



## SHOWCASE 3

### DISTRIBUTED END-TO-END NETWORK SLICING AND ORCHESTRATION

#### GOALS

- Demonstrate the deployment of customised and isolated end-to-end network slices.
- Demonstrate how end-to-end network slicing set up can be used to support different types of services with diverging service requirements on top of a shared physical network infrastructure.

#### CHALLENGES

One of the main challenges of this showcase is the coordination on the resource allocation among different network segments for deploying end-to-end network slices:

- First of all, it was necessary to virtualise network segments for creating customised and isolated network segment slices, e.g., a virtual radio access network (RAN), a virtual transport network (TN), and a virtual core network (CN).
- Then, decomposing the end-to-end network requirements per network segment, allowing the delegation of the resource management to separate specialised orchestrators, tailored for the particularities of each network segment.
- Finally, achieving a cohesive resource allocation across multiple network segment slices to ensure a consistent end-to-end QoS for the network slices.

#### CONCEPT

This showcase emulates a real network infrastructure that can be encountered in mobile network deployments. More precisely, we consider a scenario whereby the network provider (NP) can use its physical network infrastructure to offer network slices as a service (NSaaS) — in other words, creating network slices on the fly to support different types of communication services and serve service providers (SP).

- First, we instantiate network slices as a service, reacting to requests from SPs, which contain high-level end-to-end service requirements, e.g., throughput, delay, reliability.
- Then, our highlevel orchestrator, the hyperstrator, maps the high-level end-to-end requirements onto high-level local requirements for the separate network segments, enabling the decentralisation of the decision over the resource allocation and function placement to specialised orchestrators in charge of specific network segments.
- Moreover, our hyperstrator coordinates the deployment of network segment slices and ensures a cohesive and optimised performance across networks segments to guarantee a consistent end-to-end QoS for fulfilling the given service request.

