LEAN2LEAD
TECHNOLOGY

Twisted Realities

Introduction to XR(ARVRMR)

by
Kuldeep Singh

A Lean2Lead network initiative

Who am I?

Talking about

- The Reality
- eXtending the Reality
- Use-cases
- Concerns
- The way forward

Kuldeep Singh

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Speaker, mentor, author, and a community contributor

NASSCOM VR/AR ASSOCIATION periferry

thinkuldeep.com

The Reality

👀 what we see

👂 what we hear

🥵 what we sense

🧠 what we feel

Physical Reality vs Artificial Reality

👀 what we see

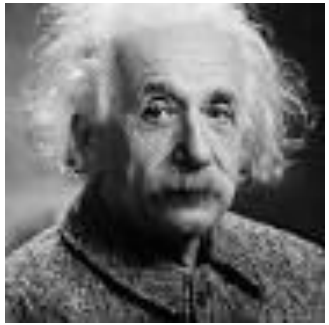
👂 what we hear

🥵 what we sense

🧠 what we feel

Physical Reality

Artificial Reality

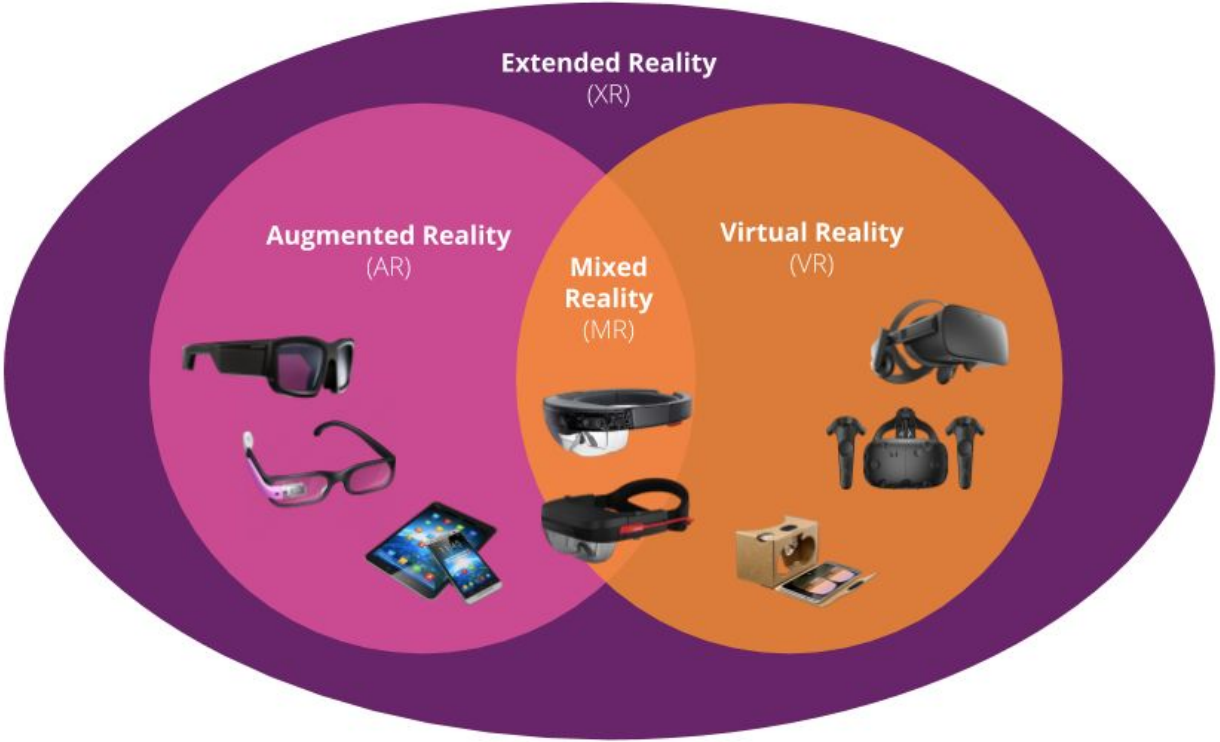


"Reality is merely an illusion, albeit a very persistent one" - Albert Einstein

“Everything we call real is made of things that cannot be regarded as real” - Niels Bohr

eXtending the Reality (XR)

Understanding multiple ways of extending the reality



Source : https://www.thoughtworks.com/insights/blog/extending-reality-ar-and-vr-part-i

AR - Augmented reality overlays digital content in the live environment.

VR - A complete immersive experience that shuts out the physical world and takes into the virtual world.

MR - Combination of both AR and VR, where physical world and digital objects interact.

Augmented Reality

Hint: Overlay

Credit: Google search images

Mixed Reality

Hint: Overlay and anchored to real world

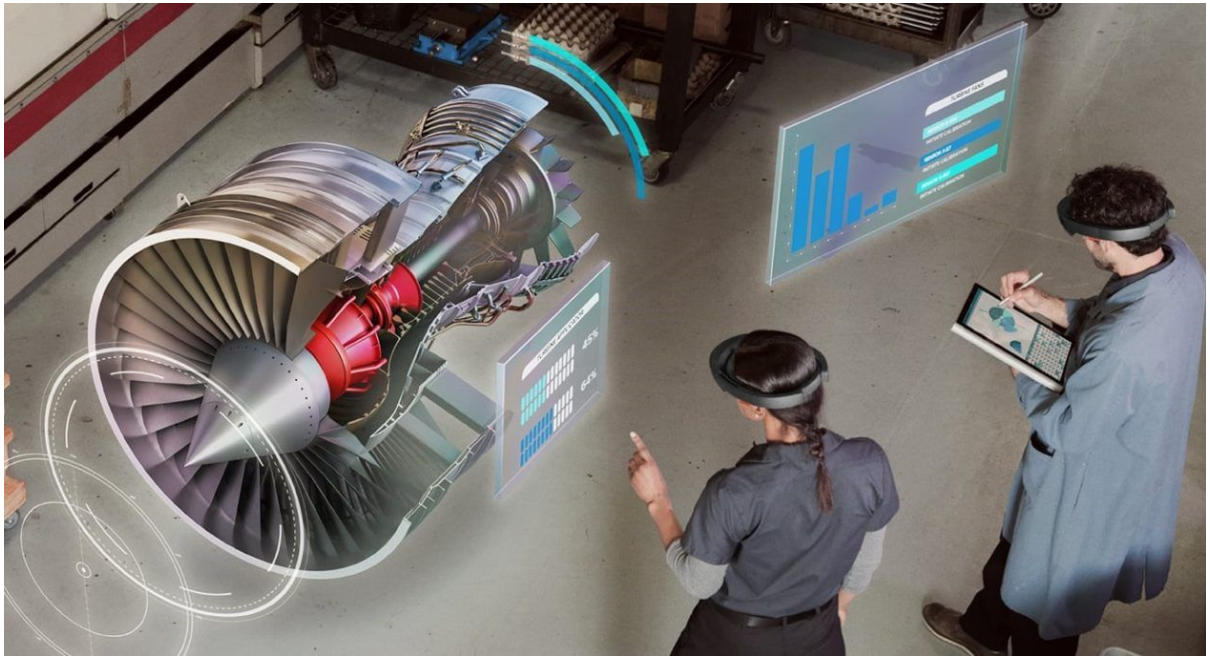
Source : https://www.thevrara.com

Virtual Reality

Hint: Immersive

Source : https://www.devteam.space

Mixed Reality



Hint: Overlay and anchored to real world

Source : Airbus Photo - MS Hololens

Virtual Reality

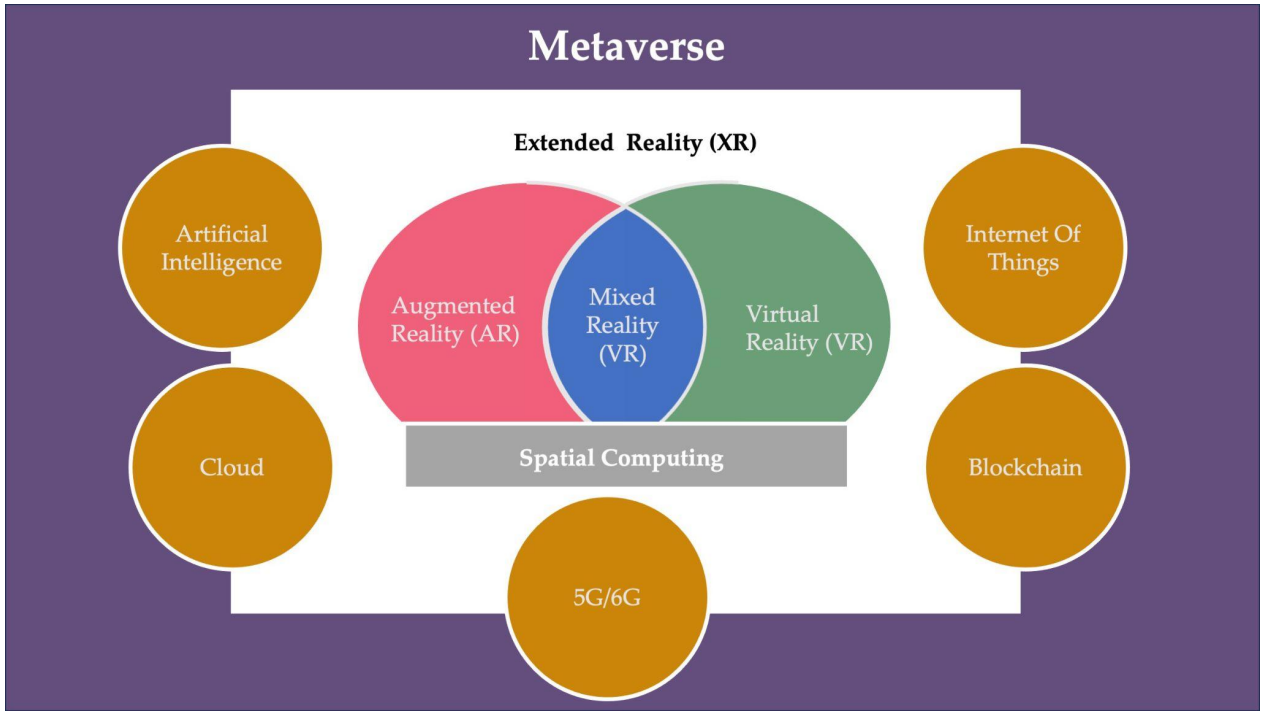
Hint: Immersive

Source : https://www.devteam.space

Source : https://medium.com/xrpractices/the-growing-list-of-xr-devices-f102262e4a58

eXtended Reality (XR)

Understanding multiple ways of extending the reality



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Mobile XR – AR/VR enabled smart phones/tablets

Web XR – AR/VR enabled web

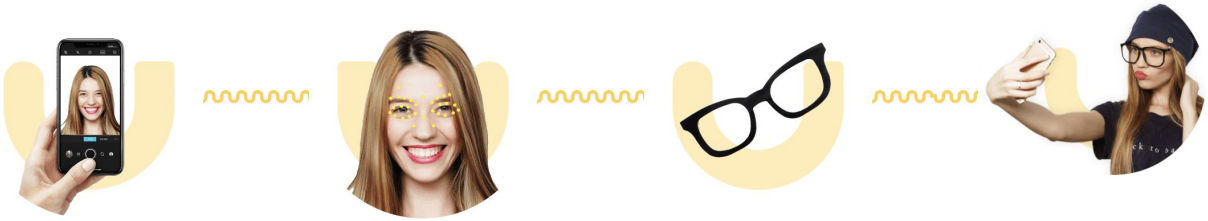
HUD - Heads up displays, projection based

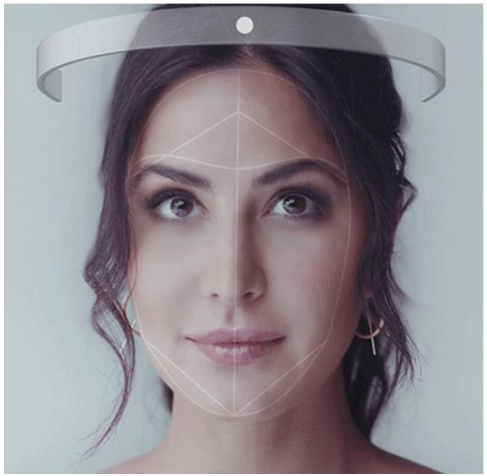
Spatial computing - technology behind XR

Metaverse - a stage of next internet. Illusion of reality become more persistent

Virtual Commerce

eCommerce > mCommerce > vCommerce >>>> (xCommerce)





Virtual Try-On

Communal Shopping

Try before buy

Fitment

Virtual Showroom – AR Portal Solutions

$12.5B by 2025, at a 91% CAGR

Source : https://thinkuldeep.com/post/future-of-shoping/, banuba, Gucci, Lenskart

Virtual Commerce

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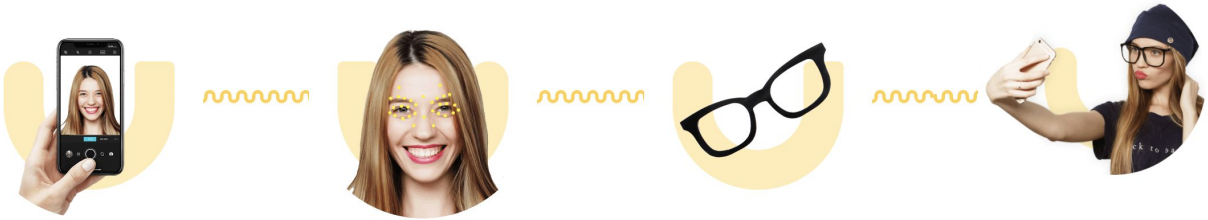

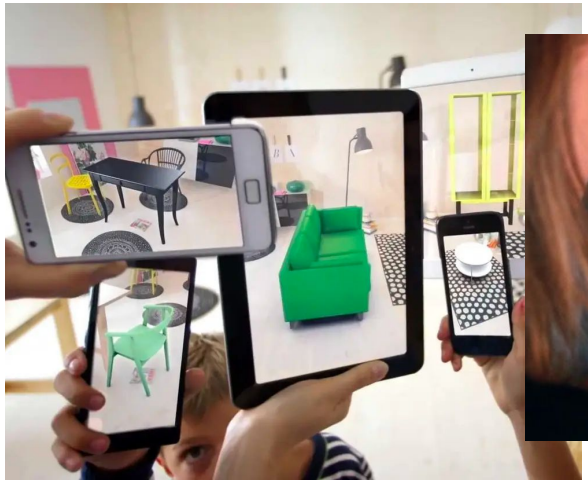

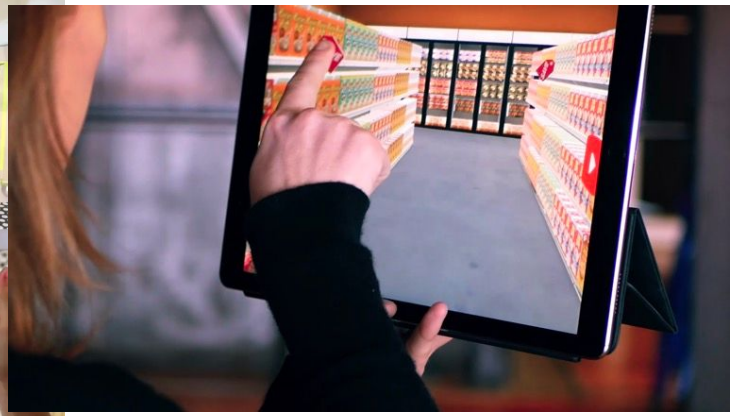

- **Virtual Try-On**
- **Communal Shopping**
- **Try before buy**
- **Fitment**
- **Virtual Showroom – AR Portal Solutions**

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Manufacturing and Automotive

Training and Maintenance

- Efficiency and Productivity
- Service Assistant
- Remote Assistant
- Try before buy
- Fitment and Alignment
- Virtual Showroom
- Product demonstration
- Spatial Collaboration
- Logistics - order mgmnt

$21B by 2025, at a 61.5% CAGR

$15B by 2025, at a 56.2% CAGR

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Real estate management

Indoor Navigation

Virtual Positioning System

Warehouse management

Building guide

Augmented BIM

Service assistance

XR Walkthrough

Property/Real Estate

$7B by 2025, at a 73.4% CAGR

Source : https://thinkuldeep.com/post/extending_reality_with_ar_and_vr-2/

Real estate management

- **Buy land, build house, and sale or may be rent**
- **Concerts, events, conferences**
- **Allow advertisements, and get paid**
- **Different platforms being built - buy Taj, monuments and more.**

Source : https://thinkuldeep.com/post/extending_reality_with_ar_and_vr-2/

Training and education

Immersive Teaching

Augmented Books

VR Class rooms, Virtual Expo's

Simulation - Gravity, Experiments

Biology - Dissection

EdTech Growth

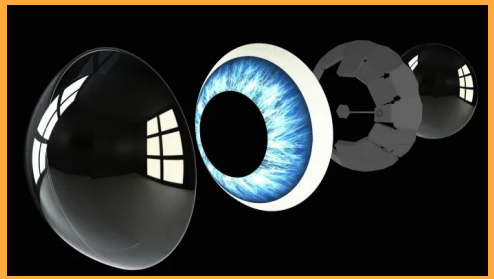
$7B by 2025, at a 78.5% CAGR

Healthcare

pic credit: Medgadget

pic credit: VRFocus

- Augmented Visualizations
- Sectioning CT Scans
- Surgery planning
- Medical Training
- Anatomy visualization
- VR Therapy
- Smart Glasses for people with disabilities



$10.9B by 2025, at a 88.5% CAGR

Source : https://thinkuldeep.com/post/extending_reality_with_ar_and_vr-2/

Meet and greet

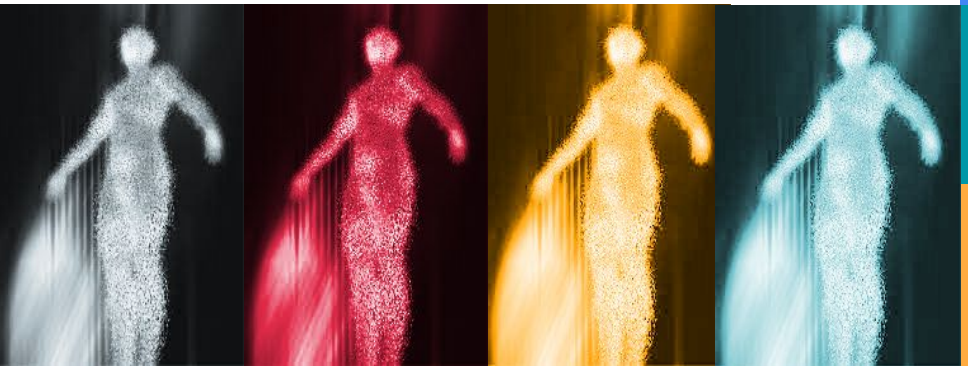
Source : https://thinkuldeep.com/post/extending_reality_with_ar_and_vr-2/

- **Meeting with the ones who are no more**
- **It DOSEs - Dopamine, Oxytocin, Serotonin, and Endorphins - Meeting family.**
- **A Legal Heroin? Addictions.**
- **Virtual social identity(ies)**

Concerning Reality

Future identify is at Risk

Safeguarding identify and protecting privacy would be difficult part, without strong laws and regulations. It is easy to impersonate people when identity is based on interests. People may want to keeps multiple social profiles and



- Identify and Privacy - Someone accessing your property/assets without your knowledge
- Social media trials, by the time truth prevails, damage happen
- What is real or fake? What is public, what is private
- New ways of information exposures, and may be more vulnerable.
- As drug - A Legal Heroin? Addictions. Influence your decisions
- Law and order

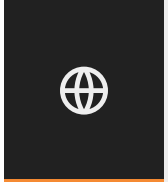
Adapt to the new Reality

Adapt technology ethically

In long run, **not using them** or staying away from it would **not** be **an option**. No matter how scary it looks, it is coming closer than we think.

Need more standards and regulations for hardware, network and software makers.

- XR Safety Initiative (xrsi.org)
- IEEE SA - XR
- XR Ethics Manifesto



Awareness - start using it

Training - get ready to build for it.

Developing - **co-create** the metaverse/xr for right use cases. Innovate and solve the concerning parts.

Contribute - Build practices, standards and contribute share with **communities**.

Join hands with enterprises and governments, institutions, systems and people.

Play your part, and save the future.

Contact me here

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