



# ICT Standardization Strategy of TTA

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Telecommunications Technology Association (TTA)

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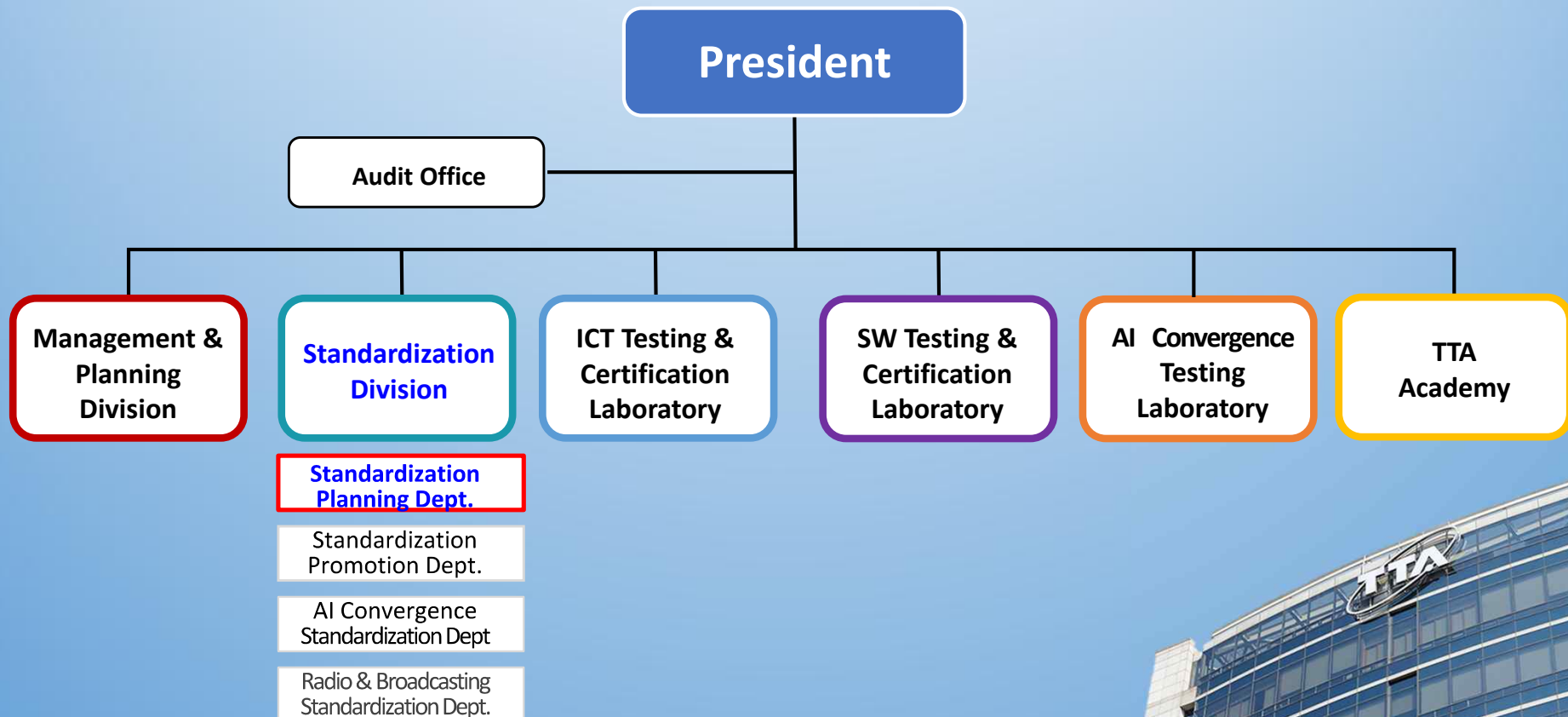
# I. Introduction to TTA

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# What is TTA and its structure

TTA(Telecommunications Technology Association) is a non-governmental **SDO(Standardization Development Organization) specialized in ICT** that comprehensively provides all services related to ICT standards, including **strategic planning** and **development of ICT standards, testing and certification** for IT products.





# History of TTA

## History



## Mission



# Strategic Direction in Standardization

## Enhancing Global Standards Capability

- Enhancing the Capabilities of the Specialized Lab for 6G Standards
- Establishing Global De Facto Standardization Organizations in Advanced Air Mobility, Quantum Technology
- Strengthening the Linkage between R&D and Standards

## Digitalization of Standards

- Establishment of Digital Platform for enhancing productivity & efficiency of standards making process
- Enhancing utilization of standards by machine readable standards & linkage between standards and open source

## Expanding International Cooperation

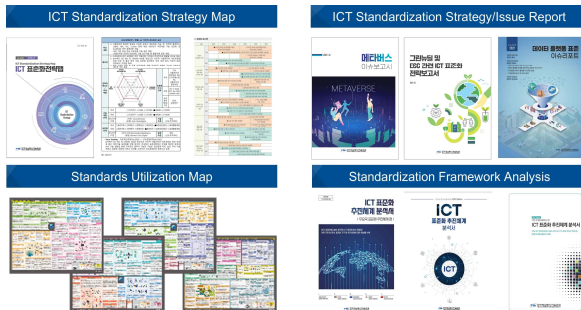
- (Strategic Standards Cooperation) Expanding Bilateral/Multilateral Cooperation on Standards Policies and Technologies in Digital Technologies with Major countries
- (Market-oriented Standards Cooperation) Expanding Standards-based Industry Cooperation through holding bilateral meeting, workshop, exhibition, etc.
- (Standards Development Cooperation) Expanding Standards Cooperation focused on Implementation of Standards with Developing Countries

# ICT Standardization – Main Projects

01

## ICT Standardization Planning & Strategy

- Establishing ICT Standardization strategies for Digital innovation and foundational technologies
  - 12 Key Technologies (6 Roadmaps / 6 strategy maps)
  - Development Standardization utilization maps for ICT Convergence Service
  - Publishing Issue Reports on Digital Platform Government, space communications, future mobility



### ICT Standards – R&D Linkage

- Promoting linkage with standards in R&D full-cycle (Planning -> execution -> evaluation -> post-management)
- Reflecting the linkage strategy into policy to strengthen R&D-standards linkage

02

## Domestic & Int'l Activities

- Developing ICT standards tailored to domestic market and industry needs
  - Operating 82 technical committees
- Developing draft National Standards (KS) as Cooperation Organization for (National) Standards Development designated by the Ministry
- Supporting operation of ICT Standardz. Forums to enhance Market-driven standardization activities
  - Focusing on specific technical domain for developing forum standards as well as promotional activities to vitalize the industry
- Operating national committees to correspond to ITU, ISO/IEC (ICT areas)
  - Chair of ITU-T Korean mirror committee
  - Vice chair of ITU-R SG1, ITU-T TSAG WP1, etc
  - Committee Manager of JTC 1/SC 6, SC 41, etc
- Int'l cooperation
  - Bilateral cooperation with various SDOs from EU, USA, Japan, China, UK, India, etc
  - Multilateral cooperation (CJK, GSC, PoCG, etc.)

03

## Promotion & Dissemination of Standards

- Providing customized consultation to solve difficulties in standardization and discovering success cases

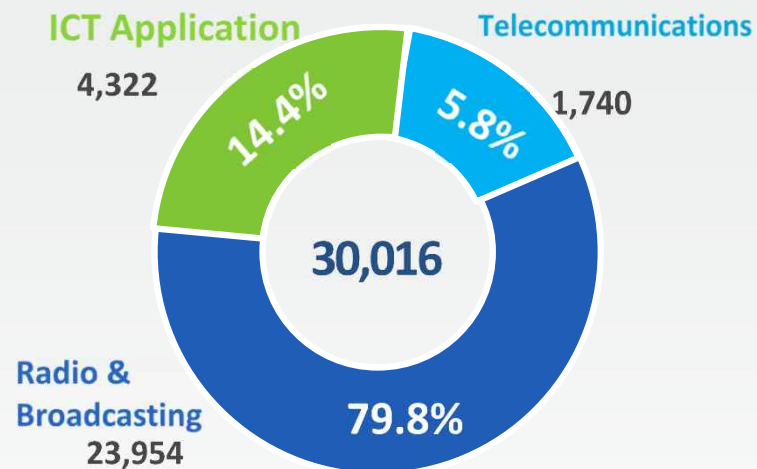


- Providing 99 consultation services for 42 companies in 2023
- Fostering int'l standards experts by supporting expenses for their standardization activities and providing training programs
- Raising awareness activities on standardization
  - Weekly news on domestic & global standardization issues (mailing service)
  - Introductory and commentary materials on important standards
  - Consultation success story, ICT terminology
  - ISI (ICT Standards Insight) seminar
  - Global ICT Standardization Conference

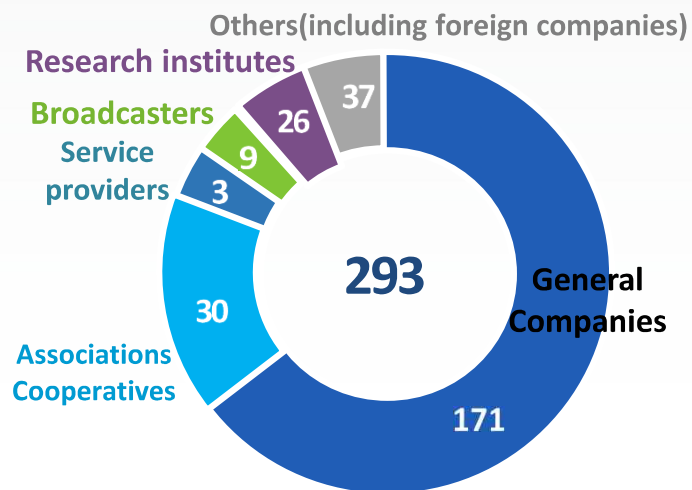


# ICT Standardization – Status & Outcome

## TTA Standards ('24.Dec)



## Membership ('24.Dec)



## Standards Development('24.Dec)

### TTA Standards

#### ❖ Standards for ICT technology & service (330 cases)



Anti-Drone System



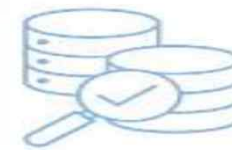
Unmanned Information Terminal



A Smart Flood Management System for Urban Areas  
Using Digital Twin Technology

### National Standards(KS)

#### ❖ Development of KS as Cooperation Organization for Development of KS (32 cases)



IoT and Data Center



Kiosk Accessibility





## II. Overview of TTA ICT Standardization Strategy

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# Introduction(1/4)

## ❖ Why “ICT Standardization Roadmap” being developed by TTA?

- TTA is only one ICT SDO in Korea, based on Korea Act. The government contribute the budget if necessary to promote the standardization of information and communications according the related Act.

Type	TTA ICT Standardization Roadmap
Task Type	Specified R&D, designated by MSIT
Agency	TTA
Budget	Approx. 1.4 Billion KRW(annually)
Duration	Updated Each Year
History	In Operation since 2002
Target Areas	ICT Standardization Key Technologies



# Introduction(2/4)

## ❖ What is the definition of “ICT Standardization Roadmap” ?

### ICT Standardization Roadmap (every 4 years)



#### Direction of ICT Standardization R&D (*Long-Term : Project Plan*)

After Forecasting Future Standardization Demands(e.g. blank standards) Based on Standard Structural Model(SSM), Discover '**Standardization issues**'

*Detailed  
action plan* →

### ICT Standardization Strategy Map (every year)

#### Strategy of Domestic and Int'l Standardization Activities (*Mid-Term : Action Plan*)

By Reflecting Changes in the ICT Environment,  
Select '**Key Standardization Items**(e.g. work item)'





# Introduction(3/4)

## ❖ What do we want by “ICT Standardization Roadmap”?



### Strengthen Alignment with Government Policy

- ▶ Propose an Action Plan for National ICT Standardization Policies
- ▶ Provide standardization insights for global standard cooperation and global R&D promotion strategies

### Identification of Strategic Standardization Targets

- ▶ Identify future standardization demands and new items
- ▶ Provide data for R&D-Standard linkage project planning

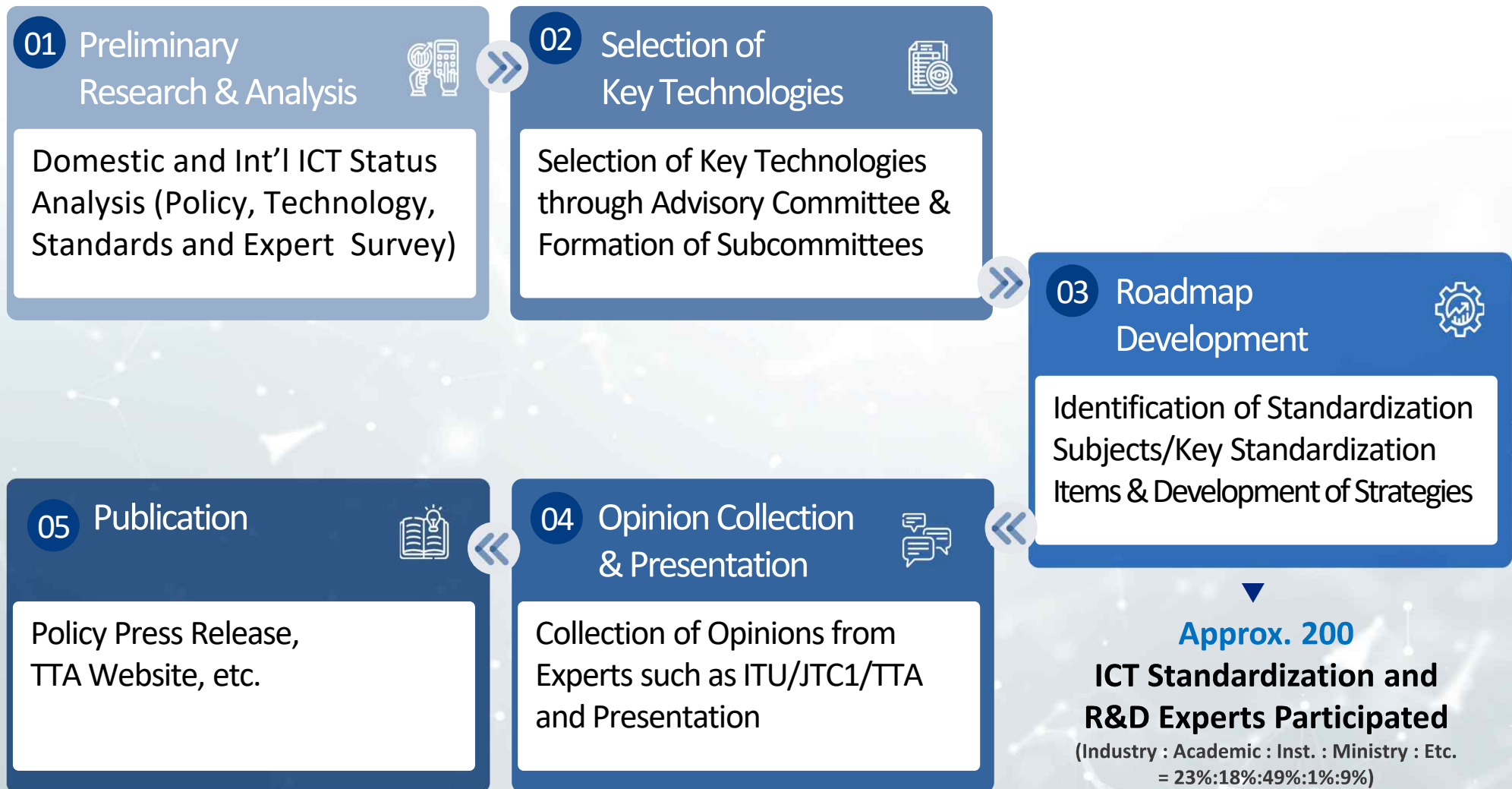


### Support Private Sector Standardization

- ▶ Provide Guidelines for Domestic and International Standardization Activities
- ▶ Offer standardization trend data applicable for research, education, seminars and extra

# Introduction(4/4)

## ❖ How being “ICT Standardization Roadmap” in TTA developed?



# Development Method(1/3)

## ❖ What are the Standardization Key Technologies selected by TTA?

Selecting Technologies that are in line with National Policy Directions

### National Strategic Technologies

Innovation  
Leading



Semi./  
Display



Future  
Mobility



Rech.  
Battery



SMR

Future  
Challenging



Bio-tech.



Hydrogen



Aerospace  
/Marine



Cyber  
Security

Essential  
Foundation



AI



Robot



5G/6G



Quantum

### National Digital Innovation Technologies

AI

AI semiconductor

5G·6G

Quantum

Metaverse

Cyber Security

ICT  
Std.  
Key  
Tech.

AI

DATA

5G·6G

Security

Digital  
Content

Quantum

6 Digital  
Innovation  
Technologies

6 Digital  
Infrastructure  
Technologies

Intelligent  
Network

Radio·  
Satellite

IoT

Cloud  
Computing

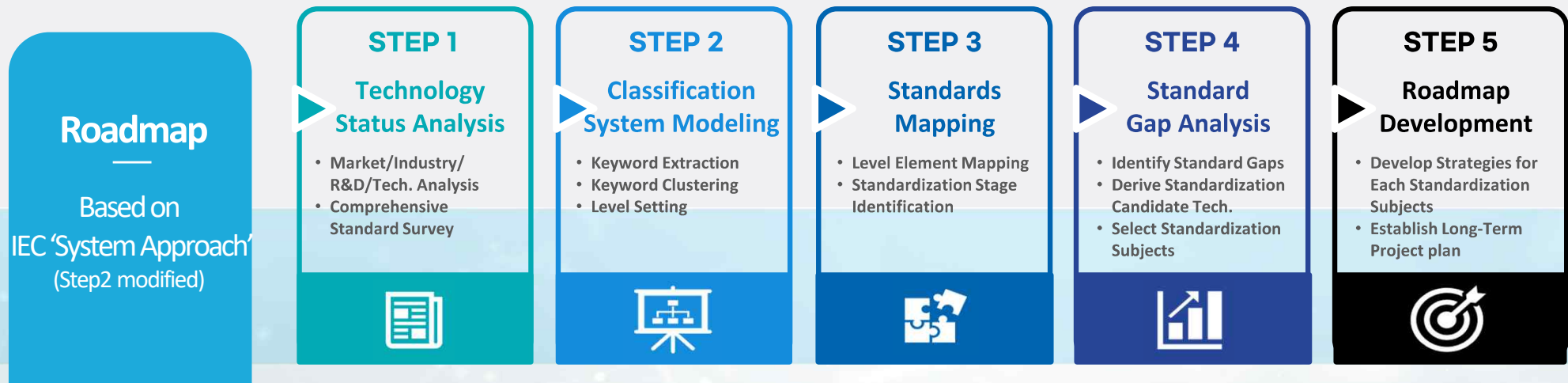
Broadcasting  
Media

Blockchain



# Development Method(2/3)

## ❖ How are the roadmap of each items being developed ?



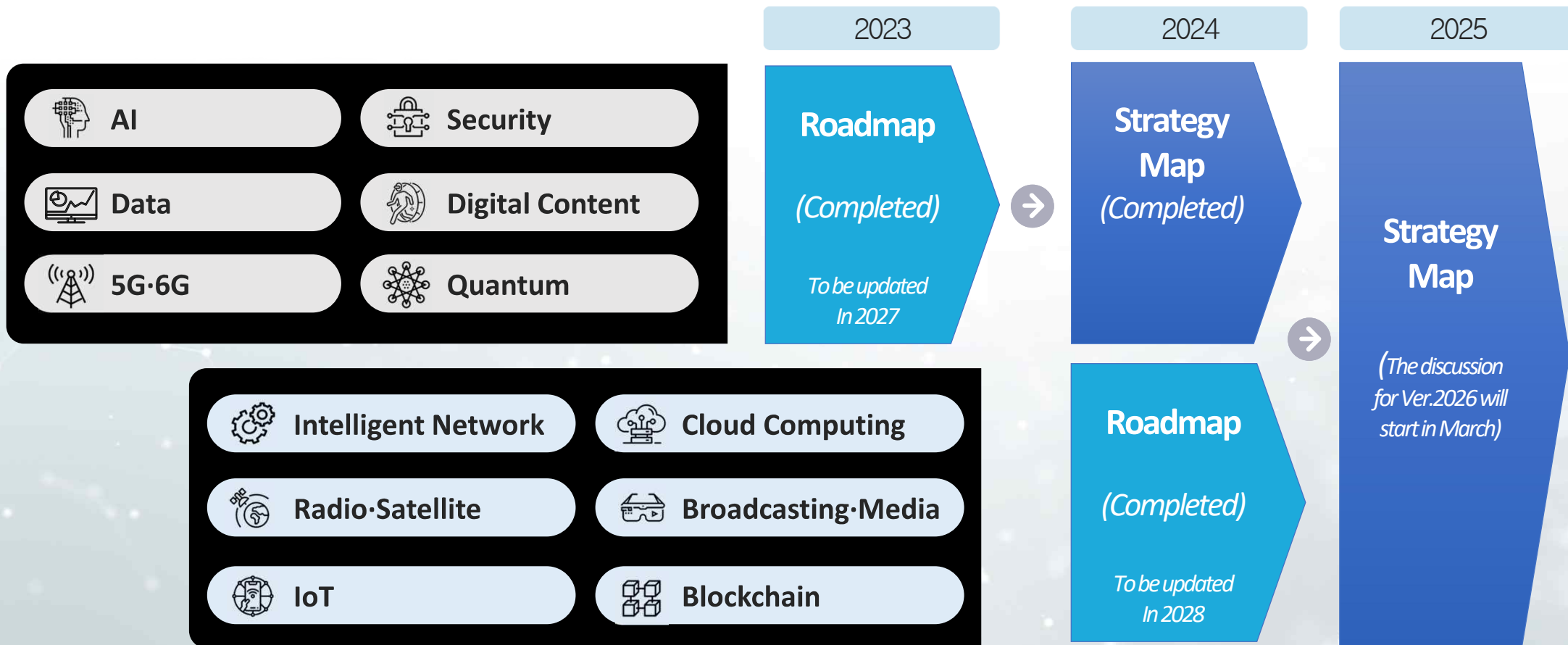
### Strategy map

Benchmarking other roadmaps  
(Reflecting ICT standardization characteristics)

Analyze the 'Standardization Subjects' derived from the Roadmap to assess their **Standardization Competitiveness** (Technology/Standard Level, SWOT, etc.),  
Select the **Standardization Items** Our Country Should Focus on Promoting, and  
Establish **Domestic and International Standardization Activity Strategies**

# Development Method(3/3)

## ❖ Where are we? - Development Progress of ICT Std Strategy





# III. Standardization Strategy Ver.2025

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# Key items of Ver.2025 strategy

## ❖ Detailed technologies

### 6 Digital Innovation Technologies



- ▶ AI-based technologies (cognition/learning/inference/social...)
- ▶ AI governance (trustworthiness/ethics/governance/evaluation...)
- ▶ AI systems (data/model/operation...)
- ▶ AI application services



- ▶ Collection/storage (types/storage formats/storage methods...)
- ▶ Processing/Analysis (Labeling/Data Mining/Machine Learning...)
- ▶ Management/Governance (Quality/Reliability/Distribution...)
- ▶ Utilization (Smart Factory/Smart City/Healthcare, etc.)



- ▶ 5G technology (RAN evolution/spectrum/IoT/Relay/Open RAN/AI-ML based ..)
- ▶ 5G convergence service (NPN/Multimedia/NTN/UAMAM/C-V2X)
- ▶ 6G technology (6G wireless access, 6G Core network..)



- ▶ Information Security (Encryption/Digital ID Management/Data Security/System & Device Security/Network Security...)
- ▶ Physical Security (Human & Bio Recognition/Video Security...)
- ▶ Converged Security (Metaverse Security/Zero Trust Security, etc.)



- ▶ Content Creation (3D Asset Creation/Hologram Creation/Haptic...)
- ▶ Content Visualization (Data Visualization/Graphics Rendering, etc.)
- ▶ Content-User Interaction (XR Interaction/Gesture Interaction, etc.)
- ▶ Content Services/Platforms (Distribution/Collaboration/Accessibility...)

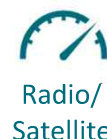


- ▶ Quantum Cryptography & Communication (QKD Protocol/Quantum Key Distribution System & Network/Quantum Random Number Generator, etc.)
- ▶ Quantum Computing (Physical Qubits/Logical Qubits/System, etc.)
- ▶ Quantum Sensing (Quantum Inertial Sensors/Quantum Optical Sensing, etc.)
- ▶ Quantum Networks (Framework/Functions & Interfaces/Integration, etc.)

### 6 Digital Infrastructure Technologies



- ▶ Optical Network (Optical Transport Network/Wired & Wireless Optical Access/Wireless Optical Communication, etc.)
- ▶ Packet Network (Ethernet Transmission/Packet Switching/Packet Delivery/Low Latency & High Reliability/Name-Based Networking, etc.)
- ▶ Network/Service Control & Management, etc.



- ▶ Electromagnetic Environment (EMC/EMF/EMP, etc.)
- ▶ Satellite Communication (Satellite Communication Systems/Satellite Control & Navigation/Satellite Applications, etc.)



- ▶ IoT-Based (Common IoT/Connected IoT/Intelligent & Autonomous IoT/IoT Devices, etc.)
- ▶ IoT Converged Services (Smart City/Smart Home/Smart Factory/Smart Farm/Digital Twin/Underwater Communication, etc.)



- ▶ Cloud Systems (Infrastructure/Virtualization/Interoperability, etc.)
- ▶ Cloud Services (Software/Platform/CaaS, etc.)
- ▶ Cloud Management (Data/Users/Quality/Service Management, etc.)
- ▶ Cloud Security (System/Data/Service Security, etc.)



- ▶ Blockchain Foundation (Distributed Ledger/Decentralized Networking/Security, etc.)
- ▶ Blockchain Applications (Identity Authentication/Digital Wallet, etc.)
- ▶ Blockchain Expansion (Blockchain Interoperability/Management, etc.)
- ▶ Blockchain Converged Services (Blockchain Technology Integration, etc.)



- ▶ Media Encoding (Video/Audio/Immersive Visual Media Encoding ...)
- ▶ Broadcast & Media Production & Management
- ▶ Broadcast & Media Converged Services
- ▶ Media Quality &

# Standardization Roadmap Ver.2025 (1/3)

## ❖ ICT Standardization Roadmap Ver.2025

- **Intelligent Networks:** Selected standardization targets include technologies for high-capacity, low-latency, and high-reliability networks, as well as AI-based network control and management
- **Radio & Satellite:** Focused on technologies that support electromagnetic safety management policies and enhance national satellite communication capabilities
- **IoT:** Targeted standardization of advanced IoT networking technologies in response to the evolution of intelligent and autonomous ICT convergence services, including smart city integration

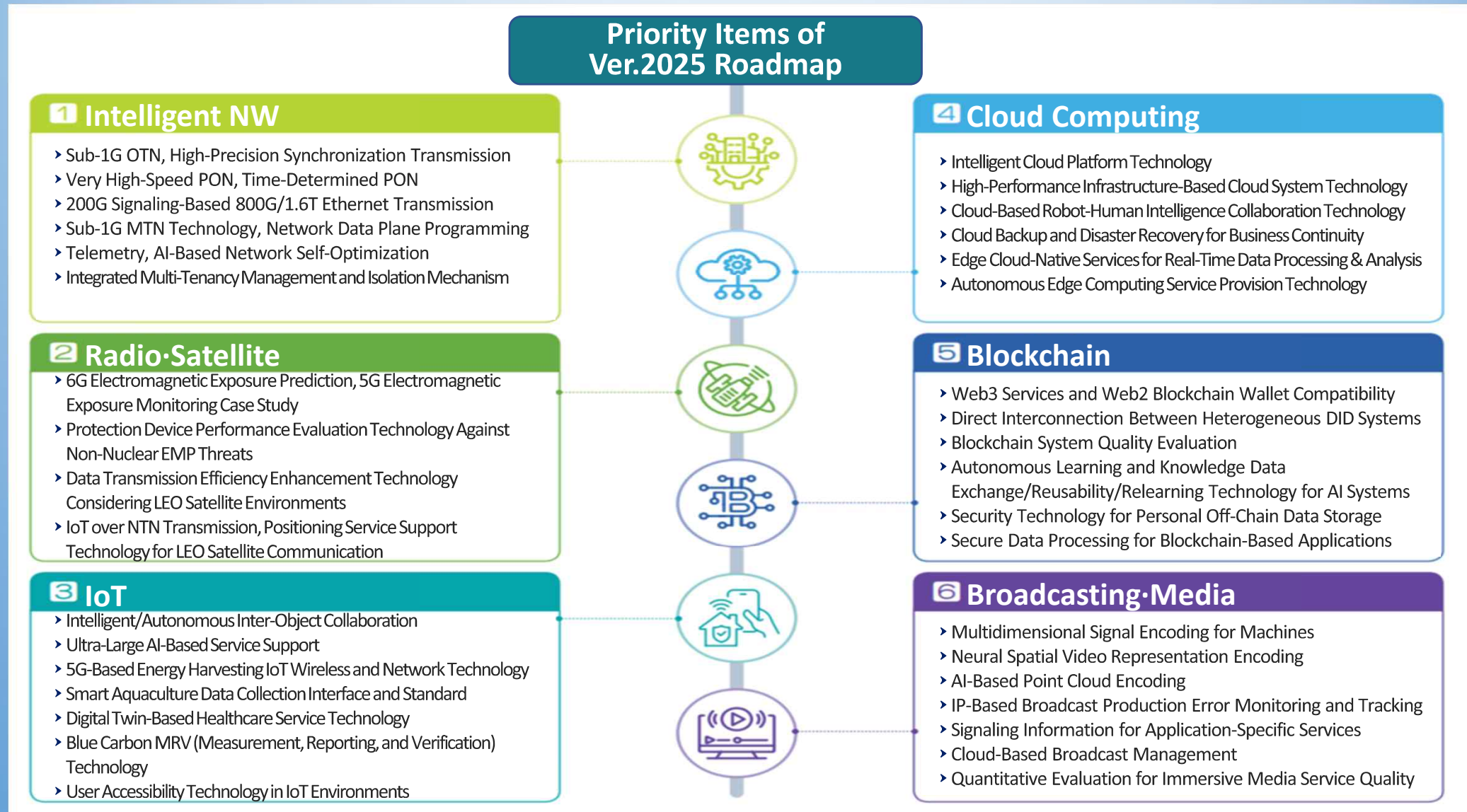
# Standardization Roadmap Ver.2025 (2/3)

- **Cloud Computing:** Identified standardization needs for high-performance infrastructure and integrated cloud management based on mature cloud system technologies
- **Blockchain:** Expanded the scope of standardization beyond usability, interoperability, and security to include service applications and evaluation frameworks
- **Broadcasting & Media:** Selected standardization targets to maintain high standards in media encoding, aligned with the growing demands of AI-driven media industries



# Standardization Roadmap Ver.2025 (3/3)

## ❖ Priority Items of ICT Standardization Roadmap Ver.2025



# Strategy Map Ver.2025 (1/3)

## ❖ ICT Standardization Strategy Map Ver.2025

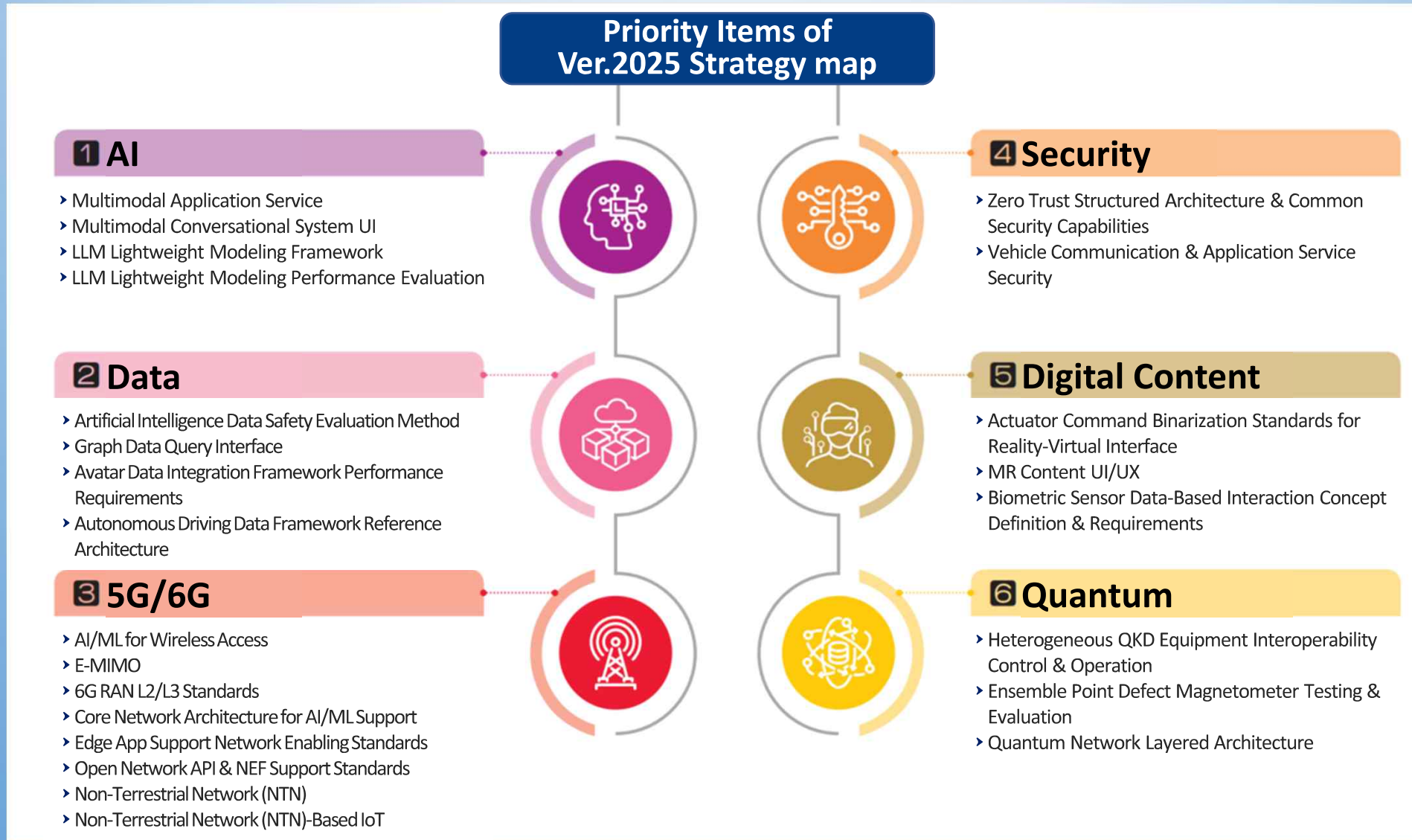
- **AI:** Priority standardization items were selected, aligned with shifting global policy trends—from AI usability to concerns over AI harm, ethics, and general-purpose capabilities
- **Data:** With the rapid expansion of data generation and utilization across industries, standardization items were selected focusing on data evaluation issues and feasibility for standardization
- **5G/6G:** Following the finalization of the 6G vision recommendations, priority items were identified focusing on 6G requirements and candidate technology standard development

# Strategy Map Ver.2025 (2/3)

- **Security:** Based on emerging technology trends (e.g., digital signatures, digital wallets) and national R&D priorities (e.g., zero trust, cloud security), key items for standardization were selected
- **Digital Content:** In response to growing international interest driven by national metaverse promotion policies, standardization items were identified where domestic experts can actively participate
- **Quantum:** Priority items were selected based on their alignment with the national quantum technology roadmap, focusing on quantum communication and quantum computing issues that can be addressed through JTC 3

# Strategy Map Ver.2025 (3/3)

## ❖ Priority Items of ICT Standardization Strategy Map Ver.2025





# ICT Standardization Strategy Ver.2025

## Standardization Roadmap



## Standardization Strategy Map



## Standard Utilization Map





# Thank you

