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Deploying Mobility Services using OpenSlice

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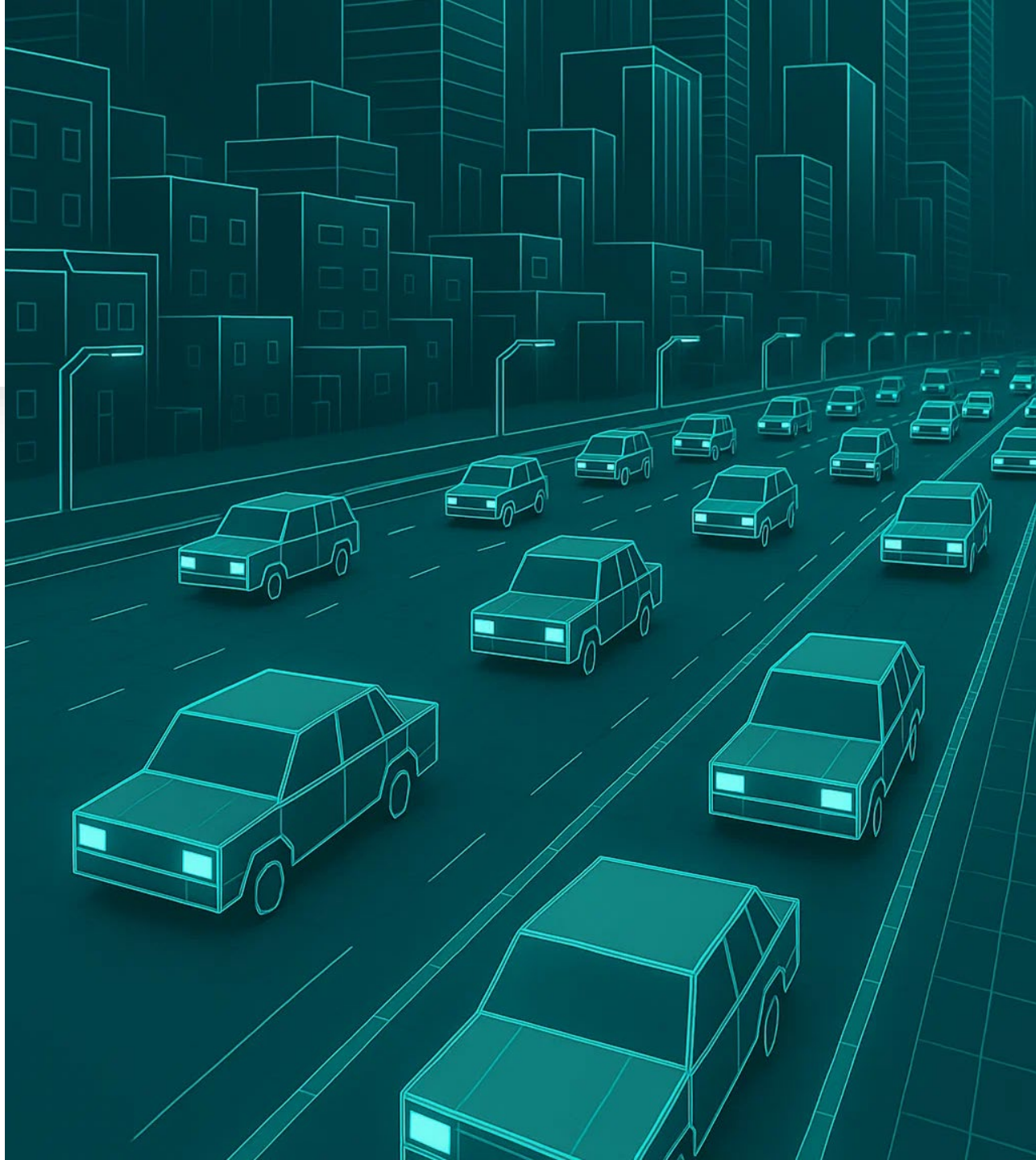
Mobility Services

- Mobility systems face increasing pressure from urbanization and climate change.
  - Traffic Management
  - Road Maintenance
  - Autonomous Vehicles
  - Electrification

Digital Twins for Mobility – DT4MOB

- Create dynamic digital representations of road infrastructure.
- Enable predictive maintenance and autonomous driving support.
- Support data-driven mobility policy and infrastructure planning.



DT4MOB

- Agent-based digital twins for infrastructure and users.
- Integration of real-time analytics and predictive models.
- Open-source components for broad reuse.
- Decision-support tools for policy-makers.

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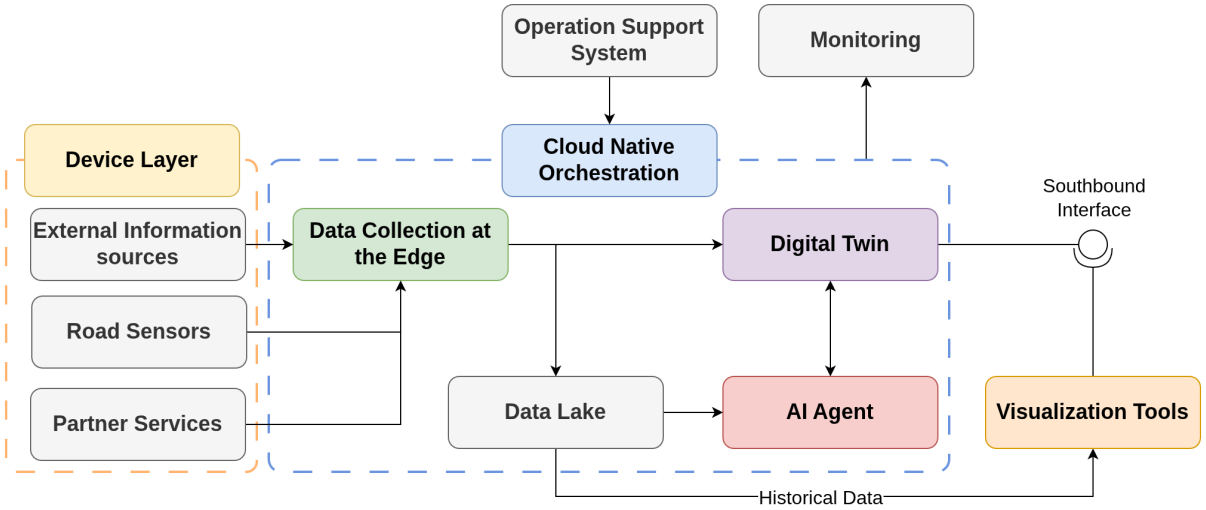
DT4MOB Requirements

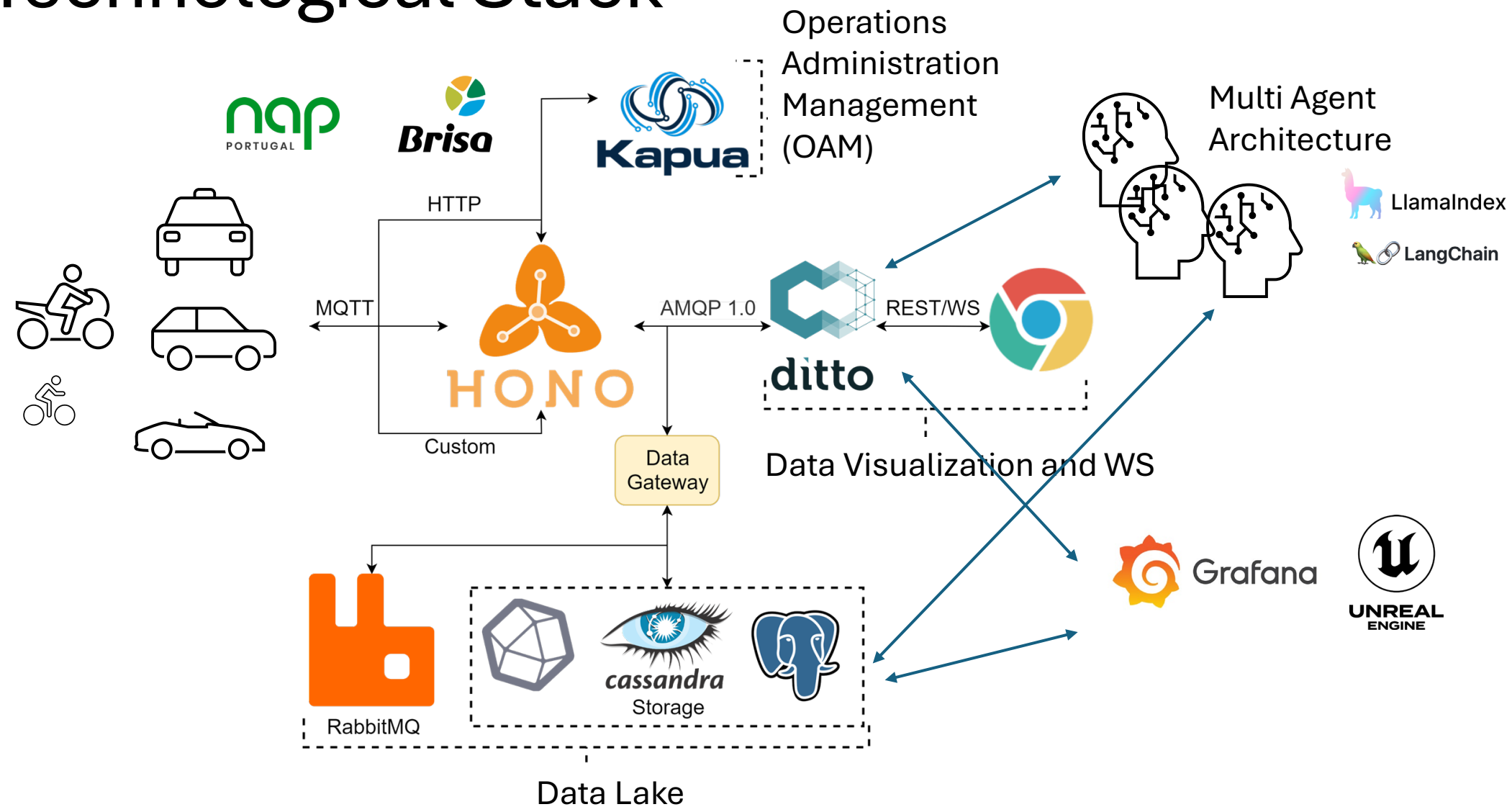
- Coupled cyber–physical Digital Twin for urban mobility
  - Edge Computing
- Real-time ingestion of sensing, traffic, and network telemetry
  - Low latency (<50ms)
- Elastic workloads
  - AI Agents
- Multi-domain
  - Full geographical coverage including cross-border

The Role of OpenSlice

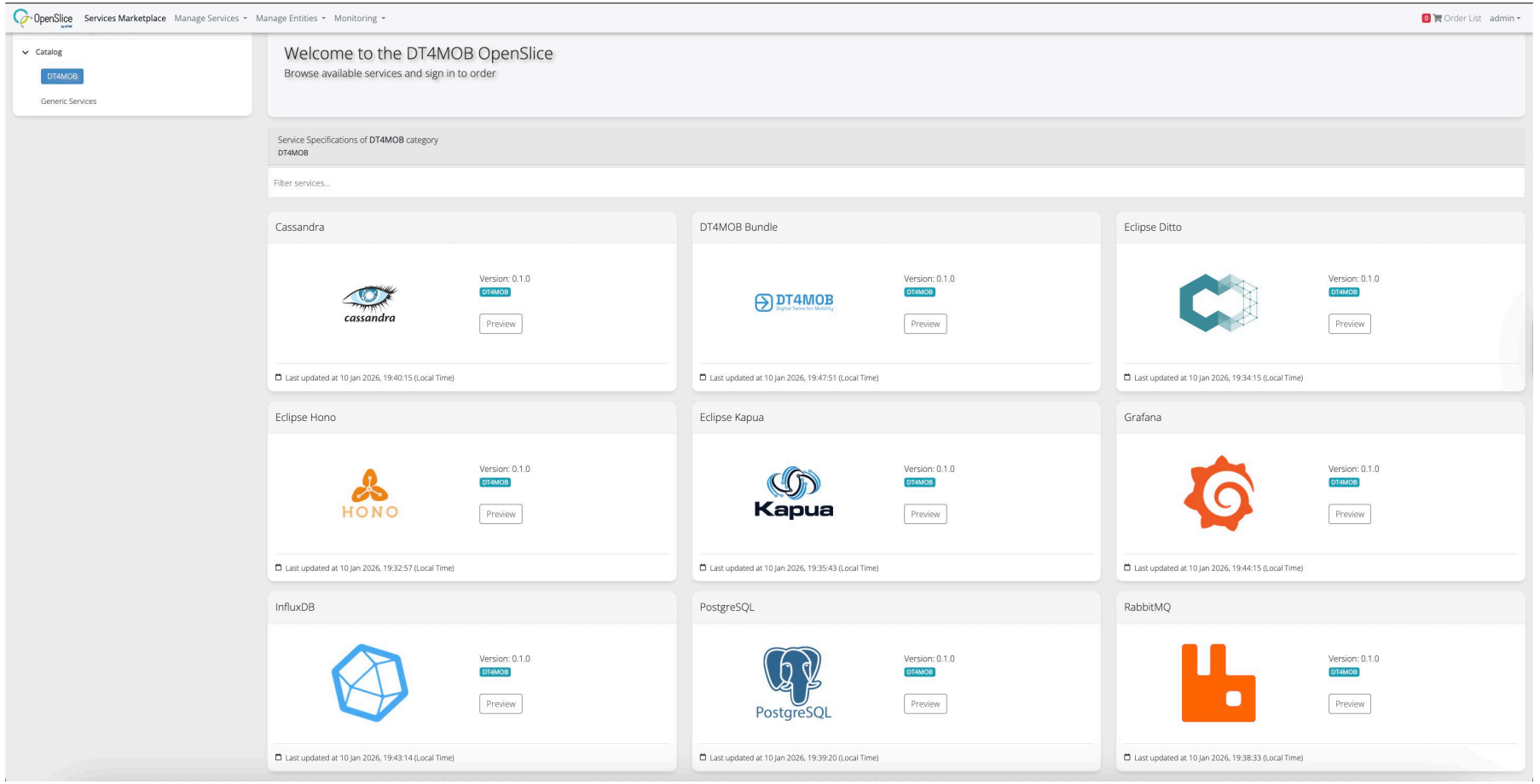


- OpenSlice fills the role of the Operation Support System
- Orchestration of the **computing** and **network** resources
- Service Catalog
- Managing Digital Twins Life-Cycles

Technological Stack

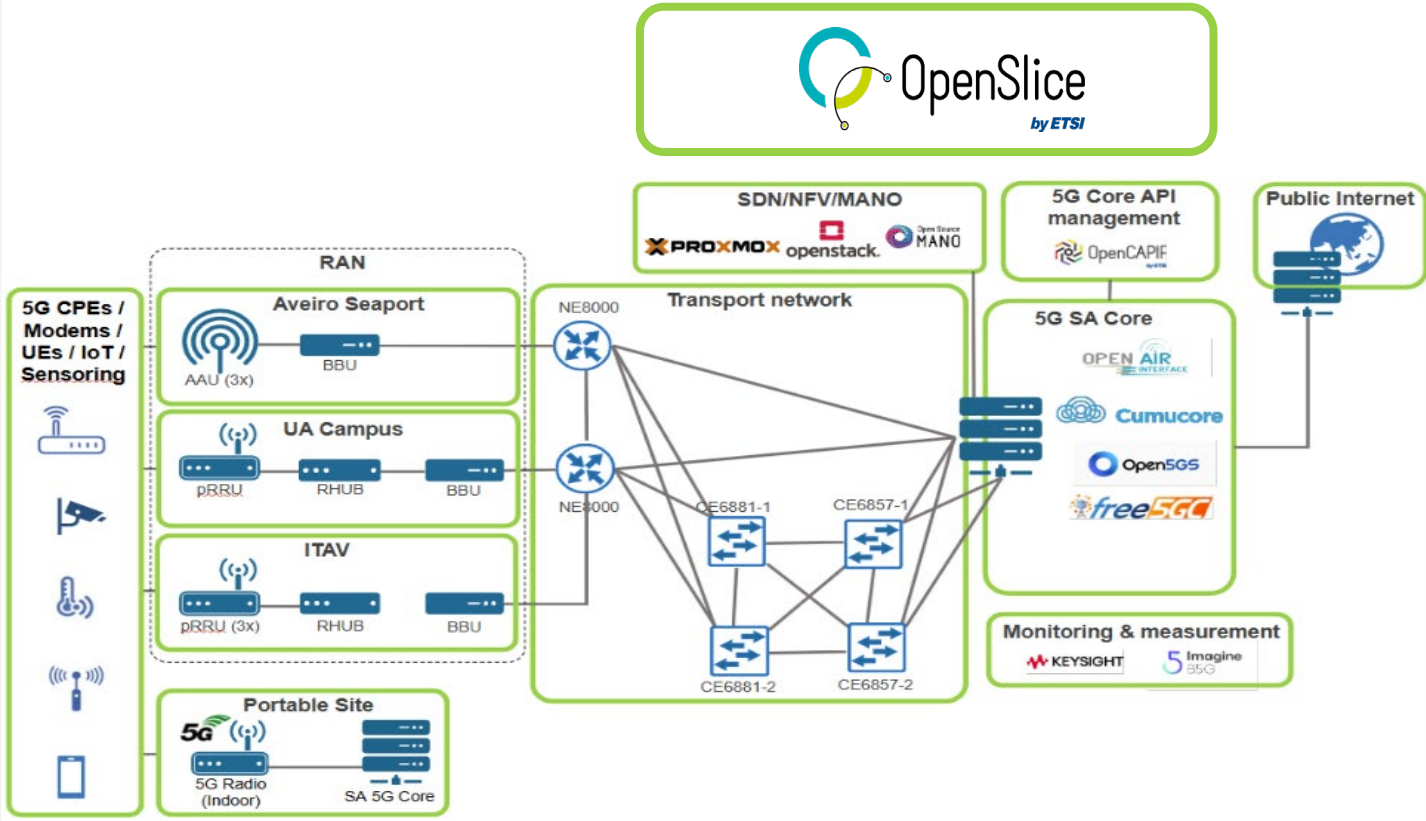


DT4MOB in OpenSlice



Status

- CI/CD pipelines for experiment deployment
  - Eclipse IoT Stack exposed in OSL service catalog
- Foundations for AI-driven orchestration policies
- Network Services deployed on 5G-SA testbed
- Deployment of Monitoring



Roadmap for OSL

- Cross-testbed federation
  - Federation API development
- Autonomic orchestration using ML policies
  - Not just exposing OSL to LLM's but learning from existing service deployments.
- Tighter Digital Twin synchronization

Conclusion

- OpenSlice enables systematic and reproducible deployment
- Strong fit for Digital Twin orchestration
- Platform supports extensibility and federation