6G – the intelligent network platform of 2030

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Driving forces – needs in the 2030's

Trustworthiness	Trusted communication and computing for industry and society relying on critical information
Sustainable world	Communication and network as part of and enabler for sustainable development
Simplified life	Massive use of AI across systems for optimal assistance and efficiency
Application demands	Extended and new services requiring extreme connectivity performance

Use cases

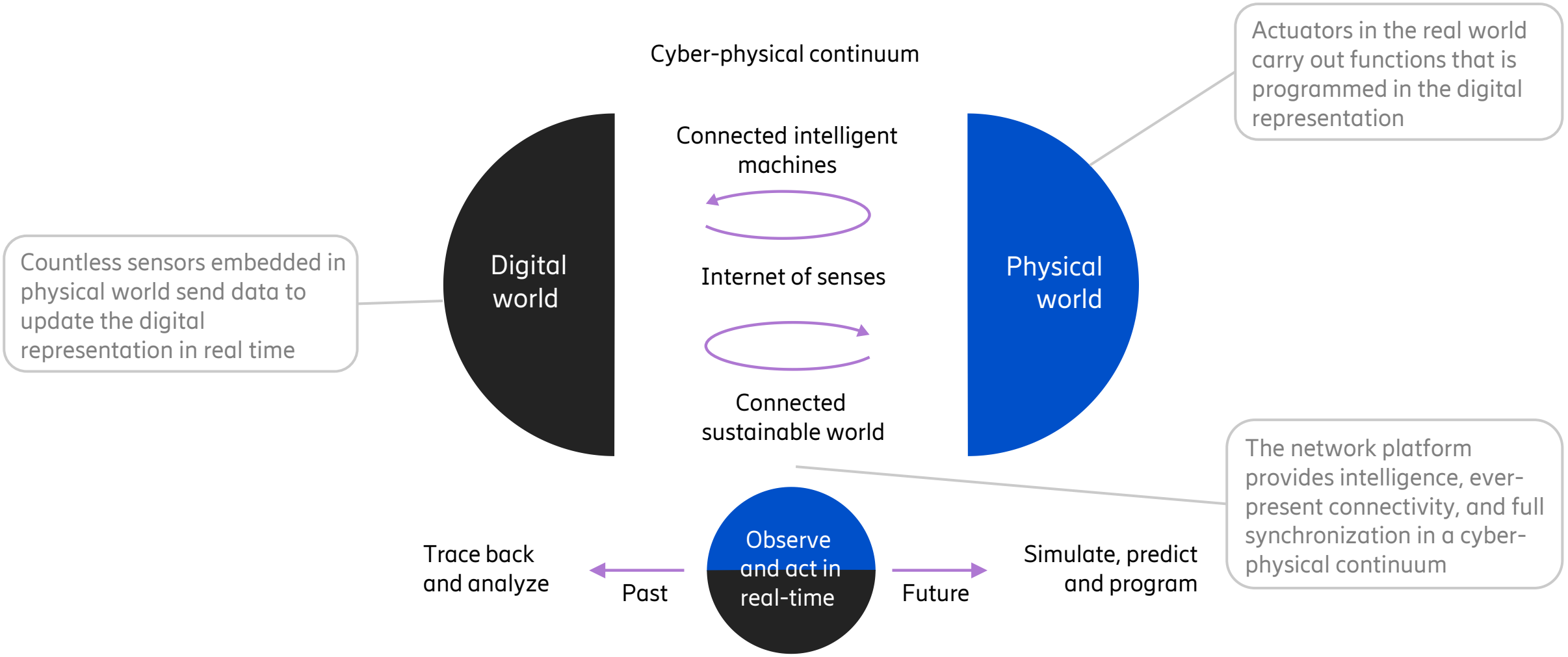
Driving forces

Use cases

Capabilities

Technology

Connecting a cyber-physical world



What's in the cyber-physical continuum?

Merged reality

- New ways of meeting and interacting with other people
- New possibilities to work from anywhere
- New ways to experience culture and scenes far away

Massive digital twins

- Connecting all equipment and tracking material
- Using the network as a platform for many ecosystems
- Allowing accurate predictions and detailed control

Situational awareness

- Sensing surroundings and locating objects
- Guiding robots and vehicles with digital maps
- Interacting with collaborative robots

Capabilities

Driving forces

Use cases

Capabilities

Technology

Capabilities

"Classical" capabilities still important

New capabilities for emerging use cases

Cost efficient and sustainable

Technology

Driving forces

↕

Use cases

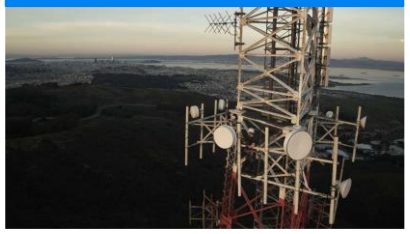
↕

Capabilities

↕

Technology

Limitless connectivity

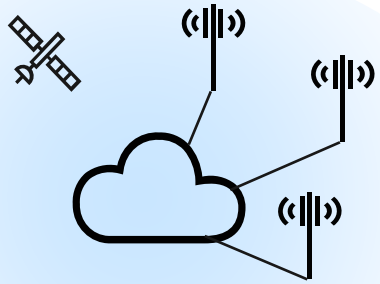


Trustworthy Systems

Cognitive network

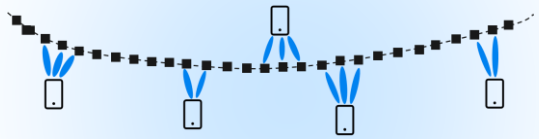
Network compute fabric

Some examples of technology components

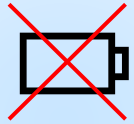


Cloud-native

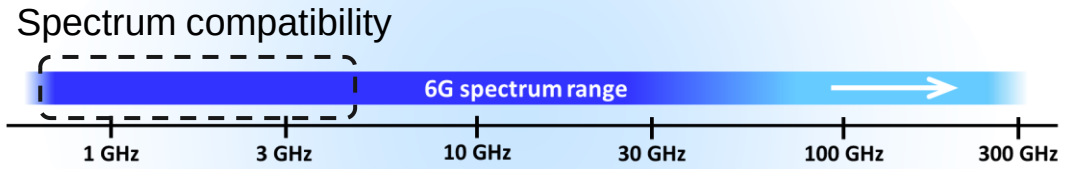
AI



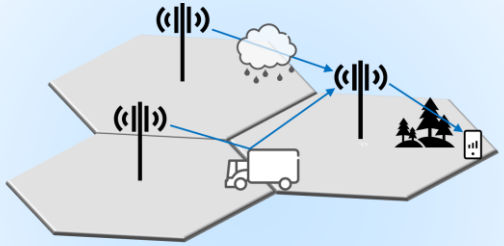
D-MIMO



"Zero energy" devices



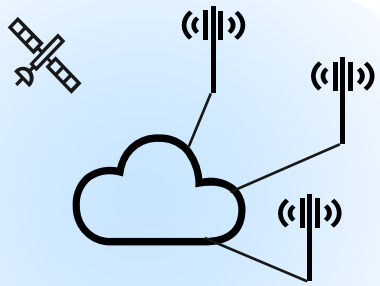
Spectrum



Joint communication and sensing
"6G makes sense"

…and many more!

Cloud native and AI



Cloud-native

AI

- Common cloud platform and IT tools
- Fully service-based architecture
- Integration of new types of access nodes
- Dynamically deployable AI/ML agents
- Application – network collaboration in an all-encrypted world

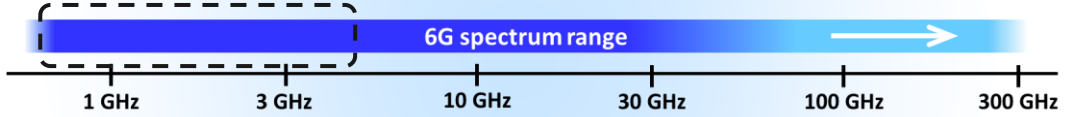
Some examples of technology components

Cloud-native

AI

D-MIMO

“Zero energy” devices



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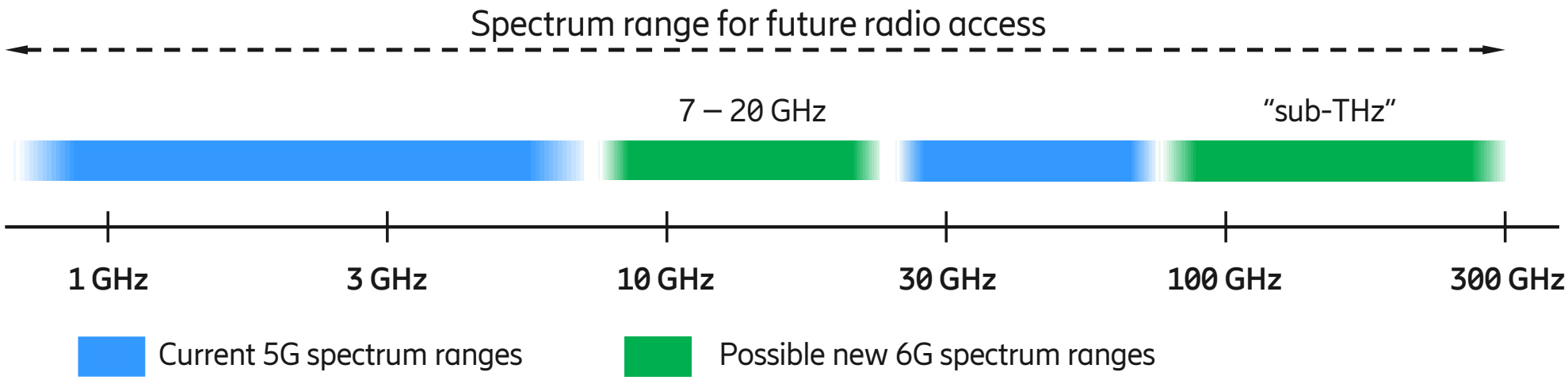
Spectrum



"Existing" spectrum

- sub-6 GHz important for coverage
- Dynamic spectrum sharing with 5G essential

"New" spectrum

- 7 – 20 GHz – highly relevant range
- "sub-THz" – for specific scenarios

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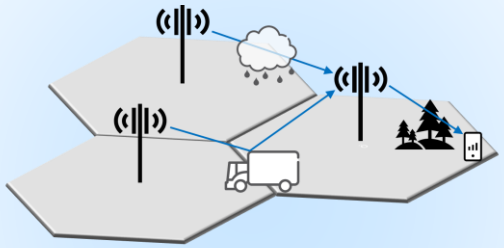


Joint communication and sensing

…and many more!

6G makes sense

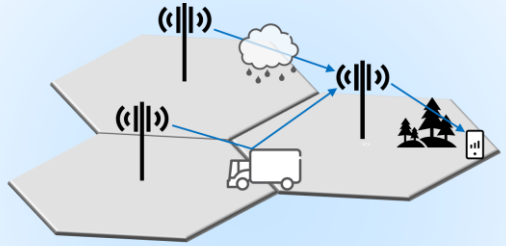
Sensing functionality as an *integrated* part of the communication network

- Reuse the communication spectrum for sensing
- Reuse the communication infra-structure for sensing

Low-cost introduction of sensing functionality

Benefit from huge number of co-operative network nodes

Externally to enable new/enhanced services
Internally to enhance the network performance



Joint communication and sensing

Some examples of technology components

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Zero-energy devices

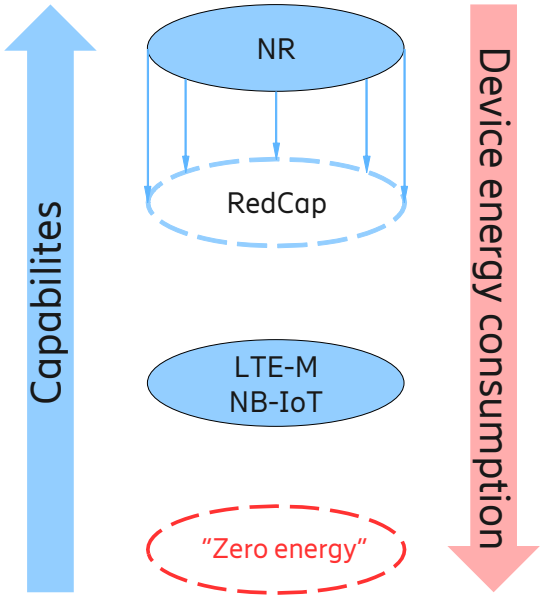
Devices harvesting ambient energy

- *"No need to change battery"*
- Sustainable asset trackers, sensors for mass deployment, …

Much more extreme than today's NB-IoT/LTE-M devices – *not* an incremental enhancement of NB-IoT/LTE-M

Very small amounts of energy available

- PHY; waveform suitable for Rx/Tx device imperfections
- Mobility; energy-efficient current mobility mechanisms
- Security; power-efficient security mechanisms
- …



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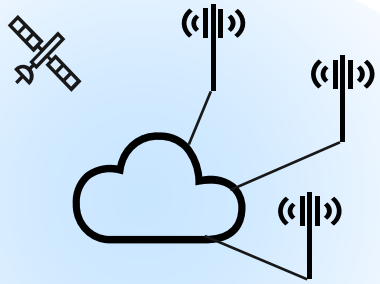

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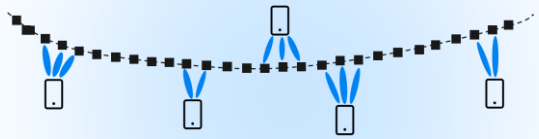

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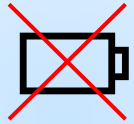

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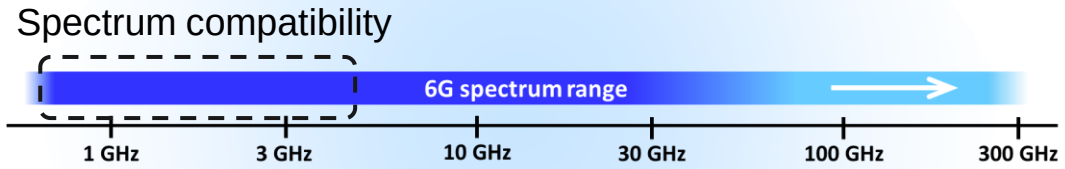

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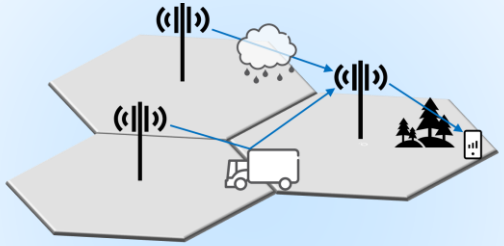

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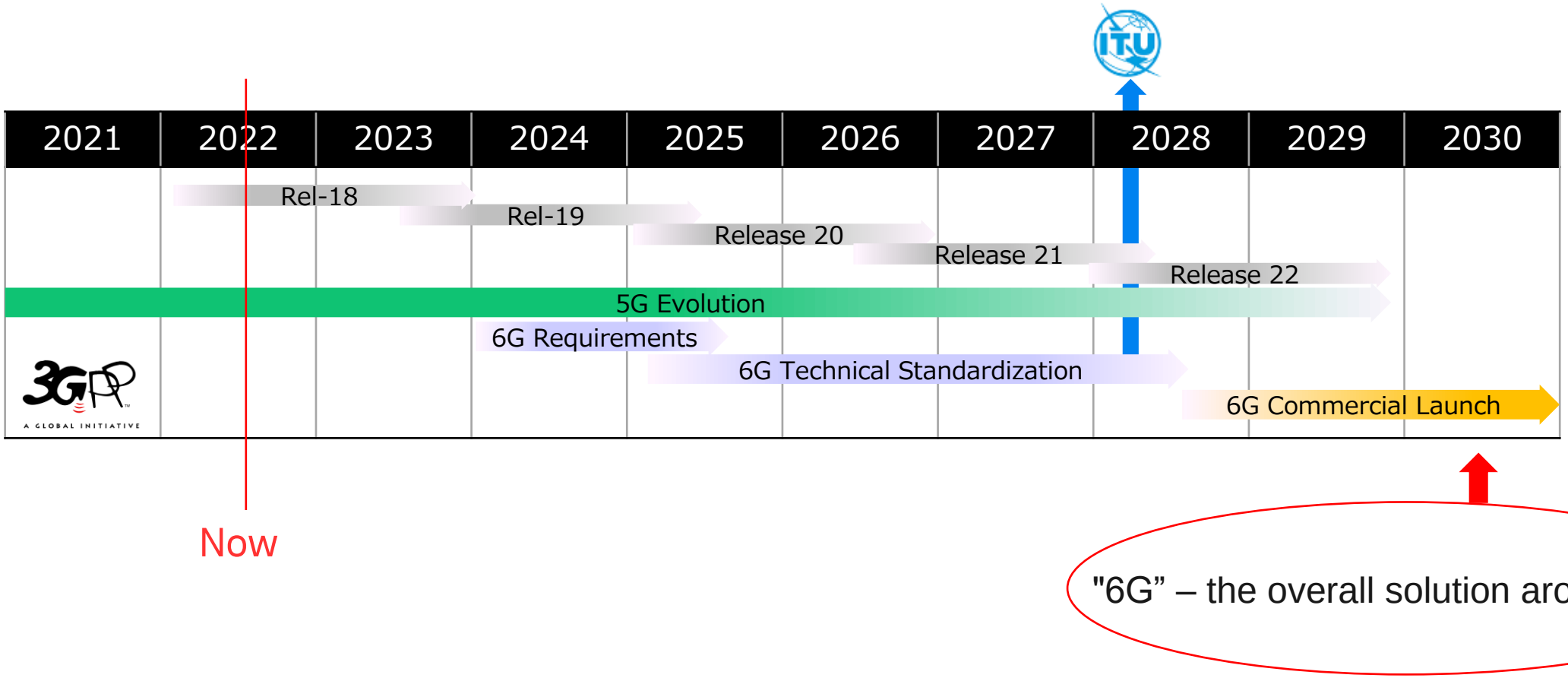
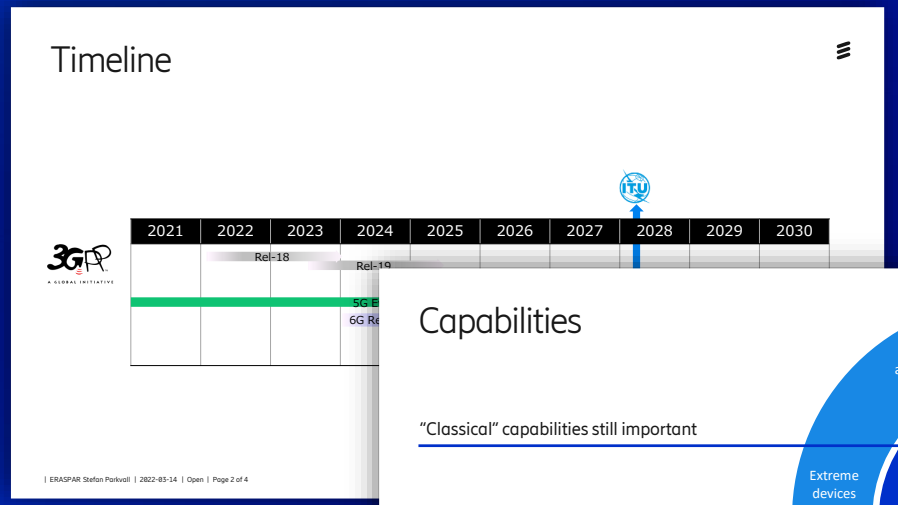
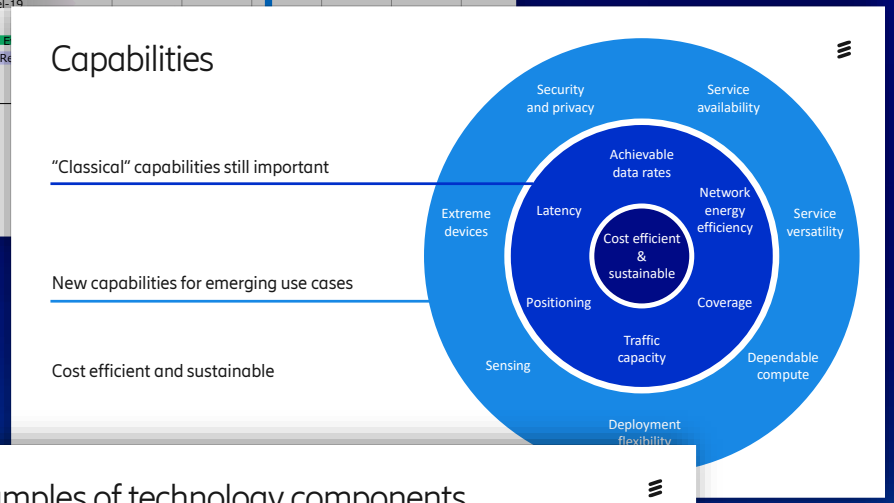
When?

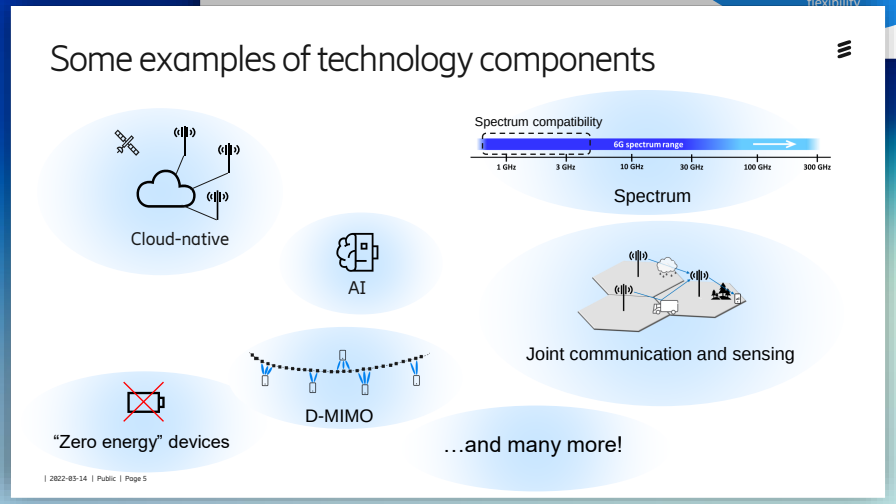

2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
Rel-18
Rel-19
Release 20
Release 21
Release 22
5G Evolution
6G Requirements
6G Technical Standardization
6G Commercial Launch
Now
"6G" – the overall solution around 2030

Summary

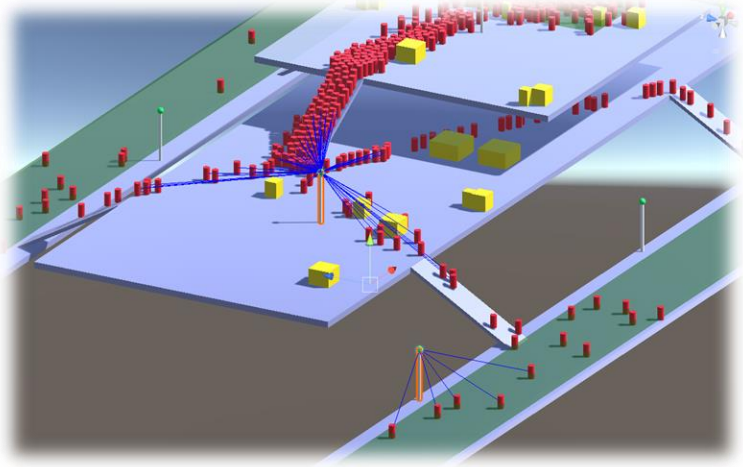
- "6G" is the overall solution around 2030
- New capabilities for new use cases
- Wide range of radio-access technologies considered



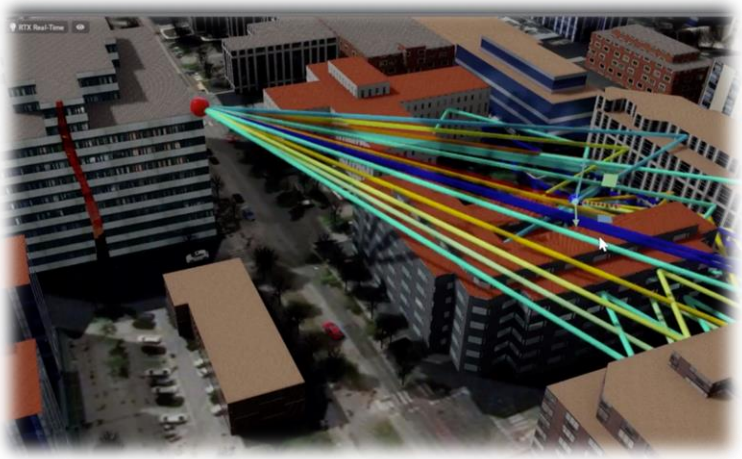




Simulation tools used for 5G and 6G research



User behavior modeling



Ray tracing for highly realistic channel modeling

Connecting a cyber-physical world

6G white paper

Released in February 2022 (link)

Presents Ericsson's 6G vision for 2030 - a broad view covering our ongoing explorative research

Update of our first 6G WP published Nov 2020