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| **Abstract:** | This TD contains a consolidated version of the various proposals concerning the ToR for an ITU-T Focus Group on metaverse (FG-MV). Rev.1 corrects an oversight regarding the parent group, which was already decided at the opening TSAG plenary as TSAG. |

The following TSAG input documents with specific proposals for the ToR were used to prepare the ToR text in the attachment: [C3](https://www.itu.int/md/T22-TSAG-C-0002) [ETRI, Korea (Rep. of), KT, SK Telecom, Soonchunhyang University], [C9](https://www.itu.int/md/T22-TSAG-C-0009) [Japan Industrial Imaging Association, KDDI, Keio University, Mitsubishi Electric, NICT (Japan), NEC, OKI, Rakuten Mobile, SoftBank, Waseda University], [C10](https://www.itu.int/md/T22-TSAG-C-0010) [Canada], [C13](https://www.itu.int/md/T22-TSAG-C-0013) [Germany, Netherlands, Romania, Sweden, UK], [TD094](https://www.itu.int/md/T22-TSAG-221212-TD-GEN-0094) [ITU-T SG17], [TD037](https://www.itu.int/md/T22-TSAG-221212-TD-GEN-0037) [ITU-T SG16], [TD106](https://www.itu.int/md/T22-TSAG-221212-TD-GEN-0106) [ITU-T SG16], [TD109](https://www.itu.int/md/T22-TSAG-221212-TD-GEN-0109) [ITU-T SG5], [TD129](https://www.itu.int/md/T22-TSAG-221212-TD-GEN-0129) [ITU-T SG13], [TD132](https://www.itu.int/md/T22-TSAG-221212-TD-GEN-0132) [SPCG Chair].

Attachment:
Draft ToR of the Focus Group on metaverse (FG-metaverse)

1 Rationale and Scope

Recently metaverse has become one of disruptive innovations with great potential to change our economy, culture and society fundamentally. In this nascent phase of the metaverse, the industry has not formed a unified norm for defining or understanding it. The metaverse concept, though still in its infancy, has attracted considerable public attention. Bloomberg analysts have suggested the total market value of the metaverse as the world's "next big technology platform" could reach USD 800 billion by 2024, doubling its value in 2020.

The Focus Group provides a platform to share findings and for dialogue, identifies stakeholders with whom ITU-T could collaborate, and can enable the inclusion of non-members to contribute to the technical pre-standardization work. This will enrich the pre-standardization work with the relevant and related use cases to be taken in consideration for its pre-standardization work..

Focus Group will consider the following aspects for pre-standardization work:

– Definitions, concepts, vision, use cases and eco-system for the metaverse

– Fundamental underlying technologies,

– Characteristics and requirements for the metaverse

– Technical framework for the metaverse

– Security and PII protection aspects related to the metaverse

– Means for building confidence and trust for the metaverse

– Interoperability for the metaverse

– Application interfaces for the metaverse

– Guidance to use related technologies in the metaverse

– Gap analysis between other standardization bodies

– Enablers for persons with disabilities to use metaverse

– Metaverse as a mean for accessing services by persons with disabilities.

2 Objectives of the Focus Group

The objective of the Focus Group is to support pre-standardisation activities for an open unified study of the metaverse eco-system. To this end, the FG aims to create an open platform for collaboration and sharing of expertise, knowledge and best practices that lead towards international harmonisation and standardization on the definition of metaverse, and its multimedia and security and PII protection related services and applications, which is essential to building the global trust, secure and unified understanding required for the metaverse.

More precisely, the objectives include:

a) To build a community of experts and practitioners, working on concepts and implementation of metaverse, which is now fragmented. ITU can use its convening power to bring them together and unify the concepts, develop common understandings, so that it be benefiting not only the ITU standardization scene but also the global community. To establish liaisons and relationships and as well as other organisations which could contribute to the pre-standardisation activities for services and applications for metaverse;

b) To identify and study the enabling technologies and key tasks within metaverse systems for standardization purpose, including multimedia, security, protection of personally identifiable information, quality, digital assets (digital currencies), IoT, accessibility and digital twin;

c) To produce a gap analysis of standardisation, fill the gaps identified, and open studies for the metaverse to facilitate interoperability;

d) To study, gather information and develop a standards research plan related to metaverse;

e) To stimulate international collaboration, to share knowledge and best practices, and to explore the opportunities and challenges of interoperable metaverse platform;

f) To identify and study the role of multimedia in optimizing networks to be ready for metaverse types of networks in terms of bandwidth, interoperability, and latency.

g) To identify and study how to secure metaverse using security technologies and technical or organizational procedures.

h) To provide a platform to share findings and for dialogue on policy and regulatory implications of metaverse between enterprises working on metaverse applications and regulators from various industrial/economic sectors.

i) To identify stakeholders with whom ITU-T could collaborate further on and potential collective action and specific next steps.

3 Specific tasks and deliverables

a) to develop technical reports covering technical research and standardization analysis related to metaverse, which may lead to new work items for ITU-T Recommendations;

b) to develop deliverables related to definitions, use cases, requirements, guidelines, best practices related to the metaverse, also considering inclusive design principles to meet accessibility requirements;

c) to develop deliverables related to security (including identity management and strong authentication), PII protection and building confidence related to the metaverse, considering security by design principles to meet security requirements during the life cycle of services related to metaverse;

c) to organize and participate in workshops to share and collect knowledge and experience from a wide range of expert community and stakeholders in the incipient metaverse domain;

d) to develop work methods to enable timely and seamless transposition of FG's deliverables into ITU-T processes of standardization leading to possible ITU-T Recommendations or other texts;

e) to provide a final report and report on the FG deliverables to the parent group.

4 Relationships

The Focus Group will work through co-located meetings with relevant ITU-T SGs when possible. It will establish and maintain task-appropriate collaboration arrangements with other partners as well.

The Focus Group will collaborate with:

– ITU-T SG 16 on multimedia aspects of the metaverse

o ITU-T Q1/16, Q11/16, Q13/16, Q21/16, and Q27/16 on multimedia

o ITU-T Q5/16 on artificial intelligence-enabled multimedia applications

o ITU-T Q6/16 for visual, audio and signal coding

o ITU-T Q8/16 for immersive live experience systems and services

o ITU-T Q12/16 on intelligent visual systems and services

o ITU-T Q23/16 on digital culture-related systems and services

o ITU-T Q22/16 for multimedia aspects of distributed ledger technologies and e-services

o ITU-T Q24/16 for human factors for intelligent user interfaces and services

o ITU-T Q26/16 for accessibility to multimedia systems and services

o ITU-T Q28/16 for multimedia framework for digital health applications

– ITU-T SG5 on the environmental sustainability aspect

o ITU-T Q6/5 for environmental efficiency of digital technologies

o ITU-T Q7/5 for circular economy

o ITU-T Q9/5 for assessment methodologies of digital technologies

o ITU-T Q11/5 for smart energy solutions

– ITU-T SG9 on broadband cable and TV aspects of the metaverse

o ITU-T Q1/9 for contribution, primary distribution and secondary distribution

o ITU-T Q9/9 for the advanced service over integrated broadband cable networks

o ITU-T Q11/9 for accessibility to cable systems and services

– ITU-T SG12 on quality-of-service aspects of the metaverse

o ITU-T Q7/12 for the subjective assessment of audiovisual quality interactions

o ITU-T Q10/12 for the subjective methods of XR communication

o ITU-T Q13/12 for the subjective methods of VR and the objective assessment of design.

o ITU-T Q14/12 for the multimedia quality assessment of packet-based video services

o ITU-T Q19/12 for the objective and subjective methods for audiovisual quality

o ITU-T Q15/12 for the conversational speech and audio-visual quality

– ITU-T SG13 on cloud computing aspects of the metaverse

o ITU-T Q17/13 for cloud requirement

o ITU-T Q18/13 for cloud architecture

o ITU-T Q19/13 for cloud management

o ITU-T Q22/13 for emerging network technologies

o ITU-T SG13 ad-hoc group on “Future ICT Evolution for emerging Web Era”

– ITU-T SG17 on security aspects of the metaverse

[o ITU-T Q4/17, Q7/17, Q10/17, Q11/17, Q14/17 and Q17/17 on security, PII protection, and identity management]

[o ITU-T Q2/17 for the security architecture and network security

o ITU-T Q3/17 for the telecommunication information security management and services

o ITU-T Q4/17 for the cybersecurity and countering spam

o ITU-T Q7/17 for the secure application services

o ITU-T Q8/17 for the cloud computing and big data security

o ITU-T Q14/17 for the distributed ledger technology security]

– ITU-T SG20 on the digital twin aspects of the metaverse

o ITU-T Q1/20 for Interoperability and interworking of IoT and SC&C applications and services

Furthermore, the Focus Group will collaborate (as required) with other relevant groups and entities, in accordance with Recommendation ITU-T A.7. These include governments, non-governmental organizations (NGOs), policy makers, SDOs, industry forums and consortia, companies, academic institutions, research institutions and other relevant organizations, inter alia:

* Metaverse Standardization Forum (MSF)
* ISO and IEC Joint Standardization Evaluation Group (JSEG)
* W3C (Open) Metaverse Interoperability (OMI) Community Group
* IEEE-SA Metaverse Standards Committee

5 Structure

The Focus Group may establish sub-groups if needed.

6 Parent group

The parent group of the Focus Group is TSAG.

7 Leadership

See clause 2.3 of Recommendation ITU-T A.7.

8 Participation

See clause 3 of Recommendation ITU-T A.7. A list of participants will be maintained for reference purposes and reported to the parent group.

9 Administrative support

See clause 5 of Recommendation ITU-T A.7.

10 General financing

See clauses 4 and 10.2 of Recommendation ITU-T A.7.

11 Meetings

The Focus Group will conduct regular meetings. The frequency and locations of meetings will be determined by the Focus Group management. The overall meetings plan will be announced after the approval of the terms of reference. The Focus Group will use remote collaboration tools to the maximum extent.

The meeting dates will be announced by electronic means (e.g., e-mail and website, etc.) at least four weeks in advance.

12 Technical contributions

See clause 8 of Recommendation ITU-T A.7.

13 Working language

The working language is English.

14 Approval of deliverables

Approval of deliverables shall be taken by consensus.

15 Working guidelines

Working procedures shall follow the procedures of Rapporteur meetings. No additional working guidelines are defined.

16 Progress reports

See clause 11 of Recommendation ITU-T A.7.

17 Announcement of Focus Group formation

The formation of the Focus Group will be announced via TSB Circular to all ITU membership, via the ITU-T News log, press releases and other means, including communication with the other involved organizations.

18 Milestones and duration of the Focus Group

The Focus Group lifetime is set for one year from the first meeting with possibility of extension.

19 Patent policy

See clause 9 of Recommendation ITU-T A.7.

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