

# WEB3D CONSORTIUM



## NEWSLETTER

WEB3D.ORG  
WEBX3D.ORG

DEVELOPING ROYALTY FREE ISO CERTIFIED 3D GRAPHICS SPECIFICATIONS FOR THE WEB



### SPRING 2023

YEAR IN REVIEW  
THE METAVERSE  
WEB3D 2023  
MEMBER PROJECTS  
2022 OUTREACH

### X3D4

New Features  
HTML5 Integration  
PBR and glTF Support!  
Encodings  
Language Bindings

### ENGAGE!

WEB3D 2023  
WORKING GROUPS  
WEB3D WEBINARS

## X3D: WEB-READY 3D GRAPHICS

### YEAR IN REVIEW

The [Web3D Consortium](#) had another successful year extending interactive 3D on the Web and the Metaverse. From new partnerships and a proposal with [Metaverse Standards Forum](#) which would potentially enable the broadest possible interoperability of Metaverse Content using the Web.

[Web3D position paper](#) explores the history of the 'Metaverse' that has led us to our current state, a workable definition of the term 'Metaverse', and providing a vision for its sustainable, cooperative construction into the future.

The year ended with [X3D4](#) in final ISO review, providing close support for HTML5, Khronos glTF Physically Based Rendering (PBR), and Web Audio API. X3D4 is Web ready and supports many applications.

As we mature and expand our technology portfolio, it is clear that the extensibility built into our standard enables us to adapt and evolve to emerging opportunities. This is especially important now, when the walled gardens of the Metaverse are being built anew. 3D Enterprises require durability, portability, and interoperability of their digital assets. Our open X3D Standard continues to meet and exceed requirements across vertical industries and often with open-source implementations.

The Web3D Consortium [liaisons](#) with other Standards Development Organizations (SDOs)

ensure that the X3D Graphics Standards are co-evolving. Web3D would not be a leader in open interactive 3D graphics standards without these contributions as we bring new dimensions for 3D Web graphics. Several successful outreach [events](#), bolstered by a community of innovators who have mapped the future of interactive, real-time 3D Graphics helped us outreach to the international 3D Community.

Web3D members and working groups continue to evolve X3D. Work on collaboration, user experience, networking, and semantic search are all building on interacting with HTML5 and extending 3D capabilities. We thank our members, who set the agenda and priorities and helps us develop and evolve the solid foundation of [Web3D Standards](#). [Join our community](#) of innovators and drive the evolution of Web3D graphics!

### The 'X' is for eXtensible!



**X3D - The Next Generation VRML:** Web3D Consortium is a nonprofit organization that develops and maintains the X3D, VRML, and HAnim standards. X3D (Extensible 3D) is open, royalty-free and ISO ratified. X3D originated from VRML and is available in XML, Compressed Binary, and classic VRML formats.

X3D provides a presentation layer (a scene graph) to display animated, interactive 3D models from multiple sources and domains into web applications. The presentation pipeline is supported by X3D4 to make native authoring and use of X3D models fully integrated with HTML5. X3D is Web ready and supports wide range of applications. X3D runs on all platforms including laptops, tablets, phones, immersive headsets, and large-scale CAVES.

# FROM 3D TECHNOLOGY INNOVATION TO THE METAVERSE

## MEMBER HIGHLIGHT

### 3D WEB INTEROPERABILITY

Our proposal to the Metaverse Standards Forum to enable an open Metaverse, with robust patterns for interoperable content authoring and delivery workflows across the Web. The proposal offers opportunity to find the right mix of Standards and practices to suit the needs of the next Metaverse and flourish on a strong foundation of Visual graphics, Interface capabilities, Web Architecture and Compression/streaming technologies. All are welcome to join and participate in these discussions as we build on this proposal and bring more value to the Metaverse!

### X3D4 - IN FINAL ISO REVIEW

The X3D4 Architecture Specification is Web ready, used in many 3D applications, highly mature, implemented, functionally complete, and undergoing final editorial review for International Standards Organization (ISO). X3D4 provides close support for the HTML5 Recommendation, Khronos glTF Physically Based Rendering (PBR), and Web Audio API.

### X3D ENCODINGS & APIS

Web3D Consortium Members and the X3D Working Group have recently

Blender X3D importer and exporter fixed! Thanks to our professional members, Vince Marchetti and Andreas Plesch, ImageTextures and paths align to the new BRDF model!

### ADVOCATING 3D WEB STANDARDS

The Web3D Consortium and its members are actively engaging in a number of initiatives to increase the awareness and adoption of the mature X3D4 and HANIM Standards. Activity has accelerated in the last few month with regular member meetings across :

- IEEE 3D Body Processing
- Metaverse-Standards Forum
- IIIF
- CS3DP (new open access book out on 3D data creation and creation!)

### NEW TO X3D?: WEBX3D.ORG



### LEARN X3D!

#### Web3D Webinar Series:

Full videos online!

[www.web3d.org/webinars](http://www.web3d.org/webinars)

- Build and Deploy X3D content
- Generate 3D models and assets
- Compose 3D scenes
- Optimize content for Web publication.
- X3D browsers and authoring tools



The INCITS Technical Excellence award is presented to Dr. Richard Puk in recognition of his significant technical contributions to the development of graphics standards within Web3D Consortium, INCITS, ANSI, and ISO for over 40 years. Congratulations to Dick on this recognition.

## MEMBER PROJECTS



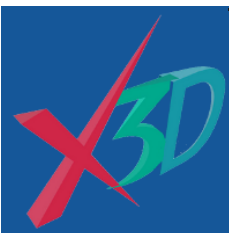
VIRGINIA TECH:  
IMMERSIVE  
CARTOGRAPHY  
SCIENTIFIC  
VISUALIZATION  
CONSTRUCTION  
SAFETY



NIH 3D PRINT  
EXCHANGE: NEW  
RELEASE

Join us at [Web3D 2023](#), Oct 9-11, 2023 in San Sebastian, Spain + Online. It's our 28th Anniversary! with steady growth of capabilities for 3D graphics on the World Wide Web. Having such a strong research and application community along with industry support helps us drive new 3D capabilities and Standards! [web3d.siggraph.org](http://web3d.siggraph.org)

The Web3D Consortium and 3D Web Interoperability Working Group is presenting at SIGGRAPH 2023 Conference, August 6-10, 2023.

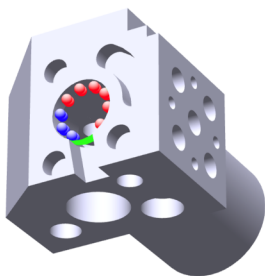


The Portable  
Inter-Operable  
Durable  
ISO Standard

## WEB3D WORKING GROUP HIGHLIGHTS

**X3D:** X3D Version 4 specification (X3D4) is submitted to ISO for publication. Major upgrades include support for glTF Physically Based Rendering, Humanoid Animation HAnim2, Web Audio API and MIDI2. New features include HTML5 integration, Projective Texture Mapping (PTM), improved linking, security review, and many others.

**DESIGN, PRINTING & SCANNING:** The Design Printing and Scanning Working Group is developing workflows to combine STEP geometry of product design with inspection results of machined parts transmitted in QIF (Quality Information Framework) files. The 3D scene rendered below is a visualization of touch-probe measurements of the location and diameter of a machined hole in the part. The colored spheres represent probe position measurements, with color of the spheres representing whether deviation of the measured hole profile from the design profile. 3D Visualization of touch -probe.



**GEOSPATIAL:** The Geospatial Working Group exists to promote spatial data use within X3D via open architectures. It is currently reviewing the geospatial component with respect to X3D4. Additional work is underway to modernize workflows and systems to support glTF and a CesiumTiles-type approach for dealing with large and complex scenes.

**WEB USER EXPERIENCE:** The Web3D User Experience (Web3DUX) Working Group's mission is to establish best practices and standardized capabilities that support rich user experiences (UX), intuitive navigation, and effective interaction techniques for a variety of 3D Web technologies. The Web3DUX working group develops and demonstrates best practices for X3D support of rich user experiences using a variety of Web3D technologies and content-delivery platforms.

**HERITAGE:** The team at Virginia Tech has secured a large digitization grant to create a Web3D library from their world-class insect collection. X3D examples and Metadata schemes continue to be developed in the museum and library communities. Digitize your history with X3D - it stands the test of time!!

**MEDICAL:** New member-driven Standard extensions to the Volume rendering Component are in the X3D4 pipeline and now ImageTextureAtlas is implemented in both X3DDOM and X\_ITE. In addition, through our HL7 Liaison relationships, the Medical WG has developed several examples using X3D to visualize healthcare data. From the demographics and distribution of illness in a hospitable system to the test results of CPET exercises tests, X3D enables interactive 3D charting and dashboards registered to 3D data and clinical vocabularies..

**SEMANTIC WEB:** Our new Semantic Working Group's mission is to publish models to the Web using X3D in order to best gain Web interoperability and enable intelligent 3D applications, feature-based 3D model querying, and reasoning over 3D scenes. Align the X3D4 specification with other standards to further enable Digital Publishing with more effective indexing, search, comparison, and analysis of X3D models through the advanced use of metadata, shape geometry, etc and maximize interoperability with Semantic Web standards for greatest possible reuse and interoperability for Web integration for the Metaverse.

## X3D Community Challenge

### WEB3D 2023 CONFERENCE

28TH ANNIVERSARY  
SAN SEBASTIAN, SPAIN  
AND ONLINE  
9-11 OCTOBER 2023

THIS YEAR'S THEME,  
"TOWARDS  
INTERCONNECTIVITY OF  
METAVERSES"

EMPHASIZES THE  
INCREASING SCOPE  
AND IMPACT OF HIGH  
QUALITY 3D CONTENT  
OVER HIGH SPEED  
NETWORKS

LEARN AND SHARE WORK  
RELATED TO :

- WEB, MOBILE, IMMERSIVE
- METAVERSE
- 3D CONTENT CREATION
- 3D PRINTING
- 3D TOOLS
- CASE STUDIES AND APPLICATION ACROSS DOMAINS

WEB3D 2023:  
OUR 25TH ANNUAL  
ACM SIGGRAPH  
CONFERENCE !

## IMPACT-FULL MEMBER COMMUNITY

An international, non-profit, member-funded, industry standards development organization. Developing royalty-free ISO standards for web-based 3D graphics. Our standard, X3D (Extensible 3D), originated from VRML and is available in XML, Compressed Binary, and 'classic VRML' encoding formats. X3D is open, royalty-free, extensible, inter-operable, and runs on all platforms including desktops, tablets, and phones. X3D is Web ready and supports many applications. Our members are from business, academia, government and the military.

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# 2022 WEB3D INTERNATIONAL MEETINGS REVIEW



International

Impact

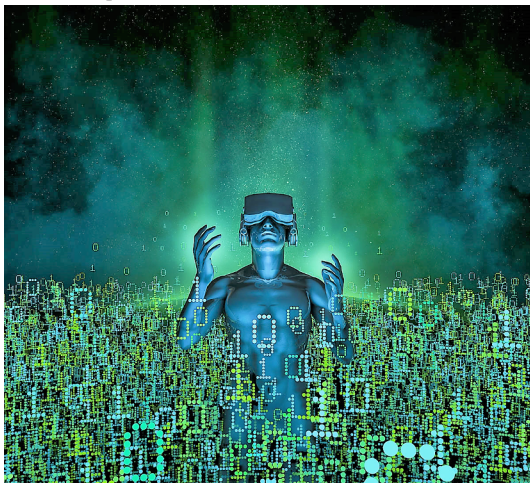
## WEB3D 2022

The [Web3D 2022 Conference](#) brought its signature top-quality Papers, Tutorials, Workshops, and a live showcase all into an action-packed three day conference. Best Papers were published in the Graphical Models Journal. We had inspiring Keynote Speakers: Marc Petit from Epic Games and Neil Trevett from Khronos. This is an annual ACM-sponsored event organized in cooperation with the Web3D Consortium. Papers are in the ACM Digital Library. [Web3D 2022 Summary report](#).

## VR HACKATHONS

Web3D Sponsored [VR Hackathons](#) are a great way to energize a local computer community and to bring people together who are interested in developing innovative VR/AR solutions, having fun, and helping to build the future of immersive technologies.

Bring one to your scene! Contact Us!



## SIGGRAPH 2022

[SIGGRAPH 2022](#) was in Vancouver, BC + online. Web3D's birds of the feather (BoF) session had discussion on how Web3D technology contributes to the Metaverse. From interactive Real-Time 3D, to Mixed Reality and Humanoid Animation, everything we do in 3D is significant to an open Metaverse. We showcased X3D Geospatial applications at the CARTO BOF. SIGGRAPH is only educational, but also provides direct opportunity to connect with experts and industry leaders.

## NOTABLE EVENTS

Web3D Consortium Members presented Extensible 3D innovations at a number of other high-profile international events:

- IEEE VR 2023 Workshop on Immersive Visualization Labs where Virginia Tech presented "25 Years so Far" entirely in X3D
- Key Speakers at 3DBody.Tech Conference 2022

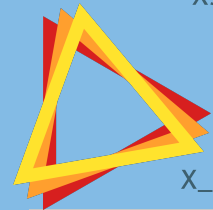


OPEN SOURCE  
ENGINES: X3D + GLTF

## x3dom

Instant 3D the HTML way!

X3DOM



X\_I\_T\_E



CASTLE  
GAME ENGINE

CASTLE GAME  
ENGINE

FREEWRL



## X3D IN THE WILD

This year was no exception as we find X3D being used in real applications and fields all around the world. Here are a few important highlights:

- US Navy
- V-Slam Unity-based X3D browser Open Sourced!
- Expanded Natural History library and UI: VNHM.de
- New examples from gemc/GEANT4 particle physics
- X3DOM supports DRACO compression