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CRITICAL INDUSTRY

Deploy a 5G MPN in a Manufacturing Plant To Boost operations

Challenges

Outdoor manufacturing plants have many restrictions that impact on the capacity to deploy networks and onboard new services to improve operations. The Critical Industry plant in Spain covers fiber optics networks and thus onboard... an area of roughly 1Km².

The combination of 5G Private Networks and the company Edge Computing Services overcomes these limitations and opens a straight access to innovative solutions that address and solve some of the daily challenges that companies have, some of them being:

01

A chemical plant is a **high-risk environment** where people, vehicles and assets **should be located anytime**.

02

Most trucks carry hazardous goods and **must remain controlled**, but some of them get lost as drivers cannot be assisted by Google Maps or similar inside the company facility.

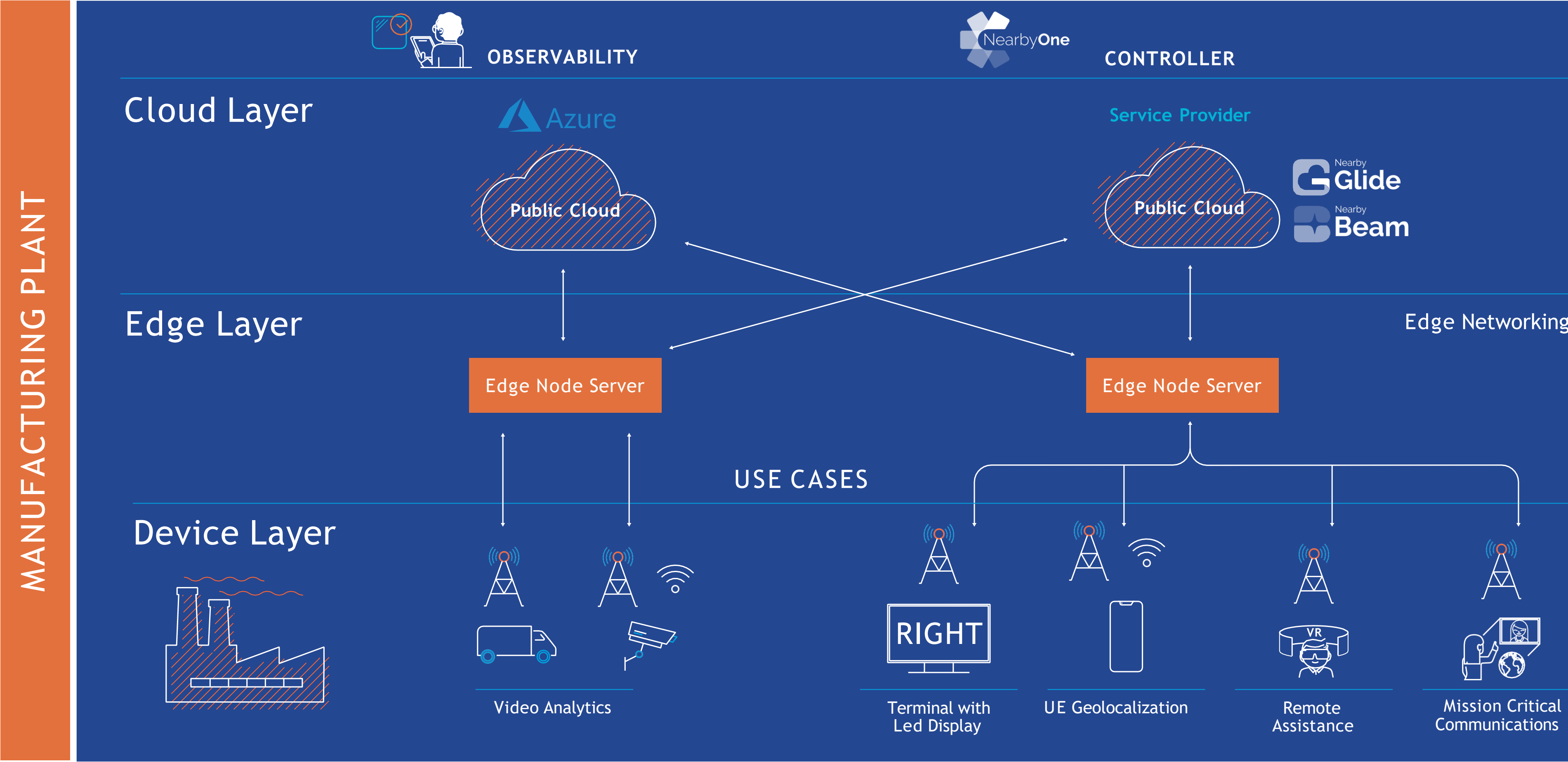
03

Maintenance and safety **require a daily dedication** but the senior maintenance team cannot take care in real time of all the reported questions and incidents as **they typically have to move and take personal care of all them**.

An available private Edge Computing platform allows testing and deploying in a fast and easy way SW solutions that can deal with those daily situations.

Solution architecture

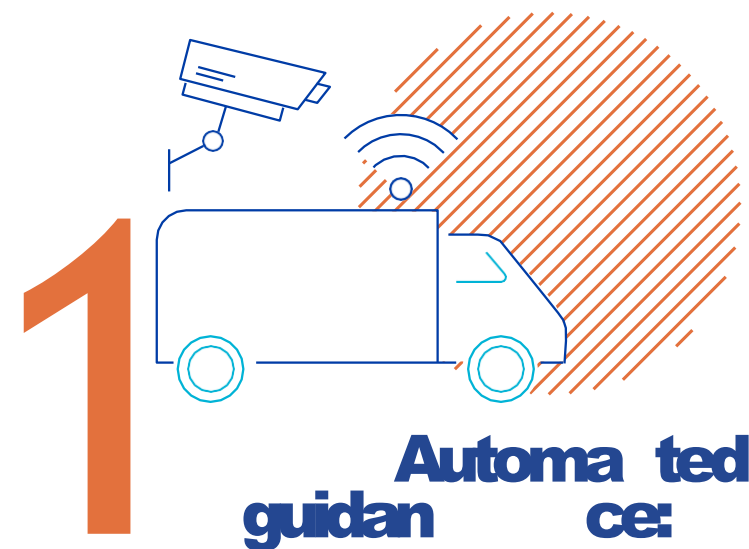
With **Glide & Beam Modules**, the provisioning and lifecycle management of the vehicle guidance application are performed. Metrics and alerts are collected from the following components: Lenovo SE350 servers, the Proxmox hypervisor, and the vehicle guidance application.



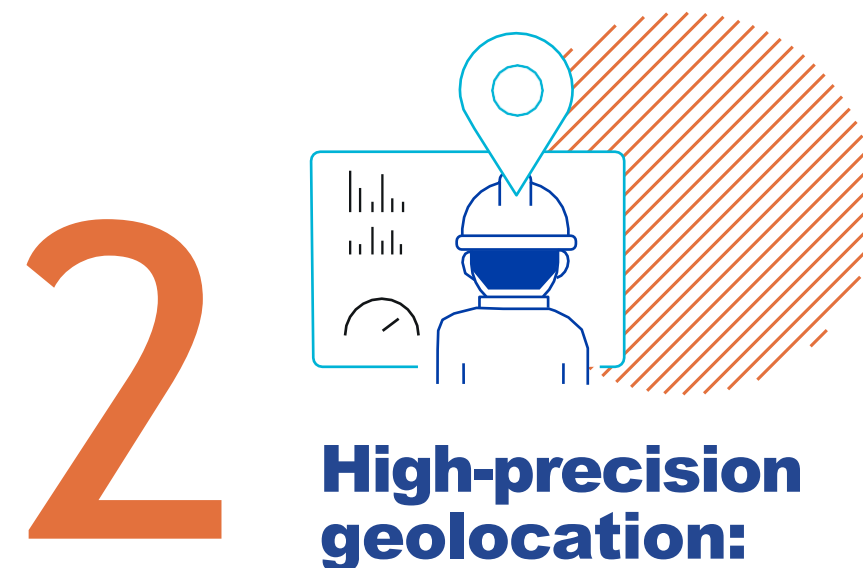
Use Cases

- + The System Integrator (SI) has deployed a 5G NSA Private Network that enables a fast deployment of services by bringing high-throughput connectivity across the whole facility.
- + Also, an Edge Services platform has been built and placed in a small data center inside Company facilities. Network functions and apps are managed by SI and delivered as-a-service to the Company.

The Edge Platform can host any kind of service that the Company may be interested in. The initial four ones are:



Each truck's plate is registered at the entry gate and its final destination inside the facility associated to it. At each crossroads, a Cam connected to the 5G MPN sends images to the Edge server where a video analytics sw reads the truck's plate and shows it in a LED display together with an arrow indicating the direction the driver must take, after a routing algorithm is applied.



Ultra-accurate geolocation (<1m) of every employer using a unit control placed either on the belt or helm. It is possible to locate with less than 10cm of accuracy an employee/asset through his regular cellphone by installing an app that extracts data from the GPS sensor and sends it to the Edge Server where a correction algorithm is applied. Employee positions are shown in a Google Maps dashboard.



An AR-powered app enables the senior maintenance team to assist from their office position the outdoor teams that are closer to industrial systems, pipes, etc. The employee in the field points its cellphone camera to wires, pipes, HMIs etc and the expert can make anotations with his finger in the shared screen to ensure instructions are clear. Overall preventive and corrective maintenance efficiency improves dramatically with the use of such a simple tool, enabled by the 5G MPN.



1:1 and group call voice/video communication can be deployed as an Android app on the maintenance team cellphones, bringing a much better experience than former TETRA walkie-talkie systems.

Outcomes

The 5G+Edge solution enables the company to onboard the most powerful new generation apps for operations, and **implement use cases tailored to the user specific needs.**

What the company perceives about this delivery model is:

Lower CAPEX, lower OPEX

Flexible sizing of the solution to allow limited CAPEX. Remote orchestration services enable a tightly controlled OPEX – no need for System Integrator to send support technicians most of the times.

Ultra-fast delivery of solutions:

Deployment of new Edge services can be done in days, and smoothly.

**Deployment time: 2-3 days
instead of 1-2 weeks.**

High Mobility indoor and outdoor availability

Private 5G ensures an equal and high-bandwidth connectivity across the facility (indoor and outdoor)

Increase Company's willingness to onboard new services

The flexibility of the solution allows to leverage any brownfield environment and scale-up any service.

Unleash the access to the full innovation cycle:

With automation, applications can be integrated at a lower cost. Efficiency is improved and thus, capacity for innovation grows exponentially.



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