



# AWARD

Scaling autonomous logistics

**Pan-European Workshop: “Charting the Roadmap for Autonomous Vehicles in European Logistics.”**

**11/12/2023**

**Lazaros Gkatzikis, Project manager, ICCS  
– PoDIUM Project Coordinator**



# PODIUM



Co-funded by  
the European Union

Horizon Innovation Actions | Project No. 101069547 | Call HORIZON-CL5-2021-D6-01



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# PoDIUM scope

**Enable connected & cooperative automated mobility in real traffic conditions**



- **Advance Multi-access Edge Computing (MEC)** as an enabler of new use cases (UCs) and services.
- **Data fusion** (locally generated and distributed computed data) to build **enhanced environmental models** towards digital twins.
- **Extend C-ITS messages** for enabling advanced CCAM use cases.
- **Ensure software integrity, trust and truthfulness of CCAM data**, their exchange and their processing.
- **Integration of Vulnerable Road Users (VRUs)**.



- Demonstration: **urban and highway use cases in 3 Living Labs** (5G SA testbeds, mmWave).

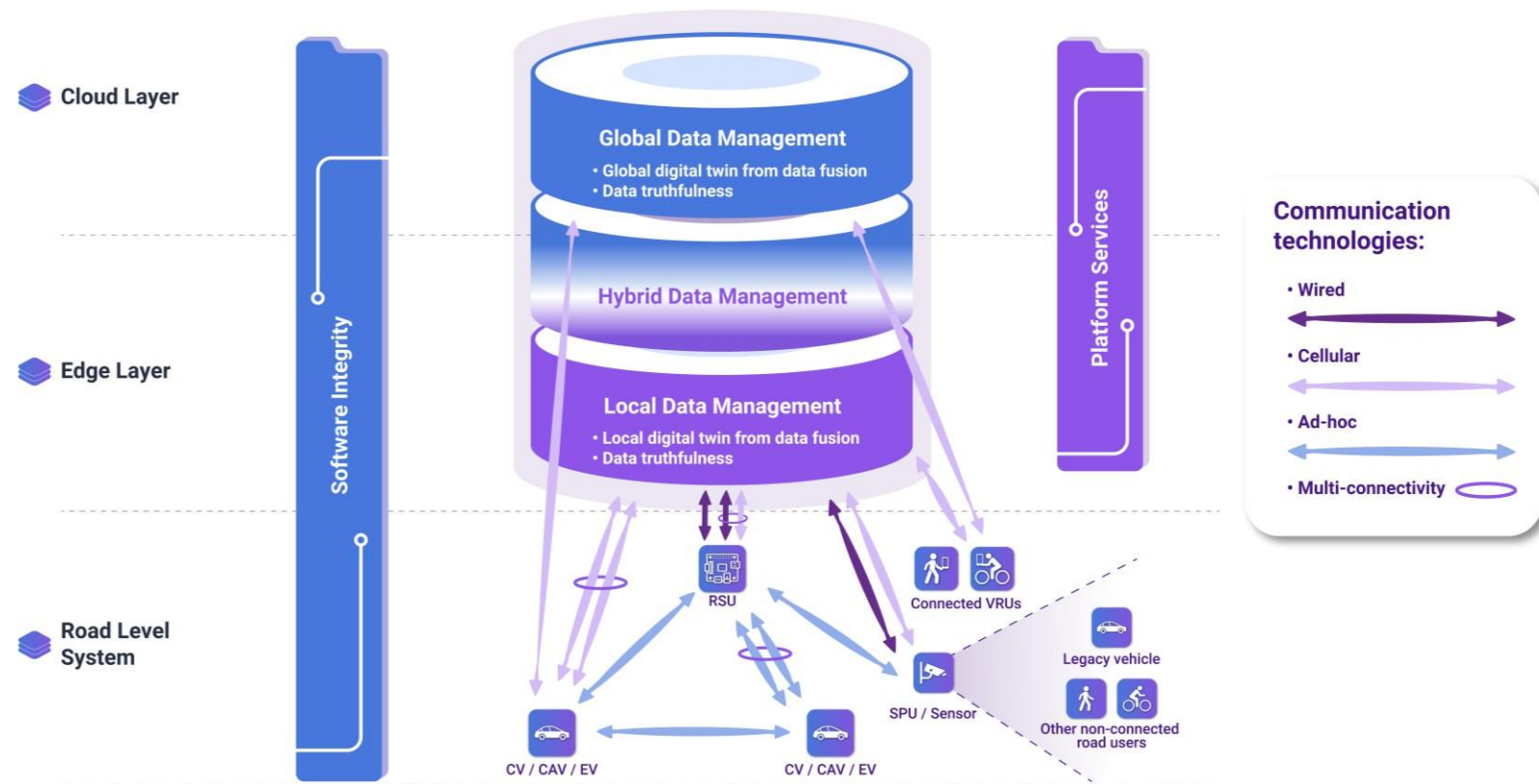
## **Impacted entities/processes**

**Physical:** MEC, wireless networking, RSUs, OBUs, VRUs, etc.

**Digital:** Traffic Management Centre, Environmental perception, Digital Twins, C-ITS messages, Trust and Truthfulness, etc.

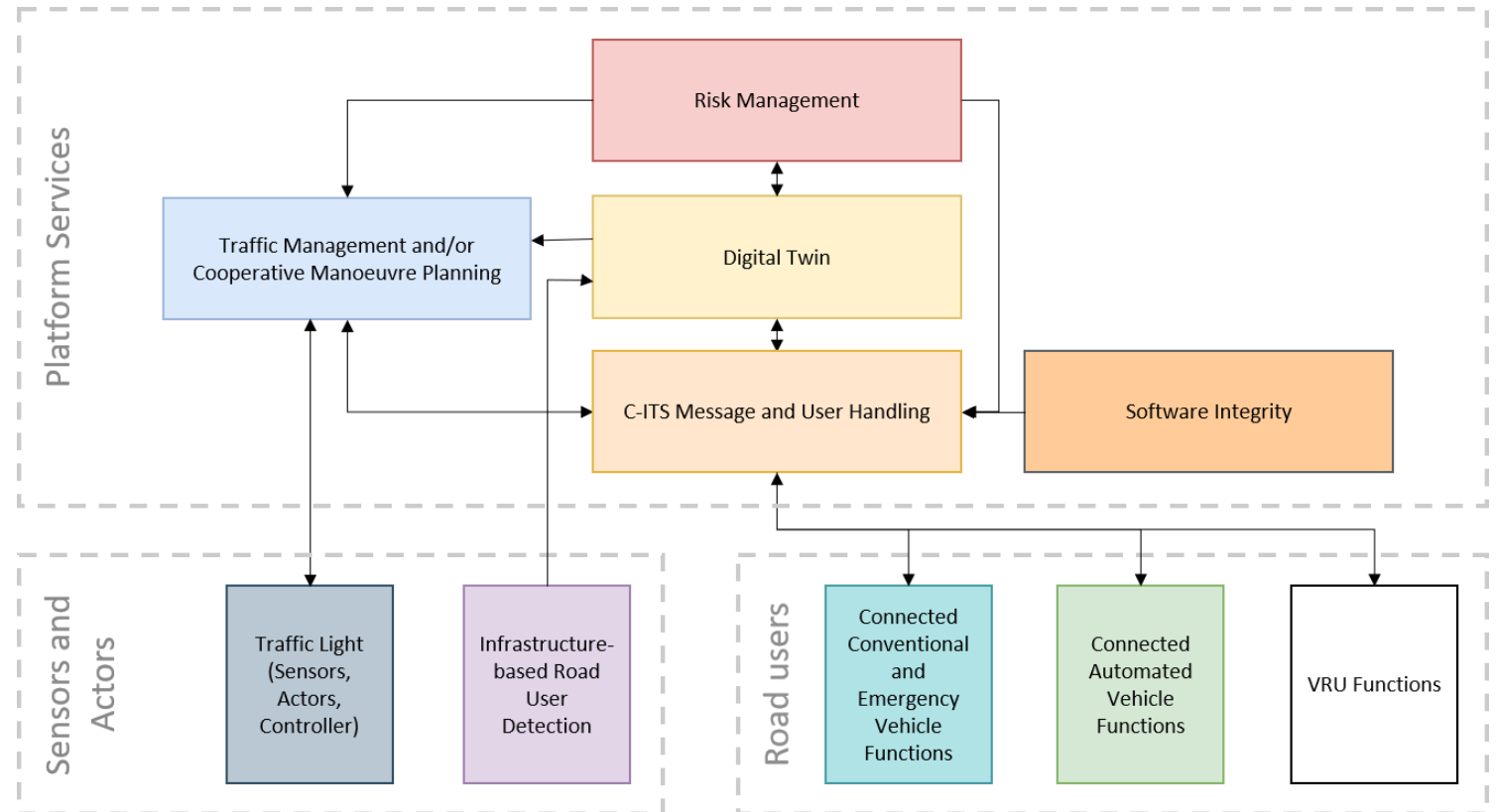
# PoDIUM architecture

- A 3-layer architecture supporting
  - All types of road users
  - All communication technologies, including multi-connectivity
  - Hybrid data management
  - Diverse set of services
  - Software Integrity & Data truthfulness



# PoDIUM functional view

- Main platform services
  - **Digital Twin:** Providing a full representation of the environment
  - **Traffic Management and Cooperative Maneuver Services:** Improve efficiency and safety of traffic flow
  - **Risk Management:** Warn road users of upcoming risks
  - **Software Integrity:** Ensure integrity of included software components
  - **C-ITS Message and User Handling:** Standards-compliant information from the road users



# Expected impact to transportation

- **Improve road safety via automated driving, connectivity and risk management**
  - Avoiding human error and providing reduced reaction time
  - Expanding the perception of individual road users (VRU detection included)
- **Reduce traffic congestion & support the vision of low-carbon and more fuel-efficient transport**
  - Increased awareness of environment via DT
  - Traffic management & flow optimization
- **Enhance urban mobility and accessibility via ADS and on-demand multimodal transport**
  - more efficient and flexible public transportation systems
  - establishing trust to ADS via real-life validation
- **Enhance real-time tracking, monitoring, and coordination of goods in transit via MEC and multi-connectivity**
  - Improving the reliability and availability of the physical and digital infrastructure
  - Facilitating seamless connectivity of road entities with logistics systems via multiple communication networks

# Thank you!

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# Living Labs

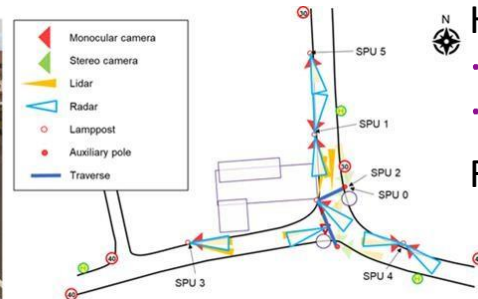
## Common aspects in all LLs

- Multi-access Edge Computing
- LTE and 5G coverage
- ITS-G5 (automotive WiFi) infrastructure
- Connected Automated Vehicles
- Mobile devices as VRUs

## Ulm-Lehr LL in Germany

Urban T-junction equipped with sensing and data processing infrastructure + communication gear

- 5G mmWave coverage
- 60GHz-WiFi
- Multipath connectivity
- RSU and Sensor Processing Units (SPUs) supporting multiple communication technologies



## LL in Spain

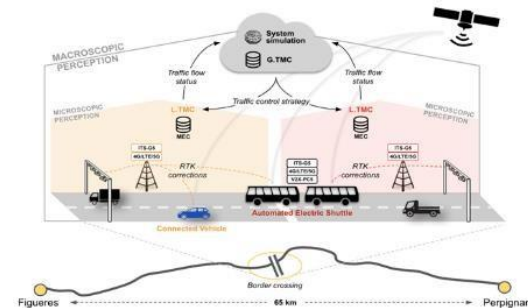
Real urban traffic environment: a corridor in the city of Barcelona

- Emergency vehicles
- Emergencies Management Centre
- Traffic light controllers



Spain-France cross-border corridor

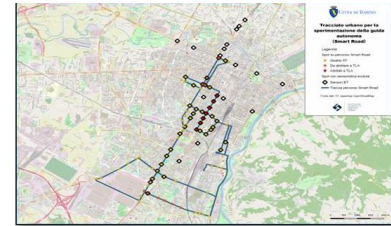
- Connected automated shuttle
- MEC servers on each side of the border



## LL in Italy

A complex urban intersection in the City of Turin

- Real edge infrastructure by TIM



Highway tunnel located on the Autostrada del Brennero

- A22/BRE Traffic Control Centre
- RSUs along the motorway axis

Focusing on software integrity, trust and truthfulness enhancements