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Technology Europe

AVEIRO TECH CITY LIVING LAB

Automating Edge-based Vehicular Services for Europe's Smartest Living Lab

Business overview

The Aveiro Tech City Living Lab (ATCLL) is a pioneering smart-city innovation hub based in Aveiro, Portugal. It serves as an open testbed where public institutions, researchers, startups, and industry collaborators can experiment and deploy real-world digital services. ATCLL's urban edge network includes wall-box units and smart lamp-posts equipped with cameras, radars, V2X radios, and computing capacity, supporting advanced applications in public safety, traffic optimization, object detection, and vehicle-to-everything communications.

Challenges

As ATCLL scaled up its edge-based infrastructure and onboarded external partners, several issues emerged:

- **Distributed edge footprint** – Hundreds of diverse nodes installed across city infrastructure (e.g., lamp posts, wall boxes)
- **Complex service deployment** – Docker-based services for camera/object detection and vehicular communications required frequent updates
- **Partner access control** – Multiple external teams needed role-based access to specific edge nodes and services
- **Manual deployment overhead** – Each new node demanded manual configuration, risking delays and misconfiguration
- **Security & consistency** – Ensuring secure, uniform deployments throughout a shared, distributed network was critical

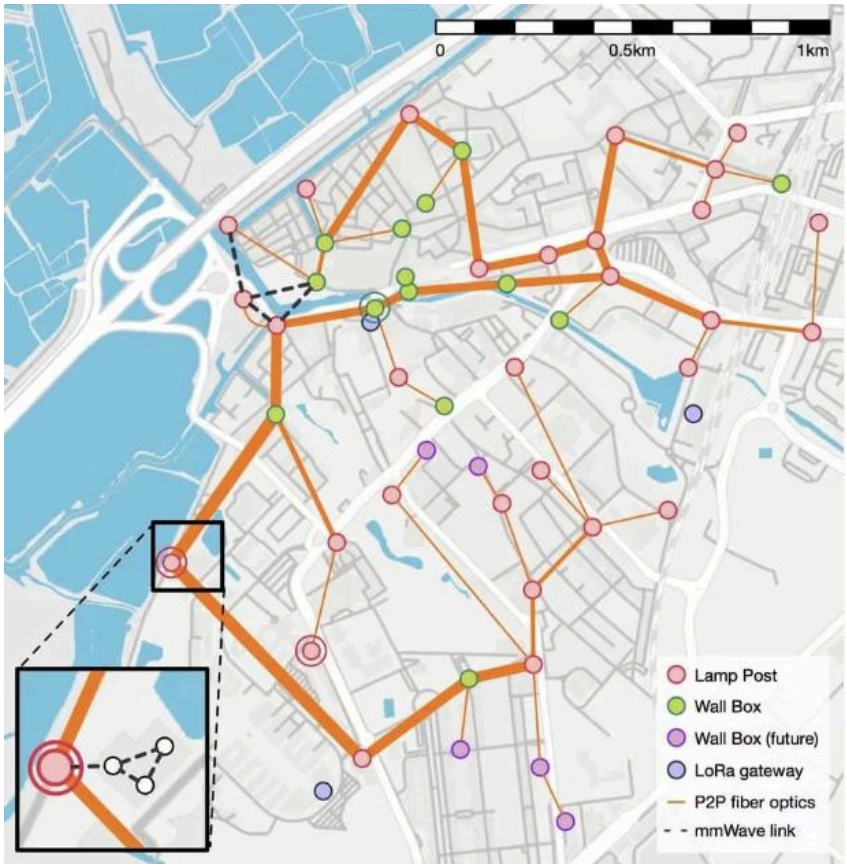
The solution

ATCLL implemented Portainer to solve these challenges through:

- **Standardized deployment** – Templates for camera detection and vehicular services ensured consistent roll-outs
- **RBAC-based access** – Portainer's role-based controls enabled fine-grained, partner-specific access to services and nodes
- **GitOps automation** – Edge deployments auto-synced from shared Git repositories, with no manual setup required for new nodes
- **Centralized orchestration** – A unified UI empowered platform teams to manage all edge nodes securely and at scale

This approach eliminated manual intervention, reduced risk, and provided a scalable, secure mechanism to govern and update urban services automatically.

How it works



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