

# VR for Google Cardboard in Unity

*Challenges and opportunities*



# Content

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- 5 W's of VR (sort of...)
- Cardboard and Unity
- Must-know of VR
  - Cybersickness
  - UI
  - Single button controller
- Future of VR?
- Cute kitten picture 

# 5 W's of VR

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## What is VR?

Trick the user's senses into believing he is somewhere else.

**"It's a trap!" Admiral Gial Ackbar**



# 5 W's of VR

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## Where: which industries?

Mainly entertainment and education.

A whole new medium, very immersive.



# 5 W's of VR

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## Who can build VR experiences?

Everyone at a basic level.

Game designers and filmmakers. **BUT** many new factors to consider.

# 5 W's of VR

When VR?

~~25 years ago?~~

Now!

(with a *LOT* to come...)



1993



2015

# 5 W's of VR

When VR?

~~25 years ago?~~

Now!

(with a *LOT* to come...)

And a lot cooler 😎



# 5 W's of VR

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## Why VR?

Because it's **AWESOME!**

...and opens new doors (to **AWESOMENESS!**)

# VR for Cardboard with Unity

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## Why Cardboard?

- Cheap => available for all
- Simple
- Good enough



## Why Unity?

- Google made a Cardboard SDK for Unity
- It's **Fun** to use!
- It's powerful
- It's *free* (until you want to monetize your apps)



# Before you start

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Cybersickness 😨

User interface 😵

Single button controller 😰



# Before you start

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Cybersickness 😨

User interface 😵

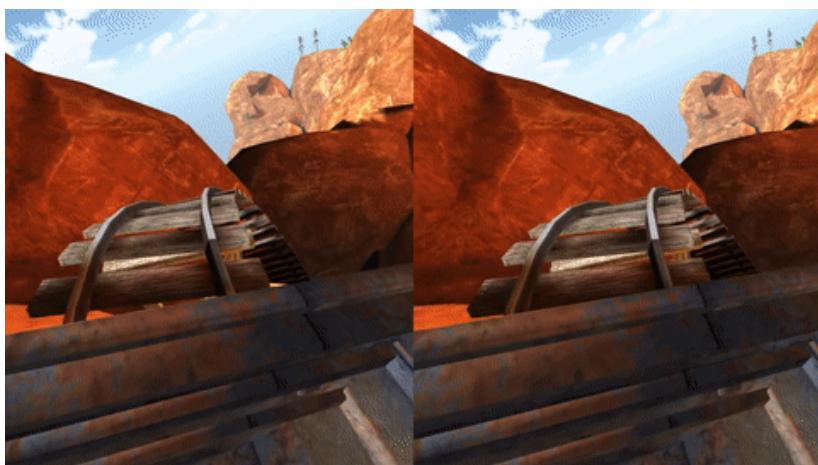
Single button controller 😰



# Cybersickness

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- Main danger for VR!
- Symptoms similar to motion sickness (seasick, airsick...)
- Caused by sensory conflicts
- Linked to the perception of self?



# Cybersickness

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**Common causes, the “easy ones 🙄”:**

- Low FPS
- Image latency
- Bad FOV



# Cybersickness

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## Common causes, the “*tricky ones* 🤔”:

- Moving virtually but not physically
- Being moved virtually
- Will virtually moving being stop by something you don't see (invisible wall)
- Moving your head virtually (using the controller stick)
- Being physically touched by someone when you don't expect it
- Touching something physically (table, chair...) that you don't see in the virtual environment
- Someone physically talking to you but not visible in the virtual environment

⇒ **Everything that breaks the illusion!**

# Cybersickness

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## Walk arounds:

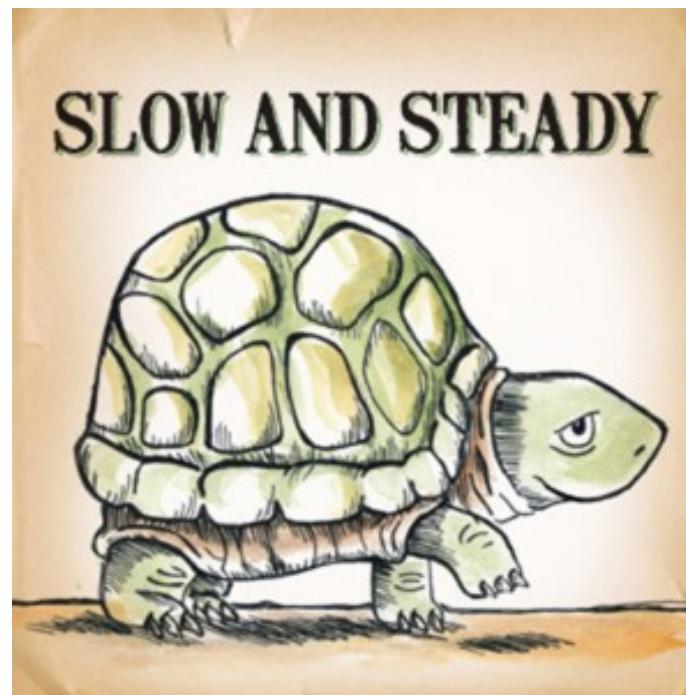
- Avoid having the users move virtually but not physically
  - ✖ Don't move them yourself (without warning)
  - ✖ Don't make them fall (jumping, taking stairs...)
  - ✖ Don't allow them to use the joystick to virtually look around
  - ✓ Teleportation is fine
- Use third person camera instead of first person
- Avoid strafing or moving backward
- If moving move slowly
- Have the user disconnect from his perception of self?

# Cybersickness

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## Warn your users!

- Start slowly 🐌, take your time, stop at the first sign
- The more you use VR the less you feel the sickness



# User Interface

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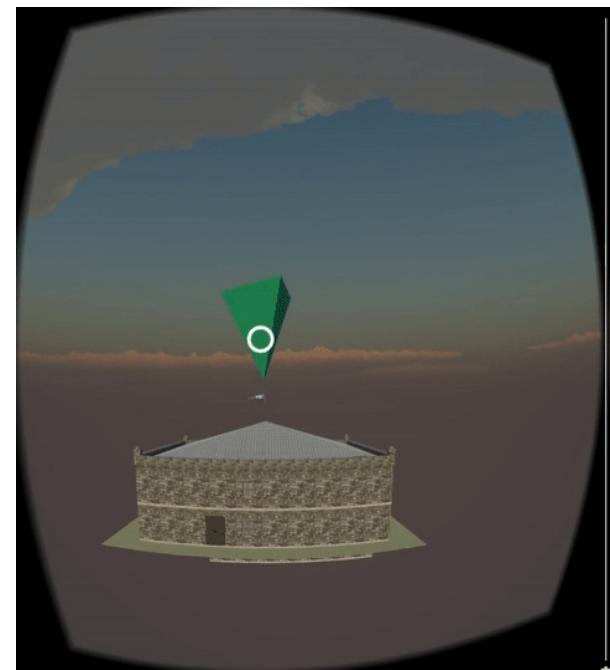
- Can't use non-diegetic UI!
- Keep your spatial UI at comfortable reading distance and font size
- Smart diegetic UI looks cool!



# Single button controller

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- Trick your way out!
  - Use objects as triggers
  - Use gaze, but do it right!
  - Use head tilt



# The future of VR?



RickyFTW  
@rickyftw

Hey, I fixed that Time Magazine Virtual Reality cover that everyone is pissed about

3:22 PM - 6 Aug 2015

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