



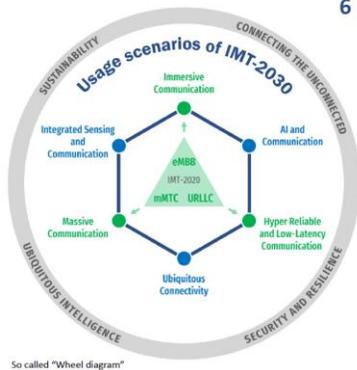
# Rakuten Mobile's view on 6G Use cases

Rakuten Mobile

# Rakuten's View for IMT2030 Usage scenario

Each use case should serve as a catalyst for **Monetization, Exposure, and Automation with further AI applicability**

## Usage scenarios



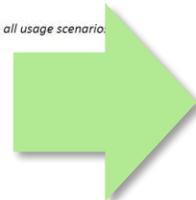
So called "Wheel diagram"

## 6 Usage scenarios

- Extension from IMT-2020 (5G)
  - eMBB → Immersive Communication
  - mMTC → Massive Communication
  - URLLC → HRLLC (Hyper Reliable & Low-Latency Communication)

- New
  - Ubiquitous Connectivity
  - AI and Communication
  - Integrated Sensing and Communication

- 4 Overarching aspects:
  - act as design principles commonly applicable to all usage scenarios
  - Sustainability, Connecting the unconnected, Ubiquitous intelligence, Security/resilience



Sensing

In built security & trust

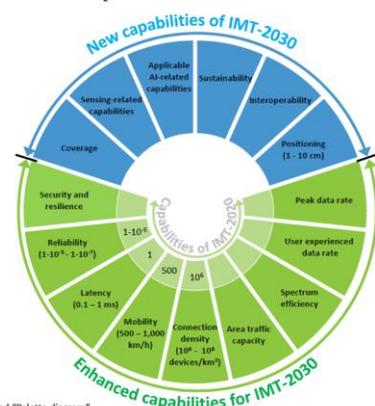
Industrial IoT

Seamless TN & NTN Integration - day 1

Metaverse/Digital Twin

Voice & Roaming from day 1

## Capabilities of IMT-2030



So called "Palette diagram"

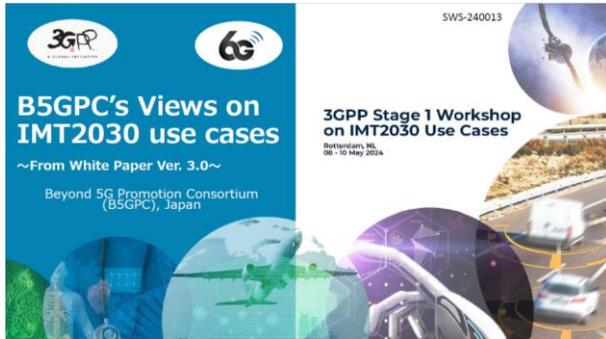
The range of values given for capabilities are estimated targets for research and investigation of IMT-2030.

All values in the range have equal priority in research and investigation.

For each usage scenario, a single or multiple values within the range would be developed in future in other ITU-R Recommendations/Reports.

# Rakuten Mobile as a Japanese operator

To solve future societal challenges in Japan, **6G aims for a dramatic improvement in security, reliability and flexibility** compared to 4G/5G



## Major issues in Japan

Low birth rate and aging population

Economic activation in local regions

Increase of natural disasters

Prolonged low economic growth

4

Zero outage

Autonomous Driving

Smart Health care

100% Coverage

Industrial Automation

Sobots

[SWS-240013](#)

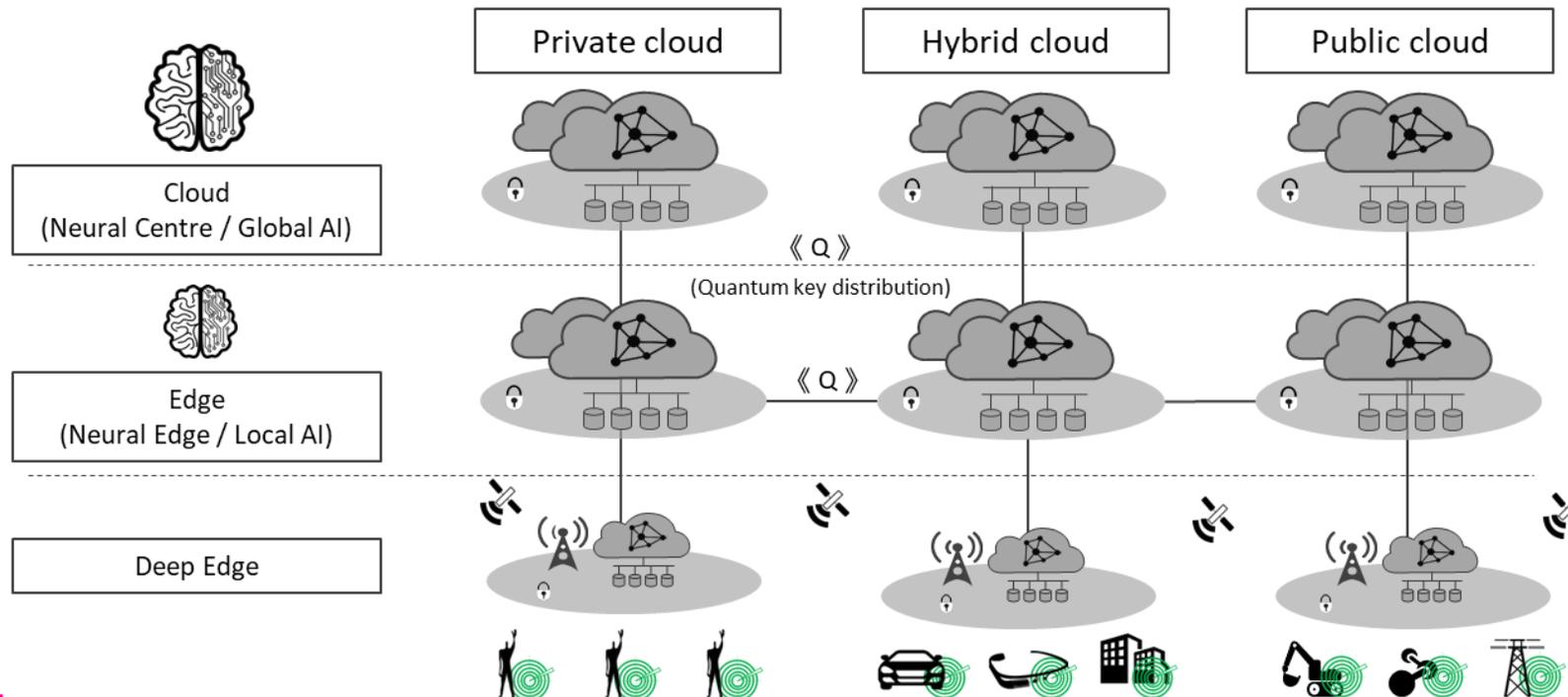
# 6G vision: cloud native and secure design

**Advanced Offerings:** Connectivity -, AI -, K -, Comms -, OSS -, Security- aaS
   
**Digital Experience:** Marketplace, BSS, IT Apps, Product and Services
   
**Operations:** OSS, Orchestration, Security, Advanced Analytics, AI/ML

## Cyber-World

**Virtual Network Functions**  
 (Deep Edge, Edge, Neural Centre)

**Unified Cloud Native Security & Networking**  
 (Container / Container Orchestration)



Sensing  
 Learning  
 Virtual-X  
 Tactile (haptic)  
 Inferencing

## Physical-World

# Rakuten's view for Key features to realize 6G

## Unified & Simplified Architecture



Avoid having multiple deployment options in 6G  
6G Core is assumed NOT to be forward compatible with 5G gNB but backward compatible with 5G gNB

## Core Network Evolution



No need to introduce a brand-new core network architecture  
Balance between flexibility & complexity should be maintained and the 6G arch should be flexible to accommodate the evolving Serverless architecture.  
. 6G should support APIs for data anonymization, and monetization.

## Support for New Service categories



Holographic communication, tactile internet, RF Sensing, Robotics, digital twins, and metaverse

## Cognitive & Autonomous Networks with AI



Intent based management, Autonomous network, AI embedded NFs, Real time management (SMO/r-apps) & extensible real time AIML, x-apps(O-RAN), Support for Gen-AI, LLM

## Management and Cloud Native RAN



Standardized unified framework for cloudified NF management & orchestration  
Adopt ideas & best practices from O-RAN Alliance

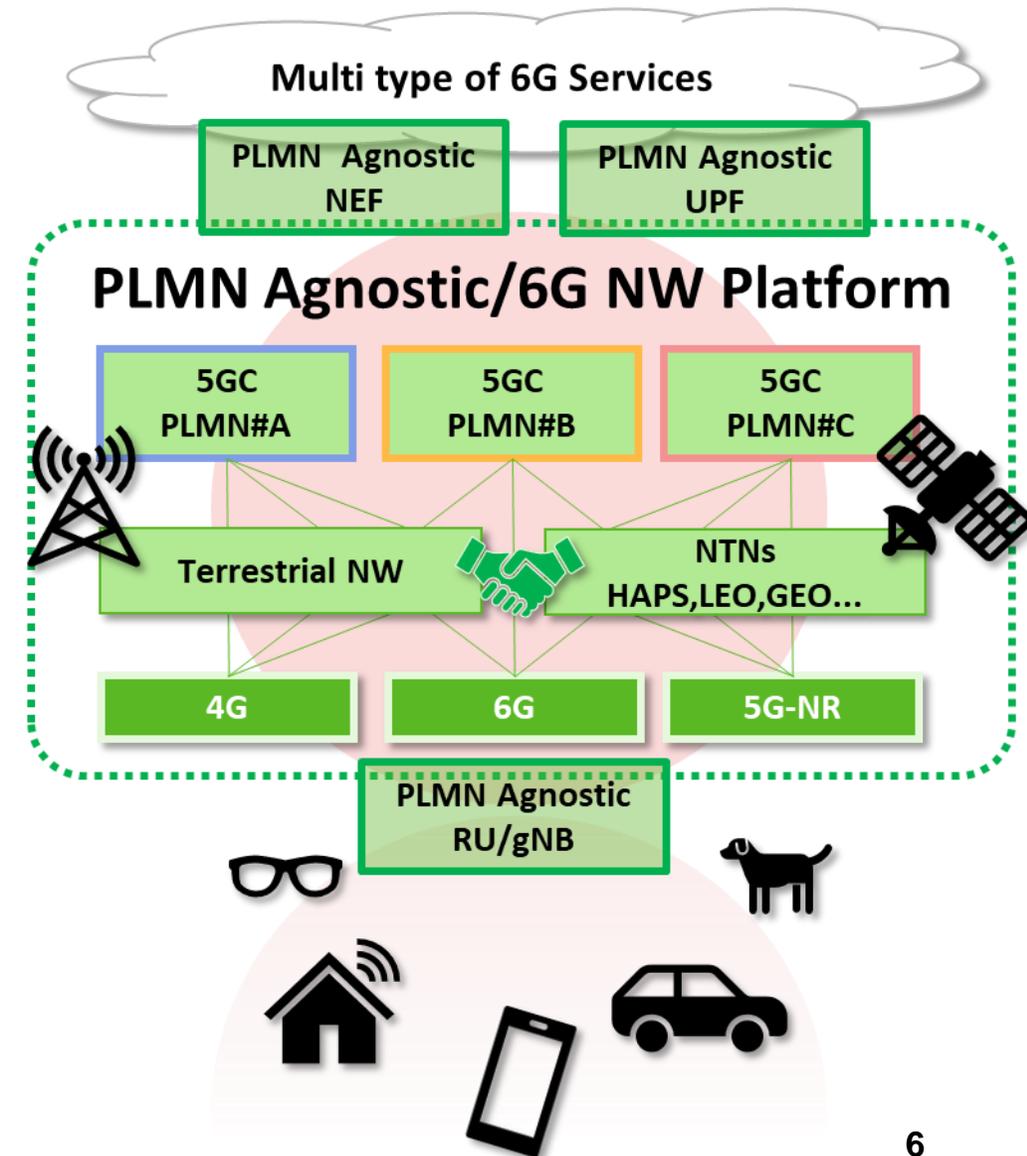
## Sustainability



Cost effective and sustainable solutions, energy saving and Cloud resource optimization, especially for RAN deployed in Data Centers

# Use case of 6G for PLMN Agnostic Architecture (6PA)

- 1. Deployment Friendly RAN sharing:** Multi PLMN Femto or IAB needs to be considered at the first stage of 6G study and the applicability to Multiple backhaul incl. NTN should also be considered. Collaboration with the other Standardization e.g. O-RAN, IWON, NFV will also be important.
- 2. PLMN Agnostic for UEs/Apps:** 6G NW equipment assume NW sharing. Multi PLMNs collaboration features e.g. MINT or inter-PLMN load balancing in case of Disaster or NW incident can be enhanced. 6G also provides the PLMN agnostic API for the Multiple service
- 3. Further Flexible Inter-RAT/System/PLMN:** 6G should not provide NSA with 4G architecture for 6G deployment i.e., 5GS architecture is the baseline. And the mobility can be enhanced based on the consideration below utilizing much more flexible methods e.g. SoR than legacy Inter-RAT/system HO.



# View for the 6G Study - way forward



- 📶 We are of the opinion that one single initial TR should capture the initial 6G study and one single TS should capture the normative text.