ITU-T Study Group 13 heading towards next Study Period

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Chairman ITU-T SG13

Facing COVID Situation

➢ WTSA-20 has been deferred from November 2020 until March 2022 (planned date)

➢ Since March 2020 all meetings of SG13 has been held virtually

➢ Structure & Mandate (as well as Study Group Chair and Vice-chairs) of SG13 remain unchanged as we are still working in Study Period 2017-2020

➢ In order to allow Questions to adopt the title, mandate and description according to new topics for the future, January 2021 TSAG meeting has endorsed the modified set of Questions as agreed by SG13 during December 2020 meeting. This should ensure that future progress of all SG13 Questions is not stalled by deference of WTSA-20.

SG13 Working Parties

WP/13	Title
1	**IMT-2020 and beyond: Networks & Systems**
2	**Cloud Computing and Data Handling**
3	**Network Evolution, Trust and Quantum Enhanced Networking**

ITU-T SG13 Mandate (proposed)

- ❑ Lead study group on future networks such as IMT-2020 networks and beyond (non-radio related parts)

- ❑ Lead study group on ~~mobility management~~ fixed-mobile convergence

- ❑ Lead study group on cloud computing

- ~~❑ Lead study group on trusted network infrastructures~~

TD291-R1 PLEN

Study areas of high attention

➢Quantum Technology
➢Trust
➢Data Handling
➢Beyond IMT2020 & ML
➢Autonomous Networks

Quantum Technology

➢ Standards on QKDN in Y.3800-Series

➢ Currently 4 planned new Standards for Future

Quantum Key Distribution Networks - Software Defined Networking Control

Quantum Key Distribution Networks - Business role-based models

Framework for integration of QKDN and secure network infrastructures.

Quantum Key Distribution Networks - Applications of Machine Learning

Trust

➢ Standards on trustworthy networking in Y.305x-Series

➢ Currently 4 planned new Standards for future

Framework of trusted electricity brokerage for distributed energy resources

Standardization roadmap on Trustworthy Networking and Services including Quantum Enhanced Networks

Functional architecture for trust enabled service provisioning

Trust index for ICT infrastructures and services

Data Handling

➢ Standards on Big Data in Y.36xx-Series on Cloud Computing in Y.35xx-Series

➢ Currently 4 planned new Standards for future

Big data - Functional requirements for data provenance

Big data - Requirements and conceptual model of metadata for data catalogue

Big Data - Overview and functional requirements for data integration
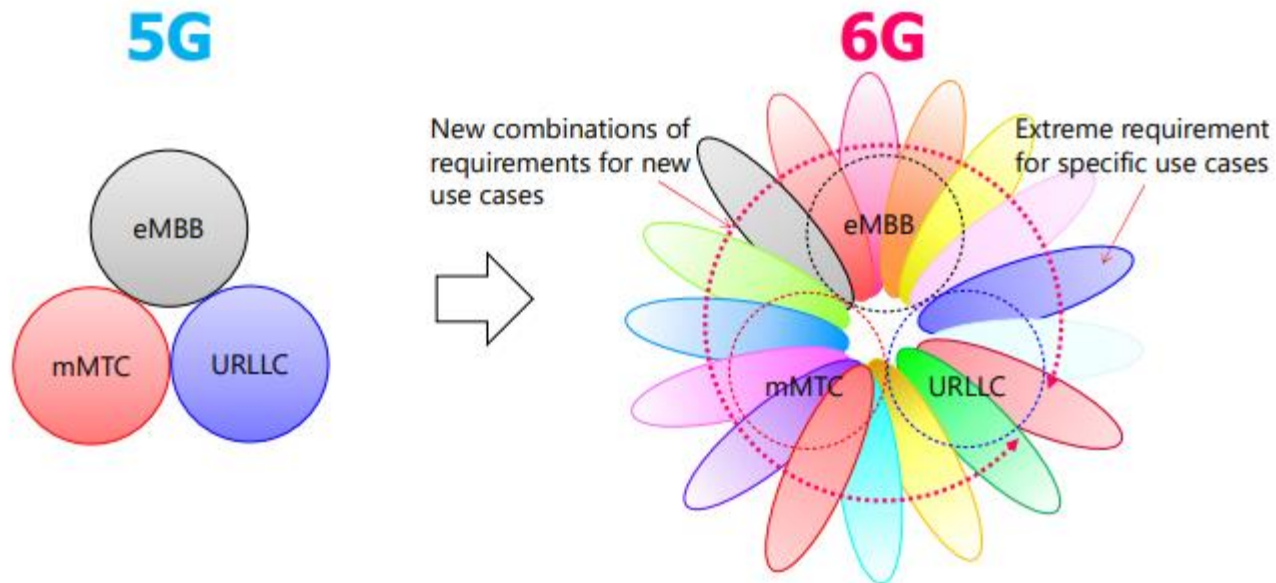
Big data standardization roadmap

Big data - Functional architecture for data provenance
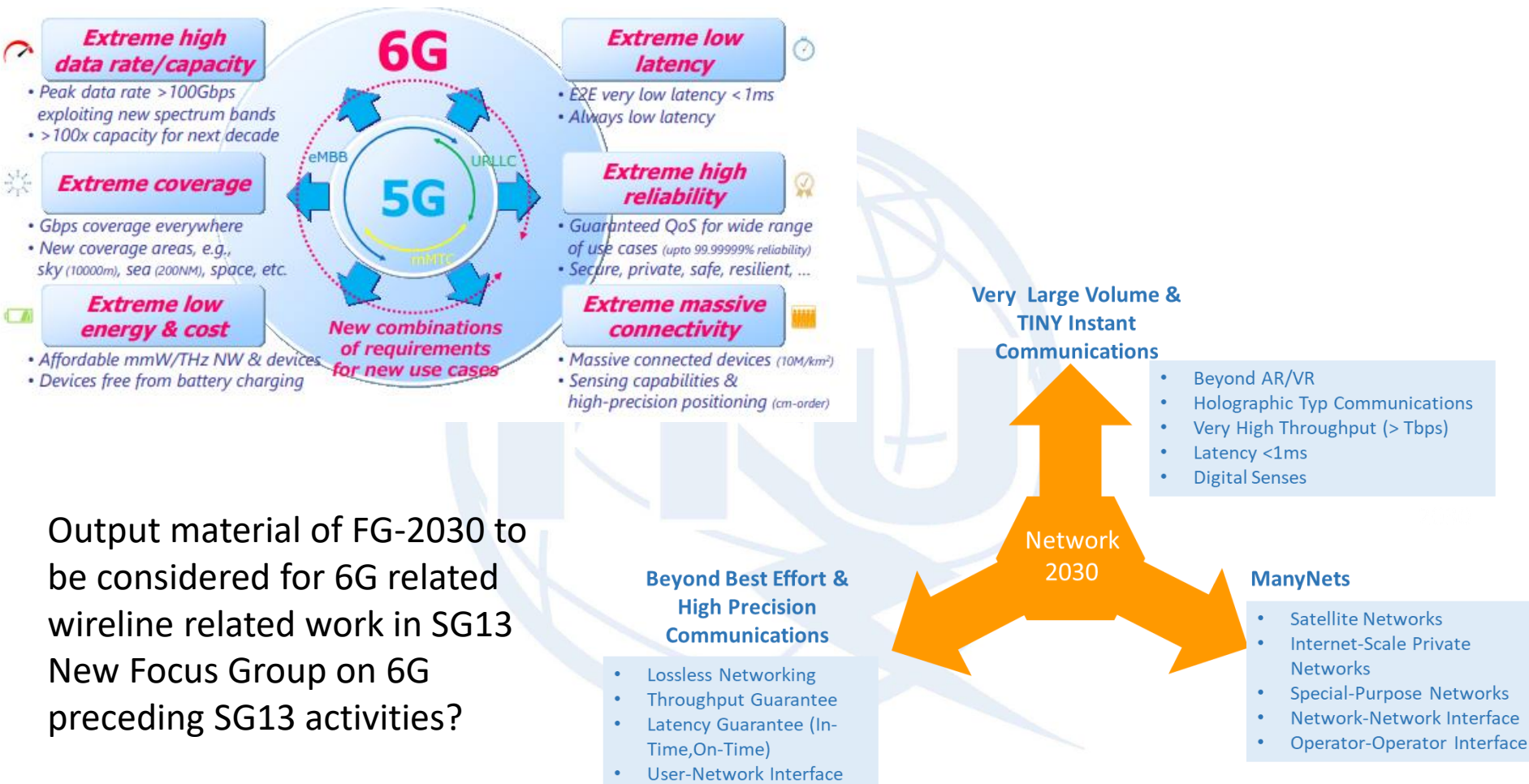
and 17 WI related to Cloud computing

Beyond IMT2020

Beyond IMT2020 = 6G?
6G Flagship, 6G Whitepaper NTT

6G approach

Extreme high data rate/capacity
- Peak data rate >100Gbps exploiting new spectrum bands
- >100x capacity for next decade

Extreme coverage
- Gbps coverage everywhere
- New coverage areas, e.g., sky (10000m), sea (200NM), space, etc.

Extreme low energy & cost
- Affordable mmW/THz NW & devices
- Devices free from battery charging

6G

5G
eMBB URLLC mMTC

New combinations of requirements for new use cases

Extreme low latency
- E2E very low latency <1ms
- Always low latency

Extreme high reliability
- Guaranteed QoS for wide range of use cases (upto 99.99999% reliability)
- Secure, private, safe, resilient, ...

Extreme massive connectivity
- Massive connected devices (10M/km²)
- Sensing capabilities & high-precision positioning (cm-order)
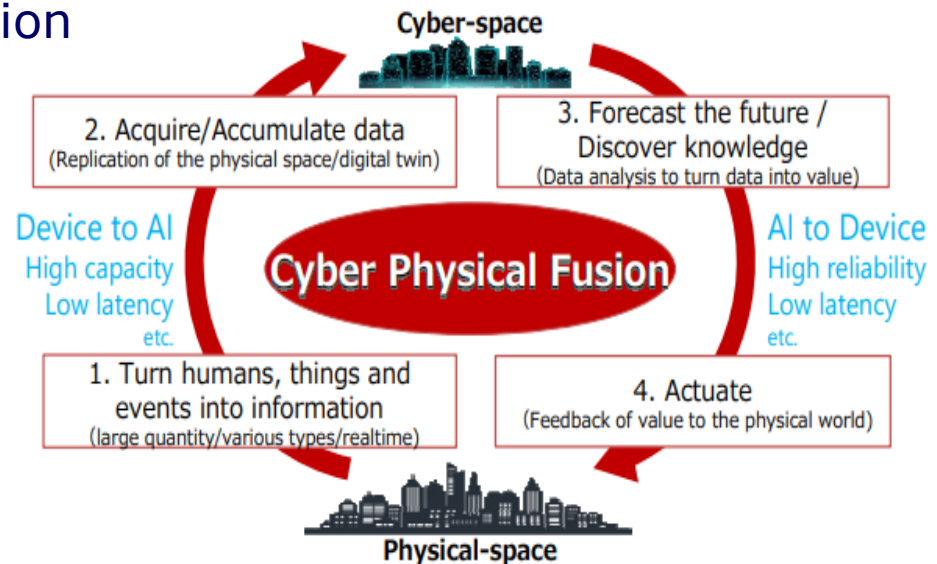
Output material of FG-2030 to be considered for 6G related wireline related work in SG13 New Focus Group on 6G preceding SG13 activities?

Network 2030

Very Large Volume & TINY Instant Communications
- Beyond AR/VR
- Holographic Typ Communications
- Very High Throughput (> Tbps)
- Latency <1ms
- Digital Senses

Beyond Best Effort & High Precision Communications
- Lossless Networking
- Throughput Guarantee
- Latency Guarantee (In-Time,On-Time)
- User-Network Interface

ManyNets
- Satellite Networks
- Internet-Scale Private Networks
- Special-Purpose Networks
- Network-Network Interface
- Operator-Operator Interface

FG-2030 output material to be considered

- ✓ Vision document "Network 2030 - A Blueprint of Technology, Applications and Market Drivers Towards the Year 2030 and Beyond" (05/19), FG NET2030 White Paper, and SG13 technical report "Driving Forces and Vision towards Network 2030" (03/20)
- ✓ IMT-2020 an beyond standardization roadmap, online
- ✓ Its prototype published as Supplement 59 to Y.3100-series (03/20)
- ✓ Supplement 66 to Y.3000-series "**Network 2030 services**: Capabilities, performance and design of new communication services for the Network 2030 applications" (07/20)
- ✓ Supplement 67 to Y.3000-series "Representative **use cases** and key network **requirements for Network 2030**" (07/20)

SG13 activities trending beyond IMT2020

- **ICN** (Y.3070-series): shaping and routing traffic more efficiently (data object segmentation, in-network computing, autonomous ICN, including autonomous name mapping) => support of <1ms Latency
- **Network Softwarization** (Y.3150-series): intelligence capability for network slice management, **intent-based network** management and orchestration, network slicing with AI-assisted analysis
- **ML** (Y.317x-series): Machine Learning for beyond IMT2020 networks, including evaluating intelligence level, data handling to enable ML in future networks, AI based network service provisioning to support Cyber Physical Fusion
- **Focus Group AN**

Cyber-space

2. Acquire/Accumulate data
(Replication of the physical space/digital twin)

3. Forecast the future /
Discover knowledge
(Data analysis to turn data into value)

Device to AI
High capacity
Low latency
etc.

Cyber Physical Fusion

AI to Device
High reliability
Low latency
etc.

1. Turn humans, things and events into information
(large quantity/various types/realtime)

4. Actuate
(Feedback of value to the physical world)

Physical-space

1956 2016

CCITT / ITU-T

Welcome to raise questions

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