



Let's Rename Everything "the Metaverse!"

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All of the different Metaversi currently cannot share your friends list, your avatar, or any in-game experience you have had. This needs to be engineered in from the start for the Metaverse to succeed.

In the mid-1980s, much of the military simulation being built in the United States went under the rubric “visual simulation.” When Jaron Lanier and VPL Research burst onto the scene with the term *virtual reality* (VR), suddenly people inside the U.S. Department of Defense (DOD) began to realize that what they were doing seemed outdated—even timid—under the name visual simulation, and they desired to join Jaron and his crew in using the term “virtual reality.” But level heads inside the five-sided headquarters decided that it sounded too druggy. They decided to create a real sleeper of a marketing term,

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“synthetic environments,” with some maybe more-hip DOD workers renaming all that they did as virtual environments—a term that seemed halfway better and more appropriate than synthetic. Not long after that, all of the DOD employees in the modeling and simulation realm moved toward this better phrasing.

VR VERSUS VISUAL ENVIRONMENTS

Now, when everyone started jumping into the pool and using the terms “virtual reality” or “virtual environments,” shouting occurred from Jaron’s way, indicating that it was his term and that anyone who used either term had to be using a head-mounted display (HMD) and not just a flat or projected screen, that VR had an actual meaning of a head-tracked world that a user could move through and interact with, and that controlling such things with game or other controllers on a flat screen already had a different name. Well, this battle was lost rather quickly as the terms got co-opted and everyone started calling everything they did



either a virtual environment or a VR, depending on their level of *outreness*.

1997

In 1997, the National Research Council (NRC) issued the report “Modeling and Simulation: Linking Entertainment and Defense,”¹ which indicated that the DOD ought to pay more attention to the games industry and adopt their best practices when building their next-generation modeling and simulation systems. I chaired this committee for the NRC and got to see this from the starting-gun level. Now, some fantastic things happened from that study. A plan was written for the chief scientist of the U.S. Army to found the University of Southern California’s Institute for Creative Technologies (by me), and the America’s Army game was funded to the MOVES Institute at the Naval Postgraduate School. MOVES means Modeling Virtual Environments and Simulation—all of the words in one place.

In 2005, I drafted an article that extended this desire to cover all phrases. That article was titled “From Visual Simulation to Virtual Reality to Games,” and it described my technological journey and what I planned to do next. And then everyone in the DOD renamed everything they were doing as games, and so it goes ...²

LET’S NOW CALL EVERYTHING “THE METAVERSE”

The Metaverse is a shared virtual space that people can move through and interact with, using a personalized avatar as they pursue communication and commerce with like-minded virtual friends. Neal Stephenson created this notion and waxed elegantly on it in his 1992 book *Snow Crash*.³ This is the first use of the term *Metaverse* in that text.

On the back is gibberish explaining how he may be reached: a

telephone number. A universal voice phone locator code. A P.O. Box. His address on a half dozen electronic communications nets. And an address in the Metaverse.

“Stupid name,” she says, shoving the card into one of a hundred little pockets on her coverall.

“But you’ll never forget it,” Hiro says.”³

Well, the Metaverse seems to be on everyone’s mind nowadays as a potential investment, and others are trying to define it transcendently. “Metaverse is a portmanteau of meta, meaning transcendent, and verse, from universe.”⁴

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I like the term *portmanteau*—it makes me think of traveling salesmen with large suitcases taking trains to distant cities to sell their wares. And so that is what the Metaverse is becoming, a place where salesmen will come to sell their wares, virtual and real. And everyone is rebranding their games as the portal to the Metaverse. So the biggest problem we now have is that all of these new “Metaversi” (is that the right term?) are not connected, and if all your efforts go into building your personal virtual identity inside one platform, you could find yourself friendless and stranded inside the modern equivalent of MySpace or, even worse, Friendster.

FROM THE START: EVERYONE WANTS TO REBUILD AMERICA ONLINE

Those of us who started early in the networked virtual environment realm wanted an open world, a world where

your avatar could be anything and you could move between parts of that world for free and unencumbered with commerce—kind of like how the Internet started. But, as we know, the Internet did not stay commerce free for long. The Internet became this space where you had to choose your own walled garden. Think of this as the generalization of America Online (AOL). AOL was a walled garden that initially you dialed into and received all your news, communication with friends, and commerce inside. It wasn’t really until the Internet with web browsers and webpages that we kind of could go pretty much anywhere we wanted to find the community of our internal desire. With

the prominence on the Internet of social media platforms, we all went back into a walled garden once again, all seeking solace inside. Everyone wanted to climb back inside the comfort pioneered initially by AOL and the like. So we can look at social media platforms as everyone wanting to again rebuild AOL. And with the various Metaverse platforms being created, we are all considering climbing back inside today’s AOL again.

OUR AOL-LIKE METAVERSI

Now that every online game made that has had any success is rebranding itself as a portal to the Metaverse, we can kind of see what is being built. We can see that these worlds are 3D, and that each world is providing users the ability to stylize and create their own 3D avatar and create and develop their own island/space/games imbued with gameplay, social communication, and commerce. We wish them all well, and

most of all we wish them all the ability to allow their users to transport their avatars/worlds/businesses/friends lists among each other. This is not too likely though as walled commerce is the AOL model they are all following. Let's look a predecessor Metaverse that had great potential but never could get much past the "slapped together without art designers" appearance. Let's look at Second Life.

SECOND LIFE GETS A SECOND LIFE

Now, first of all, I remind you I am a tech person, and I was totally enamored with Second Life's ability to gather

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some 900,000 users into its virtual world despite having a dreadful user interface in its client and a mid-1990s rendering engine that made everything look like engineer art, which we all know is a technical term for "sucky look." With the 2003 launch of Second Life not being too far from the mid-1990s, this was not too surprising. Second Life's developers had completely no clue as to how to provide a good user interface so that its players could easily move through and interact with its various user-built worlds.

Despite this weakness, Linden Lab, the developer of Second Life, showed a US\$3.2 billion revenue over a 10-year period that was made from user-built businesses inside the platform as well as the sale and purchase of virtual real estate inside the world. Second Life even had its own in-world currency, the Linden Dollar. Had this come out in this era as bitcoin or some other cryptocurrency, it would have made them the bomb. And the most amazing thing is that Second Life still exists as a platform and could still do this. We will see.

EPIC'S FORTNITE CREATIVE

Epic is a successful company that, when it's not spending its investor's money suing competitors for lower platform fees, has a great future ahead when it finally unwinds itself from the legal morass of its own making. Epic's Unreal Engine is beautiful and has been beautiful in all of the years I have seen it used to make some wonderfully successful games. I even licensed the Unreal 2.0 Alpha Minus-Minus Engine for the America's Army game—we had to add 150,000 lines of code into that engine to make it work for us at that time. I am sure the engine is way easier to use now.

So Epic's entry into the Metaversi space is to take its Fortnite game, a hugely successful game that used to be on more platforms, and make modifications (mods) accessible to users via its Fortnite Creative toolset. Users can create their own island, build their own games and businesses on that island, build their own communities, and share revenue with Epic as their games/communities/businesses in the Fortnite Metaverse become successful. It is Second Life with better development toolsets, better user interfaces, and way better rendering. When Epic settles its legal issues (five years from now?), it will be on even more platforms and make its developers even more revenue. We wish them great success as they have the best look and best capabilities.

FACEBOOK HORIZON WORLDS OR NOW, JUST THIS WEEK, META

Facebook is a direct descendent of AOL; it is a walled garden (or island, depending on your taste in metaphors) that encloses you in its newsfeed

algorithm and presents you with the most provocative postings during your daily/hourly time there. Facebook hopes you will post your most juicy daily life issues online so that others can respond to/fight/like what you say despite your personal/truth-resistant/narcissistic ravings. I like Facebook for this—it's kind of the epitome of "algorithms gone wild" and is letting us all know at this stage of our development that perhaps we need to be more careful with what we build and then ship. Facebook is under investigation by Congress for its tacit participation in the 2020 presidential misinformation campaign and the 6 January coup attempt by the outgoing president-for-life-hopeful.

So Facebook, with its purchase of Oculus, is building its own entry into the Metaversi, initially named Facebook Horizon Worlds and now with a renamed company called Meta, which if you recall earlier in this article means "transcendent." The question is: Transcendent of what? Perhaps it is Facebook's way of saying they are running away from misinformation and coup assistance as a business. That would be an appropriate use of their lucre. We will use Horizons as the name of their Metaversi entry rather than the cumbersome Facebook Horizon Worlds.

Horizons is a 3D social space meant to be run inside of the Facebook Oculus Quest 2 VR headset. Comparisons between Horizons and the Microsoft Altspace VR World are common. The thing that Facebook (Meta) has over other VR apps is a huge number of users in their Facebook/Instagram/WhatsApp platforms who might transition to Horizons. We say "might" as only 1.87 million Oculus Quest 2 VR headsets have been sold in total. Meta (Facebook) itself has 2.89 billion users, so that number is approximately 0.065% of Facebook's users. Facebook (Meta) made US\$86 billion in 2020 in revenue, primarily from ads. Most of the tech superstars of the Internet age have all focused on figuring out just what ads will make us purchase

that lifetime subscription of Viagra or other similar supplement.

But Meta (Facebook) is doing this inside of VR with their Oculus Quest 2 VR headset, which means that most people won't join this Metaverse. Who wants to wear an HMD for more than 3 or 4 min? And Meta (Facebook) still has the continuing problem with Congress, so we don't think there is much future in this until Facebook (Meta) figures out how to do a VR-like experience without an HMD and how to make its algorithms less provocative to Congress. Also, early sample images of Horizons show its desperate need for a better render and better art direction.

MICROSOFT TEAMS IMMERSIVE

During the COVID lockdown, most of us stopped traveling and started using Zoom video teleconferencing as our primary educational and business portal. Every once in a while, someone would require our meeting to occur in Teams. Now, Zoom has way too many buttons and settings I have to press to

make my classes happen, and its crazy support for audio makes it nearly useless. Sharing a video or demo that has sound on Zoom rarely works, and that makes me want to scream.

Now, Teams tends to be required when you are doing business with the U.S. government, and Teams is a worse piece of junk than Zoom. My last two meetings trying to use Teams ended

colleagues during online business meetings. I hope that the crazy interface and log-on problems will go away when this is finally released.

ROBLOX AND OTHERS

Roblox is another entry in the Metaversi. It allows the users to create their own avatars, create their own games, play the games of others, and make

It is Second Life with better development toolsets, better user interfaces, and way better rendering.

with us all giving up as no one could ever get logged on. Everyone has five to seven email addresses now, and we have to guess which one was used for the Teams meeting to be able to log on, and that only happens if the host of the meeting remembers which email address he/she used to set it up.

So, now there is Teams Immersive, which is stunningly beautiful—it looks like they have gotten hold of artists who have created some very cool avatars that you can use to chat with your

revenue in Robux. As of August 2020, Roblox had 164 million monthly active users. The images online for Roblox show an artistically developed world that continues with the avatar creation system.

Minecraft is part of the Metaversi. Even Unity claims to be part of the Metaversi with the various tools and game engine it provides. Everyone is part of the Metaversi, if Jon Radoff's figure is to be believed.⁵ (See Figure 1.) We used to call it the Internet, but



FIGURE 1. Everyone is part of the Metaversi. (Source: Radoff⁵; used with permission.)

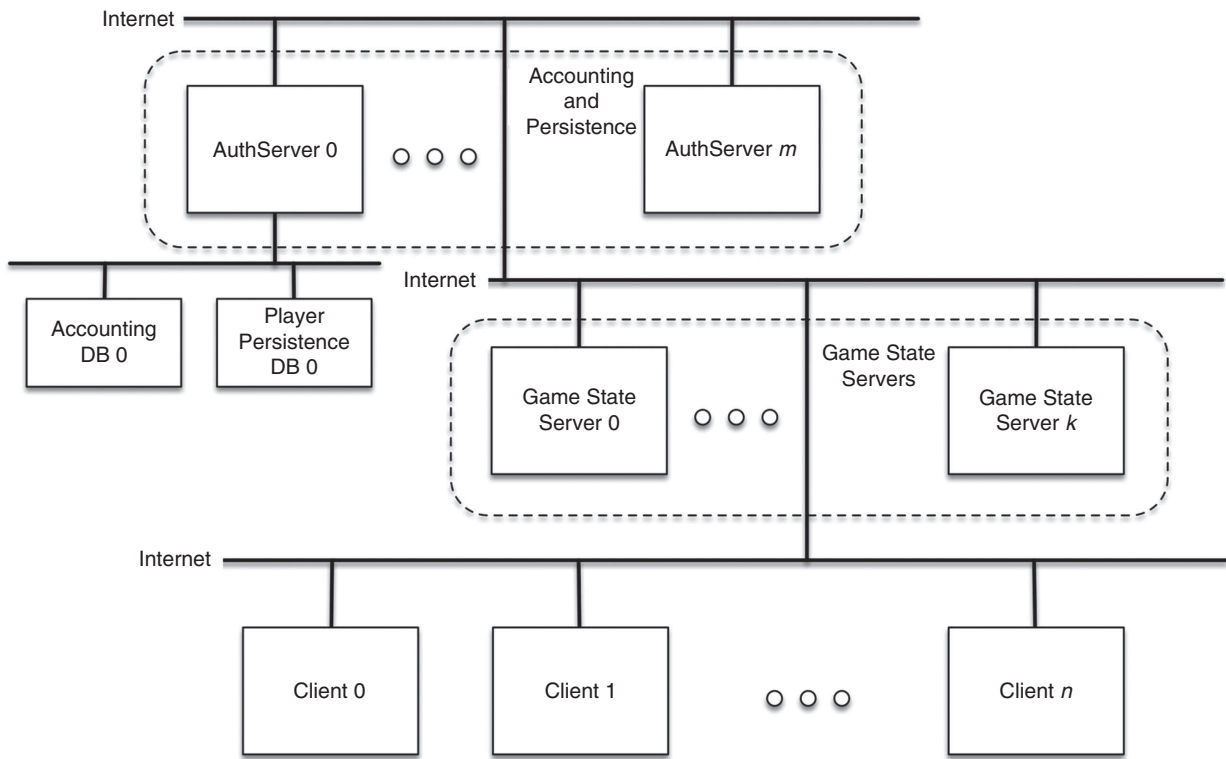


FIGURE 2. Traditional online game architecture from a high level. DB: database.

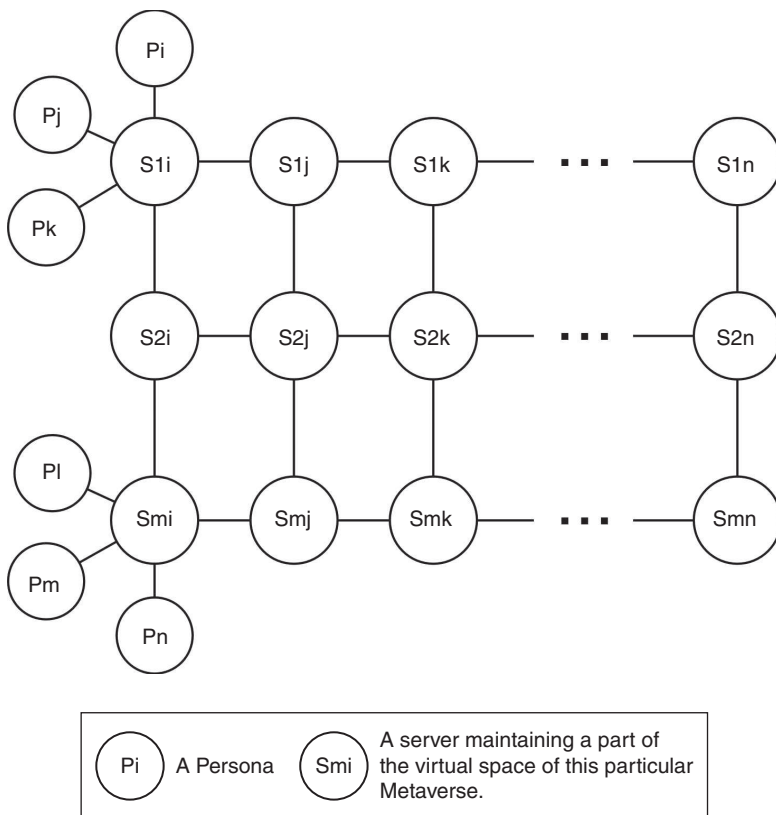


FIGURE 3. Scalability in a single Metaverse organized by virtual space.

now we have a new term because it is in three dimensions and allows us to create cute 3D avatars, with outfits changeable daily.

TECHNOLOGY REQUIRED FOR THE METAVERSI TO COEXIST

Most of the members of the Metaversi rely upon game networking infrastructures and a game lobby where the player selects what world/island/garden he or she wishes to teleport to. So, worlds/islands/gardens can be treated as levels they can use the same technology. And most of them will require that you pop back up to the lobby when you want to switch worlds/islands/gardens or go through some sort of a portal inside a level. There don't seem to be any real open worlds, except perhaps Second Life. Second Life was architected so you could walk from one virtual property to the next. The only real issue then is how many servers are used to manage any one level and maybe provide an architecture

to expand/contract when the numbers of players in a particular level expand/shrink.

Figure 2 shows what a traditional client/server game architecture looks like, and Figure 3 shows what we really need to do if we want a virtual space to accommodate, say, the number of “players” who attended Woodstock. That could be, for example, some 400,000 spectators, players who can walk from one end of the farm in Bethel to the other without having to transit a game lobby. That is how it will go if we create a single Metaverse properly and not just make it a marketing term for “games that allow character mods.”

If we want to move between different Metaversi, then we need something like the setup in Figure 4. In Figure 4, we see open worlds and AOL-like walled gardens. Open worlds can utilize a Persona (a 3D avatar, friends list, and additional data) that may have been created in another Metaverse so that we can bring our

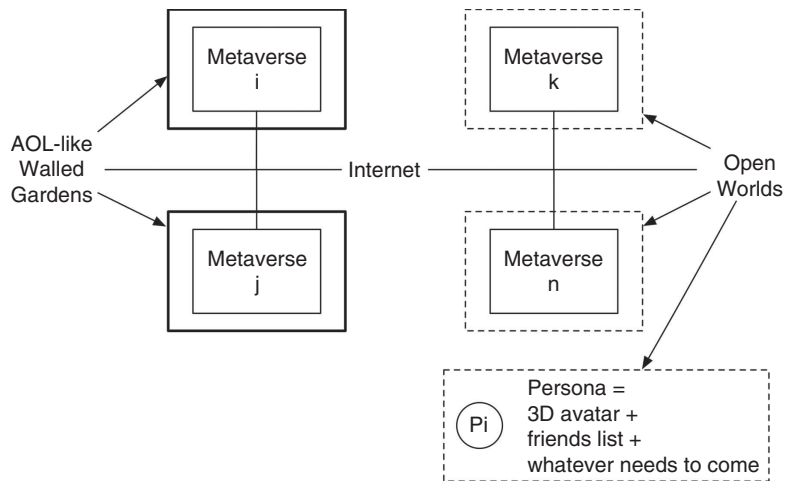


FIGURE 4. Connecting the Metaverse.

cute 3D avatars along with our friends, pretty please. AOL-like walled gardens are not at all what most of us want—we want to be free to move easily among the Metaversi.

If you believe the path of the Metaversi is the truth, the way, and the light, then games that do not rebrand as members of the Metaversi will all die a slow and miserable death, a death prognosticated by the Metaversi version of Metacritic, perhaps the Meta-MetaversiCritic ... Oh, please, it’s just the Internet 4.0 in sheep’s clothing ...

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REFERENCES

1. M. Zyda and J. Sheehan, Eds., *Modeling and Simulation: Linking Entertainment & Defense*. Washington, DC, USA: National Academy Press, Sep. 1997, p. 181.
2. M. Zyda, “From visual simulation to virtual reality to games,” *Computer*, vol. 38, no. 9, pp. 25–32, Sep. 2005, doi: 10.1109/MC.2005.297.
3. N. Stephenson, *Snow Crash*, New York, NY, USA: Random House, 1992.
4. “What is the metaverse? 2 Media and information experts explain,” *The Conversation*, Aug. 12, 2021. <https://theconversation.com/what-is-the-metaverse-2-media-and-information-experts-explain-165731>
5. J. Radoff, “Market map of the metaverse,” *Medium*, Apr. 13, 2021. <https://medium.com/building-the-metaverse/market-map-of-the-metaverse-8ae0cde89696>

COMMENTS?

If you have comments about this article, or topics or references I should have cited or you want to rant back to me on why what I say is nonsense, I want to hear. Every time we finish one of these columns, and it goes to print, what I’m going to do is get it up online and maybe point to it at my Facebook (mikezyda) and my LinkedIn (mikezyda) pages so that I can receive comments from you. Maybe we’ll react to some of those comments in future columns or online to enlighten you in real time! This is the “Games” column. You have a wonderful day!

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