Architecture for Scalable, Self-*, human-centric, Intelligent, Secure, and Tactile next generation IoT

assist-iot

NGIoT Thematic Workshop
Manufacturing

Prof. Carlos E. Palau

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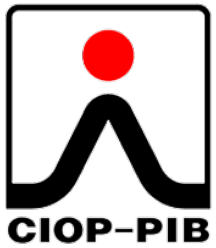
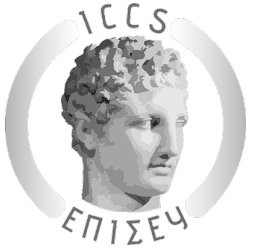
ASSIST-IoT Partners





Predictive Maintenance to Prescriptive Maintenance

"In the environment of Industry 4.0, maintenance should do much more than merely preventing downtimes of individual assets. Predicting failures via advanced analytics can increase equipment uptime by up to 20%. Predictive Maintenance utilizes a wealth of process data and advanced analytical methods to predict failures well before immediate action has to be taken."

EDGE

- Enable Real-Time Analytics and Actuation
- Reduce latency and traffic
- Reduce latency, traffic, network cost
- Increase security, privacy and trust
- Introduce intelligence close to the event(s)

ASSIST-IoT in a nutshell

- **Motivation**: Traditional centralised IoT architectures lack capabilities needed to handle new application requirements
  - Increasing need for a (near-)real-time reaction, and automatic decision making, suggests/enforces application of intelligence close to events
- **ASSIST-IoT** will deliver **blueprint of decentralized architecture for next generation of Internet of Things**
  - Definition and implementation of distributed smart networking components, decentralized security and privacy exploiting DLT, smart distributed AI enablers, Self-* capabilities, and human-centric tools and interfaces
  - Allowing stakeholders to overcome market barriers with disruptive business models and assure optimal collaboration and cooperation

ASSIST-IoT – main goals

Scalability and flexibility of data processing and analytics

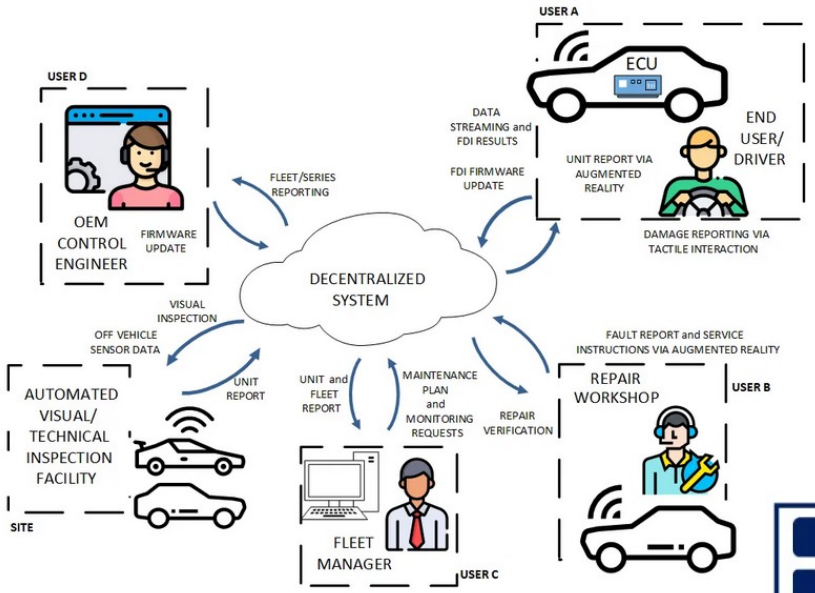
Vertically agnostic, **addressing the needs** of logistics, construction, and automotive industries

ASSIST-IoT main goal
new architectural approach to future IoT

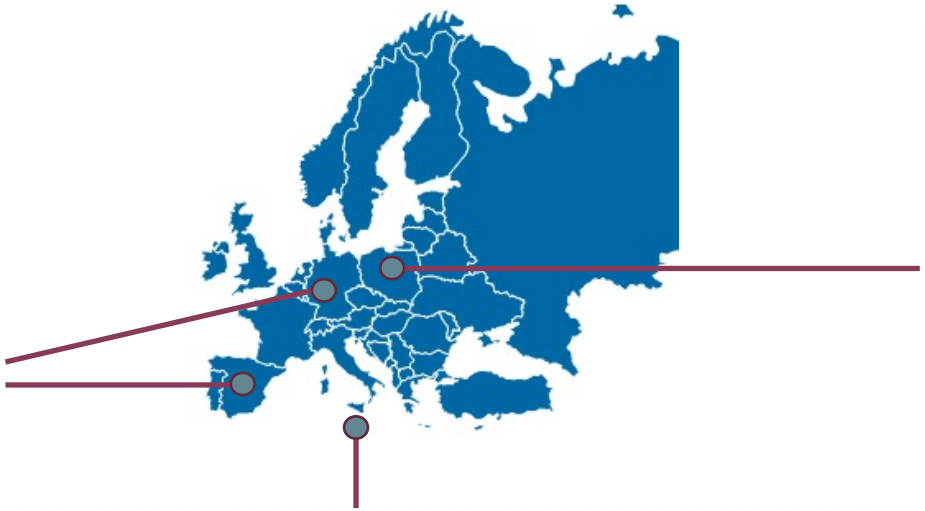
Transform existing IoT-based solutions into **smarter, more secure, trustable, and efficient environments**

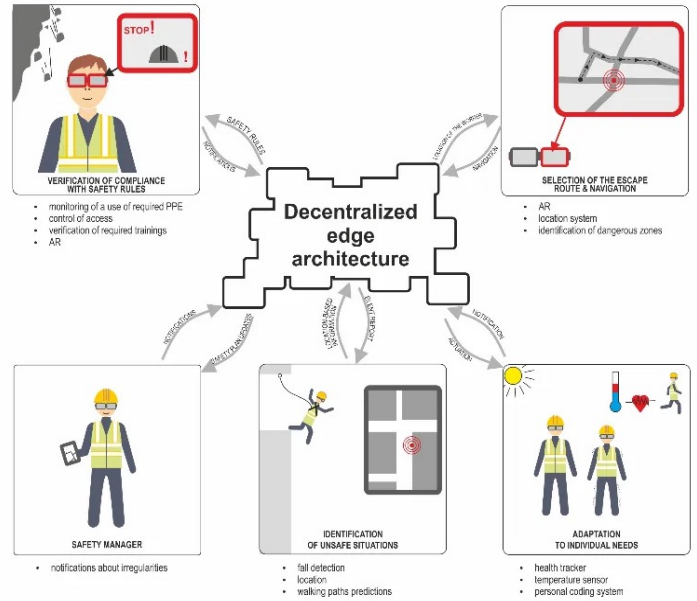
Allow **multiple streams of human and environment** collected contextual data, to benefit multiple AI-infused applications

Pilots

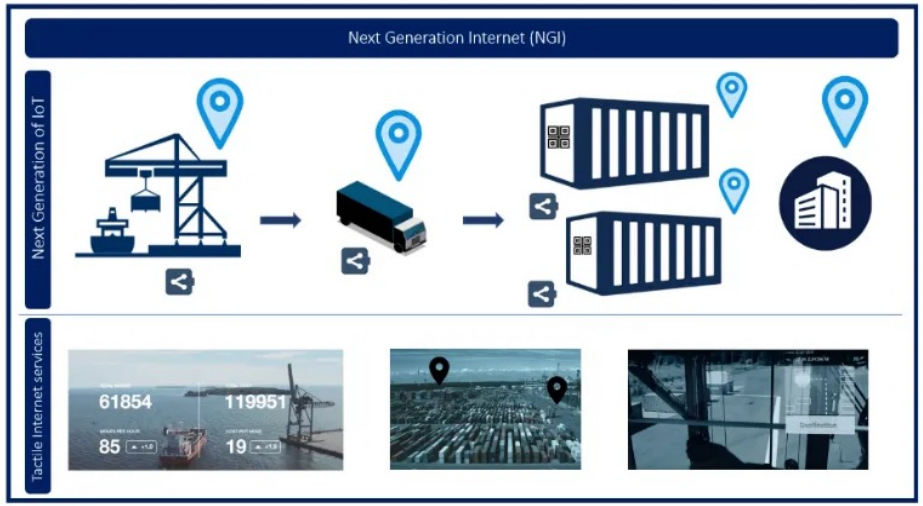


Cohesive vehicle monitoring



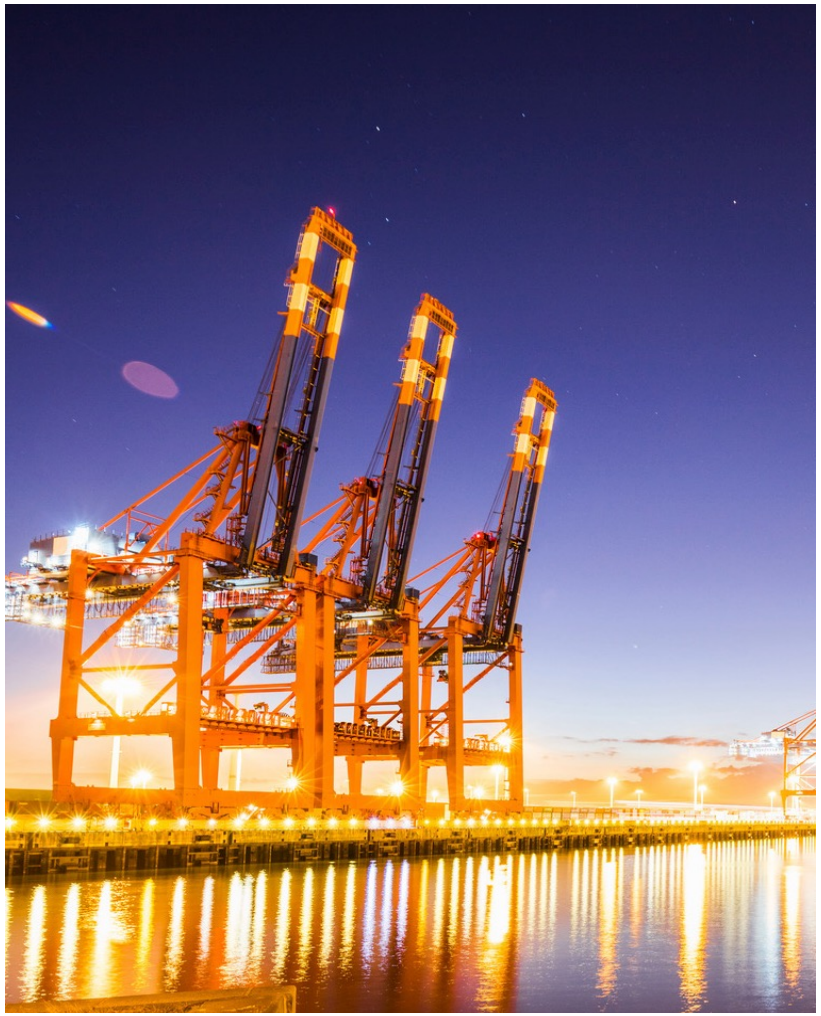


Worker Safety

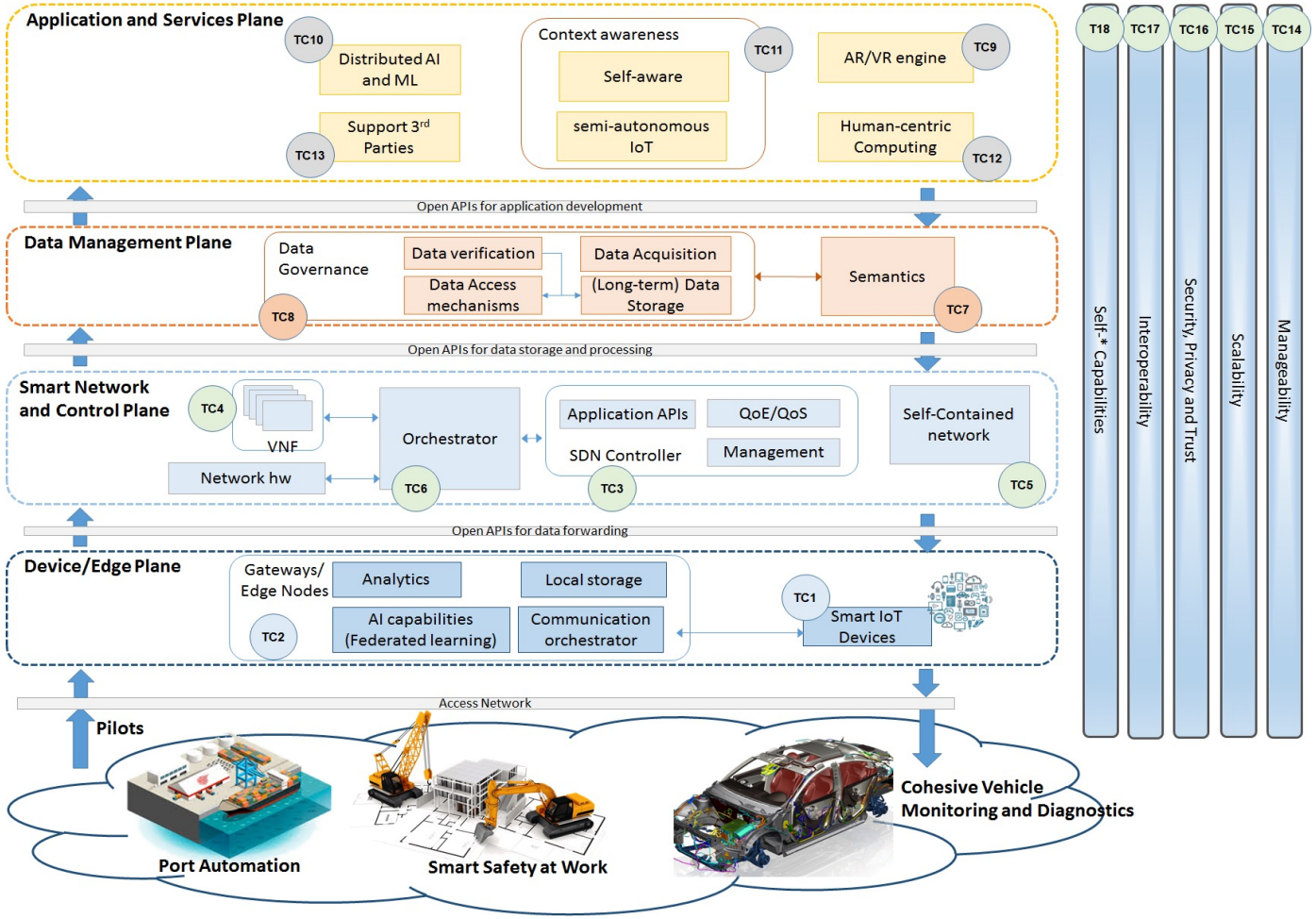


Port Automation

Prescriptive Maintenance – ASSIST-IoT

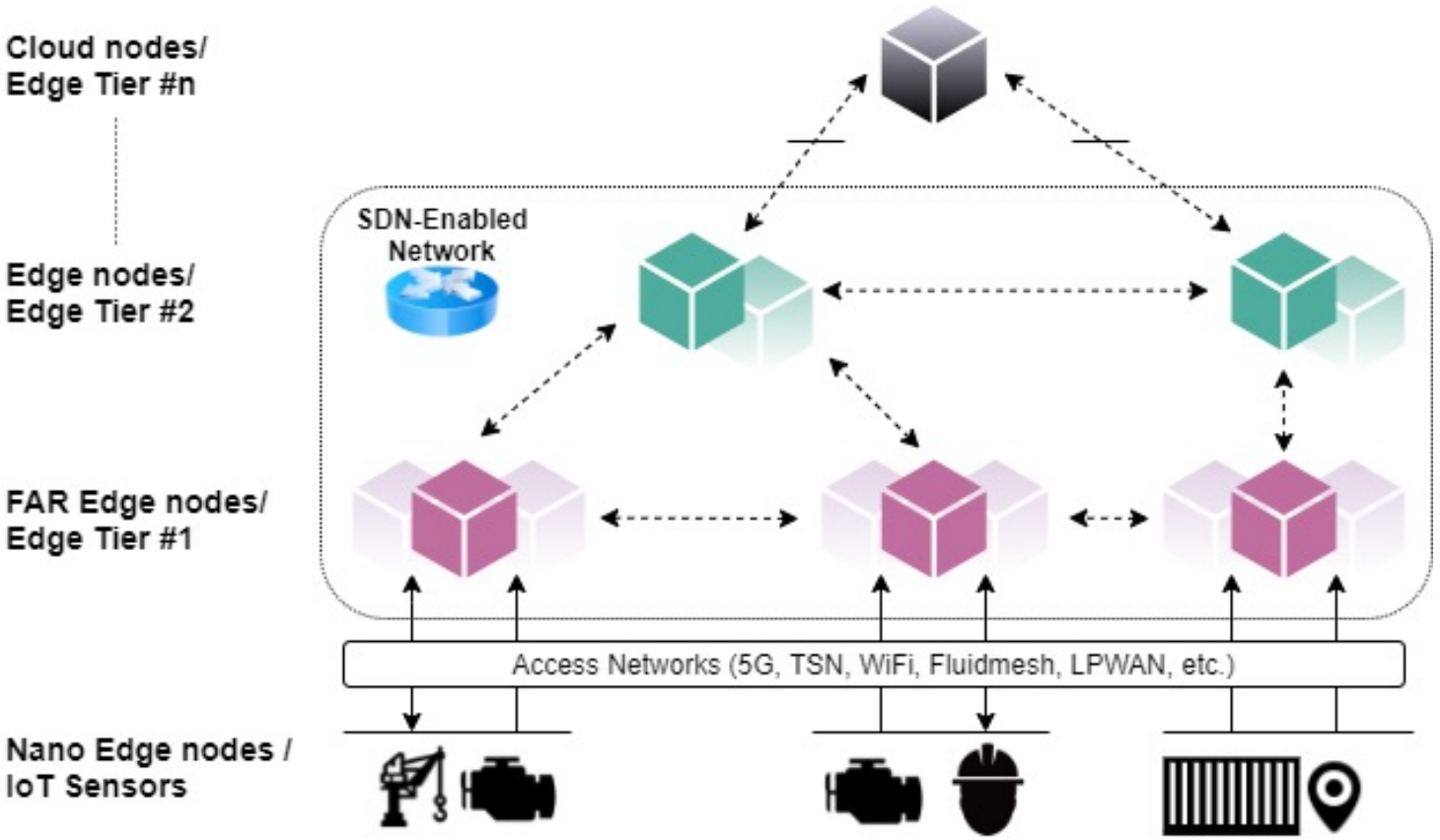


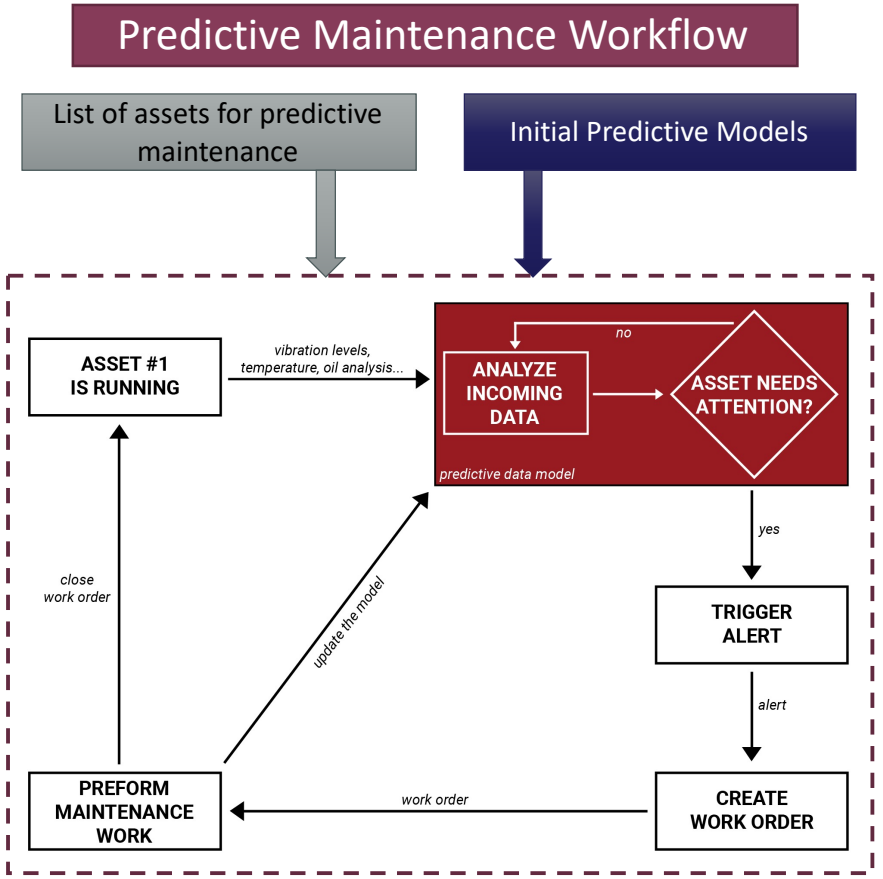
ASSIST-IoT Vision



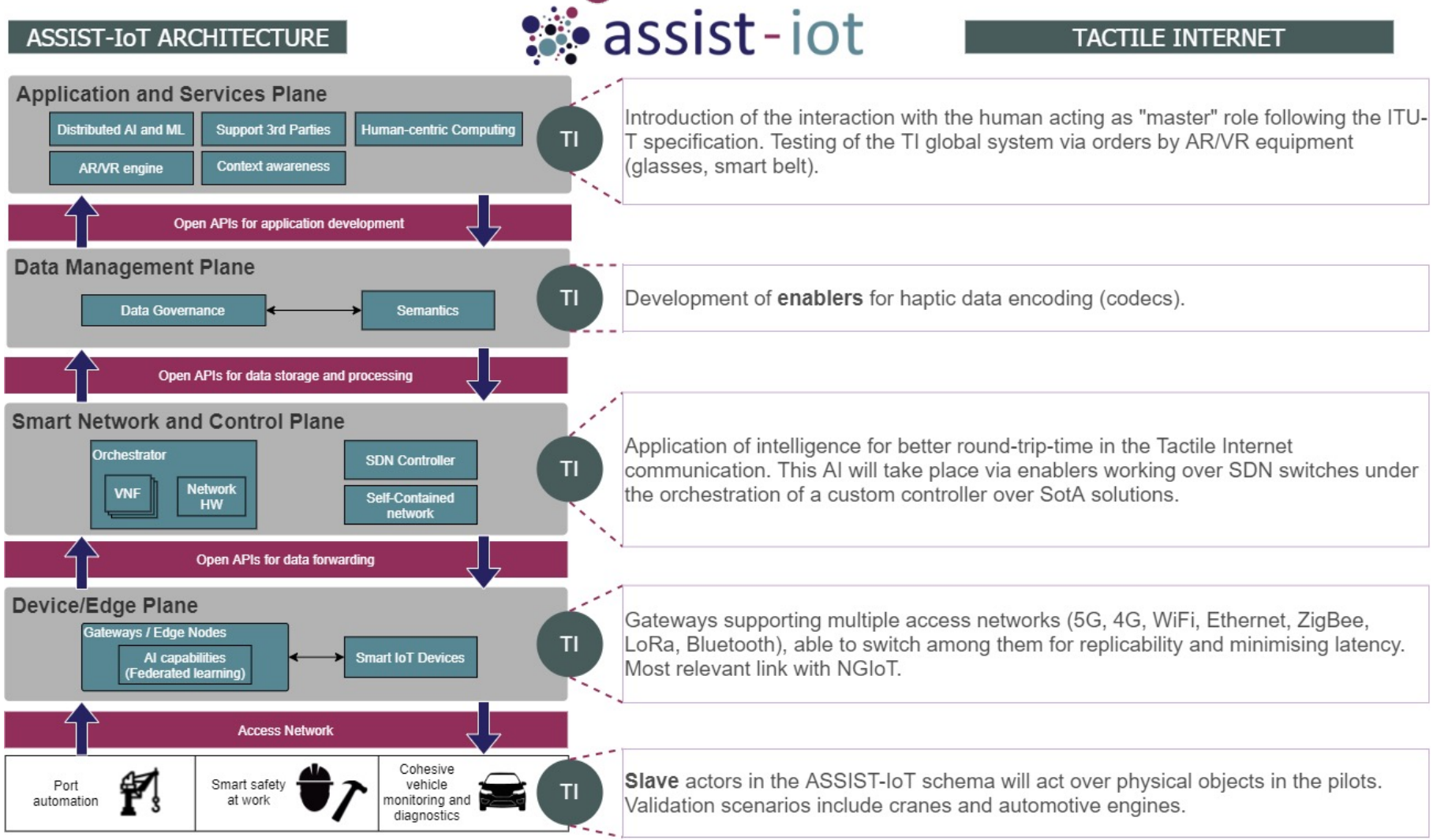
- Decentralised Architecture
- Hyper-connectivity and interoperability
- Context-awareness
- Distributed and decentralised intelligence
- Distributed data protection and differential privacy
- Human-machine interfaces for collaboration and interaction
- Ambitious pilots and scenarios

ASSIST-IoT Edge approach





ASSIST-IoT enabling Tactile Internet



Challenges of Edge-based PdM

- **Data – fuel of predictive maintenance**
  - Limiting factor – data quality (and quantity)
  - Key aspect – connectivity and latency
  - Heterogenous data sources need interoperability
- **ASSIST-IoT solution –decentralized architecture for NGIoT**
  - Edge architecure – including far-edge and nano-edge
  - Federated learning – multi-stakeholder predictive maintenance
  - Semantic interoperability
  - Low latency communication (5G, TSN, FluidMess, …)
  - DLT to track data, contracts, events, …
  - DevSecOps approach

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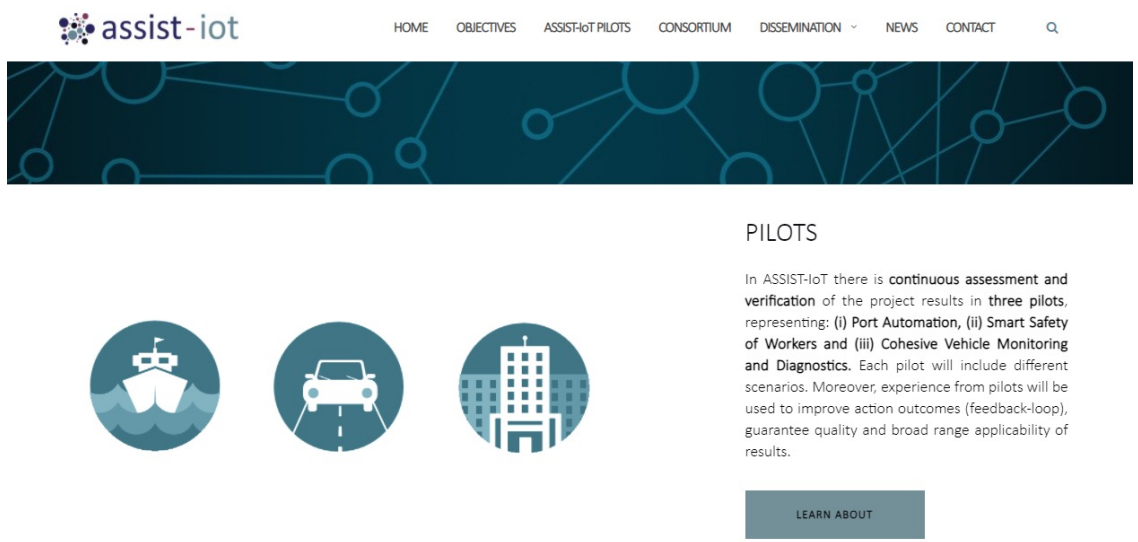

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Thank You

Questions?

Prof. Carlos E. Palau
Project Coordinator - UPV
cpalau@dcom.upv.es