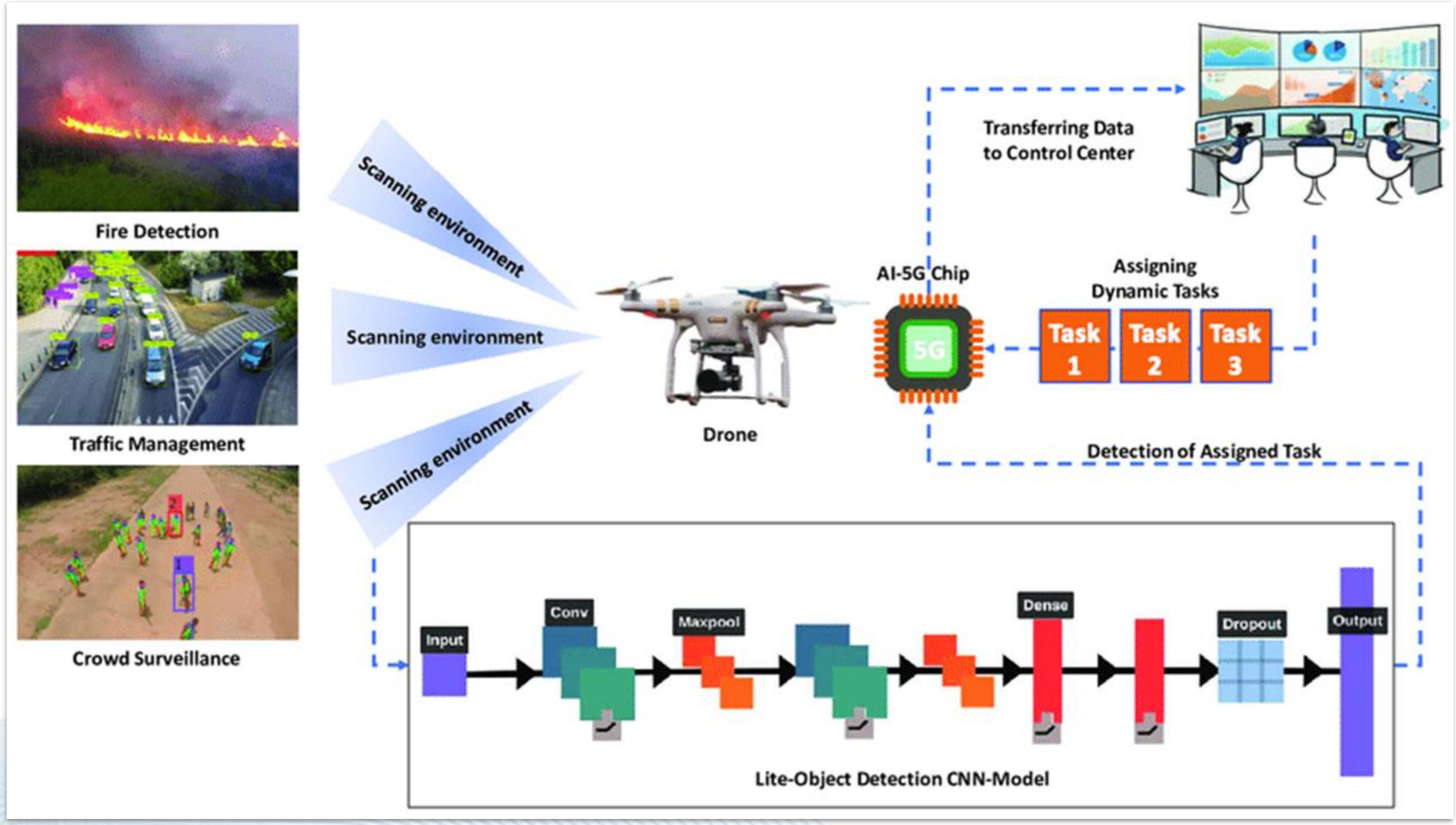


Paper: *"Applications and Challenges in Video Surveillance via Drone: A Brief Survey"*

# The Flex Drone Concept

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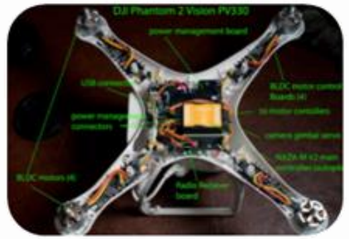
## Flex Drone Concept Without Edge Support

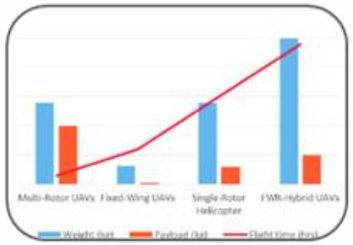

Embedded AI: expensive resources

Weight of drone: increased

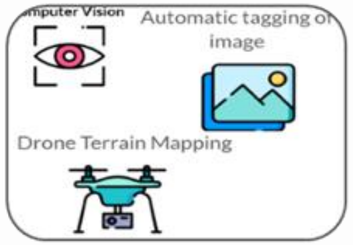
## Flex Drone Concept With Edge Support



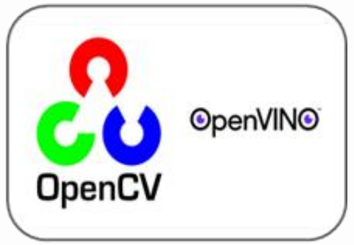
Simpler and cheap components in drone



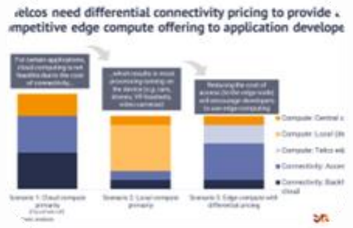

Weight reduction gives more autonomy




Flexible suite of AI assets




Get benefit from open innovation



# Follow Mec Description

With a focus on security and surveillance, the Follow Mec is an artificial intelligence application for autonomous flights that performs video stream analysis in real time for pedestrians detection and tracking.

It uses the computing and low latency capabilities offered by the Edge in combination with AI pedestrian detection algorithms

# Follow Mec Functionality

The surveillance drone flies over a predefined route that covers different coverage areas: Wifi, 4G, 5G...

The drone streams their camera images to the Follow Mec edge application where the AI pedestrian detection algorithm is executed

# Follow Mec Functionality

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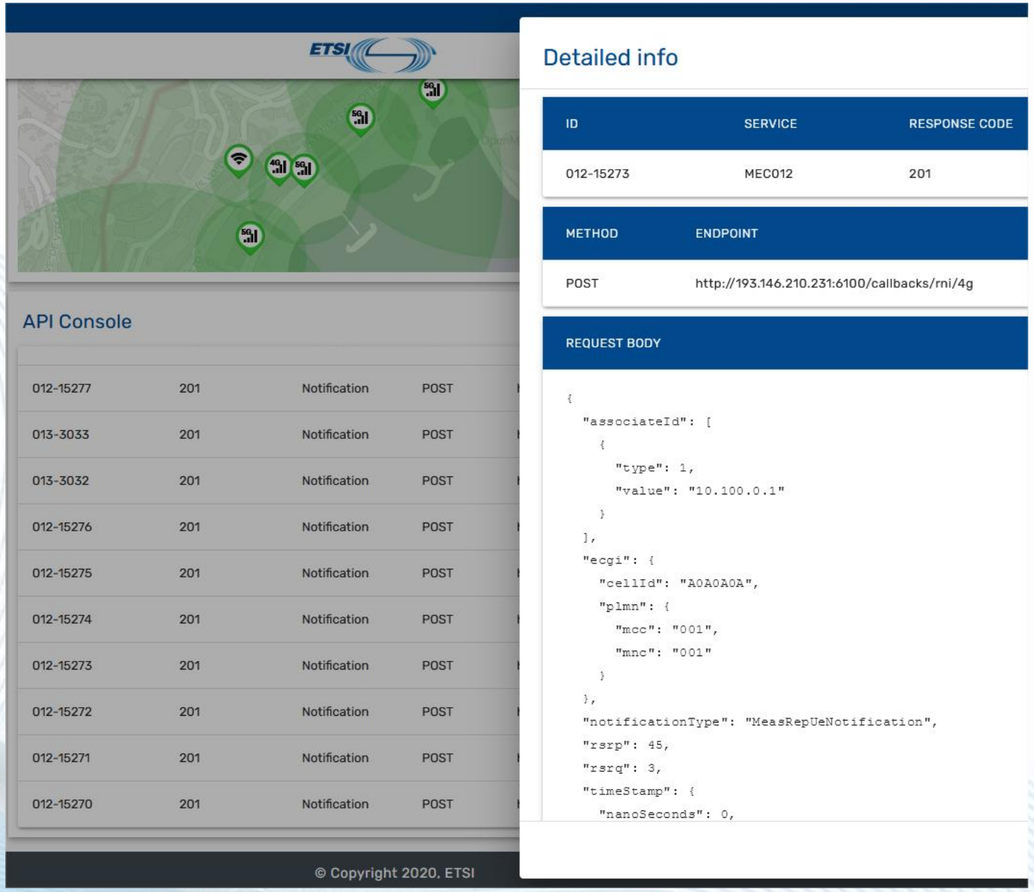
If a pedestrian is recognized by the object detection algorithm in the received images, the application enters in Tracking mode.

In tracking mode, the application sends flying instructions to the drone allowing the target tracking

If the pedestrian moves away from the route, the drone returns to the surveillance mode following the original path

# Follow Mec Subscriptions

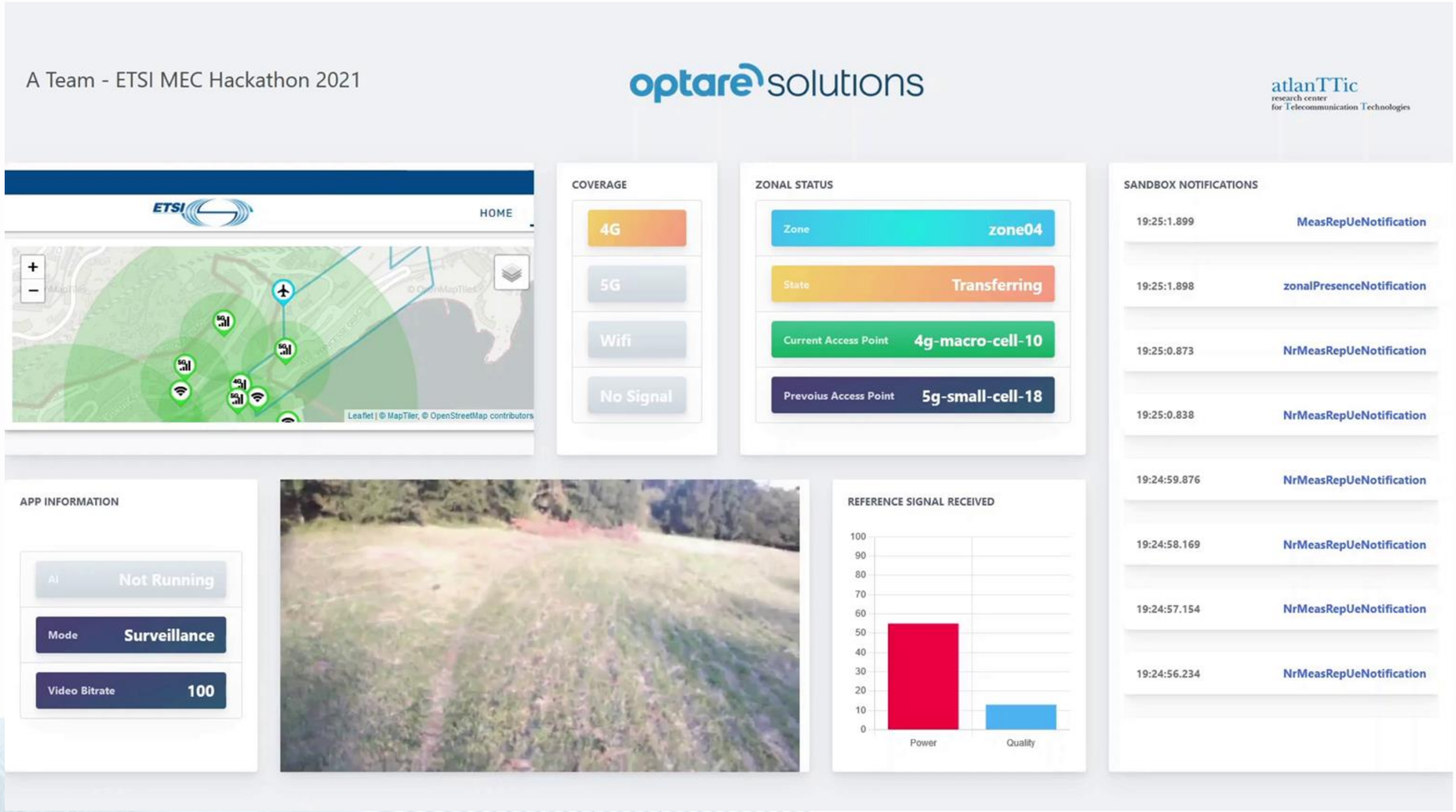



The Follow Mec application is subscribed to several notifications:

- Location Information
- Radio Network Information
- WLAN Information

This information is used by the Edge Application to know the availability of the MEC and Connectivity resources, adapting its behaviour.

# Follow Mec Dashboard



# Follow Mec OpenVino

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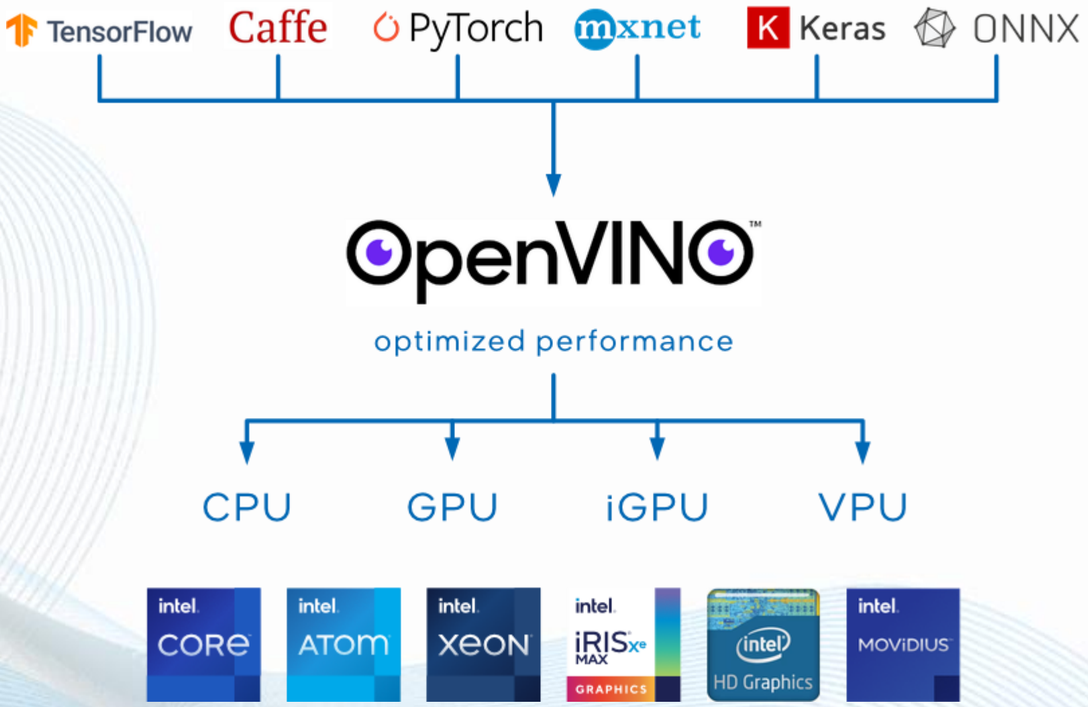


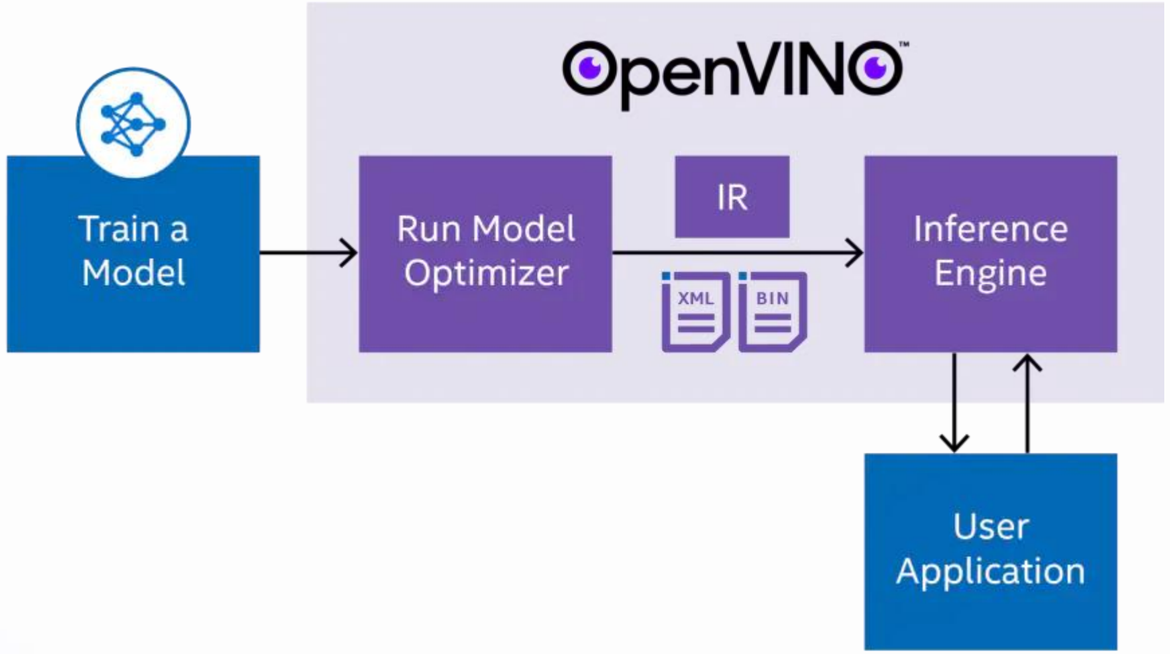

# Follow Mec Pre-Trained Models

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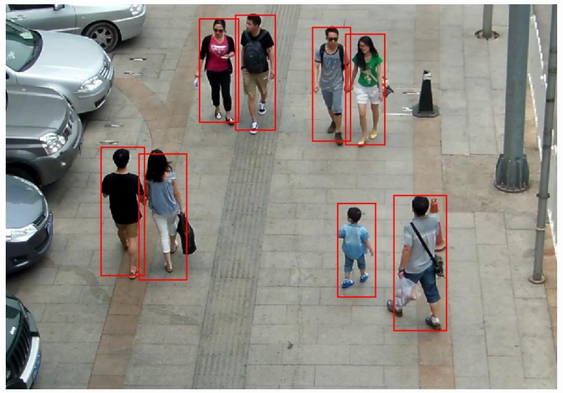
Detection:

**person-detection-retail-0013**

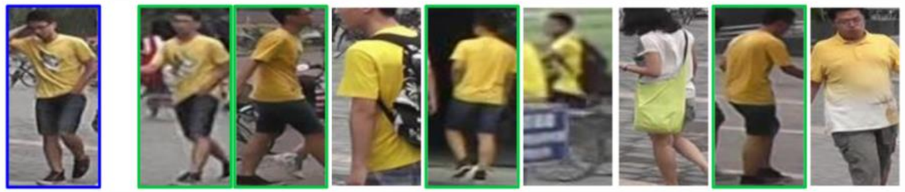
https://docs.openvino.ai/2021.2/omz_models_intel_person_detection_retail_0013_description_person_detection_retail_0013.html



Tracking:

**person-reidentification-retail-0031**

https://docs.openvino.ai/2019_R1/_person_reidentification_retail_0031_description_person_reidentification_retail_0031.html



# Architecture

# Follow Mec Architecture

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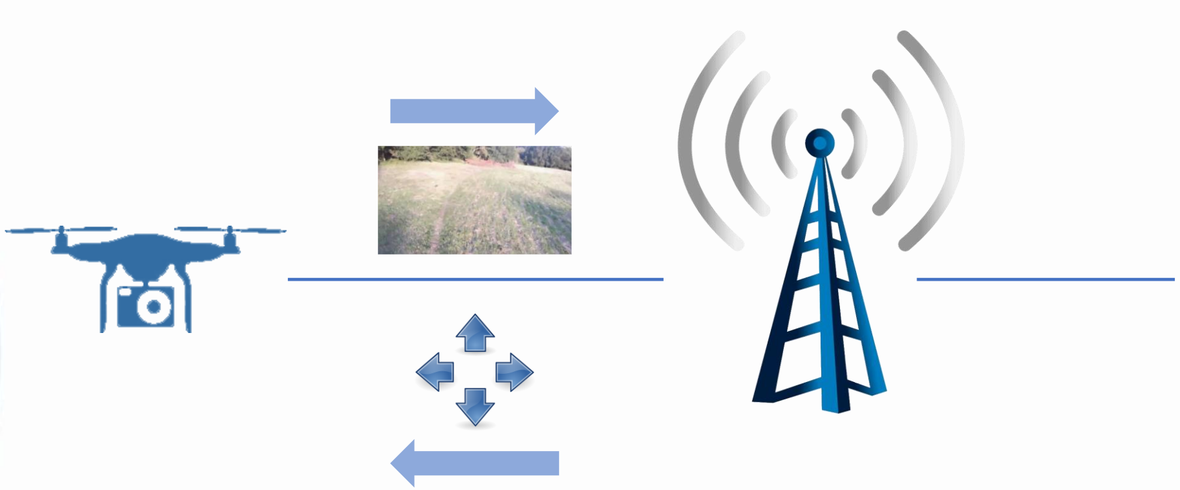

Intel® Smart Edge Open

**Follow Mec App**

ETSI

- Location (013)
- Radio Network Information (012)
- WLAN Access Information (028)

(OpenNESS has been rebranded as Intel® Smart Edge Open)

# Follow Mec Drone Architecture

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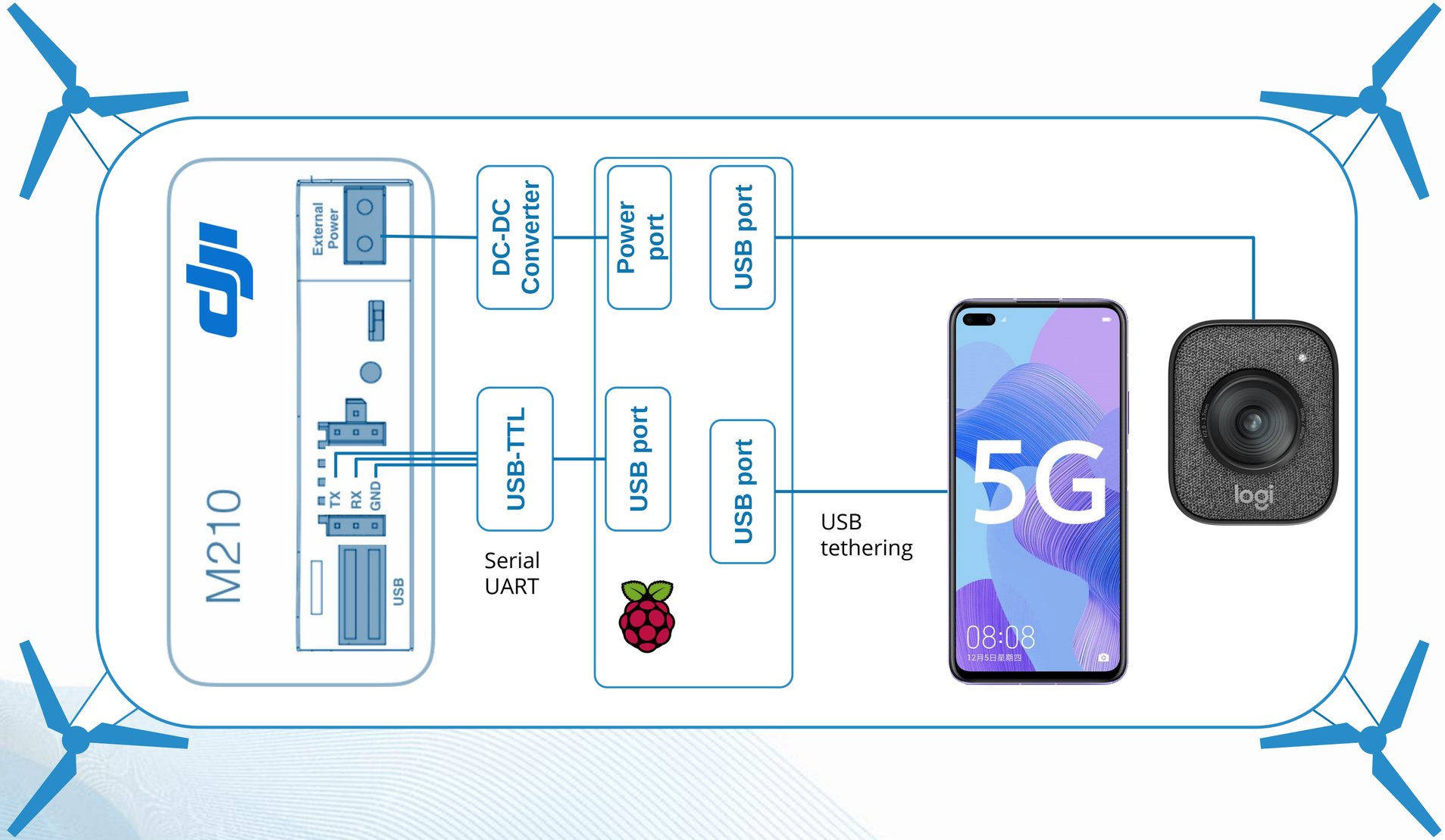

# Follow Mec Edge Architecture

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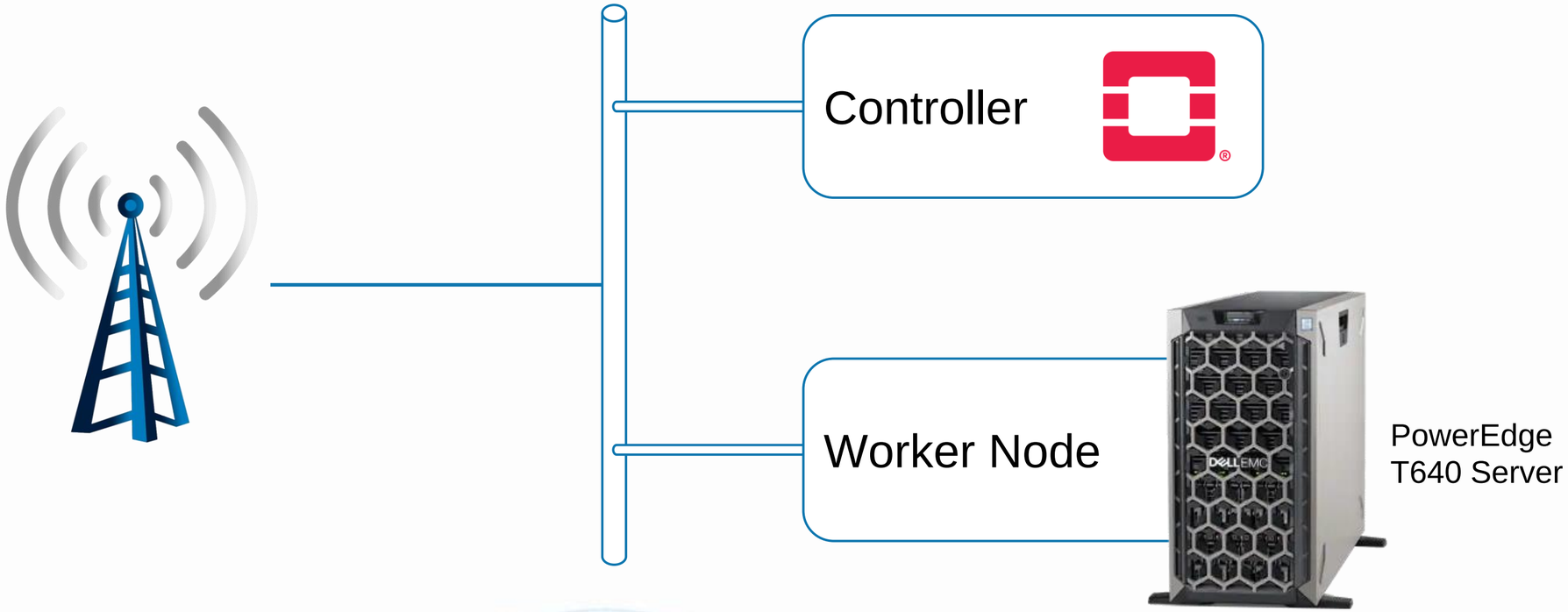


Intel® Smart Edge Open

(OpenNESS has been rebranded as Intel® Smart Edge Open)

# Follow Mec SW Architecture

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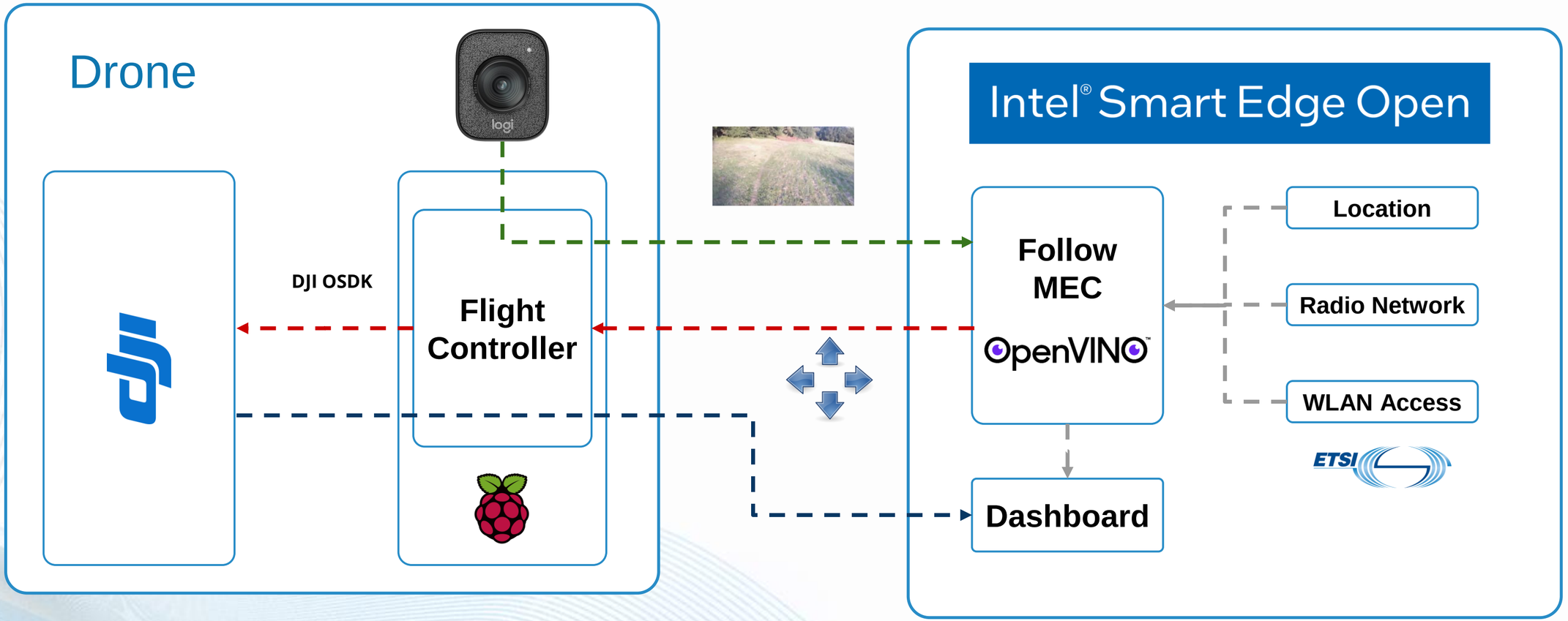
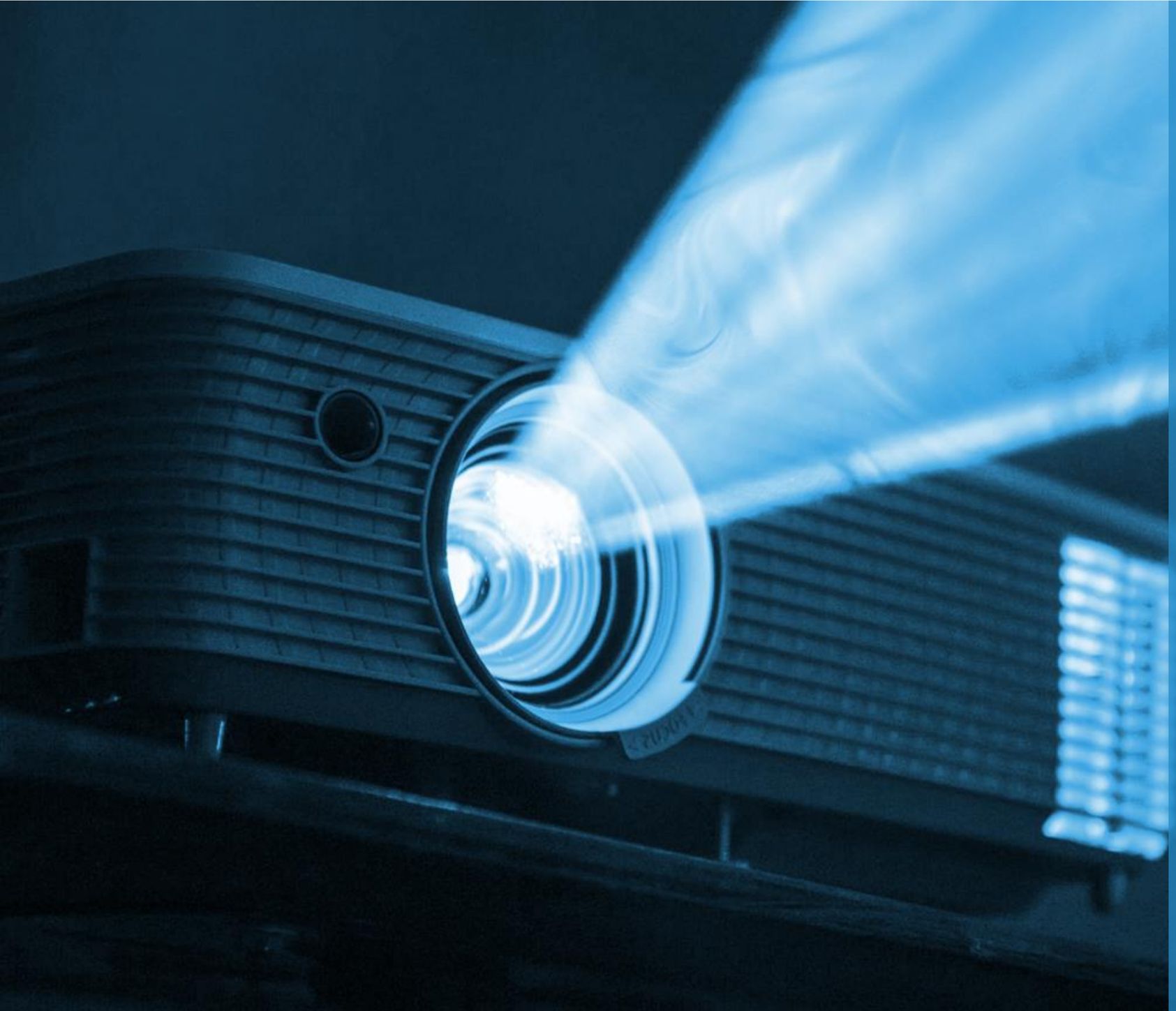



(OpenNESS has been rebranded as Intel® Smart Edge Open)



# Video Demonstration

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