



Intent-driven NaTive AI architecturE supporting Compute-Network abstraction and Sensing at the Deep Edge



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6G-INTENSE project has received funding from the Smart Networks and Services Joint Undertaking (SNS JU) under the European Union's Horizon Europe research and innovation programme under Grant Agreement No 101139266. Co-Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. <https://smart-networks.europa.eu/>

IE workshop



Grant Agreement: 101139266

Duration: 36 Months

Starting date: 01/01/2024

Total budget: 4,248,308.75 Euros

EC funding: 3,999,819.75 Euros

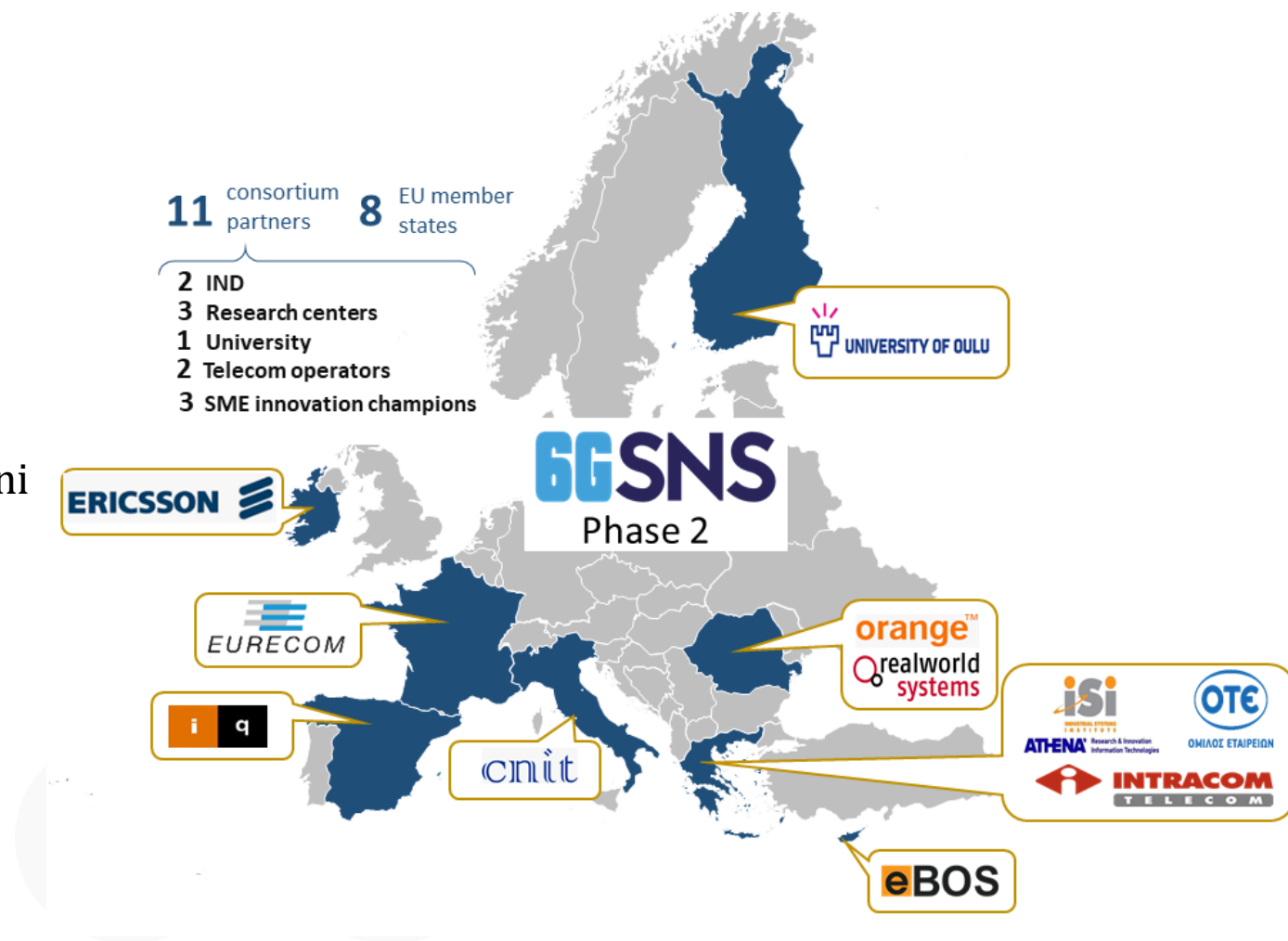
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✓ **Technical Manager:** Prof. Adlen Ksentini (EUR)

Consortium: 11 Partners – 8 Countries

Effort: 533 PMs

URL: www.6g-intense.eu



New 6G System Architecture

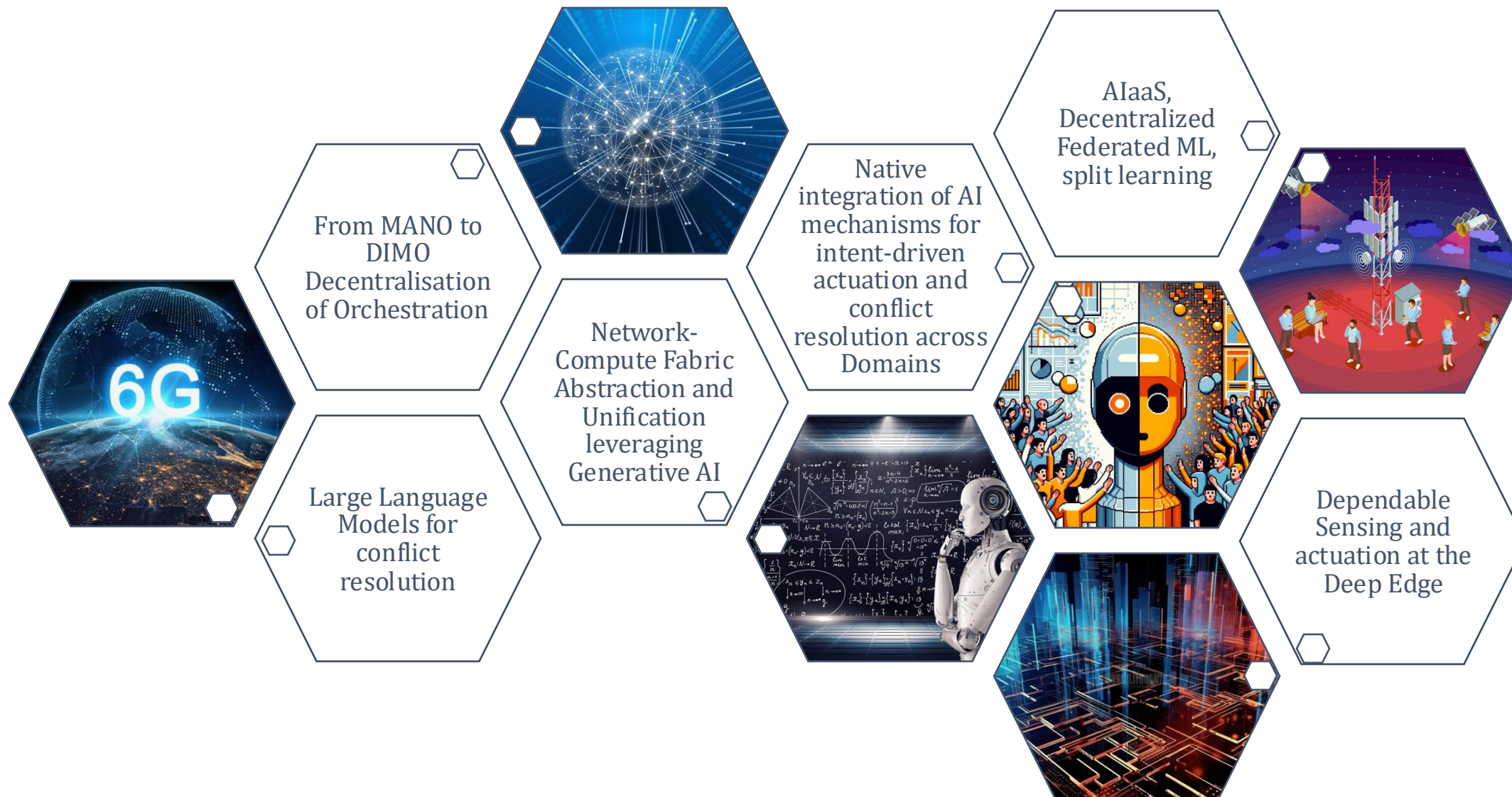
- Delivering “6G as a Smart Service Execution platform”.
- Sustainable infrastructure sharing to reduce costs.
- Encouraging collaboration under a unified Network-Compute fabric.

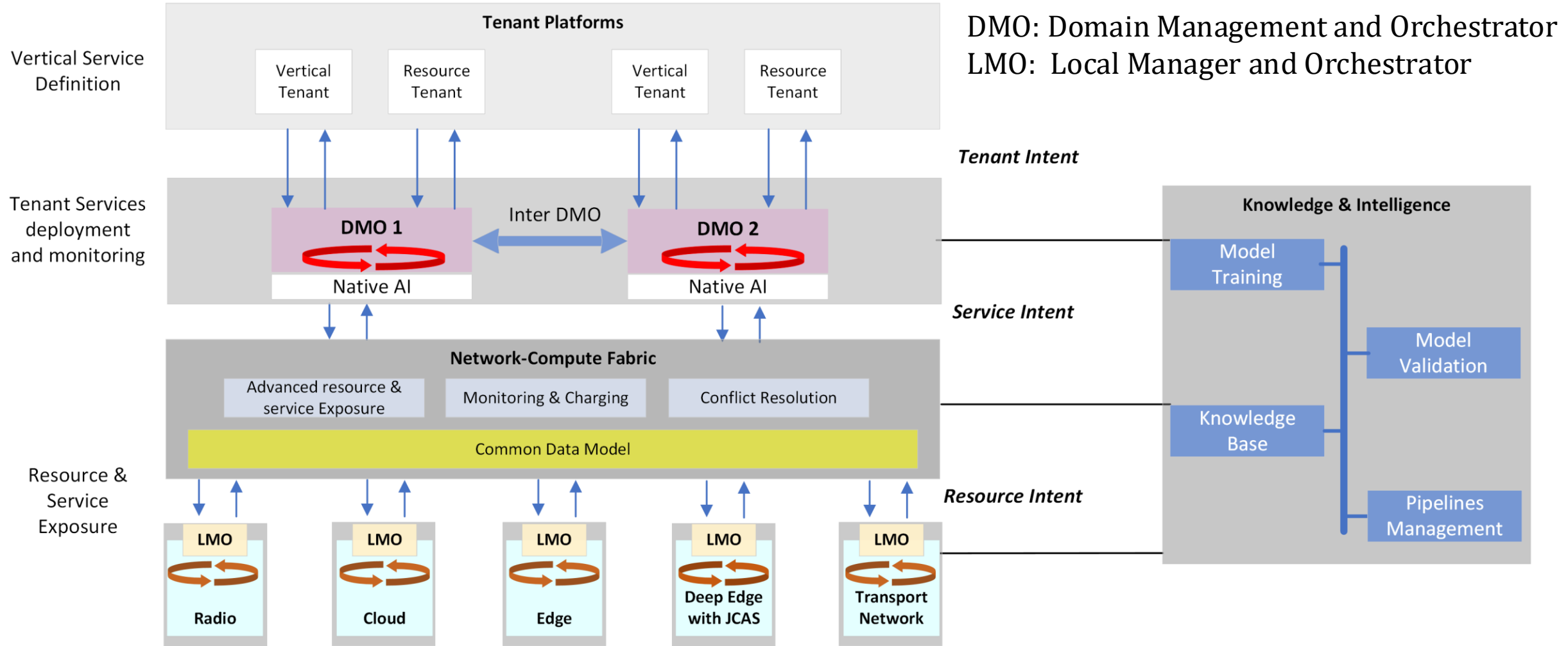
Key Contribution

- Novel Native AI toolkit, Distributed Intent-driven Management and Orchestration (DIMO).
- Separation between service and resource management.
- Facilitating intent declaration, negotiation, and decision automation across domains.
- Sensing as a key enabler for navigating complexities of the Deep Edge.



- 1 Offer a Distributed, Intent-driven Management & Orchestration plane (DIMO)** for autonomously reconciled intent declarations in multi-stakeholder ecosystems
- 2 Deliver an intent-based Abstraction Framework** for the 6G Network-Compute Fabric
- 3 Deliver a scalable Compute Interconnection solution based on SD-WAN** for self-organized Service Mesh deployments
- 4 Deliver a concrete AI Native Toolkit**, offering intent decomposition, actuation and reconciliation towards fully Autonomous Domains
- 5 Deliver a federated AI plane for multi-stakeholder 6G ecosystems**, via knowledge optimization, synthesis and intent propagation mechanisms
- 6 Support privacy-preserving Joint Communication & Sensing for resilience and dependability at the Deep Edge**
- 7 Dissemination, Communication, Exploitation and Standardisation**





PoC #1: Distributed Continuum towards Pervasive Computing

Experiment 1.1: Pervasive Computing in a Distributed Continuum

- Lifecycle management of micro-service deployment as an Orchestration Continuum undertaken by the Network-Compute Fabric after appropriate training of its Generative AI models.
- JCS of the Deep Edge infrastructure (e.g., monitoring links and performance).



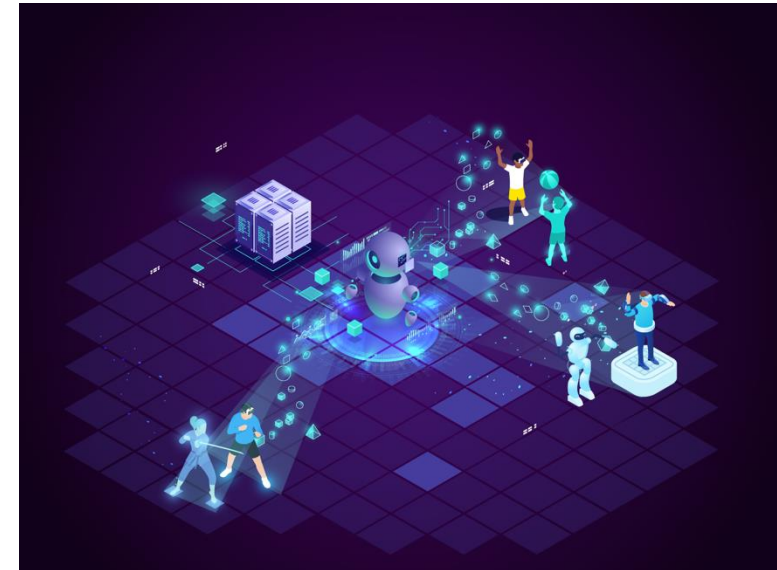
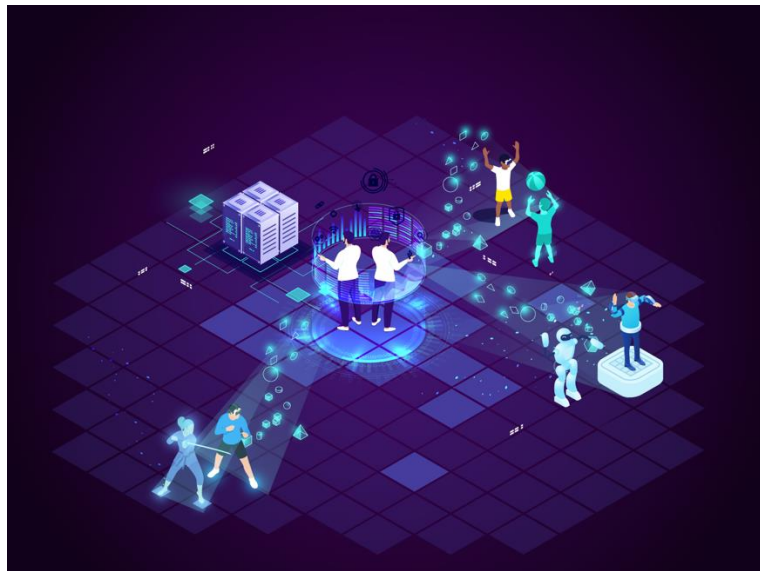
Experiment 1.2: Edge Intelligence and Compute Interconnection

- Demonstrate: SD-WAN usage for PoP interconnection, Dynamic resource integration to Network-Compute Fabric, SLA guarantee by intent monitoring, Edge intelligence for training distributed ML models.

PoC #2: Metaverse

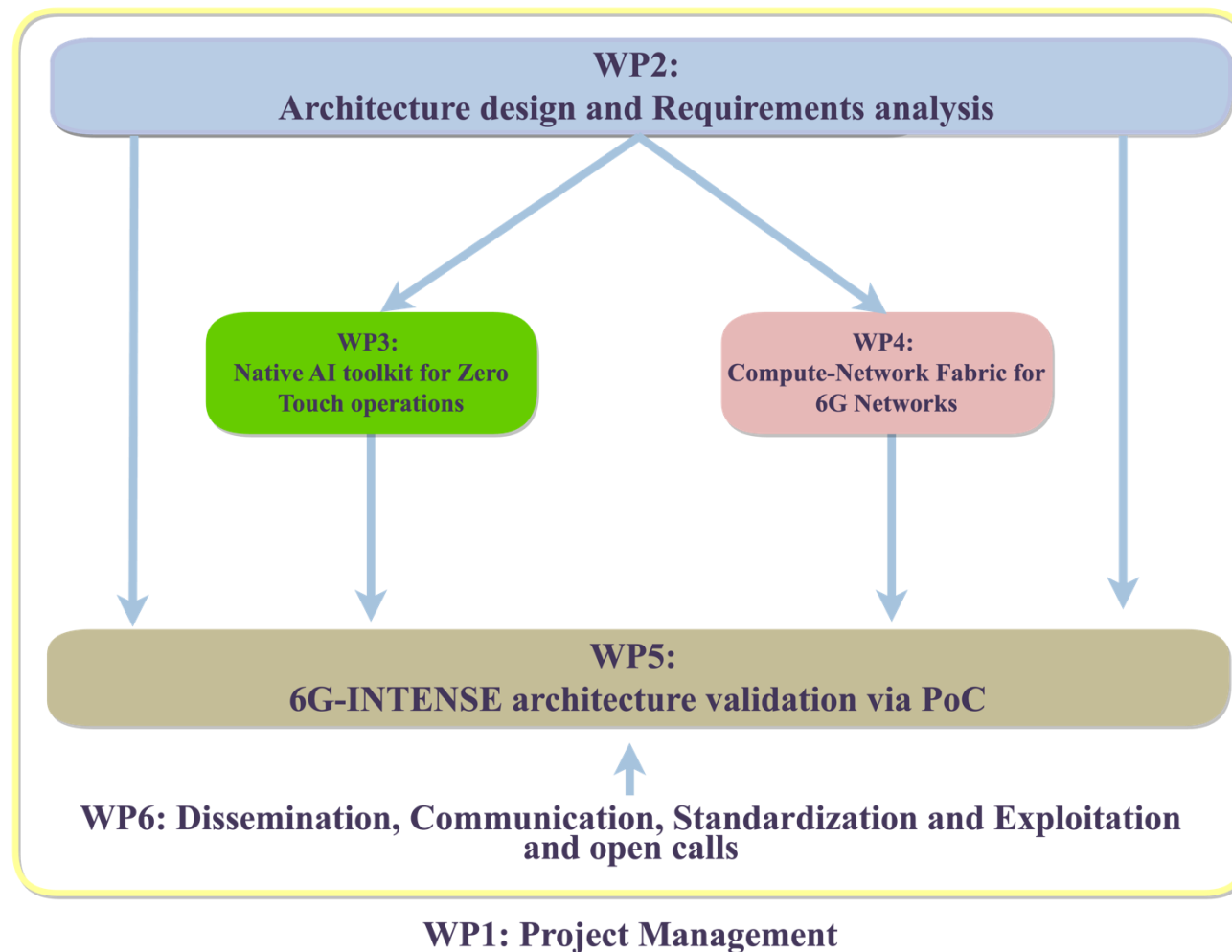
Experiment 2.1: Joint Communication and Sensing for Optimal User Tracking in the Metaverse

- Demonstrate the JCS functions that provide pervasive location awareness to be leveraged by Metaverse
- Explore trade-offs on sensing accuracy vs. energy efficiency at the Deep Edge



Experiment 2.2: Fully Autonomous Metaverse FCAPS, Sensing, and Continuum Abstraction

- Showcase how Native AI mechanisms drive intent (re-)negotiation at the tenant domain.
- Deliver the Orchestration Continuum vision at the Service domain.
- Demonstrate adaptation based on the inputs of a Sensing service that is part of the generalized Service Mesh.



Thank You!!!



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