






Canadian Partnership Lab

Virtual Reality In Training

Enhanced Performance Innovation Centre | Centre de performance innovation améliorée

Virtual Reality Is...

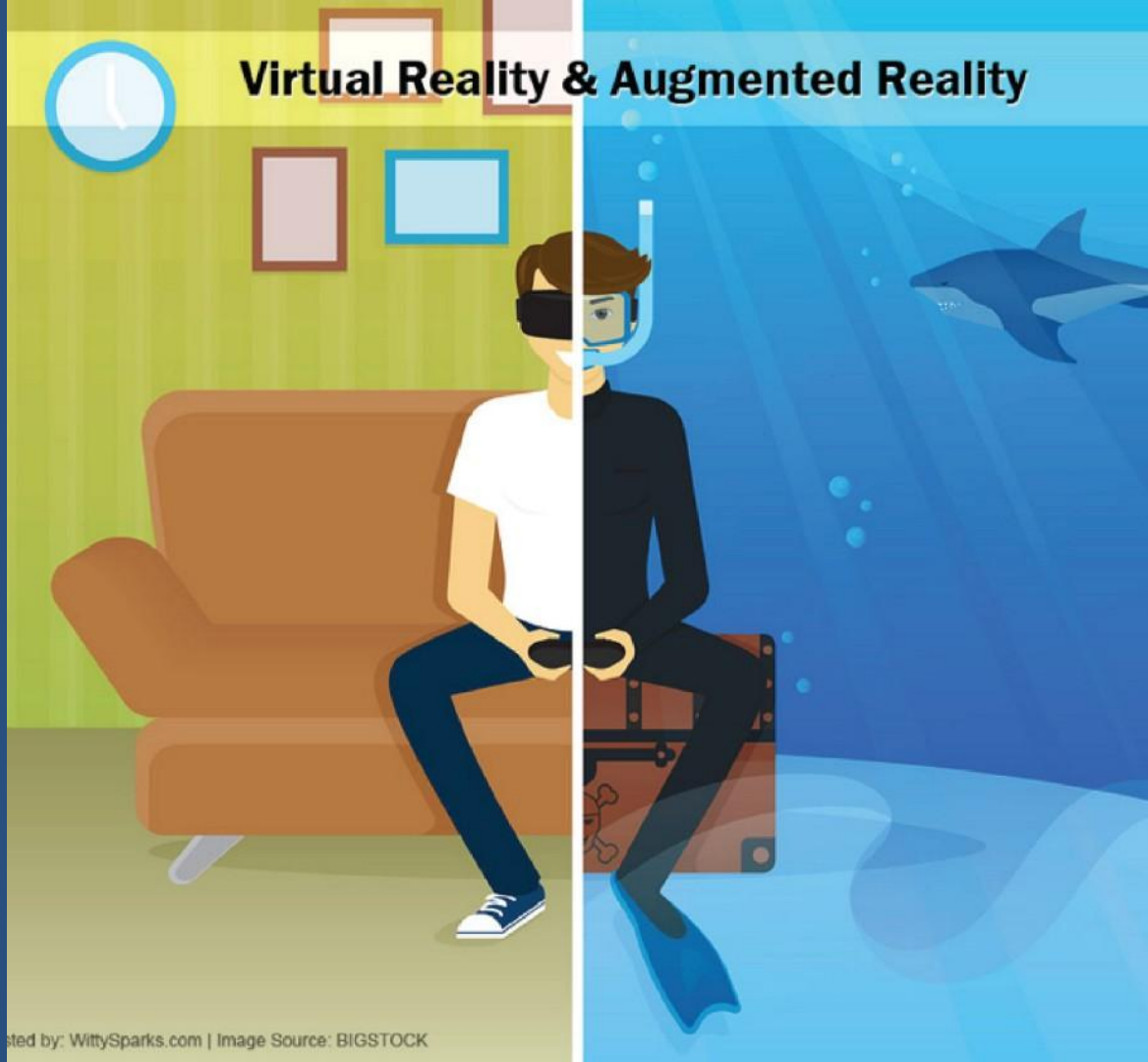
TECHNICALLY:
an artificial environment which is experienced through sensory stimuli (such as sights and sounds) provided by a computer and in which one's actions partially determine what happens in the environment

REALISTICALLY:
the use of a positionally tracked headset that allows a user to interact with an artificial environment. This interaction can be for the purpose of entertainment, Training, or experience.

VR, XR, MR, AR… What does it all mean?

There are four main acronyms when it comes to Virtual Realities:

1. **Augmented reality (AR)**
2. **Virtual reality (VR)**
3. **Mixed Reality (MR)**
4. **Extended Reality (XR)**



Who cares about VR?

43% of companies believe that some form of VR technology will be integrated into their operations within the next three to five years.

https://3dinsider.com/virtual-reality-statistics/

Perception of VR

Most of the world is still forming opinions on how much AR and VR should be a part of daily life.

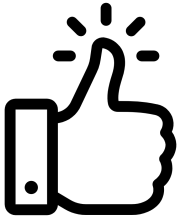
Many view vr as a toy just for “GAMERS” and “Techies”, when it is more accurately thought of as a new medium.

How does VR enhance learning?

- VR enables students to learn through practical experience, as students are immersed in a world that simulates real-life. Learning through experience has been argued as the most effective way to learn, and studies have shown that it increases the quality of learning and retention by **70-90%.**

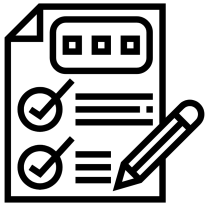
https://elearningindustry.com/vr-enhances-elearning-improves-skills-effectively

Case Study - Walmart VR Training



10 - 15%

Employee knowledge retention rate increased by 10-15% after VR-training



70%

Trainees score 70% higher on workplace tests

30%

Increased employee satisfaction by 30%

https://www.strivr.com/resources/customers/walmart/

Case Study - Intel & HTC Vive: Reducing electrical accidents

300%

Intel improved their training offer by using VR and recorded a 5-Year ROI of 300%

94%

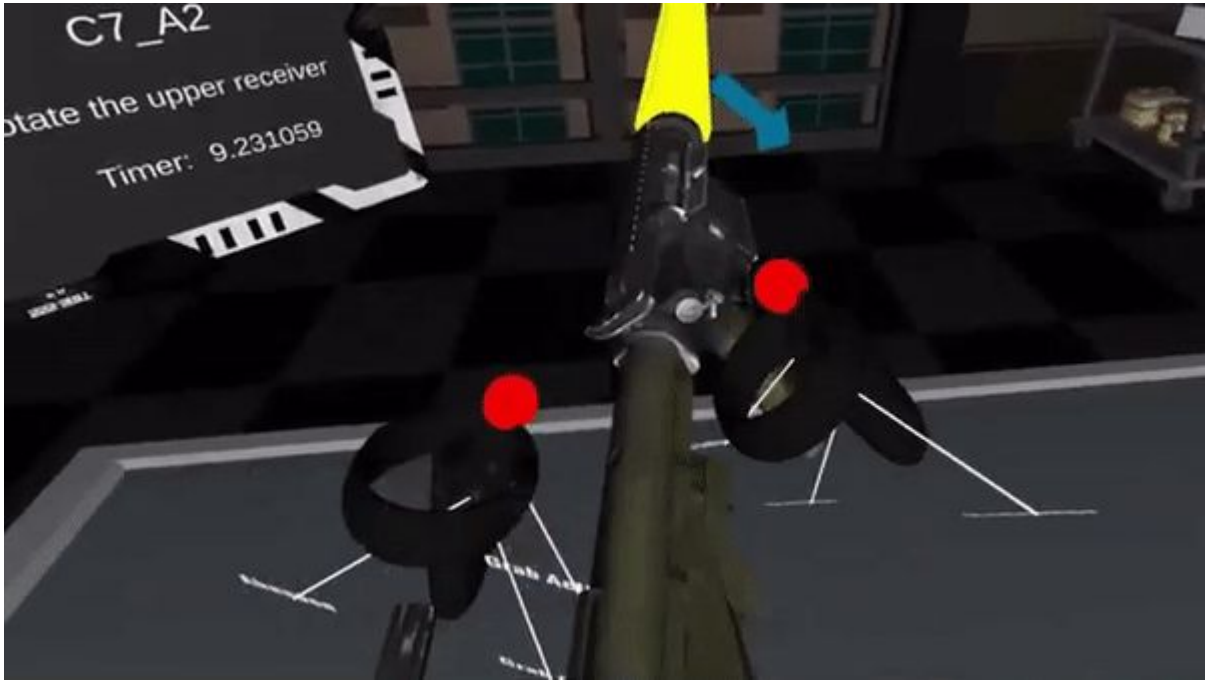
94% of trainees wanting more virtual training

https://blog.vive.com/us/2019/10/30/vive-vr-case-study-intel-training-roi/

Examples of VR training applications

Weapons Locker

Weapons locker is a self guided learning experience where users can safely explore the assembly and disassembly of firearms.



Exposure Therapy/ Mental Health

- Studies have shown that VR has a potentially strong role to play in the field of mental health
- The ability for people to be placed into controlled environments allows them to work through many issues
    - Anxiety disorders
    - PTSD
    - addiction
    - etc.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5421394/

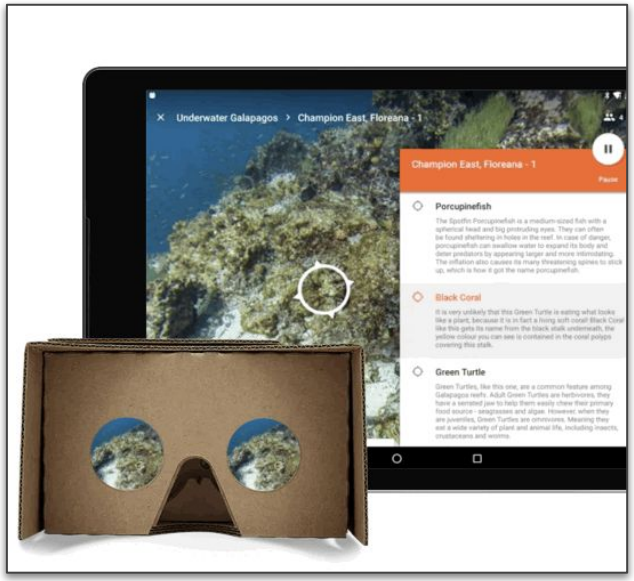
VSTS: Wargames in Virtual Reality

Schofield Barracks is a facility located in Hawaii where soldiers receive training using the Virtual Squad Training System. The trainees are outfitted with an HMD (Head Mounted Display), motion tracking devices and controllers that are perfect replicas of actual military weapons in terms of shape, size and weight.

Wrench VR

Wrench is a highly detailed race car mechanic simulator that tasks you with maintaining your team's race cars. Start at the bottom as a junior level assistant handling fluid and tire changes. Earn XP and gain mechanic levels based on each component of the car you service and the car's race results. Mechanic level ups grow your role on the team and make you responsible for a larger portion of each car's mechanical systems.

Google Expeditions



Google Expeditions is an immersive education app that allows teachers and students to explore the world through over 1000 virtual-reality (VR) and 100 augmented-reality (AR) tours. You can swim with sharks, visit outer space, and more without leaving the classroom.

When should I use VR for training?

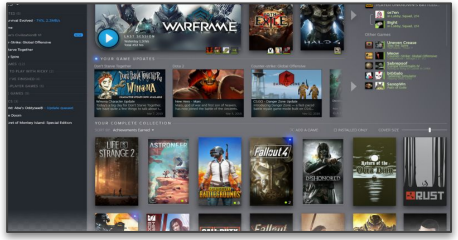
- The scenario is dangerous to perform in reality
- The scenario is costly or difficult to access in real life
- I need the user to feel like they're really there
- I want to train motor skills, not just remember the steps

Where to get started

	Design	Price	Hidden Costs	Space Needs	Controllers	Why use it?
Low Cost 	Simple, Cheap , Low Resolution, low comfort	0$ - 30$	$600+ Smartphones	Minimal	None	Cost, Easy use, Availability, Easy Content Creation
Medium Cost 	Varying quality, Powered Features, Tracking	100$ - 500$	$600+ Smartphones depending on device	Room for arms / interactions	Varying Controllers and other input options	Best Quality/Cost Balance, Portable, Interactions
High Cost 	High Quality, Adjustable Pieces, Full Tracking, Full Controller Features	500$ +	$1000+ Computer	Dedicated space for VR	High quality controllers with multiple inputs	High Fidelity, Precise Tracking, Complex Environments

App Stores

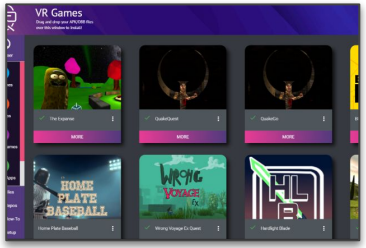
Oculus Store
(Oculus)



Steam

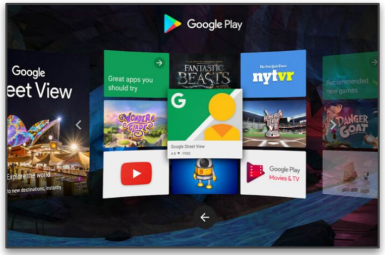
Viveport
(HTC Vive)

WEARVR

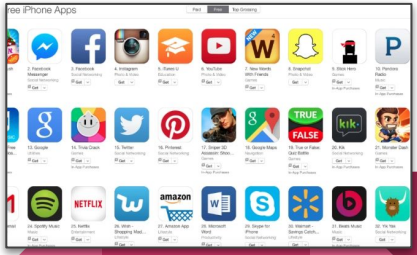


SideQuest
(Oculus Quest)

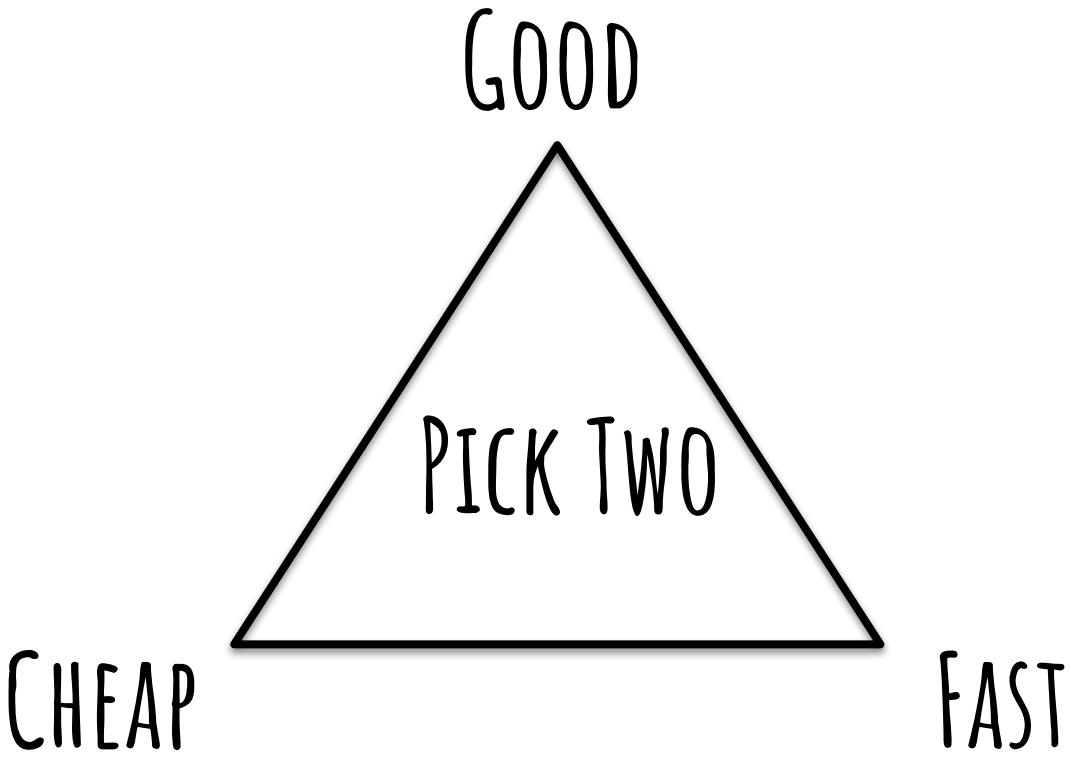
GitHub



Google Play
(Android)



App Store
(Apple)


Good
Pick Two
Cheap
Fast

Learn From My Mistakes

Always

- Maintain a consistent and relatively high framerate
- Make sure interactions are intuitive
- Identify the target hardware in the initial stages of development
- Make sure audio sources are in 3d space

Never

- Move the player unexpectedly
- Rotate the player or change the “UP” direction
- Change the input/control scheme once it has been established

END

Post some questions in the teams chat if you have any!

Feel free to contact me at:
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