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PILOTO 5G CATALUNYA

Smart city use cases through
a **5G private city** network

The challenges ahead

01

IMPROVE PUBLIC SERVICES

After deploying FO and Wi-Fi networks in the past, cities want to understand **how 5G technologies can improve public services.**

02

REAL TIME DECISIONS

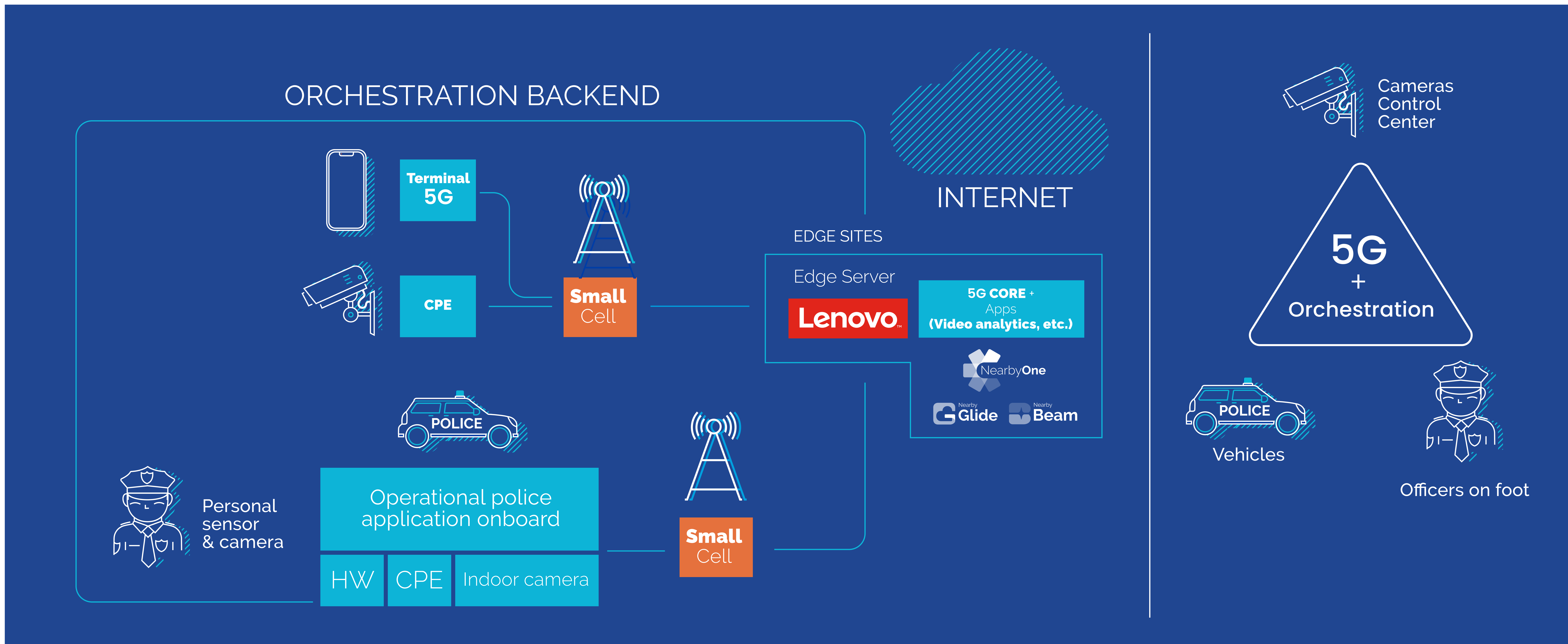
As cities generate **massive amounts of data**, solutions based on **AI** and **IoT** can bring more **accurate information** and help city managers to take better decisions, including real-time ones.

03

DISTRIBUTED INFRASTRUCTURE

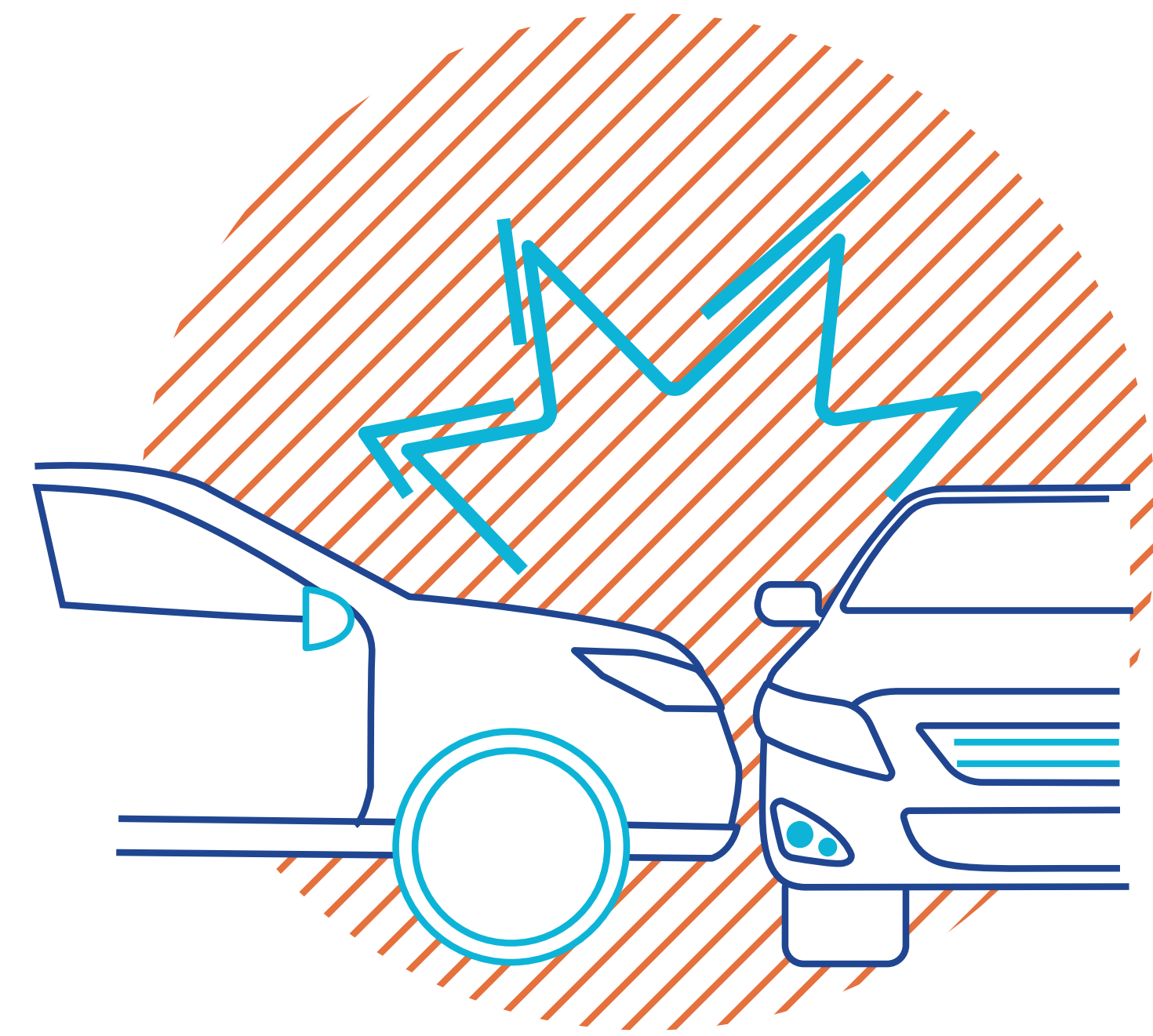
Managing **computing infrastructure distributed across the city** presents new and complex requirements compared to current centralized computing in datacenters.

Solution architecture



Thanks to Beam and Glide, the provisioning and lifecycle management of the video analytics and mission-critical communications applications are enabled. Provisioning and lifecycle management of the 5G core are also supported. This entire stack runs on Lenovo edge servers.

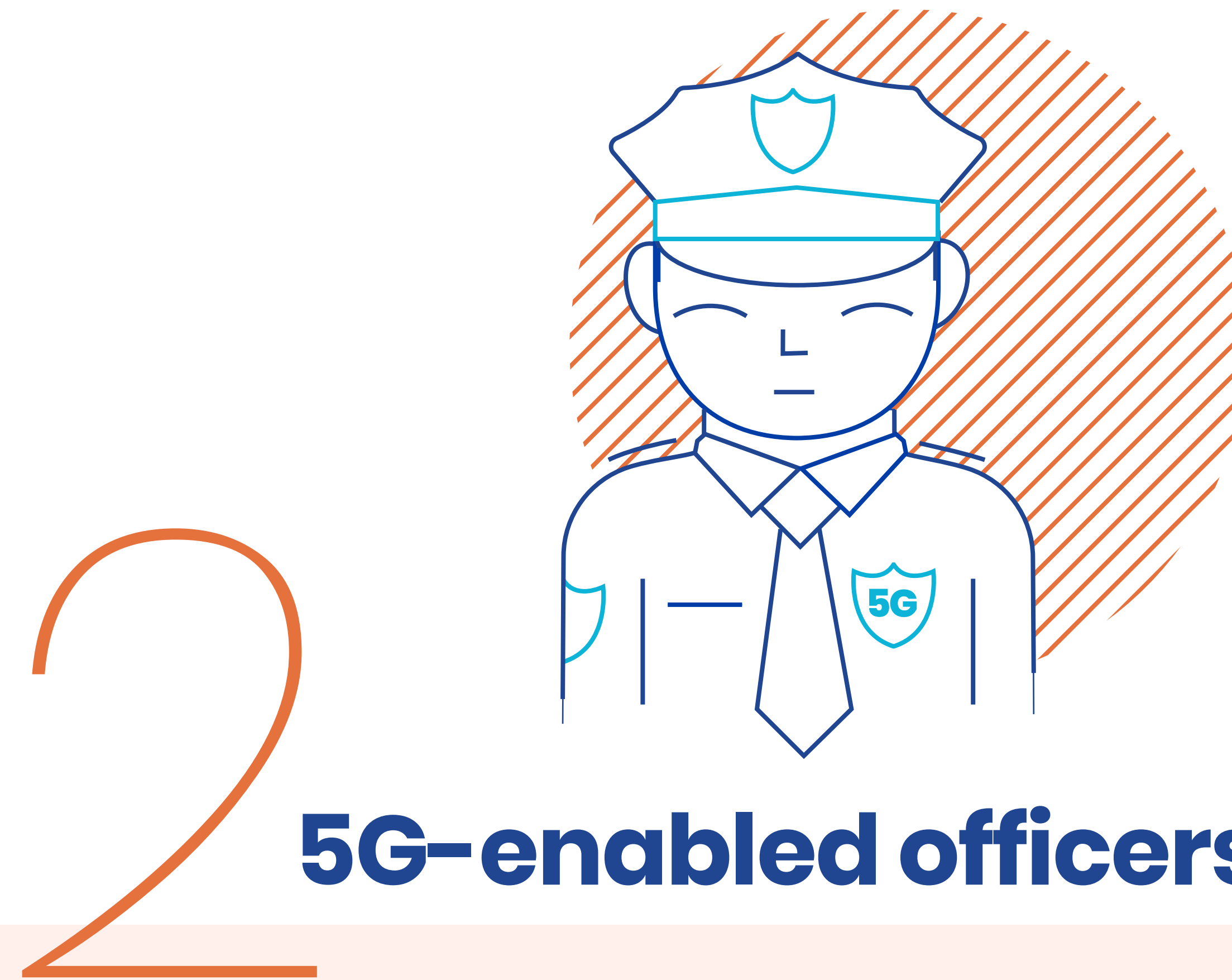
5G Smart City use case examples



Detection and analysis of vehicle traffic

Video Analytics

- Vehicle counting.
- Event detection: vehicle stopped on tramway crossing zone.
- Bicycle counting on bike lanes.



5G-enabled officers

Health Monitoring

- Real-time Monitoring of officers' vitals via wrist sensors (heart-rate, etc).
- Activity detection: stopped, walking, running.

High-precision Geolocation

- Ultra accurate geolocation (<1m) of every officer using the cellphone GPS data.
- (Leveraging Albora Technologies)

Video Management

- Live access to the video feeds emitted by the body-worn cameras carried by every officer.

Mission-Critical Push-to-Talk

- 1:1 and group call voice/video communication.
- (Leveraging Nemergent solutions)



5G-enabled vehicles

5G-Powered Vehicle

- Vehicle server managed through orchestrator.
- Deployment of virtualized dispatching apps, LPR, etc.
- IT infra LCM OTA.

VALUE-ADDED SOLUTION

Solution **outcomes**

All the power of AI and IoT

A 5G-powered edge computing city platform allows a fast introduction of video analytics, IoT analytics, augmented reality etc applications that **can improve the public services' delivery** and the **citizens' quality of life**.

Operational coordination

As information flows from any part to any part of the network, **many operations can be automated** and human intervention is instantly coordinated. As a result, less errors are committed and no relevant information is left without being processed.

Information generated and consumed everywhere

Any node in the network can generate, process or consume information, leading to a **global enhanced city resilience** and capacity of dealing with potential situations.

Resource availability

All nodes are managed centrally thus reducing dramatically the service downtime for maintenance. Also, workloads can be placed to the nearest available computing node in case of overcapacity, so **the service availability time is substantially improved**.

Lower CAPEX, lower OPEX

Greater efficiencies in the use of the computing equipment lead to a **reduction in the global investments**. Automation and orchestration avoids most of the human-led operations and of errors, thus leading to a relevant OPEX reduction.

Orchestration allows a full lifecycle management of the distributed infrastructure

A central or several federated orchestrators take care of the distributed edge computing infrastructure lifecycle Management. Provisioning, upgrades, application deployment, data processing workloads... **are centrally planned and executed locally at the Edge nodes**, in a fully unattended procedure. Accordingly, managing centralized or distributed infrastructure becomes fully transparent for the IT systems teams.

