Priorities for Resilient 6G Infrastructure in Japan

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Context & Imperatives

- Japan faces frequent natural disasters (earthquakes, typhoons, floods).
- Resilient connectivity is part of national emergency priorities.
- Government strategy (MIC's “Beyond 5G”) prioritizes APN, NTN, and advanced RAN (including local connectivity).

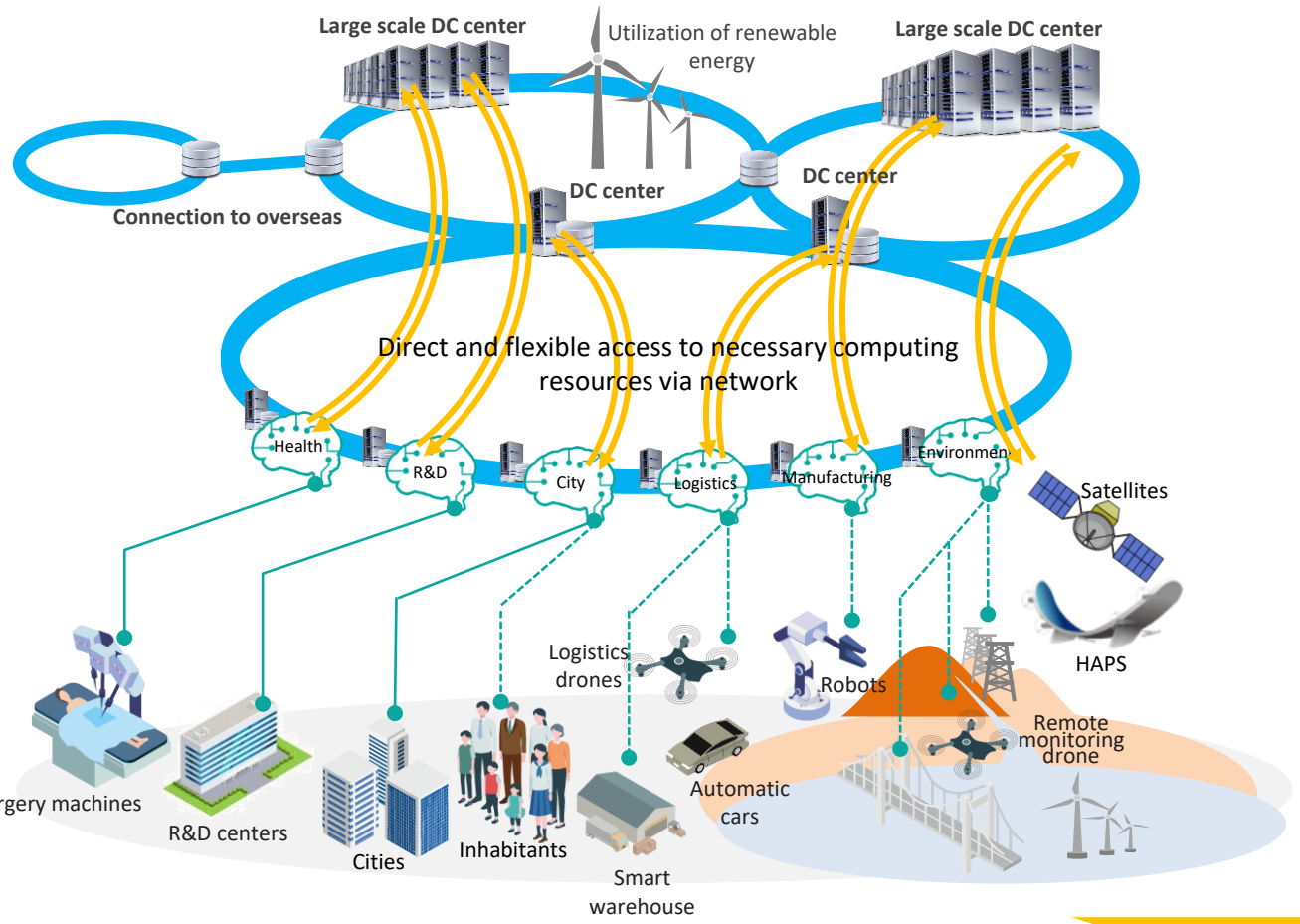
Core 6G Requirements

- Ubiquitous access to AI compute (network for AI)
- Seamless operation in natural disasters, especially during power/fiber outages (empowered by AI)
- 100% national land coverages integrated with early warning and public safety
- Dynamic Spectrum Sharing strategies for availability
- Minimizing human errors and misconfiguration

Technological Enablers

- Non-Terrestrial Networks (LEO, HAPS) for coverage and failover
- AI-based risk analytics and routing (LLM)
- APN for decarbonation, e.g., Watt-Bit Cooperation, Microgrid-powered MEC and base stations

Digital Infrastructure That Will Support AI Society in the 2030s



A next-generation information and communication infrastructure (**Beyond 5G**) should be **connecting extensively**

- **a wide variety of users,**
- **objects and sensors,**
- **numerous small and distributed AIs** specialized in individual fields,
- and **computing resources,** such as **data centers** where **renewable energy** can be utilized

on multi-layered network (**RAN** and **NTN**) and **all-photonics network (APN)**.

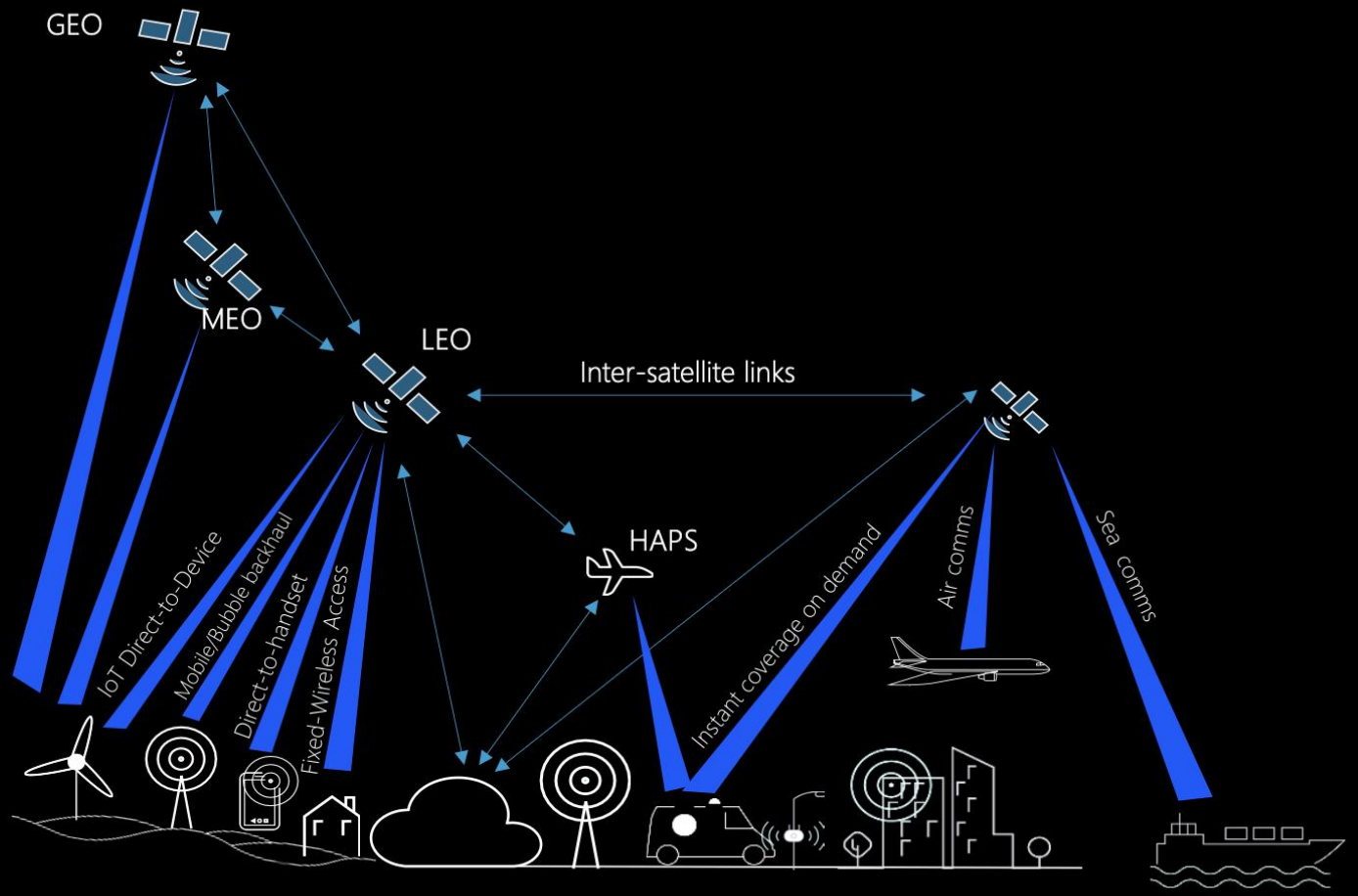
Accelerate innovation that resolves social issues

by providing **green, safe, secure, and reliable AI** to **the entire society** through **Beyond 5G!**

Slide provided by MIC, Japan

Grand Design of NTN

Non-Terrestrial Networks (NTN)



Integrated TN-NTN Ground Infrastructure

LEO/MEO/GEO = Low/Medium/Geostationary Earth Orbit
HAPS = Low/High Altitude Platform Systems

NTN is a wireless communication network that utilizes satellites, HAPS, drones, or other aeronautical platforms.

Complement each other with their respective strengths