



Metaverse
STANDARDS FORUM™

International Cooperation for an Interoperable Metaverse

Shanghai, July 2023

CAICT 中国信通院



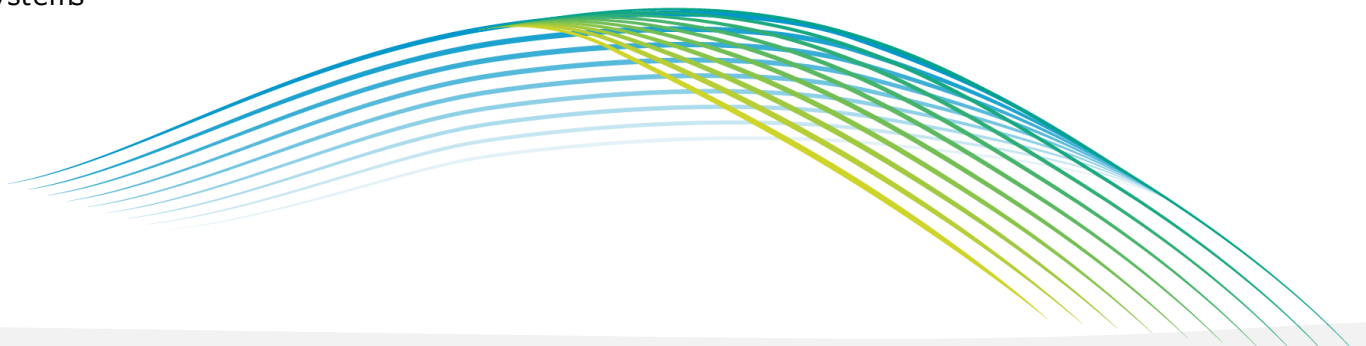
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Metaverse will be Built on Interoperability Standards

**The metaverse combines the connectivity of the Web
with the immersiveness of Spatial Computing**
through enabling multiple disruptive technologies to work together
(AI, GPU, XR, Web3, 5G+)



Building bridges between applications to scale beyond a series of disconnected silos



Depends on
Interoperability



Evolving a platform that is open and inclusive for all – an immersive evolution of the web



Pervasive metaverse interoperability will need a constellation of open standards ...
... involving 100s of standards organizations



A unique venue for cooperation between standards organizations and with the wider industry

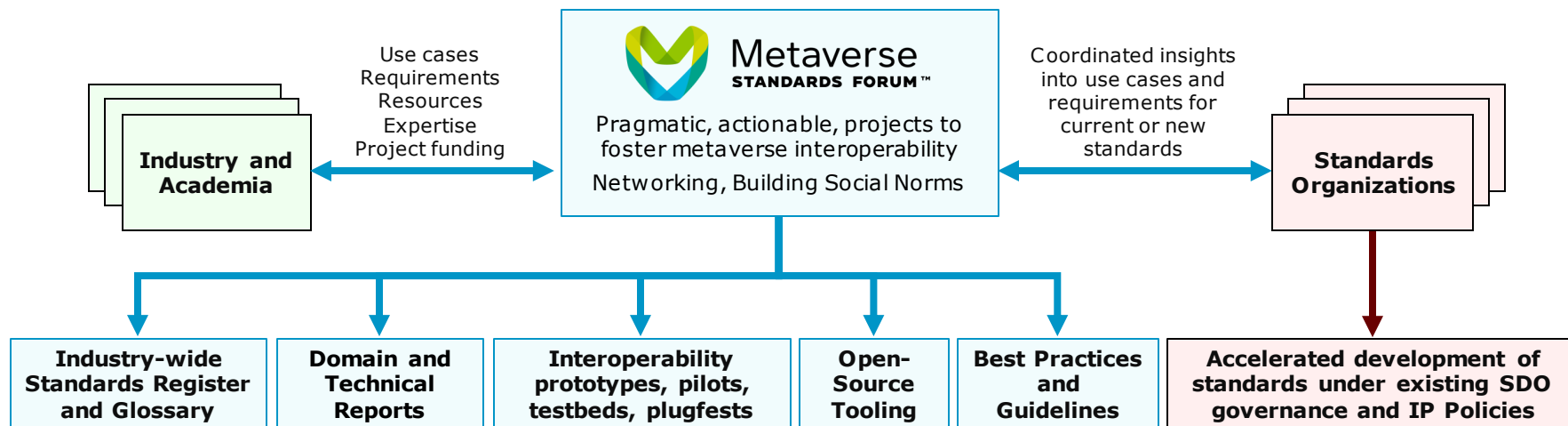


**Metaverse
STANDARDS FORUM™**



Better Standards for the Metaverse – Sooner!

- The Forum aims to assist and **accelerate development of metaverse standards by its Members**
 - The Forum does not create standards itself!
- A neutral and welcoming venue for all standards organizations and companies to cooperate
 - Open to any organization, free membership tiers, no NDA, no patent licensing obligations
- Pragmatic, active and agile – strongly connected to industry activities
 - Multiple Forum meetings happening almost daily



Khronos Bootstrapped the Metaverse Standards Forum

- The metaverse has driven significantly increased interest in interoperability standards!
- Khronos recognized the need for broad cooperation to avoid duplication, eliminate gaps, and gather use cases and requirements to inform and assist standardization activities
- Khronos successfully executed the transition to incorporate the Forum as an independent consortium in April 2023

KHRONOS
GROUP

Khronos launches the Forum in bootstrap mode to quickly start cooperative work while determining industry interest
37 Founding Companies including Meta, Microsoft, NVIDIA, Epic, Unity, Adobe, Autodesk

June 2022

 **Metaverse**
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The Forum grows to over 2400 Member organizations

Multiple Domain Working Groups working to improve interoperability one project at a time

End 2022



The Forum incorporates with unanimous agreement from its membership

Independent, self-funded, non-profit industry consortium

The Forum's mission is to create a wavefront of business opportunities through fostering interoperability 'brick-by-brick' on the road to the metaverse

April 2023



2500 Global Members and Counting...

Wide diversity of organizations, including...

SDOs

Khronos, W3C, Open Geospatial Consortium, IEEE, OMI, ASWF, Spatial Web Foundation, VRM Consortium, XRSI, OMG, Open AR Cloud, OMA3 ...

Platforms

Meta, Microsoft, Sony, Google, Baidu, Huawei, General Motors, RedHat, Siemens, Tencent, Mozilla, Paramount ...

Tools and Engines

Epic, Unity, Adobe, Autodesk, Otoy, Maxon, Cesium, ESRI, Blackshark.ai, Croquet, Laminar, Niantic, Ready Player Me, DGG, Manticore ...

XR

HTC, Magic Leap, Nreal, Panasonic, Tobii, zSpace ...

Hardware

NVIDIA, Intel, AMD, HP, Acer, Dell, Qualcomm, Samsung, Sony, MediaTek, Oppo, Lenovo, ZTE, LG ...

Wireless and Networking

China Telecom, Deutsche Telekom, T-Mobile, Verizon, NTT, AT&T, Telefónica, Juniper, Comcast ...

3D Commerce

Alibaba, Ivanon, Avataar, CLO, Browzwear, IKEA, VNTANA, Metaverse Fashion Council, Target, Wayfair ...

Universities and Institutes

Stanford, John Hopkins, Yale (XRP), Queens University Belfast, University Salford, New York Institute of Technology, APMG ...

Advocacy

XRSI, A REA, XR Association, VRAR Association, XR Guild, Web3 Marketing Association, International Virtual Reality Healthcare, Swiss Institute for Disruptive Innovation, IOT Consortium, Metaverse Japan, RIAA ...

Global participation enables gathering diverse requirements and expertise
Strong industry involvement drives pragmatic projects and deliverables
Broad membership ensures continuity of progress despite 'hype cycles'



Organizing for Effective Forum Action

1. Gather standardization topics of interest from all members

Actionable interoperability problems and opportunities

Over 200 topics suggested and counting, for example..

Database of metaverse standards
Taking 3D assets between worlds
Asset LODs
gITF / USD interoperability
Avatar customization / animation
3D Apparel and Fashion
Cloth Simulation
Metaverse traversal
Geospatial ontologies
Geospatial streaming
Decentralized User ID
Ethical framework
User privacy
Child safety
Payment frameworks
Etc. etc..



2. Organize Topics into Domains

Member voting on where the Forum can best add industry value

Member-prioritized Domain List

Privacy, Safety, Security, Inclusion
Interoperable 3D Assets
Real/Virtual World Integration
Identity (was User Identity)
Avatars and Apparel
Teaching, Education, Certification
Metaverse Standards Register
XR and UI
Metaverse Definition
Networking
Geospatial
Payments and Economy
Runtimes and Object Model
Governance and Advocacy
Video Broadcasting and Meetings
Forum Outreach
Tooling and Creators
Gaming
Health and Medical
Performance and Scalability
Business Analytics



3. Create Domain Groups

To execute projects to create public work products

Any Forum member can propose and participate in Domain Groups

Domain and technical reports
Use case and requirements recommendations
Best practices and guidelines
Pilots, testbeds and plugfests
Interoperability data, insights and visibility
Open-source tooling
Etc.

Forum Domain Groups focus on pragmatic, focused projects to create a wavefront of short-term business opportunities



Forum Domain Group Pipeline

Metaverse Standards Register

Publicly available database mapping the landscape of metaverse-relevant standardization activities

gITF / USD 3D Asset Interoperability (visuals, behaviors)

Cooperation between USD and gITF to increase synergy and reduce duplication of effort, gaps, fragmentation and industry confusion

Asset Management (web3, protection, digital rights)

Digital rights, protection, portability, access, availability

Real/Virtual World Integration (digital twins, IOT)

Constructs to describe and integrate the physical world and created representations

Network Requirements and Capabilities to Support Metaverse Applications

Industry requirements for seamlessly transitioning traffic on multiple wireline and wireless technologies for deploying metaverse applications at scale

Interoperable Avatars

Cross-platform avatars and characters for film, gaming, fashion and social platforms

Digital Fashion/Wearables

Clothing (including layering), shoes, hats, accessories

Privacy, Cybersecurity & Identity

Recommendations for responsible innovation that mitigates human and societal harm from objective and subjective privacy risks – including cybersecurity and identity risk management

Technical Interoperability and End-User Troubleshooting

Enabling end-users to ensure reliable metaverse experiences

3D Web Interoperability

Enable the broadest possible interoperability of Metaverse Content using the Web

Ownership and Identity Accessibility

Best Practices for Living and Working in the Metaverse

Academia & Research and the Metaverse

Ethical principles for the metaverse and their implementation

The Industrial Metaverse

Forum Domain Groups are driven by broad consensus to meet industry's most urgent needs

There are typically multiple Domain Group meetings being scheduled every day

Key
Working Groups
Exploratory Groups
Exploratory Group Proposals

Forum Domain Group activities

<https://metaverse-standards.org/domain-groups/>



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Continuously Evolving Pipeline

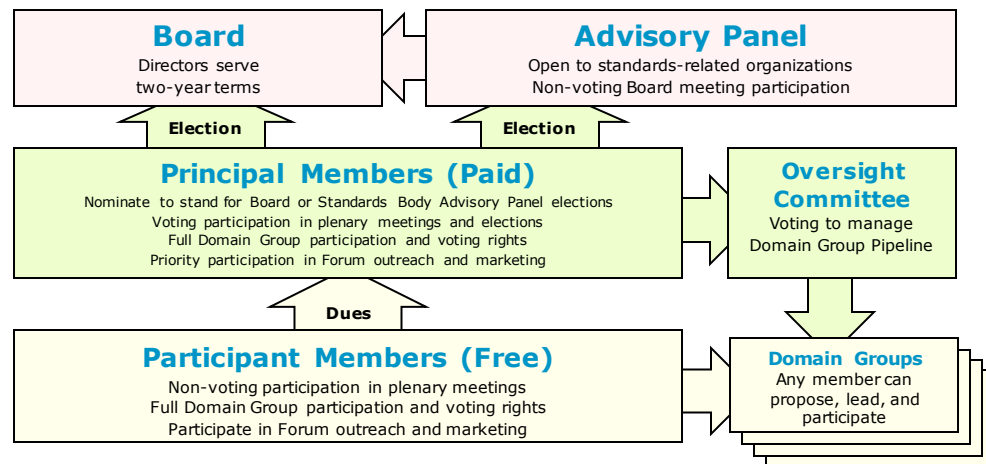


Forum Organization

- No NDA or IPR Framework is needed as the Forum is not a standards organization
 - All Forum-generated materials are made publicly available
- Participant Membership is free
 - Access to all Domain Group activities
- Principal Members oversee Forum priorities and operations
 - Participate in Oversight Committee and elected Forum Board of Directors
 - Membership fees from \$50 to \$10K
 - Principal dues are waived for standards-related organizations and non-profits



The Metaverse Standards Forum is an independent non-profit 501(c)(6) industry consortium that welcomes global participation



Metaverse Reality vs. Hype

The Hype

You will need to plug into a VR headset to access the metaverse

We will live our lives isolated in a dystopian VR metaverse!

The Metaverse will be a wild west of crypto currencies and NFT scams

The Metaverse market will be worth *Trillions* of dollars \$ in the next few years

The Metaverse is dead!

The Reality

Although VR will deliver some of the most immersive experiences and AR could *eventually* replace mobile phones, there will be many ways to use metaverse applications - including phones, tablets and PCs

We will choose to use the metaverse when and if it is engaging, insightful and educational – and perhaps more productively than the average of 3 hours a day we on average spend watching TV today

Web3 is a young area of innovation – and is still evolving how to enable systems of decentralized trust for ID, reputation and economic transactions that will be essential to the metaverse

As with many transformative technologies, its evolution will take longer than we think, but its impact will likely be larger than we first imagined

Many over-associate 'the metaverse' with their favorite technology such as VR or NFTs, or the quarter-by-quarter actions of individual companies

Cooperative endeavors such as standards organizations and the Metaverse Standards Forum can provide the thread of continuity for industry forward progress as technologies, platforms and market positions – and hype cycles - swirl and evolve



A Unique Cooperative Opportunity

Broad global participation in the Forum provides a unique opportunity for metaverse standards cooperation, coordination and leadership for Forum members to accelerate their objectives

Any company or organization is welcome to join the Forum!
<https://metaverse-standards.org/>

Comprehensive, international gathering of industry requirements and expertise in Forum Working Groups

Any Forum member can propose, lead, contribute to, participate in, or monitor Domain Working Groups

Wide visibility and adoption of Forum initiatives and deliverables



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The Forum values the opportunity to cooperate with the ITU to help advance the metaverse for all through international standards!

