

NETWORK SLICING IN THE FOKUS 5G PLAYGROUND

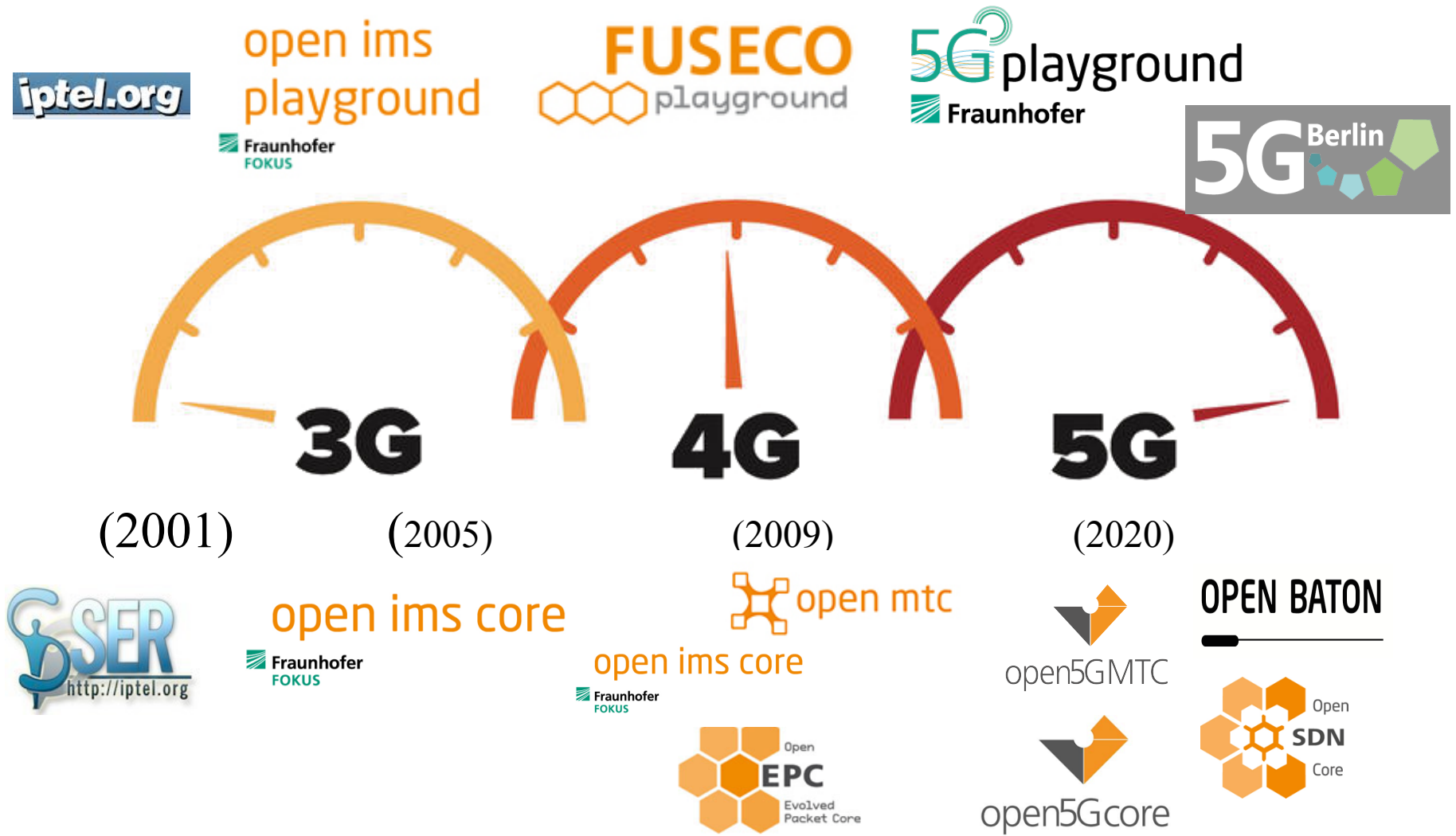
Internet: www.5G-playground.org

Contact: info@open5Gcore.net

OPEN BATON



FOKUS TESTBED AND TOOLKIT EVOLUTION



What is the 5G Playground

5G Playground provides a single stop for a comprehensive set of toolkits with virtually all that is needed to be installed for a live 5G testbed

- A comprehensive set of software toolkits enabling setup and development of 5G applications in an end-to-end testing environment.

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Management and orchestration for NFV environments, running on top of OpenStack (and soon OpenMANO).



A new, efficient approach for remote connectivity management of M2M and multimedia, based on standard protocols.



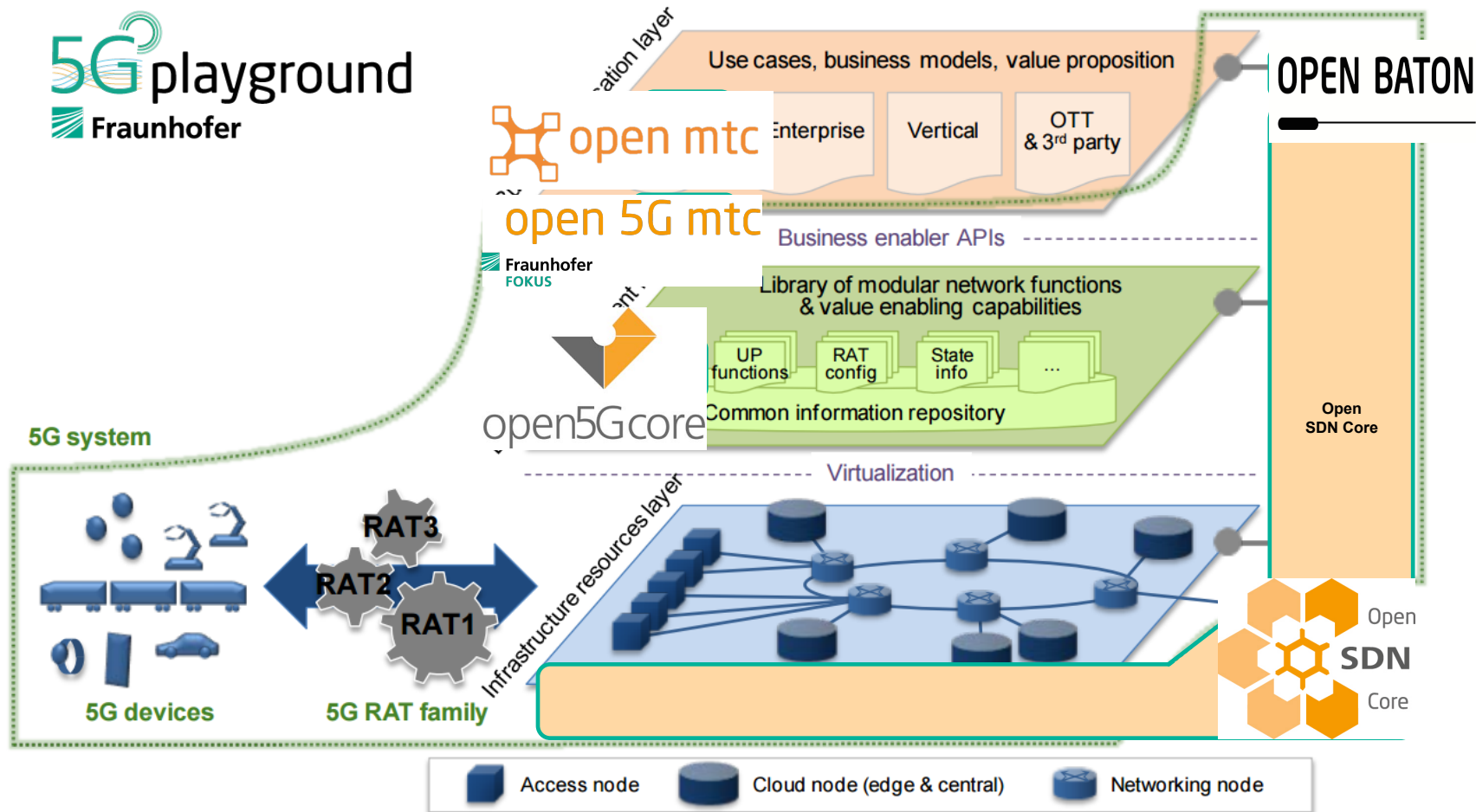
Extensive platform for SDN added value features for flexible routing, virtual environments and core network data paths.



R&D prototype for mobile core networks beyond 3GPP Release 13, supporting 5G, 4G (LTE) and WLAN.

- A methodology and tools for benchmarking 5G prototypes and products.
- A commodity providing cost efficient automatic installation and experiment control.

5G PLAYGROUND MAPPED ON NGMN 5G ARCHITECTURE

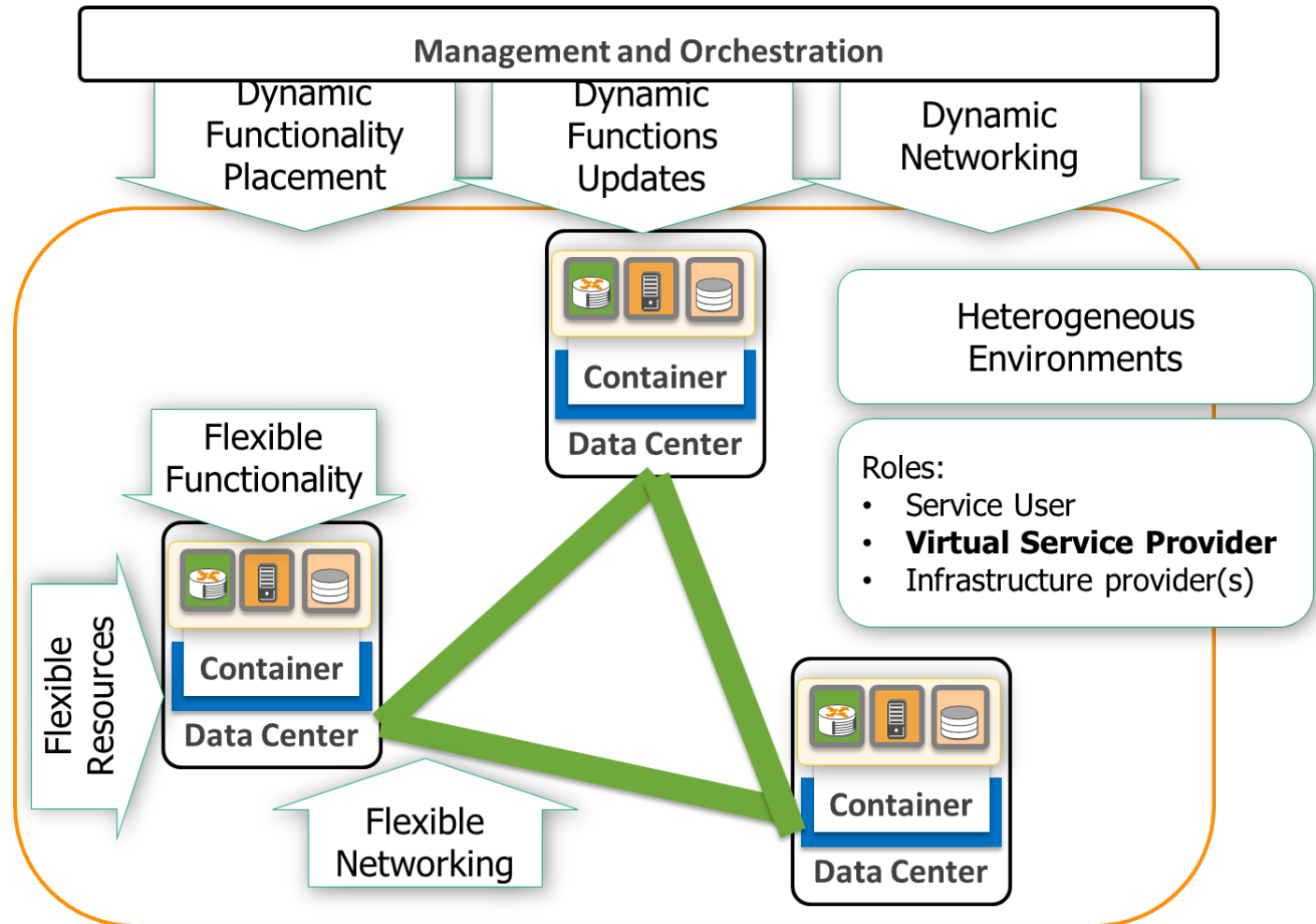


OPEN 5G PLAYGROUND - THE FIRST REAL 5G TESTBED



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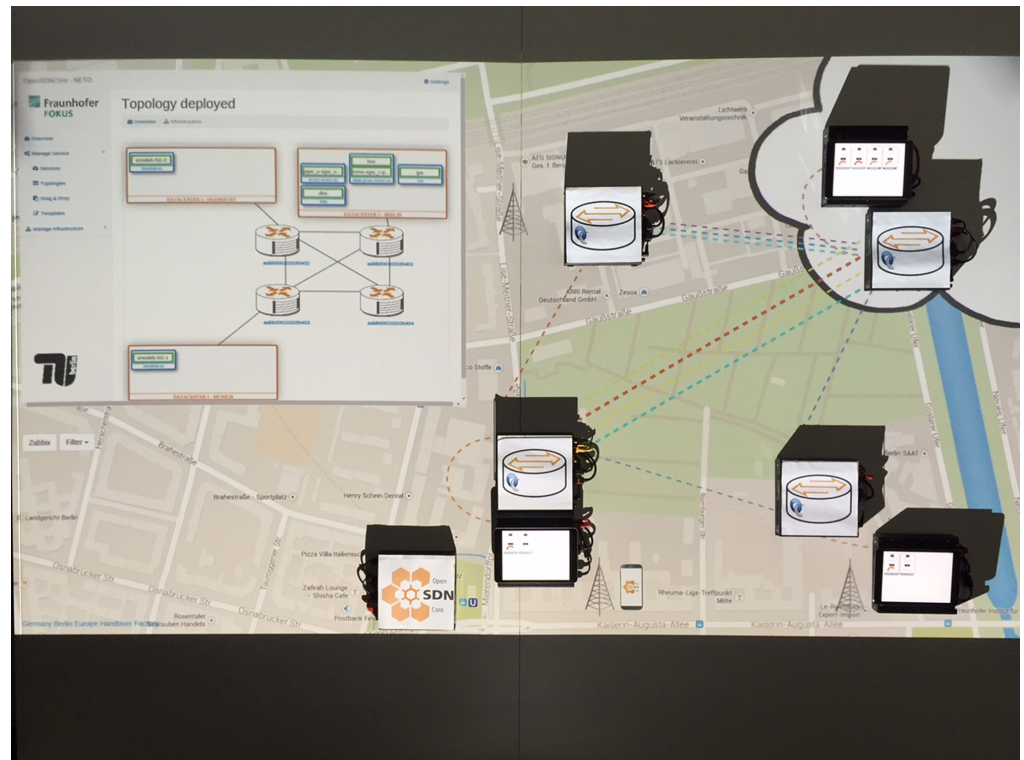
- Multimedia Call center
- Critical Comms
- Secure Enterprise
- Automation
- eUtilities
- Logistics
- E-Energy
- ehealth



THE 5G PLAYGROUND @ FOKUS INFRASTRUCTURE

Permanent Demonstration Environment

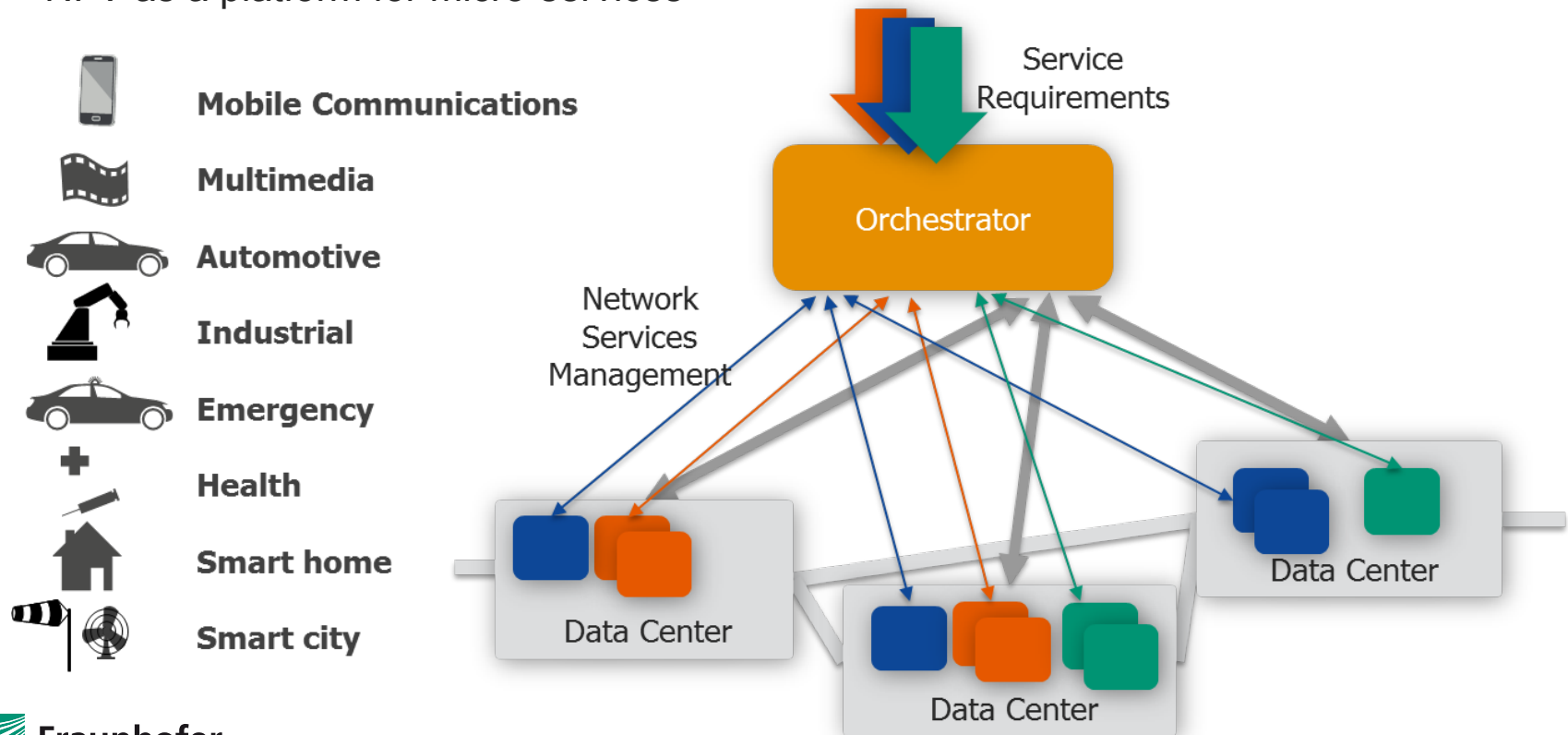
- Facilitates 5G Playground toolkits and infrastructure in a comprehensive micro-operator scenario (network slice)
- Placed on a vertical setup (“4G/5G Wall”)
- Showcases
 - Comprehensive environments
 - Different features within the same environment
 - Effects on live testbeds
 - Edge mobility
 - Live monitoring information



EXPERIMENTATION ON NETWORK FUNCTION VIRTUALIZATION

Scope: Multiple service slices on top of a dynamic federation of heterogeneous compute and storage nodes

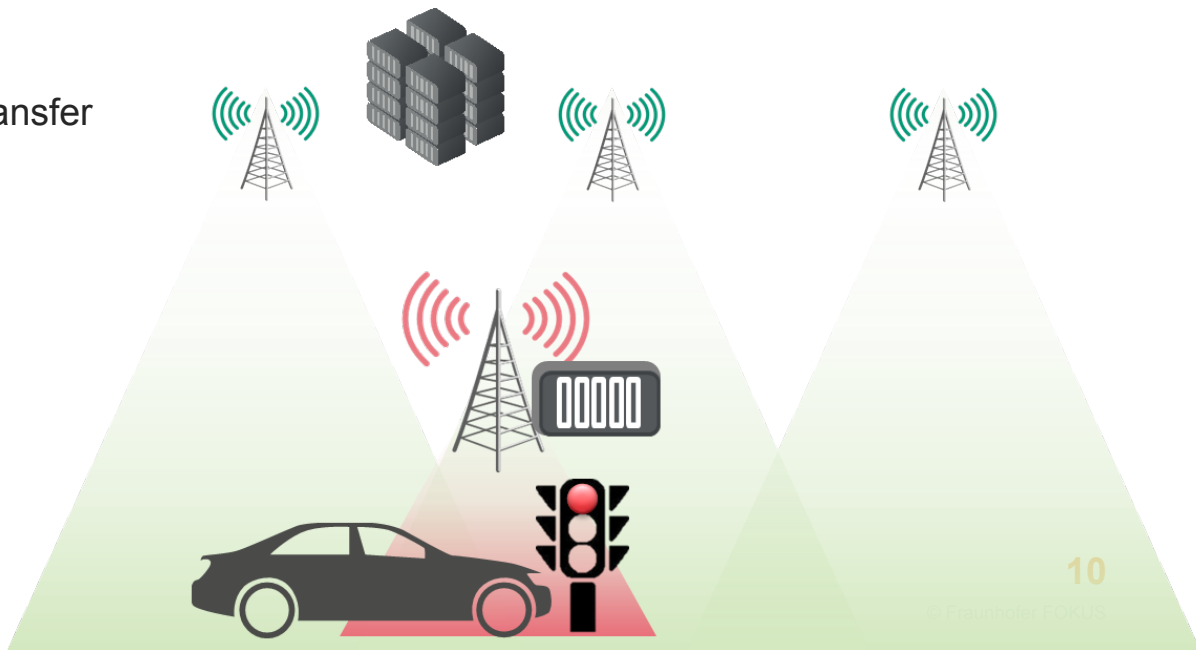
- NFV in distributed, heterogeneous environments
- NFV as a platform for micro-services



ADDRESSING VERTICAL MARKETS – AUTOMOTIVE

Focus topic: Highly distributed and secure, sparse usage with high speed communication needs suitable networks

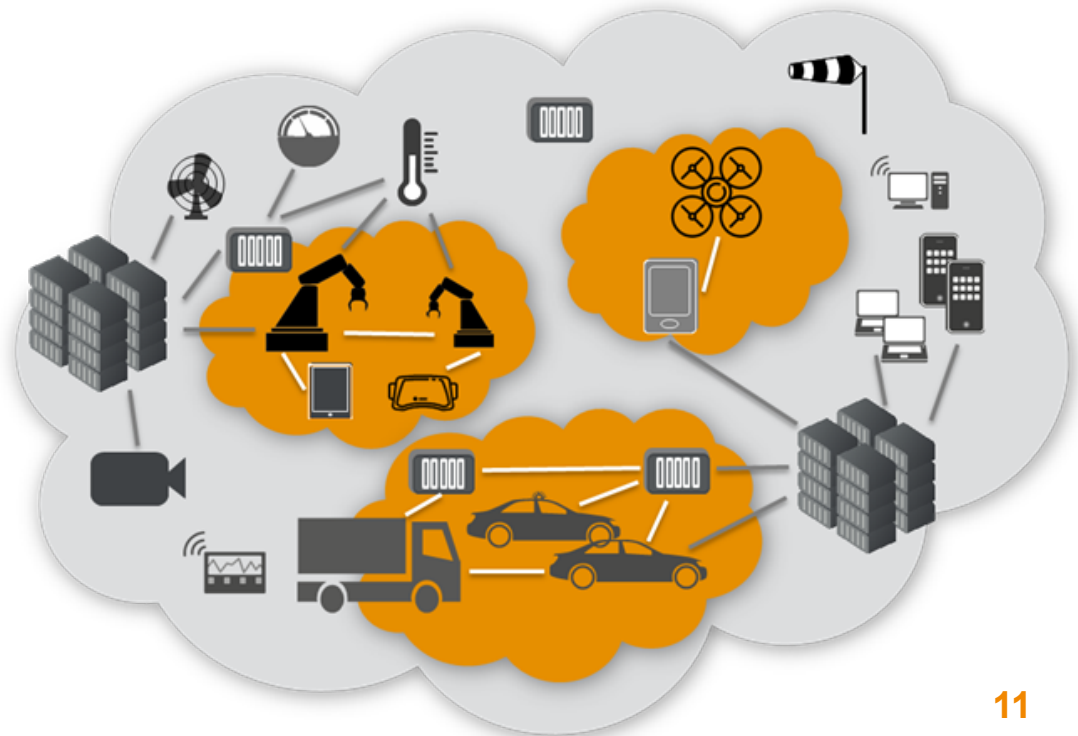
- Providing edge network capabilities for data showers
 - Network Function Placement
- Providing a dedicated MVNO for the automotive industry
 - Sharing of radio environment
 - Sharing of edge nodes
- Enabling caching and fast downloading of content directly from edge nodes
 - Pre-authentication
 - Subscriber state information transfer
 - CDN and caching
 - Secure connectivity



ADDRESSING VERTICAL MARKETS – MASSIVE M2M

Focus topic: Highly distributed, low data rate communication through low cost 3GPP rooted MTC based networks

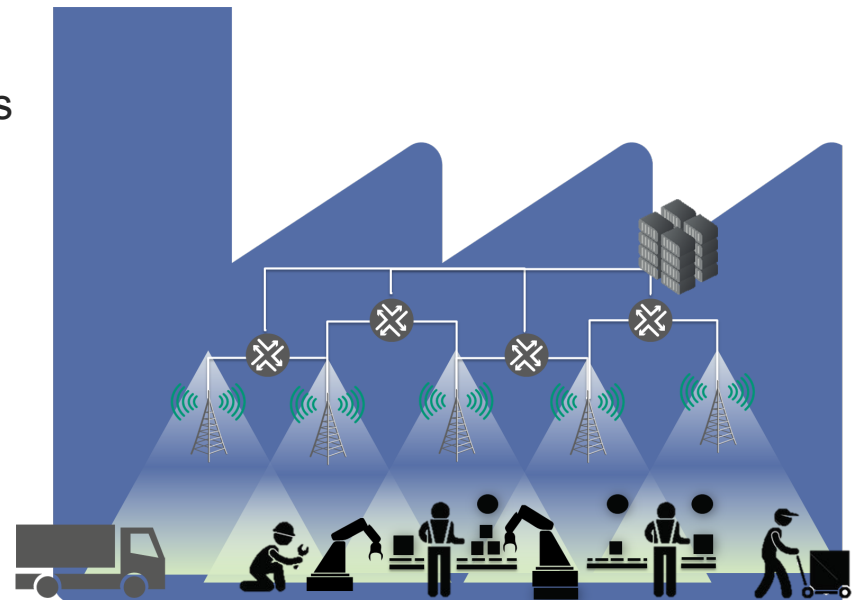
- Support for MTC oriented dedicated core networks e.g. suppression of procedures in the core network
- Support for dynamic connectivity management including:
 - dynamic identity management
 - dynamic connectivity policies
 - differentiated default connectivity
 - group bearers



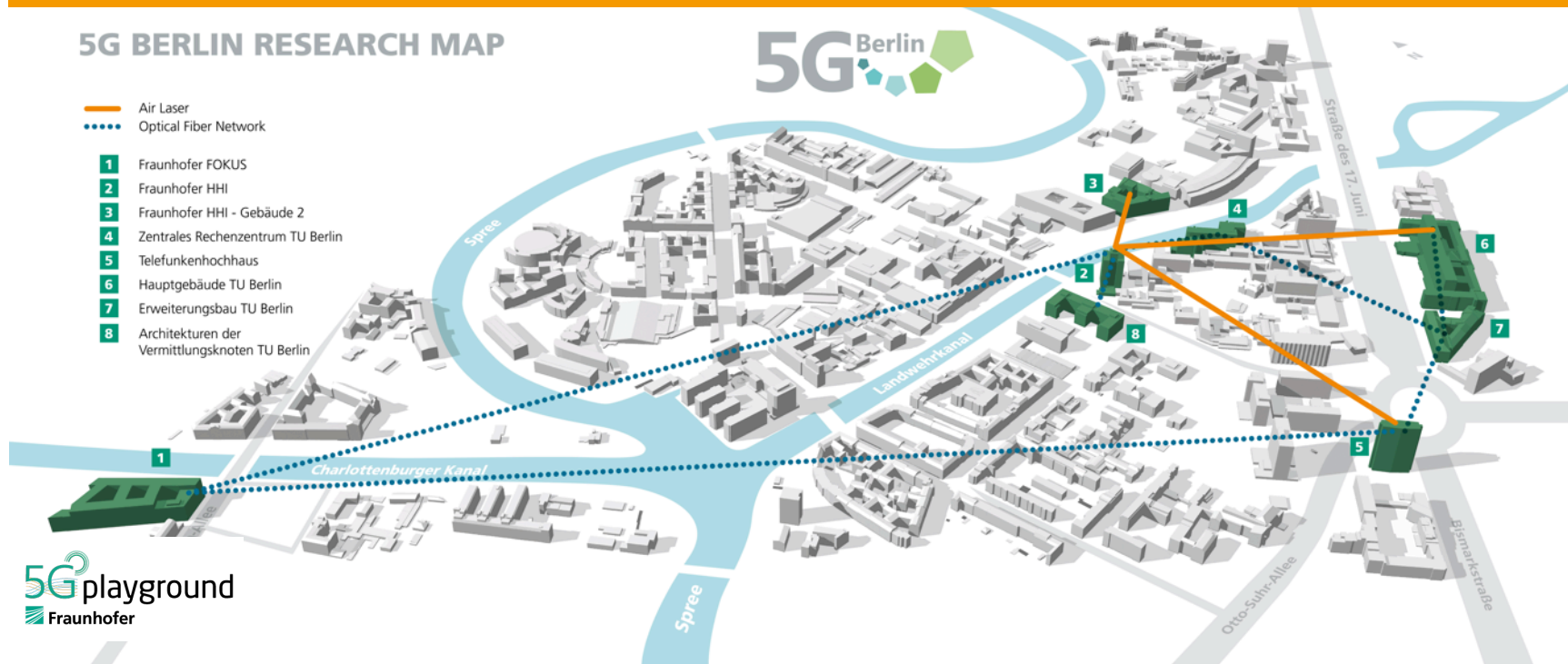
ADDRESSING VERTICAL MARKETS – INDUSTRIAL COMMUNICATION

Focus topic: Enabling reliable wireless shop floor communication through local 5G network deployment

- Development of suitable mixed wireless/wired architecture for in-factory communication
 - Flexible, ultra-low delay and interference tolerant radio technologies
 - Low-delay in-site backhaul and low delay cross-site communication
 - Easy to configure and maintainable networking infrastructure
 - Easy adaptation to changing shop floor environment and production processes
- Communication environment characteristics
 - Communication and non-communication (machines) radio interferers
 - Coexistence with existing systems
 - Many communicating devices (machines, goods, tools, controllers, transportation ...)
 - Extended demands on reliability, long term operations, maintenance, security ...



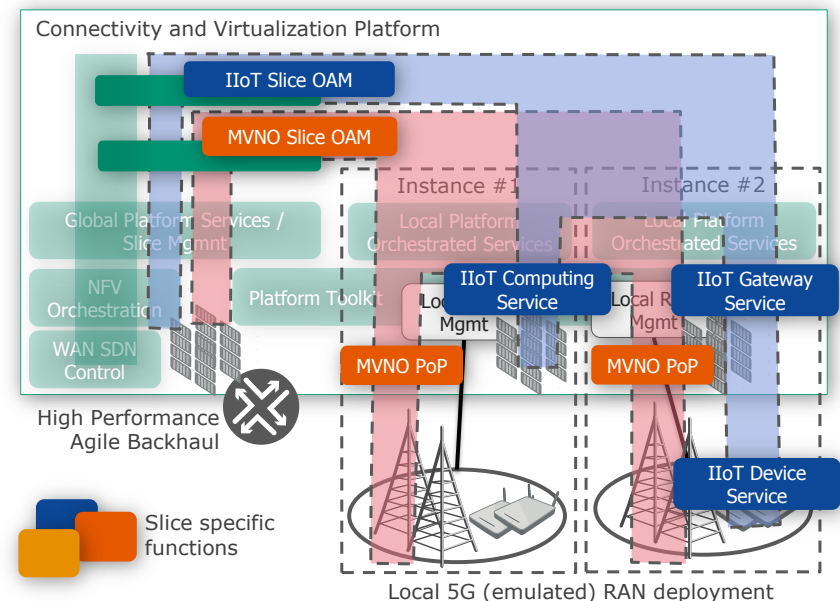
5G BERLIN TESTBED ENABLE APPLIED 5G R&D



The foundation for getting 5G ready

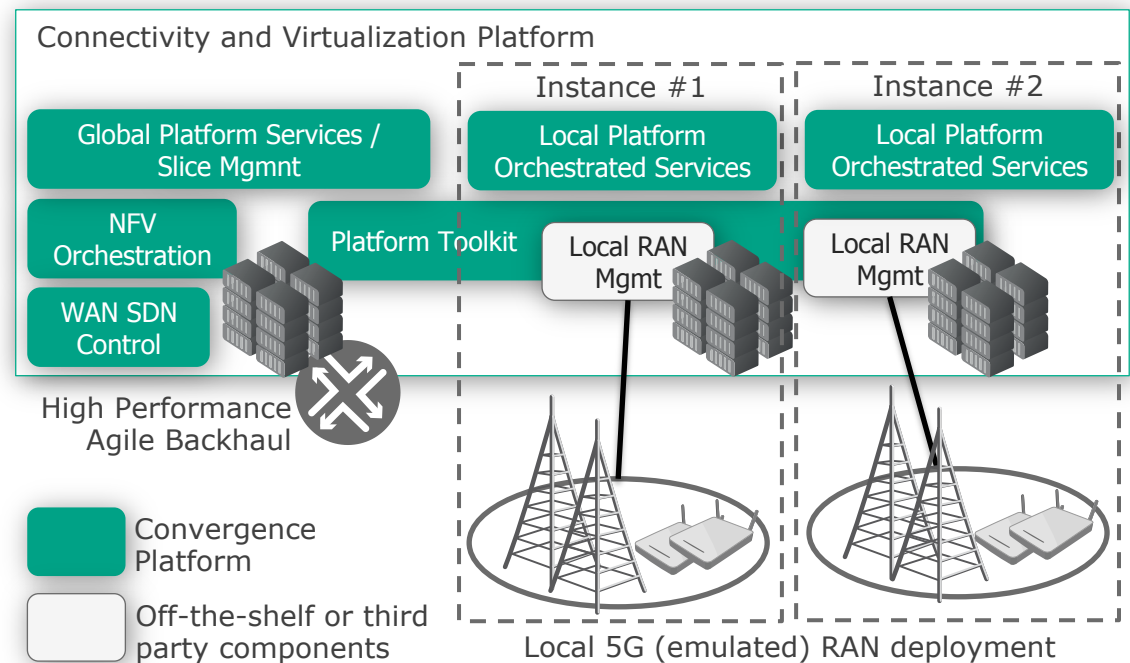
5G-Berlin provides 5G-Access, 5G-Core & Xhaul Technologies in combination with SDN/NFV/MEC Service Platforms within one single place

- Initial Phase comprises two projects until end of 2016
 - HHI MMIMO Prototype (Performance Measurements)
 - FOKUS 5G Ready Trial Plattform Project (Network Slicing / MEC Prototype for massive M2M Benchmarking)
- FOKUS 5G Ready Trial Plattform Project
 - Initial platform to be established until end of 2016
 - Based on OpenXXX Toolkits and 5G Playground



5G-Ready Trial Platform

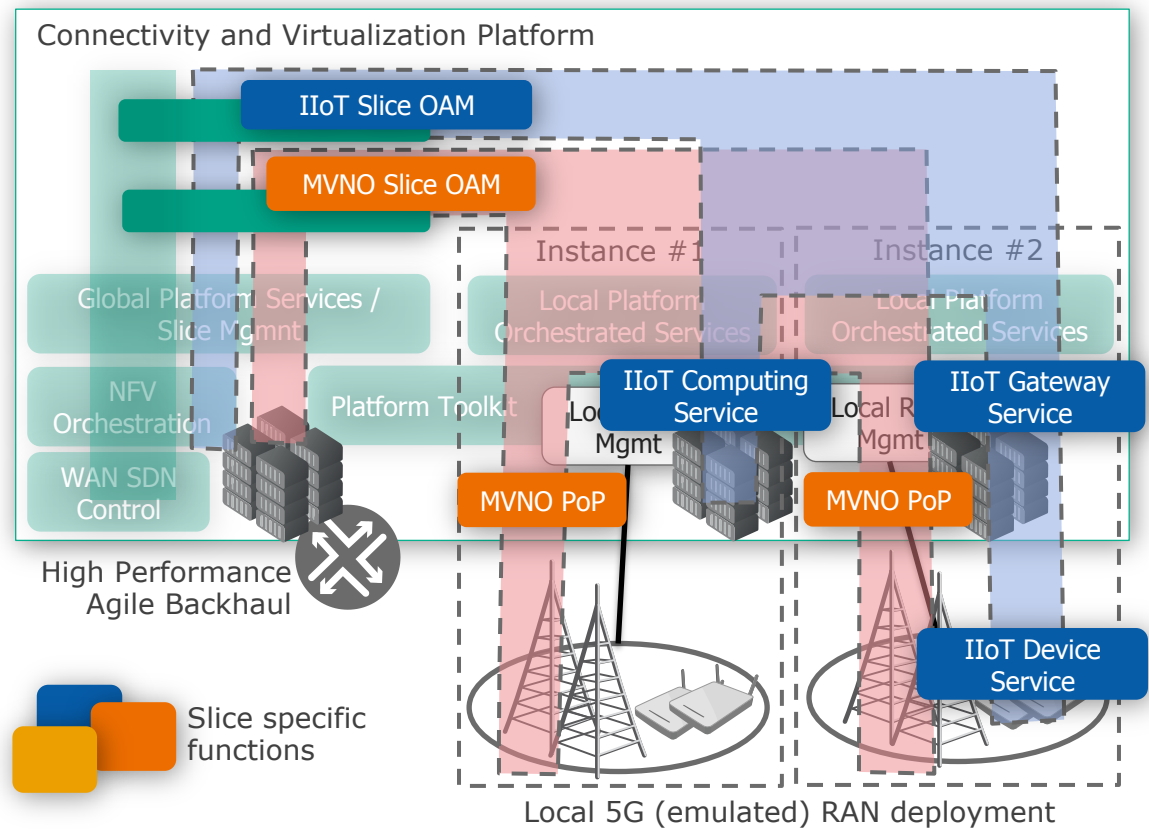
- Platform provides a number of baseline core network components and services
 - Data center, 4G+ wireless access, SDN Infrastructure, NFV orchestrator and virtualized infrastructure managers
 - Virtual Core (virtualized EPC)
 - Evaluation tool chest
- Enables assessment of
 - 5G Core network technologies
 - Use case technologies relevant for 5G
 - New wireless access technologies
- Enables use case demonstrations in “relevant environment”



5G-Ready Trial Platform

Sample use case Massive M2M

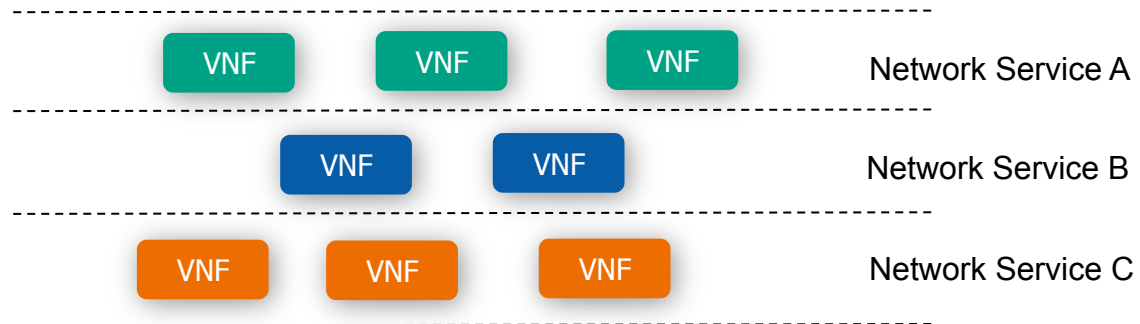
- Platform provides core functionality to create and manage network slices, flow management and network resource management as well as virtualization
- Experiments will assess platform technologies ...
 - Slice management and scalability / availability
 - Isolation between slices
 - Cross-slice resource utilization
- ... use case technologies
 - Intra- and cross slice communication
 - (I)IoT infrastructure performance / scalability
 - Wireless access performance / mobility bottlenecks



Network requirements enforcement

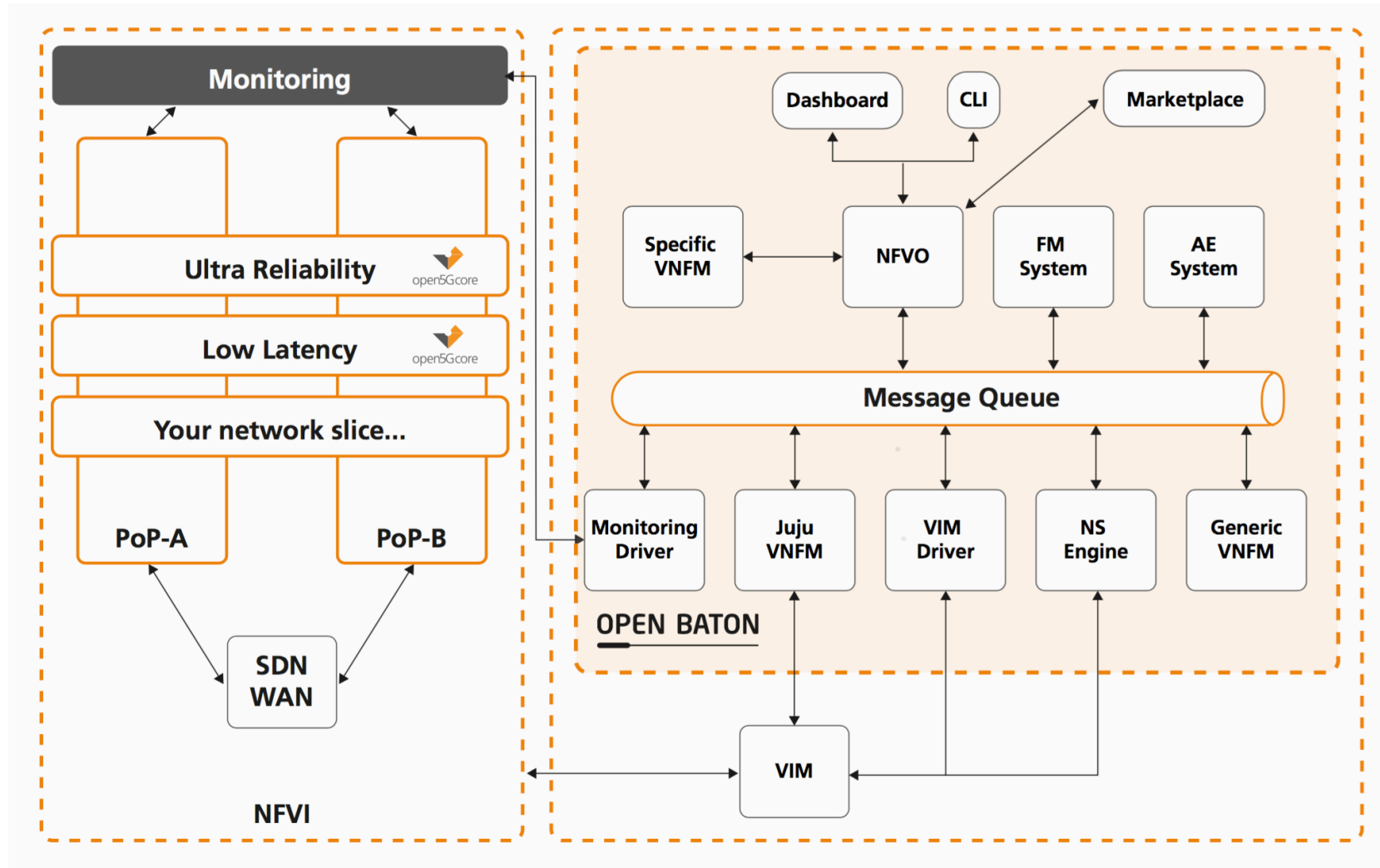
Each Network Slice may require different network capabilities:

- NFV Orchestrator has to make use of SDN technologies for enforcing different level of QoS on the NFV Infrastructure



NFVI

OPEN BATON RELEASE 3 ARCHITECTURE



CONTACT



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Any Questions

