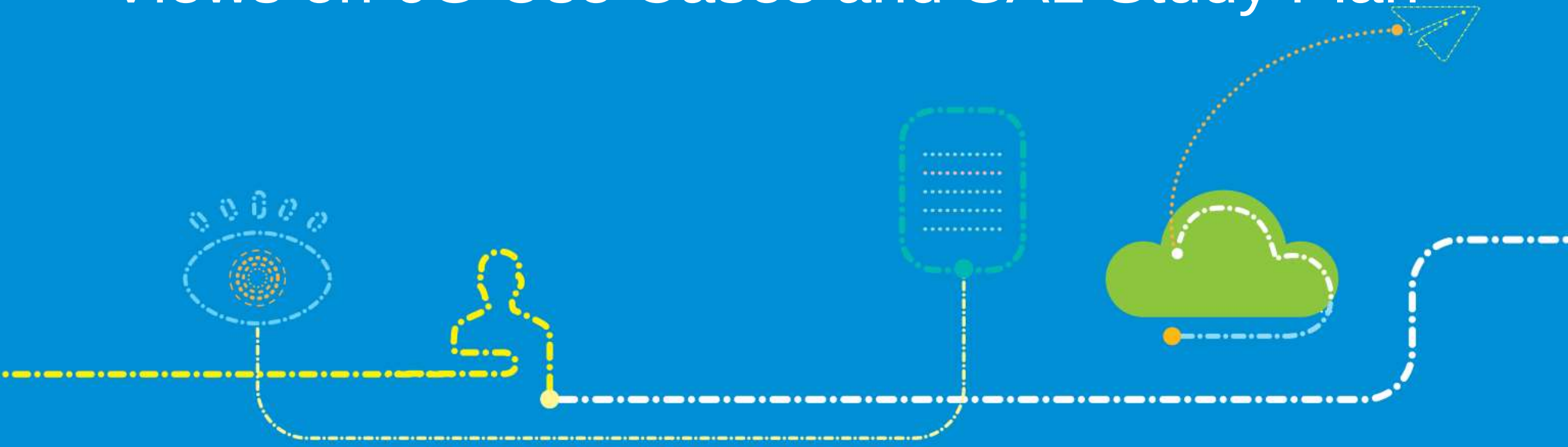
3GPP TSG-SA WG1 Meeting #106
Jeju Island, Korea, 27-31 May 2024

S1-241045

Source: ZTE Corporation

Agenda Item: 8

Views on 6G Use Cases and SA1 Study Plan



Considerations for 3GPP SA1 6G study

1. Begin with one 6G SID

- Begin with one 6G SA1 SID and end with one 6G WID with one basic 6G Req TS.
- Discuss whether the subsequent multiple Building Blocks needed and if yes, how? It is suggested to be decided after Feb. 2025 based on the collected UCs.
- Legacy 5G service migration: The same use case(s) with new PR? Directly refer the existing TS?
- Consolidation for the quantitative technical performance requirements needs to be addressed per usage scenario.

2. Actual demands and prioritization 6G service requirement for the first release.

- Collect UCs as broad as possible and study the actual demands from consumer, industry, society aspects
- Learn from 5G/5G-Advanced experiences
- Leverage from achievement of external organizations
- Priority principle needs to be considered to select the first 6G requirement set

3. Close collaboration with RAN 6G SIDs

© ZTE All rights reserved

Discussion: Higher prioritized 6G UC groups

User and application trends

New Tech trends

Spectrum

Sustainability

Security & Resilience

Connecting the unconnected

Principle for prioritization:

- Value for consumers, industry and society
- Learn from 5G/5G-A experience
- Tech. feasibility
- TCO & Carbon Emission Reduction

Immersive Comm.

Industry IoT

Intelligent Network Operation

Native AI

ISAC

Ubiquitous Connectivity

Energy Efficiency

© ZTE All rights reserved

ZTE

Prioritized 6G UCs: Industry IoT (Digital transformation for vertical industry)

Consideration on Industry IoT :

- Identify and promote key features for industry IoT in first 6G release (lessons learned from 5G)
- Address the gap identified in the market (e.g. performance, efficiency, cost & complexity, etc.)
- New scenarios, use cases and Req.

Typical Industry IoT Use Cases

Collaborative Robots

Machine vision & AI/ML for defect detection

Industrial Sensors

Smart Grid

Digital Twin

Task driven intelligent collaboration

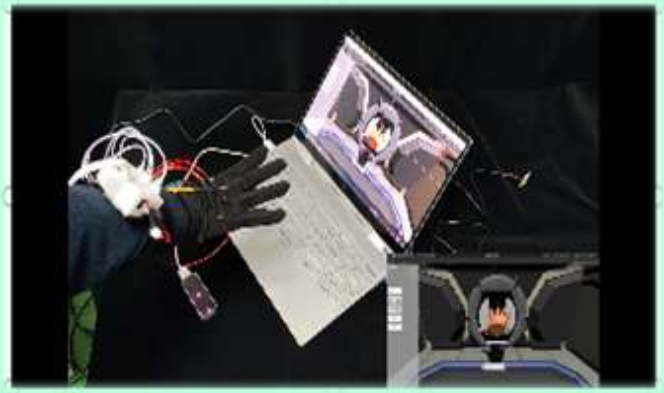
- HRLLC
- Strict time synchronization among devices/nodes
- Deterministic transmission with service awareness
- UL throughput & capacity improvement to facilitate the usage of machine vision and AI/ML
- Energy efficiency

- Edge computing for AI/ML, digital twin
- NW capability/information exposure
- Robustness & Resilience network capability
- Simplified & on-demand NW deployment & operation
- Support of Industry device diversity
- Real-time performance monitoring

ZTE 5G experience with Industry partners

- 15+ Industries
- 150+ Partners
- 500+ Use cases

Prioritized 6G UCs: Immersive Communication

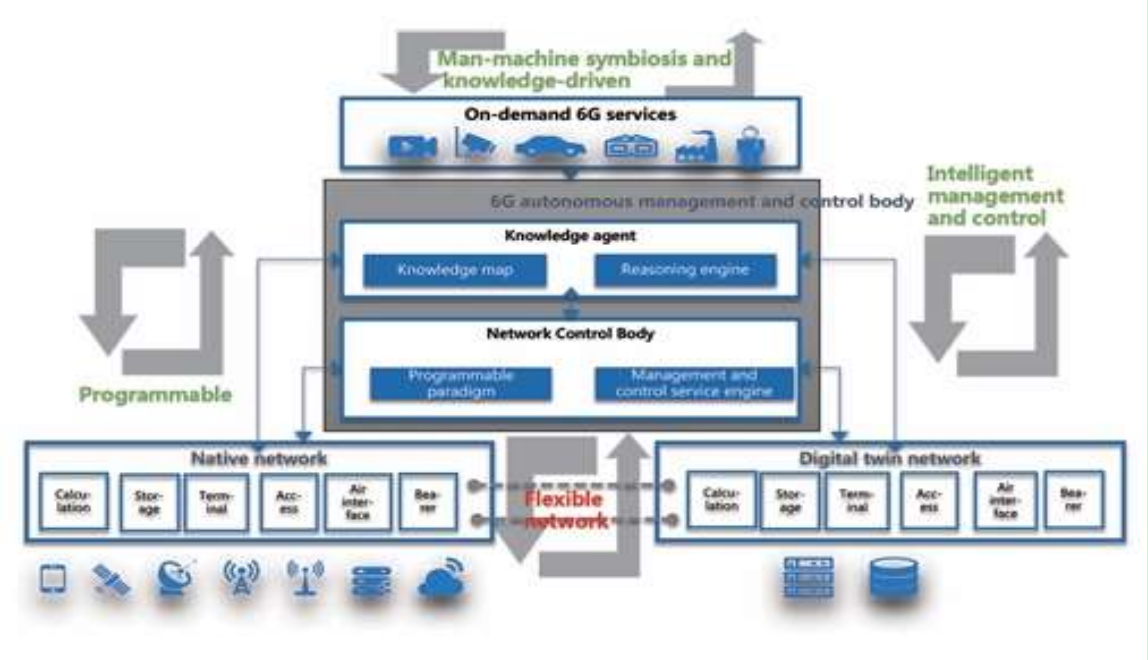


- Ultra-high data throughput & capacity especially in UL
- Sync accuracy among multiple nodes/devices
- Real-time interaction and feedback
- Distributed computing network
- Higher positioning accuracy
- Service continuity during mobility

© ZTE All rights reserved

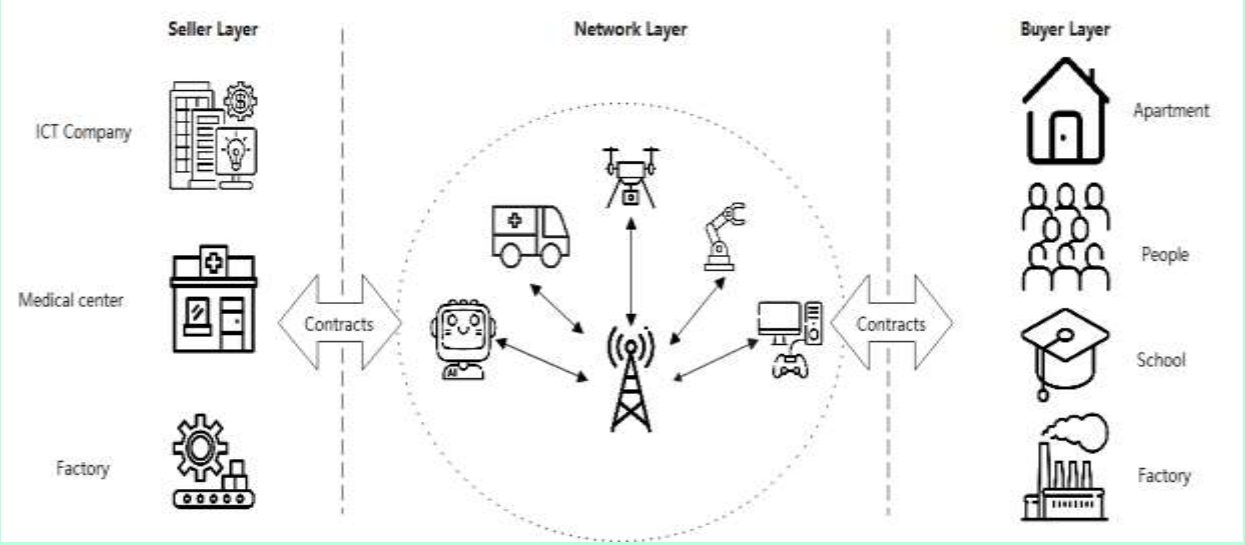
Prioritized 6G UCs: Sustainable & Intelligent Network + Native AI

Autonomous Network



- Aim for Level-5 autonomous Network (3GPP TS28.100)
- Digital twin
- Network capability exposure
- Energy efficiency
- Distributed network collaboration
- Generative AI

Native AI

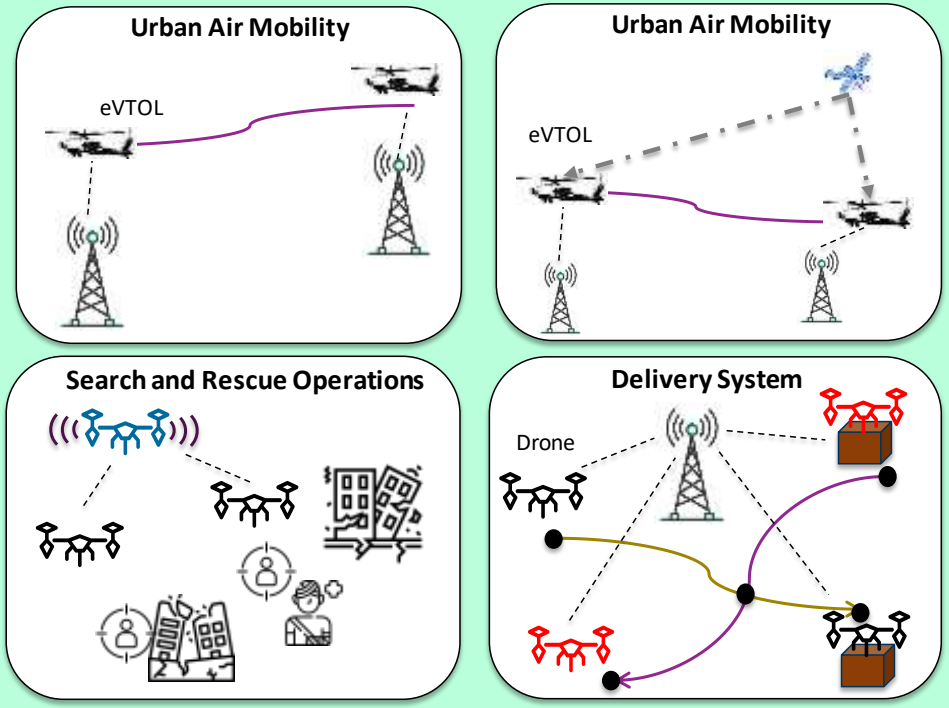


- Empower the wireless network with intelligence, across all domains/layers
- AI enabled task driven service
- More flexible and efficient data management
- Real-time human machine/computer interaction
- Coordinated resource control
- Energy/cost Impact

© ZTE All rights reserved

Prioritized 6G UCs: Low-altitude Economy + ISAC

Low-altitude economy



- Ubiquitous coverage in 3D domain with variant altitudes
- Low Latency & high reliability
- Higher data rate
- High-accuracy sensing and positioning in wide-area
- AI & Computing

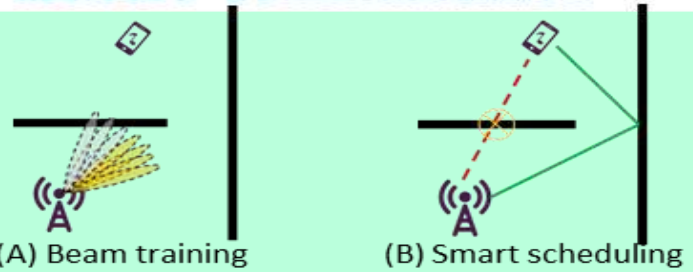
ISAC

- Prioritize positioning-type use cases

UAV detection

Safety monitoring

- Sensing and positioning assisted Communication



- Higher accuracy & availability
- Efficient sensing data processing & utilization
- Sensing & positioning for communication
- Energy efficiency
- AI & Computing

© ZTE All rights reserved

Proposal: Begin with one 6G SID

- Begin with one SA1 6G SID to collect UCs as broad as possible, study actual demands, prioritize requirements for the first 6G release.
- Whether and how to decide the subsequent multiple Building Blocks are suggested to be addressed after Feb.2025 (i.e. after 2 SA1 meetings of the discussion in the SI) based on the collected UCs.

SA1 6G SID

Immersive Communication

SMART City

Industry IoT (Hyper Reliable and Low-latency Communication, Sensing enabled digital twin, deterministic service, resilient network, On-demand service,…)

SMART Agriculture

SMART Health

SMART Grid

AI and Communication (including computing)

Integrated Sensing and Communication (including positioning)

Sustainable and Intelligent Network Operation (Autonomous network, Network capability exposure, Energy efficiency, 5G/6G migration, Net sharing,…)

Auto driving

Security

ITS

Ubiquitous Connectivity (e.g. Low-altitude economy, ATG, NTN, …)

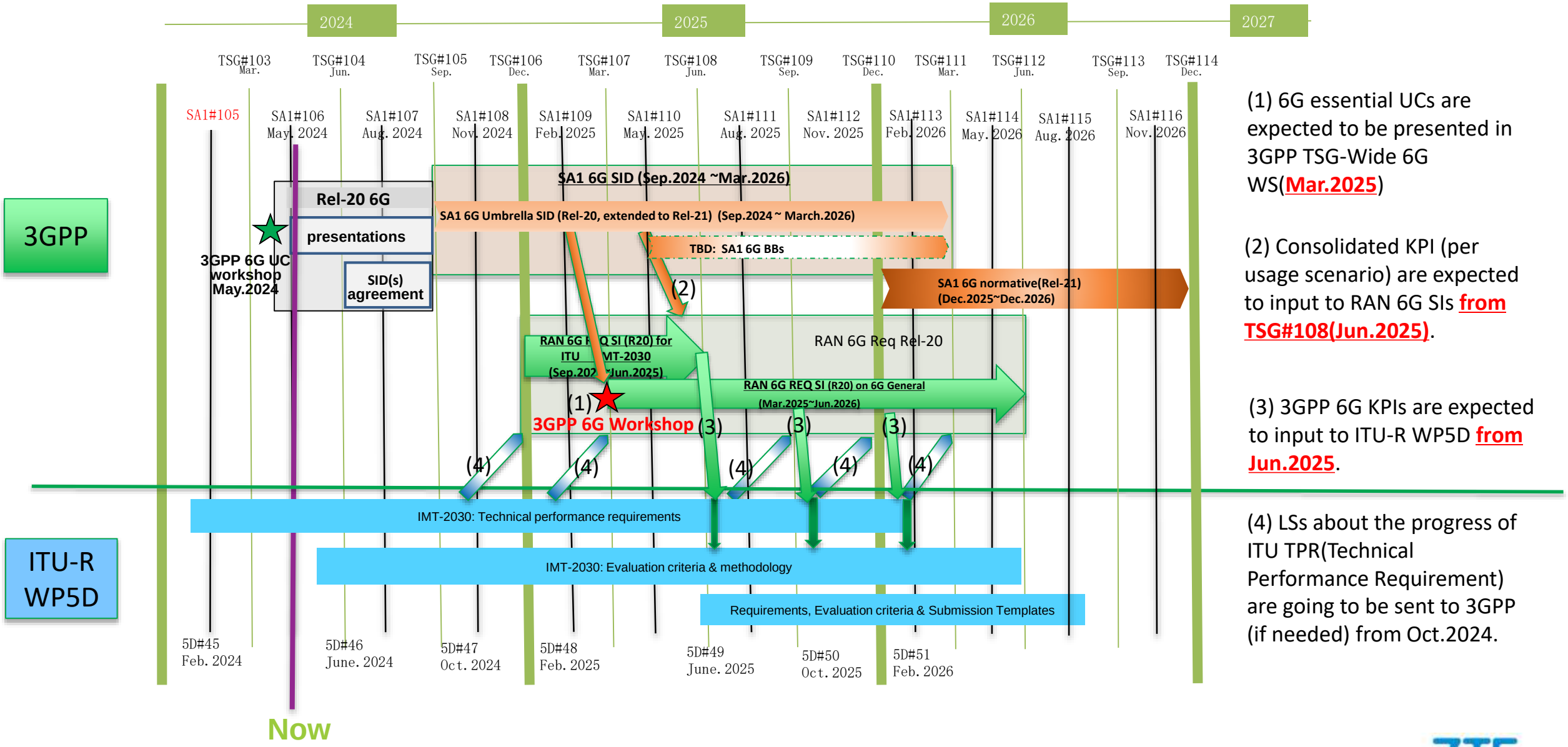
Other new UCs…

Massive Communication

© ZTE All rights reserved

ZTE

Proposal: Timeline of 3GPP SA1 6G study



(1) 6G essential UCs are expected to be presented in 3GPP TSG-Wide 6G WS(**Mar.2025**)

(2) Consolidated KPI (per usage scenario) are expected to input to RAN 6G SIs **from TSG#108(Jun.2025)**.

(3) 3GPP 6G KPIs are expected to input to ITU-R WP5D **from Jun.2025**.

(4) LSs about the progress of ITU TPR(Technical Performance Requirement) are going to be sent to 3GPP (if needed) from Oct.2024.

© ZTE All rights reserved

Thanks a lot!

Leading 5G Innovations