



SEASON Project

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SEASON Project

Grant No. 101096120

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❖ Self-mAnaged Sustainable high-capacity Optical Networks (SEASON)

- ❑ Grant agreement ID: 101096120
- ❑ HORIZON-JU-SNS-2022-STREAM-A-01-03 - Sustainable Capacity Networks
- ❑ RIA - Research and Innovation action

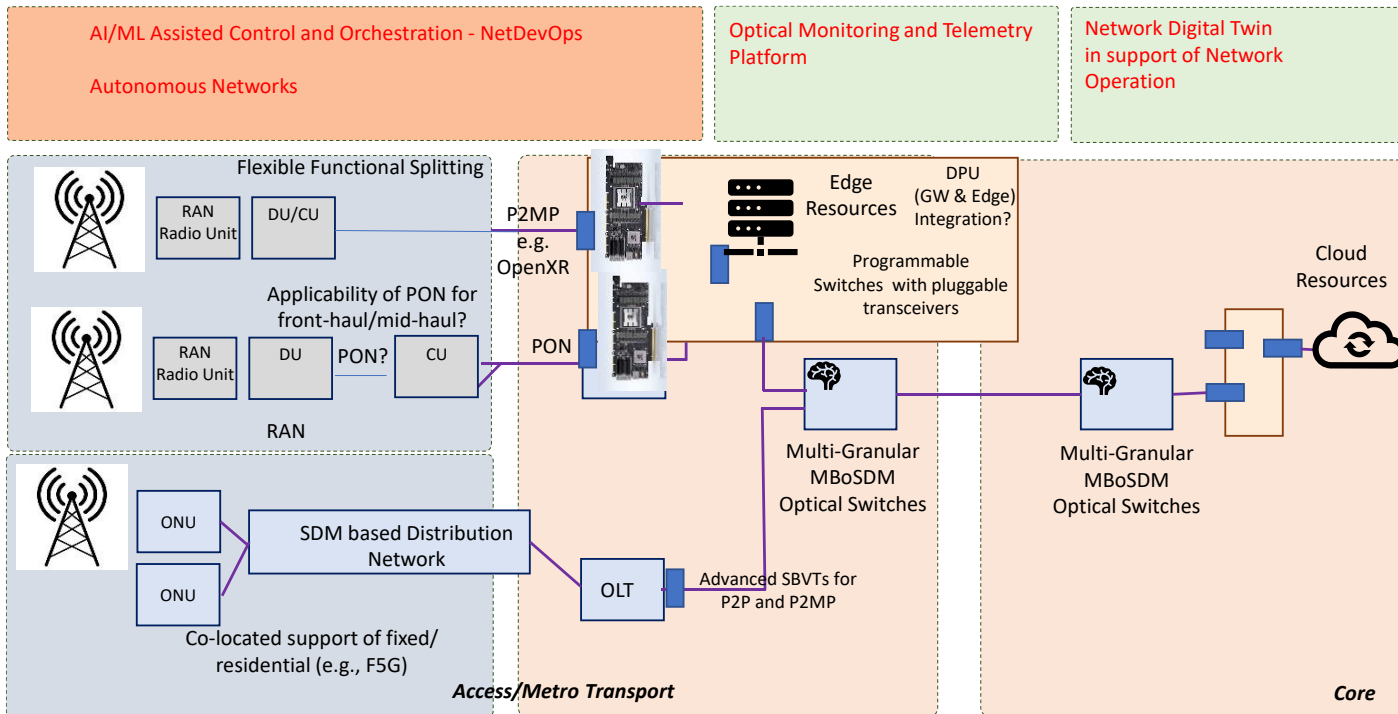
❖ Dates

- ❑ Start: 1 Jan 2023
- ❑ End: 31 Dec 2025

❖ Total cost: € 6 393 648



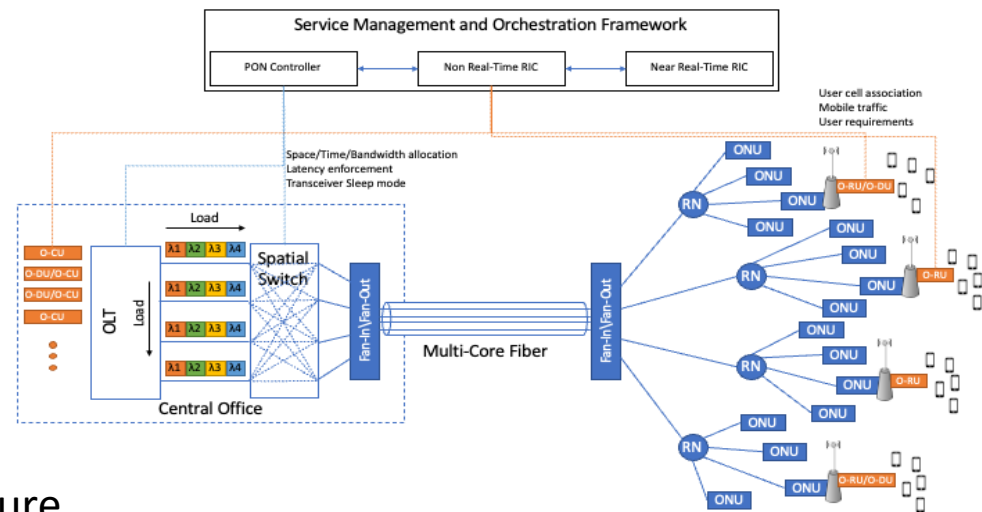
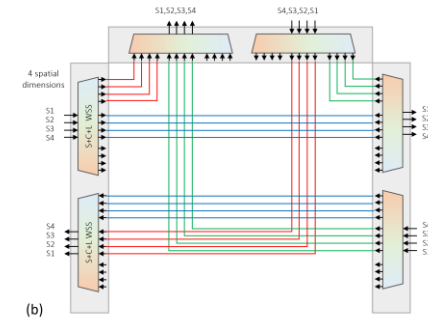
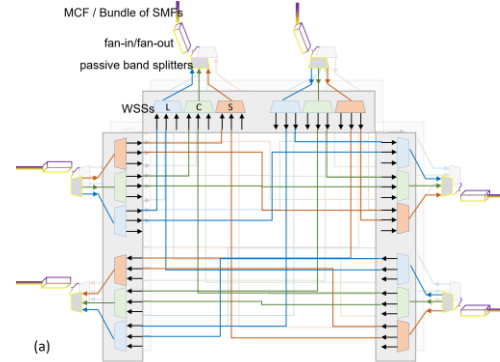
- ❖ The goal of the SEASON project is to design and validate a transport network infrastructure able to support beyond 5G and new emerging services.
 - ❑ Network scope includes the access, aggregation, and the metro/long-haul segments
 - ❑ SEASON targets efficient networks in terms of capacity and energy efficiency.



Pillars:

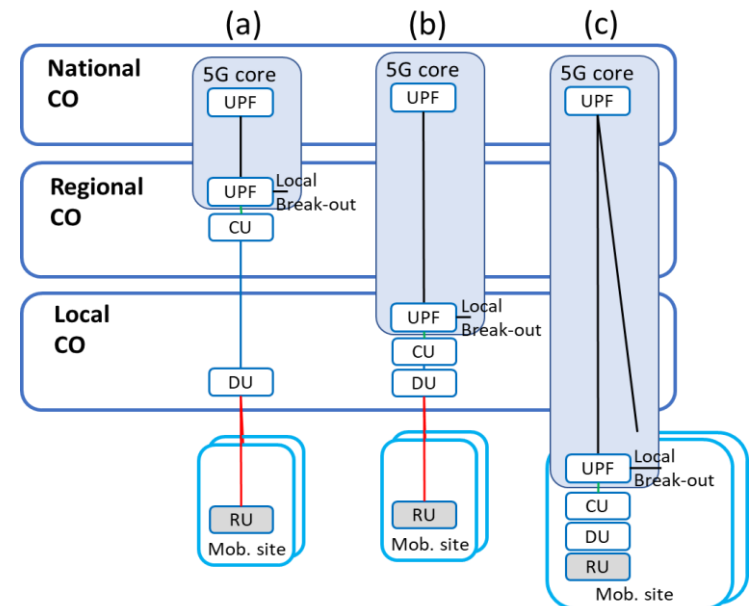
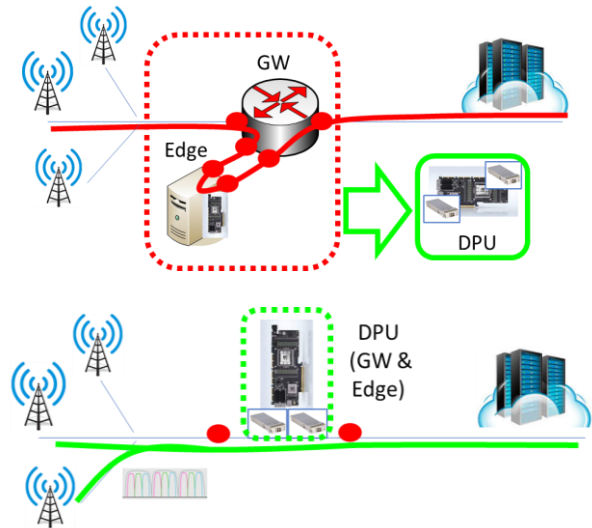
- 1) Multi-Band and Space division Multiplexing (SDM)
- 2) Packet/optical/computing integration
- 3) Self-managed and autonomous networking

- ❖ New MBoSDM infrastructure
 - ❑ from C-band (~35 nm) to O, E, S, L, U bands (~415 nm)
 - ❑ >10 fibres / cores
 - ❑ x120 wrt current C-band.
- ❖ Innovative multi-granular switch
- ❖ Ultra-high capacity transmission
 - ❑ Point-to-point and P2MP
 - ❑ Energy-Efficient Coherent DSP
- ❖ Optical Midhaul/Fronthaul
 - ❑ Coordinated cell activation/deactivation
- ❖ Data plane monitoring infrastructure
 - ❑ DSP-based monitoring scheme

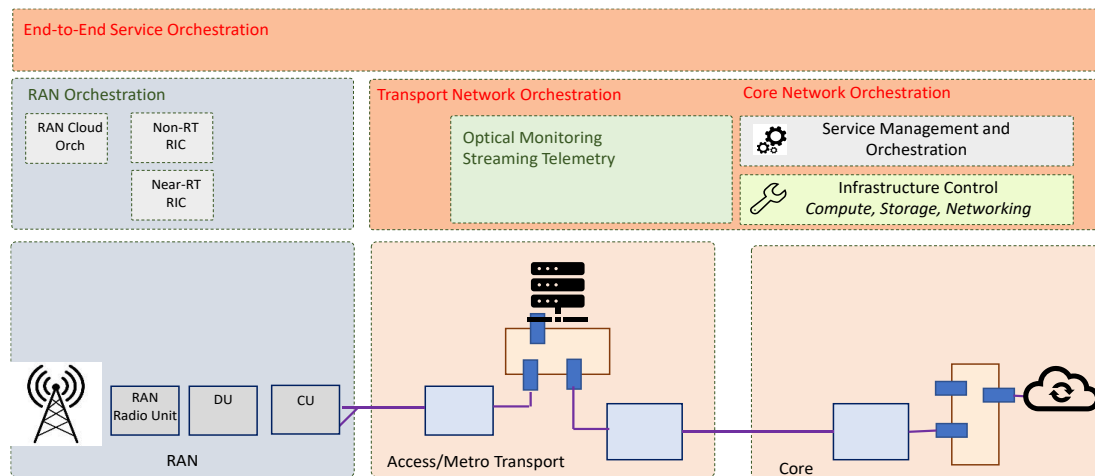
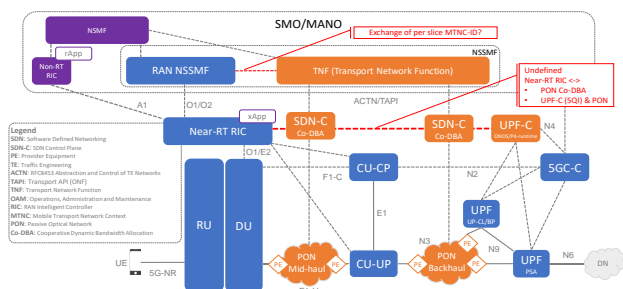


- ❖ Converged packet-optical transport solution based on coherent pluggable modules directly inserted into computing resources
 - ❑ drastically reducing O/E/O conversions
 - ❑ removing boundaries between networks and edge computing resources,

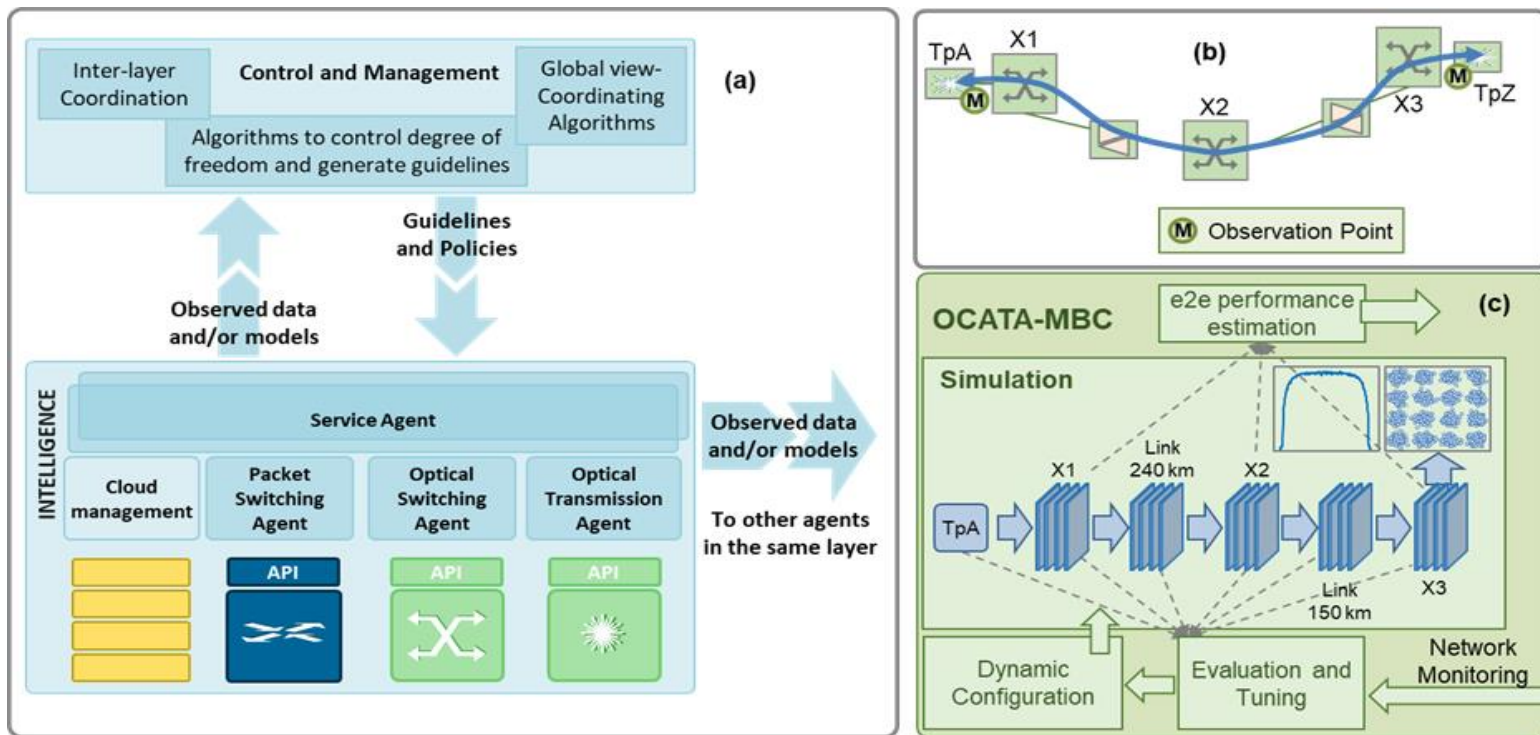
- ❖ Decentralize the implementation of UPF-DU-CU (-RU) functions closer to the cell site
 - ❑ Reduce latency (user traffic handled at the local CO or at the cell site)
 - ❑ Elimination of some GTP interconnects (F1-U, N3, N9) to be bypassed
 - ❑ HW acceleration to reduce energy consumption



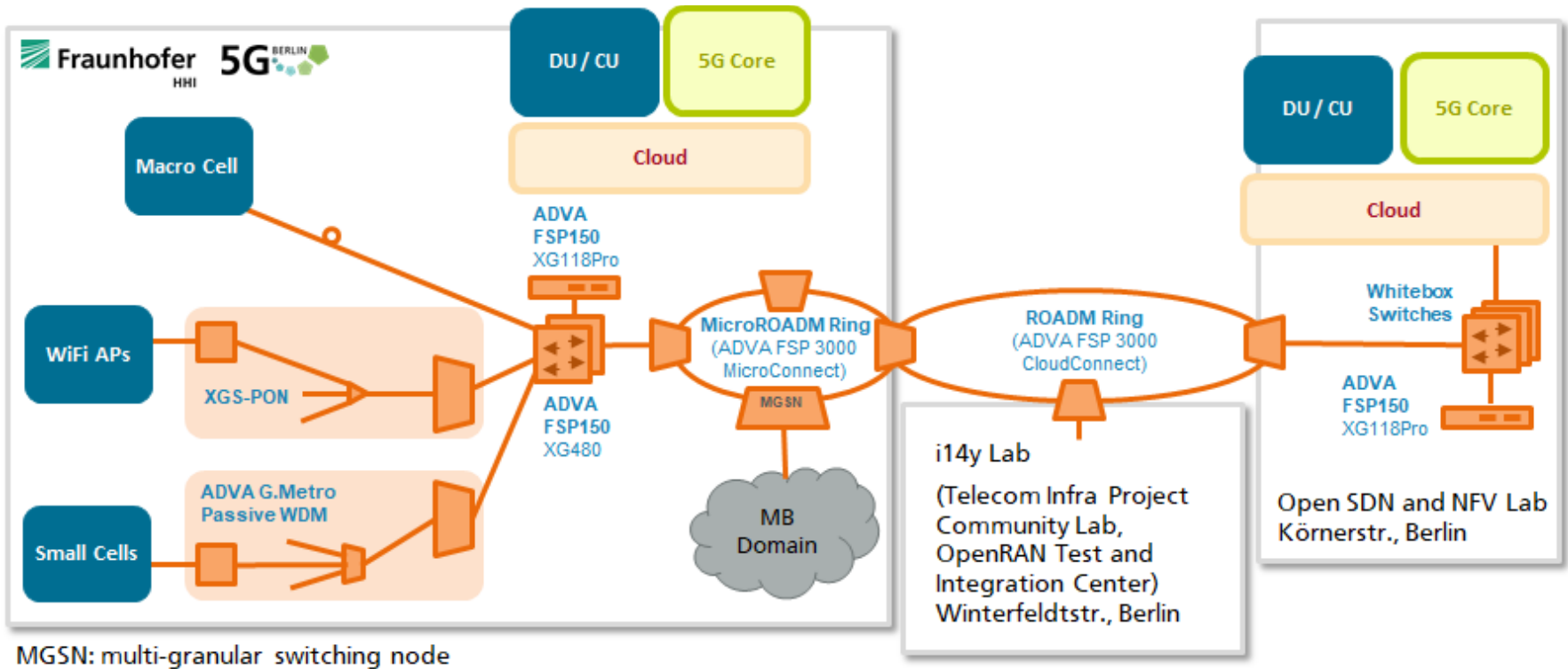
- ❖ Design and validate a transport network control and orchestration infrastructure able to support beyond 5G and new emerging services
 - ❑ Full support of innovative Multi-band over SDM transmission and switching HW solutions
 - ❑ Integration of RAN Intelligent Controller (RIC) and access/metro SDN Control
 - ❑ Applicability of new control paradigms based on NetDevOps approaches jointly with AI/ML in support of network operation and network orchestration;



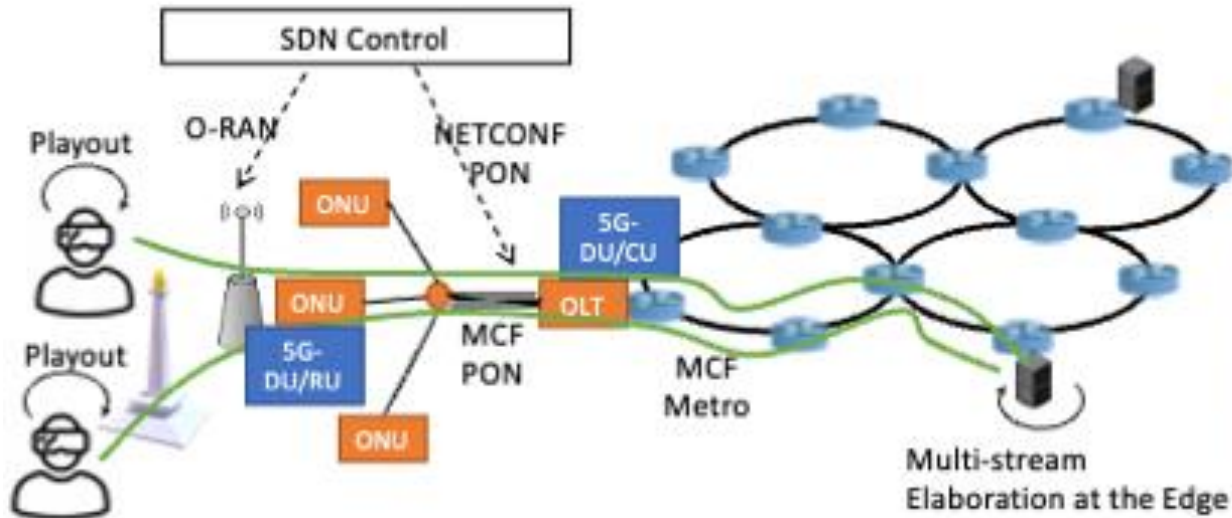
- ❖ Monitoring and Streaming Telemetry with Intelligent Data Aggregation (IDA)
- ❖ Multi-Agent Systems (MAS) for distributed intelligence
- ❖ Optical Layer Digital Twin



- ❖ Operator Infrastructure with capacity scaling, monitoring and AI/ML network operation in support of Beyond 5G



- ❖ Real-time *profiled* content to offer enhanced immersive experience to the user
 - ❑ Off-load of the graphical computation for multi-stream transmission of rendered content.
 - ❑ High throughput offered by densifying radio access points → dense and high-capacity optical transport.
 - ❑ The demo will deploy an open virtual museum in the City of L'Aquila and by leveraging field-deployed experimental infrastructures (O-RAN, SDM optical ring testbed)



SEASON

 The logo consists of four colored squares with white icons: a green square with a double-headed arrow, a yellow square with a double-headed arrow, a brown square with a speaker icon, and a blue square with a radio tower icon.

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