Evolution of Technologies for Networks & Services

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tsdsi
India's Telecom SDO

Infosys®
Navigate your next

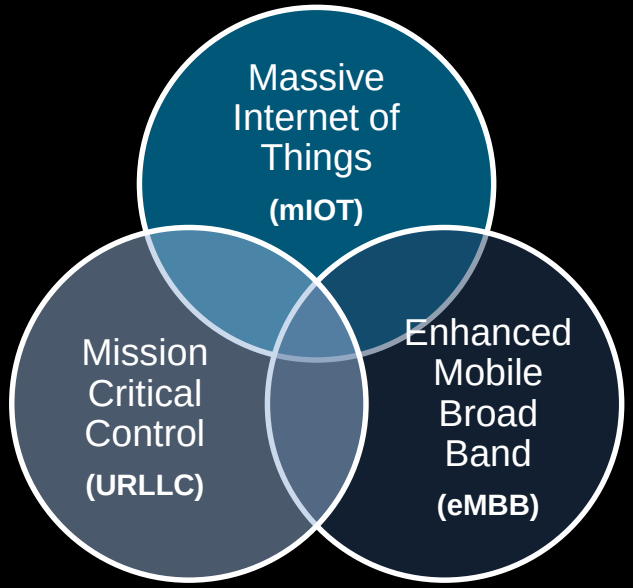
5G & Beyond

Building Management
Smart Meters
Smart City
Smart Factory
Digital Utilities
Smart Farming

Connected Robotics & Autonomous systems

Remote Machines
Autonomous Vehicles
Tele Robotics
Drone Delivery
Tele medicine
Connected Vehicles

Wireless Brain – Computer interactions



Immersive media
Gaming
Teleporting
Connected Bank
Connected Retail
Infotainment

Multi sensory XR applications. Holograms

Security & Privacy

Evolution	Spectrum	BW	Data Rate	Spectral Efficiency	Mobility	Latency	Applications
5G	3 – 300 GHz	0.25 – 1 GHz	Up to 20 Gbps	30 bps / Hz	Up to 500 Km / h	U-plane – 0.5 ms C-plane – 10 ms	Voice, Data, Video Call / Chat, DVB, AR / VR videos, UHD videos, V2X, IOT, Smart City / Factory / Home, Telemedicine, wearable devices
6G	73GHz, 140 GHz, 1 -10 THz	Up to 3 THz	>1 Tbps	100 bps / Hz	Up to 1000 km / h	U-plane – <0.1 ms C-plane – <1 ms	+ HD TV, Digital sensing & realty, holograms, automated driving, Industrial Internet

Key Enabling Technologies

1. THz Band Communications
2. Intelligent Communications Environments
3. Pervasive Artificial Intelligence
4. Network Automation
5. Reconfigurable Transceiver Front ends
6. Ambient Backscatter Communications
7. The Internet of Space Things
8. Cell Free MIMO
9. The Internet of NanoThings
10. The Internet of BioNanoThings
11. Quantum Communications

Source: IEEE, 6G white papers

AI plays key role in 6G & Beyond

AI - robotics, natural language processing, machine learning (ML), computer vision, …

- Cognitive Radio - AI Optimized Spectrum usage for optimal performance
- PHY / MAC – Channel Estimation & Prediction, Symbol Detection, Channel Decoding, Resource Allocation & Scheduling
- Wireless – Routing Protocol Design (energy efficient), Edge AI, Distributed AI (core to devices)
- Network – Planning & Orchestration, Routing & Network Operations, Fault Analysis & Recovery
- ML based Orchestration & Management – Supervised learning (traffic prediction, classification, slice resource prediction), Reinforcement learning (resource management), Unsupervised learning (Optimizing end user QOE, network security)
- Network Automation (self driving networks)

Source: IEEE, 6G white papers