**Partners:** NFI, EAB, AAU, AAP, ASA, EBY, ICC, LTU, TNO, NXW, NGE, OPL, TUD, TIM, UBW, UC3, WIN, TUK, SON

EuCNC 2024

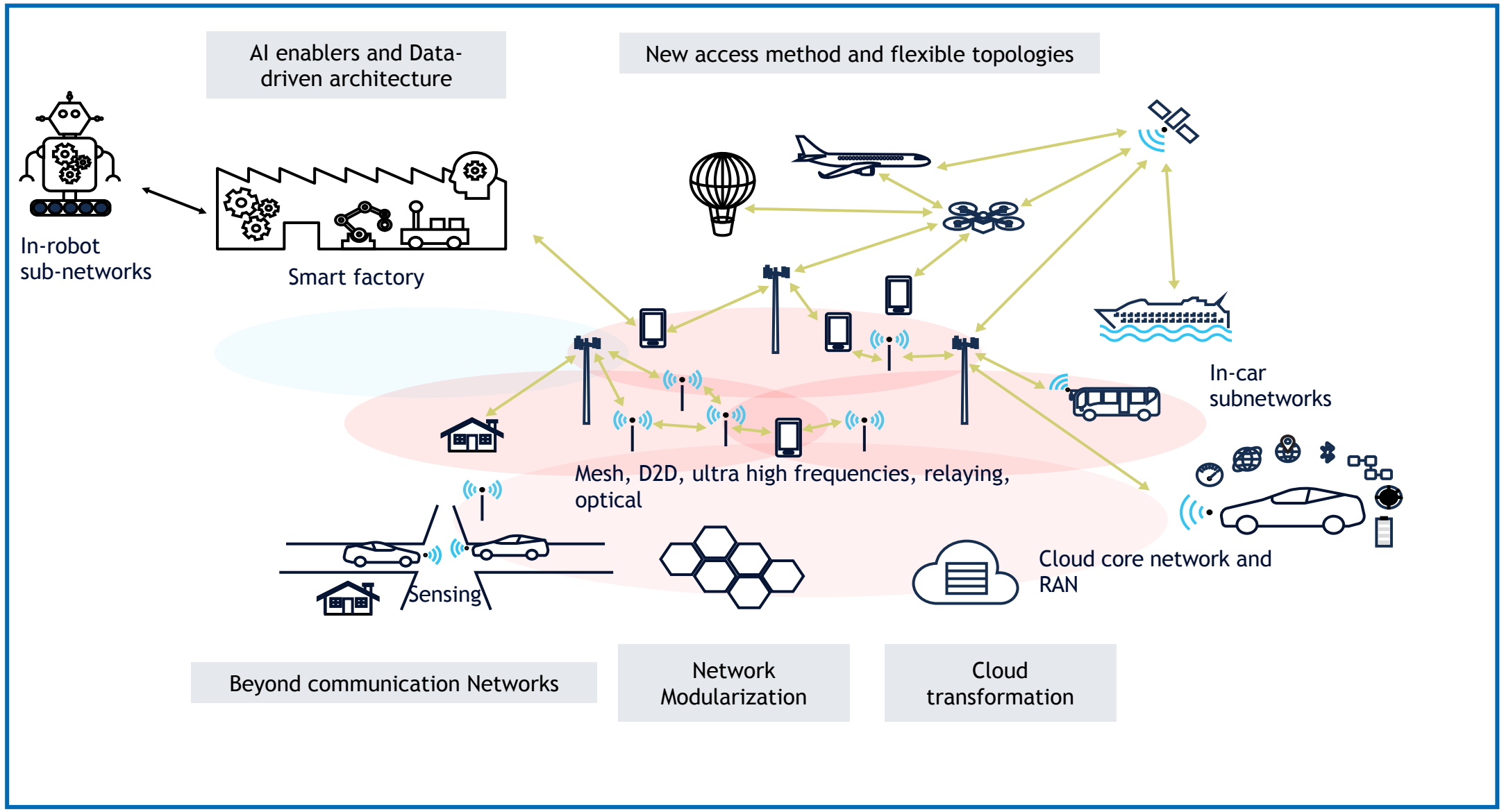
# Hexa-X-II: 6G Architectural Enablers and Framework

Mårten Ericson
(Ericsson AB)

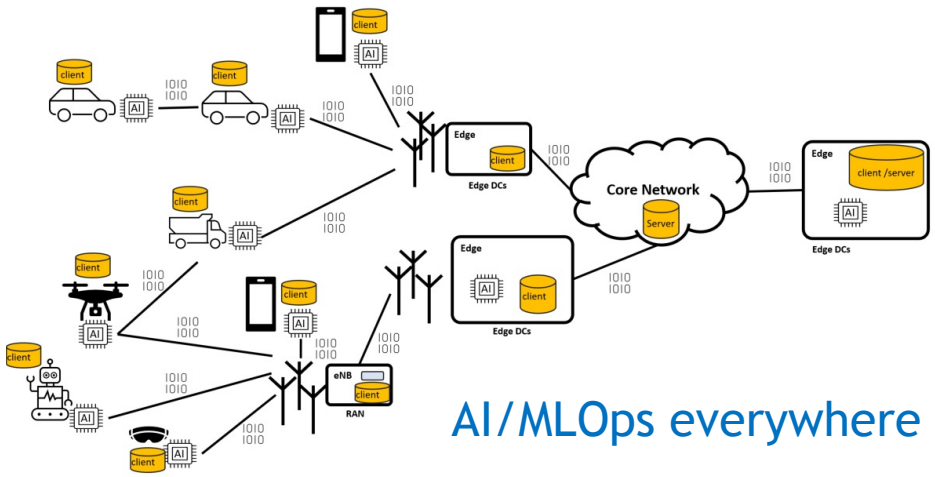
hexa-x-ii.eu

2024-06-03

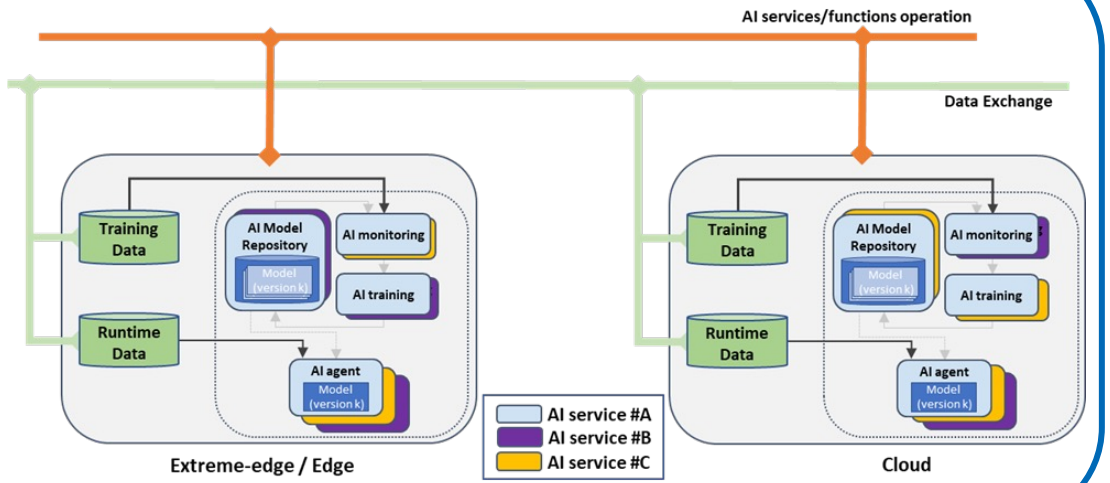
# Hexa-X-II 6G Architecture work package



# AI enablers for data-driven architecture

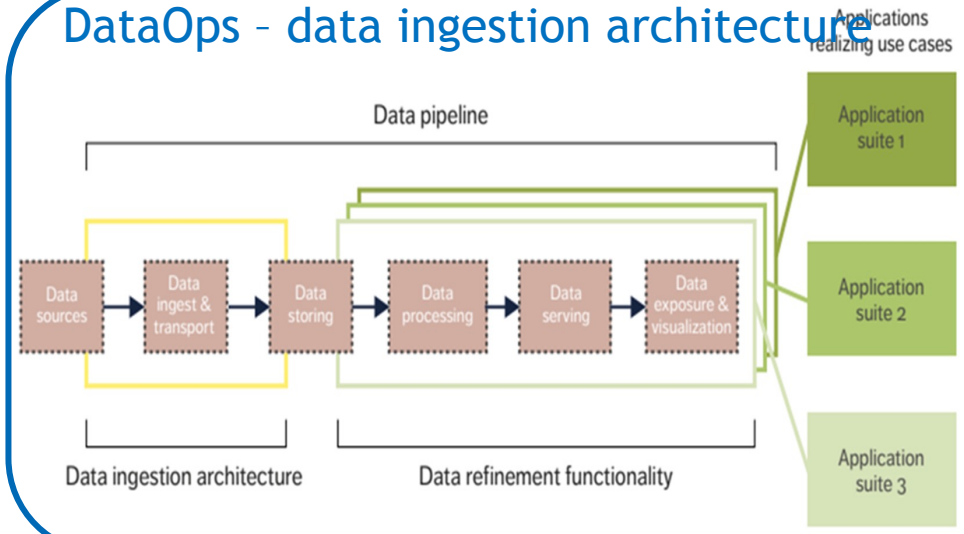



AI/MLOps everywhere



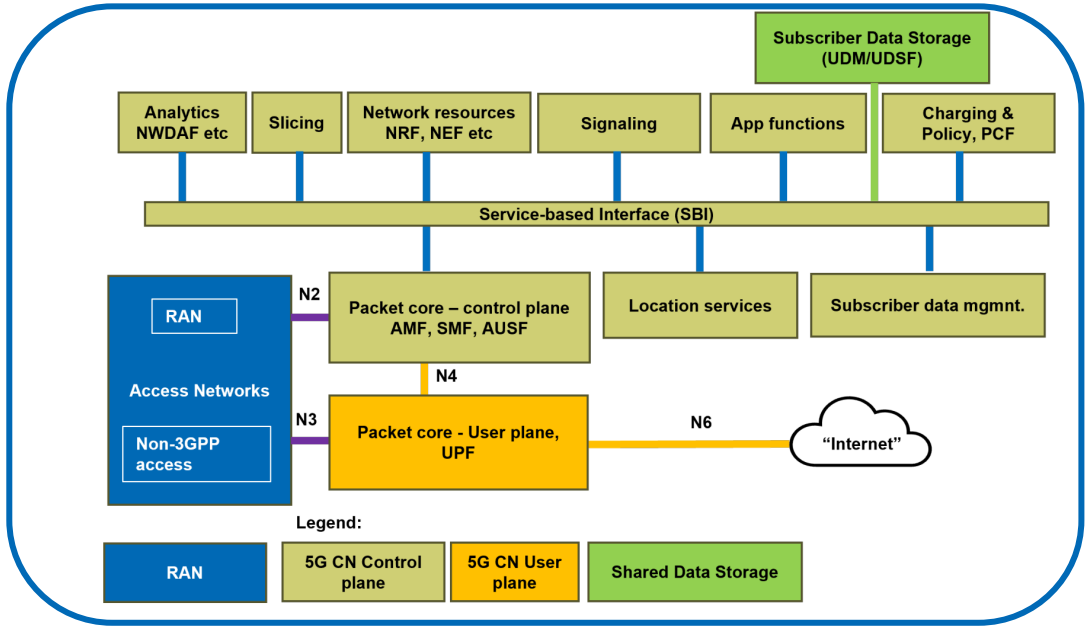

AIaaS framework

## DataOps – data ingestion architecture

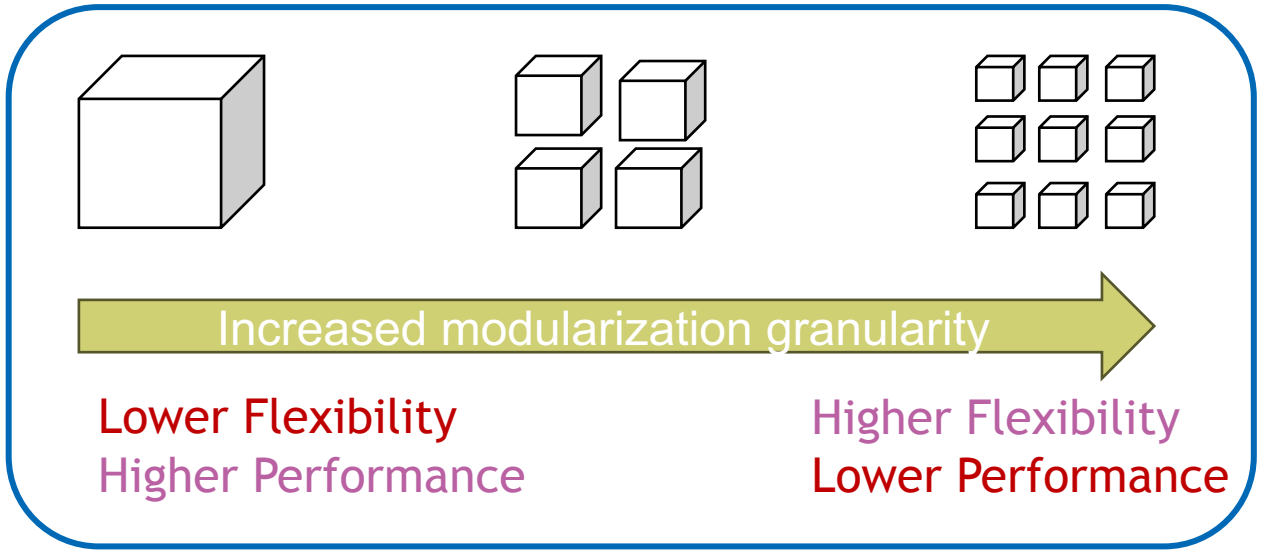


# 6G Network modularisation

## Advantages and Disadvantages of increased modularization granularity

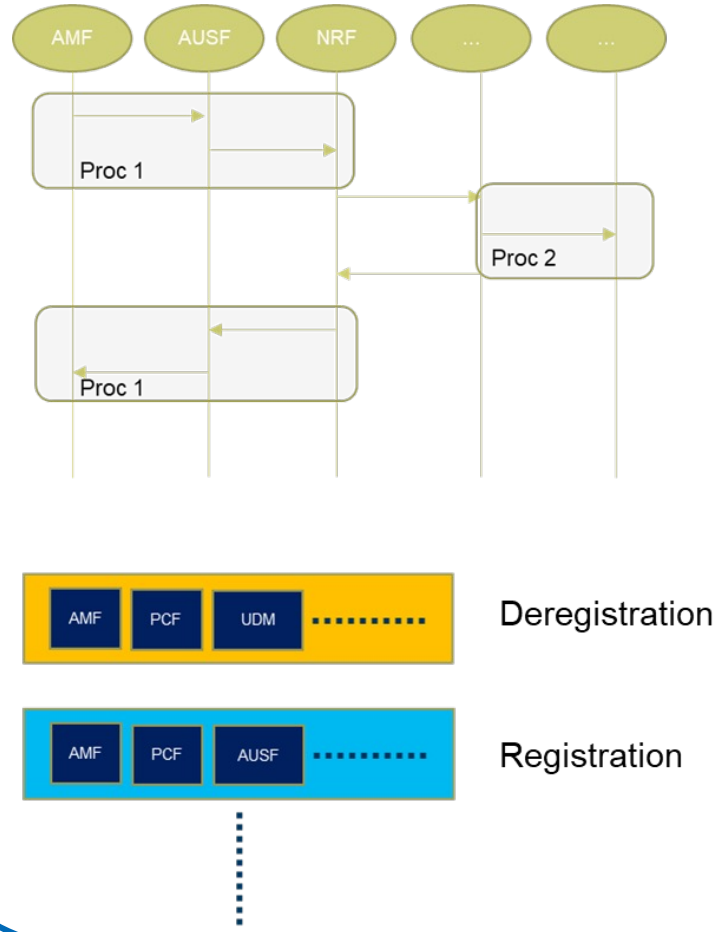



High level view of 5G network architecture

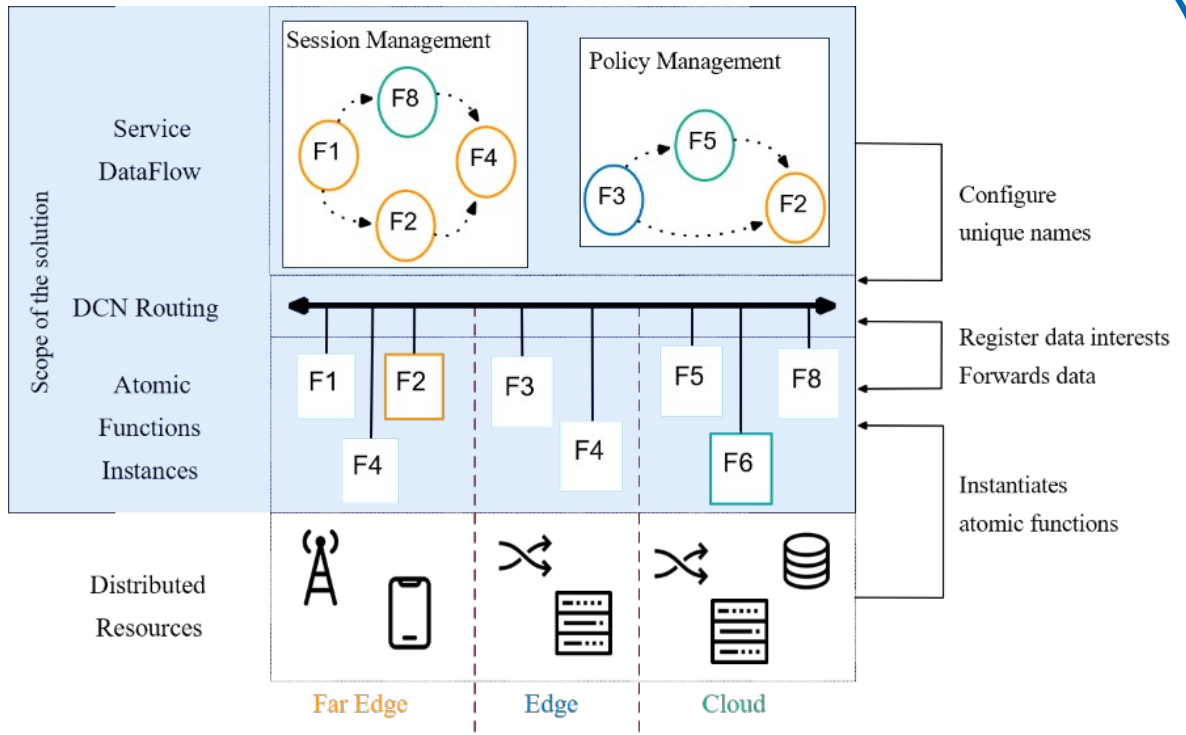



| Advantages with modularization granularity | Disadvantages with modularization granularity |
|---|---|
| Scaling of modules | Lower performance in terms of delay |
| Easier to identify faulty modules | Additional interfaces |
| Faster development cycles | Management overhead |
| Flexibility for distributed deployments | More signaling and data exchange is needed |
| Easier to reusing | More read and store stateful data |

# 6G Network modularisation
# Proposed solutions



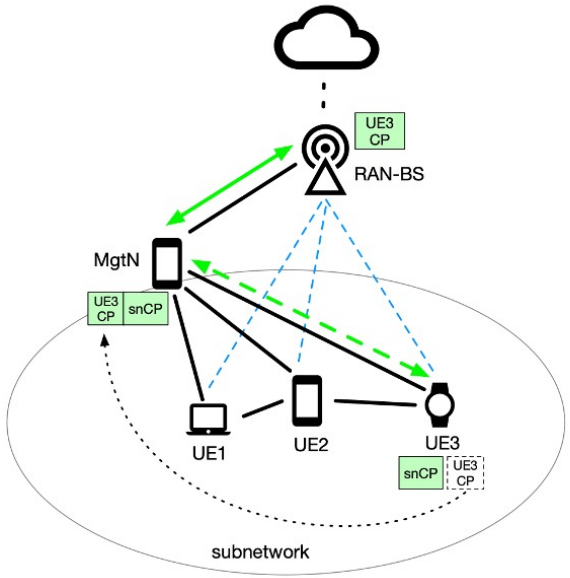

Procedure based solution

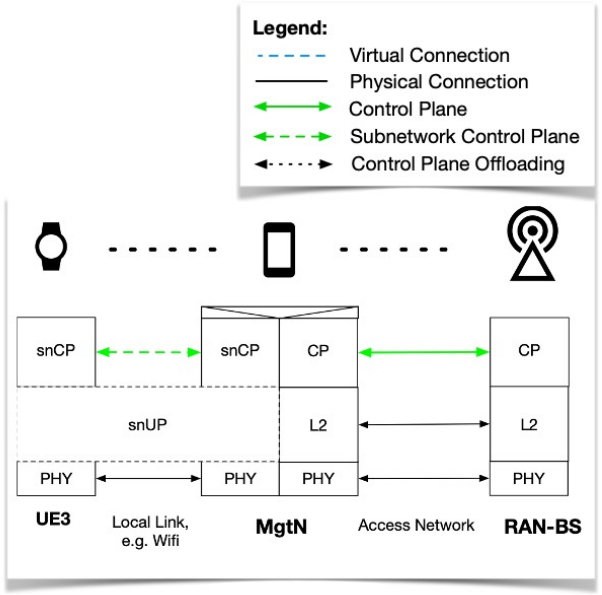


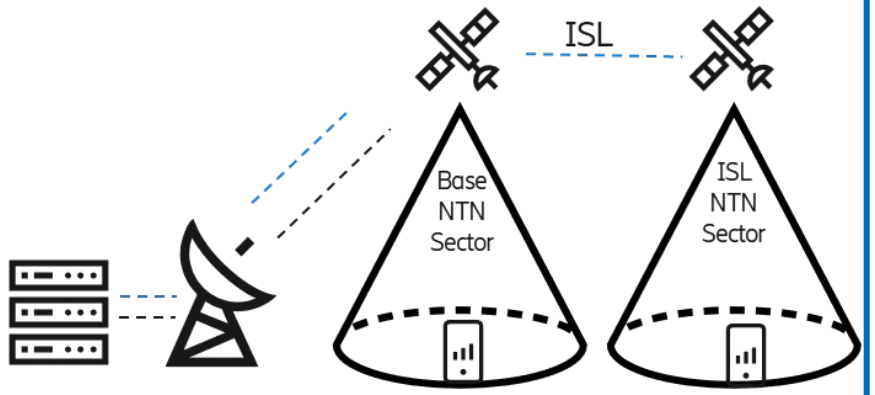

Data-centric service-based architecture

# Network of networks

## Subnetworks architecture: Subnetwork control plane with the aid of the MgtN



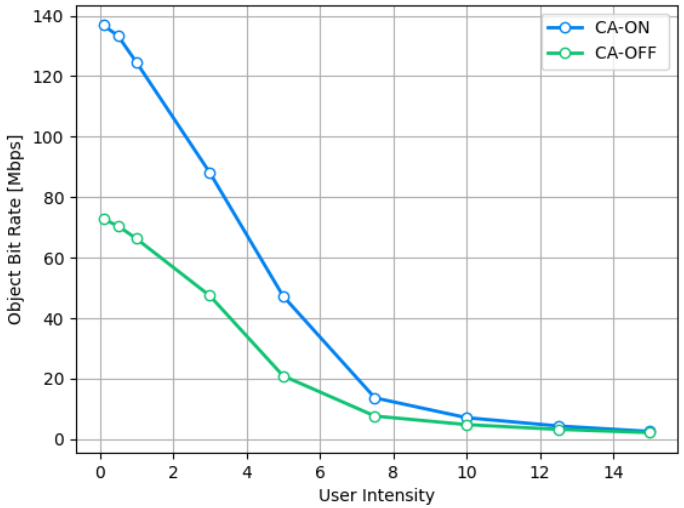



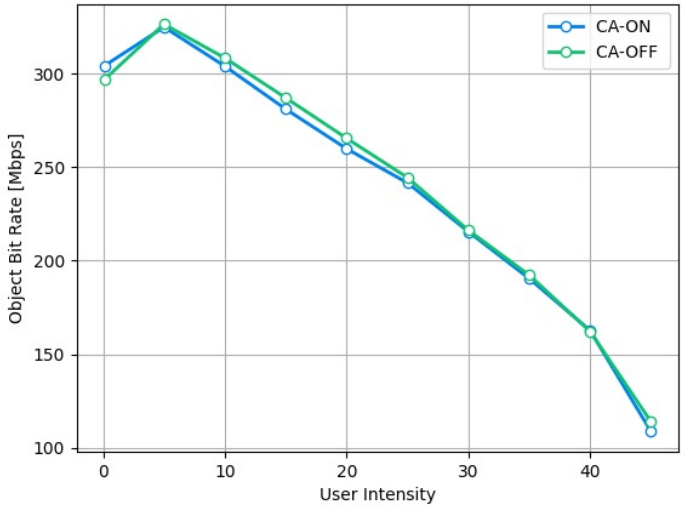

**6G NTN architecture:**
**Support of Multi-hop ISL with the BS on the ground or inboard**

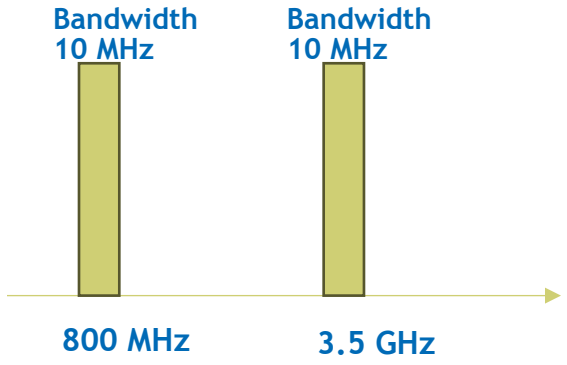
# Network of networks
# Evolution of Carrier Aggregation

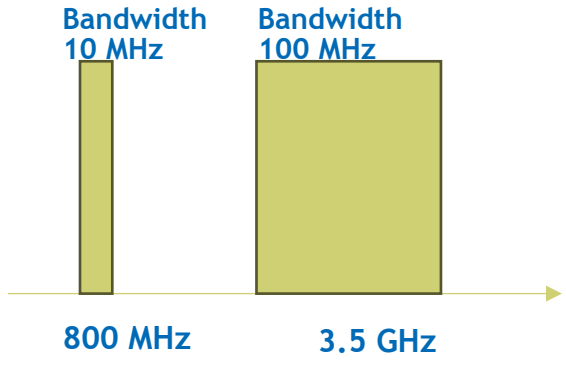
Reference scenario

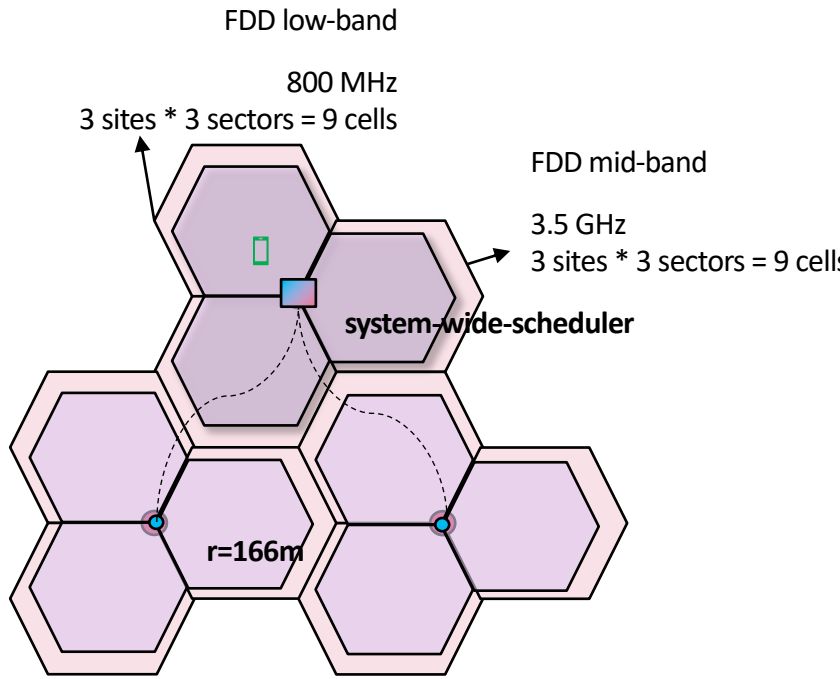



Realistic scenario

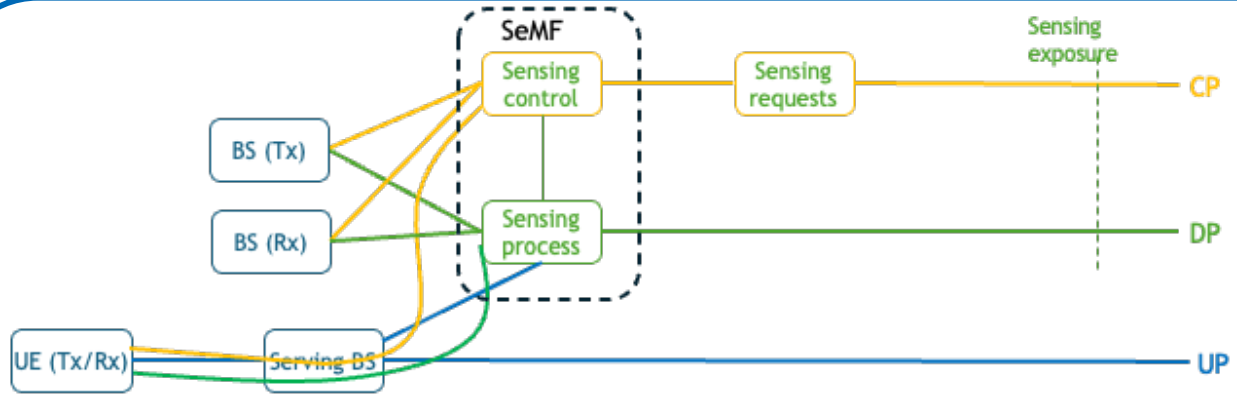


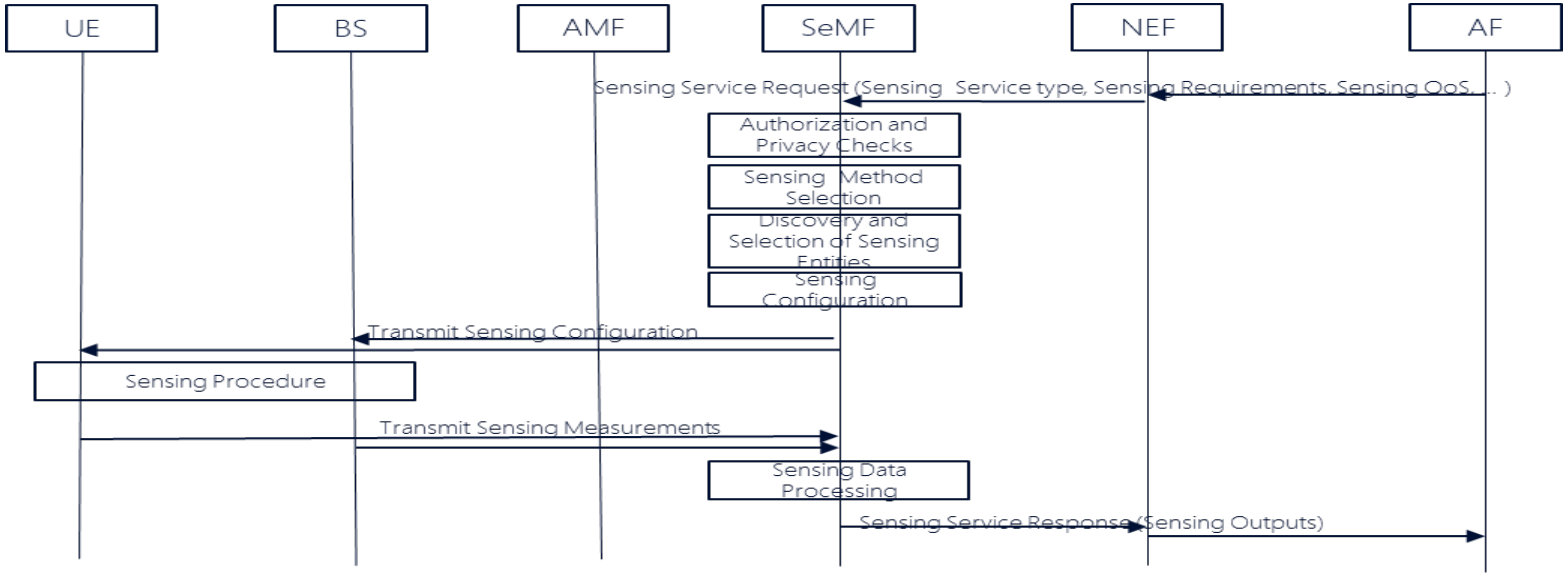



# Beyond communication Networks
# JCAS Protocols, Signaling, and Procedures

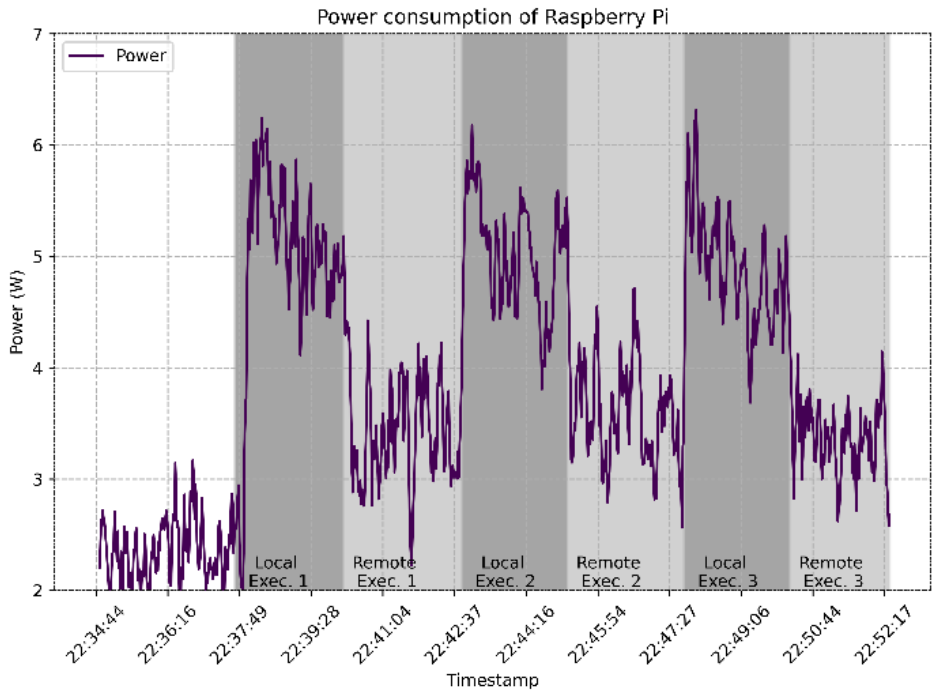



Functional architecture, network-based sensing with UE involvement for a bi-static sensing setup

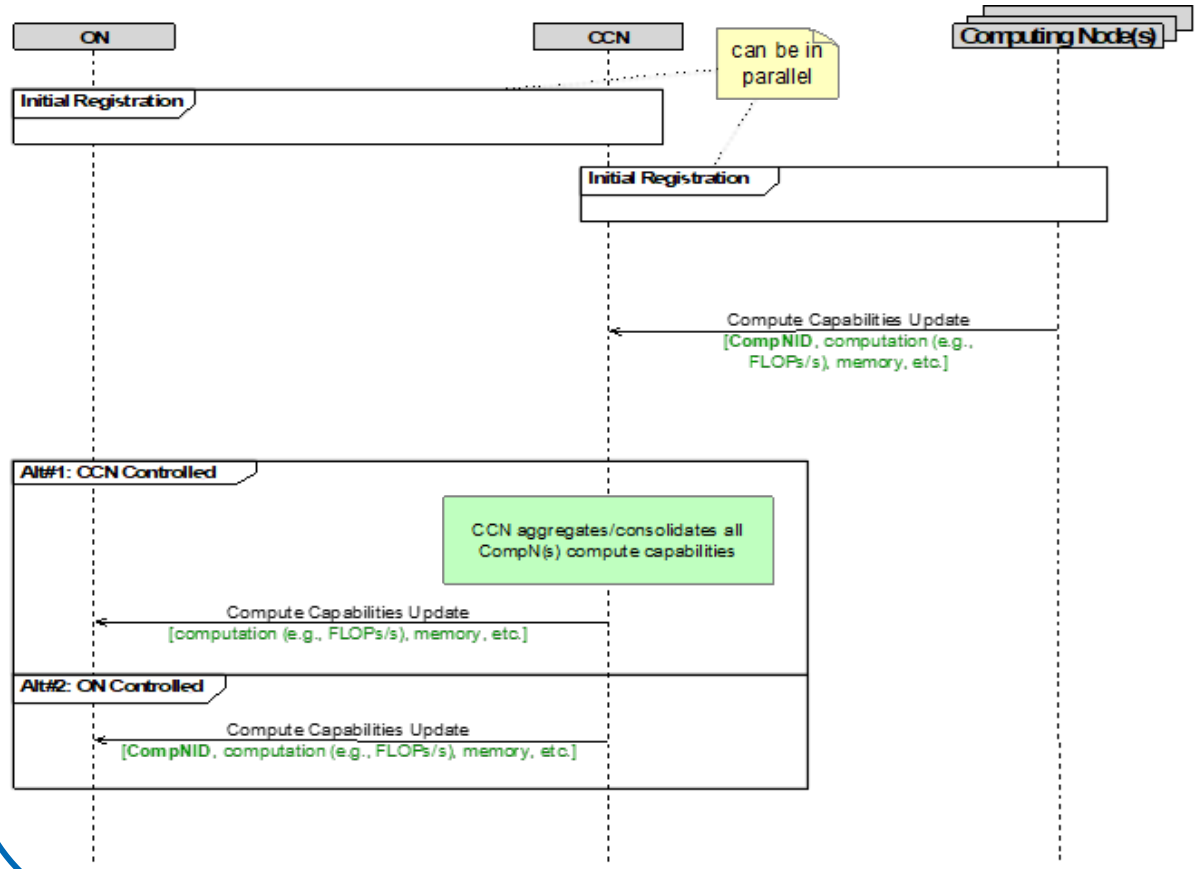



Example Deployment of Sensing Services in a Communication System

# Beyond communication Networks
# Compute Offloading Protocols, Signalling, and Procedures

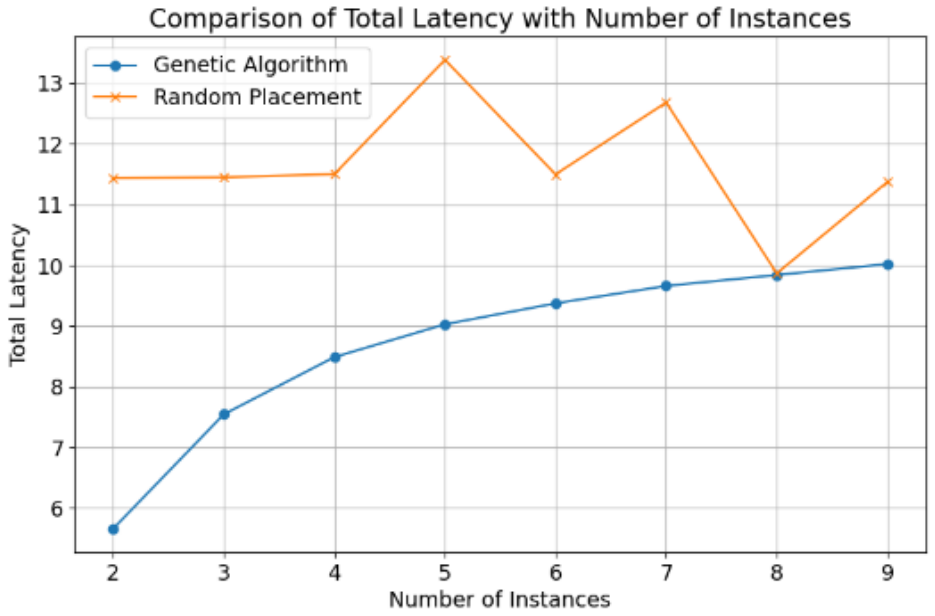


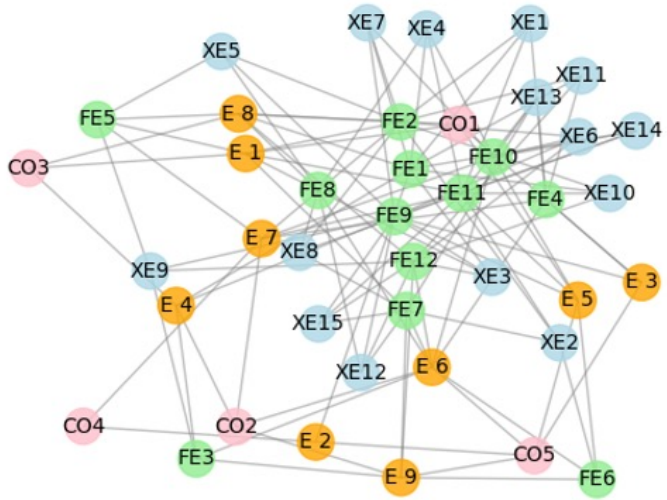

Dynamic offloading of a CPU demanding operation from the device to the network




Node Discovery

# Beyond communication Networks
# Example of benefits with application placement




xEdge/ Devices — APP

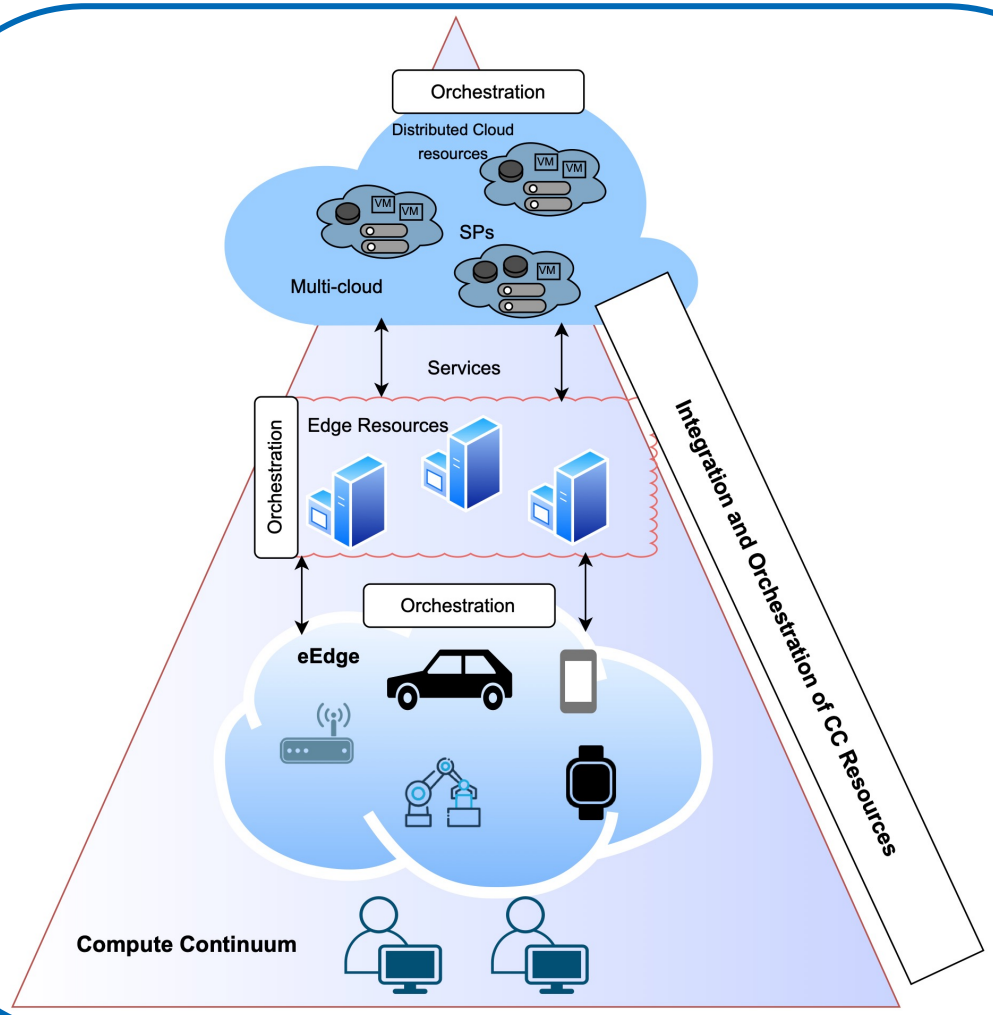
Far Edge/ DUs — APP

Edge/ CUs — APP

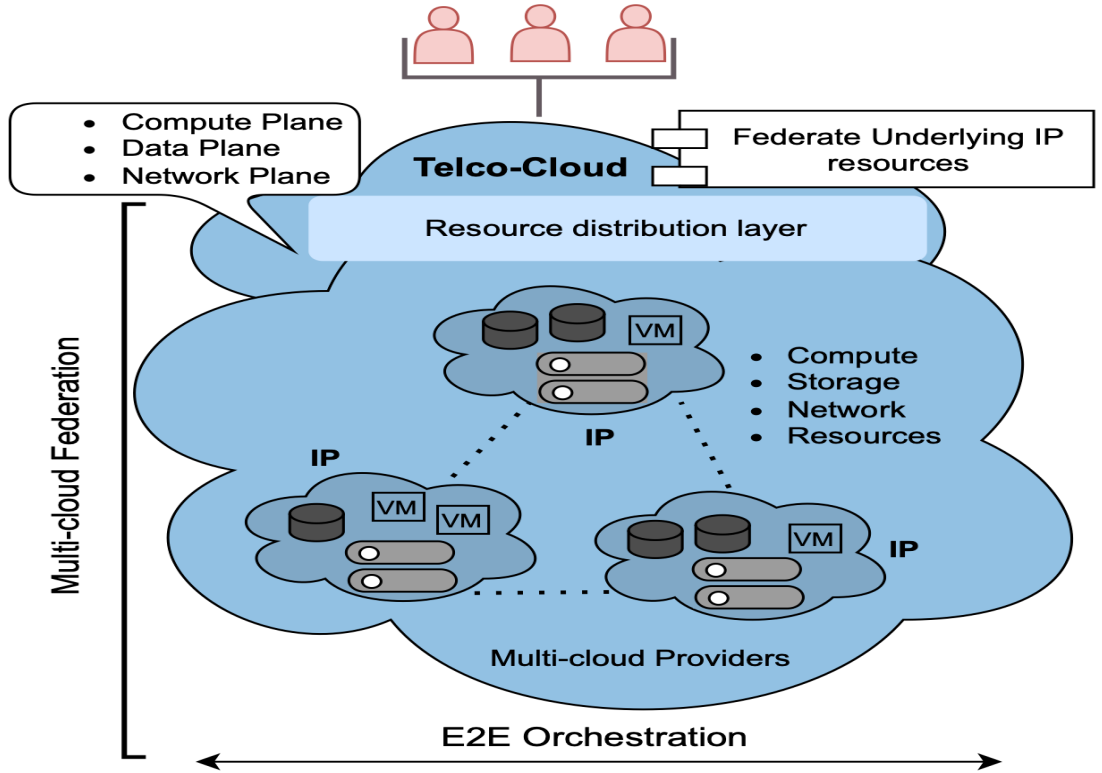
Cloud/ Core network — APP

## Application component placement optimisation evaluation

# Cloud transformation enablers




The three layer compute continuum: xEdge, Edge and Cloud resources




Multi-domain/Multi-cloud enabler


HEXA-X-II.EU //

Co-funded by the European Union

6GSNS

Hexa-X-II 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 101095759.