

SK Telecom's View on Future Telco. Infrastructure

3GPP SA1#106 in Jeju, KR

S1-241246 (revision of S1-241015)

SK Telecom

May. 27-31, 2024

I. Introduction

① Expectation of 6G era

② Approach for 6G

II. Fundamental Motivation

① Telco AI Infra (Edge AI)

② Generation mix

③ Killer Service & Innovative device

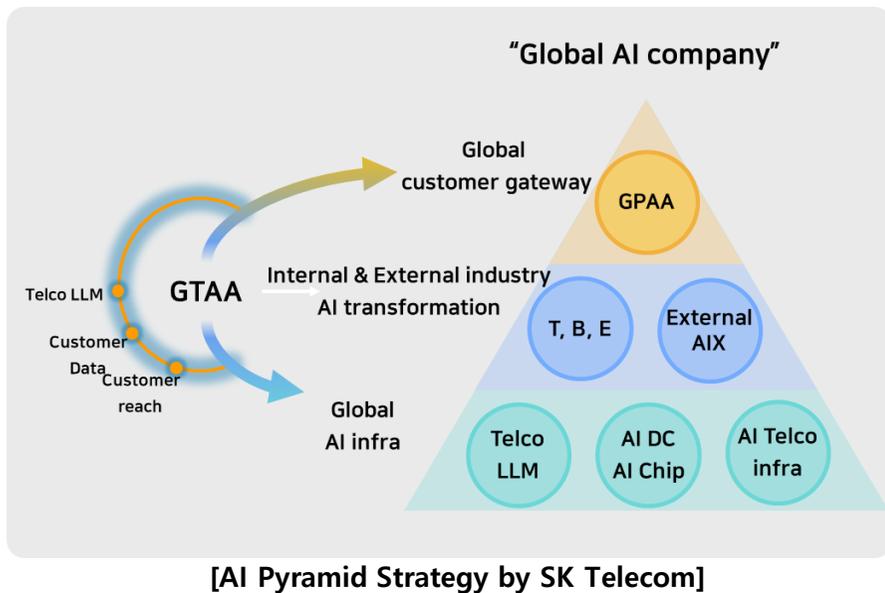
④ Core Network

III. Proposals for Next steps

AI services & further monetization should be considered for 6G evolution

Infra for AI and Monetization

- AI becomes mega trend as shown in recent CES/MWC
- 6G should be fundamentally designed to support emerging AI services
- 6G should offer monetization opportunities for MNOs through groundbreaking AI services



New business opportunities with AI (Exemplary)

Autonomous



- Faster and Accurate Decision with Real-time data

Factory/ Robots



- Intelligent Remote Control
- Sensitive data with LLM

Logistics



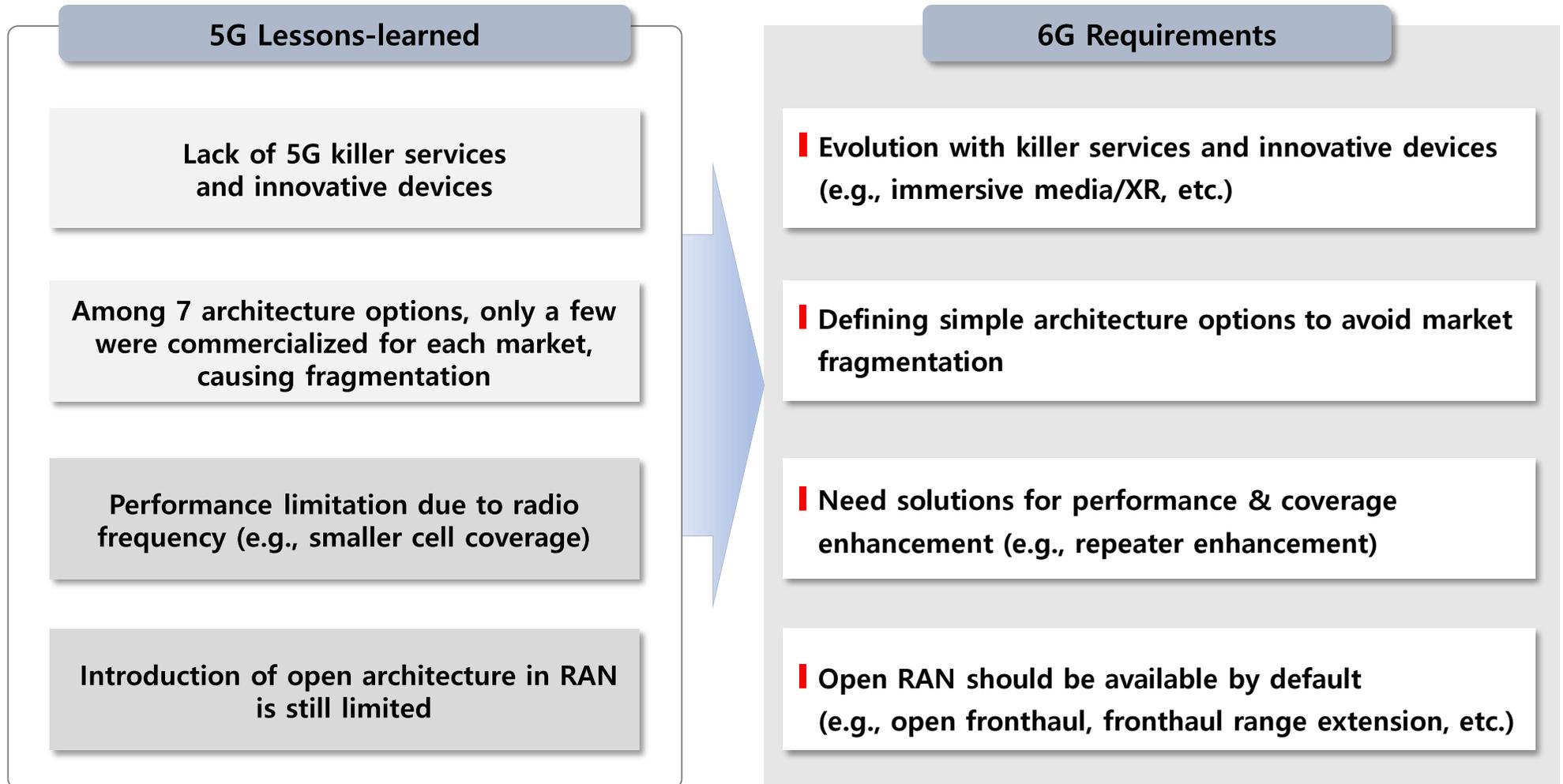
- Route Optimization
- Object Detection

Healthcare

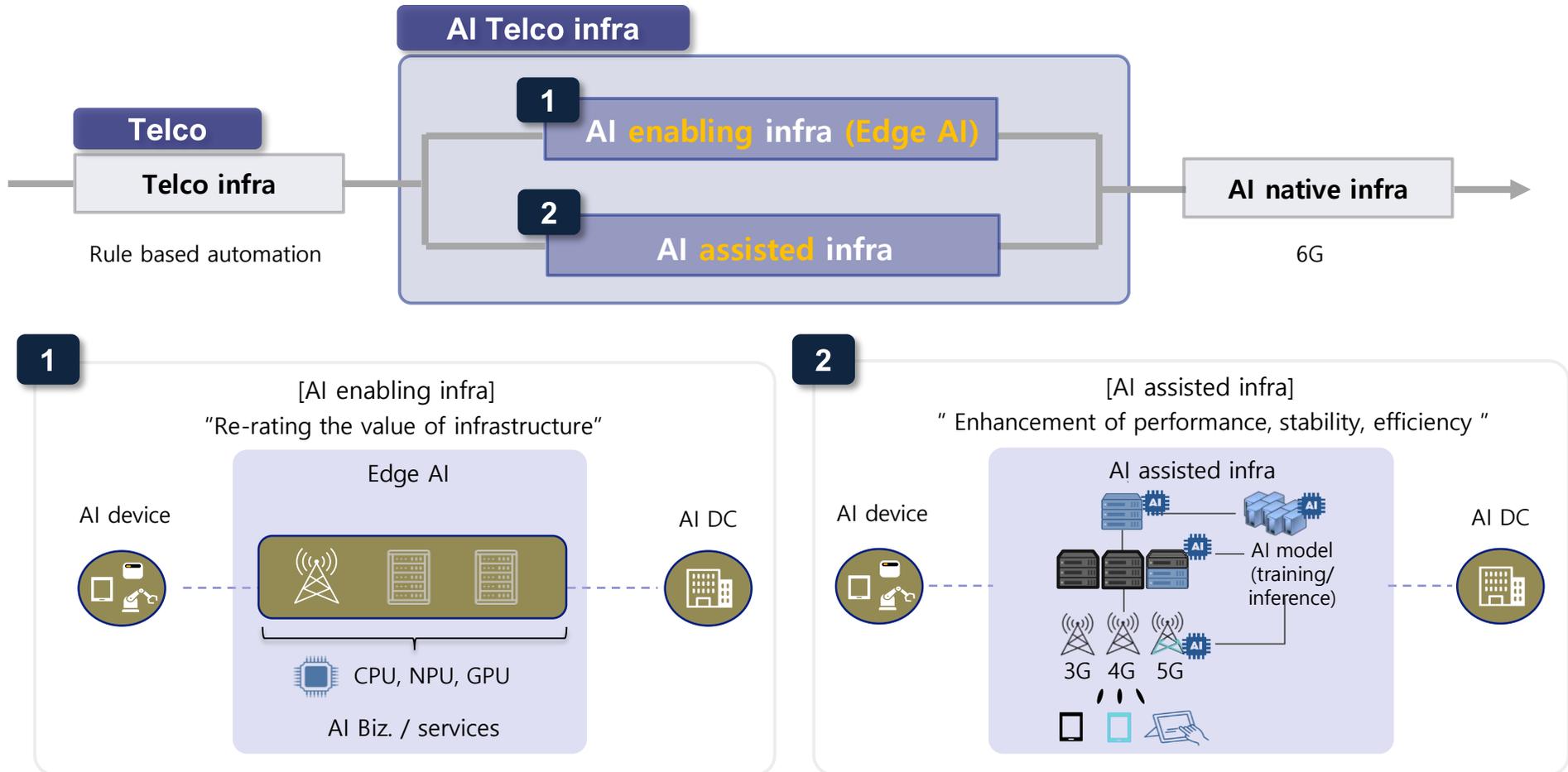


- Telemedicine
- Private Medial Data with LLM

SKT has derived requirements based on 5G lessons-learned and Infrastructure evolution



As AI holds significance in both AI assisted infra and AI enabling infra, **Edge AI** works an opportunity for monetization as well as improvement of infra performance



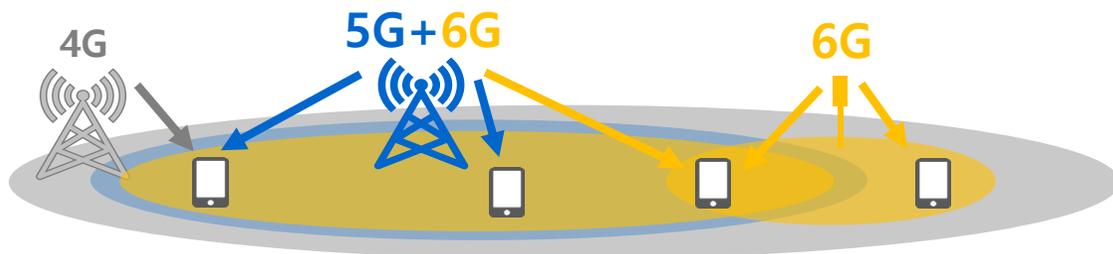
With the uncertainty about services and data traffic, various migration options should be explored, taking into account “Generation Mix” strategy

○ 6G service/traffic demands and migration options

- Innovative devices & services will be proposed for 6G, but service/traffic demand forecasts are unclear for now
- 6G migration plan needs to consider service/traffic demands for sustainable network operations
 - ✓ Service/traffic demand is *not* expected to increase significantly : **Generation Mix** (6G builds upon, and extends existing generation and is deployed for specific use cases, e.g., hotspot) can be considered
 - ✓ Service/traffic demand is expected to increase *significantly* : **Generation Change** (6G will eventually replace existing generation and become widely adopted, e.g., nationwide coverage) can be considered

○ Migration option examples

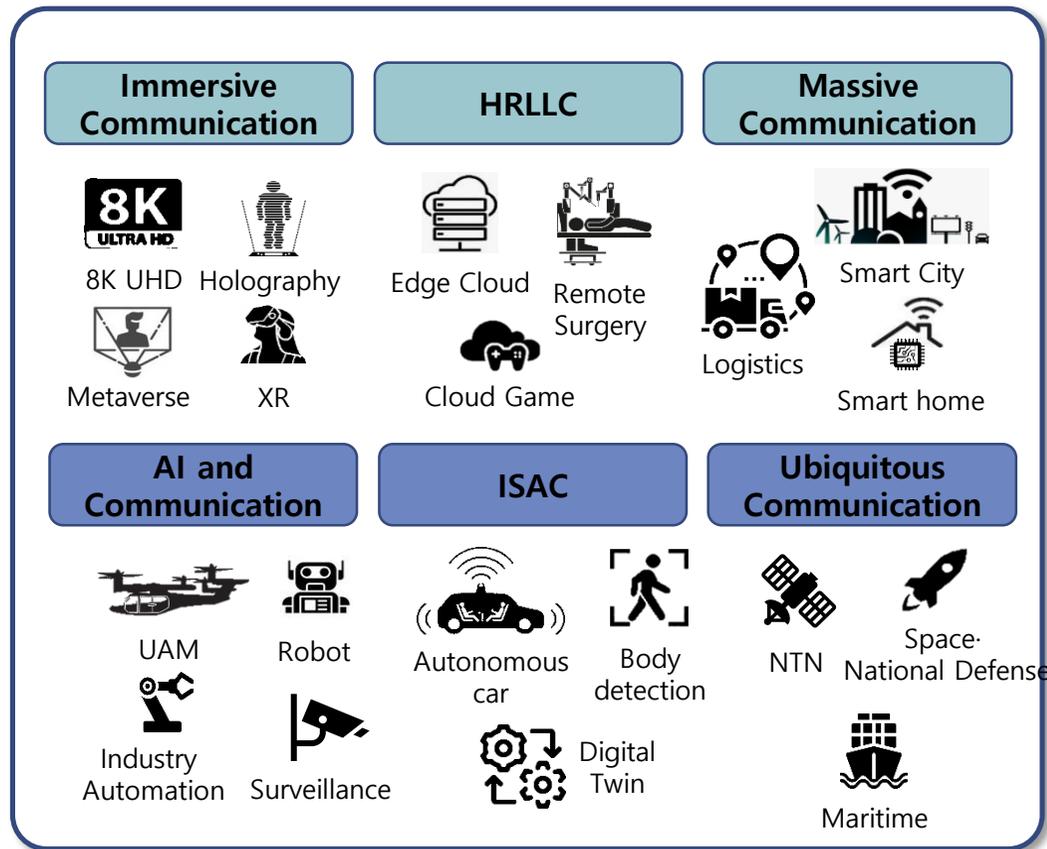
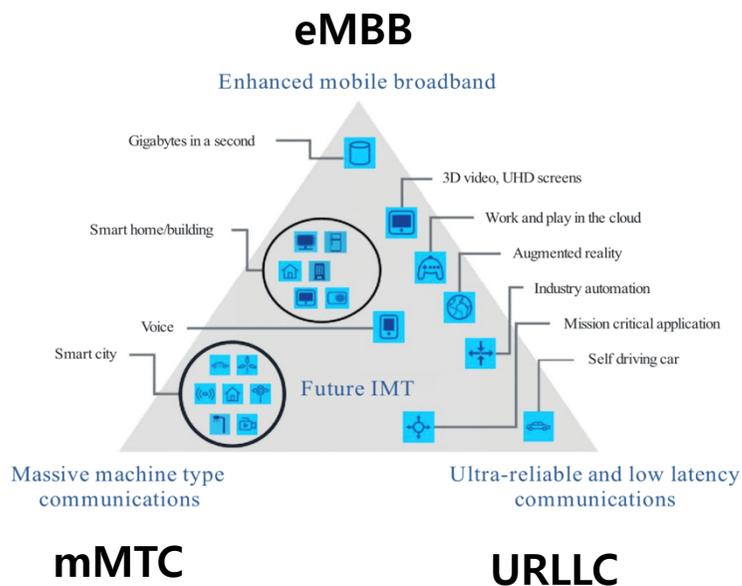
- 6G MRSS, 6G SA Option 2/4, 5G-6G NSA, Dual-Stack, QoS provisioning, inter-RAT mobility for TN/NTN, etc.
- Need to consider coverage and capacity requirements according to service/traffic demands



[Deployment Scenario by Generation Mix (Exemplary)]

- *4G/5G: QoS based services focusing on coverage and capacity*
- *6G : Specialized services, such as sensing*

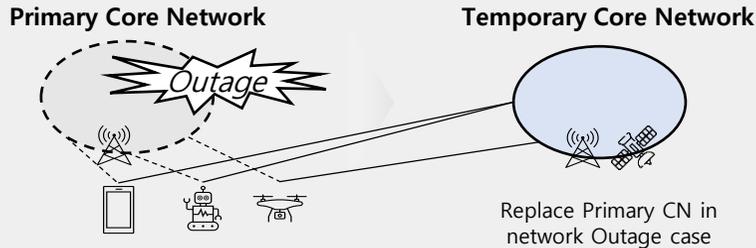
Timely resonance between innovative devices/services and network requirements will be the key momentum for 6G evolution



6G should support more intelligent AI/Cloud/Energy-related core network

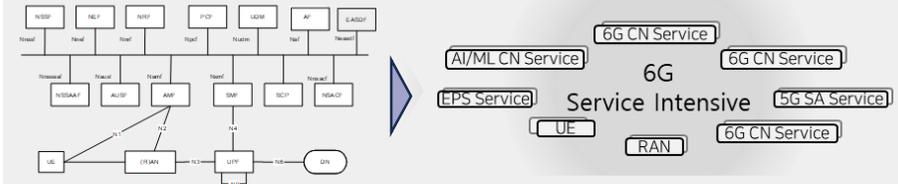
Robust / Disaster Resilience Core

- Study for enhanced disaster recovery of network, including temporary authentications



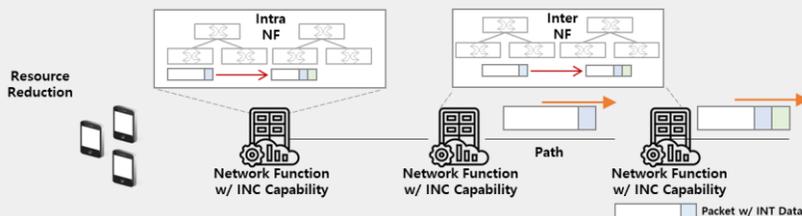
Service Intensive Architecture

- Study for the 'service-intensive' to reduce NF dependencies and expand eSBA domains



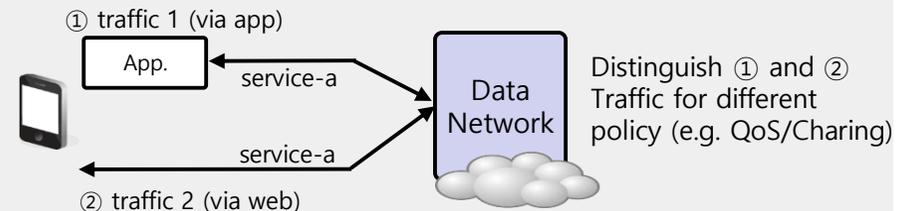
In-Network Computing

- Resource offloading (e.g. HW offloading) to support various computing resource usage scenarios for AI/Cloud based services..



Intelligent Traffic Management

- Network will enhance traffic visibility for various emerging/encrypted applications



III. Proposals for Next steps

SKT recommends to align with our perspectives and to prioritize the technological study especially on Proposal #1, #2 and #4

[Proposal #1] – II. Fundamental Motivation-①

Standardization activity for supporting evolution to Telco AI (Edge AI) infra should be included in the 6G scope

- e.g., Architectural changes, Tailored interfaces, and etc.

[Proposal #2] – II. Fundamental Motivation-②

From the beginning of 6G, “Generation Mix” should be taken into consideration

- e.g., Targeted technology like multi-RAT interworking, ran sharing, QoS provisioning, aligning to traffic demand and emerging SLA by new service/device availability

[Proposal #3] – II. Fundamental Motivation-③

Collaboration among all eco-players for evolution of 6G killer services and devices

- e.g., Customers (*Social demand for new services*), Telcos (*Smooth & Timely migration to 6G*), Manufacturing (*Evolution of fundamental technologies*) and related ICT Industry (*New Service, BM*)

[Proposal #4] – II. Fundamental Motivation-④

Standardization activity for exploring uses cases and requirement for 6G Core Network



AI service

AIX

AI infra

Global AI Company

SK telecom

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SK Telecom
40th Anniversary
AI로 대한민국을 새롭게 하는 힘