



Metaverse  
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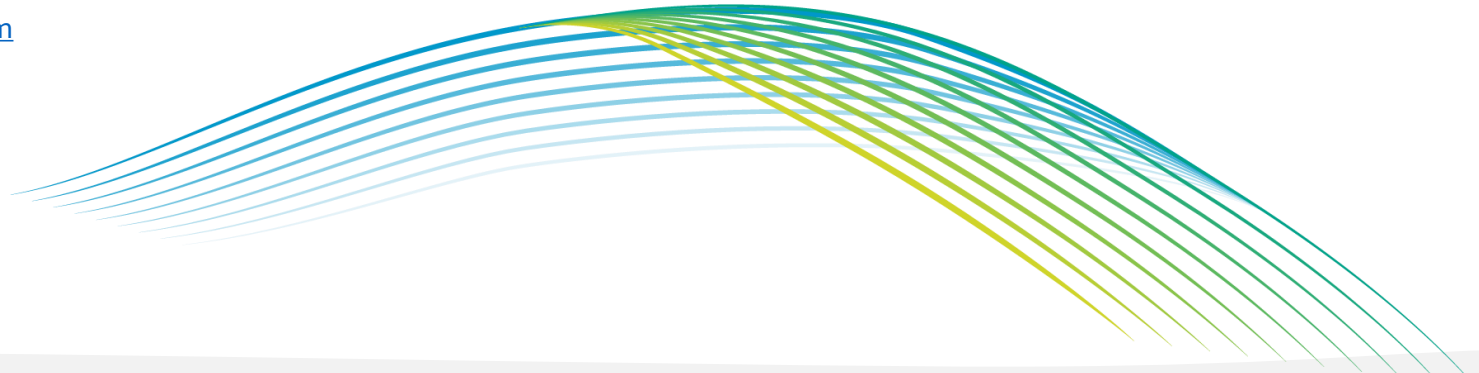
# International Cooperation for an Interoperable Metaverse

**WAIC, Shanghai, July 2023**



**Neil Trevett**

Metaverse Standards Forum, President  
NVIDIA, VP Developer Ecosystems  
Khronos, President  
[ntrevett@nvidia.com](mailto:ntrevett@nvidia.com)



# 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

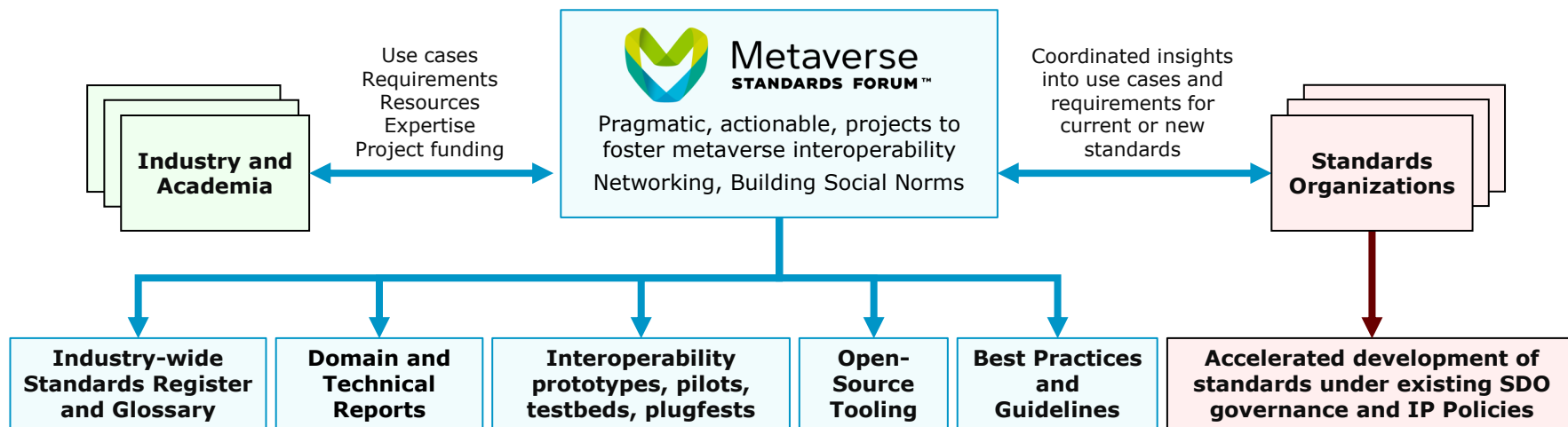


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# Effective Standards for the Metaverse – Sooner!

- 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 is driving 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**

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The Forum grows to over 2500 Member organizations

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

**End 2022**

**FAST COMPANY**

Fast Company Gives Metaverse Standards Forum Honorable Mention in 'World Changing Idea' Awards!

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**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...

### Standards Organizations

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, Lamina1, 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, Alvanon, 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 Technology, APMG ...

### Advocacy

XRSI, AREA, 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 gathers diverse requirements and expertise



## Strong industry involvement drives pragmatic projects and deliverables



# 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

**Execute projects to create public work products**

**Focus on pragmatic focused projects to create a wavefront of immediate business opportunities**

Video presentation libraries  
Domain and technical reports  
Use case & requirements matrices  
Best practices and guidelines  
Pilots, testbeds and plugfests  
Test assets, interoperability testing data and insights  
Open-source tooling  
Etc.



# Forum Domain Group Pipeline

Continuously Evolving 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

Any Forum member can propose and participate in Domain Groups

There are often multiple Domain Group meetings each day

Key  
Working Groups  
Exploratory Groups  
Exploratory Group Proposals

Forum Domain Group activities

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



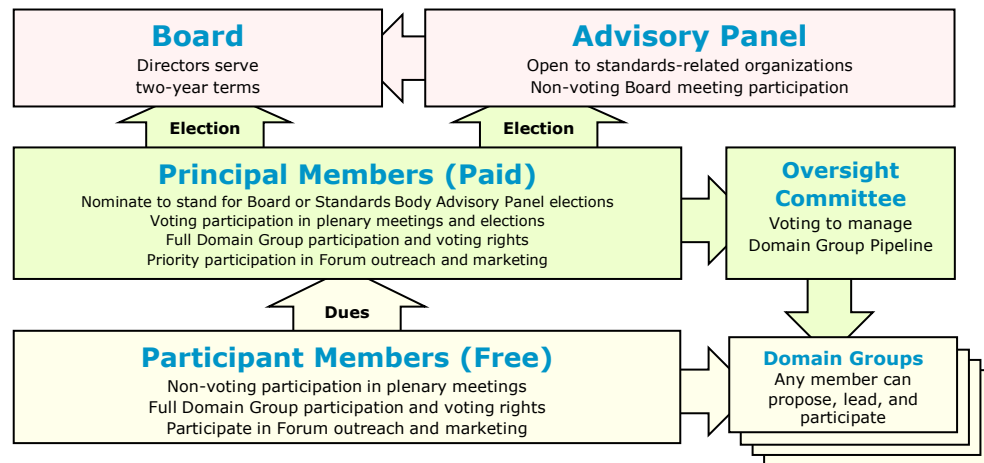
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# Forum Organization

- 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**

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

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

**Wide visibility and adoption for initiatives and deliverables of the Forum and its members**



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**Any company or organization is welcome to join the Forum!**

**<https://metaverse-standards.org/>**

