NF-MUST
End-to-end 5G MUlti-domain Services managemenT architecture

Context and objectives

6G is announcing a new area of resource orchestration and management which is far more complex than 5G, using different types of resources at different scales. The built infrastructure will be composed of resources for computing and networking that come from different nonhomogeneous technological domains, such as the centralized cloud (private and public), edge (including Non-Terrestrial Network devices), and far edge (integrating IoT devices), Radio access, networking.

In 6G, all these resources will be combined and considered objects that must be managed and orchestrated. In this context, it is essential to come up with new orchestration and management mechanisms that :

1) should be scalable, distributed, and collaborative to handle the diversity of resources when deploying 6G services;
2) should achieve the zero touch service management (ZSM) approach by relying on state of the art AI/ML solutions;
3) should be reliable and low-latency as many 6G services require very low latency and highly reliable infrastructure;
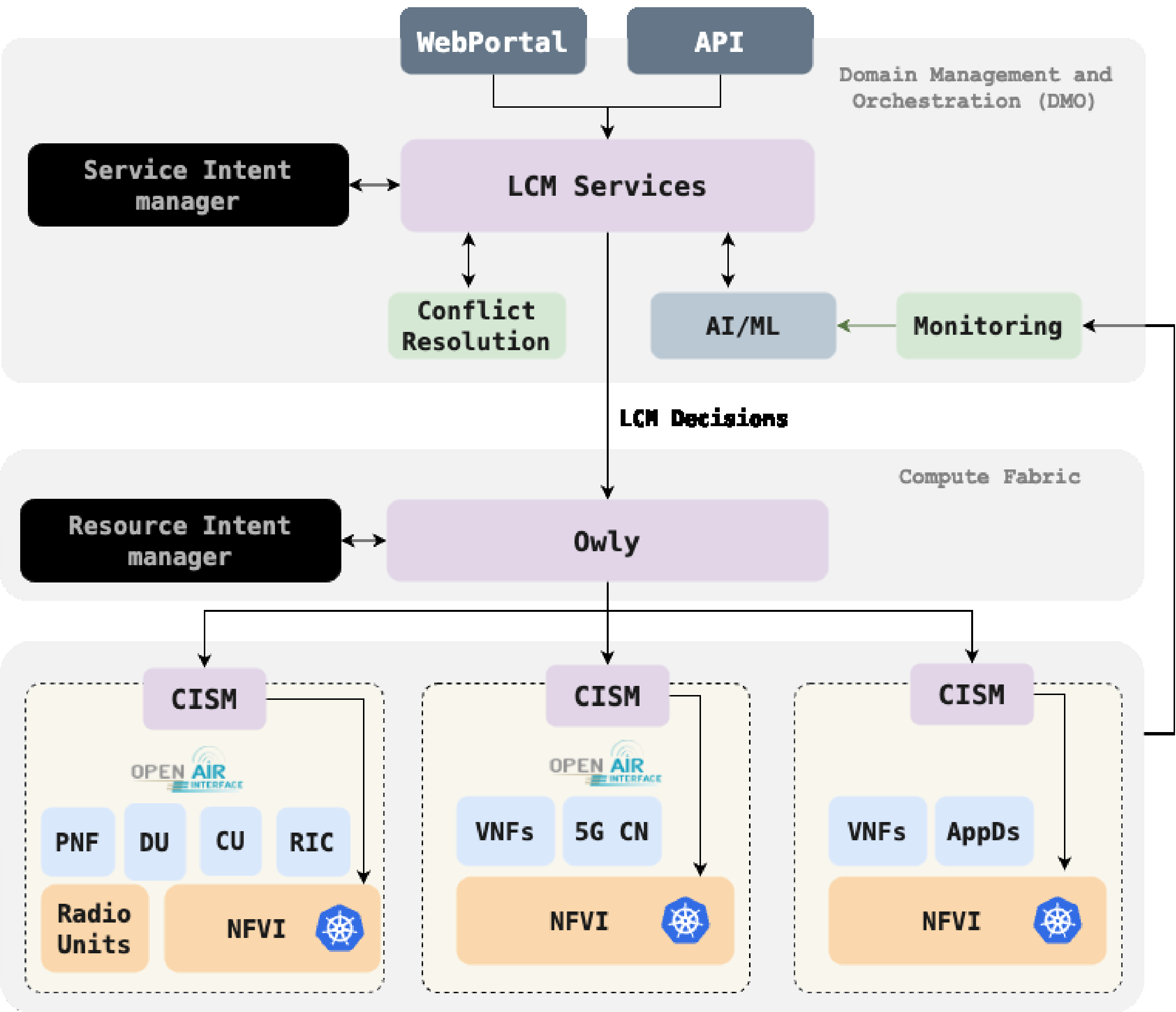4) Should cover not only the cloud/edge but also the 6G Radio Access Network (RAN)

Methodology

To overcome the diversity of the resources involved and used by 6G services and efficiently handle their life cycle, EURECOM has devised a novel orchestration and management mechanism that separates service and resource management.

The proposed approach introduces two critical elements in the orchestration and management plane :

1) Domain Management and Orchestration (DMO), which handles and manages the service life cycle: configuration, onboarding, instantiation, and run-time management, and translates the service components into resources that spam different technological domains;

2) Compute Fabric that handles the resources assigned to a service and enforces DMO decisions using low-level languages closer to the technological domains using the Owly resource orchestrator.

Architecture

Consortium

IMT-TSP & TP, CEA-LIST, CNRS, INRIA, Universités Bordeaux and Strasbourg

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