

Focus Group on metaverse: Exploring metaverse standardization

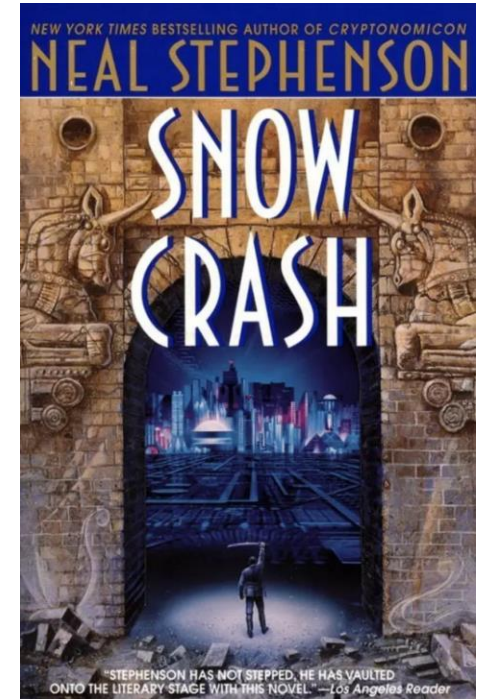
Shin-Gak KANG
Chairman, ITU Focus Group on metaverse

September 2023



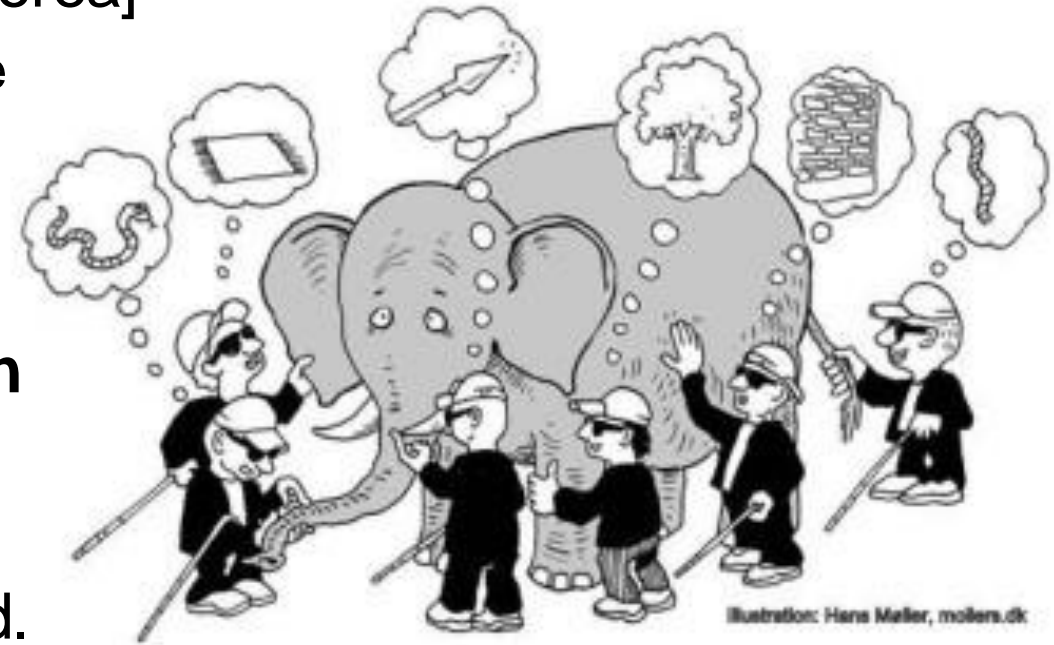
What is the Metaverse ?

- The term "metaverse" **originated in the 1992** science fiction novel Snow Crash as a **portmanteau of "meta" and "universe."**
- [ASF] “The convergence of 1) virtually enhanced physical reality and 2) physically persistent virtual space.” It is a fusion of both.
 - ASF: Acceleration Studies Foundation, USA
- [Facebook] “The ‘metaverse’ is **a set of virtual spaces** where you can create and explore with other people who aren’t in the same physical space as you.”
- [New York Times] Metaverse is a massive, operable **Real-time rendering 3D virtual world networks**, which can bring synchronous and persistent experience for unlimited number of users, while it also has data continuity, include identity, history, rights, communication, payment, etc.



What is the Metaverse ?

- Other extended view on the Metaverse [in Korea]
 - In a **space** where the virtual and reality converge
 - People or things **interact** with each other
 - **Creating** economic, social, and cultural **values**
- There's **no universally accepted definition** of a real “metaverse.”
- The **term has grown** beyond Stephenson's 1992 vision of an immersive 3D virtual world.
- **Terms and Definitions** related to metaverse
 - One of the very important issues being discussed by various SDOs.



The importance of standards in the metaverse

Interoperability

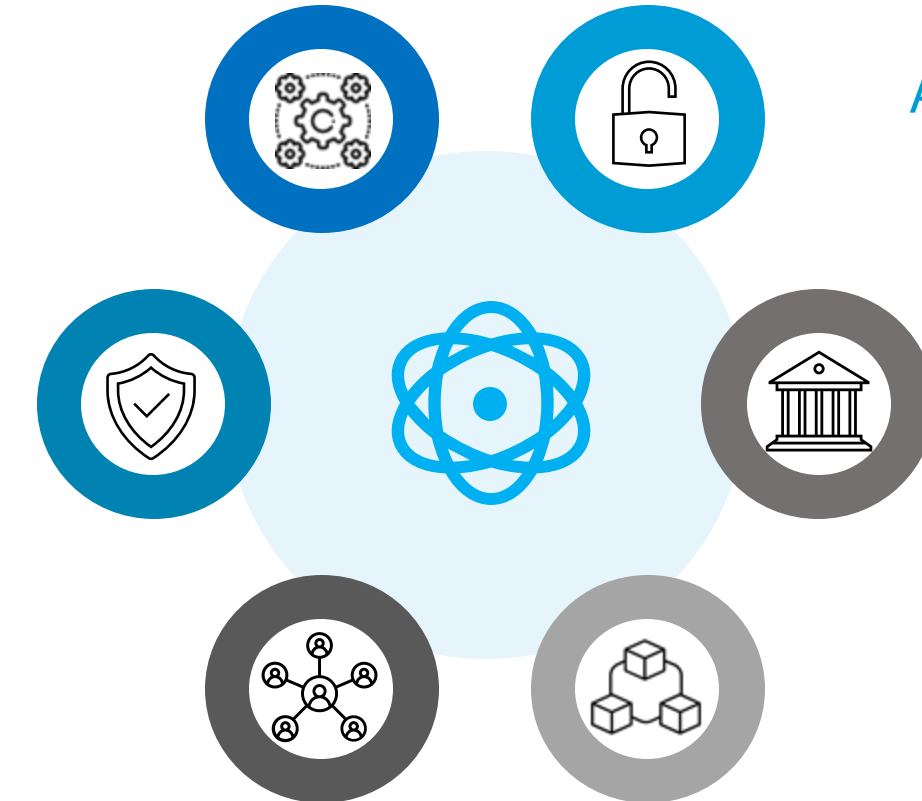
Ensure compatibility and ease of communication for different technologies and platform

Privacy and security

Support a safe and secure metaverse

User experience

Provide consistent user experiences regardless of location or device



Accessibility and sustainability

Ensure that the metaverse is open, sustainable and accessible to all

Regulation and governance

Ease concerns about ethical, legal, and social aspects of the metaverse

Economic and competition

Facilitate global reach and market expansion

Efficient combination of various technologies

Ensure that technologies can work together seamlessly in the metaverse

ITU Focus Group on metaverse (FG-MV)

Unanimously established by TSAG in December 2022;

- (ITU) 193 Member States as well as more than 900 companies, research institutes and International Organizations



Open to non-ITU members;

Free of charge;

Physical meetings with remote participation & E-meetings



Diverse management team:

- Government, Industry, Academia, UN agencies
- Africa, Asia, Europe, Americas



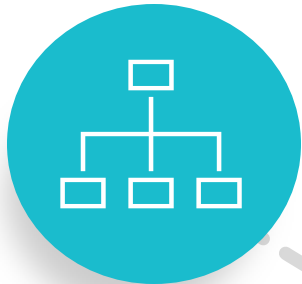
50+ planned deliverables (06 July 2023),
including Technical Specifications & Reports



More than 500 experts
involved in the FG-MV

The 1st FG-MV meeting broke the record! (8-9 March 2023, Riyadh. Kingdom of Saudi Arabia)

Most attended ITU Focus Group meeting with over 650 participants!



FG-MV Management Team

Government, industry,
academia, UN agencies, Asia,
Africa, Europe, the Americas



FG-MV Structure established

8 Working Groups and
10 Task Groups



Work Plan agreed

18 new work items were
created and are moving fast!

ITU FG-MV Management Team

Chairman

Shin-Gak Kang
(ETRI, Rep. of Korea)

Vice-Chairmen

Andrey Perez
(Brazil)

Hideo Imanaka
(NICT, Japan)

Per Fröjdh
(Ericsson, Sweden)

Shane He
(Nokia, Finland)

Vincent Affleck
(United Kingdom)

Yuntao Wang
(China)

**Leonidas
Anthopoulos**
(Greece)

Manuel Barreiro
(Aston Group,
Mexico)

Cristina Martinez
(European
Commission)

Stella Kipsaita
(Communications
Authority, Kenya)

Natalia Bayona
(UNWTO)

FG-MV Initial Structure (approved at the 1st FG-MV meeting)

Task Groups (TGs) can be formed under either FG or WG for intensive discussions and developing deliverables on specific sub-areas or topics. [FG's decision]

TG Collaboration
(Closed during the 2nd FG-MV meeting)

WG1 General

- TG on terminology & definitions
- TG on gap analysis

WG2 Applications & services

- TG on media coding

WG3 Architecture & infrastructure

WG4 Virtual/real world integration

WG5 Interoperability

WG6 Security, data & personally identifiable information (PII) protection

- TG – child online protection
- TG – cybersecurity
- TG – building confidence and security in the metaverse
- TG – issues in trustworthiness related to the metaverse

WG7 Economic, regulatory & competition aspects

WG8 Sustainability, accessibility & inclusion

- TG – sustainability
- TG – accessibility & inclusion

Outcome of the 2nd FG-MV meeting (4-6 July 2023, Shanghai, China)

The **1st time** that a deliverable has been approved at the 2nd Focus Group meeting.

- Technical Report, “**Exploring the metaverse: opportunities and challenges**”

The Focus Group meeting, was attended by **more than 2,000 participants** on-site and online, which broke the record set by the first FG-MV meeting.

FG-MV encouraged ITU to organize a **UN Metaverse Week** in 2024.

FG-MV encouraged ITU to establish a **Digital Coalition on CitiVerse**.

- TSB was requested to follow up on these actions and to report back to the next FG-MV meeting.

39 new work items have been approved.

- Currently, total 57 on-going work items

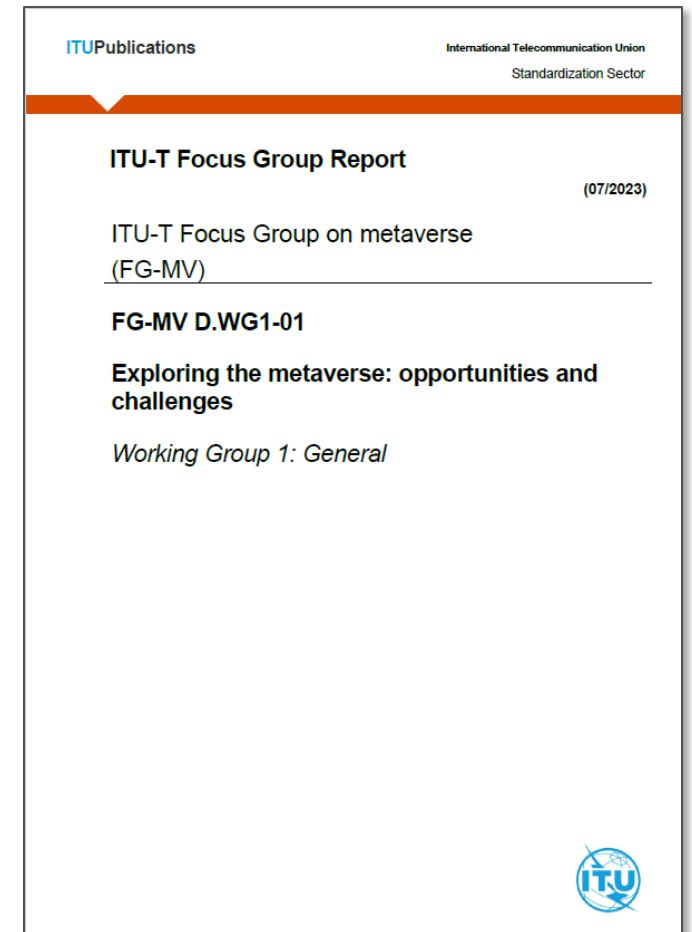
1st FG-MV Technical Report

“Exploring the metaverse: opportunities and challenges”

Unanimously approved at the 2nd FG-MV meeting

- Opportunities and challenges
- The role of international standards
- The potential for the metaverse in the achievement of the United Nations Sustainable Development Goals.

Download at: <https://www.itu.int/pub/T-FG-MV-2023>



1 new Working Group and 10 new Task Groups have been approved (at the 2nd FG-MV meeting)

Working Groups	New Task Groups
WG1 - General	• TG on implications for people in the metaverse
	• TG on pre-standardization for the CitiVerse
WG2 - Applications & Services	• TG on Generative Artificial Intelligence in the metaverse
	• TG on Embodied Artificial Intelligence for metaverse
	• TG on medical metaverse
	• TG on metaverse tourism
	• TG on power metaverse
WG8 - Sustainability, Accessibility & Inclusion	• TG on Industrial metaverse
	• TG-design criteria and metrics with incentives for sustainable metaverse
WG9 - Collaboration	• TG-metaverse social safety
	• TG-gap analysis

FG-MV latest structure (approved at the 2nd FG-MV meeting)



WORKING GROUP 1

General



WORKING GROUP 2

Applications & Services



WORKING GROUP 3

Architecture & Infrastructure



WORKING GROUP 4

Virtual/Real World Integration



WORKING GROUP 5

Interoperability



WORKING GROUP 6

Security, Data & PII Protection



WORKING GROUP 7

Economic, Regulatory & Competition Aspects



WORKING GROUP 8

Sustainability, Accessibility & Inclusion



WORKING GROUP 9

Collaboration

FG-MV Workplan (WG1, WG2)

WGs	List of planned deliverables
<p>WG1: General</p>	<ul style="list-style-type: none"> • Overview of metaverse • Vocabulary for Metaverse • Principles and Processes for Building Concepts and Definitions Related to metaverse • An analysis of definitions • Pre-standardisation roadmap for an inclusive and sustainable CitiVerse • Near-term and Long-term Implications of People in the metaverse
<p>WG2: Applications & Services</p>	<ul style="list-style-type: none"> • Overview of the application requirements of metaverse on emergency management in chemical industrial parks • Use case and requirements for virtual and real fusion coding in metaverse application • Use cases and requirements on immersive audio coding for metaverse applications and services • Framework and requirements for the construction of 3D manual driven digital human application system based on image recognition algorithm • Use cases and requirements for Generative Artificial Intelligence in metaverse applications and services • Requirements and framework for extended reality content creation system based on artificial intelligence • Guidelines and use cases on tourism in the metaverse • Use case and requirements for remote amusement service with automatic movable robot (AMR) with multimedia functions on metaverse • Medical metaverse: Use-case Relevant to Medical Training and Hospital • Power metaverse: Use Cases Relevant to Grid Side and User Side • Guidelines for metaverse application in energy power

FG-MV Workplan (WG3, WG4, WG5)

WGs	List of planned deliverables
WG3: Architecture & Infrastructure	<ul style="list-style-type: none">• Requirements and challenge associated with network infrastructure to enable the metaverse• Requirements and functional architecture of IoT-based metaverse service• Reference architecture of industrial metaverse• Setting the framework for an ICT architecture to enable the metaverse
WG4: Virtual/Real World Integration	<ul style="list-style-type: none">• Use cases and requirements for the metaverse based on digital twins enabling integration of virtual and physical worlds• Reference model for the metaverse based on a digital twin enabling integration of virtual and physical worlds
WG5: Interoperability	<ul style="list-style-type: none">• Use cases and requirements for metaverse cross-platform interoperability• Interoperability and migration of identity of things across metaverses• High-level interoperability architecture for cross-platform metaverse

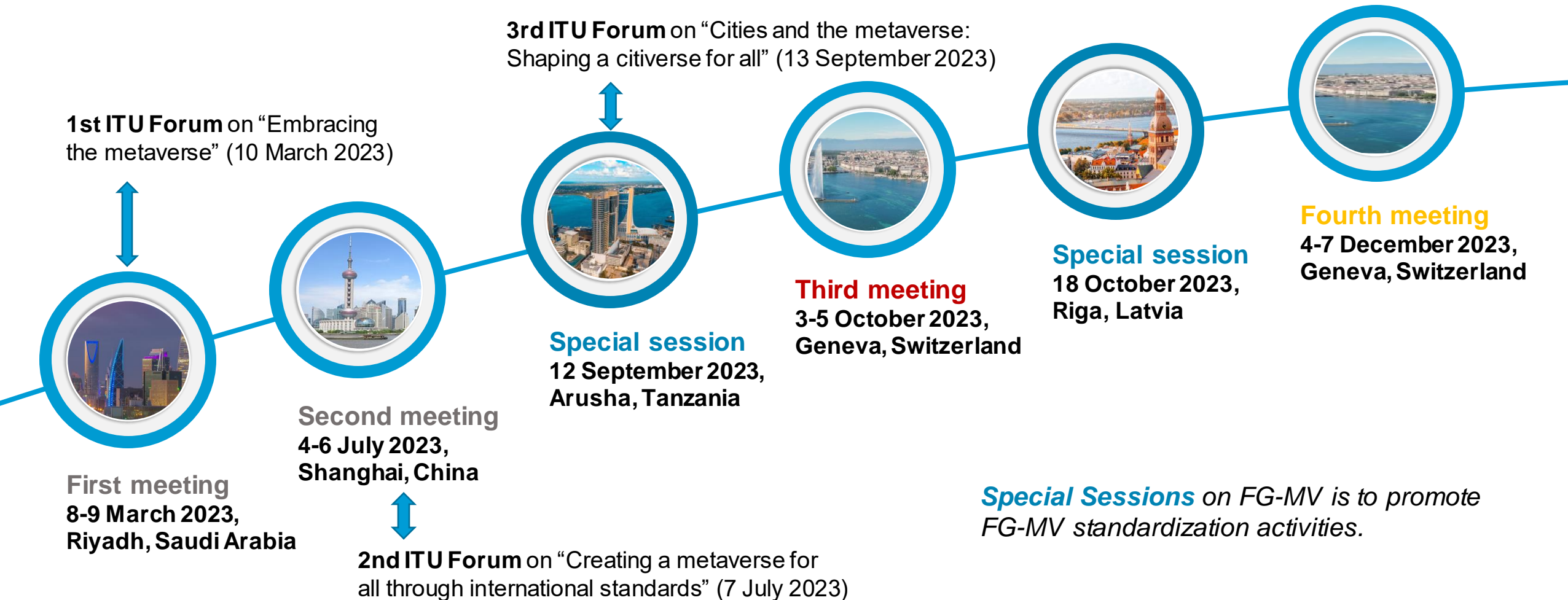
FG-MV Workplan (WG6)

WGs	List of planned deliverables
WG6: Security, Data & PII Protection	<ul style="list-style-type: none">• Requirements and framework for digital identity system• Data management and security for things across metaverses• Security Framework for the Metaverse Architecture• Identity management Security guidelines in the metaverse• Guidelines for security management of using metaverse applications• Asset management Security guidelines in the Metaverse• Guidelines for consideration of ethical issues in standards that build confidence and security in the metaverse• Embedding safety standards and the user control of Personally Identifiable Information (PII) in the development of the metaverse• Risks, threats and potential harms in the metaverse• Responsible use of AI for child protection in the metaverse• Children age verification in the metaverse• Extended reality and children: key issues and recommendations for government stakeholders, including policymakers and regulators, and technology companies• Trustworthy Metaverse• The framework of building a trustworthy digital human

FG-MV Workplan (WG7, WG8, WG9)

WGs	List of planned deliverables
WG7: Economic, regulatory & competition aspects	<ul style="list-style-type: none"> • Economic Value Creation and Competition in metaverse • Regulatory and economic aspects in the metaverse: Data protection-related • Policy and regulation challenges of the metaverse
WG8: Sustainability, Accessibility & Inclusion	<ul style="list-style-type: none"> • Guidance on green and low carbon development of Metaverse • Accessibility requirements for metaverse services supporting IoT • Interpreting in the metaverse • Guidelines to assess inclusion and accessibility in metaverse standards development • Accessible products and services in the metaverse • Accessibility for a Sustainable Metaverse • Guidance on how to build a metaverse for all • Use of metaverse as a mitigation strategy for people with cognitive development difficulties in flood regions • Requirements and design criteria for sustainable metaverse systems • Incentive strategies to boost high-impact sustainable metaverse applications • Metrics and indicators to drive the design of sustainable metaverse applications • Metaverse Social Safety: Mitigating Harassment in the Metaverse
WG9: Collaboration	<ul style="list-style-type: none"> • Gap analysis on metaverse standardization

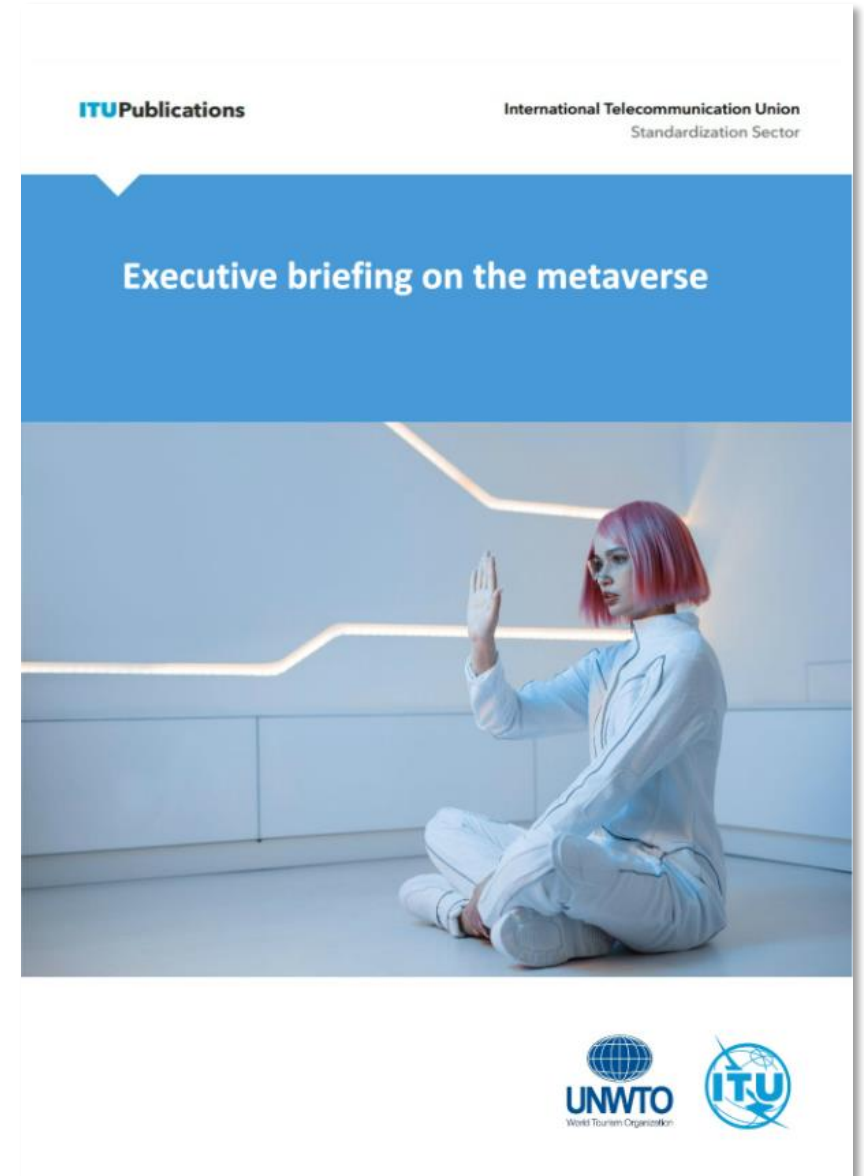
FG-MV roadmap



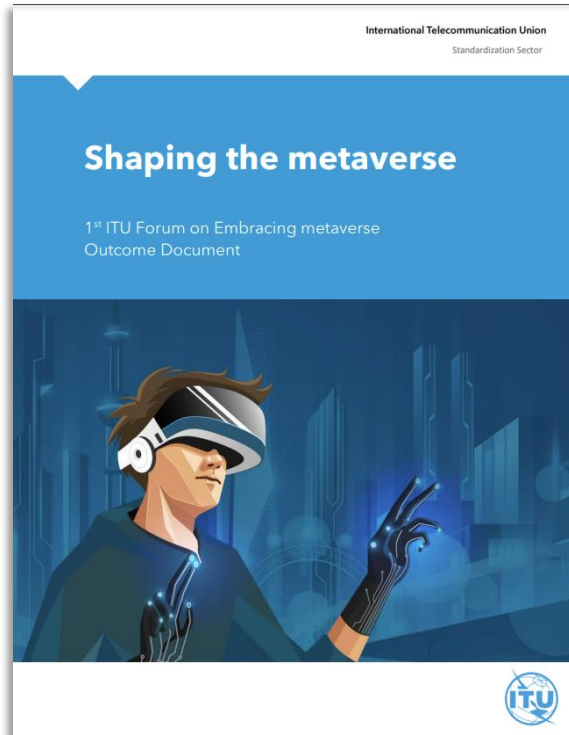
Executive briefing on metaverse

- Co-published by ITU and UNWTO
- Contributed and reviewed by more than **40 experts** of the FG-MV management team from **Africa, Asia, the Americas** and **Europe** with a background in **industry, government, academia**, and **UN agencies**

*To download the executive briefing, please visit:
www.itu.int/metaverse*



1st ITU Forum on metaverse



Outcome document

650+
Participants in person
and online

30+
speakers from
governments, industries,
UN agencies, SDOs



7 March 2023, Riyadh, Kingdom of Saudi Arabia

2nd ITU Forum on Creating a metaverse for all through international standards



7 July 2023, Shanghai, China

15,000+

Participants in person and online

Showcase of metaverse applications

Exhibition on ITU Focus Group on metaverse



Outcome document

A series of physical and virtual ITU events on metaverse



4 May 2023, Virtually

UN STI Side event on
**Leveraging the metaverse in
cities to achieve the SDGs**



**8 June 2023,
Sharm El-Sheikh, Egypt**

GSR Session on **Harnessing
the Opportunities of the
Metaverse**



13 July 2023, Virtually

UN HLPF side event on **Exploring the
metaverse: A New World of Possibilities
for Cities and Communities**

Upcoming events on metaverse



**13 September 2023,
Arusha, Tanzania**

3rd ITU Forum on “**Cities and the metaverse: Shaping a citiverse for all**”



2 October 2023, Virtually

Webinar on “**Fashioning**” the metaverse to accelerate digital transformation: what has gone out of style



**18 October 2023,
Riga, Latvia**

2nd Special session on **ITU Focus Group on metaverse**

And more...

Join us! – Let's shape the future of the metaverse!



FG-MV

Recently, metaverse has become one disruptive area of innovation with great potential to change our economy, way of living and communicating and society. In this nascent phase of the metaverse, the industry has not converged towards common terms and definitions. The metaverse concept has attracted considerable public attention.

The ITU-T Focus Group on metaverse was established under TSAG on 16 December 2022. The group will analyse the technical requirements of the metaverse to identify fundamental enabling technologies in areas from multimedia and network optimization to digital currencies, Internet of Things, digital twins, and environmental sustainability.

It will also provide a collaboration platform for dialogue, for identifying stakeholders with whom ITU-T could collaborate, and for enabling the inclusion of non-members to contribute to the technical pre-standardization work. The Focus Group work will be enriched with the identification of relevant use cases.

The **FG-MV Workplan** including the FG-MV structure, the list of deliverables along with information concerning the designated Chairmen and Vice-Chairmen for the Working Groups (WGs) and Task Groups (TGs) is available [here](#).

Participation in the Focus Group is **open to any interested stakeholder willing to contribute** — to sign up, please [join our mailing list!](#)

Parent Group: TSAG

- ▶ [Terms of reference](#)
- ▶ [A.7- Focus groups: Establishment and working procedures](#)
- ▶ [Press release](#)
- ▶ [FG-MV Chairman's video message](#)

Meetings and related events

2nd FG-MV Meeting Shanghai, China, 4-6 July 2023

- ▶ [Announcement](#)
- ▶ [Registration](#)
- ▶ [Draft Agenda \(rev. 3\)](#)
- ▶ [Remote participation platform](#)
- ▶ [Documents](#)
- ▶ [Practical information](#)
- ▶ [Venue: Zhangjiang Science Hall](#)
- ▶ [Deadlines:](#)

- ▶ [Request for visa support letters: 20 June 2023](#)
[Request form](#) and necessary documents to be sent to jiajun.yao@sh-aia.com
- ▶ [Contribution: 27 June 2023](#)
To be submitted by email at tsbfgmv@itu.int
- ▶ [Pre-registration: 29 June 2023](#)

- ▶ The FG-MV meeting will be followed by the **2nd ITU Forum on "Creating a metaverse for all through international standards"** that will take place on 7 July 2023.

The report of the first meeting of the Focus Group on metaverse (FG-MV) (Riyadh, 8–9 March 2023) is available [here](#).

UPCOMING E-MEETINGS, MEETINGS AND RELATED EVENTS

- ▶ [Working Group and Task Group meetings](#)
- ▶ [The list of Working Group and Task Group meetings and e-meetings is available \[here\]\(#\).](#)
- ▶ [Planned Focus Group on metaverse \(FG-MV\) Meetings & Special Sessions of the FG-MV](#)

- ▶ [Press release](#)
- ▶ [FG-MV Chairman's video message](#)

MANAGEMENT TEAM AND CONTACTS

Chairman:

- ▶ Shin-Gak Kang (ETRI, Rep. of Korea)

Vice-Chairmen:

- ▶ Andrey Perez (Brazil)
- ▶ Hideo Imanaka (NICT, Japan)
- ▶ Per Fröjdh (Ericsson, Sweden)
- ▶ Shane He (Nokia, Finland)
- ▶ Vincent Affleck (United Kingdom)
- ▶ Yuntao Wang (China)
- ▶ Leonidas Anthopoulos (University of Thessaly, Greece)
- ▶ Manuel Barreiro (Aston Group, Mexico)
- ▶ Cristina Martinez (European Commission)
- ▶ Stella Kipsaita (Communications Authority, Kenya)
- ▶ Natalia Bayona (World Tourism Organization (UNWTO))

Secretariat:

- ▶ Cristina Bueti, Counsellor
- ▶ Yining Zhao, Junior Communication Officer
- ▶ Chiara Co, Secretariat
- ▶ Bohan Leng, Intern
- ▶ Email: tsbfgmv@itu.int

WORKING GROUPS AND TASK GROUPS

The Focus Group on metaverse (FG-MV) has established 8 working groups that are tasked to carry out a series of deliverables.

- ▶ [Task Group - collaboration](#)
Mailing list: fgmv-tg-collaboration@lists.itu.int

Working Groups (WGs)

- ▶ [WG1 - General](#)
Mailing list: fgmv-wg1@lists.itu.int
- ▶ [WG2 - Applications & Services](#)
Mailing list: fgmv-wg2@lists.itu.int
- ▶ [WG3 - Architecture & Infrastructure](#)
Mailing list: fgmv-wg3@lists.itu.int
- ▶ [WG4 - Virtual/Real World Integration](#)
Mailing list: fgmv-wg4@lists.itu.int
- ▶ [WG5 - Interoperability](#)
Mailing list: fgmv-wg5@lists.itu.int
- ▶ [WG6 - Security, Data & Personally identifiable information \(PII\) Protection](#)
Mailing list: fgmv-wg6@lists.itu.int
- ▶ [WG7 - Economic, regulatory & competition aspects](#)
Mailing list: fgmv-wg7@lists.itu.int
- ▶ [WG8 - Sustainability, Accessibility & Inclusion](#)
Mailing list: fgmv-wg8@lists.itu.int

Planned Focus Group on metaverse (FG-MV) Meetings & Special Sessions of the FG-MV

- ▶ 2nd FG-MV meeting (Shanghai, 4-6 July 2023)
- ▶ 2nd ITU Forum on Creating a metaverse for all through international standards (Shanghai, 7 July 2023)
- ▶ Special session on FG-MV (Arusha, 12 September 2023)
- ▶ 3rd FG-MV meeting (Geneva, 3-5 October 2023)
- ▶ Special session on FG-MV (Riga, 18 October 2023)

Past events

- ▶ [1st ITU Forum on Embracing the metaverse](#) (Riyadh, Kingdom of Saudi Arabia, 7 March 2023)

TEMPLATES AND MAILING LISTS

Collaboration site:

- ▶ Documents are available at the [Collaboration site](#) (A free ITU Account is required to access relevant documentation and participate).

Mailing lists:

- ▶ [List of FG-MV, Working Groups and Task Groups mailing lists](#)
- ▶ Please subscribe to the FG-MV mailing list (fgmv@lists.itu.int) to receive news, updates, invitations, and access the e-meetings:
- ▶ Sign up for a (free) ITU account, if you do not already have one.
- ▶ Account holders [log in here](#): select

Metaverse is coming, Are you ready?



Email

tsbfgmv@itu.int



Website

www.itu.int/metaverse

