

Metaverse 101

Risks & Challenges

@rodsoto
rodsoto.eth
rodsoto.net

<https://discord.gg/d3dpDQQB>



\$whoami
@rodsoto
rodsoto.eth
rodsoto.net



Metaverse

Etymology



Metaverse NOT new

- Word taken from N. Stephenson Snow Crash novel (1992)
- Virtual Realms have been around some time
- Metaverse is promised as the next evolution of the internet
- Facebook now Meta spearheads Metaverse as the ultimate social platform
- A mix of reality plus internet plus virtual/augmented reality technology plus cryptocurrency tech
- A promise of decentralization, increased privacy, new forms of income and new principles of society. “An internet created and own by the people” *Messari

The road to Metaverse

- Potential trillion plus dollar economy
- AR advertising entertainment financial gain potential in different industries (Festivals, Sport Events, Physical Training, Education, Gaming, Manufacturing, etc)
- Aggressive expansion of tech industry and workforce (Data Centers, Content Creators, Connectivity, Hiring skilled workers)
- Driven by higher connectivity and processing power devices (Wearables, Mobile devices, Laptops)
- Gaming technologies are leading the adoption and direction of metaverse
- Pandemic (COVID-19) accelerated online presence and interest in VR

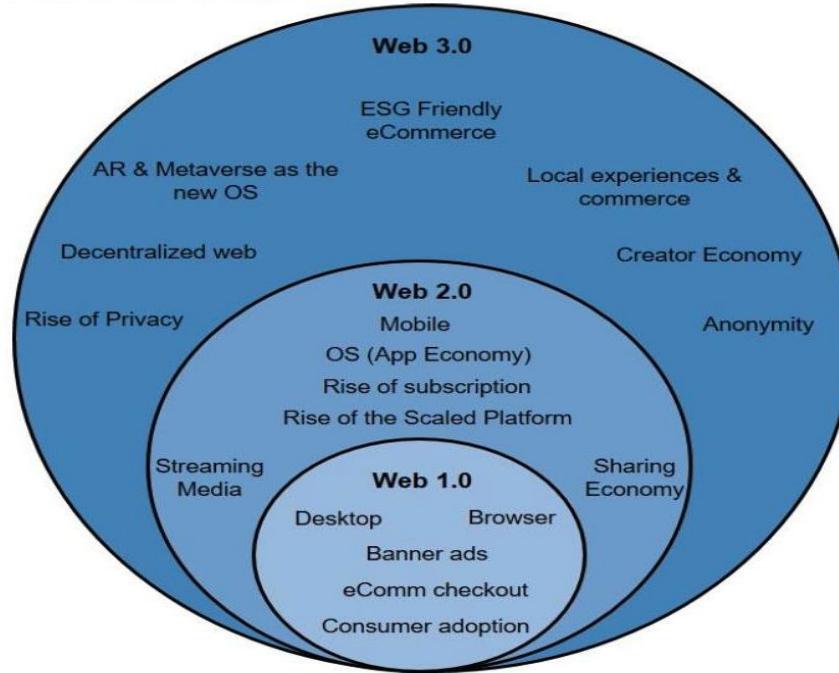
The metaverse is already here

Related technologies mostly gaming related

- Cryptocurrency (BTC-\$730.52B, ETH-\$250B, Mana-\$1.82B circulating supply)
- NFTs (Based on ETH EIP-721, EIP-1155)
- Decentraland.org (465K monthly active users, \$15 Million in p2p sales)
- OpenSea market (\$13.3B market worth)
- Second life (800k, 900k monthly users, \$64 Million GDP (reported in 2006))
- Fortnite(\$5.1B), Roblox(\$47.5B), NVIDIA (\$745B)
- Facebook (Oculus-Horizon Ventures) \$871.41 Billion
- VR, AR (Microsoft \$2.3Tn, GOOGLE \$1Tn. APPL \$3Tn)

WEB3 WEB2, WEB1 What is that?

Exhibit 1: Evolution of Decentralized Web



Source: Company data, Data compiled by Goldman Sachs Global Investment Research

How does it look like now? sorta...



How does it look like now?



How does it look like now?

Dream of Sri Ganesh

X

OWNER
0x94...de50

LAST SOLD FOR
ETH 0.2

PRICE
ETH 0.501

DESCRIPTION
Sri Ganesh, Hindu deity and remover of obstacles. This piece was a part of the initial inspiration and process behind the 'Beyond this Body' collection.

SCENE COMMENT
This work IS FOR SALE. Please proceed to 'View on Opensea'.

CANCEL

VIEW ON OPENSEA

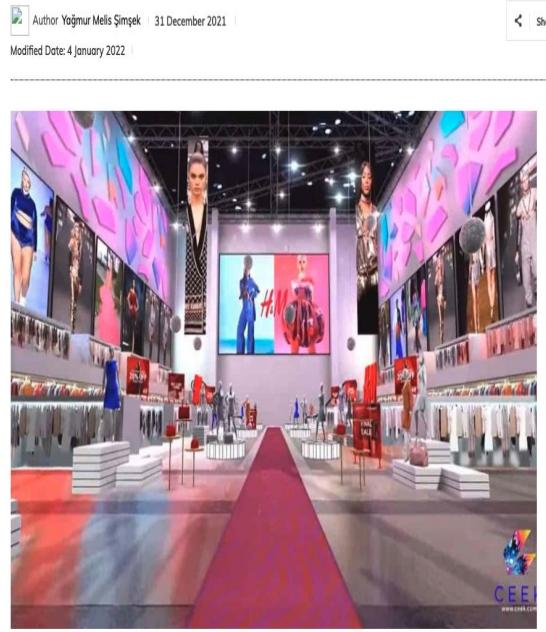


H&M - VANS

[Home Page](#) » [Topical](#) » CEEK presented H&M metaverse concept store

CEEK presented H&M metaverse concept store

Metaverse, the new dimension of virtual reality, offers users new experiences in clothing and retail shopping.



Author Yağmur Melis Şimşek · 31 December 2021

Modified Date: 4 January 2022

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Digital Magazine Subscription (Yearly \$120)

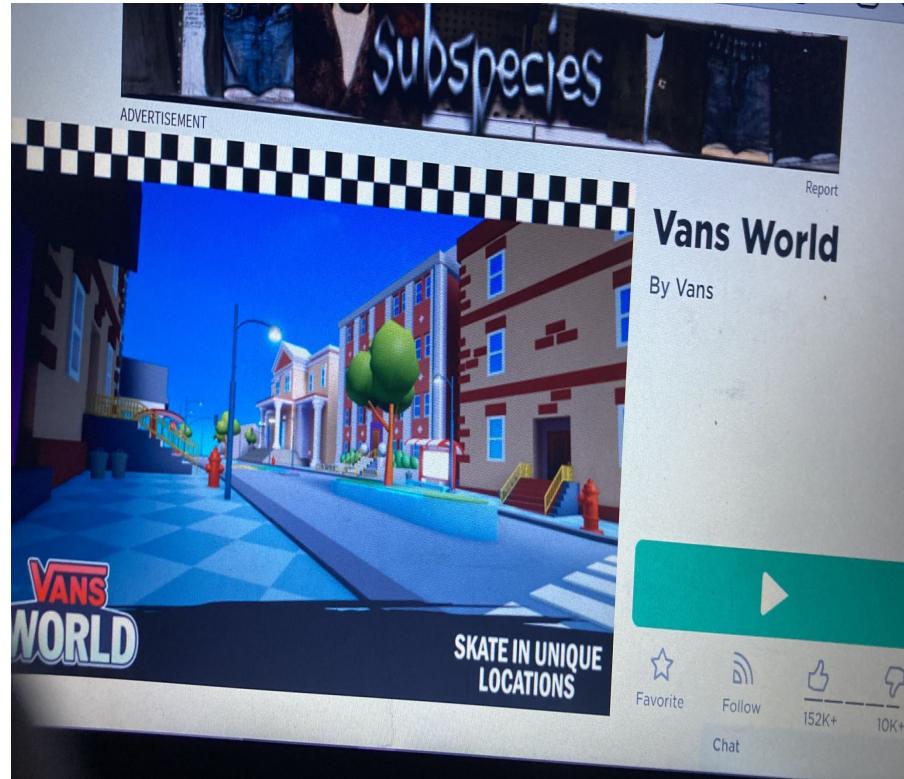
Yes

No

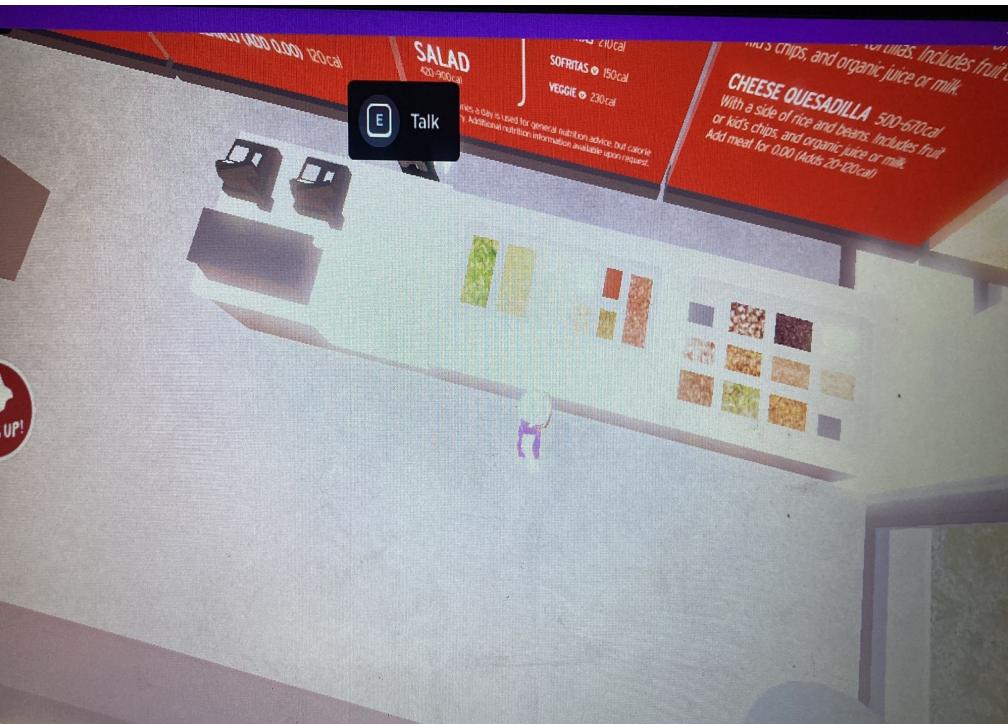
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roblox.com/upgrades/robux?ctx=nav

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Roblox

Showing results for events

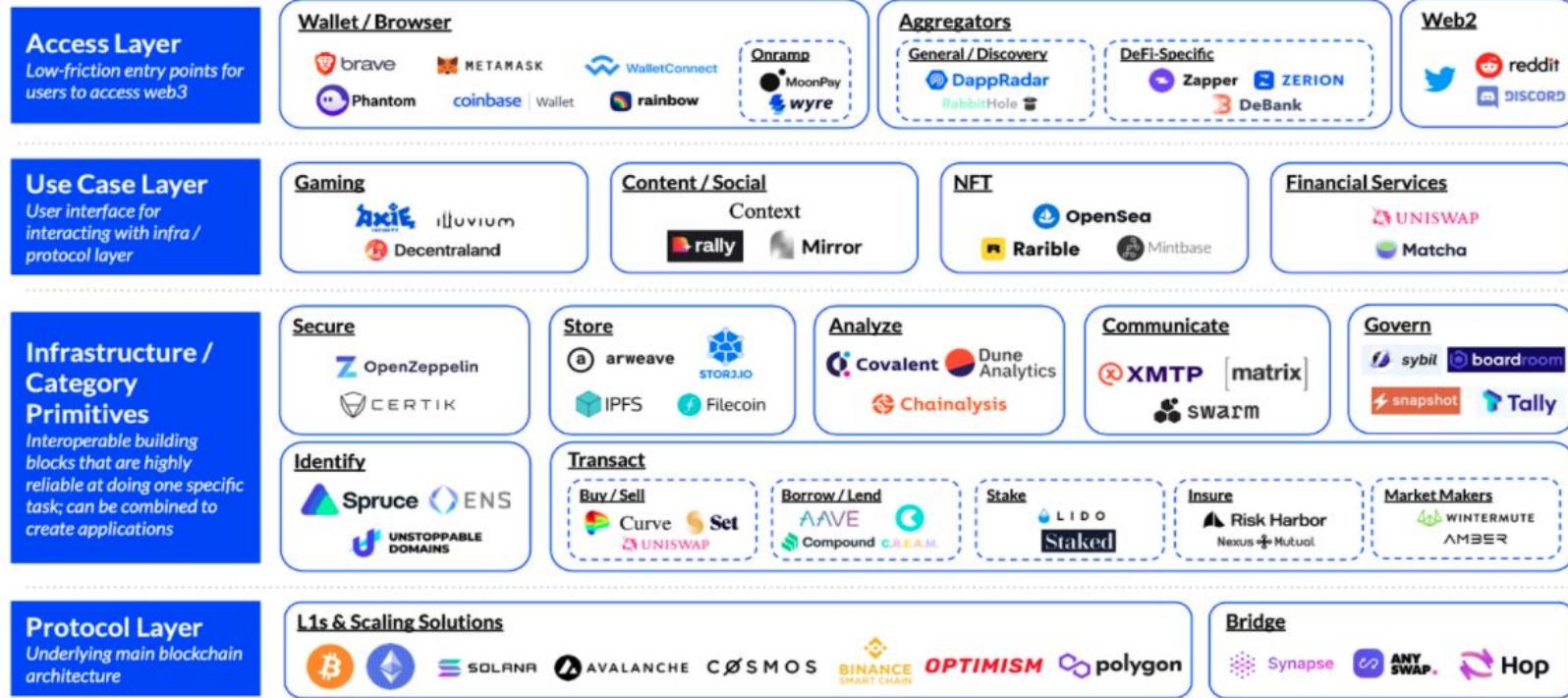
Thumbnail	Name	Description	Rating	Comments
	FREE ITEMS	Events & Activities	90%	41
	Vans World	Events & Activities	93%	209
	8th Annual Bloxy Awards	Events & Activities	89%	69
	Gurty [EVENT] CHAPTER 6!	Events & Activities	70%	44
	FNBR: Event Recreations	Events & Activities	85%	4
	EVENT ★ Star Wars: Coruscant	Events & Activities	72%	13
	Tai Verdes Concert	Events & Activities	70%	50
	Survive the Night [UPDATE]	Events & Activities	88%	2.8K
	Catalog Outfit Creator!	Events & Activities	75%	1.9K
	Death Zone [DRILL SITE]	Events & Activities	85%	1.6K
	Pet Zoo (TYCOON)	Events & Activities	85%	1.6K
	Chipotle Boorito Maze	Events & Activities	62%	12
	Open Mic Night [VOICE CHAT]	Events & Activities	70%	75
	Metaverse Champions Hub	Events & Activities	85%	4
	My Computer Tycoon	Events & Activities	76%	104
	[NEW CODE!] Clicker Frenzy	Events & Activities	80%	50
	Impossible Squid Game	Events & Activities	64%	29
	[UPDATE] TRENCHES	Events & Activities	68%	94
	Ready Player Two Hub	Events & Activities	89%	17
	The Russian Sleep	Events & Activities	55%	11
	Lil Nas X Concert Experience	Events & Activities	60%	0
	Twenty One Pilots Concert	Events & Activities	15%	0
	[EVENT] Tropical Resort	Events & Activities	95%	3.3K
	BAKON	Events & Activities	80%	1.2K
	HORRIFIC HOUSING	Events & Activities	76%	3.9K
	TOWER OF GOD	Events & Activities	61%	3.1K
	[x2 Event] Merging Legen	Events & Activities	90%	304

Principles of web3

- ‘Open’ in that they are built from open source software built by an open and accessible community of developers and executed in full view of the world.
- ‘Trustless’ in that the network itself allows participants to interact publicly or privately without a trusted third party.
- ‘Permissionless’ in that anyone, both users and suppliers, can participate without authorisation from a governing body.

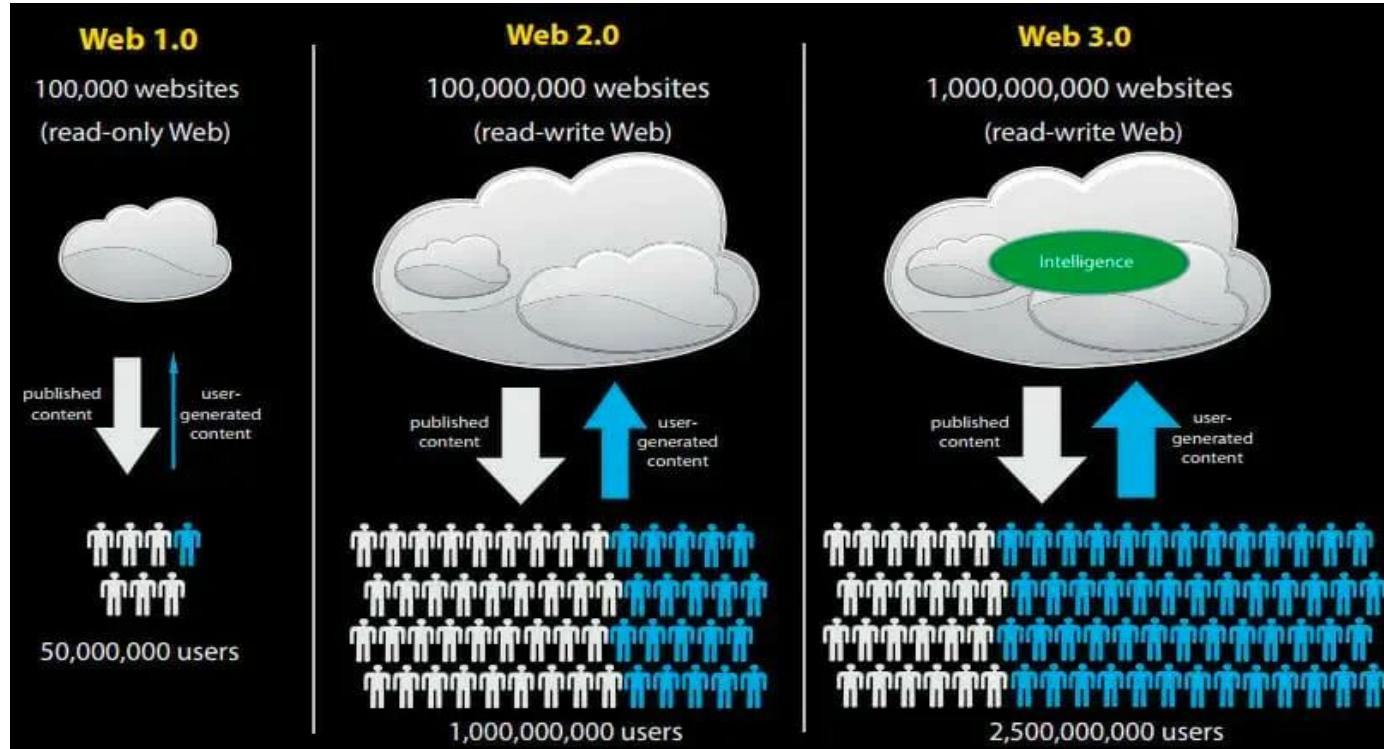
<https://medium.com/fabric-ventures/what-is-web-3-0-why-it-matters-934eb07f3d2b>

Associated technologies “Web3”



<https://blog.coinbase.com/a-simple-guide-to-the-web3-stack-785240e557f0>

Web evolution

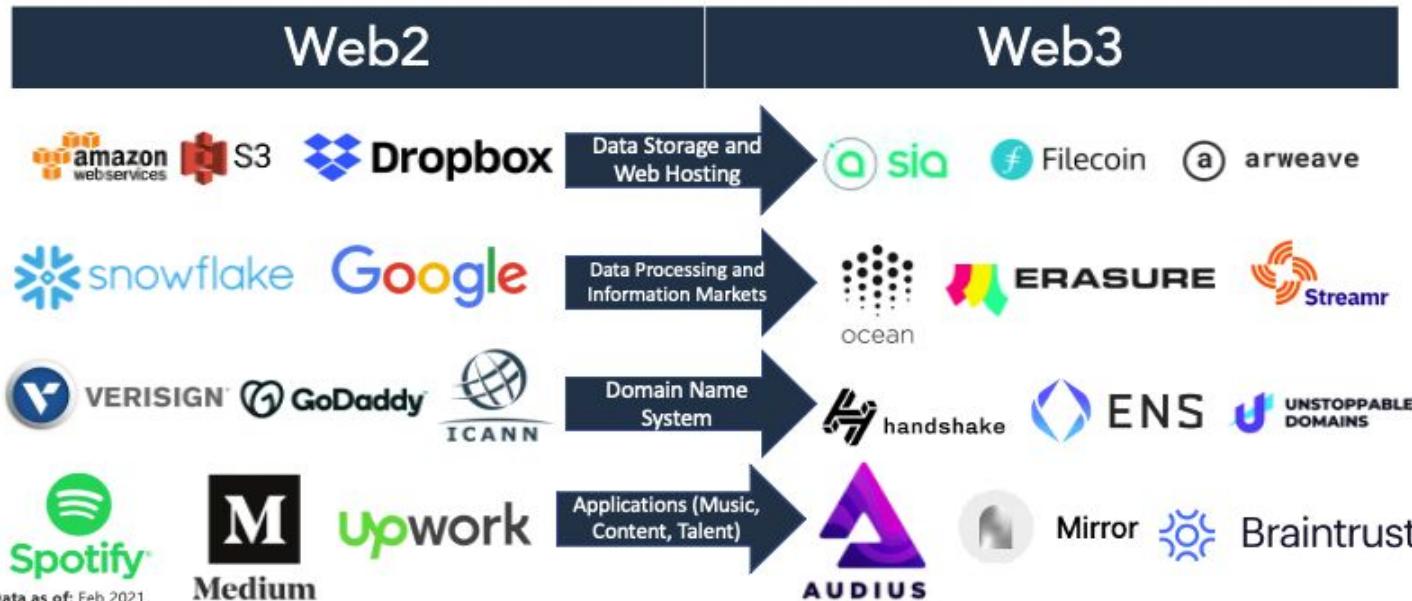


Web2 vs Web3 Companies



Web2 Companies Vs. Web3 Protocols

Web3 protocols aiming to replace or compete with web2 companies

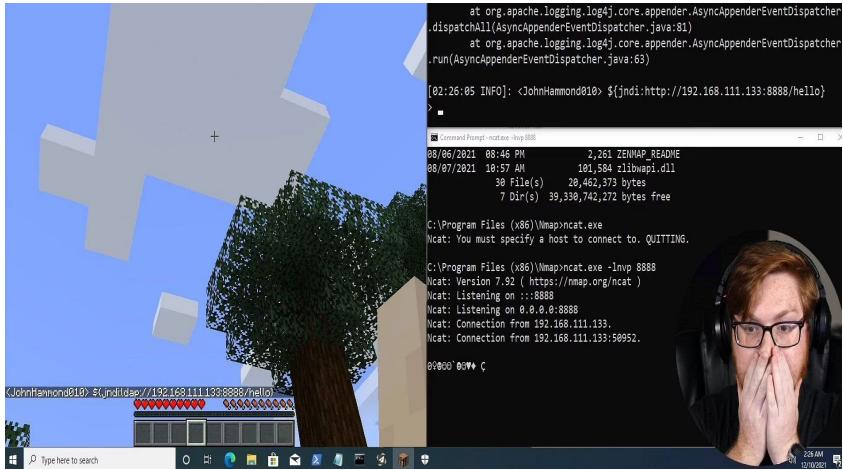


Data as of: Feb 2021

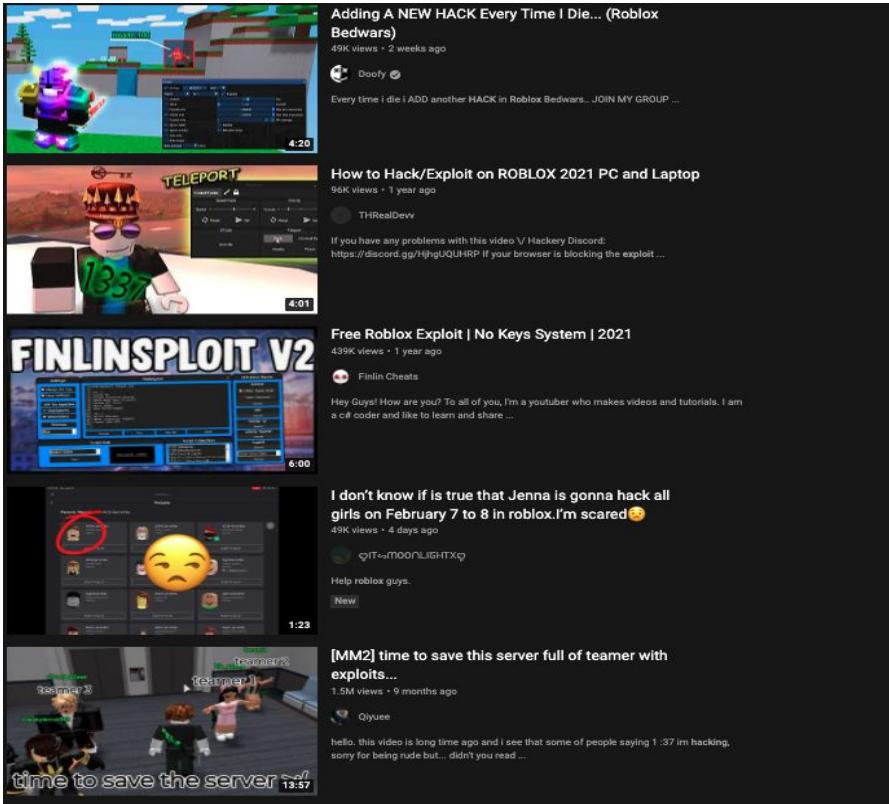
Source: Messari

Technical Threats

- Hacking Smart Contracts CVE-LIST
<https://cve.mitre.org/cgi-bin/cvekey.cgi?key=word=smart+contract> (too many to list)
- Related **off-chain** technology Vulnerabilities (i.e SQLi, DDoS). **Off-chain** tech is related to **any non-transactional data that is too large to be stored in the blockchain** * **Source IBM**. Many of current web3 sites store data in off-chain tech such as MongoDB, MySQL or Redis. These technologies are vulnerable and can be attacked to get foothold on ON-CHAIN technologies.
- Vulnerabilities affecting Metaverse related technologies (i.e Log4j injection in Microsoft MineCraft)
- Attacking trading platforms (i.e NFT listing manager at OpenSea).



Technical Threats



These are examples of advertised ROBLOX hacks some of these hacks involve kicking players out, obtaining expensive avatar items (houses, weapons, clothes). Many of these hacks are public and simply executed publicly available binaries some of them have easy to use GUIs in order to perform attacks.

The screenshot shows the NVD page for CVE-2021-41191. The page header includes the NIST logo and the text "Information Technology Laboratory" and "NATIONAL VULNERABILITY DATABASE". The main content area displays the following information:

- CVE-2021-41191 Detail**
- Current Description**: RobloxFurnitureHub is an open source Roblox product purchasing hub. A security risk in versions 1.0.1 and prior allowed people who have someone's API URL to get product files without an API key. This issue is fixed in version 1.0.2. As a workaround, add "@require_apikey" in "BOT/lib/cogs/website.py" under the route for "/v1/products".
- Analysis Description**
- Severity**: CVSS Version 3.x CVSS Version 2.0
- CVSS 3.x Severity and Metrics**: CVSS:3.1/A-N/AC:L/PR:N/U/N/S/U/C/H/N/A-N
- Base Score**: 7.5 HIGH
- Vector**: CVSS:3.1/A-N/AC:L/PR:N/U/N/S/U/C/H/N/A-N
- Quick Info** section includes:
 - CVE Dictionary Entry: CVE-2021-41191
 - NVD Published Date: 10/27/2021
 - NVD Last Modified: 11/02/2021
 - Source: GitHub, Inc.

Technical Threats

The OpenSea “Bug”

According to a [report](#) by the blockchain analytics firm Elliptic, the OpenSea exploit was the result of a flaw in how the platform handles asset listings on its platform.

OpenSea is built on the Ethereum blockchain, which is notorious for its outrageous gas fees. Therefore, to cut down on the amount spent on transactions, the NFT marketplace handles most of its functions off-chain until those transactions need to be sent to the blockchain for settlement.

To list an asset, NFT vendors on the platform will have to sign off-chain data confirming the amount they wish to sell their NFTs. However, the issue arises when vendors decide to send a message to the blockchain to cancel the initial listing.



An NFT purchased using the exploit, and then re-sold for a substantial profit

For example at around 7am on January 24, a Bored Ape Yacht Club NFT #9991 was purchased for 0.77 ETH (\$1,800). This family of NFTs currently sell for at least \$198,000. Twenty minutes later the hacker sold the NFT for 84.2 ETH (\$196,000) – realizing a profit of \$194,000.

One attacker, going by the pseudonym "[jpegdegenlove](#)" paid a total of \$133,000 for seven NFTs – before quickly selling them on for \$934,000 in ether. Five hours later this ether was sent through Tornado Cash, a "mixing" service that is used to prevent blockchain tracing of funds.

[Jpegdegenlove](#) also seems to have partially compensated two of their victims - sending [20 ETH](#) (\$45,000) to [TBALLER](#) and [13 ETH](#) (\$30,000) to [Vault327](#).

Another attacker purchased a single Mutant Ape Yacht Club NFT for \$10,600, before selling it on five hours later for \$34,800.

The [exploit](#) appears to rely on the fact that NFT owners are unaware that old marketplace listings for their NFTs are still active. Those old listings are now being used to purchase NFTs at prices chosen by the seller in the past - which is often well below current market prices.

<https://www.elliptic.co/blog/bug-allows-nfts-worth-over-1-million-to-be-stolen>

<https://cryptopotato.com/opensea-compensates-affected-users-with-over-1-8-million-following-exploit/>

Technical Threats

OpenSea Compensates Affected Users with Over \$1.8 Million Following Exploit

 Author: Mandy Williams • Last Updated Jan 30, 2022 @ 14:06

Popular NFT marketplace OpenSea has made users whole following the recent exploits on its platform.

In light of mounting criticism and complaints from the crypto community, one of the largest NFT marketplaces, OpenSea, has reimbursed about \$1.8 million to users who were affected by the recent hack on its platform.

On January 24, 2022, some OpenSea users saw their valuable NFTs sold at rock-bottom prices by hackers who **leveraged** a flaw on the OpenSea listing process to purchase those NFTs at almost 98% discounts and subsequently resell them for much higher.

<https://cryptopotato.com/opensea-compensates-affected-users-with-over-1-8-million-following-exploit/>

Threats - Crime always moves to new realms specially if there are more opportunities

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embedded analytics from Sisense

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Are Terrorists Using Second Life To Plan Attacks?

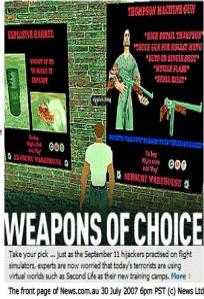
Contributor 9:22 PM EDT • July 30, 2007

Comment

OK, so sensationalistic headlines targeted at Second Life are so last week; from FBI related [gambling bans to animal sex](#), we've seen a lot. Now there are [allegations being printed](#) by News Corp in Australia that suggest that the next major terrorist attack on a Western country could be being planned in Second Life, and yes, as can be seen in the picture to the right, 9/11 is being used as a reference point as well.

The report describes in detail various griefer operations as being terrorist attacks and goes on to say that:

On the darker side, there are also weapons armories in SL where people can get access to guns, including automatic weapons and AK47s. Searches of the SL website show there are three jihadi terrorists registered and two elite jihadist terrorist groups.



ENTERTAINMENT

Woman claims she was virtually 'groped' in Meta's VR metaverse

By Hannah Sparks

December 17, 2021 | 1:32pm | Updated



A woman said she was "groped" in the metaverse by a fellow beta tester of the new platform Horizon Worlds, adding that "sexual harassment [in VR] is no joke."

Sexual abuse

Woman 'gang raped' in VR Metaverse says tech advances made it feel like real life

As the Metaverse grows in popularity, more and more people are using it to chat to their friends and meet strangers online - but there's a dark side, as one woman's story of sexual harassment shows

Threats

- Money Laundering. Example, Tornado Cash. Untraceable transactions.
- Laundering centrifuge. Create BS NFT buy it yourself, transfer to fiat
- Speculation, “pump and dump” of NFTs
- Confusing multiple ownership fungible vs non fungible(EIP-1155) you own an NFT but others can as well in some circumstances.
- Identity Theft. Steal avatar, content, proceeds from online activity.
- Social Engineering amplified. Deceiving, misleading persuading for malicious purposes
- ETH Gas fees. Too expensive can't create, can't trade

Threats

More abuse of cheap labor



Image: Sleep Dealer. Coyotek

Threats

More inequality

Source:

<https://www.profqalloway.com/web3/?s=09>

INEQUALITY IN CRYPTO
2021



SOURCES: CHAINANALYSIS, FLIPSIDE CRYPTO NOTE: NFT MARKET=NFTS ON ETHEREUM BLOCKCHAIN NETWORK.

Mental Illness

- Overuse of digital technology is associated with many mental health issues, such as somatic symptoms (6%), depression (4%), psychoticism (0.5%), paranoid ideation (0.5%), and serious mental illness (2%)

... highly doubt the metaverse will be a safe place, look at Social networks today...

*<https://www.psychologytoday.com/us/blog/digital-world-real-world/202110/will-the-metaverse-impact-mental-health>

Three areas where Metaverse tech MUST be successful

Sensory Input	Connectivity	Kinetic feedback
Visual - Headset / Cell / Comp Audio - Headset / Cell / Comp Other senses will have to be incorporated (touch, smell, taste)	PAN - Watch, Mobile, Wearable LAN - Home, Office, Car, etc Internet	See, Hear, Touch, Weight, Weightless, Smell, etc

Kinesthesia in Cyber - “Metaverse”

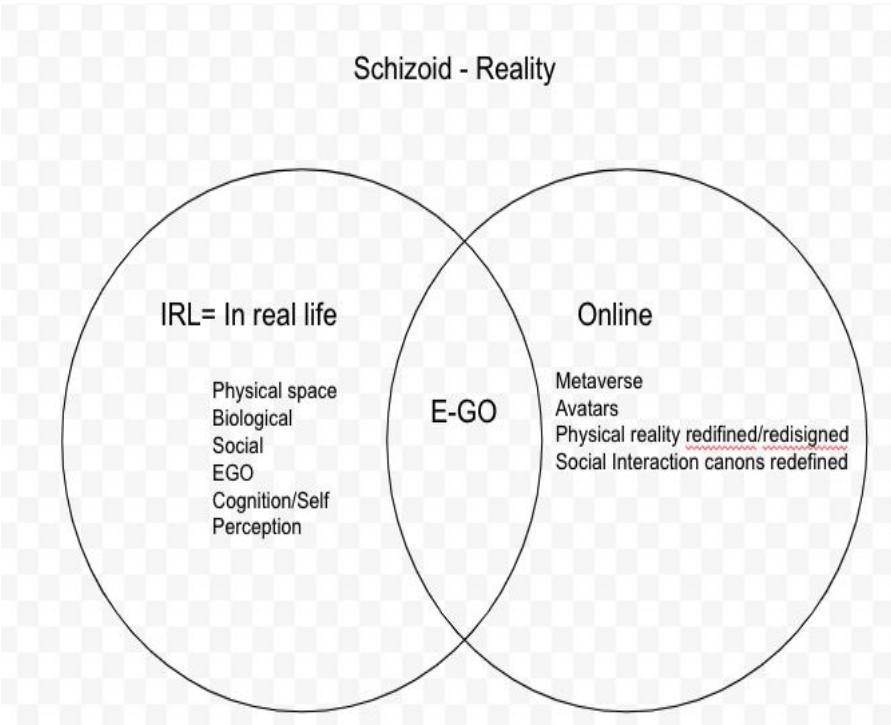
Kinesthesia: [The](#) sense that detects bodily position, weight, or movement of the muscles, tendons, and joints

New tech will have to be invented



Image: Amazon Prime Series Upload sex suit

Kinesthesia + cognition in TWO worlds



Patel said that: "Virtual reality has essentially been designed so the mind and body can't differentiate virtual/digital experiences from real.

"In some capacity, my physiological and psychological response was as though it happened in reality."

A spokesperson for Meta said: "Horizon Venues should be safe, and we are committed to building it that way.

"We will continue to make improvements as we learn more about how people interact in these spaces, especially when it comes to helping people report things easily and reliably."

Schizoid Reality

Reality	Metaverse
Physical handicap or weak	Can fly, stamina level gained by gaming or purchase
Small home	Mansion
Need to drive, walk, take public transportation	Can be literally anywhere
Limited by circadian rhythms	Unlimited



If you spent more time in the metaverse than physical world, had a better body, could fly, have a mansion, etc why would you care about your physical home or even body or simply BLOCK anything you don't like, having the chance to stay there and avoid physical reality...

Image: Black Mirror White Christmas

Obnubilation (Tech)

obnubilation

Also found in: [Thesaurus](#), [Medical](#).

obnubilation (əb'njü:bɪ'lēzhən)

n

(Medicine) *med* the obscuring or dimming of awareness or mental faculties

"CITE"  Collins English Dictionary – Complete and Unabridged, 12th Edition 2014 © HarperCollins Publishers 1991, 1994, 1998, 2000, 2003, 2006, 2007, 2009, 2011, 2014

Tech obnubilation IRL=Online



life is too short to not customize your appearance like we're video game characters so if you want fangs and to wear devil horns in public just do it

10-year-old girl dies after attempting social media 'Blackout Challenge'

Tragedy comes 10 months after Italian authorities blocked underage social media users following a similar death

Gino Spocchia • Wednesday 22 December 2021 19:57



What should Tide PODs be used for? DOING LAUNDRY.
Nothing else.

Eating a Tide POD is a BAD IDEA, and we asked our friend [@robgronkowski](#) to help explain.



5:15 PM · Jan 12, 2018



Tech Obnubilation

Russia issues 'metaverse' warning

Authorities expressed concern about drug dealing and VR's influence on the physical world



Regulators in Russia are looking into the possibility of new restrictions on virtual reality (VR), saying they are worried that it could enable illegal activity, while acknowledging that the "metaverse" also offers new possibilities for human interaction.

The Scientific Technical Center of Roskomnadzor, the federal agency responsible for monitoring mass media, released a report on Wednesday, assessing what it sees as the potential risks and possibilities of VR spaces where people are able to interact across national borders.

The report also cites concerns about the consequences that virtual interaction has for human behavior. The authors write, "*The transformation of perception on account of being located in the metaverse will have a meaningful cultural effect on society and will change social behavior, including reducing the importance of moral and ethical norms due to the use of a virtual avatar.*" They warn that this could particularly affect children, "*the most vulnerable group in the new metaverse.*"

The previous slides present a somewhat a functional physical condition in order to interact with the metaverse



That may change with new technologies...

In closing...

- Adoption will depend on the usability/attractiveness of the technology to join it/use it
- Economic models are still uncertain
- None of it seems to point to a fixing of current challenges with Social Media Platforms if anything it will enhance them
- Risk of furthering inequality, tech obnubilation and subjugation of non-tech, uninformed class
- A lot of this tech will take decades to develop and it is still unproven
- By NO MEANS will enhance privacy and is neither decentralized...
- Current Metaverse status looks more like a MVP
- However the ingredients are there...



Questions for you to take home...

- Would this be an expansion of current world or break from current world as we know it?
- Would this expansion allow more expressions of human creativity and freedom? Or would it be used to subjugate and dominate the uninformed, the gullible, the naive, the cognitive impaired?
- Would this new metaverse economies create financial equality or disparity? New sub-classes? (i.e Coyotek)
- Would the IRL vs Online relationship flip as people spends more time connected to the metaverse than physical life or would this two join together via tech such as neuralink?
- What would happen to things such owning a home, driving a car or even traveling physically? (i.e living in containers like Ready Player 1)
- In order to create the enabling technologies for a full experienced metaverse the user will have to give up an incredible amount of private data (i.e clothes size, scanning of home spaces, sensors picking up data from private sensorial experiences like sex suits, even thoughts via tech like neuralink). How will this do anything but erase whatever privacy is left?
- How would we look at each other? (schizoid reality, tiger online mouse in irl or vice versa)

... finally do we really need a metaverse?