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| **Source:** | ITU-T Study Group 13 |
| **Title:** | LS/i/r on ITU-T SG13 Standards Success Stories (reply to TSAG-LS5) [from ITU-T SG13] |
| **LIAISON STATEMENT** |
| **For action to:** | TSAG |
| **For information to:** | - |
| **Approval:** | ITU-T SG13 management team (by correspondence, 29 August 2025) |
| **Deadline:** | - |
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| **Abstract:** | This liaison statement is in reply to communication from TSAG on the development of ITU-T Standards Success Stories ([TSAG-LS5](https://www.itu.int/net/itu-t/ls/ls.aspx?isn=34254)).   |

ITU-T Study Group 13 welcomes TSAG initiative to raise awareness of the successful implementation/use of the ITU-T standards worldwide.

In reply to the call for the success stories collection (launched by TSAG-LS5), it is delighted to offer the following from the SG13 perspective:

* Success stories in China;
* Success story in Japan;
* Success stories in Korea.

These are contained in Annex.

ITU-T Study Group 13 invites TSAG to review and accept its proposals and is looking forward with growing interest for the outcomes of this initiative.

**Annex A
Success story in SG13 in study period 2017-2021 and 2022-2024**

This Annex includes SG13 success stories on future networks and emerging network technologies in China, Japan, and Korea.

# A.1 China

## A.1.1 Fixed, mobile and satellite convergence (FMSC) trial

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| Key metrics: | Subjective organization / Country: | Effective period: |
| Trials/experiments; Adoption of requirements, framework and capabilities | China Mobile Communications Co. Ltd. / China | 02.2024 - the present |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.3200 (2022): Fixed, mobile and satellite convergence – Requirements for IMT-2020 networks and beyondY.3201 (2023): Fixed, mobile and satellite convergence – Framework for IMT-2020 networks and beyondY.3216 (2024): Fixed, mobile and satellite convergence – Distributed core network for IMT-2020 networks and beyond |
| Success story |
| ITU-T SG13 has developed fixed, mobile and satellite convergence (FMSC) series Recommendations to provide services and applications to end users regardless of the access technologies being used, and ensure the seamless connection, service continuity, QoS, network robustness and energy efficiency. ITU-T Y.3200, Y.3201 and Y.3216 specifies the requirements, framework, networking methods, enabling technologies, network function enhancements and procedures of FMSC, in the context of IMT-2020 networks and beyond. Among SDOs, the new framework of satellite-based core network and the new technologies including onboard processing, distributed networking and autonomous operation are proposed in FMSC series Recommendations at first. FMSC series Recommendations have been widely adopted worldwide to achieve ubiquitous connectivity, including in developing countries.Based on FMSC series Recommendations, especially the above Recommendations, China Mobile developed the satellite-based core network with the capabilities of in-orbit processing, onboard software reconstruction, distributed networking and collaboration, dynamic network function deployment, and autonomous management and orchestration. In February 2024, China Mobile launched the world's first 6G test satellite with the onboard satellite-based core network, and verifies the above capabilities of satellite-based core network, as well as basic communications services including voice, video, message and data. This trial marks a milestone in the efforts to explore the space-air-ground integrated technologies and promote the industries of both mobile communications and satellite communications.Reference: <http://www.chinadaily.com.cn/a/202402/05/WS65c078e3a3104efcbdae9c1c.html> |

## A.1.2 Network slicing with SLA assurance

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| Key metrics: | Subjective organization / Country: | Effective period: |
| Trials/experiments; Adoption of requirements, framework, and capabilities | China Mobile Communications Co. Ltd. / China | (2020 - the present) |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.3153 (2019): Network slice orchestration and management for providing services to 3rd party in IMT-2020 networksY.3156 (2020): Framework of network slicing with AI-assisted analysis in IMT-2020 networks |
| Success story |
| Based on the future operational management of network slicing and the purpose of meeting tenant SLA requirements, Y.3153 and Y.3156 specified the requirements and architectural design guidelines for the end-to-end lifecycle management orchestration of network slicing, supported by AI-assisted analysis capabilities. The functional architecture of the AI-assisted analysis function entity is defined, along with relevant interfaces. It supports capabilities for ensuring SLA guarantees, optimizing slice management, addressing tenant requirements, and optimizing network resource allocation for the lifecycle of Network Slice Instances (NSIs).Based on the guidance of network slicing Recommendations and including of these two ones, network slicing has been fully implemented in China Mobile' s IMT-2020 network, as of 2025, China Mobile has launched customized SLA IMT-2020 private networks and network slicing applications across more than 30 industries. Moreover, it also realizes in achieving minute-level fully automated cross-domain deployment of 5G slicing. The success of these applications mark a key technological breakthrough in the automated deployment of 5G slicing and intelligent operational management, aiding the digital transformation of industries. |

## A.1.3 Trials and adoption for AI enabled cross-domain networks

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| Key metrics: | Subjective organization / Country: | Effective period: |
| Trials/experiments; Adoption of requirements, framework, and capabilities | China Mobile Communications Co. Ltd. / China | (2022 - the present) |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.3115 (2022): AI enabled cross-domain network architectural requirements and framework for future networks including IMT-2020 |
| Success story |
| Recommendation ITU-T Y.3115 addresses the problem of lack of an architecture to coordinate the artificial intelligence (AI) capabilities among the current network domains and specifies architectural requirements and framework of AI enabled cross-domain networks for future networks including IMT-2020, which aim to achieve overall network intelligence.China Mobile has carried out pilot projects and achieved large-scale applications of AI cross-domain distributed federated learning in multiple scenarios, covering low-altitude intelligent network, network optimization, and vertical industries. Through cross-domain data collaboration and technological innovation, it has achieved remarkable results in bandwidth guarantee, model training effect, and business delay optimization, with independently developed large models also implemented in multiple fields. |

## A.1.4 Adoption of cloud computing related Recommendations

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| Key metrics: | Subjective organization / Country: | Effective period: |
| Trials/experiments; Adoption of requirements, framework, and capabilities | China Mobile Communications Co. Ltd. / China | 12.2021 - the present |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.3526 (2021): Cloud Computing-Functional requirement of edge cloud managementY.3532 (2023): Cloud computing - Functional requirements of Platform as a Service for cloud native applications |
| Success story |
| Y.3526 and Y.3532 are ITU recommendations related to two important technologies of cloud computing: edge cloud and PaaS. Y.3526 defines functional architecture of edge cloud management and relevant functional requirements. Y.3532 designs PaaS capabilities for cloud native applications and relevant functional requirements.For Y.3526, China Mobile has applied the unified management architecture of edge clouds to guide internal edge cloud construction. 13 functional requirements of edge cloud management has been included in enterprise standard "Technical requirements of edge cloud management platform", 12 functional requirements has been included in "Technical requirements of Mobile Edge Computing Unified Edge Cloud Management", and 7 functional requirements has been included in "Edge cloud evaluation criteria". The enterprise standard and technical files of China Mobile containing Y.3526 contents guided the design and implementation of edge cloud management products of many equipment vendors such as China Mobile ecloud, ZTE, and Huawei, and realize the construction and deployment in the province.For Y.3532, China Mobile has included PaaS within network cloud's cloud native evolution as the fundamental platform and included PaaS functional requirements in the study of "Functional requirements of PaaS for cloud native network cloud". |

## A.1.5 Trust in autonomous networks

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| Key metrics: | Subjective organization / Country: | Effective period: |
| Trials/experiments; Adoption of requirements, framework, and capabilities | China Mobile Communications Co. Ltd. / China | (09/2023-the present) |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.3060 (2023): Autonomous networks - Overview on trustY.3062 (2025): Trustworthiness evaluation for IMT-2020 and beyond with autonomous network functions |
| Success story |
| Y.3060 provides an overview on trust for autonomous networks. It introduces the background and necessities of trust study in areas of network autonomy and network intelligence. The concepts of trust for autonomous networks are explained and defined in context. Basic principles are also explained and described in detail. In addition, an overall workflow model for a trusted autonomous network is introduced.Y.3062 specifies trustworthiness evaluation for IMT-2020 and beyond with autonomous network (AN) functions. It includes the overview of trustworthiness, evaluation process for trustworthiness, evaluation metrics and related sub metrics for trustworthiness, quantitative methods of establishing trustworthiness for trust in AN (TiAN). In the appendices, the details of sub metrics are described in general; at the same time, the evaluation methodologies are described for each sub metric and there are a series of detailed typical scenario descriptions to make them more understandable and acceptable for trustworthiness evaluation for IMT-2020 and beyond with AN functions.Both Y.3060 and Y.3062 focus on the trust standardization for autonomous networks and network intelligence. China Mobile has remarkable achievements in network intelligence, especially the autonomous network. Concerning to the authorities to intelligent and autonomous network functions and blocks, trust and trustworthy related issues have been come to the views to the commercial networks of China Mobile. China Mobile are trying to explore efficient ways to quantify and evaluate the trustworthiness of network intelligence, so that to make autonomous network and related functions can achieve more and more commercial applying. |

## A.1.6 Coordination of networking and computing (CNC)

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| Key metrics: | Subjective organization / Country: | Effective period: |
| Trials/experiments; Adoption of requirements, framework, and capabilities | China Mobile Communications Co. Ltd. / China | (2023-the present) |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.3400 (2023): Coordination of networking and computing in IMT-2020 networks and beyond- Requirements”Y.3401 (2024): Coordination of networking and computing in IMT-2020 networks and beyond- Capability framework” |
| Success story |
| ITU-T SG13 has developed Coordination of networking and computing in IMT-2020 networks (CNC) series Recommendations to perform the coordination of utilization, control and management of computing, storage, and networking resources for the purpose of provisioning and optimization, with that, satisfaction of requirements of resources' users and improvement of resource utilization may be achieved. ITU-T Y.3400 and Y.3401 specify the requirements, capability framework, enabling technologies and procedures of CNC, in the context of IMT-2020 networks and beyond.Base on CNC series Recommendations, especially the above Recommendations, China Mobile developed the network with the capabilities of resource measurement, resource awareness, joint scheduling, unified management and orchestration of resources, resource transaction, intelligence and automation integration. In 2024, China Mobile completed the pilot construction of CNC in 5 provinces, and carried out the verification of key technologies of resource awareness, scheduling, and orchestration management for low-latency services such as cloud rendering, high I/O communication services such as 4K HD video, and intelligent computing services such as intelligent identification, which strongly proved that the new technology of CNC can reduce the end-to-end latency of the services and improve the utilization rate of resources. |

## A.1.7 Implementation of NaaS and cloud data mobility

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| Key metrics: | Subjective organization / Country:  | Effective period:  |
| Commercial applications; Adoption of requirements; Framework and capabilities | China Unicom / China | 2017 - the present |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.3515 (2017): Cloud computing - Functional architecture of Network as a ServiceY.3523 (2019): Metadata framework for NaaS service lifecycle managementY.3529 (2022): Cloud computing - Data model framework for NaaS OSS virtualized network functionY.3551 (2024): Cloud computing - Framework and functional requirements of cloud data mobility management |
| Success story |
| Since 2013, ITU-T SG13 has developed nearly 50 cloud computing related Recommendations covering multiple XaaS, such as Network as a Service (NaaS), Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Machine Learning as a Service (MLaaS), Robotics as a Service (RaaS), Blockchain as a Service (BaaS), etc., different cloud interconnection patterns, e.g. inter-cloud, multi-cloud, etc., and management and governance on cloud resource, cloud data, and cloud service lifecycle. Among these cloud series Recommendations, as a typical example of cloud and network synergy and digital transformation, NaaS series Recommendations pave a way for traditional telecommunication operators to provide cloud services based on telecom networks. ITU-T Y.3515 specifies NaaS functionalities and functional components as well as OSS reference points and illustrates usage of SDN and NFV in support of NaaS implementation. As the extension of ITU-T Y.3515, ITU-T Y.3523 and Y.3529 provides metadata framework for NaaS lifecycle management in a closed-loop automation environment, and data model framework for NaaS OSS network function in the SDN-based virtualized environment, respectively. With more and more cloud services deployed and provisioned in geographically distributed and heterogeneous cloud computing environments, ITU-T Y.3551 addresses the concept of cloud data mobility management, and its functional requirements and framework in inter-cloud, intra-cloud and multi-cloud environments.The technological characteristics, functional frameworks, functional architectures, and use cases illustration addressed by the cloud related Recommendations, especially the above Recommendations, have been implemented in China Unicom’s IP carrier network SDN-enabled renovation and cloud production system (Unicom Cloud) construction, including bandwidth on-demand, agile VPN, Firewall as a Service, Load Balance as a Service, plug-in&agent-based extensible SDN service, heterogeneous cloud data storage, etc. Those implementations strongly support nationwide high-speed interconnected computing resource scheduling of Unicom Cloud across more than 100 backbone cloud resource pools, more than 200 edge cloud resource pools, and more than 10 external cloud resource pools of other cloud service providers for providing computing and network integration based intelligent cloud services. |

## A.1.8 Aapplication of network sharing blockchain scheduling system

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| Key metrics: | Subjective organization / Country: | Effective period: |
| Commercial applications/Trials; Adoption of requirements; framework and service procedures | China Unicom / China | 2021 - the present |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.3082 (2023): Mobile network sharing based on distributed ledger technology for networks beyond IMT-2020 – Requirements and framework |
| Success story |
| ITU-T SG13 has developed network sharing Recommendations to provide services and applications to reduce the high cost of infrastructure deployment for operators, and to enhance capabilities to suit the trust demands from the sharing mechanism. Recommendation ITU-T Y.3082 specifies the requirements and framework of distributed ledger technology used in mobile network sharing for networks beyond IMT-2020. The detailed requirements of distributed ledger technology based mobile network sharing are put forward. The high-level framework, service procedures and security considerations are presented. The Recommendation has been widely adopted to achieve sustainable development of the 5G network's collaborative and shared ecosystem, including in developing countries.Based on ITU-T Y.3082, China Unicom and China Telecom developed the full life-cycle 5G network co-construction and sharing trust system, and put it into large-scale commercial use. In January 2022, China Telecom and China Unicom officially launched a network sharing blockchain scheduling system. This system is built based on blockchain technology and possesses joint data management, joint network planning, joint construction scheduling, joint operation analysis and joint collaboration functions. As of January 2022, through this system, both parties have cumulatively deployed and shared 700,000 5G base stations, saving over 210 billion yuan in network construction costs and reducing annual carbon emissions by 6 million tons. This success story provided experience for the sustainable development of mobile communications.Reference: <https://www.lightreading.com/business-management/sharing-network-operation-and-scheduling-system-based-on-multi-operator-baas-collaboration> |

## A.1.9 Internet of Vehicles (IoV)

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| Key metrics: | Subjective organization / Country: | Effective period: |
| Trials/experiments; Adoption of requirements; framework and capabilities | China Unicom / China | 2024 - the present |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.3046 (2024): Requirements and framework of service aware network for network service provider |
| Success story |
| ITU-T Y.3046 specifies requirements and a framework of service aware network for network service provider, and constructs service aware network through the awareness of service requirements, service capabilities and network capabilities to provide support for end-to-end service orchestration and scheduling. Service aware network has been widely adopted worldwide to achieve refined network service, including in developing countries.Based on ITU-T Y.3046, China Unicom has established a service aware network demonstration project for the Internet of Vehicles (IoV) scenario in Xiong'an, China. The capability of service and network awareness has been deployed. By perceiving and analyzing the diverse service requirements of IoV, the network can accurately distinguish between different IoV applications. Concurrently, by monitoring the real-time status of computing resources and network, the network can achieve dynamical scheduling, thereby selecting the most appropriate computing nodes and optimal network paths to different applications. Experimental results show that the deployment of service aware network framework reduces the end-to-end delay of remote driving by 67.5%. This trial marks a milestone in exploring service-aware technology and promoting the development of the IoV industry. |

## A.1.10 Computing and networking convergence products

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| Key metrics: | Subjective organization / Country: | Effective period: |
| Commercial use/ICT products；Adoption of requirements; framework and capabilities | China Unicom / China | 2022 - the present |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.3138 (2022): Unified multi-access edge computing for supporting fixed mobile convergence in IMT-2020 networksY.3133 (2019): Capability Exposure enhancement for supporting FMC in IMT-2020 networks |
| Success story |
| ITU-T SG13 has developed fixed mobile convergence (FMC) series Recommendations, FMC is the capability that provides services and applications to end users regardless of the fixed or mobile access technologies being used and independently of the users' location in the context of IMT-2020. ITU-T Y.3138 and Y.3133 specifies the requirements, architecture, and functions of unified multiaccess edge computing for supporting fixed mobile convergence (FMC), describes the requirements of the capability exposure for supporting FMC in IMT-2020 networks. It also defines the functional architecture, the functional entities, the procedures, and the high-level API descriptions for network capabilities exposure for supporting FMC in IMT‑2020 networks. The above standards have been widely adopted globally.Based on FMC series Recommendations, especially the above Recommendations, China Unicom has created an integrated computing and network scheduling platform, as well as three industry-leading computing and network integration products, all-optical intelligent enterprise, computing power private network, and 5G intelligent cloud private network. The integrated scheduling platform for computing and network is the brain of China Unicom's integrated computing and intelligent computing, as well as the convergence of fixed network and mobile network. The all-optical intelligent enterprise product is an integrated product that provides "FTTO networking plus security plus cloud applications" to small and medium-sized enterprise customers. The computing power private network product is aimed at enterprise customers with intelligent computing needs, providing services such as elastic transmission of training and reasoning data, automated deployment of models, and high-quality access to reasoning services. 5G intelligent cloud private network is an integrated service product that provides "cloud, network, edge, and security" services to enterprise customers who require 5G private network access, computing, and interconnection services. |

## A.1.11 Computing power network standards

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| Key metrics: | Subjective organization / Country:  | Effective period:  |
| ICT products | China Telecom / China | (2021 - the present) |
| Relevant Recommendations: (preferably within the last two study periods) |
| ITU-T Y.2501 (2021): Computing power network – Framework and architecture |
| Success story |
| ITU-T Recommendation Y.2501 defines the framework and functional architecture of computing power network. Y.2501 has initiated the formulation of the computing power network series standards. Based on this standard, SG2, SG11, and SG17 have all conducted standardization research on computing power networks, resulting in dozens of standards that have been released or are under development. ITU-T Y.2501 has been implemented in China’s national priority projects and adopted by telecom operators, cloud service providers, and equipment manufacturers. They have been deployed across diverse sectors including higher education, research institutions, healthcare, and finance. The revenue generated by driving equipment manufacturers' sales revenue through computing power network construction and boosting operators' computing network product revenue via service quality upgrading has reached billions of dollars.Meanwhile, this standard also promotes the widespread application of computing power network technologies, attracting various parties from industry, academia, research and application sectors to establish more than 10 industry alliances related to computing power networks, thus forming a closed loop of "standard formulation - technological research and development - product implementation". |

## A.1.12 AI intelligent energy-saving

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| Key metrics: | Subjective organization / Country:  | Effective period:  |
| ICT products | China Telecom / China | (2020 - the present) |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.3141 (2023): Energy efficiency management of virtual resources in IMT-2020 networks and beyondM.3381 (2022): Requirements for energy saving management of 5G radio access network (RAN) systems with artificial intelligence (AI)M.3382 (2022): Requirements for work order processing in telecom management with artificial intelligence (AI)Q.4069 (2022): Testing requirements and procedures for Internet of Things based green data centres |
| Success story |
| Recommendation ITU-T M.3381 specifies requirements for energy saving management of a 5G radio access network (RAN) system with artificial intelligence (AI) and describes use cases of energy saving management of 5G RAN system with AI.Recommendation ITU-T M.3382 specifies requirements for work order processing in telecom management with artificial intelligence (AI). Based on AI models and features extraction, work orders will be collected, analyzed, forwarded and archived.Recommendation ITU-T Q.4069 specifies testing requirements and procedures for green data centers (GDCs) based on the Internet of things (IoT).Recommendation ITU-T Y.3141 specifies energy efficiency management (EEM) assisted by artificial intelligence of virtual resources in IMT-2020 networks and beyond.The AI intelligent energy-saving standards have been widely applied in provincial branches of China Telecom. As of 2024, they have been applied to 90% of the 4G/5G cells, 3,800 data centers and machine rooms, and over 13,000 cloud hosts of China Telecom across 31 provinces in the country, saving more than 900 million kWh of electricity. |

## A.1.13 Cloud-network collaborative orchestration and operation

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| Key metrics: | Subjective organization / Country:  | Effective period:  |
| ICT products | China Telecom / China | (2018 - the present) |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.2323 (2018): Requirements and capabilities of orchestration in next generation network evolutionY.2324 (2019): Functional architecture of orchestration in next generation network evolution (NGNe)Q.3058 (2020): Signalling architecture of orchestration in next generation network evolutionM.3080 (2021): Framework of artificial intelligence enhanced telecom operation and management (AITOM) |
| Success story |
| Recommendation ITU-T Y.2323 provides orchestration scenarios in NGNe, specifies the general requirements of the orchestration in NGNe.Recommendation ITU-T Y.2324 provides the general functional architecture of the orchestration in NGNe, specifies its functional entities, and establishes the functionalities of these functional entities, as well as providing descriptions of all reference points of orchestration in NGNe.Recommendation ITU-T Q.3058 specifies the mapping of reference points to interfaces in the signaling architecture of orchestration in NGNe, provides the signaling requirements of the interfaces and establishes the protocols used for interfaces. Recommendation ITU-T M.3080 provides a framework of artificial intelligence enhanced telecom operation and management (AITOM)This series of standards have been widely applied in the research and development, planning, construction and intelligent operation of cloud-network collaborative orchestration and operation systems for operators and equipment manufacturers, as well as in the application of standard technical content for the development of new cloud-network integrated products, achieving large-scale revenue generation. Based on the application of this series of standards, NLP-based AI capabilities have been applied 4 provinces, involving over 200,000 work orders, saving more than 600 man-days, and reducing the automatic order processing time by over 40% year-on-year. In total, revenue from product income has exceeded 3.5 billion yuan, and nearly 1 billion yuan in costs has been saved. |

## A.1.14 Blockchain-enabled IMT-2020 co-building and sharing

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| Key metrics: | Subjective organization / Country:  | Effective period:  |
| ICT productsDistributed resource scheduling platform for 5G Co-Building and Sharing | China Telecom / China | (2021 - the present) |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.2345 (2023): Scenarios and requirements of network resource sharing based on distributed ledger technologyY.2348 (2025) : Functional architecture of network resource sharing based on distributed ledger technology” |
| Success story |
| The NRS-DLT series of standards enabled the design of the joint 5G co-building and sharing platform led by China Telecom and China Unicom, resulting in the world’s first cross-operator 5G scheduling system. Leveraging blockchain, the platform addresses mutual data trust issues, establishes a cooperative trust mechanism, and significantly improves efficiency in co-construction, co-maintenance, and shared operations.Since 2021, the distributed resource-sharing platform has introduced three major blockchain scenarios: (1) on-chain verification of key network parameters, (2) bi-directional work order rights confirmation, and (3) intelligent contract-based resource scheduling. It has processed over 0.8 PB of data and recorded more than 120 million key parameters on-chain, doubling operational efficiency.With the support of this platform, China Telecom and China Unicom have deployed large-scale carrier aggregation in 300+ cities, upgraded RedCap IoT in 150 cities, and launched low-altitude communication trials in 10 cities. The system now manages over 5.3 million shared 4G/5G base stations, laying a strong foundation for accelerating digital infrastructure, enabling industry-wide digital transformation, and driving the growth of the digital economy. |

## A.1.15 Blockchain-as-a-Service (BaaS) platform

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| Key metrics: | Subjective organization / Country:  | Effective period:  |
| ICT productsChina Telecom’s BaaS platform | China Telecom / China | (2020 - the present) |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.3530 (2020): Cloud computing - Functional requirements for blockchain as a serviceQ.4046 (2023): Interoperability testing requirements of blockchain as a service |
| Success story |
| Y.3530 was jointly studied and published by ETRI, China Telecom, and ZTE within SG13 Q17. Q.4046 was intiated and released by China Telecom within SG11.In accordance with Y.3530 and Q.4046, the Yizhifu BaaS (Blockchain-as-a-Service) platform was developed to deliver blockchain services such as rapid network configuration, one-click chain deployment, smart contract development, functional testing, and visualized performance monitoring. It provides enterprises with low-barrier blockchain capabilities and high-performance privacy components, enabling secure and efficient on-chain operations without dedicated hardware infrastructure.The platform has supported major projects nationwide, including in Xi’an, Changzhou, Guizhou Province, Nanjing, and Shanghai, across domains such as social governance, anti-fraud prevention, supply chain management, asset registration, public data authorization, and carbon emission management. Collectively, these initiatives have generated economic benefits worth several billions of RMB, significantly advancing digital governance and operational efficiency.A notable example is a blockchain-based smart financial system for enterprise commission settlement, offering end-to-end closed-loop processes including online invoicing, automatic matching, intelligent auditing, and voucher generation. The system has been deployed in China Telecom subsidiaries as well as in government agencies, banks, and hospitals. External enterprises also leverage the BaaS framework for secondary development of smart taxation platforms. To date, over 200,000 invoices have been processed, with a cumulative amount exceeding 3 billion RMB, showcasing the platform’s scalability and economic impact. |

## A.1.16 Cloud computing

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| Key metrics: | Subjective organization / Country:  | Effective period:  |
| ICT products | China Telecom / China | (2017 - the present) |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.3507 (2018): Cloud computing - Functional requirements of physical machine Y.3508 (2019): Cloud computing – Overview and high-level requirements of distributed cloudY.3510 (2016)**:** Cloud computing infrastructure requirements |
| Success story |
| Recommendation ITU-T Y. 3507 provides the functional requirements of the physical machine for cloud computing based on cloud computing infrastructure requirements presented in [ITU-T Y.3510.Recommendation ITU-T Y.3508 provides an overview and high-level requirements of the distributed cloud. It addresses definition of distributed cloud, concept of distributed cloud, characteristics of distributed cloud, configuration models of distributed cloud, deployment considerations of distributed cloud and high-level requirements of distributed cloud.Recommendation ITU-T Y.3510 identifies requirements for cloud infrastructure capabilities to support cloud services including overview of cloud infrastructure, requirements for compute resources, requirements for network resources, requirements for storage resources, requirements for resource abstraction and control. This series of Recommendations effectively supports the construction of internal and external cloud resource pools for China Telecom, gradually realizing the unified cloud hosting of its own internally business and building cloud data centres to provide cloud services externally. Based on this series of Recommendations, China Telecom has built its own cloud brand Tianyi Cloud, constructed more than 700 data centres, 315 cloud resource pools, over 3,000 edge nodes, and served over 4.9 million customers, ranking first in China's private cloud market and among the top three in China's public cloud market.  |

# A.2 Japan

## A.2.1 QKDN standards

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| Key metrics: | Subjective organization / Country:  | Effective period:  |
| National standards | TTC / Japan | (2019 - the present) |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.3800 (2019): Overview on networks supporting quantum key distributionY3801(2020): Functional requirements for quantum key distribution networksY3802 Amd.1(2023): Quantum key distribution networks - Functional architectureY3803 Amd.1 (2023): Quantum key distribution networks - Key managementY3804 Amd.1 (2023): Quantum key distribution networks - Control and managementY3808 (2024): Integration of quantum key distribution network and secure storage network  |
| Success story |
| The above-mentioned ITU-T Recommendation Y. 3800 series defines the basic specification of a quantum key distribution network (QQDN), including overview, functional requirements, architecture, and fundamental functions. In Japan, the Telecommunication Technology Committee (TTC), which is authorized by ITU-T A. 5, has been publishing national standards based on the Y. 3800 series to contribute to the development of the telecommunications field. The Tokyo QKD Network is a type of a QKD testbed and has been developed and operated to enable reliable key relay even between QKD links of different vendors. The equipment of the Tokyo QKD Network conforms to these standards, and several devices has been commercialized by vendors.Reference: [1] TTC document database (Japanese only): <https://www.ttc.or.jp/document_db>NOTE ‒ JT-series are TTC standards based on ITU-T Recommendations[2] Inauguration of the Tokyo QKD Network, <https://www.nict.go.jp/en/press/2010/10/14-1.html>[3] Quantum Cryptography and Physical Layer Cryptography, https://www.nict.go.jp/en/quantum/about/crypt/english.html |

# A.3 Korea

## A.3.1 QKD certification

|  |  |  |
| --- | --- | --- |
| Key metrics: | Subjective organization / Country:  | Effective period:  |
| Government regulations/ policies | NIS (National Intelligence Service) / Korea (Republic of) | (2020 - the present) |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.3800 (2019): Overview on networks supporting quantum key distribution |
| Success story |
| ITU-T Recommendation Y.3800 defines the layered model of quantum key distribution networks (QKDNs). In the Republic of Korea, the National Intelligence Service (NIS) operates a national certification program for security equipment. Under this program, quantum key distribution (QKD) equipment is classified based on the layers and functions specified in Y.3800, and the certification program is applied accordingly to each equipment category. |

## A.3.2 QKDN control and management

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| --- | --- | --- |
| Key metrics: | Subjective organization / Country:  | Effective period:  |
| ICT products | KT (Korea Telecom) / Korea (Republic of) | (2021 - the present) |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.3804 (2025): Quantum key distribution networks – Control and management |
| Success story |
| ITU-T Recommendation Y.3804 specifies the control and management functions within the layered architecture of quantum key distribution networks (QKDNs). In the Republic of Korea, the telecommunications operator KT has implemented the functions defined in Y.3804 to operate and manage its QKD test networks and commercial service infrastructure, applying them to actual business deployments. |

## A.3.3 QKDN QoS

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| Key metrics: | Subjective organization / Country:  | Effective period:  |
| ICT products | KT (Korea Telecom) / Korea (Republic of) & Toshiba / Japan | (2022 - the present) |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.3708 (2022): Quantum key distribution networks – Quality of service parameters |
| Success story |
| ITU-T Recommendation Y.3807 defines parameters for evaluating the quality of service (QoS) in quantum key distribution networks (QKDNs). To assess the long-distance performance of a family of QKD devices developed in accordance with Y.3800, KT implemented the QoS parameters defined in Y.3807 into a QKDN management system conforming to Y.3804. KT then conducted interoperability and quality evaluation tests in collaboration with Toshiba of Japan, over the longest communication link in Korea.**(Reference)** [Toshiba Group and KT Collaborate on Quantum Key Distribution Pilot Projects in South Korea　Covering world's first application of ITU standard to evaluation of a long-distance hybrid QKD network, and a QKD service testbed that will expand the quantum industry ecosystem | News | TOSHIBA DIGITAL SOLUTIONS CORPORATION](https://www.global.toshiba/ww/company/digitalsolution/news/2022/0328.html) |

## A.3.4 The natural environment measurement including the fine dust monitoring

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| Key metrics: | Subjective organization / Country:  | Effective period:  |
| ICT products | Rep. of Korea, ETRI, KT corp., and KAIST | (2022 - the present) |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.2243(2019): A service model for risk mitigation service based on networks Y.2245(2020): Service model of the agriculture information based convergence serviceY.2246(2021): Smart farming education service based on u-learning environment |
| Success story |
| These recommendation provides services to resolve the climate change risk mitigation by providing the natural environment measurement information included the fine dust to related users (agriculture/factory fields) through Low Power Wide Area Network (LPWA)/ Industrial, Scientific and Medical (ISM) and satellite Internet networks.Service providers can ensure interoperability compatibility as to provide services model applied to the Recommendations . |

**A.3.5 Risk mitigation on livestock pandemic**

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| Key metrics: | Subjective organization / Country:  | Effective period:  |
| ICT products | Rep. of Korea, ETRI, KT corp., and KAIST | (2021 - the present) |
| Relevant Recommendations: (preferably within the last two study periods) |
| Y.2243(2019): A service model for risk mitigation service based on networks Y Suppl. 91 (2025): Service model of risk mitigation on livestock pandemic based on networks |
| Success story |
| For the prevention of such livestock infectious diseases, it is more problematic because it is handled manually and there is no standardization procedure until now. It is required to effectively prevent infectious diseases occurring in wild birds, wild animals and livestock by utilizing the modernized advance network, and to effectively treat the future, current and post situation.Risk mitigation service providers then classify the risk types and assess the impacts due to the detected risks. The risk status will be delivered based on the risk types and impact levels to the relevant parties, i.e. risk mitigators that are responsible to cope with risks such as disaster prevention headquarters or local officers to prevent the dispersion of risks. The results after these risk mitigation actions have been performed will ultimately be delivered to the service users (risk mitigators and risk sufferers).Service providers can ensure interoperability compatibility as to provide services model applied to the Recommendation and relevant Supplement. |

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