

Metaverse

Where we are & Applications

With real Demo

By Davide Ciliberto 2022 – lperverse.com

November
2022



Topic

- Technology Enablers
- Metaverse :The Next Big Thing!
- Applications



Technology Enablers



By Davide Ciliberto – Iperverso.com

VR + AR = MR

Virtual Reality, VR

- The main feature of Virtual Reality is to allow the user to completely isolate himself from the reality that surrounds him, entering a digitally created world.
- VR technology therefore allows you to immerse yourself completely in a totally digital world in which to interact with the elements contained in it.
- Precisely in the industry, the possibility of transporting the user into new dimensions enables new training methods, particularly suitable in complex scenarios or dangerous environments, where, thanks to VR, the possibility of carrying out training without putting the health of operators, plant safety or regular productivity at risk.

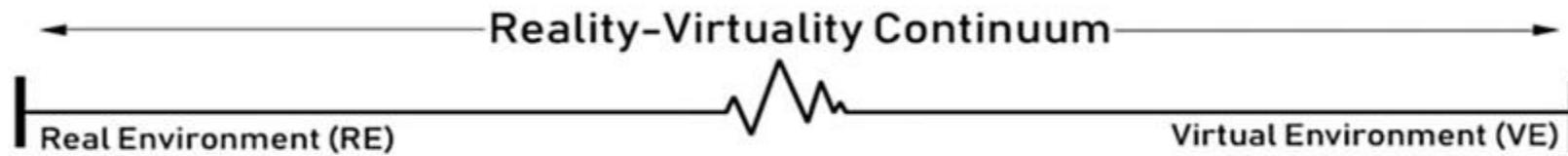
Augmented Reality, AR

- Much closer to the reality that surrounds us we find AR, an acronym for Augmented Reality, a technology that has been growing rapidly in recent years.
- Augmented Reality, as the word itself suggests, consists of a technology that increases reality thanks to the superimposition of additional digital elements and information, such as paths, images, videos, instructions and objects
- Unlike VR, Augmented Reality can be enjoyed through a greater number of devices. In fact, almost all smart devices equipped with a camera are able to deliver Augmented Reality experiences. In particular, the most used tools are Smartphones, Tablets and specific Headset, the latter indicated if there is a need to have hands-free use.
-

Mixed Reality, MR

- Between VR and AR, we find the MR, acronym for Mixed Reality. Mixed Reality combines the peculiarities of the other two technologies to create a world where real and virtual converge, adapting digital content according to the characteristics of the surrounding world, allowing you to interact indiscriminately with real and digital objects.
- This is definitely the most advanced technology and requires very specific hardware. To use MR it is in fact necessary to use dedicated Headset, equipped with a multitude of sensors able to map the surrounding world and understand its structure.

VR + AR = MR



AR

AUGMENTED REALITY

Digital content from virtual world on top of real environment, providing information.



MR

MIXED REALITY

Virtual and Real Environment mix and interact with each other.



VR

VIRTUAL REALITY

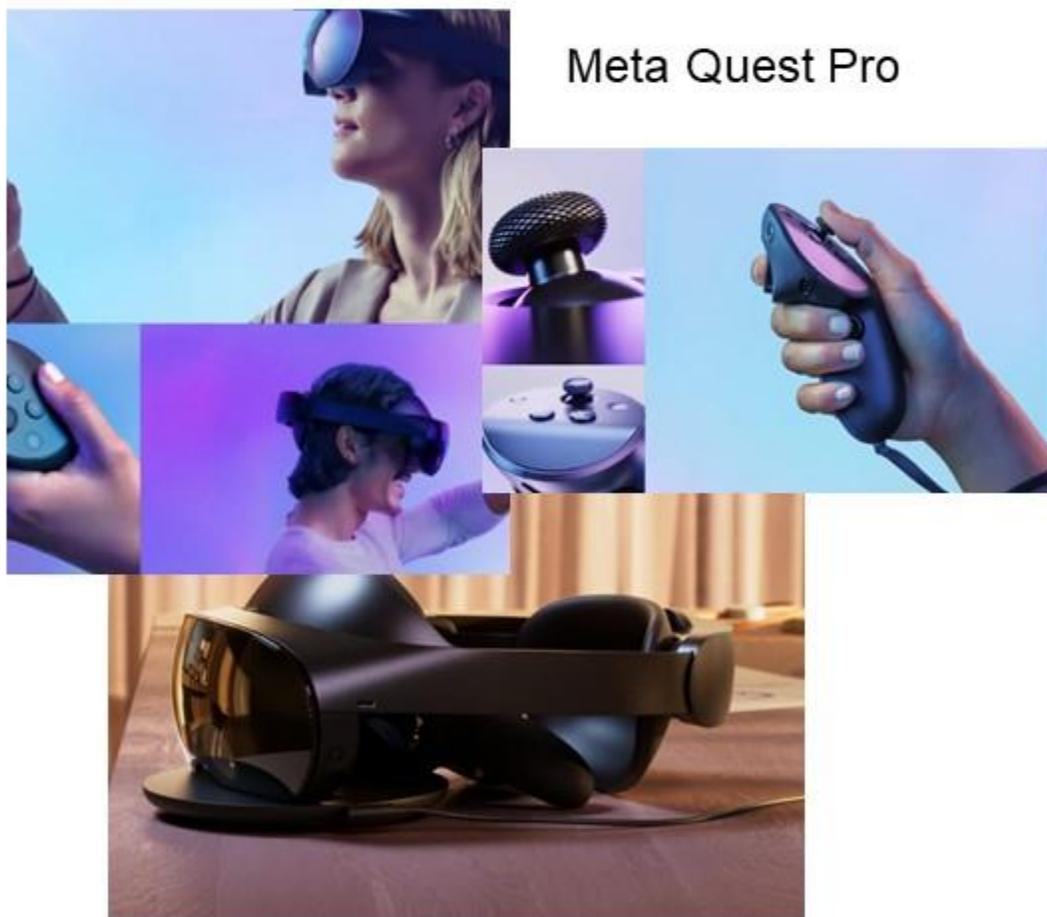
Immersive virtual environments shut out the real world.

Towards massive Mixed Reality...



In **Meta Connect 2022** the brand-new viewer, Meta Quest Pro, was presented as the first of the new line of high-end devices designed thinking about collaboration and productivity for companies, but above all in the direction of approaching an increasingly total immersiveness (vision quality and visual comfort) and in providing an expressiveness to your avatar, both elements at the base of the development of the Metaverse!

New Metaverse Headset



Meta Quest Pro

The advantages of the new generation of Headset

- **Headset with 10 advanced VR/MR sensors** and spatial audio, 256 GB of space, 12 GB of RAM and a doubly powerful Snapdragon XR2+ processor for multitasking
- **Advanced high-resolution mixed reality** that allows you to easily interact with the virtual world with the same high-definition colors as your presence in physical space.
- **Visual clarity.** The optical stack has been reduced by more than 40% compared to Quest 2 using innovative pancake lenses and optical technology that curves light inside the optical module. Advanced VR LCD screen technology that offers 37% higher density. 1.3X larger color scale with brighter colors for a more immersive VR experience.
- **Real-time expression tracking** allows you to create an avatar that can reproduce your facial expressions: the way you smile, raise an eyebrow, wink.
- **Advanced controllers** including 3 cameras and a Snapdragon 662 mobile processor per controller, for a 360° range of motion in virtual space. The TruTouch haptic feedback and the precision of the finger-closing movement return the feeling of a more intuitive VR.
- Meta Quest Pro **brings together the latest VR to change the way physical and virtual worlds are designed.** With Painting VR and other design apps, the creative process reaches a whole new level.
- **The simplified, balanced, wireless profile** combines to increase comfort and let you work, create, and collaborate longer in VR.

Avatars



From pixels to Full Body Scanner

A 3D avatar is a virtual representation of a physical identity, in a digital environment. Whether it is a real person or an artificial intelligence, as in the case of NPCs (Not Playable Characters) and virtual assistants, the avatar essentially makes two crucial operations possible: recognition and interaction between the users who populate virtual worlds.

Thanks to the introduction of artificial intelligence, full body scanners (also through smartphone cameras) and facial expressions sensors introduced in recent Headset, we will soon arrive at the perfect digital representation of your real appearance, complete with facial expressions in real time!

N.B. Of course with the possibility of applying all the beauty and rejuvenation filters already available ;-)

Create videos at scale with AI avatars

Get access to 65+ AI avatars covering different ethnicities, ages and styles. Add a human touch to your video content.

[See all avatars](#) [See how avatars are created](#)



The world of Headset

Professional Headset

Magic Leap 2 – MR(3299€) - 2022



Meta Quest Pro – VR-MR(1800€) - 2022



HP Reverb G2 – VR (700€) - 2021



Microsoft HoloLens – AR (3900€) - 2020



Google Glass 2 – AR(1300€) – 2013 - 2020



Consumer Headset

Oculus (Meta) Quest 2 – VR (390€) - 2020



Playstation VR2 – VR (600€) - 2023



Valve Index – VR (1500€) - 2019



HTC vive pro 2 – VR (1500€) - 2021



Google Cardboard – VR (Gratis) - 2014





METaverse... THE NEXT BIG THING!

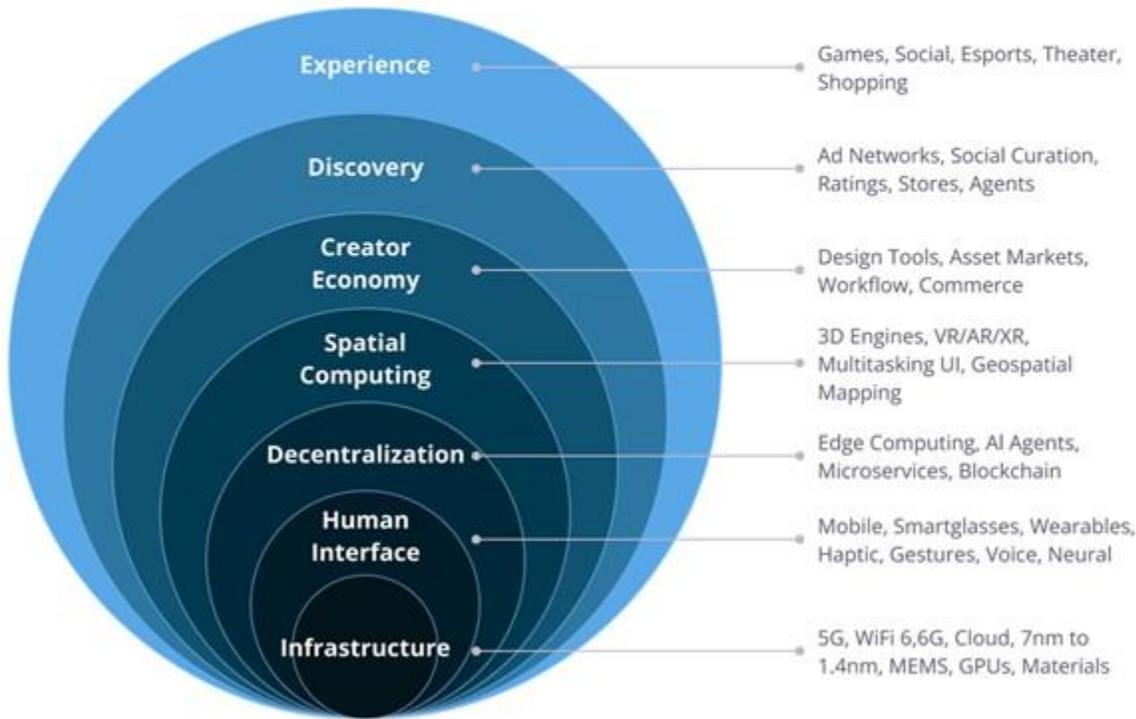
By Davide Ciliberto – lperverse.com

In the most recent futurist literature, the Metaverse is a hypothetical immersive use of the Internet, a digital alternative of the physical world, accessible thanks to the use of virtual reality (VR) and mixed reality (MR) headset.

In current practice, an evolving concept still not well defined and often interpreted in many different ways.

The ecosystem

Seven layers of the metaverse

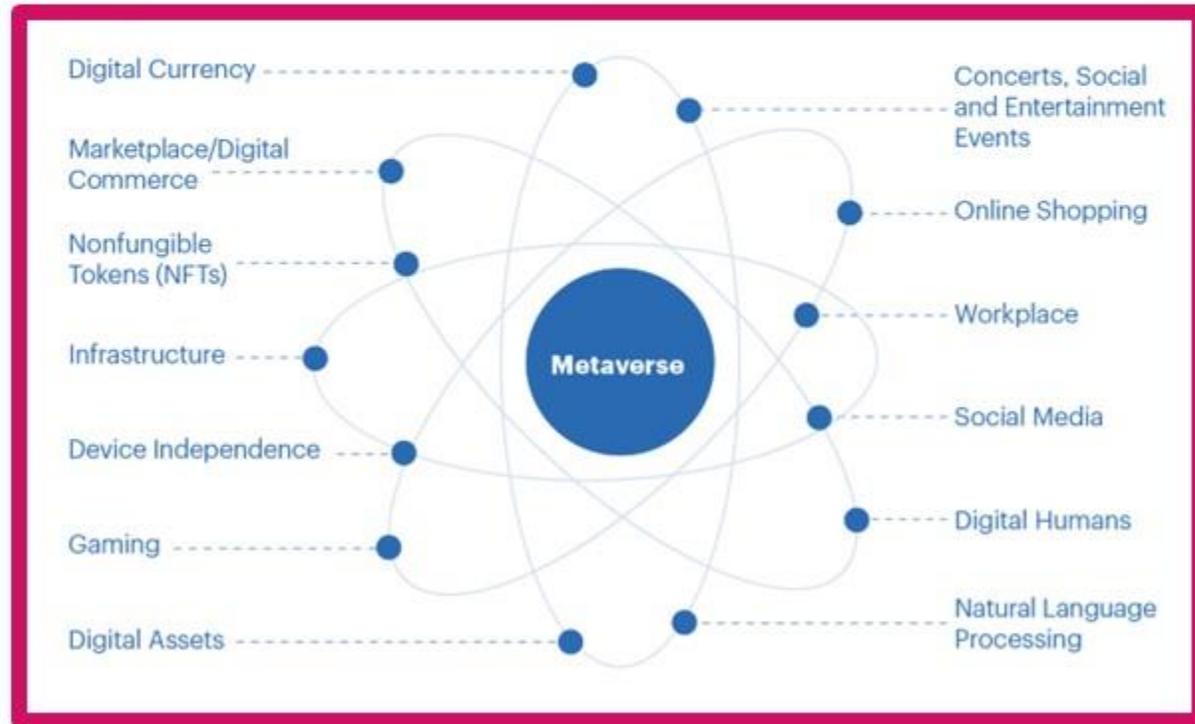


Experience	Discovery	Creator Economy	Spatial Computing	Decentralization	Human Interface	Infrastructure
FORTNITE 	facebook unity Ads Google STEAM Google Play itch.io APPLOVIN IronSource NETWORK Vungle 	unity EPIC BEAMABLE RQBLX horizon Microsoft SANDBOX skillz Adobe genvid Decentraland Polystream GameMaker Studio 2 ESSECE gravity sketch shopify 	unity Matterport Google AI OpenAI occipital CESIUM 	Microsoft Dapper ubuntu IBM wax Enjin Ava Labs Algorand THETA Polkadot CARDANO OpenSea makersplace SuperRare Crucible 	oculus Apple XBOX SAMSUNG Enjin VIVE NEURALINK LIGHTFORM VUZIX neoi AVEGANT 	aws Azure AMD intel Qualcomm qorvo verizon F Mobile fastly

The Supporting Elements of the Metaverse

*The Metaverse must be **persistent, decentralized, autonomous, infinite, interoperable and real-time**. These are its main features in order to offer a real alternative to the real world*

*To achieve this result it is **necessary to develop a complete ecosystem**, similar to that of the real world, at the same time enabled and supported by sufficiently immersive, user-friendly and affordable technologies (Smartphone like)...*



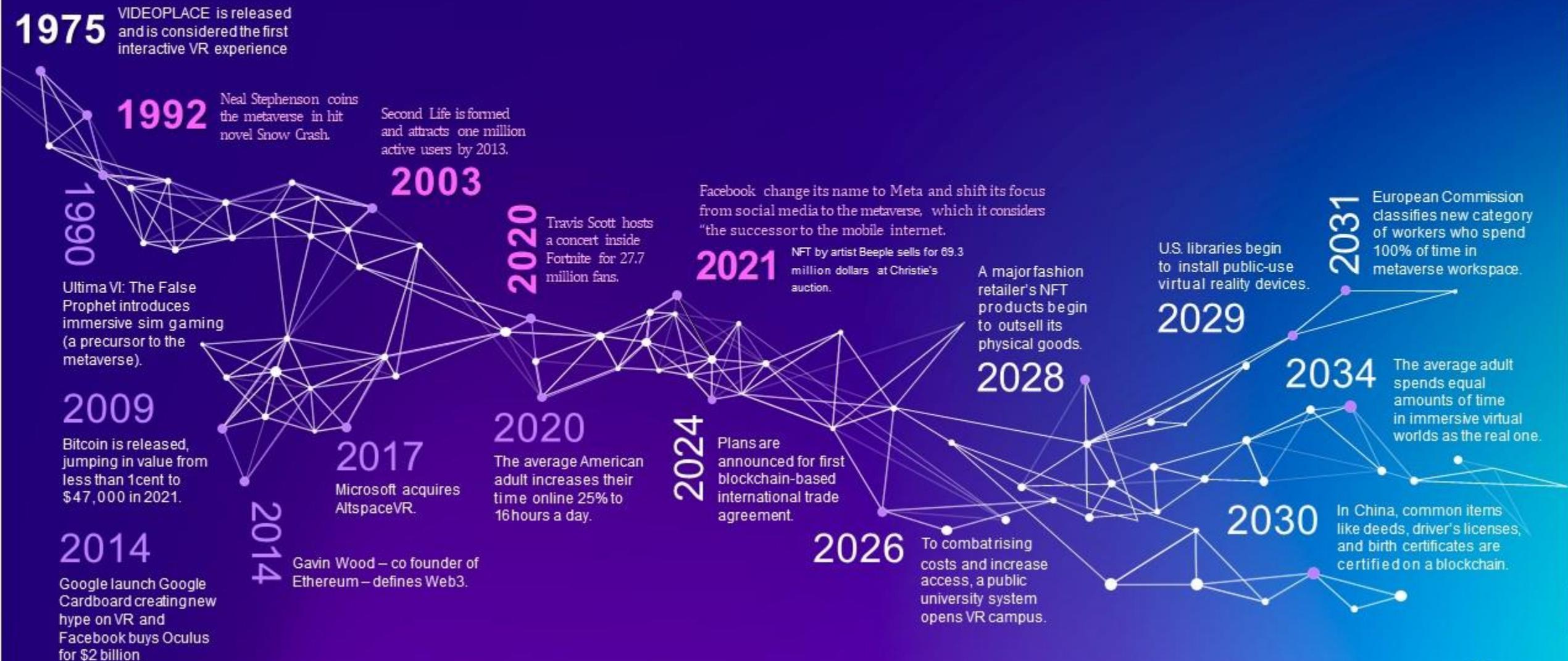
What could the Metaverse look like in the not-too-distant future?

By Davide Ciliberto – lperverse.com



Recent literature and cinema have a more or less defined vision, although at times dystopian... Here is an excerpt from RPOne based on the novel by Ernest Cline, scripted by Spielberg

The Metaverse History... & Future



What activities could we carry out in the metaverse?



PLAY

Take video games to the next level, offering **infinite universes** and fully immersive experiences.



ENJOY

Virtually enter a **concert, or other form of entertainment**, and experience it in an immersive way.



WORK

Create our own **virtual workspaces**. In fact Facebook is already driving such a project.



BUY

Interact with brands and get hold of **virtual but also real objects** in the stores of the metaverse.



WATCH

The metaverse will have, let's say, a life of its own, so we will be an **active part of its day-to-day life** and evolution.



SOCIALISE

Personalised avatars will create **group experiences that facilitate** social interaction.

Applications

- Distributed Smart & Remote Working
- Events in the Metaverse
- Fitness
- Education
- Metaverse Gaming & Virtual World
- Virtual Travel

By Davide Ciliberto – lperverse.com

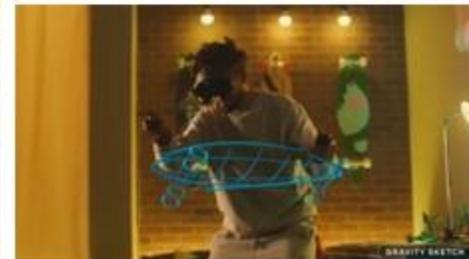
Distributed Smart & Remote Working

MICROSOFT TEAMS MEETING IN VR

"We want this to be more than a virtual meeting.
This is the beginning of the virtual office in the Metaverse» ... Meta & Microsoft

Virtual Office and Work

- Instant access to your workspace, configured as you wish (environment, tools, meeting rooms) no matter where you are.
- No matter where you are, you may only have a 13-inch laptop in your physical space, but in your virtual office you can use multiple custom-sized monitors working on your computer or in the near future, have a real virtual client in your company's cloud, with all the benefits of the case.
- You can have virtual whiteboards on which to draw or mark notes, set up a Kanban board where you can manage tasks, and this will always be available as you left it.
- The real plus will be the immersiveness in shared spaces, where interaction with people will be more realistic with the next generation of headset, thanks to the enabling of Mixed Reality and the introduction of facial expressions.
- Thanks to the new headset and new development software, the degree of collaboration will grow at the highest levels, enabling work cooperation that is difficult or unthinkable even in physical reality, especially in sectors such as design and architecture.
- Finally, considering the difficulty of finding the necessary resources and skills on site, it will be easier to create and manage distributed teams minimizing costs and improving productivity.



Meta & Microsoft Collaboration

Microsoft and Meta Partner to Deliver Engaging Experiences for the Future of Work and Play

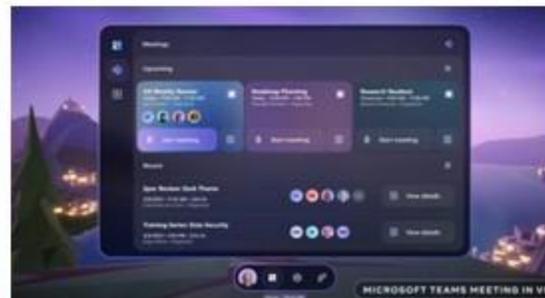


Meta Connect 2022

Two of the Tech Big Five united for the Metaverse...

- **Microsoft Teams immersive meeting experiences for Meta Quest:** Connect, share, and collaborate in Teams immersive experiences.
- **Microsoft Windows 365 for Meta Quest:** Stream the Windows experience on Meta Quest Pro and Meta Quest 2 devices, and access your personalized apps, content, and settings in VR.
- **Microsoft 365 app experiences for Meta Quest:** Interact with 2D content from Sharepoint or productivity apps like Word, Excel, PowerPoint and Outlook directly from Meta Quest Pro and Meta Quest 2.
- **Microsoft Teams/Workrooms integration:** Join a Teams meeting from inside Workrooms.
- **Meta Avatars in Microsoft Teams:** Use your Meta Avatar in Teams for whiteboarding, brainstorming, and meetups.
- **Microsoft Intune and Azure Active Directory support for Meta Quest:** Enable enterprise security and management on Meta Quest Pro and Meta Quest 2 devices.

Meta & Microsoft Collaboration



Meta & Accenture Collaboration



In Connect 2022, Zuckerberg was also joined by Accenture President and CEO Julie Sweet, who revealed that the global professional services firm is partnering with Meta and Microsoft to help companies around the world create new experiences that accelerate the future of work.

In the last year (2021-22), Accenture deployed 60,000 Meta Quest 2 headsets and transformed its onboarding process, welcoming 150,000 people to its virtual campus "Nth Floor", created in collaboration with Microsoft.

Accenture will work alongside Meta and Microsoft over the next year to help companies use virtual reality to transform the way they engage employees, interact with customers, or create products and services in the Metaverse.





FORTNITE + J+K

"Artists make more money and consumers don't have to pay too much for an experience shared with millions of people, which sometimes wouldn't even be possible in the real world."

By Davide Ciliberto – iperverse.com

Events in the Metaverse

On April 23, 2020, over 12 million people watched Travis Scott's 10-minute concert in real time via the game FORTNITE. After four more replays in three days, a total of 27.7 million unique Headset joined to experience Travis Scott's avatar performance.



Sport & Entertainment Event in VR

The best seats, unlimited and available to anyone at affordable prices

- Dozens of different point of views, among the best in the stadium or arena, available to everyone (the physical limits of the events disappear, and the target of users widens)
- Immersive view and audio for a life-like experience
- Party View : possibility of seats next to friends or VIPs, to share the event as if you were there in person all together
- "All You Can Eat" subscriptions or Individual events on demand

Fitness

More and more social apps in VR and in the future MR

- New apps more and more immersive and engaging, that thanks to more comfortable headset, allow a more intense workout.
- Possibility to participate in group sessions or with friends, such as in physical gyms.
- Possibility to have real remote or virtual personal trainers
- Gamification increasingly pushed to make less heavy training thanks to the simulation of pleasant and relaxing environments or realistic dynamic situations
- Virtual Gym 2.0 which will gradually arrive with the new generation of Headset and the MR, which will enable a hybrid reality, in which you can work with real tools, but in a context enriched by virtual elements, including the personal trainer who could be physically anywhere.





By Davide Ciliberto – lperverse.com

Education Meets the Metaverse... Reimagining the Future of Learning

The HYPE around the metaverse has reached a fever pitch. This is a unique opportunity for the emerging world to move beyond stale eLearning programs into an "always-on" universe of new experiential learning opportunities.

Education

Cancellation of distances and physical spaces

Thanks to the virtual classes, each student or apprentice will be able to participate in the lessons wherever he is, living in simulated physicality the environment and the interactions with the participants for a total and engaging immersion.

Optimize information storage through experiential learning

Learning through experience is one of the best ways to acquire concepts and enhance learning skills

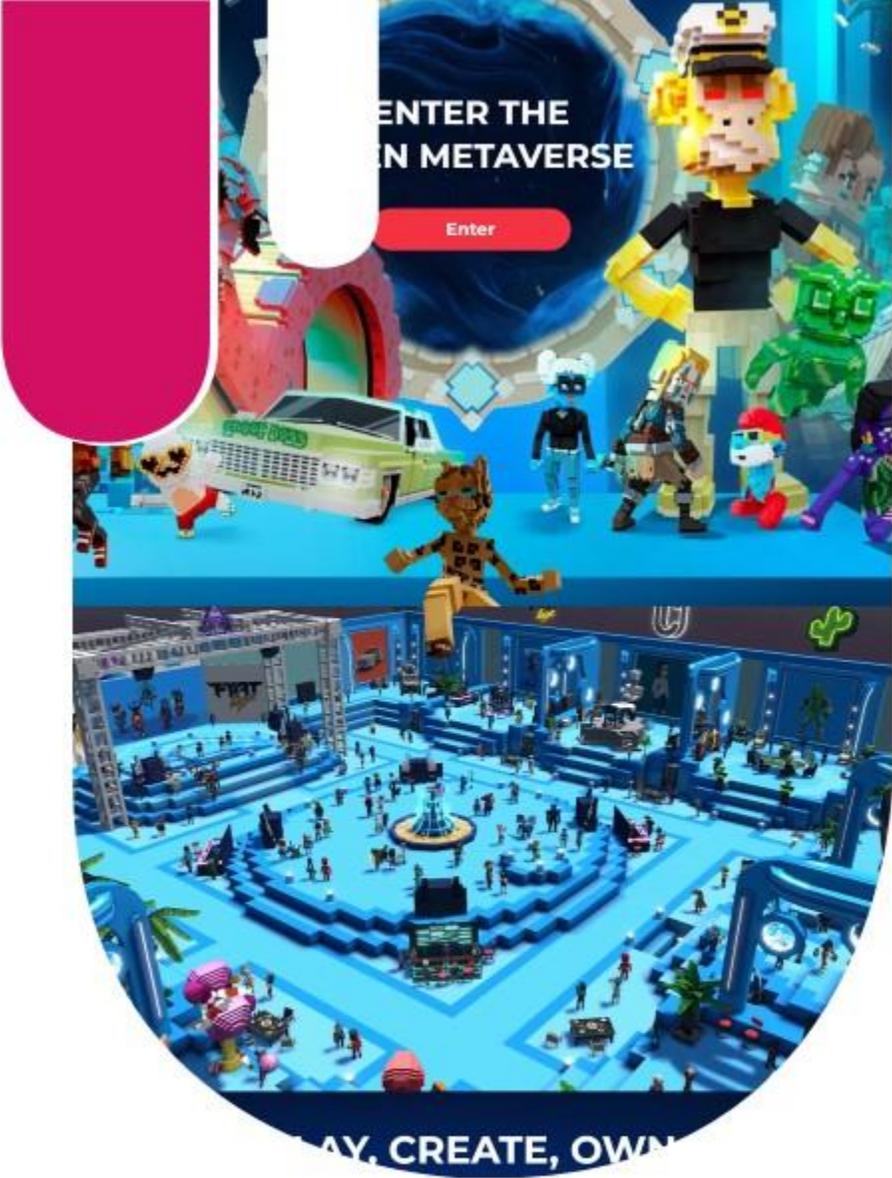
90% of the information transmitted to our brain is images

Scientific evidence shows that our brain accesses information more effectively through visual stimuli, so much so that 90% of the total information transmitted is images.

Marked improvement in focus and results

Virtual Reality in the classroom can improve the results of students and apprentices by simplifying the memorization of information and manual practices while minimizing distractions from the external environment.





Metaverse Gaming & Virtual World

Reality Vs Metaverse

About half of young gamers said they would rather play online with their friends online than in person.

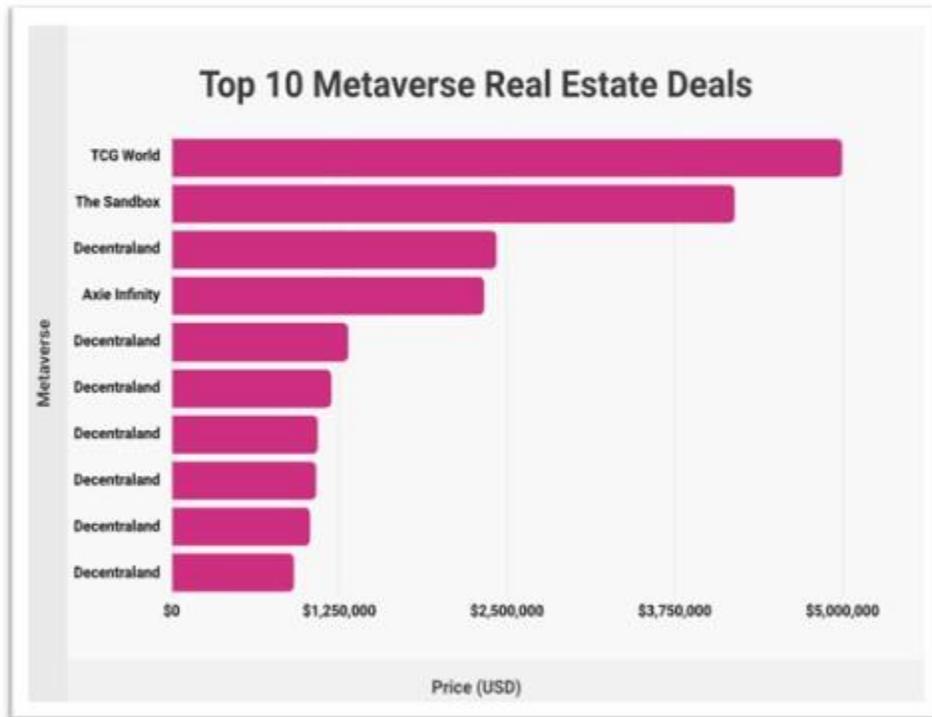
Not only that: 53% of them would prefer to inherit a holiday home in the metaverse than on an exotic island. "This is just one example of how player preferences are shaping the world of entertainment virtually.

The emerging groups of new young people under 18 not only spend an average of 12 and a half hours a week between video games, + 15% compared to the group only slightly older than 18-24 years; But above all, they spend almost twice as much on the gaming metaverse.

Spending that now averages \$42 per month, well beyond the expense of a monthly subscription to TV or telecommunications entertainment platforms, and is expected to increase significantly in the future.

The Virtual Real Estate Phenomenon

Virtual real estate is the buying and selling of digital properties within metaverses, especially those based on the blockchain.



VRE represents the new frontier of investments in real estate, where the traditional brick gives way to the pixels of virtual worlds

Virtual Travel

Travel in the Metaverse could revolutionize the way people interact with the travel industry. Imagine a scenario where you can explore a hotel or attraction in virtual reality (VR) while sitting in your home on the other side of the world.

By creating three-dimensional models of real places, journeys in the Metaverse will create new experiences and new ways for people to experience tourist destinations and accommodation and live activities.

Broaden your travel inspiration

It's likely that the Metaverse will complement the travel industry, providing potential travelers with a taste of what they can experience. It will be possible to allow travelers to inspect hotel rooms and other spaces before booking, while also allowing them to try out the check-in process.



The Metaverse Numbers

By Davide Ciliberto – lperverse.com

Data sources from Accenture research (Technology Vision 2022), Gartner, McKinsey & Company (Value creation in the metaverse), Crunchbase, Osservatoriometaverso.it



The metaverse will significantly impact our commercial and personal lives

\$120b+

in investment has flowed
into the metaverse so far
in 2022

79%

of consumers active on
the metaverse have
made a purchase

>15%

of corporate revenue is
expected to come from the
metaverse in the next 5
years according to 25% of
senior executives

The Numbers - Finance

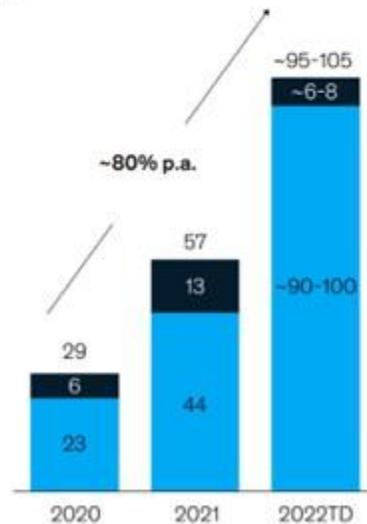
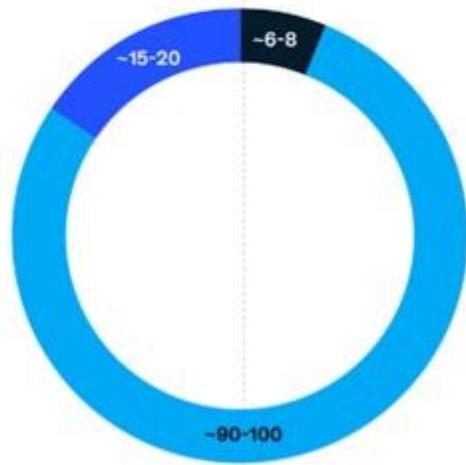
Substantial investment signals confidence in the potential of the metaverse.

Value of metaverse-related investments, \$ billions

■ Venture capital (VC) & private equity (PE) ■ M&A ■ Internal corporate investment*

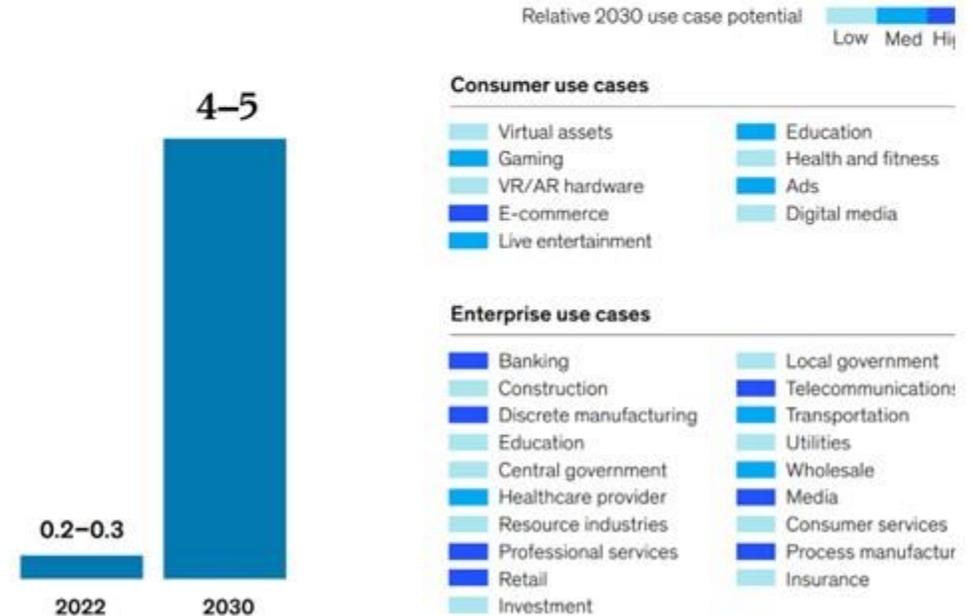
Total investment, \$ billions, 2022 to date

VC & PE funding and M&A, \$ billions 2020-2022 to date



By 2030 the metaverse could generate \$4 trillion to \$5 trillion across consumer and enterprise use cases.

Metaverse impact potential by 2030, \$ trillion



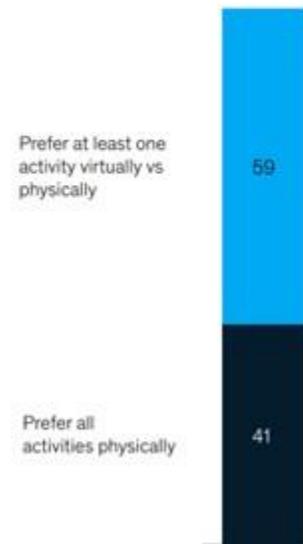
*Internal corporate investment in 2022 derived for top 30 companies investing in the metaverse based on publicly announced investment amounts. Source: Crunchbase (Jan 2020-May 2022)

Source: McKinsey analysis. For a detailed explanation of the methodology behind our sizing forecast, please refer to Appendix B

The Numbers – Consumer mood

Consumers are looking forward to shifting a range of their activities to the virtual world.

Preference for at least one activity in immersive world compared to physical alternative,¹ % of respondents



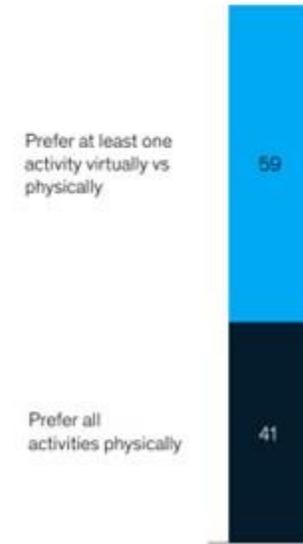
Top 5 activities most preferred in an immersive world compared to traditional alternatives,² % of respondents



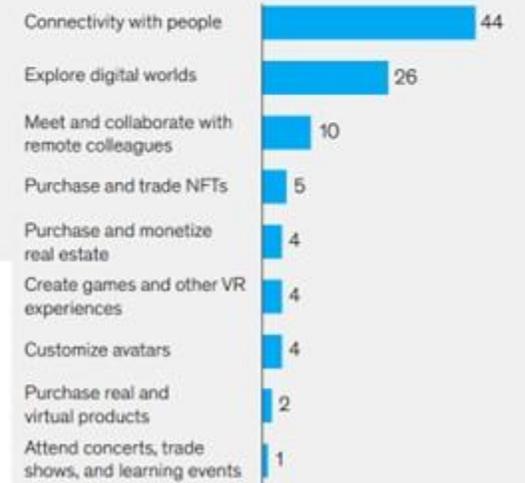
¹Q: When you participate in the metaverse, do you prefer that virtual experience over the same activities in the physical world? (n = 2,939).
²Q: Only for respondents who preferred at least one activity in the immersive virtual world compared to physical alternative; Compared to traditional, non-immersive digital events or activities, how much did you enjoy the following? (n = 1,210).
 Source: Intell Metaverse Consumer Survey in Europe, the Middle East, and Asia (EMEA) and Asia-Pacific (APAC); Intell Metaverse Consumer Survey in United States

Approximately 60 percent of consumers are excited about the transition of everyday activities to the metaverse.

Preference for at least one activity in virtual world compared to physical alternative,¹ % of respondents



Drivers of excitement for consumers who prefer virtual immersive virtual experience over similar activities in the physical world,² % of respondents



¹Q: When you participate in the metaverse, do you prefer that virtual experience over the same activities in the physical world? (n=2,939).
²Only for respondents who preferred at least one activity in the immersive virtual world compared to physical alternative; Q: What gets you most excited about participation in the metaverse? (n=1,210).
 Source: Intell Metaverse Consumer Survey in Europe, the Middle East, and Asia (EMEA) and Asia-Pacific (APAC) (April 2022)

The Numbers – Adoption

Initiative preferences vary by industry; meetings and events are of particular interest to healthcare, and travel, transport, and logistics.

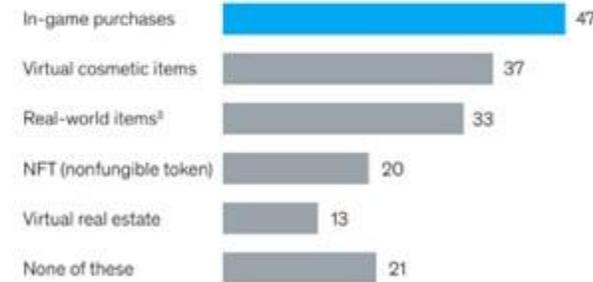
Metaverse initiatives implemented to date, by industry,¹ % of senior executives in each industry



¹Q: What metaverse features or capabilities have you implemented in your company to date? (n = 258). Source: McKinsey & Company Senior Executive Survey, April 2022.

About 79 percent of consumers active on the metaverse have made a purchase, mainly to enhance their online experience.

Purchases in the metaverse,¹ % of respondents



Top 3 reasons for purchases in the metaverse,² % of respondents

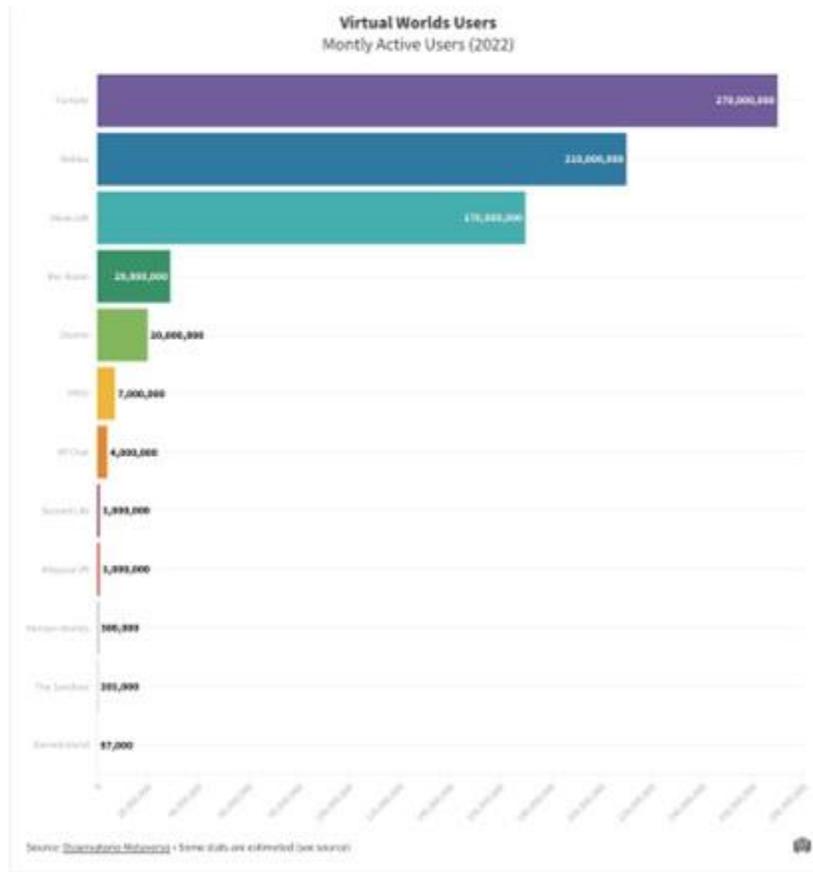


¹Q: When you are participating in activities in the metaverse, have you purchased any of the following products/services in past 12 months? (n=2,093).

²Q: What was the main reason for the purchase(s) you made? (n=1,543).

Source: Intellii Metaverse Consumer Survey in Europe, the Middle East, and Asia (EMEA) and Asia-Pacific (APAC); Remesh Next Gen Consumer – Metaverse Survey in United States.

Numbers – Active Users in the Metaverse



In September, Decentraland said it had 56,697 monthly active users, while The Sandbox said that during its last opening (Alpha Season 3) it hosted 201,000 monthly users and 39,000 daily users.

Update Nov 2022

Metaverse	Registered Users	Monthly Active Users	Daily Active Users	Source
Roblox	n.a.	210.000.000*	58.800.000	Roblox
Minecraft	n.a.	170.000.000*	15.000.000*	
Fortnite	400.000.000	250.000.000*	24.000.000*	Active Player
Decentraland	n.a.	57.000	8.000	Decentraland
The Sandbox	2.000.000	201.000	39.000	Dean Takahashi The Sandbox
Altspace VR	n.a.	1.000.000*	n.a.	
VR Chat	n.a.	4.000.000*	-	
Horizon Worlds	n.a.	300.000	-	The Verge
Second Life	-	600.000*	n.a.	
Rec Room	75.000.000	29.000.000	n.a.	Venture Beat
IMVU	n.a.	7.000.000*	n.a.	
Zepeto	300.000.000	20.000.000	-	Naver

Fonte : [osservatoriometaverso.it](#)

NOW DEMO!

Meta Quest Pro
VR-MR (1800€) - 2022

Oculus (Meta) Quest 2
VR (390€) - 2021



Demo Use Case & Application with Latest Generation Professional & Consumer Headset



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THANK YOU!

Davide Ciliberto

Passionate, Visionary and unbridled Technology Experimenter since 1984...

From the internet to the Metaverse, creating one of the first internet points in Milan in 1996 Working and experimenting with the web and its applications in all its forms, starting from the first 9600 bps modems and later from the first Omnitel cellular communications.

*Testing in Vodafone the first **multimedia services and digital payments** on rudimentary smartphones, deepening and experimenting in my spare time the development of **IOT, Home Automation, 3D Printing and Robotics**, studying the evolution of **Artificial Intelligence** and then the **Blockchain**, trying the world of **Crypto** and creating the first **NFTs**, while I began the experience of **VR & MR** from 2015.*

*All naturally intermediated by moments of leisure dedicated to the passion for **Videogames**, which from Atari to PlayStation 5 / Xbox have entertained me for about 35 years, projecting me more and more into the imminent future of the Metaverse ;-)*

*P.S. said so, it seems to be a "total nerd" ...
in reality, in addition to being the father of two fantastic creatures and husband of a patient wife, I love and practice numerous sports, when I can I travel the world, and in addition to the passion for scientific / economic essays and cinema, I enjoy oil painting as much as Lego Technic constructions ;-)*