

Architectural Support for Verticals

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5GPPP Arch WG, Nokia Bell Labs

- Architecture WG is one of the Working Groups as part of the 5GPPP Initiative
- 5GPPP Architecture White Paper issued in June 2016 (V1.0) and updated in January 2018 (v2.0) based on Phase I projects results
- New release (v3.0) issued during the EuCNC 2019 based on Phase II and III project results

5GPPP Architecture White Paper Releases

<https://5g-ppp.eu/white-papers/>



5GPPP Phase II and III Projects: Contributors



Architectural Enablers for Vertical Support

Enablers

- Tailored E2E Logical Networks
- SLA Assurance

1 Network Slicing

2 Multi-access Edge Comp. (MEC)

3 Service-based Architecture

4 Functional RAN Split

5 Smart Net. Management

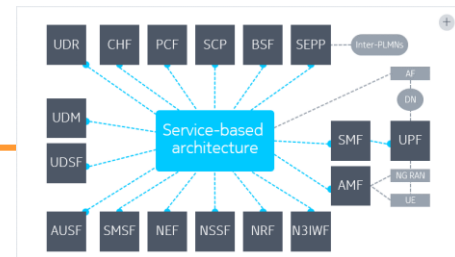
6 Security Intelligence

7 Location Services & Context M.

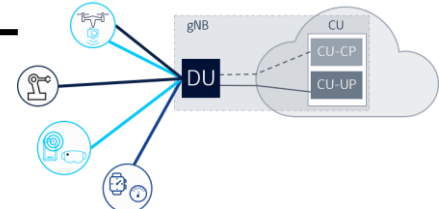
- VNFs at Edge Clouds
- Latency-critical Services



- Core Net & Management Plane
- Flexible Function Addition & Extension



- Virtualization of Higher Layers in RAN
- Easy Scaling



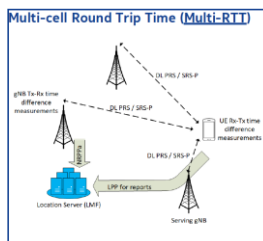
- Automation & Dynamic Adaptation
- Analytics Functions

Service orchestration
Network orchestration

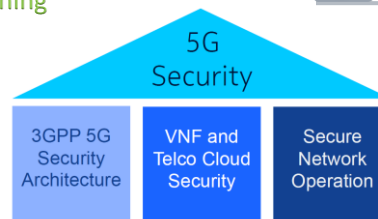


- E2E Security Solutions
- Tailored solutions, e.g., IIoT

- High-accuracy Low-latency Positioning
- Indoor & Outdoor



- Network Virtualization
- Numerous Lower-Layer Enablers
- Flexible QoS Enforcement
- Satellite Integration



- IMT-2020 Requirements for 5G Networks set by ITU-R
- 5GPPP IMT-2020 Independent Evaluation Group (IEG) Results *)

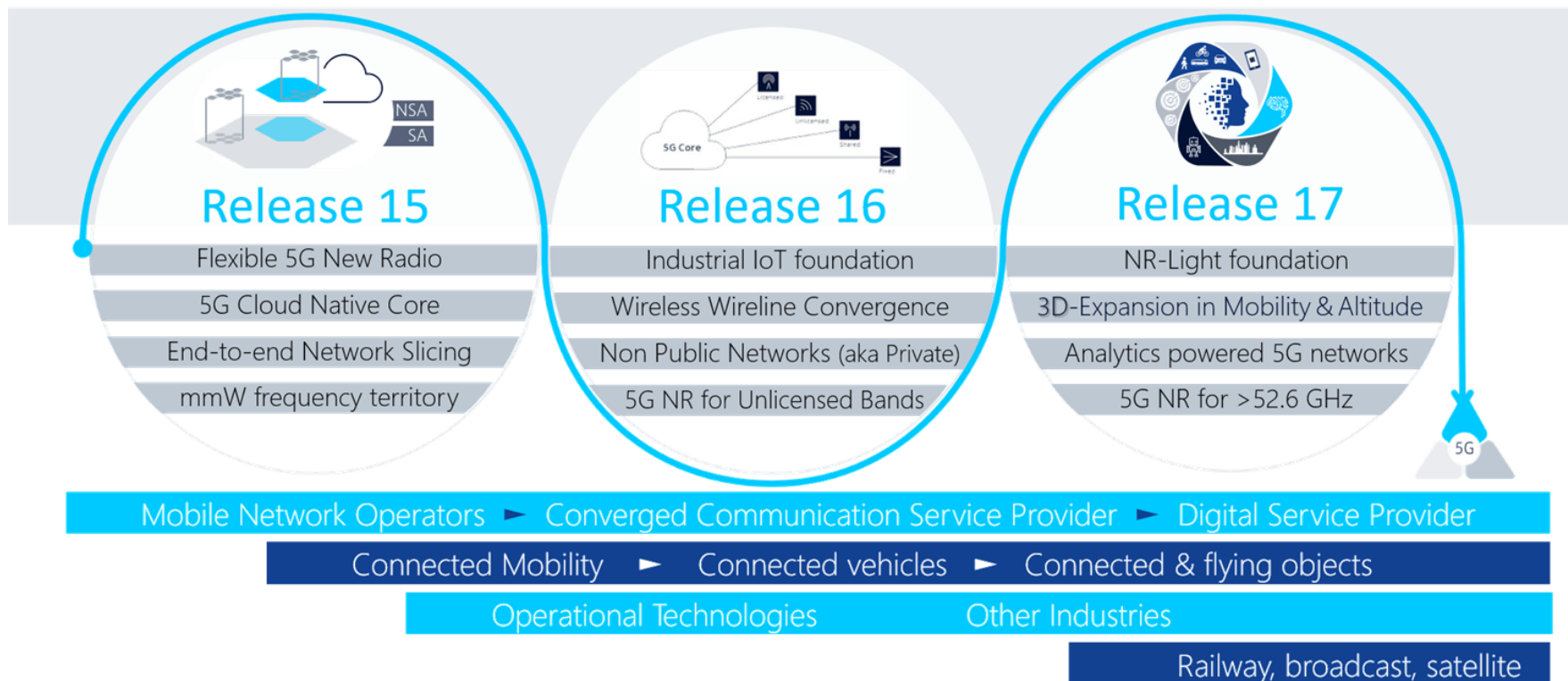
KPI	IMT-2020	5G NR	Fulfillment
Bandwidth (GHz)	1	6.4	✓
Peak data rate (Gbit/s)	20	78.05	✓
Peak SE (bit/s/Hz)	30	48.78	✓
User plane latency (ms)	1	0.23	✓
Control plane latency (ms)	20	11.6	✓
Energy efficiency (%)	Qualitative	99.73	✓
5th perc. user SE (bit/s/Hz)	0.3	0.47	✓
User exp. data rate (Mbit/s)	100	247.6	✓
Average SE (bit/s/Hz/TRxP)	9	15.5	✓
Traffic capacity (Mbit/s/m ²)	10	37.5	✓
Mobility SE (bit/s/Hz)	0.45	2.64	✓

*)

- 5G IA, IMT 2020 Evaluation WG, Online: <https://5g-ppp.eu/5g-ppp-imt-2020-evaluation-group/>
- M. Fuentes, et. al, "5G New Radio Evaluation Against IMT-2020 Key Performance Indicators," IEEE Access, June 2020

Realizing the full promise of 5G through 3GPP evolution

“Rome wasn’t built in a day” – 5G evolves from a strong Rel-15 base



Thank you for your attention

For more information about 5G PPP activities please visit <https://5g-ppp.eu>

The white paper is available at <https://5g-ppp.eu/white-papers/>