



Future 6G Management Network Orchestration aspects

Marius Iordache

Ioana Dragus

Orange Romania

RWS Romania



12.11.2024



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



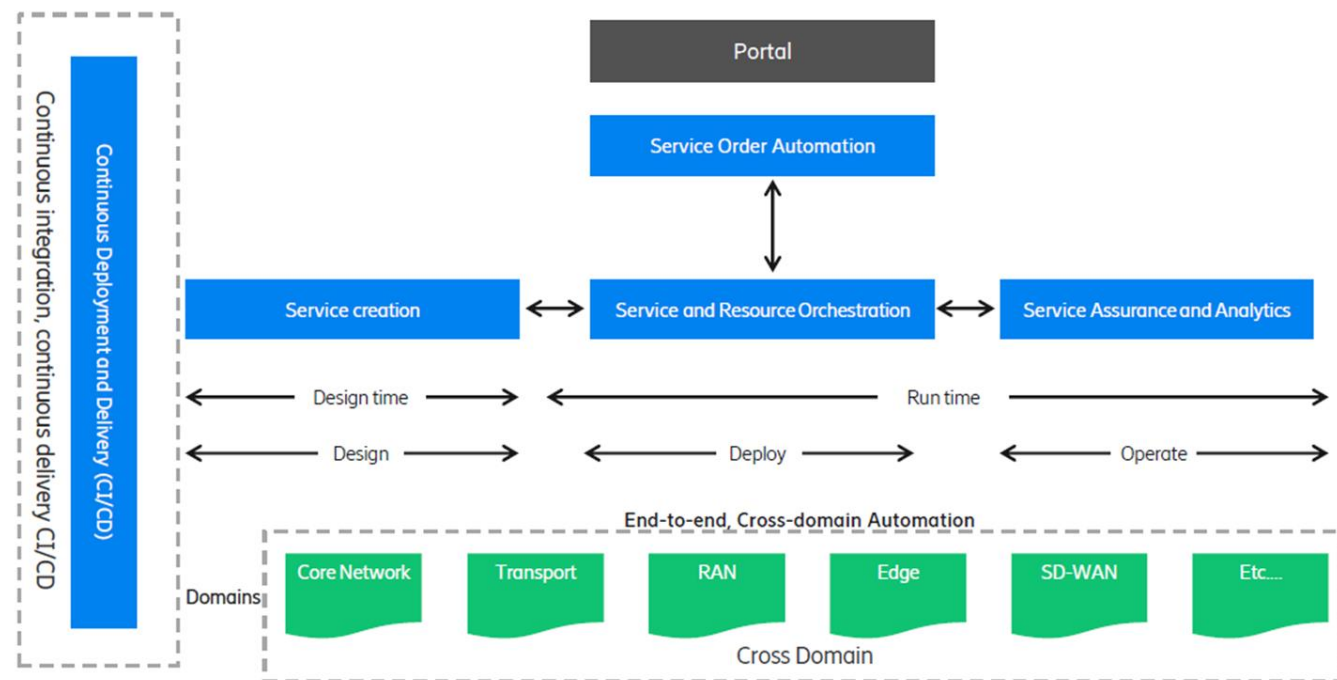
Co-funded by
the European Union

'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'

1. General aspects of M&O and challenges
2. M&O evolution and challenges
3. Architecture aspects
4. Innovative implementation
5. M&O approach with Intent-based support (TMF mapping)
6. Conclusions

Overview and aspects:

1. MANO systems to orchestrate and manage the resources composed of virtualized and physical elements
2. Centralized NFV architecture, as Cloud Edge, Deep Edge, rising questions of efficiency
3. Vision of sustainable infrastructure's, network sharing aspects for efficiency and energy costs, impossible to manage the resources of multiple infrastructure providers
4. Request for efficient and scalable management system, common Resources and Services orchestration systems
5. The evolution to the new 6G architecture paradigms brings unprecedented complexity



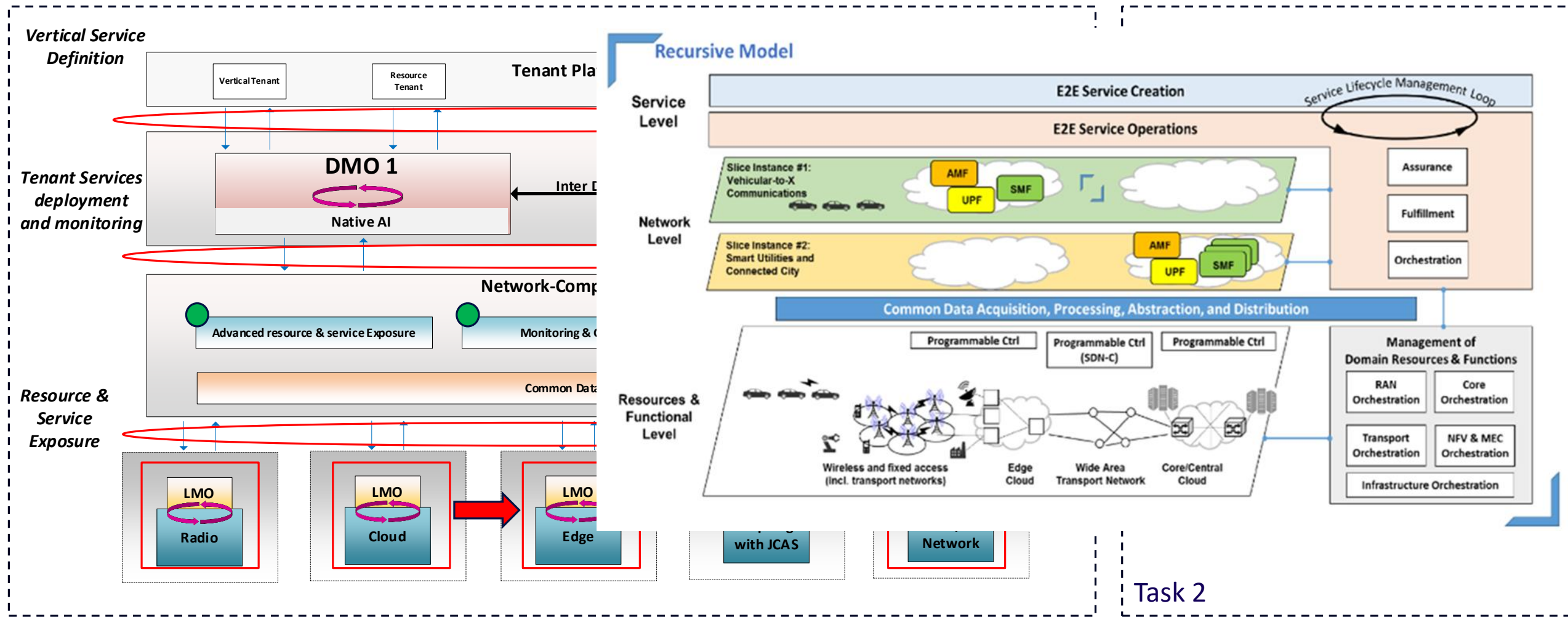
Evolution: Distributed Managed and Orchestration (DMO)

1. Decentralized and zero-touch management system handling different technological domains
2. DIMO framework: separation of the service orchestration from resource orchestration & Network-Compute Fabric
3. Multi-tenancy approach, unify the CEC resources
4. Intent translation and propagation approach,

INTENT-driven approach for ZTM

1. Intent-driven (3GPP and TMF): defining desired outcomes or intents rather than specifying detailed processes or configurations.
2. Intent focuses more on describing the "What" needs to be achieved but less on "How"
3. High-level goals for network behavior and performance
 - Automation, aiming to automate network management by translating intents into actionable configurations
 - Flexibility, the support for dynamic network environments by allowing changes in intents
 - Responsive and customer-focused service management ecosystem

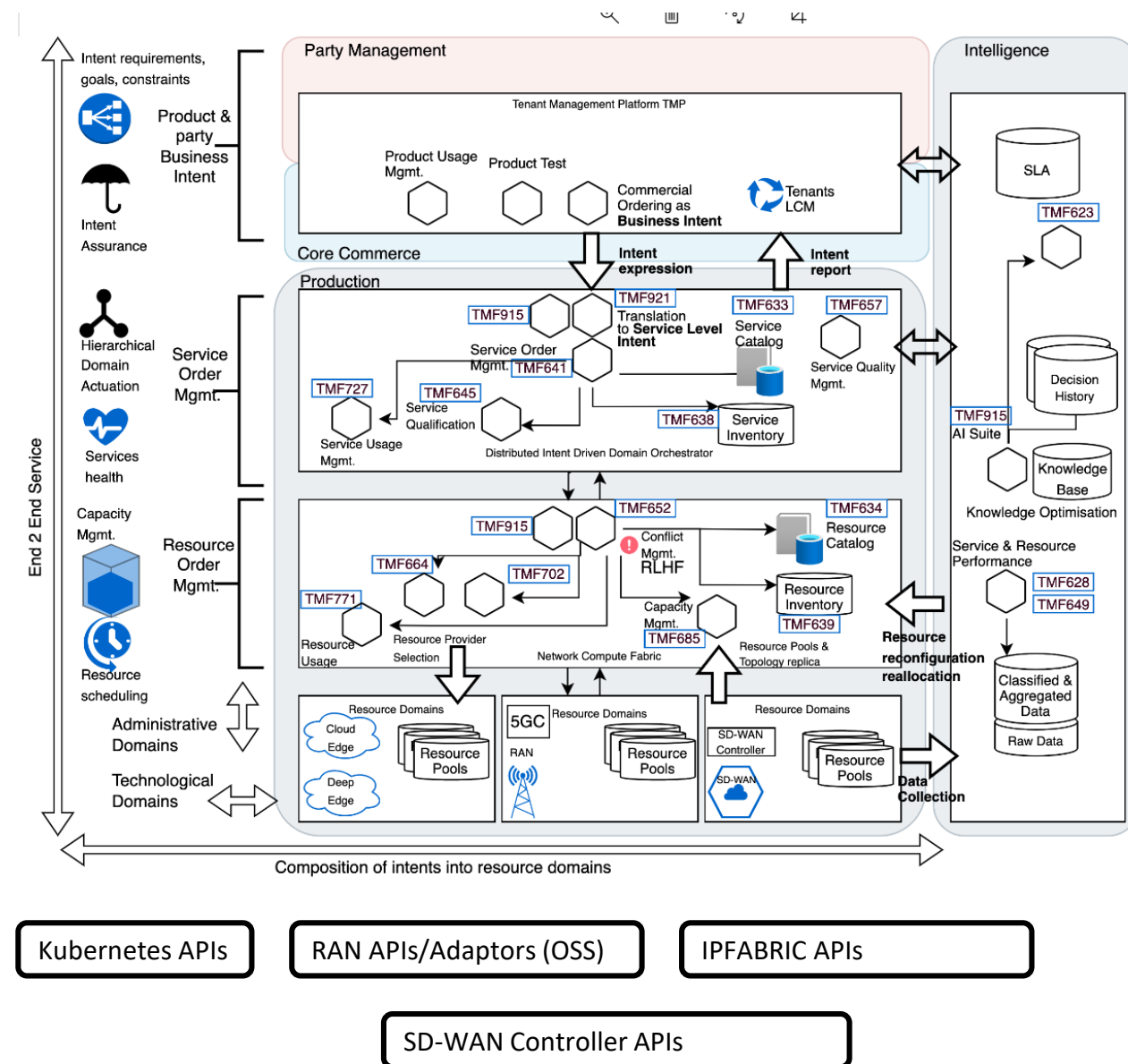
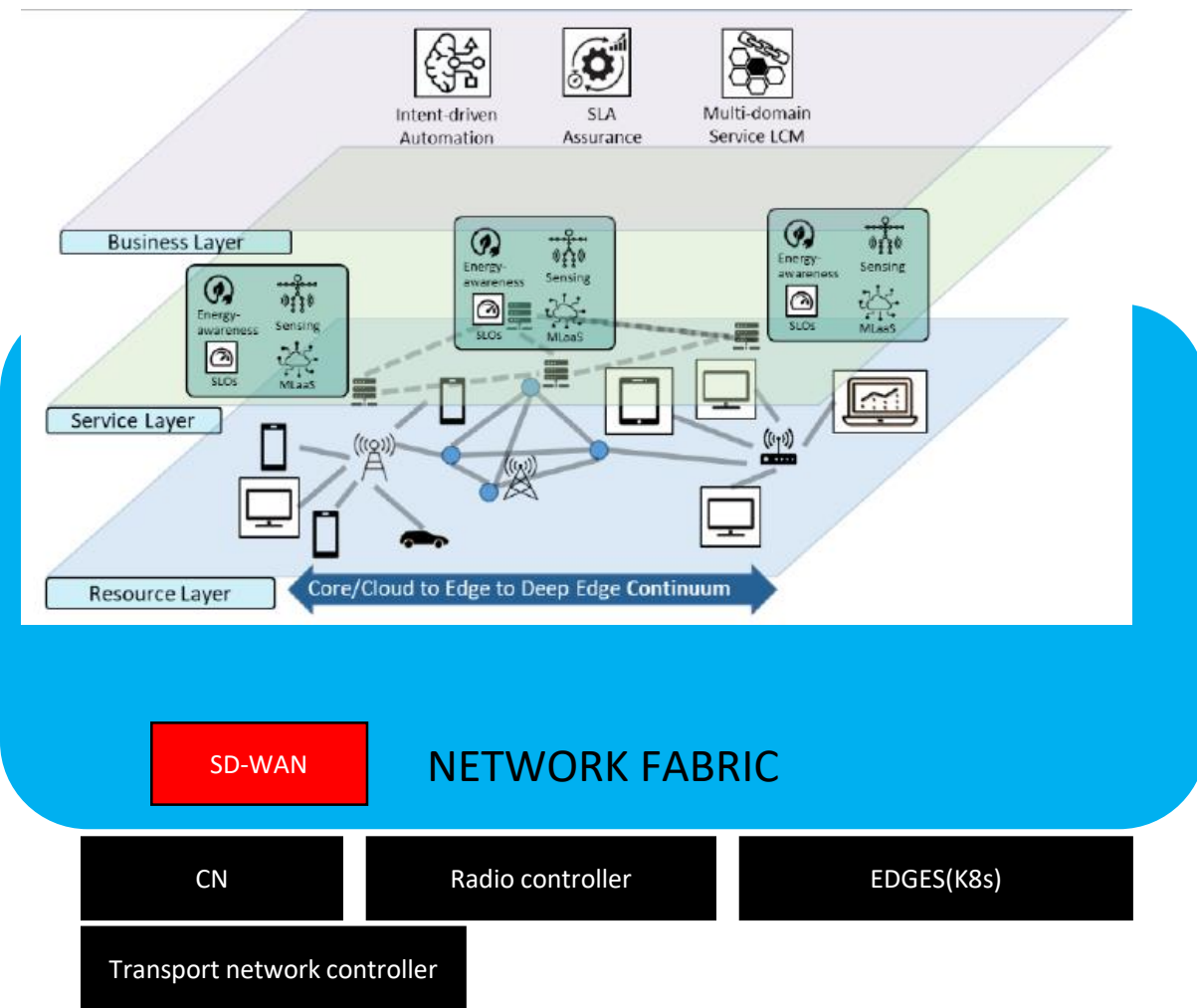
INTENSE Architecture aspects



Task 2

1. Distributed, Intent-driven Management & Orchestration plane (DIMO)
 - Disaggregating Service and Resource orchestration
 - Dynamic resources addition and deletion
2. Intent-based Abstraction Framework for the 6G Network-Compute Fabric, unified Intent APIs as an interface towards tenants
 - Autonomous self-configuration, self-healing and self-optimization for the southbound platforms (Native AI)
 - Resource Utilization Efficiency
 - Decentralization and Autonomous Domains
3. Scalable Compute Interconnection solutions
 - Self-organized Service mesh deployments
4. Network-Compute Fabric Abstraction framework
 - abstracts and unify the CEC resources
 - unifying entity of all Orchestration Domains

INTENSE M&O approach with Intent-based support



1. From MANO to DIMO concept

- combining the cloud, edge, and deep edge, the computing infrastructure highly distributed
- novel way to orchestrate and manage these resources to seamlessly deploy services and network functions
- Cloud Edge Continuum

2. Network-Compute Fabric Abstraction and Unification

- proposes a ground-breaking Network-Compute Fabric framework, to abstract resource pools composed of heterogeneous computing and networking resources
- resources from different infrastructure providers are federated by exposing these resources with a unified Intent API and data to the DMOs

3. Intent-driven approach for actuation and conflict resolution across Domains

4. The leveraging on Generative AI

Thank You!!!



MARIUS IORDADCHE

IOANA DRAGUS



MARIUS.IORDACHE@ORANGE.COM

IOANA.DRAGUS@REALWORLD-SYSTEMS.COM



ORANGE/RWS