

# Augmented Reality

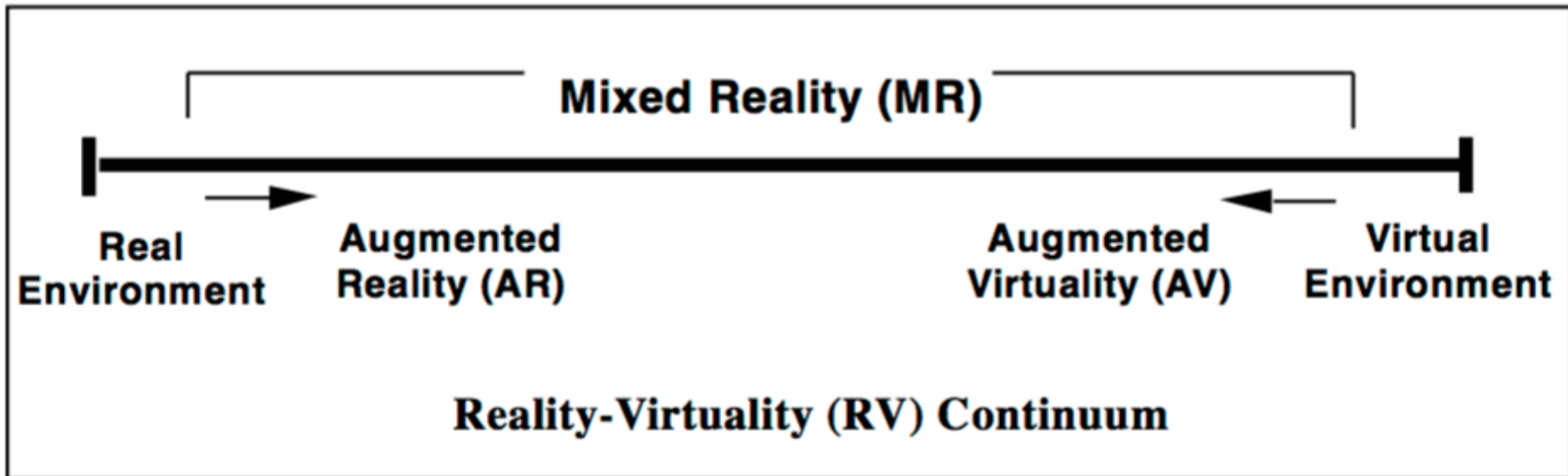
# Virtual Reality



#fclsumac

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Bart Verswijvel @BartVerswijvel

# Reality – Virtuality Continuum



*by Milgram, Takemura, Utsumi, & Kishino, 1994*

# Mixed Reality

Real Environment



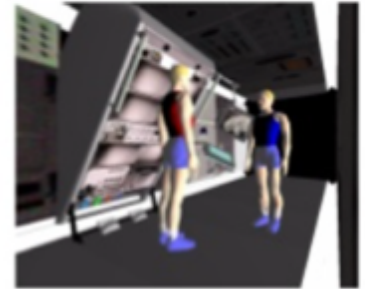
Augmented Reality (AR)



Augmented Virtuality (AV)



Virtual Environment



*by Mark Billinghurst,  
2014*

← Reality – Virtuality – Continuum →



**REALITY**



**AUGMENTED REALITY**



**VIRTUAL REALITY**

face-to-face contact - digitally enriched environments - virtual worlds

## Augmented Reality

digital content  real environment

## Augmented Virtuality

real-world content  virtual environment

# Virtual vs. Augmented



- complete replacement of a real environment with a synthetic environment
- the entire experience is computer generated



- virtual images produced by the computer are augmented with objects from the real environment
- virtual information is brought to the user

# MIXED REALITY





# Holograms





**AR** we there yet?

# The next big thing



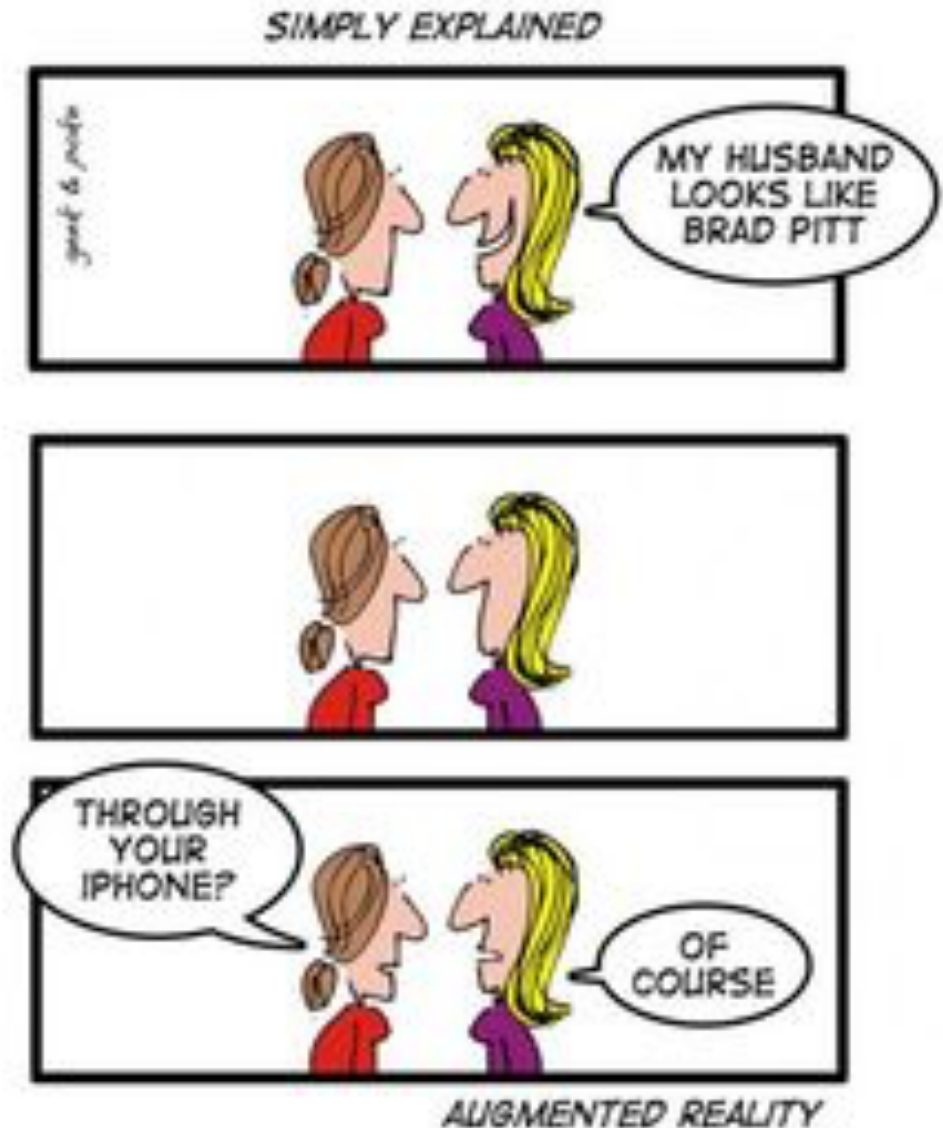
# It's AugMagic!

**Any sufficiently advanced  
technology is indistinguishable  
from magic.**

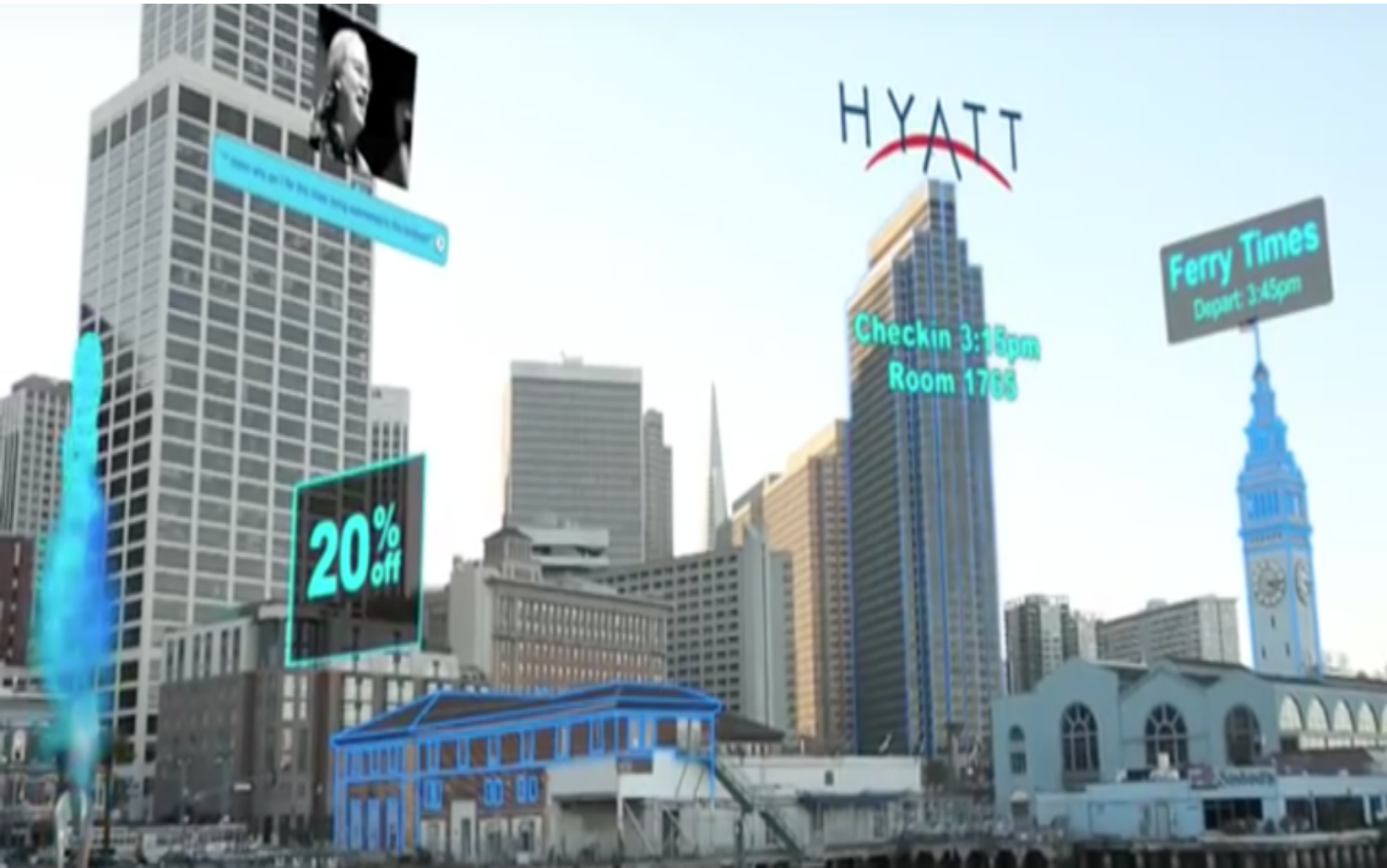
*Arthur C. Clarke*



Anything is  
Possible  
Anywhere

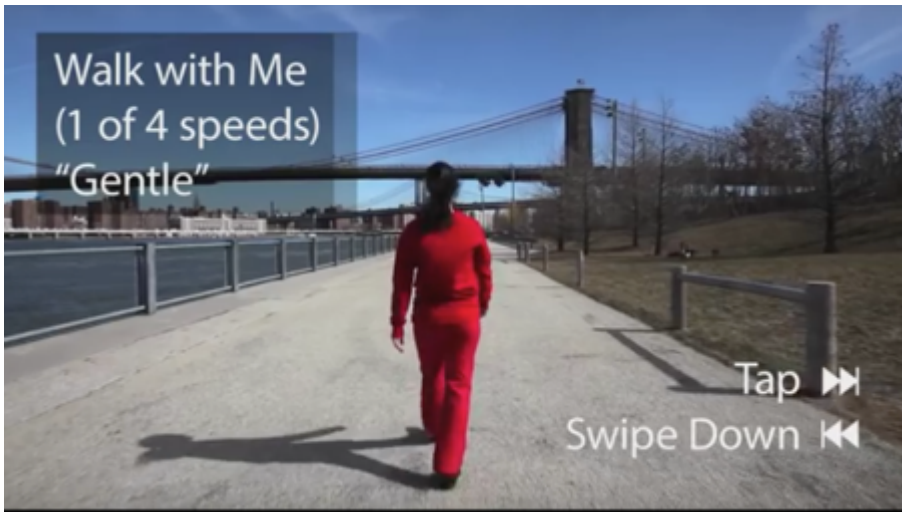


# AR in Everyday Life



# Health

## A walking guide



## Treatment of phobia



# Design and Automotive

**Furnish your empty room**



**Customize your Ferrari**





# Travel and Advertising

## Travel guides



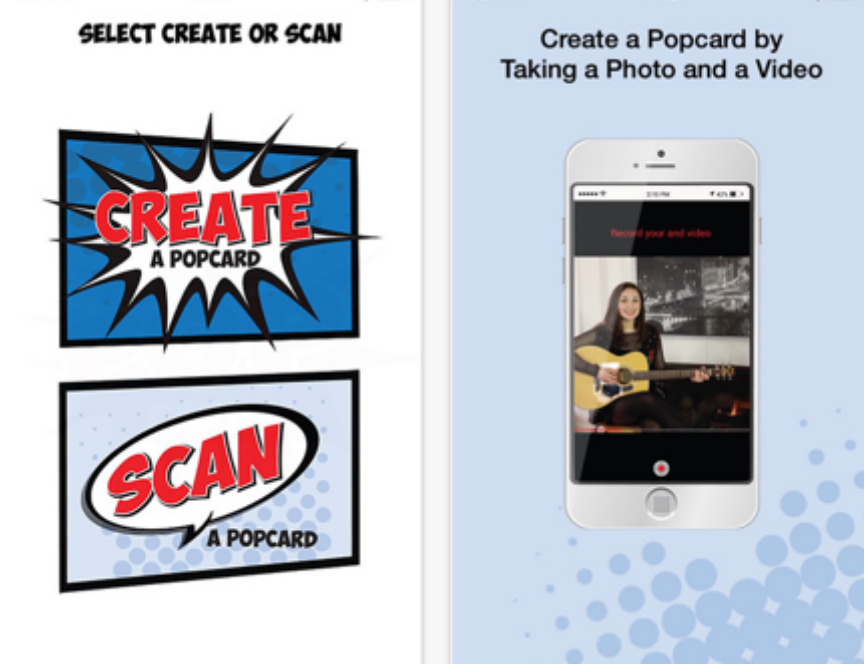
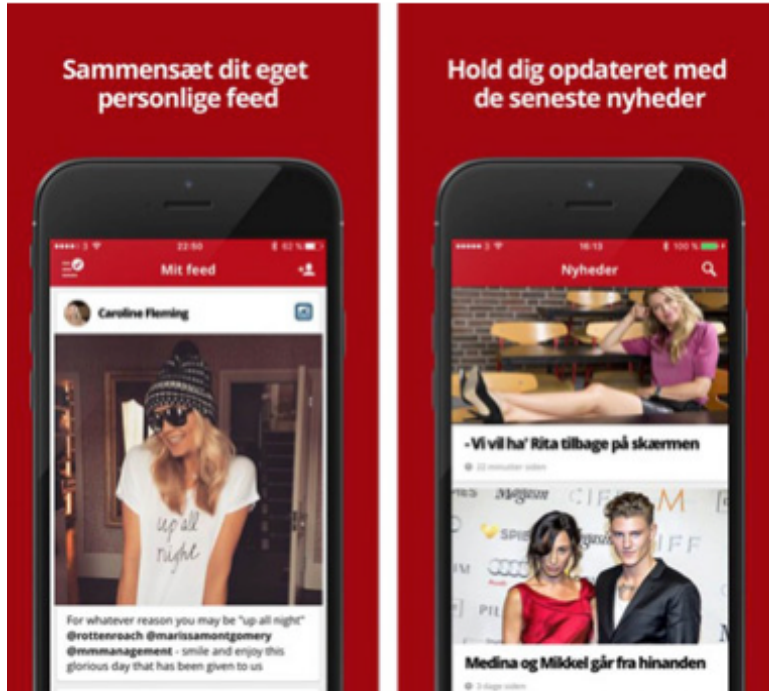
## Advertising



# The Media

Editorial and commercial content

Greetings cards and messages

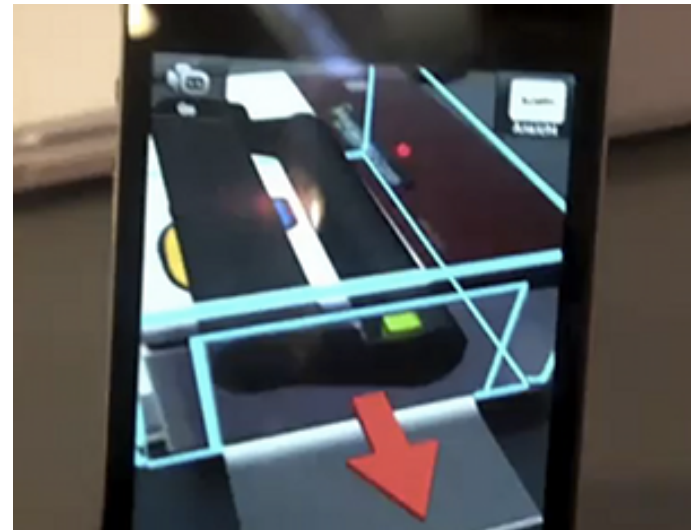


# Computer - Assisted

Medical Interventions



Instruction



# AR @ SCHOOL

Research on how AR can help students achieve deep learning:

**Art**

**Math**

**Chemistry**

**Physics**

**Language learning**

**Writing**

# Augmented Learning

Experiential  
Spatial  
Kinesthetic  
Collaborative

Engaging children in creating their own AR experiences

3D objects, 2D images, 360 images, videos, animations, computer graphics

# VR in Everyday Life









# REALISTIC ILLUSION OF IMMERSION

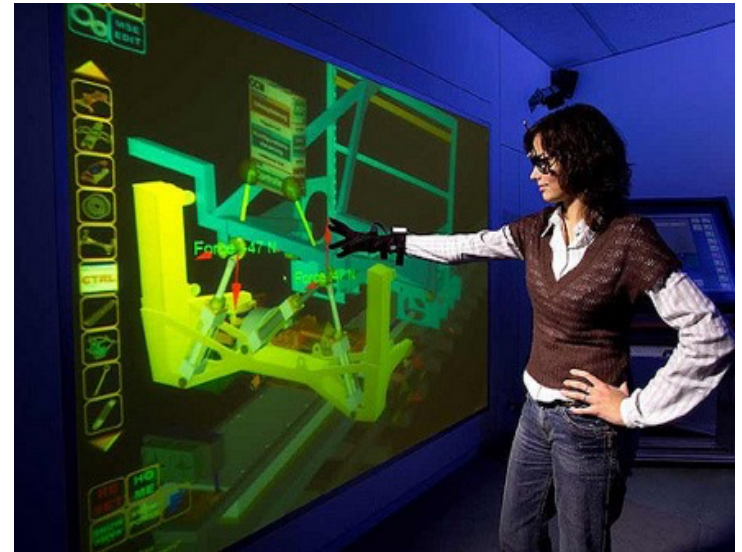
creating the illusion that we are present  
somewhere we are not

COMPUTER **SIMULATED** ENVIRONMENT

**SIMULATION** OF PHYSICAL PRESENCE

**IMAGINARY** WORLD

**IMMERSIVE** MULTIMEDIA



Powerwall by [Caseorganic](#) on Flickr

# VR Gear

## Head-Mounted Displays (HMD)

Sony VR



Rift



Samsung Gear VR

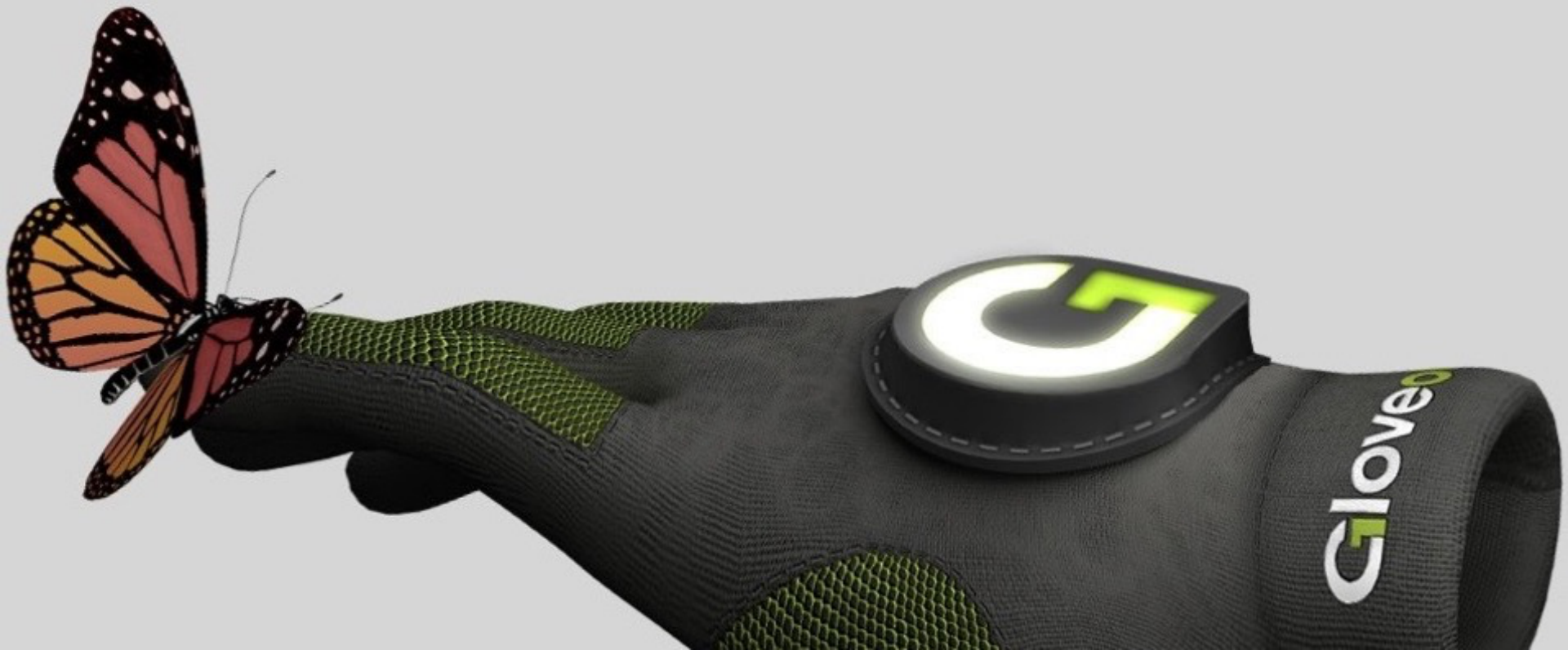


HTC VR Vive



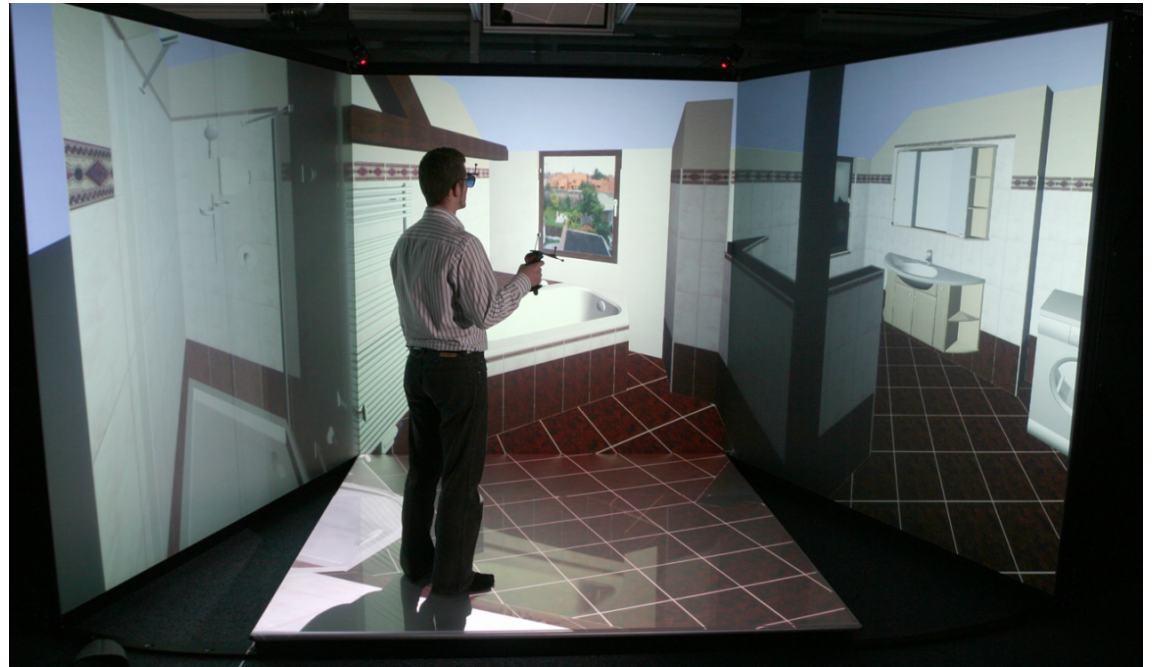
# VR Data Glove

Seeing is believing, but touching is truth.





Data Suit



CAVE

# Gesture Recognition



Leap Motion

# Screens Are No Longer Borders...

Pretty soon, we're going to live in a world where everyone has the power to share and experience

**whole scenes**

as if you're right there

**in person.**

*M. Zuckerberg, 2016*

# ... Cameras Are No Longer Memories\*

Writing  
Picture  
Video  
**VR**

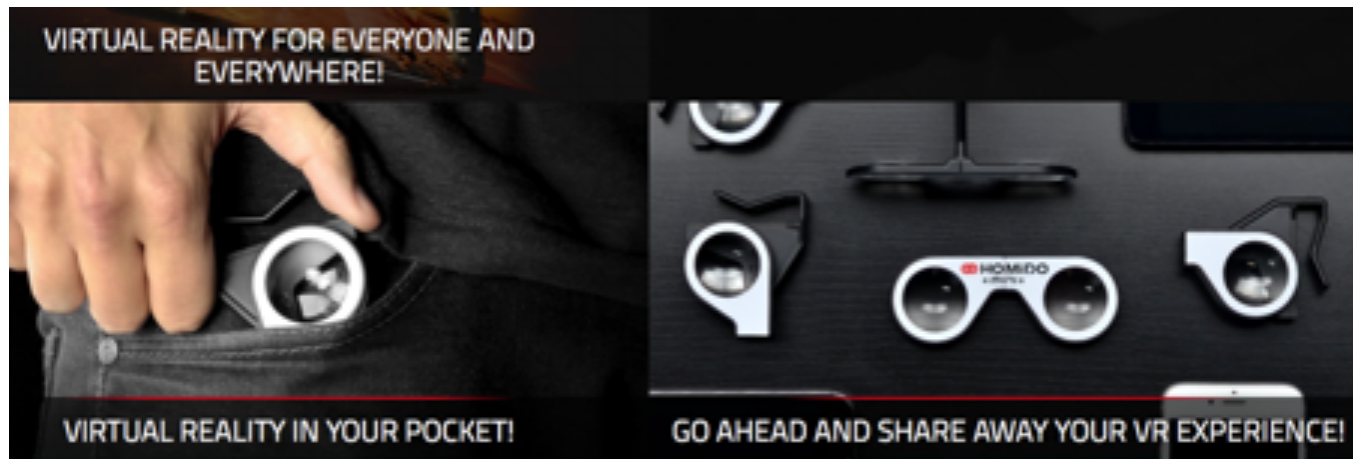


\* V. Geroimenko

# VR In Your Pocket

Visit new places, dive in oceans, fly through space

...





# Google Cardboard



KNOX V2  
Knox Labs

[+ MORE INFO](#)

[BUY IT](#)



V2  
I AM CARDBOARD

[+ MORE INFO](#)

[BUY IT](#)



UC 2.0  
Unofficial Cardboard

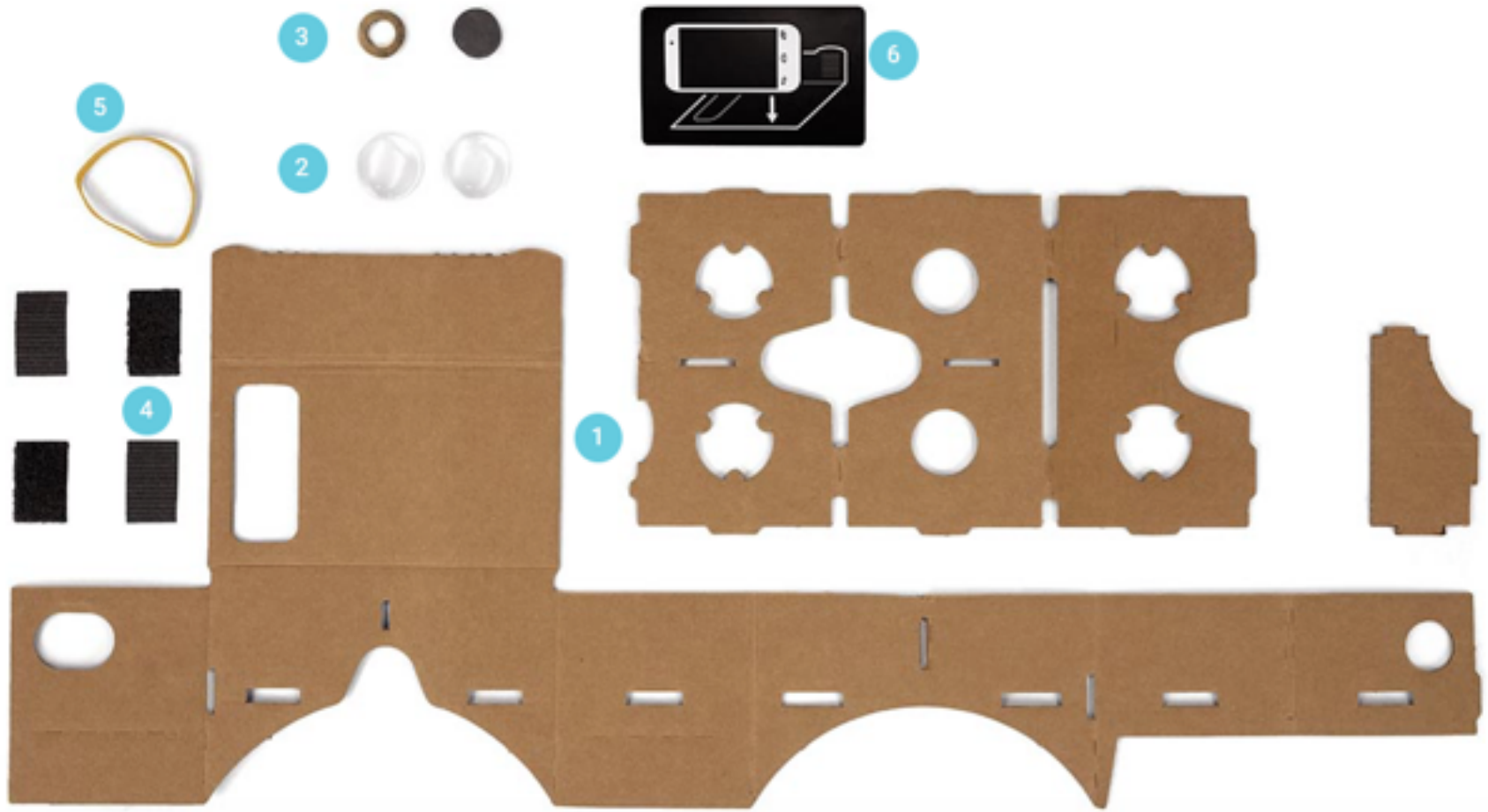
[+ MORE INFO](#)

[BUY IT](#)

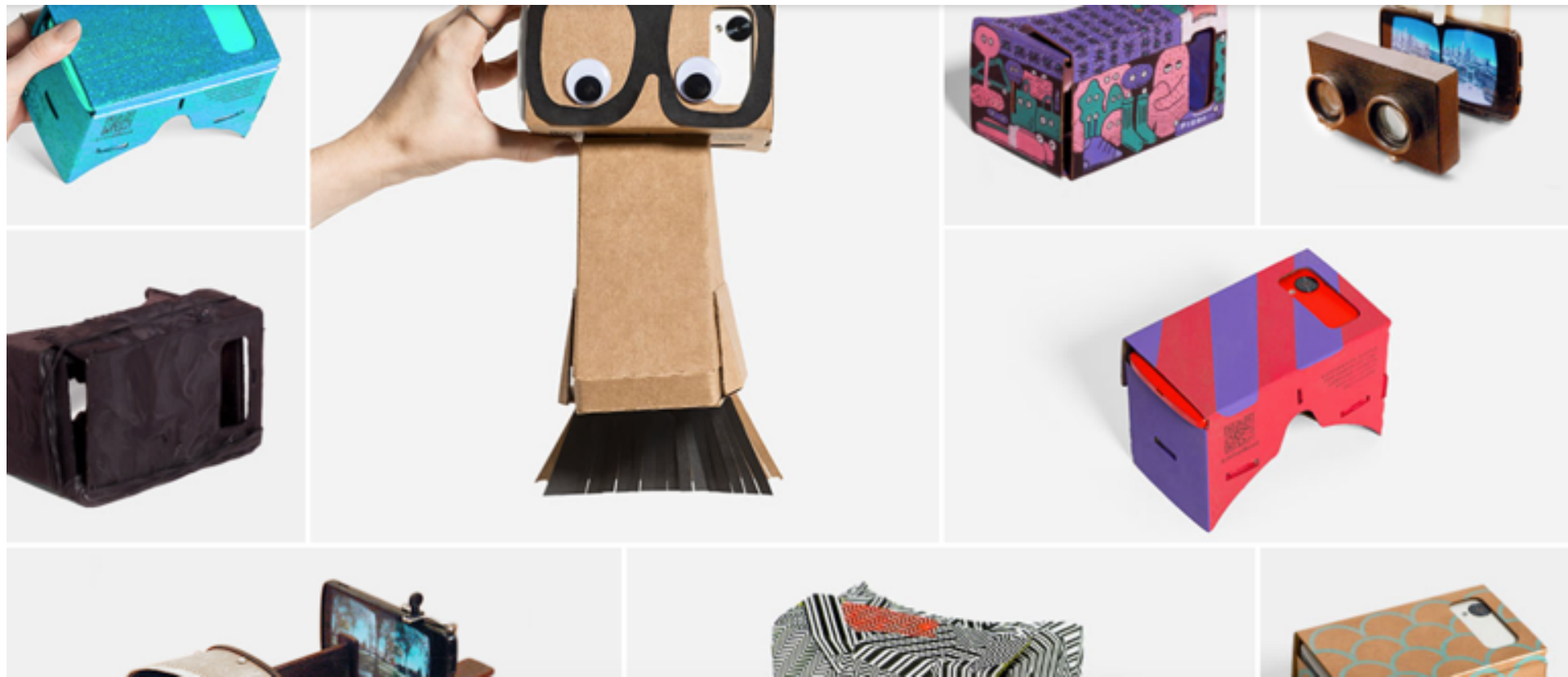


**Affordable**  
**Low-cost**

# Build Your Own VR



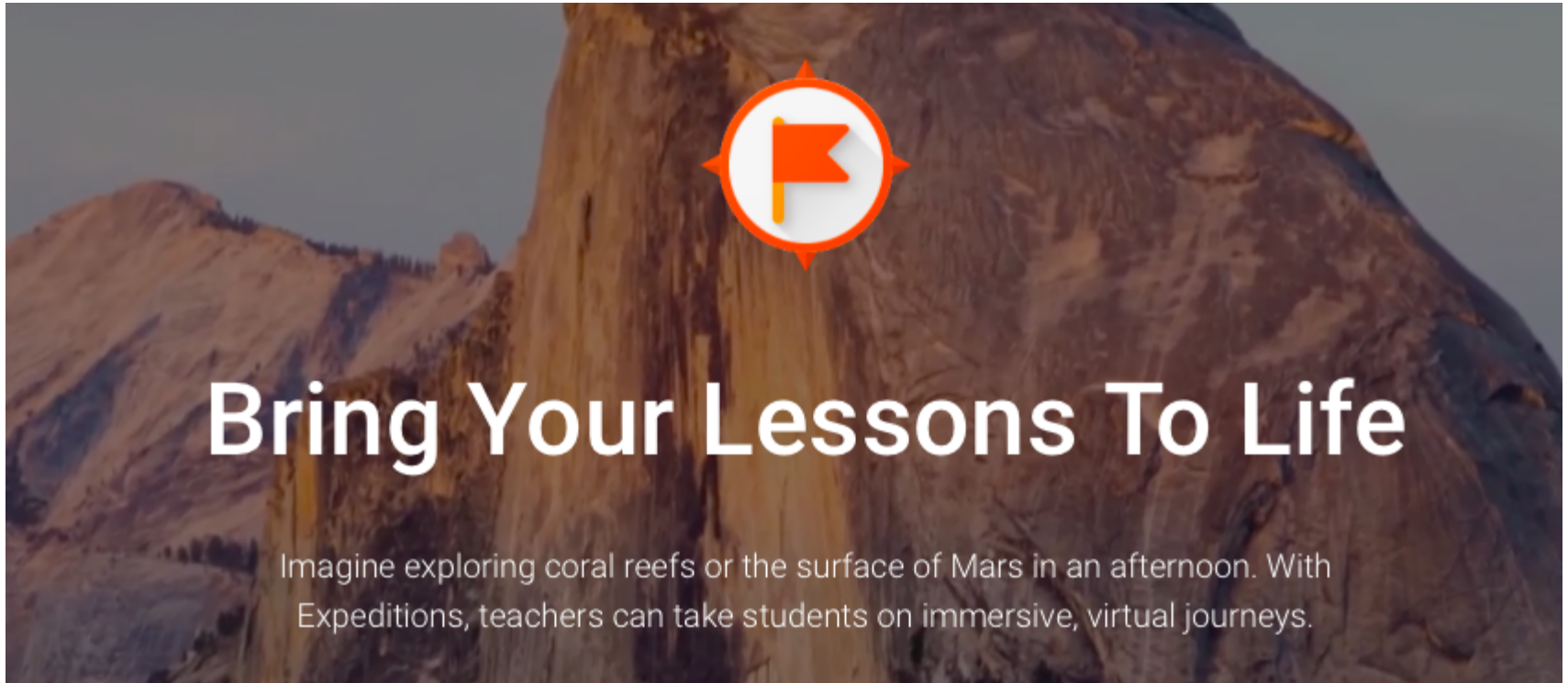
# Customize It



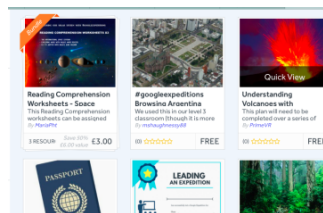
You Are One Click Away From...



# Google Expeditions

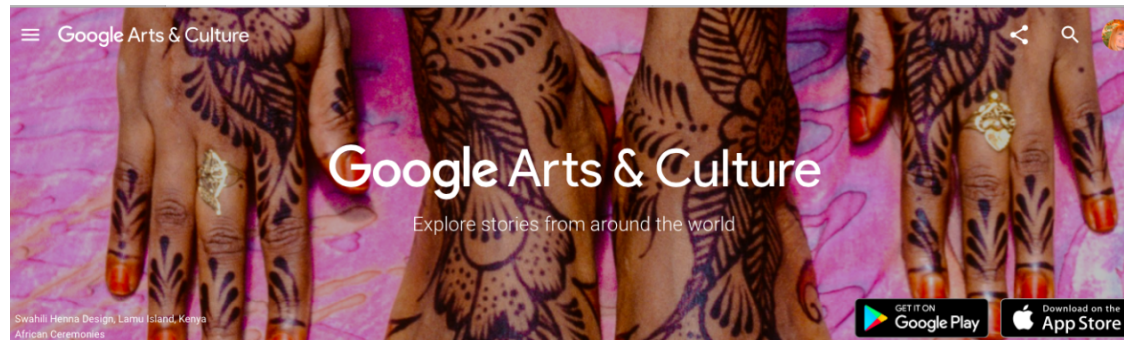


[List of available expeditions](#)



[TES resources](#)

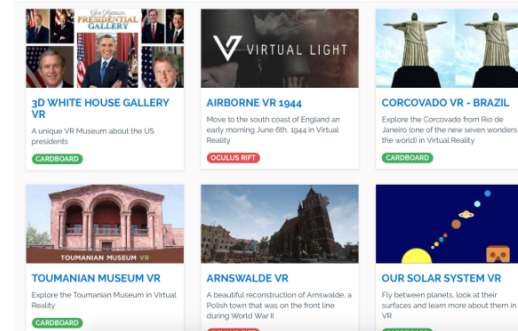
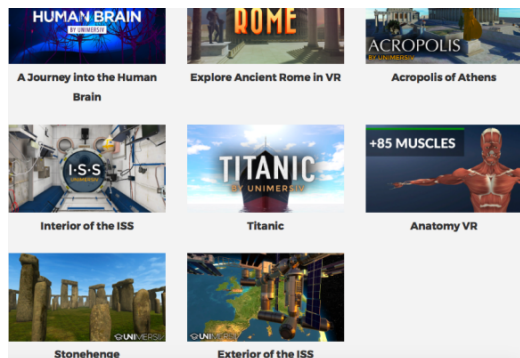
# Google Arts and Culture



360° performances

VR Library

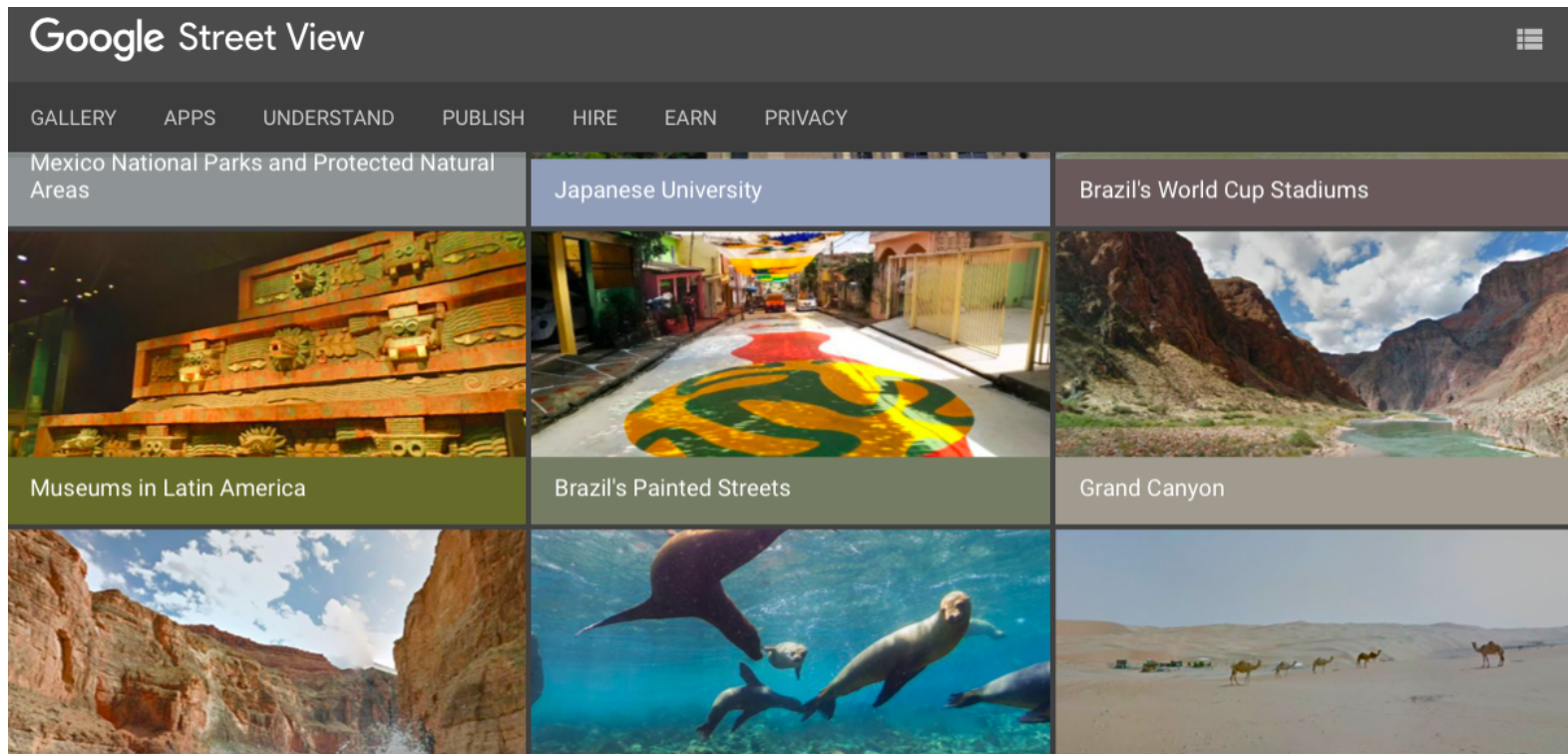
[bit.ly/unimersiv](https://bit.ly/unimersiv)



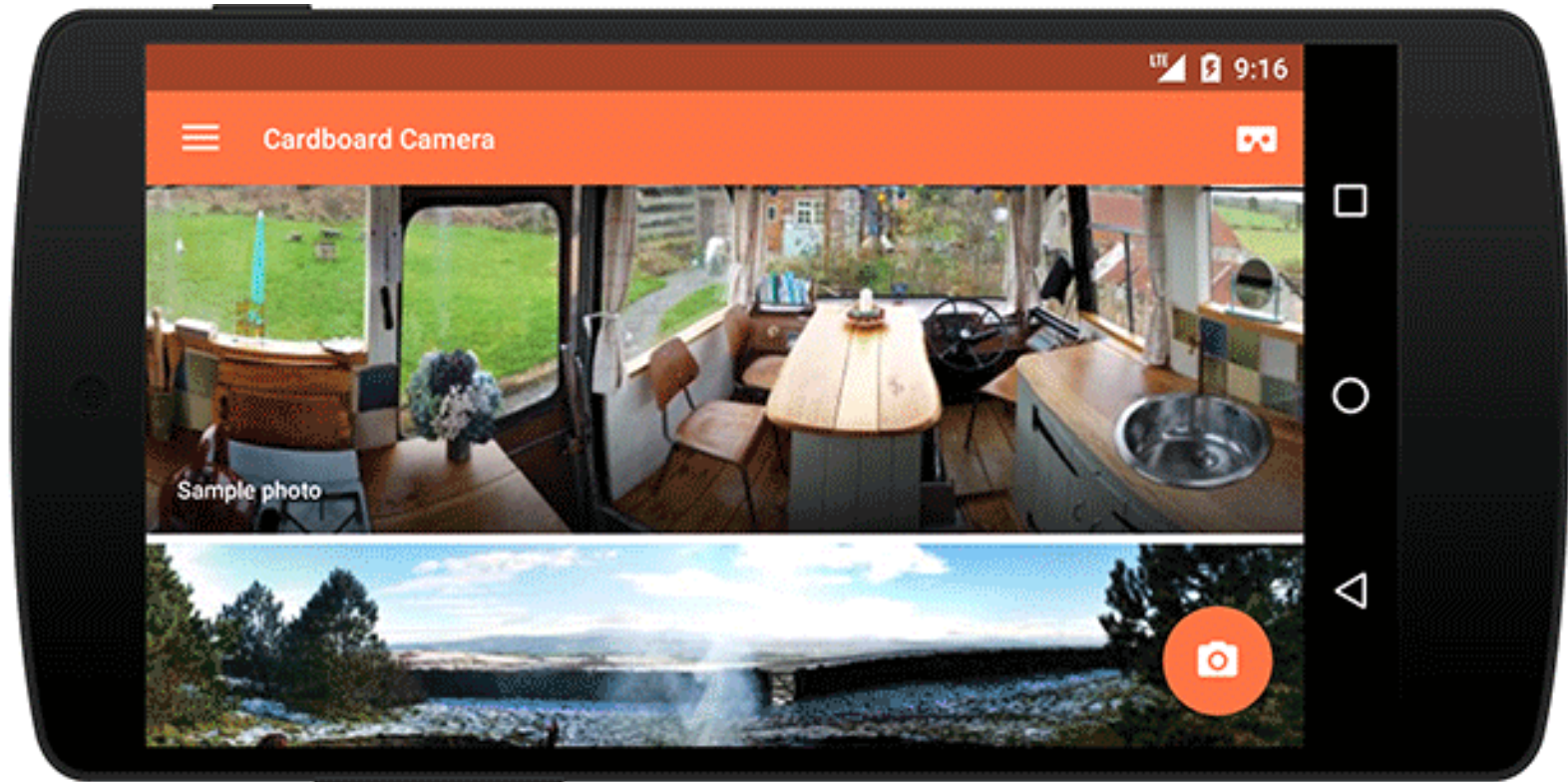
# Google Street View

collections of already curated street view images

[www.google.com/streetview](http://www.google.com/streetview)



# Students As VR Creators



Cardboard Camera



# Ideas for Using **VR** in the Classroom

Explore far-away places

Trips to  
outer space

Virtual field trips

Visit  
museums

Go back to history

Examine abstract  
concepts

Interact with artifacts

Adaptive learning



# Ideas for Using AR in the Classroom

Interactive word wall

Homework assignment

Student art gallery



Rubrics

Book review

Mystery reading

# AR you ready?

