

5G Evolution and 6G

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Requirements for 6G Wireless Technology



Extreme high data rate/capacity

- Peak data rate >100Gbps exploiting new spectrum bands
- >100x capacity for next decade



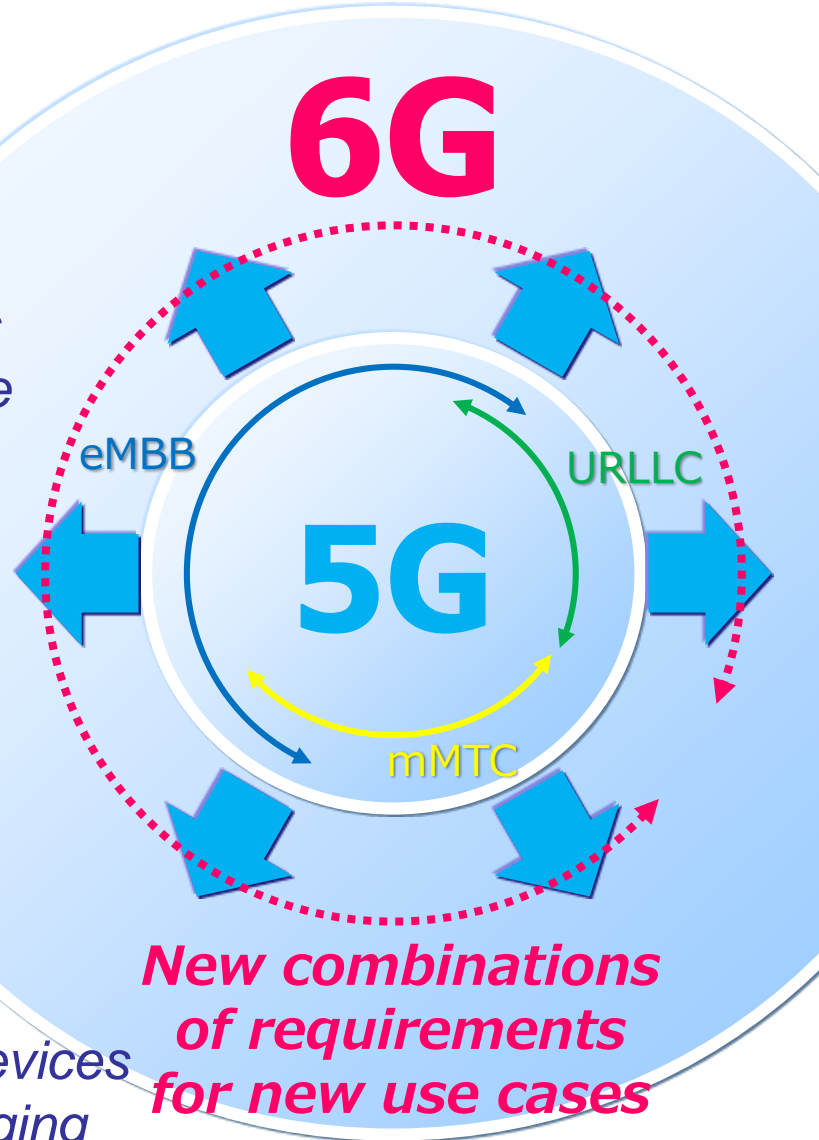
Extreme coverage

- Gbps coverage everywhere
- New coverage areas, e.g., sky (10000m), sea (200NM), space, etc.



Extreme low energy & cost

- Affordable mmW/THz NW & devices
- Devices free from battery charging



Extreme low latency



- E2E very low latency <1ms
- Always low latency

Extreme high reliability



- Guaranteed QoS for wide range of use cases (upto 99.99999% reliability)
- Secure, private, safe, resilient, ...

Extreme massive connectivity

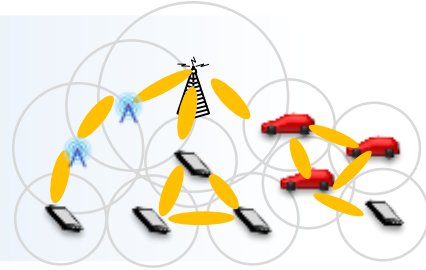


- Massive connected devices (10M/km²)
- Sensing capabilities & high-precision positioning (< cm)

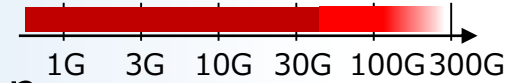
New combinations of requirements for new use cases

Technical Components for 5G evolution and 6G

New network topology



Frequency extension and improved spectrum utilization



Coverage expansion including Non-Terrestrial Network



Further enhanced massive MIMO and wireless technology



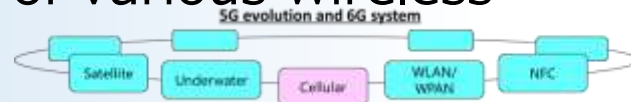
Enhanced URLLC/ Non-Public NW



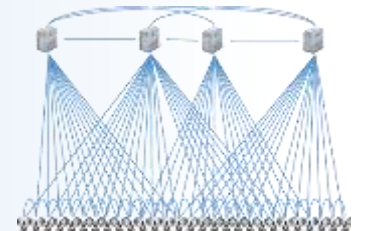
Multi-functionalization and AI in mobile network



Expanded integration of various wireless technologies



Advanced and flexible Network architecture



- Visualization of DOCOMO's 6G technical concept
- Use as a tool for quantitatively evaluating and appealing the effectiveness of 6G key technologies
- Implemented 6G key technical topics;
 - New radio network topology
 - Coverage extension technology including NTN
 - Frequency extension and improved spectrum utilization technologies
 - Further advancement of wireless transmission technologies

		5G	6G
Center frequency		28 GHz	100 GHz
Bandwidth		400 MHz	8 GHz
No. of BS ant. elements	Shopping mall	392	4608
	Factory	128	1152

Shopping mall



Factory



6G Real-time Simulator - Shopping Mall Scenario -





5G evolution & 6G

Technologies that enrich human life

Thanks!