

Metaverse

Internet and reality Intersection

By: Javier Hernandez Rivera

About me

- Computer Engineer
- 20+ year experience in automation, software development and everything that is related to barcodes.
- Hobbies
 - Electronics
 - Tech activities (previous to covid)
 - 3d Printing
 - Ham Radio
 - Fishing



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Outline

- Metaverse definition
 - History / Devices
- Use cases
- Why?
- Players
- Challenges
 - Privacy
 - Enviromental
- Future

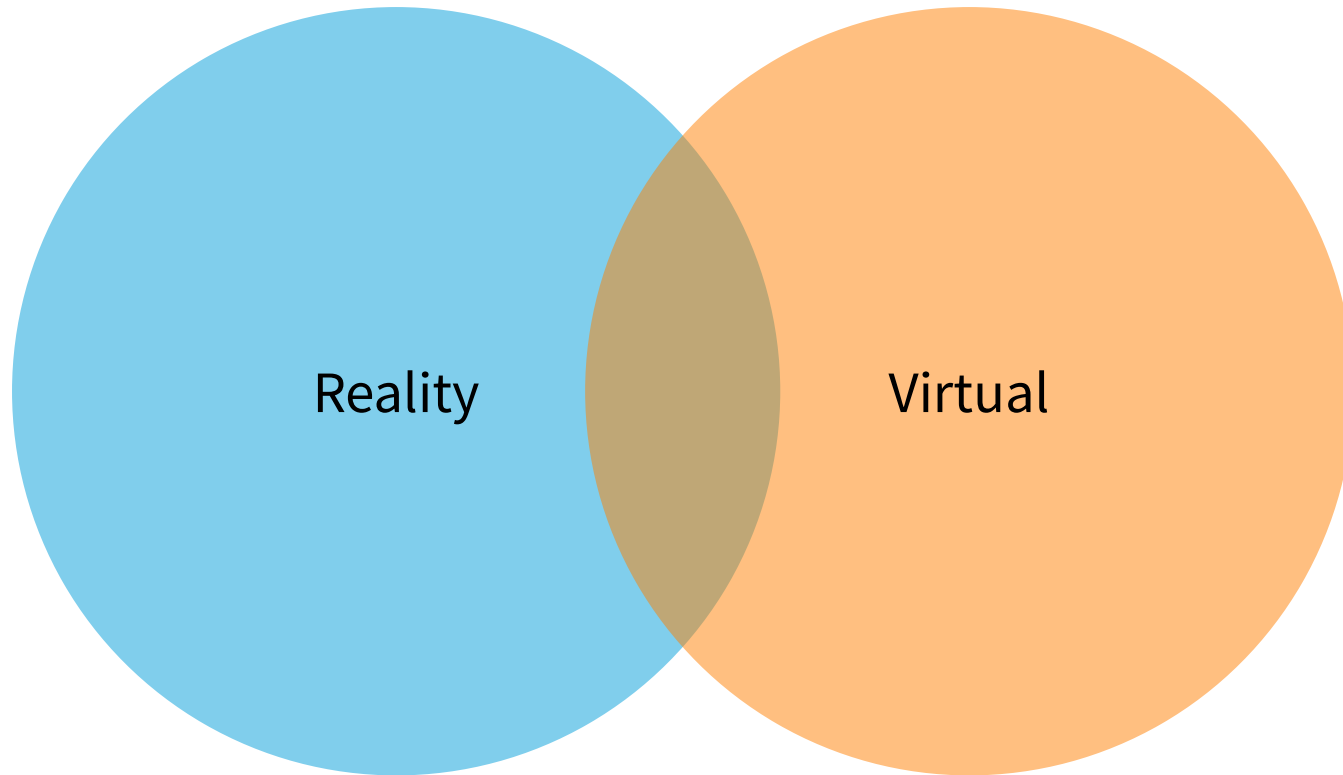
Metaverse != Augmented Reality

Augmented reality

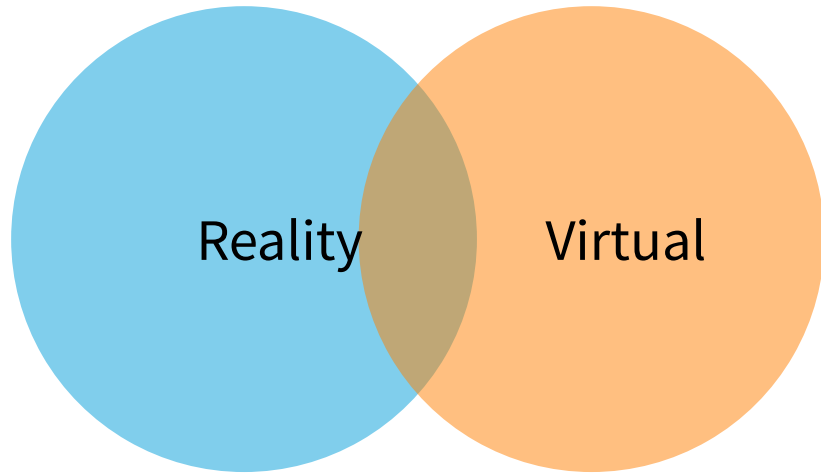
“Augmented reality is an interactive experience of a real-world environment where the **objects that reside in the real world are enhanced** by computer-generated perceptual information, sometimes across multiple sensory modalities...”

https://en.wikipedia.org/wiki/Augmented_reality

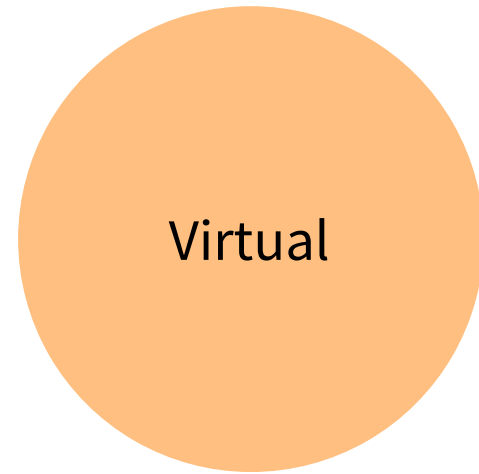
Augmented reality



Augmented reality



Metaverse



Augmented reality use case example

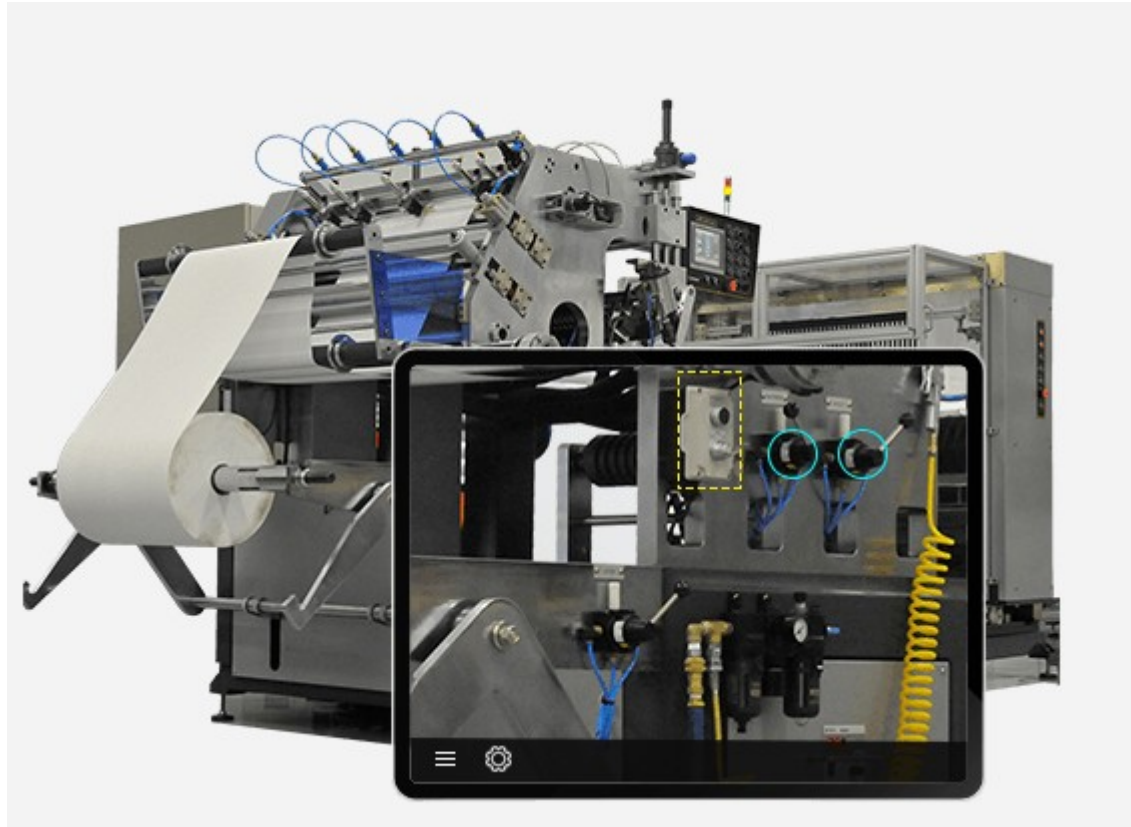


Image from Quaytech web site

<https://www.quaytech.com/augmented-reality-in-manufacturing.php>

Augmented reality in amazon app

Allows customer to visualize how product will be in home environment



Metaverse Definition

Metaverse Definition (Wikipedia)

- “In futurism and science fiction, **the metaverse is a hypothetical iteration of the Internet as a single, universal and immersive virtual world** that is facilitated by the use of virtual reality (VR) and augmented reality (AR) headsets. In colloquial use, a metaverse is a network of 3D virtual worlds focused on social connection.
- The term "metaverse" originated in the 1992 science fiction novel Snow Crash as a portmanteau of "meta" and "universe." **Metaverse development is often linked to advancing virtual reality technology due to increasing demands for immersion.** Recent interest in metaverse development is influenced by Web3, a concept for a decentralized iteration of the internet. Web3 and The Metaverse have been used as buzzwords to exaggerate development progress of various related technologies and projects for public relations purposes. **Information privacy, user addiction, and user safety are concerns within the metaverse**, stemming from challenges facing the social media and video game industries as a whole.”

Summary

- the metaverse is a hypothetical iteration of the Internet as a single, universal and immersive virtual world
- Metaverse development is often linked to advancing virtual reality technology due to increasing demands for immersion
- Information privacy, user addiction, and user safety are concerns within the metaverse

Summary

- Virtual World (not real)
- Immersive experience
- Interaction with others on this virtual world

Virtual World (Wikipedia)

“A virtual world (also called a virtual space) is a computer-simulated environment which may be populated by many users who can create a personal avatar, and simultaneously and independently explore the virtual world, participate in its activities and communicate with others..”

https://en.wikipedia.org/wiki/Virtual_world

Virtual World (Wikipedia)



<https://www.epicgames.com/fortnite/en-US/chapter2>

No Man's Sky (game)



Immersive Experience

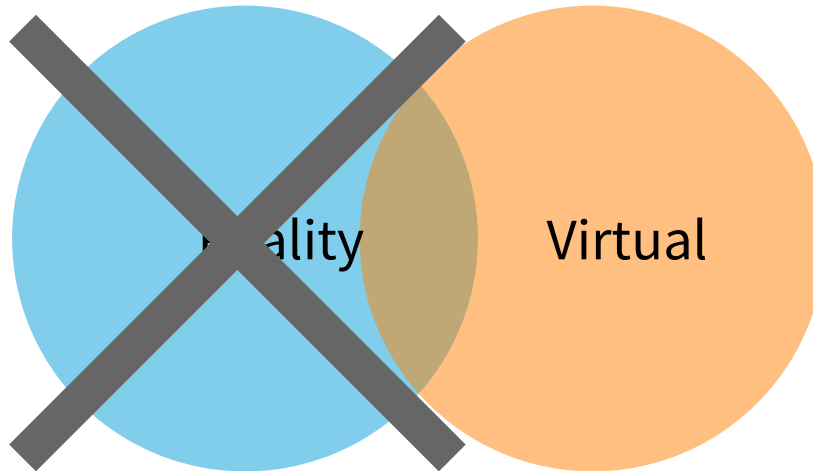
- “Generally speaking, an immersive experience refers to any experience facilitated by digital technology that attempts to imitate a physical world through a digital or simulated world by creating a surrounding sensory feeling, thereby creating a sense of immersion.”
- “In simpler terms, with immersive experiences, one’s perceptual and sensory experiences of the real world are entirely overridden by a virtual experience”

Immersive Experience

- Imitate a physical world
- Sensors to create sense of immersion
- The real world are entirely overridden by a virtual experience

Immersive Experience

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The Matrix

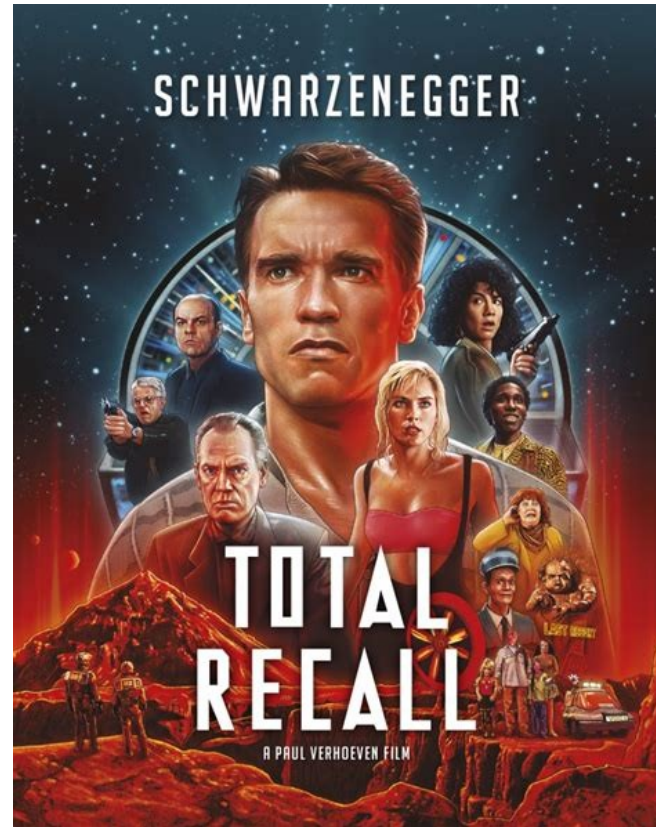


The Matrix

- the metaverse is a hypothetical iteration of the Internet as a single, universal and immersive virtual world
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-



What is real?

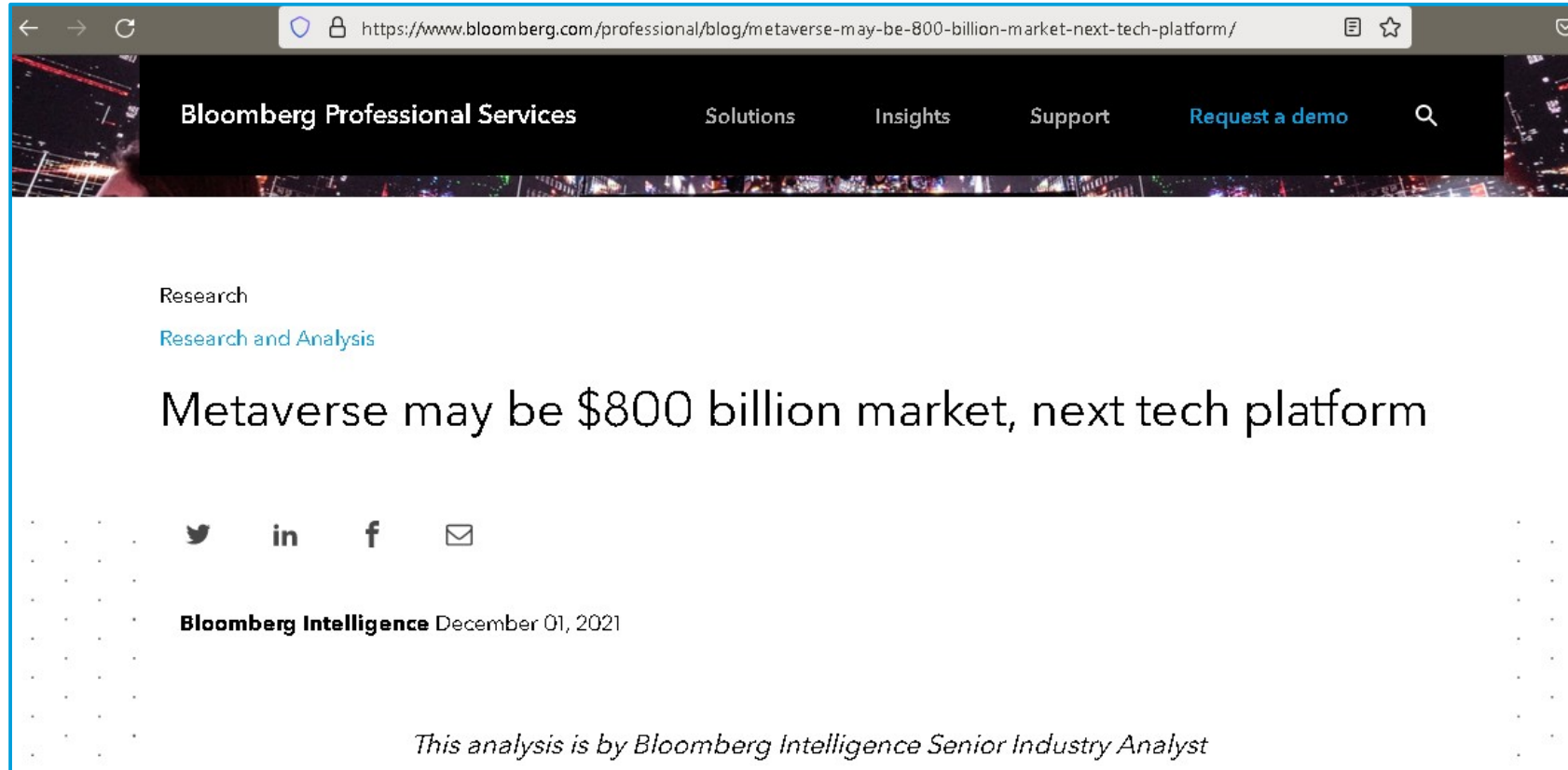


Why?

No need to be an engineer to know



Bloomberg said



<https://www.bloomberg.com/professional/blog/metaverse-may-be-800-billion-market-next-tech-platform/>



BUSINESS NEWS

Metaverse Market Size to Reach USD 1,607.12 Billion in 2030 | Emergen Research



By Biswas Debanjan ✉

Posted on August 4, 2022

- “According to the most recent analysis by Emergent Research, the size of the worldwide metaverse market is anticipated to reach USD 1,607.12 billion in 2030 and see a revenue CAGR of 43.3% over the projected period. ...”

TMCNET NEWS

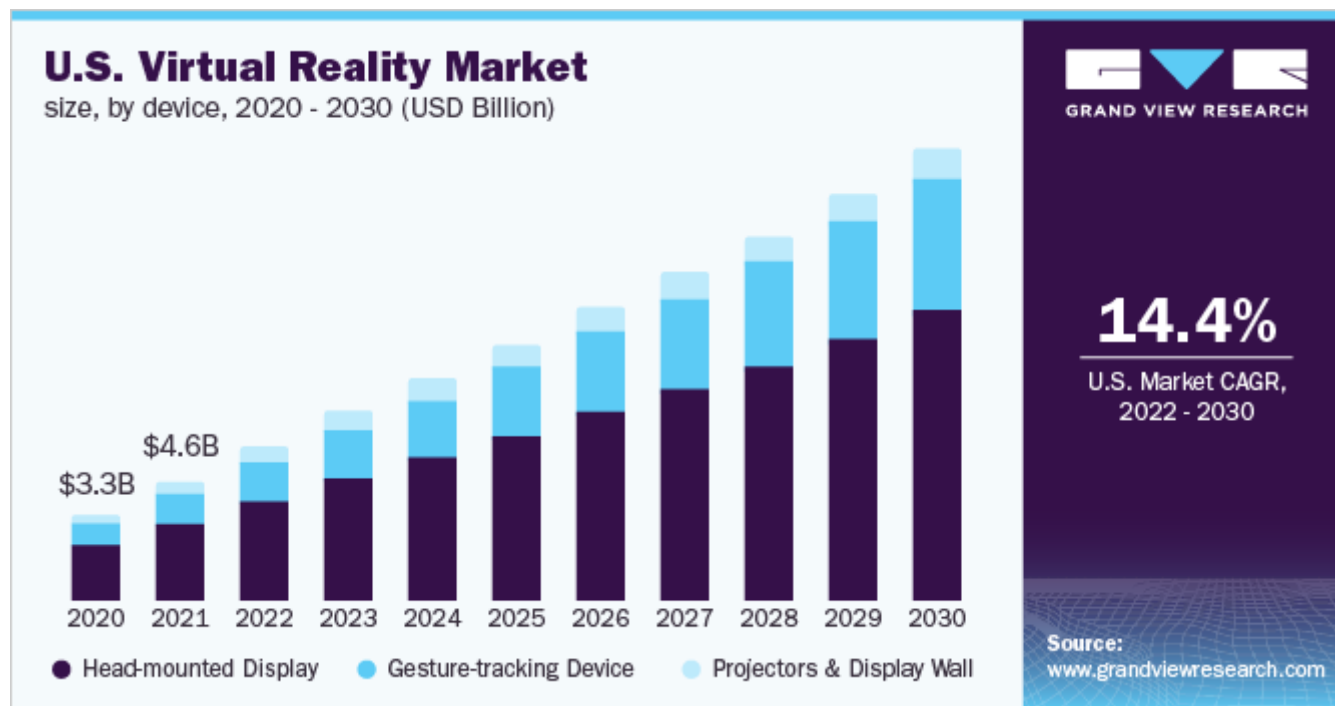
[August 03, 2022]

Global Metaverse Market Set to Reach USD 659.7 Billion by 2030, With a Sustainable CAGR of 37.5% | Growth Market Reports

- “... the market was valued at USD 37.9 billion in 2021 and is projected to reach USD 659.7 billion by the end of 2030, expanding at a CAGR of 37.5% during the forecast period, 2022-2030. ...”

<https://www.tmcnet.com/usubmit/2022/08/03/9650149.htm>

Virtual Reality Market

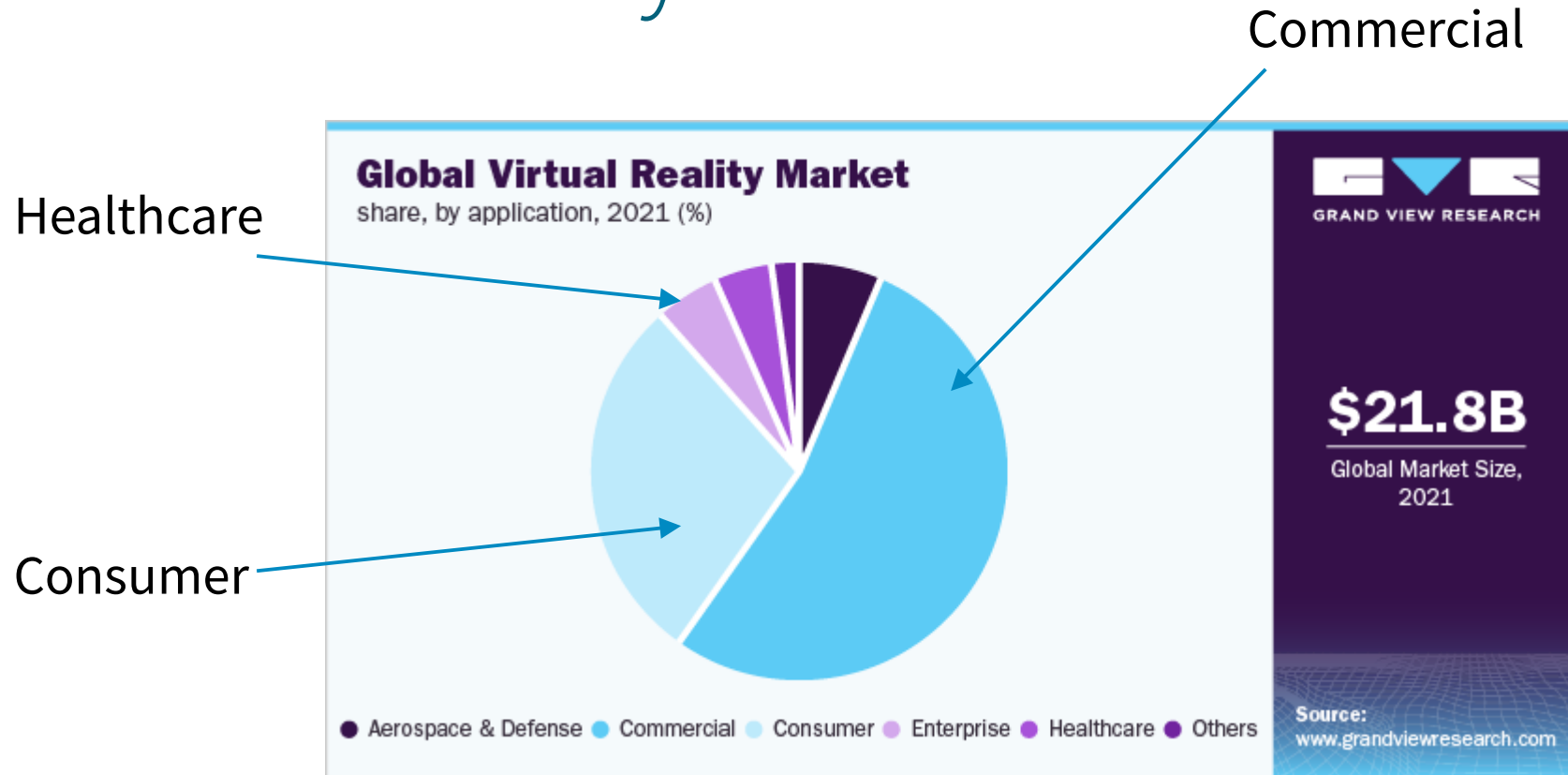


Source:

<https://www.grandviewresearch.com>

<https://www.grandviewresearch.com/industry-analysis/virtual-reality-vr-market>

Virtual Reality Market



Source:

<https://www.grandviewresearch.com>

<https://www.grandviewresearch.com/industry-analysis/virtual-reality-vr-market>

Is it a totally new idea?

Virtual Boy 1995

- The Virtual Boy is a 32-bit tabletop portable video game console developed and manufactured by Nintendo. Released in 1995



From google image search

VR Games on 90's

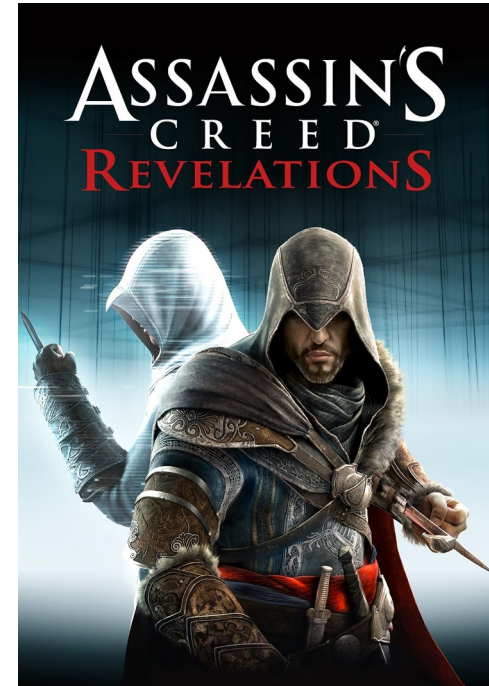


<https://www.youtube.com/watch?v=dji9YiPZ4AM>

90's technology



Open World games



Second Life

- <https://secondlife.com/>



Expect the Unexpected

With thousands of virtual experiences and communities, you'll never run out of places to explore and people to meet. Music clubs, roleplaying communities, virtual cinemas and more. Second Life is always wonderful, sometimes weird, and 100% wow-worthy.

[Explore Now](#)

Second Life

- <https://secondlife.com/>
- Launched In 2003
- In 2019, launched Tilia, a registered money services business and fully licensed money transmitter that powers virtual economies.
- By Linden Lab was founded in 1999 and is headquartered in San Francisco with additional offices in Seattle, Boston, Davis, and Charlottesville.

Second Life

- <https://secondlife.com/>

Remote Meetings Redefined

Make meetings fun again with virtual hangout spaces, classes and conferences. For over a decade, leading companies and educators have trusted Second Life for branded social spaces for events and remote meetings.

[Learn More](#)



Second Life

- <https://secondlife.com/>



Imagine the Possibilities

Shop the Second Life Marketplace to discover millions of items including virtual fashions, home decor, and more. Create and monetize your own creations to earn real profits in a virtual economy powered by Tilia.

[Shop Now](#)

Limitation

- Second life character lives in secondlife world
- I do not know anyone that uses secondlife

Google glass



- Release 2013
 - Is it around? I do not know.
- On June 20, 2013, Rafael J. Grossmann, a Venezuelan doctor practicing in the U.S., was the first surgeon to demonstrate the use of Google Glass during a live surgical procedure.
- In July 2014, the startup company Surgery Academy, in Milan, Italy, launched a remote training platform for medical students.

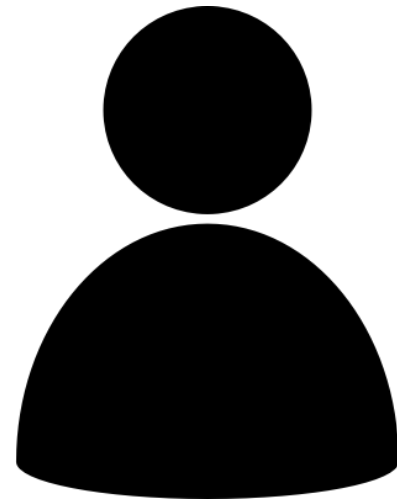
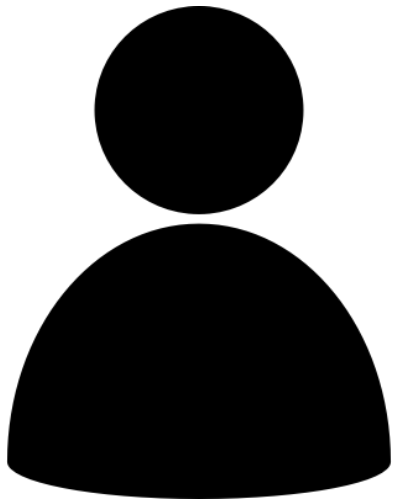
We know what is.
We had related stuff build.
Why I am not using it?

Is not simple

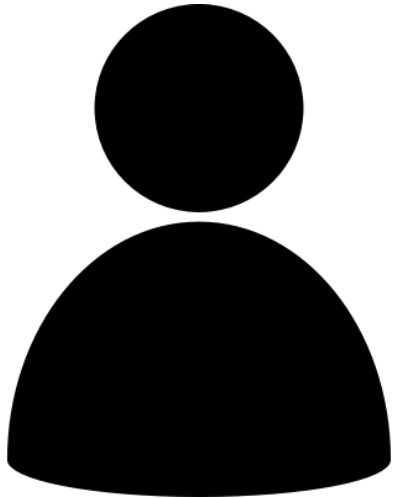
Challenges

**Starts with a
Simple Representation**

Two persons



**Think of
Beautifull dog**



Google? Beautiful dog

← → ↺ <https://www.google.com/search?q=beautiful+dog&tbm=isch&ved=2ahUKewi7rd2HhrP5AhUIHN8KHWnnBqYQ2-cCegQIABAA&oeq=50%> 50% ☆

Google beautiful dog

🔍 All 🖼️ Images 📺 Videos 📍 Maps 📰 News ⋮ More Tools

🐕 small 🐕 wallpaper 🐕 german shepherd 🐕 long hair 🐕 female 🐕 rare 🐕 pet 🐕 large 🐕 top 🐕 labrador 🐕 brown 🐕 unique 🐕 breed 🐕 samoyed 🐕 majestic 🐕 nose 🐕 rottweiler 🐕 mix 🐕 blue eyes 🐕 fur 🐕

20 Most Beautiful Dog Breeds Our List... [k9mfm.com](#)

Most Beautiful Dog in the World 2019... [importerit.com](#)

Beautiful dogs - Home Facebook [facebook.com](#)

Top 10 Most Beautiful Dog Breeds - Photos [photos.com](#)

Most Beautiful Dog: 11 Gorgeous Dogs... [thecolor.com](#)

Dog is Beautiful Online, BCS OFF in vivo... [importerit.com](#)

10 Most Beautiful Dog Breeds (with... [petlover.com](#)

The 20 Most Beautiful Dog Breeds (with... [hegger.com](#)

The 20 Most Beautiful Dog Breeds (with... [hegger.com](#)

About 1000 Paws [petlover.com](#)

Top 12 Most Beautiful Dogs... [herd.com](#)

Top 9 Prettiest & Cutest Dog Breeds... [ornamental.com](#)

Most Beautiful Dog Photos: Over 120 Pictures... [boredpanda.com](#)

Most Beautiful & Intriguing Dog Breeds... [thegeekydog.com](#)

Cute dogs - Home Facebook [facebook.com](#)

20 Most Beautiful Dog Breeds in the... [ornamental.com](#)

Top 9 Prettiest & Cutest Dog Breeds... [ornamental.com](#)

Dogs: Beautiful Dogs Desk... [importerit.com](#)

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101 Beautiful Dog Breeds for Tiny... [thegeekydog.com](#)

Beautiful Dog Images From Vectors... [freepik.com](#)

21 Adorable Dog Breeds to Help... [carnegie.com](#)

The Most Beautiful Dog Breeds You'll... [chewy.com](#)

23 Most Beautiful Dog Breeds in the World... [topdoggo.com](#)

Related searches

- 🐕 puppy beautiful dogs
- 🐕 rare beautiful dog breeds
- 🐕 tiny cute dogs

Top 21 most beautiful dog breeds in the... [doggo.com](#)

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Cute Dog Names for Your Adorable Pup... [doggo.com](#)

Dogs, Dog, Dog, Dog, Dog, Dog, Dog... [doggo.com](#)

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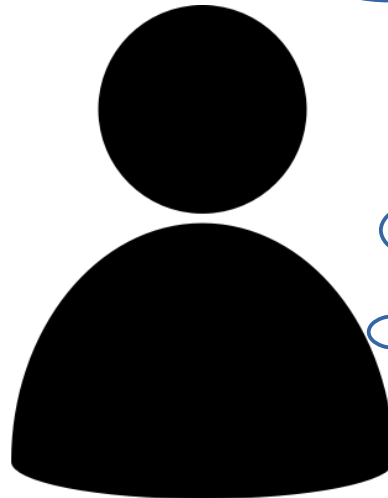
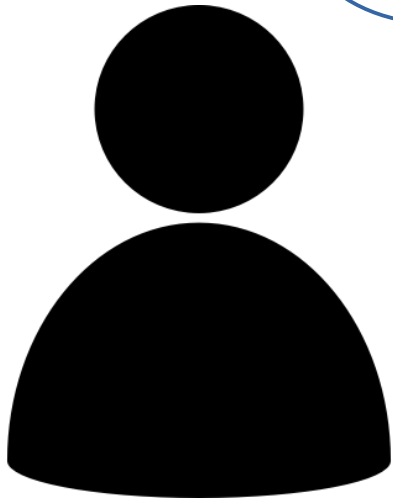
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Cutest Dog Breeds for Families... [petlover.com](#)

Get in Your Dog's Face... [petlover.com](#)

Top 10 Most Beautiful Dog Breeds - 1000... [petlover.com](#)

Most Beautiful Dog Breeds - Photos... [petlover.com](#)



Problem

- Person cannot see other person dog
- We cannot read minds (neither computers)
- One dog cannot interact with the other

What is needed for the two to interact

- Common platform
- Information sharing
- Set of rules
 - Rules need to be enforced by some kind of government

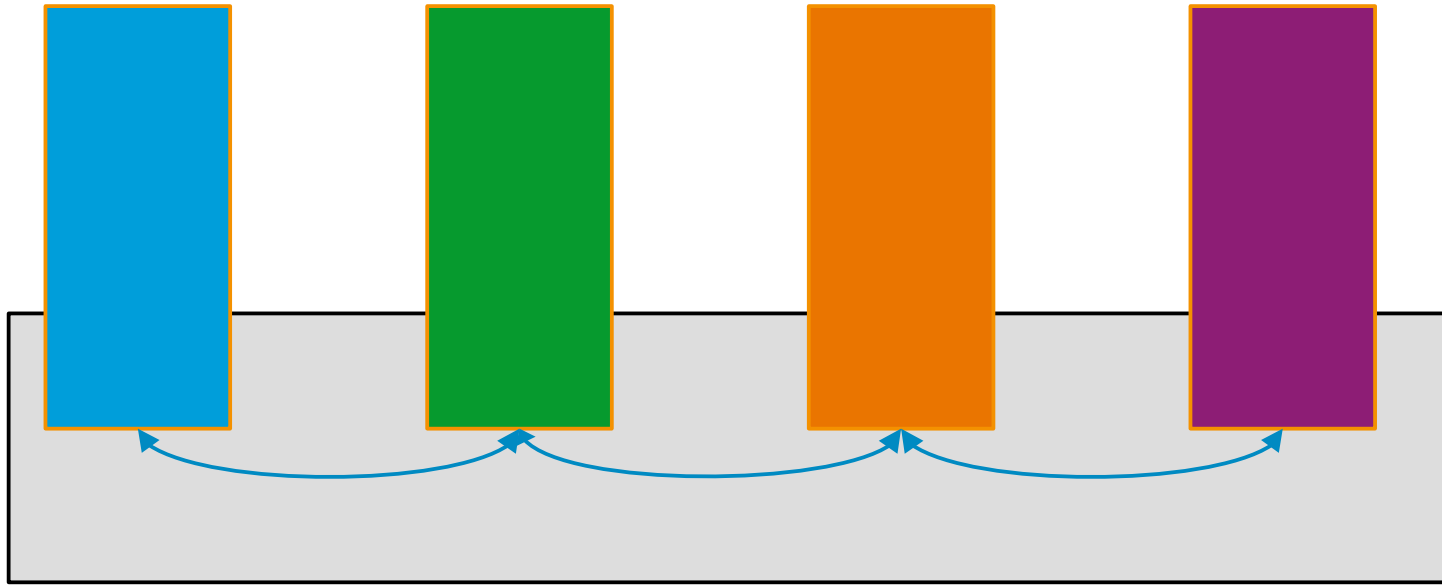
Challenges

- Compatibility
- Storage
- Desentralization
- Security/Privacy

Challenges

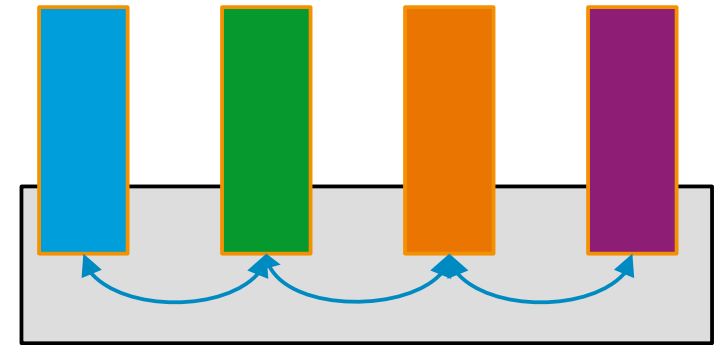
- Compatibility – technical challenge
- Storage – technical challenge
- Desentralization – technical challenge
- Security/Privacy – Political challenge

Platform - Compatibility



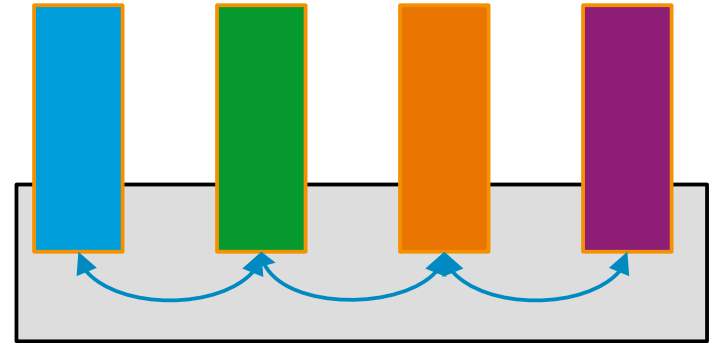
- Provides access from one world to the other
- Decides who, what and how information is shared
- The platform owner is God

Platform



Platform

With great power comes...

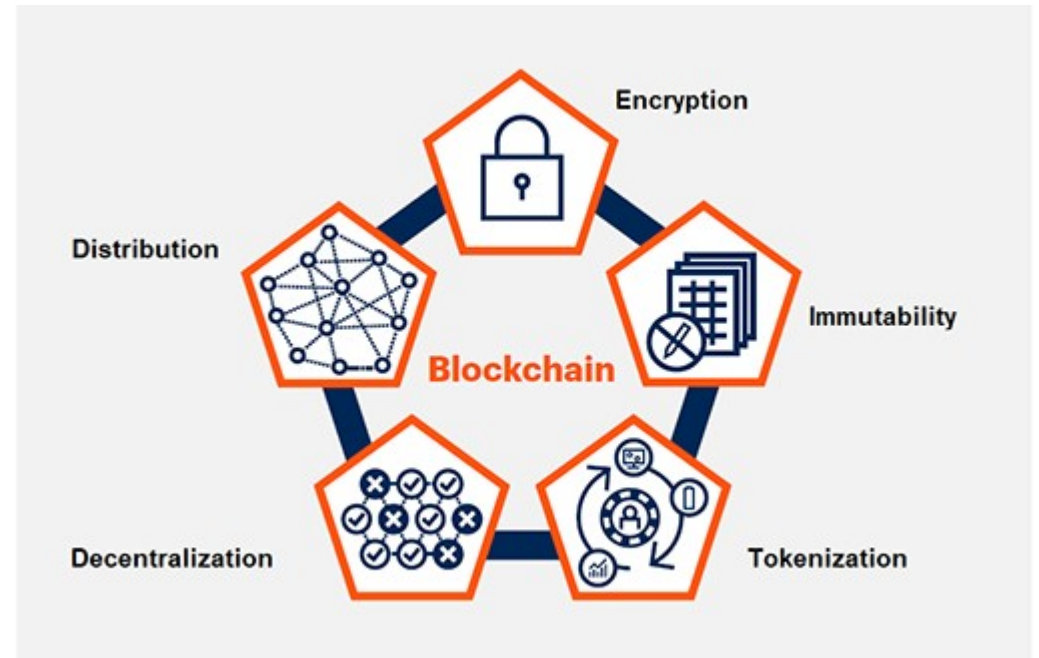


Platform

- Storage
 - Every day, we create more than 2.5 million terabytes of data.
- We may need multiple storage sites
- Data integrity is an issue

Platform – Data Integrity

- Blockchain
 - Desentralizad
 - High processing power
 - High energy consumption



Platform – Privacy



Platform – Privacy

Facebook data privacy scandal: A cheat sheet



by **TechRepublic Staff** in **Security**
on July 30, 2020, 11:37 AM PDT

Read about the saga of Facebook's failures in ensuring privacy for user data, including how it relates to Cambridge Analytica, the GDPR, the Brexit campaign, and the 2016 US presidential election.



Zuckerberg Summoned to Testify Over Shocking Consumer Privacy Violations

ijr.com | 15 days ago

Racine's lawsuit accused Zuckerberg of 'directly participating in decision-making that allowed the Cambridge Analytica data breach.'



Platform – Privacy

- What can be said?
- There is no actual privacy as we know
- The perception of privacy will be determined by the platform owner or ruler
- New laws may need to exist and an enforcement agency

Players

Players



Microsoft Altspace VR



<https://altvr.com/>

Devices



<http://www.abt.com/product/104092/Samsung-Gear-VR-Goggles-SMR323NBKAXAR603758.html>

<https://www.walmart.com/ip/VR-Headset-Compatible-iPhone-Android-Phone-Universal-Virtual-Reality-Goggles-Play-Your-Best-Mobile-Games-360-Movies-Soft-Comfortable-New-3D-Glasses-B/789518569>

Microsoft Oculus Rift

- Release in 2016



<https://www.microsoft.com/en-us/store/locations/OculusRift>

Environment

Environment

- “We found that streaming a two-hour high-definition film on Netflix [or another online provider] equates to boiling over 10 kettles of water,” said Mike Hazas, a researcher in sustainable computing at Lancaster University.
 - <https://www.thetimes.co.uk/article/energy-used-in-streaming-one-film-on-netflix-makes-60-cuppas-0hkp690rm>



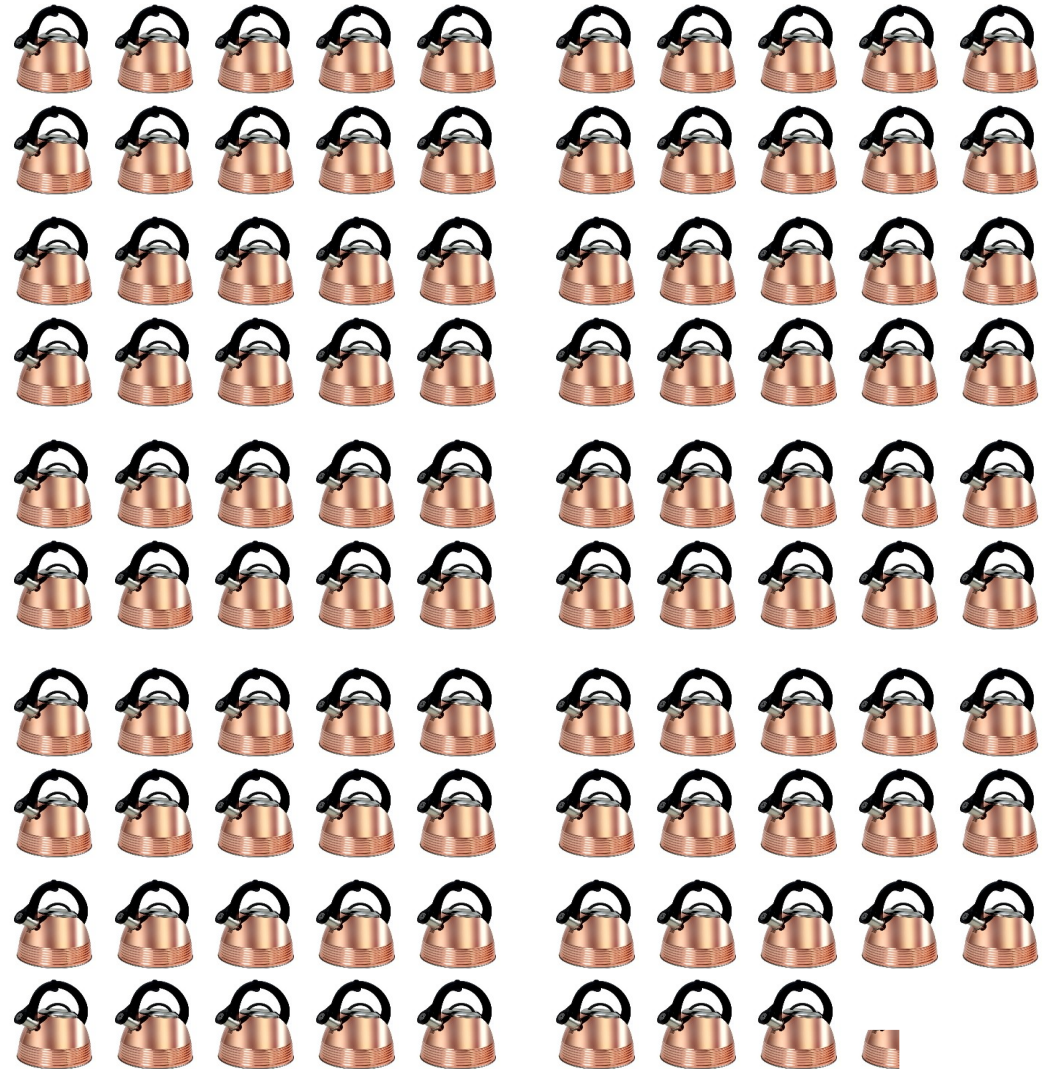
Harry Potter

Estimate!!!



- 8 Movies
- 19 hours and 39 minutes
- $2h * x = 10 \text{ kettle}$
- $X = 5 \text{ kettle/hr}$
- $19.65 * 5 = \mathbf{98.25 \text{ kettle}}$

Image: <https://sites.psu.edu/moviesgalore/2015/03/11/harry-potter-the-boy-who-lived/>



Apple's Mesa Data Center

- Area: 1,300,000 square feet
- Location: Arizona, United States
- It has a 50 MW capacity, which is enough to power about 12,500 homes
- 300-acre solar power plant in Florence, Arizona (not enough)



What's the carbon footprint of an email?

- Sending even a short email is estimated to add about four grammes (0.14 ounces) of CO₂ equivalent (gCO₂e) to the atmosphere.
- To put this into perspective, the carbon output of hitting "**send**" on **65 mails** is on par with **driving an average-sized car a kilometre** (0.6 of a mile).

<https://phys.org/news/2015-11-carbon-footprint-email.html>

Got the idea?



Future – Conclusion

3 Final things

#1 Not if but when

- When money involved, no stop
- Concept may change
- We are the ones who decide what to change

#2 Hardware needs to evolve

- Affordable
- Multiple ways to interact, not one single type of device
 - Ways to consume the metaverse needs to be everywhere in order for it to succeed.

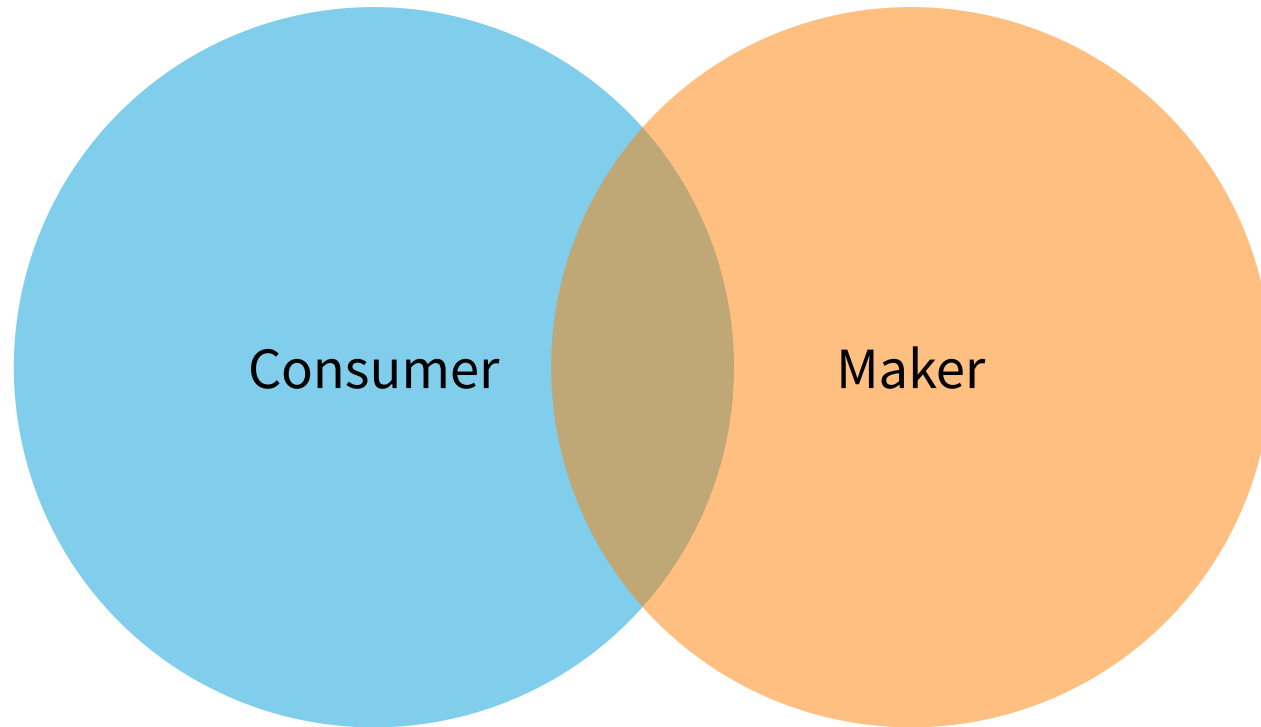
#3 When is real?

- A game or real life?
- Untill when?
- What other countries be doing while people hang out in the metaverse?
- We do not eat virtual food nor virtual clothes cover from cold

Who's in power?
Who decides?
What if?

Should I care?

Should I care



thankyou