

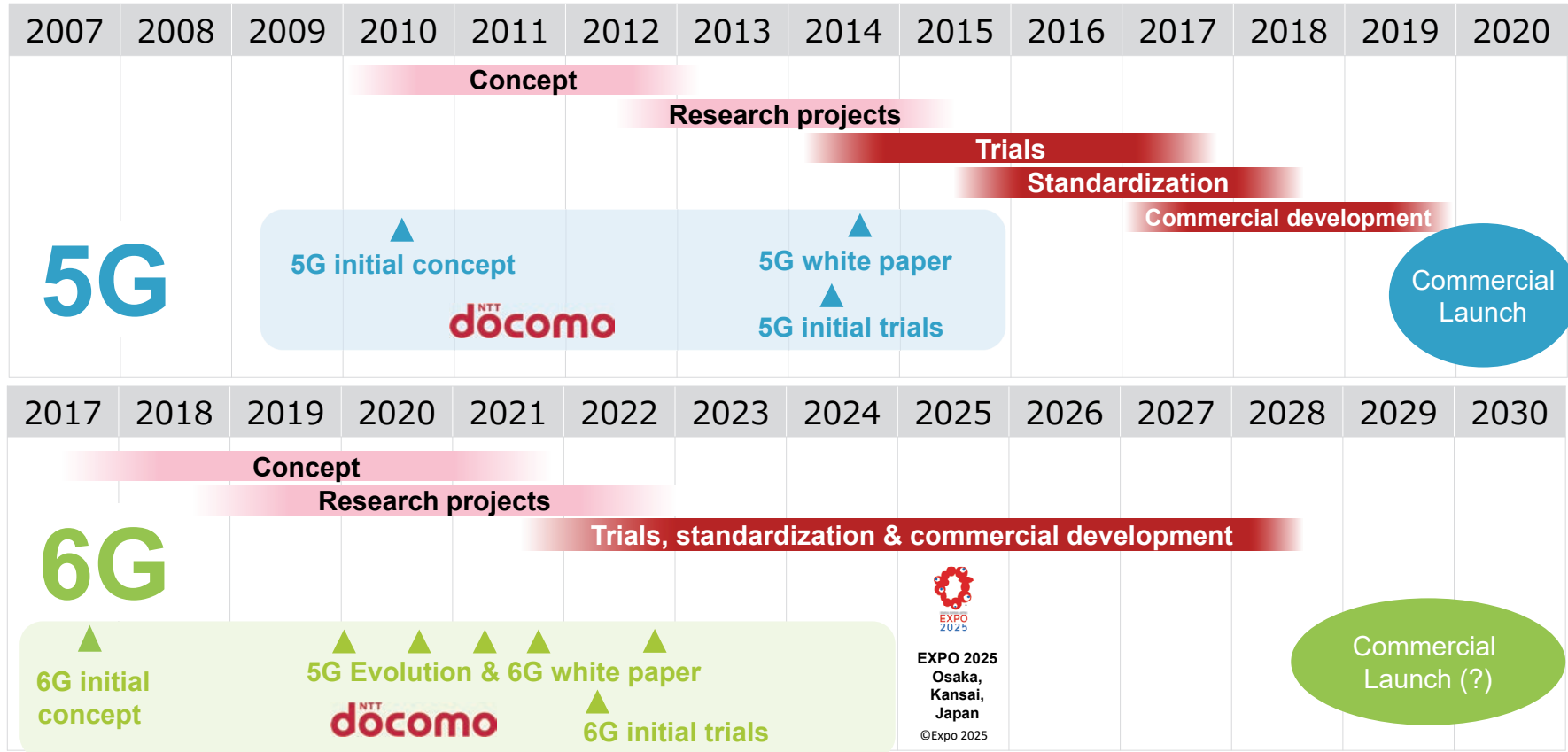
Changing worlds with you.

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Research and Development for 6G Wireless

NTT DOCOMO, INC.

5G Development and 6G Roadmap

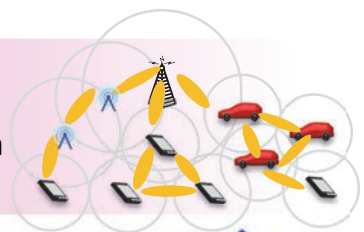


5G Evolution & 6G

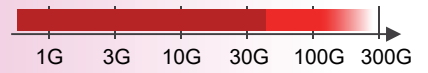


Technology development and key topics

Distributed network advancement in spatial domain



Upgrading frequency utilization



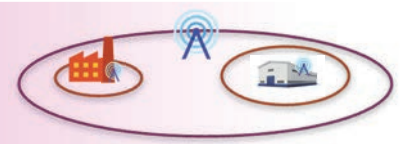
Coverage expansion, including non-land-based



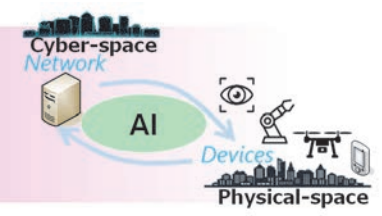
Further advancement of wireless transmission technologies



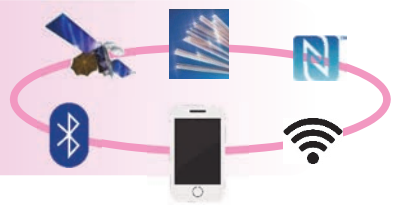
Extended low-latency and reliability



Multifunctional wireless communication systems and AI technologies



Integration of multiple wireless communication technologies

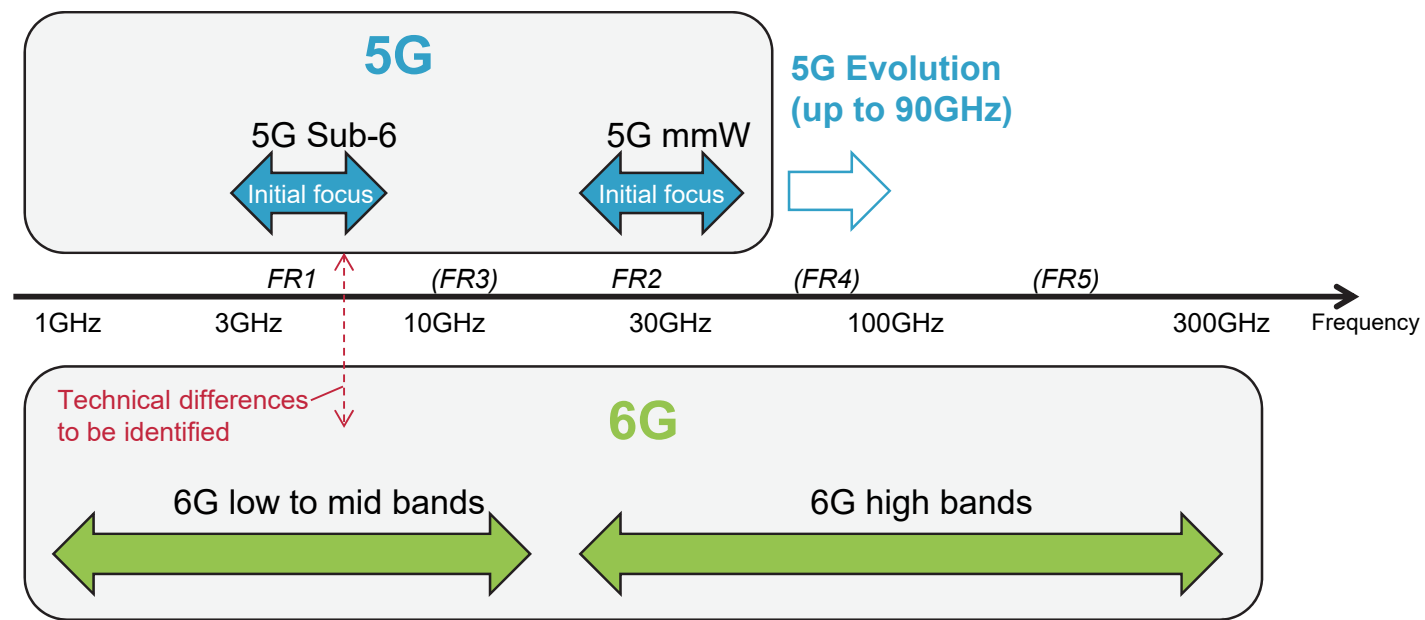


Advancing network architecture



Pioneering frequency bands for 6G

- Sub-THz (to 300 GHz) bands above those for 5G
- Mid bands including existing 5G bands



Performance evaluation and visualization with 6G simulator



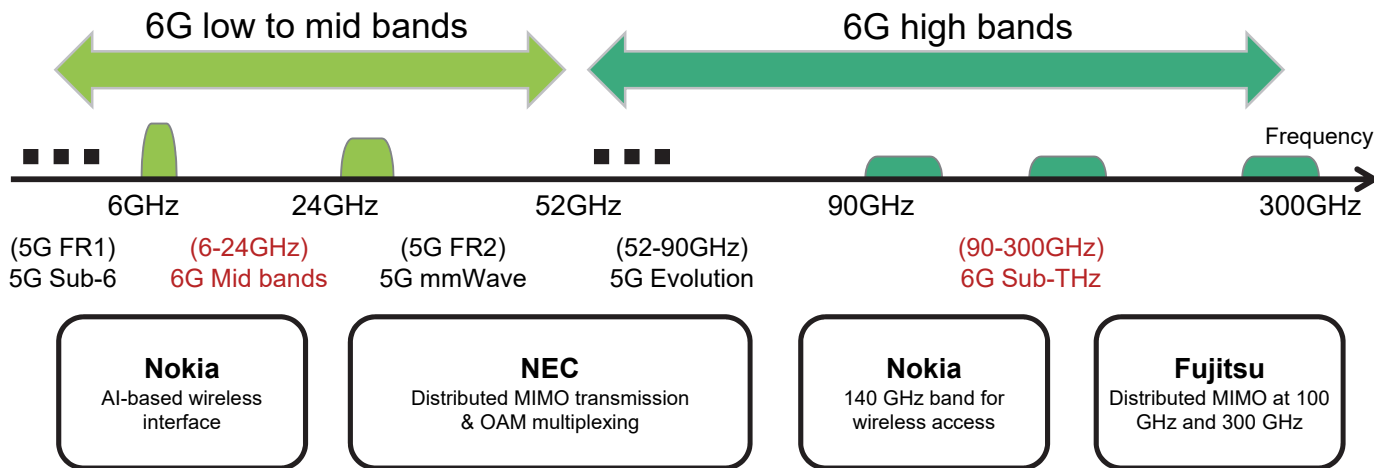
6G system-level simulator



6G concept & elemental technologies

6G trials with major vendors

From June 6, 2022



Starting February 27, 2023!

Ericsson
Improve frequency utilization efficiency

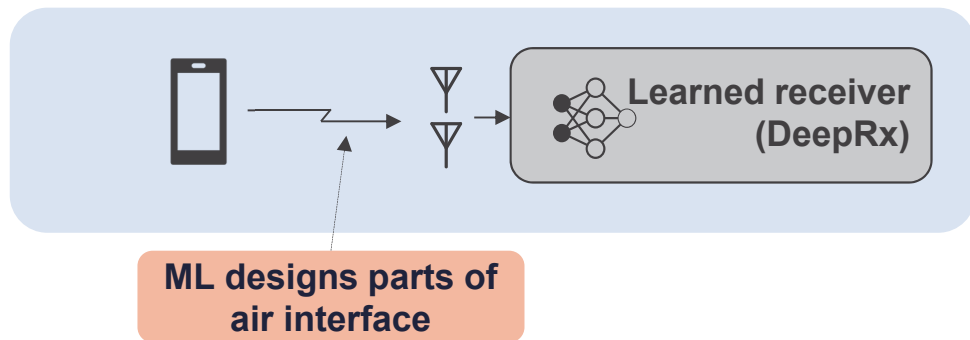
New partners!

Ericsson
100 GHz band wireless transmission

Keysight Technologies
Radio wave propagation measurement for Sub-THz

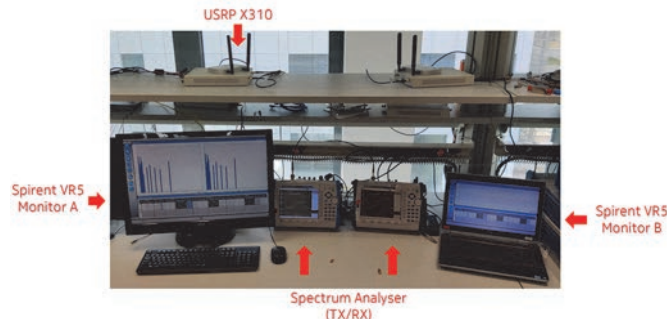
PoC: AI-native air interface (with NOKIA and NTT)

- Pairing AI-based learned waveform in transmitter with deep-learning receiver



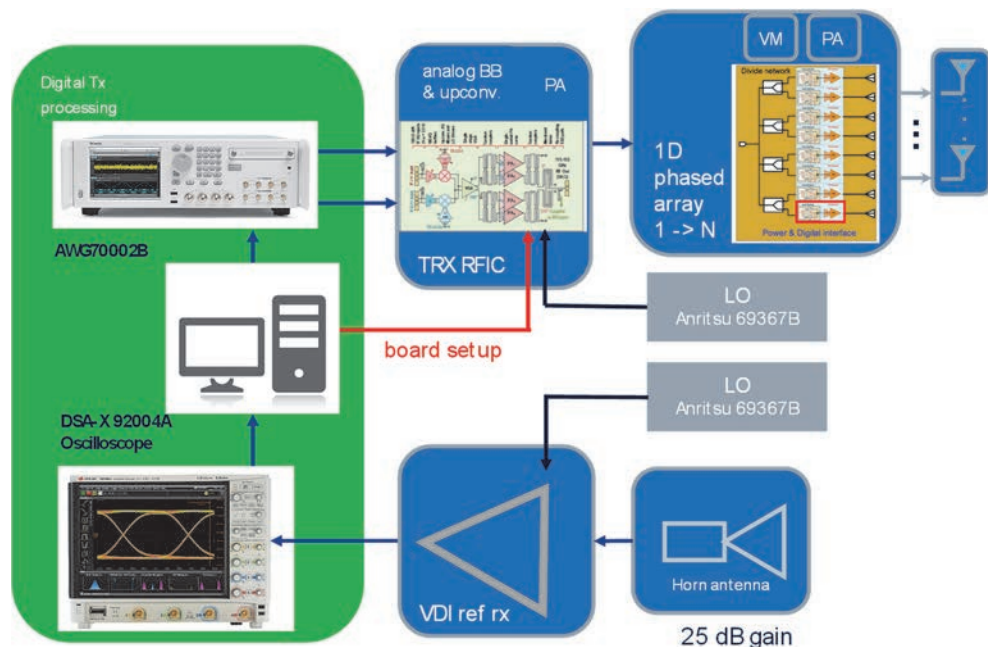
Significantly reducing signaling overhead and improving throughput by up to 30%

Demonstrated by
NOKIA at MWC '23



PoC: Sub-THz high-rate transmission (with NOKIA and NTT)

- Demonstrating a 25 Gbps connection on a single 256QAM stream over a carrier frequency of 144 GHz using beamforming



1D phased array for wider range:

- Horizontally steerable beam
- Steering angle $\pm 20^\circ$
- 128 elements
- Max. tx power: 47 dBm EIRP



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