

Looking backwards, looking forwards: 30 years of Web3D Conference

People, Technology, Process, Progress

Web3D 2025 Conference Keynote Address
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Reprise
3 NOV 2025

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Looking Backwards and Looking Forwards

People matter most. Working together can change the world!

Technology Challenges. We achieve what we pursue.

Process provides predictable, proven paths for success.

Progress continues in many directions – get involved!

People matter most

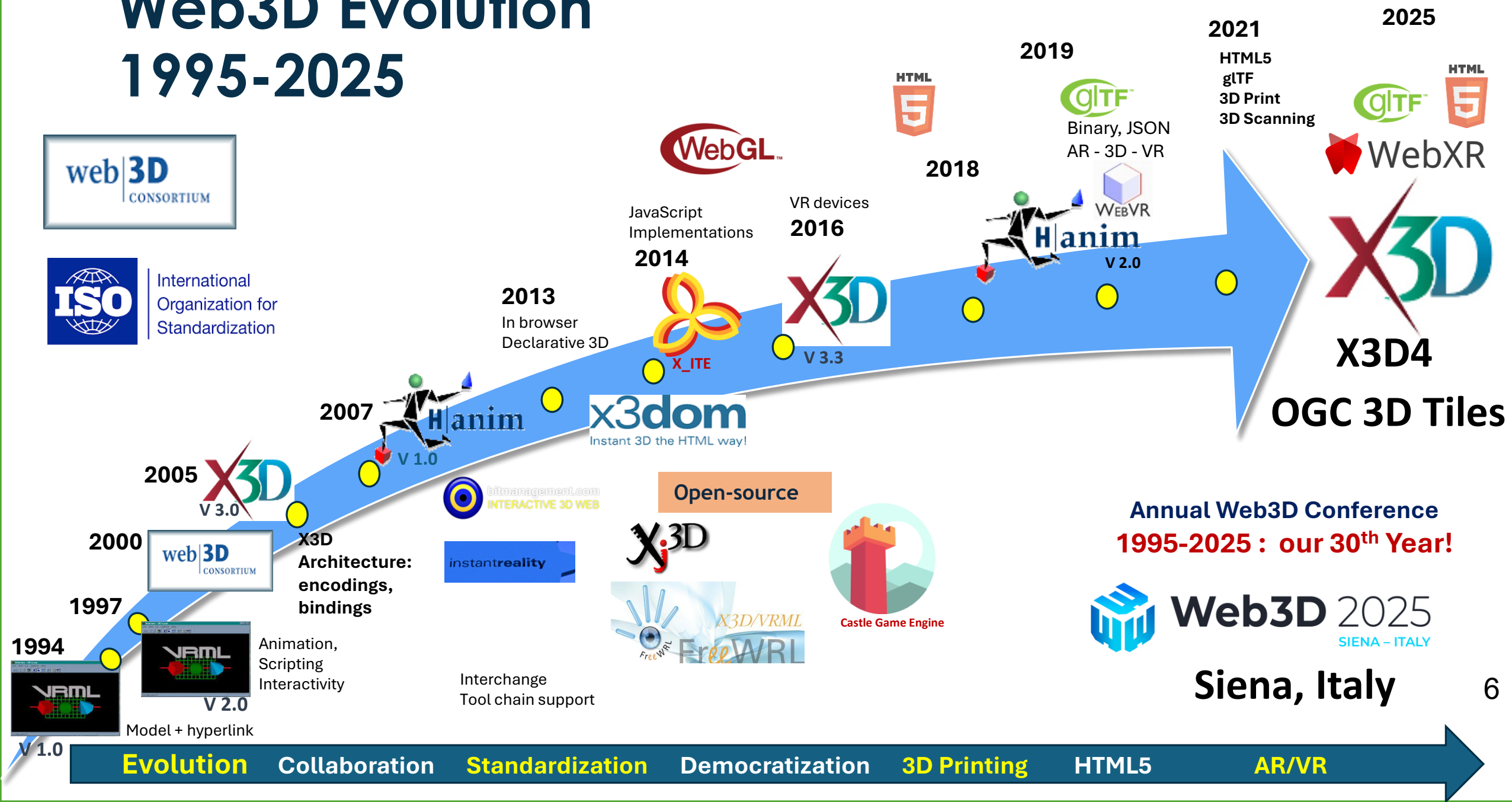
This means *you*, plus all of us gathered here, and everyone else too

Origin stories



- [SIGGRAPH](#) 1997, *The Edge*, Mark Pesce and Tony Parisi (see [Banana](#))
- Predecessor design [OpenInventor](#) by Rikk Carey and Paul Strauss at SGI
- Competition and VRML 1.0 discussion established our community
- First Web3D Conference, 1995 San Diego Supercomputer Center, *say what?*
- **Implement, evaluate...** hey wait a minute! We now need VRML 2.0 !!
- Community practitioners realized both VRML Architecture Group experts/gurus and International Standards Organization (ISO) rigor is needed to protect the specification: stable, interoperable, repeatable, well-defined and understandable, validate-able, etc. etc.
- Creating nonprofit Web3D Consortium established these basic principles, establishing agreed-upon process and business model
- People in that first room looked a lot like our room today at Web3D 2025...

Web3D Evolution 1995-2025



Web3D Conference, 30 years online

3D technologies for the World Wide Web



- The annual ACM Web3D Conference is a major event which unites researchers, developers, entrepreneurs, experimenters, artists and content creators in a dynamic learning environment. The conference also focuses on recent trends in interactive 3D graphics, information integration and usability in the wide range of Web3D applications from mobile devices to high-end immersive environments.
- Amazing cumulative contributions, supports our evolving challenges
- One step at a time... yes we can change the world! Again and again!
- dl.acm.org provides ongoing **availability, influence and impact**
- What paper will you work on and write for next year's conference?

Bibliometrics ©	Publication Years	Publication Count	Available for Download	Citation Count	Downloads (6 weeks)	Downloads (12 months)	Downloads (cumulative)	Average Citations per Article	Average Downloads per Article
	1995 - 2025	769	736	6,501	2,702	30,575	326,141	8	443

Technology provides capabilities,

Challenges offer motivation + goals

What do you want to accomplish?

How are you pursuing your goals?

Repeating pattern: what do **you** want to do?

- Hollywood story: visit any film set and ask each individual
 - Ask around: what do you do? (every single person has different job)
 - What do you really want to do?? (“I actually want to be director here”)
- Sharing goals with each other allows everyone to see both recurring problems and available solutions
 - Mutual benefit the occurs for working together
 - No single person or organization can learn these lessons by themselves
- It is important for you to understand what you want to accomplish
 - Warning sign: if hard to describe, maybe it is not yet well defined
 - Define success criteria + path forward... show demo... rinse lather repeat!

Figuring out “what does success look like?”

- Describe the “demo” that illustrates your problem and use case
 - What does it do? What value does it provide?
 - Demos the “experiment” in computer graphics, and can be *quantitatively cool*...
 - **It’s all about the data**, at every level of people, technology, process, progress...
 - Create feedback loops that reinforce progress towards your intended goals...
 - Fundamentally important: **How do you measure that?**
- Assess technology capabilities and currently evolving design space
 - Look at other examples, embrace gaps (either for focus or avoidance)
 - Implementation and evaluation establishes the larger feedback loop
- Assess potential impact: assume success, then what?
 - What new capabilities or solutions are expected to emerge
 - Make sense of details to describe the value proposition
 - Avoid fatal mistakes, someone will doubtless notice if errors occur

Process provides predictable and proven paths for success

A level and well-defined playing field encourages engagement and success

Surprisingly necessary for long-term innovation

Vignettes

“Who is in charge” syndrome leads to circular dialog, wasted efforts

W3C meeting during “browser wars” when Web3D first engaged

Clear rules allow planning for commitments, investments of time

Counter examples: oh so many different companies and their special shiny technologies have come and gone, now forgotten...

- Either obsolete, or out of money, or bought out to eliminate competition
- Where does that leave you, your 3D modeling work, and your career?

Gee whiz, standards development is so slow!

Something even slower than building standards: losing everything

- How many 3D company efforts have been lost? (lost count)
- How many 3D authors have any way to save their life's work?

Ernest Hemingway conversation with (formerly) wealthy friend:

Question. "How did you go bankrupt?"

Answer. "Two ways. Gradually, then suddenly."

Good news: we never go backwards because something in X3D broke

- Nothing succeeds like success!
- No blockers if progress is delayed or tandem efforts are independent

Progress

Progress continues in many directions – get involved!

Nothing succeeds like success.



Web3D Conference Series

We've had a great first thirty years!!!



- Keep Writing Papers, posters, industrial use cases, tutorials, etc.
 - Is [Web3D Conference](#) helping your career? Your students, proteges, staffs?
 - Program committee and conference participation is hugely valuable

Workshops and working-group meetings are fundamentally important

- Face-to-face lets us figure out together real problems and possible solutions
- For next steps, people stand up or stand back... we are “playing the long game”

For many years we were considered upstart rebels

- Perhaps now we are the emerging status quo on what 3D means?
- Gosh does that mean Web3D folks are “in charge” of future now? ([Bwa ha ha...](#))

Look ahead: Metaverse + Web3D



ISO/IEC JTC 1 Standards and Standardization for the Metaverse, August 2023

- “The Metaverse can be defined as a universal, immersive virtual world that is principally facilitated by Virtual Reality (VR) / Augmented Reality (AR) / Mixed Reality (MR)”
- “At a fundamental level, the metaverse requires standard technologies for composing virtual worlds and incorporating the real world into virtual worlds. The goal of the metaverse is an enhancement of human life by extending it to virtual worlds.”
 - [JTC-1 Technology Trend Report](#), edited Myeong Won Lee
 - [Replay of the JTC 1/SC 24 workshop](#) on Metaverse
- **Metaverse Standards Forum (MSF)** is active, important!
 - Emphasis on **use cases** to make shared sense of group goals
 - [3D Web Interoperability](#): Web standards as heart of Metaverse
 - [Standards Register](#): shared semantics, metadata and ontologies



Getting involved with Metaverse design

Engagement with other active individuals, companies, organizations

- Lots of interesting dialog and insights, building excellent awareness!

3D Web Interoperability Working Group

- Whatever that metaverse stuff might become, there must be a Web variation
- (possible corollary: if something isn't on the Web, does it really exist?)

• Metaverse Standards Register Working Group

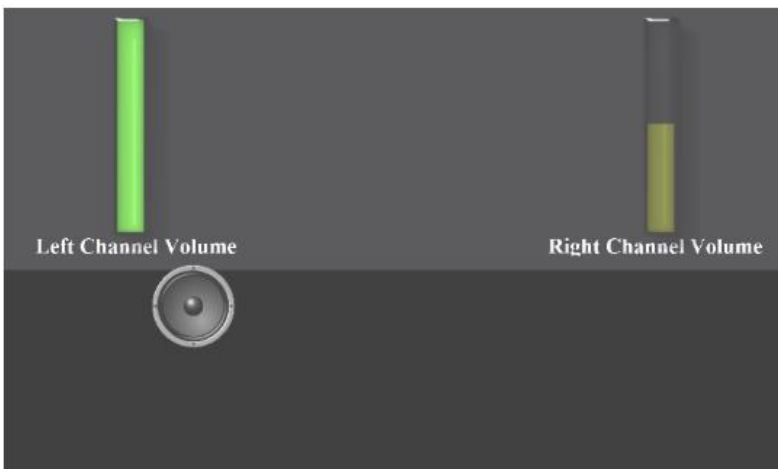
- Collection of structured metadata terms and definitions
- One vocabulary does not “win” compared to others, instead gets correlated
- Next task: can we paraphrase many use cases with shared vocabulary?

Audio and Spatialized Sound

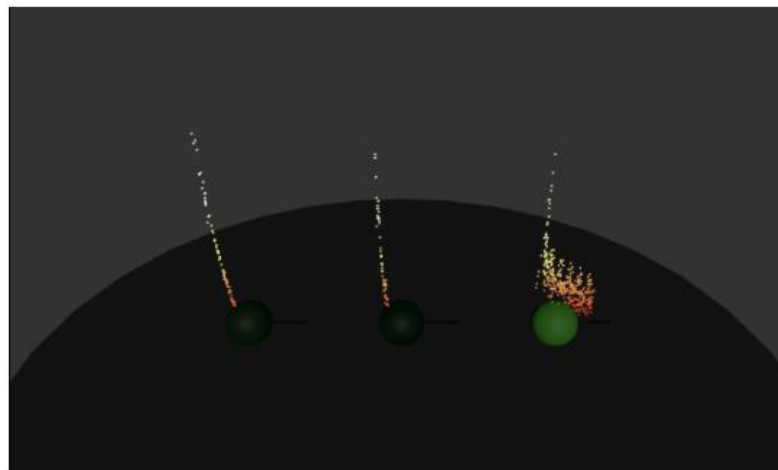
- X3D4 has fully integrated W3C Web Audio API – powerful
- Thanos Malamos, Efi Lakka (remotely) and I are presenting at I3DA 2025 on initial implementation of *AcousticProperties* for physically based aural rendering of rooms, performance spaces.
- We are crossing a new horizon! Please stand by... 🤗👂

Bologna
Thursday

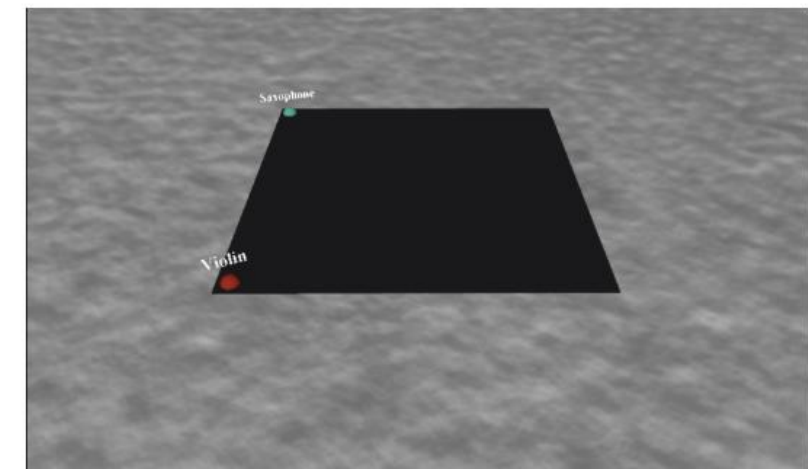
Split Channels



Filters



Spatial Audio Camera Animation



Old and New!

Might everything old become new again?

Consider: *are the 3D format wars over if they actually don't matter any more?*



[Happy Xmas \(War is Over\)](#)

John Lennon and Yoko Ono

([image credit](#))

So... what's your problem?

- First grade approach, repeat repeat repeat until laughing too hard:
 - “I don’t have a problem, what’s your problem?”
 - “I don’t have a problem, what’s your problem?”
 - “I don’t have a problem, ... ”



And so, what are *you* really doing? No really. Figure it out:

1. What is the right problem ?
2. What does success look like ??
3. What is your key contribution ???
4. What influence + impact are you achieving ????
5. How does world change ?????

Hamming test: okay let's measure that



Let's together apply the Hamming test for “you and your research”

- **Who here wants to do important work?** (all hands go up)
- **Who is doing important work right now?** (many hands hesitate...)
- **Why not?** (not expecting that question! Only you can answer...)

Richard Hamming, 1915-1998,
third recipient of Turing award

Looking forwards

- Do what you want to do, be what you want to become
- Create the changes that you want to see and explore
- “Yes, we can” change future worlds, working together
- Measuring success: are we there yet?

Ah, but a **person's reach should exceed his grasp,
Or what's a heaven for?**

Robert Browning
1812-1889

Contact

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X3D Standards Working Group

Web3D Consortium

Questions, insights and feedback are always welcome.

Have fun with X3D!

