Embodied Learning Part 2

Virtual Reality and Augmented Reality

Structure

Recap on Mixed Reality, AR & VR

Benefits and Implementation

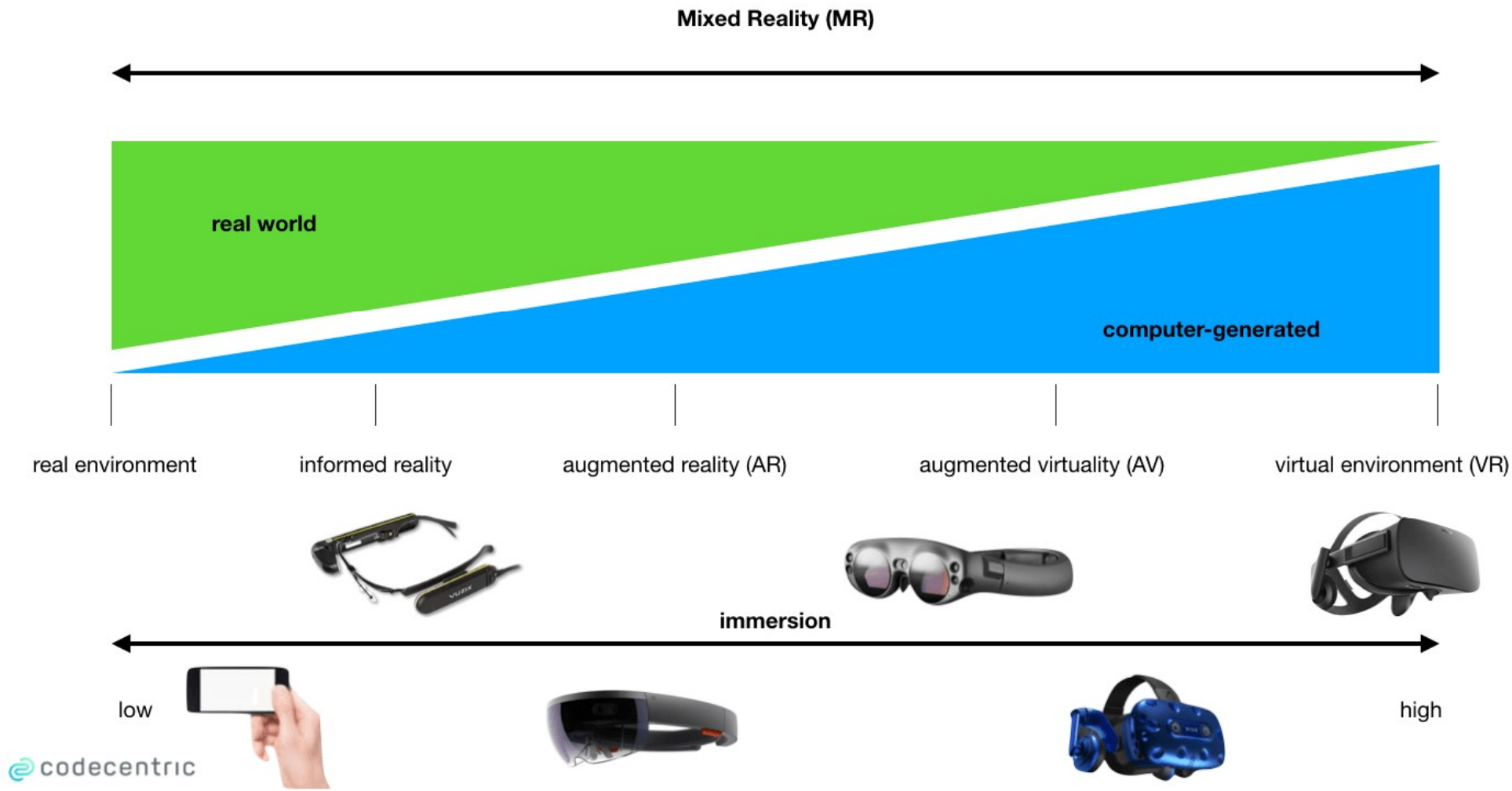
- Microsoft HoloLens 2
- Businesses and Higher Education
- in Schools
- Interactive Part

Outlook

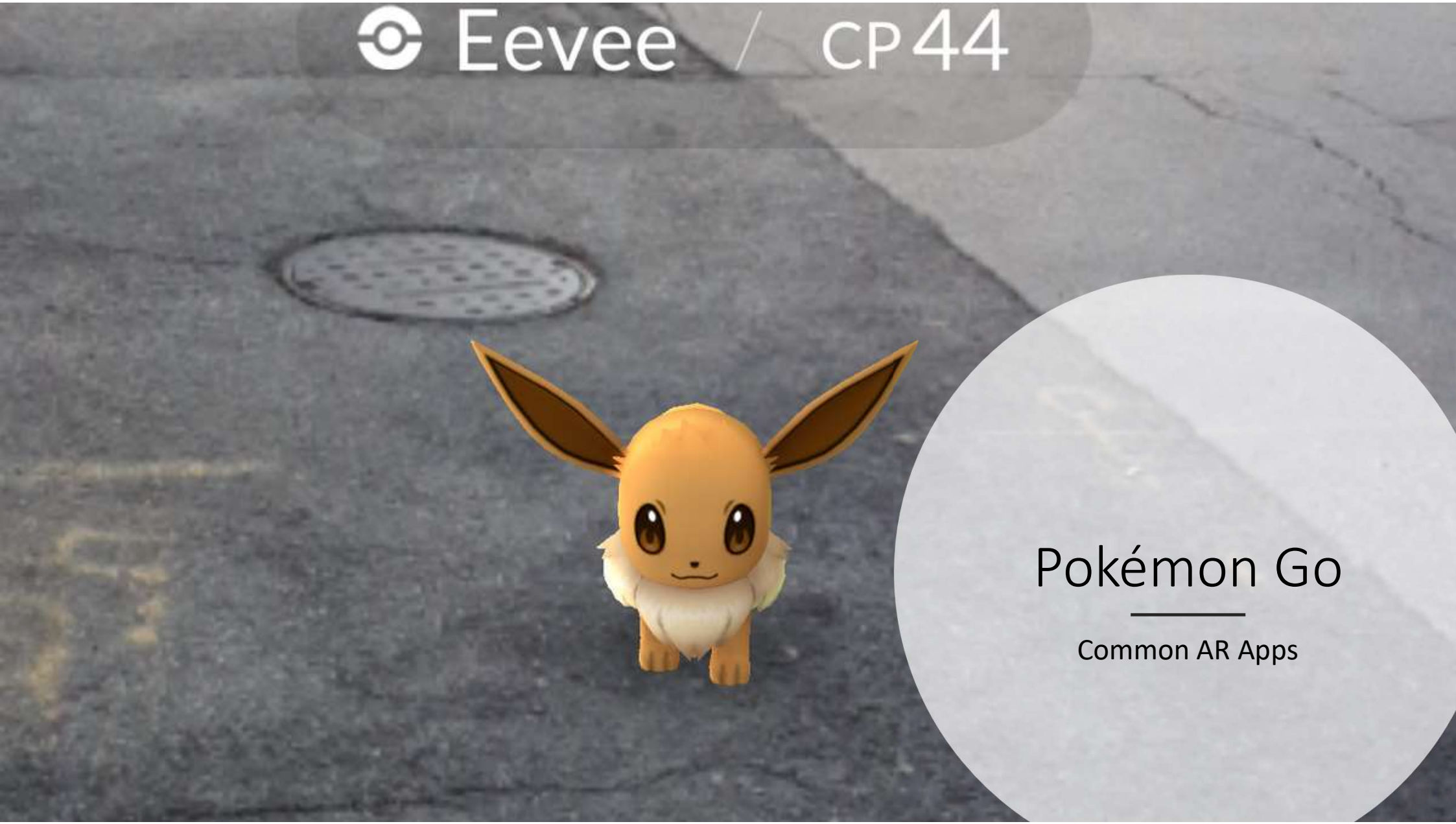
The Reality-Virtuality-Continuum

https://en.wikipedia.org/wiki/Reality%E2%80%93virtuality_continuum#/media/File:Virtuality_Continuum_2.jpg

Mixed Reality Continuum

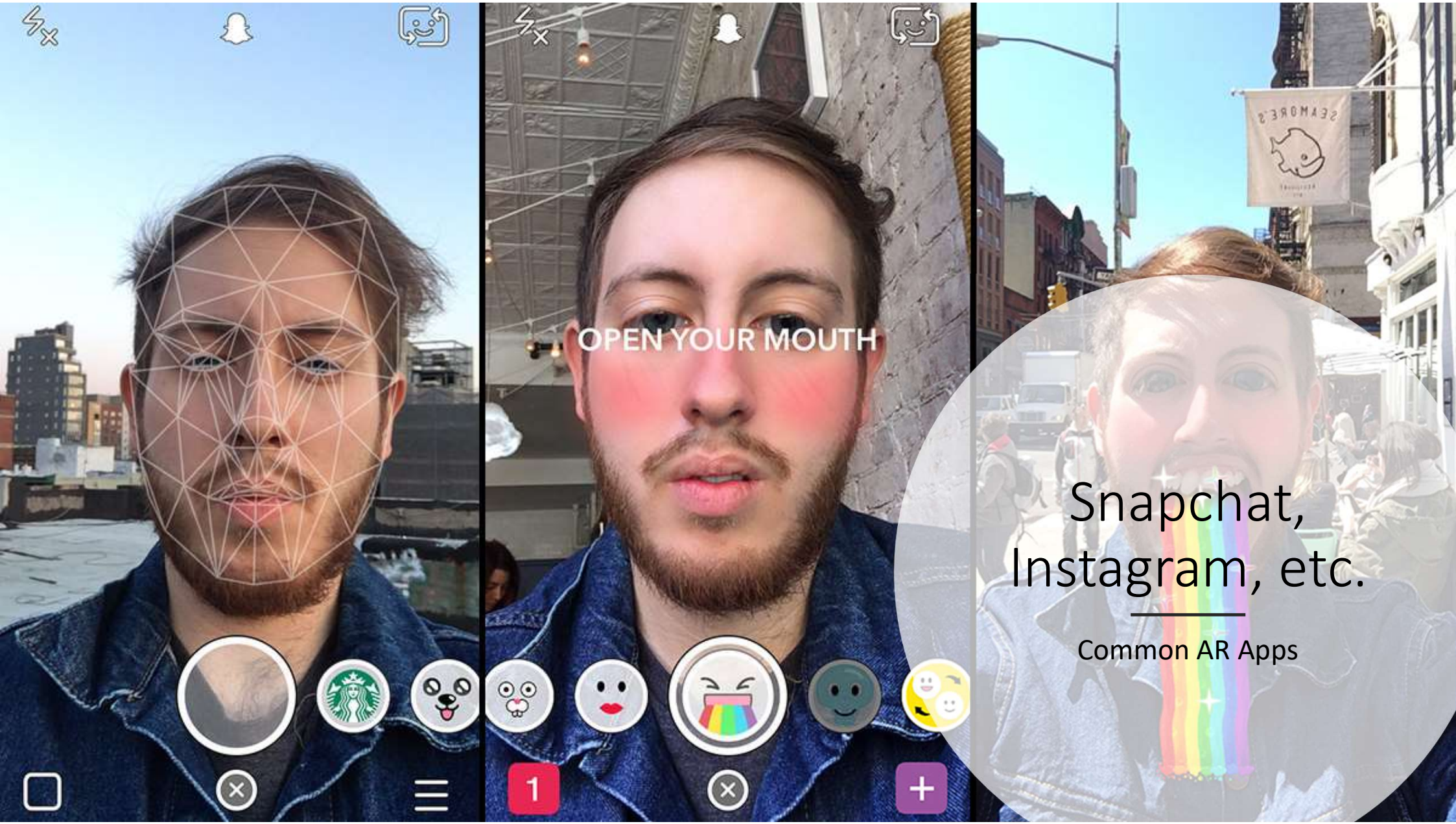


https://blog.codecentric.de/files/2018/11/MR-Continuum.png



Pokémon Go

Common AR Apps



Snapchat, Instagram, etc.

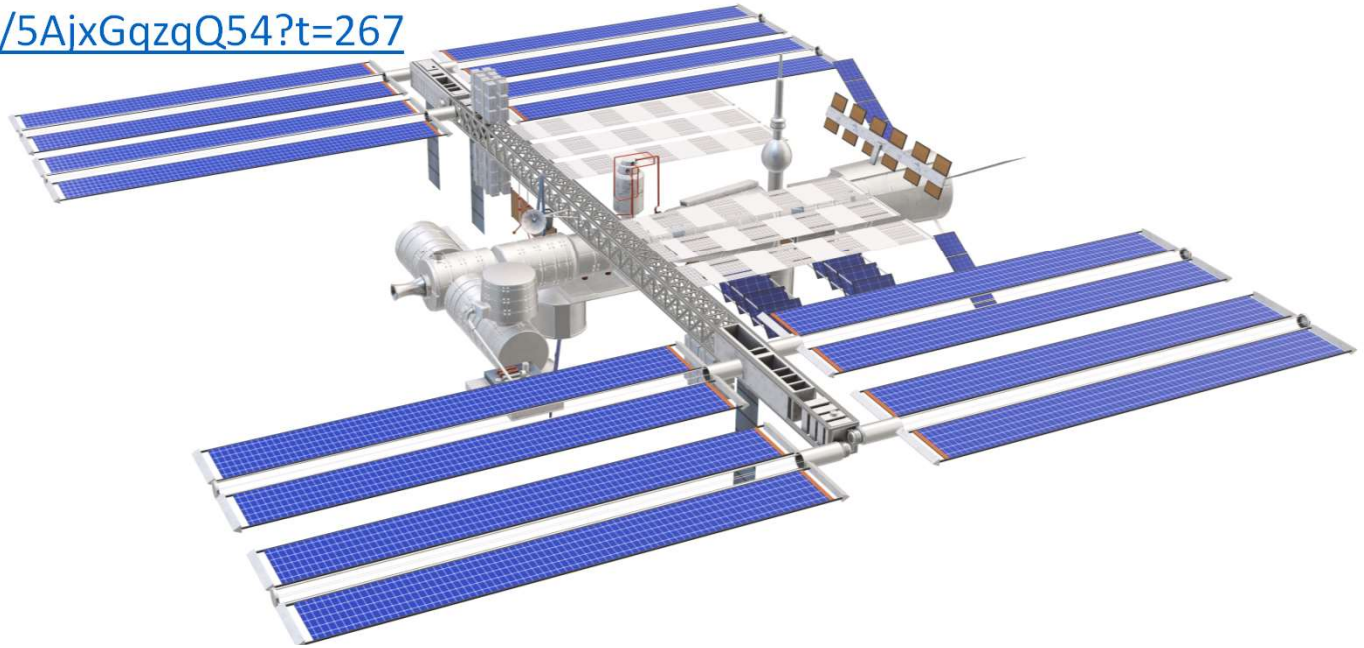
Common AR Apps

Benefits

Of Augmented and Virtual Reality

Benefits of AR & VR

- „physical“ appearance instead of 3D model on a screen
  - More IMMERSIVE → KINAESTHETIC learning
- Ideal to VISUALIZE topics / subjects that are hard to grasp
  → Create a model to facilitate learning
- https://youtu.be/5AjxGqzqQ54?t=267



Microsoft HoloLens 2

State-of-the-art AR Headset

https://winfuture.de/news,107573.html#sci1551033964,1800,1200,18818

SYSTEMS CHECK
History
Performance
89%
95.4%
98.3%

Implementation

Companies and Higher Education

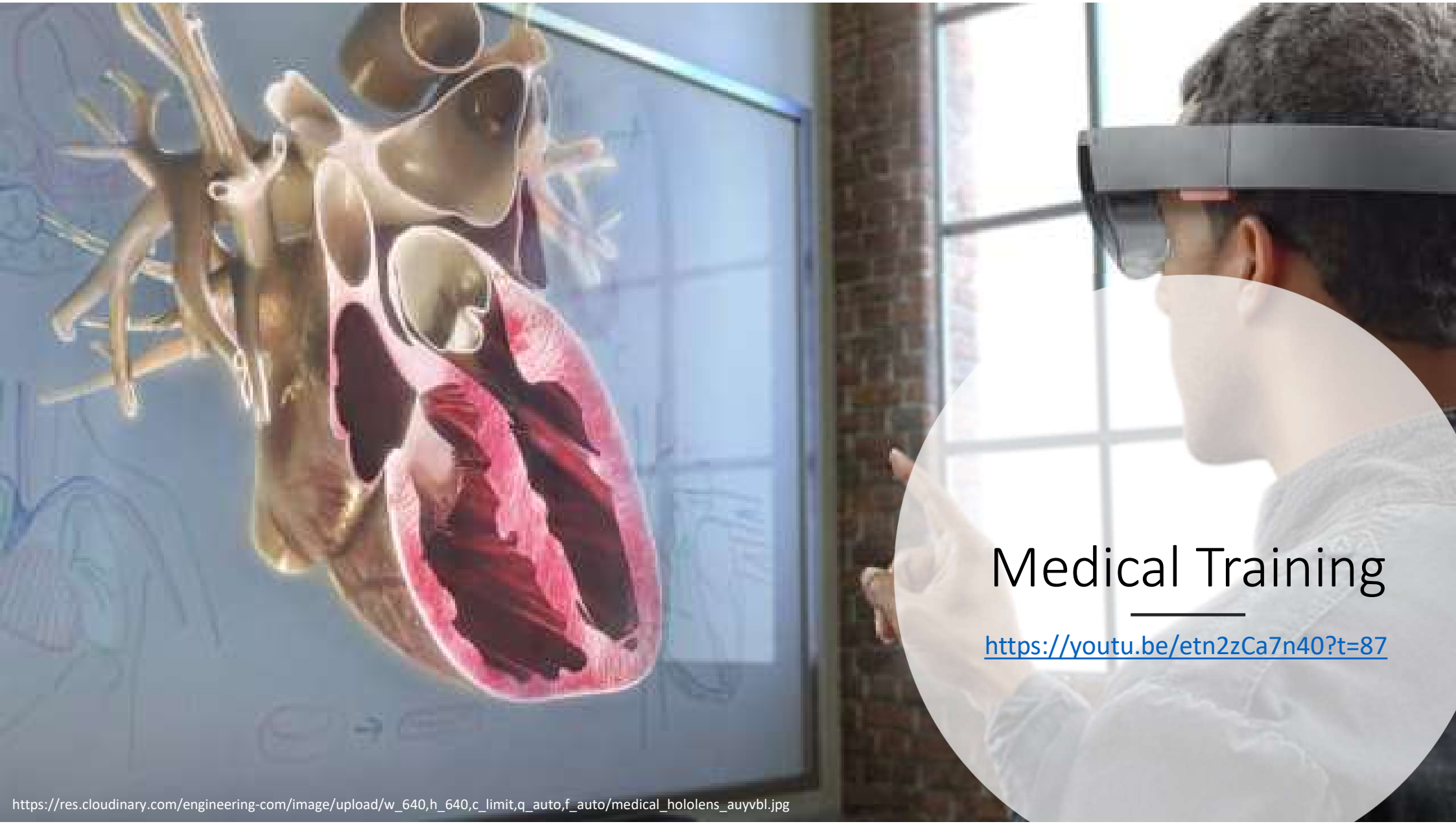
Familiarizing staff with new technology

Maintenance

“Spatial”

Virtual creative co-working

https://winfuture.de/news,107573.html#sci1551034063,1799,1200,18818



Medical Training

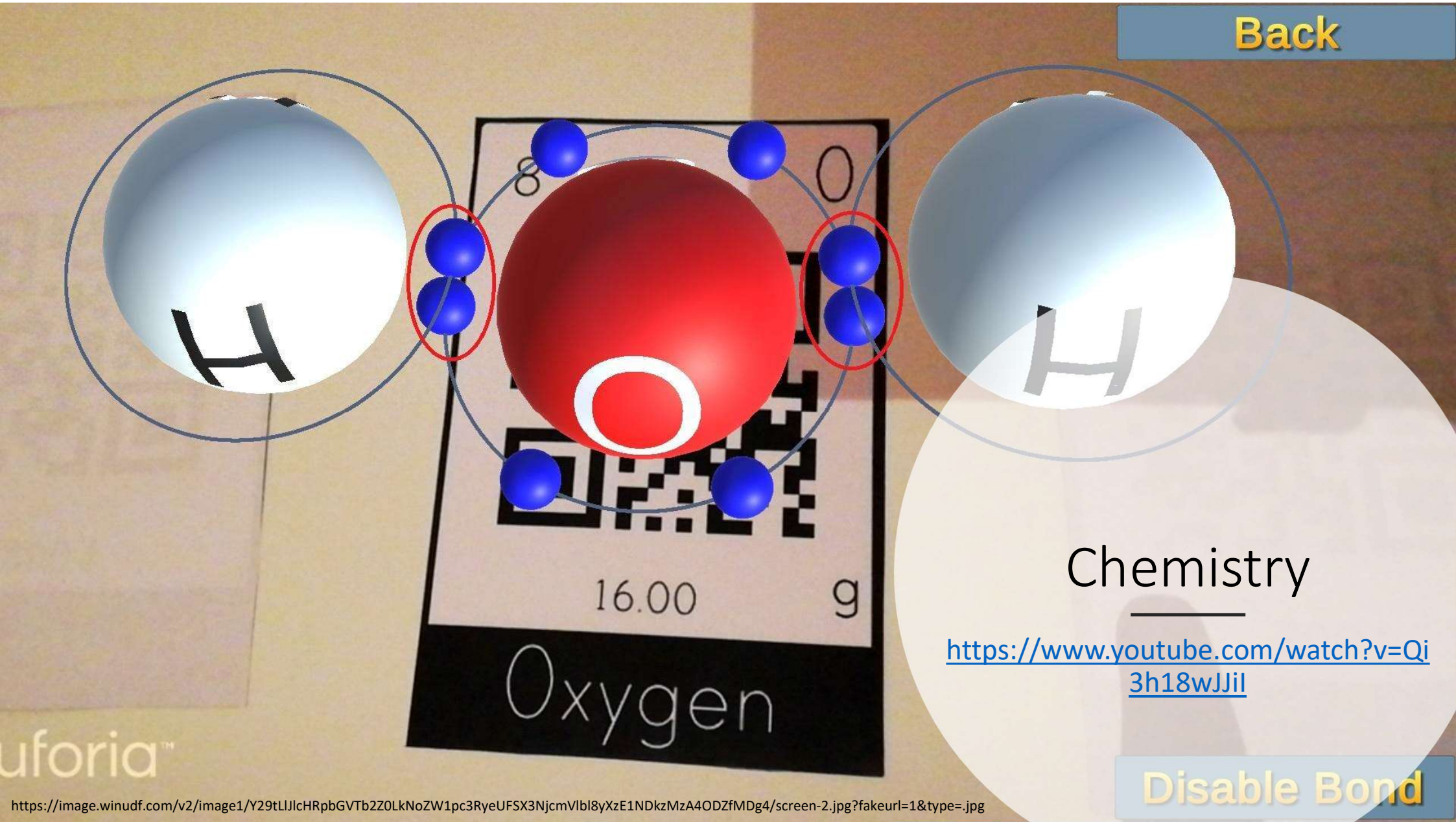
https://youtu.be/etn2zCa7n40?t=87

https://res.cloudinary.com/engineering-com/image/upload/w_640,h_640,c_limit,q_auto,f_auto/medical_hololens_auyvbl.jpg

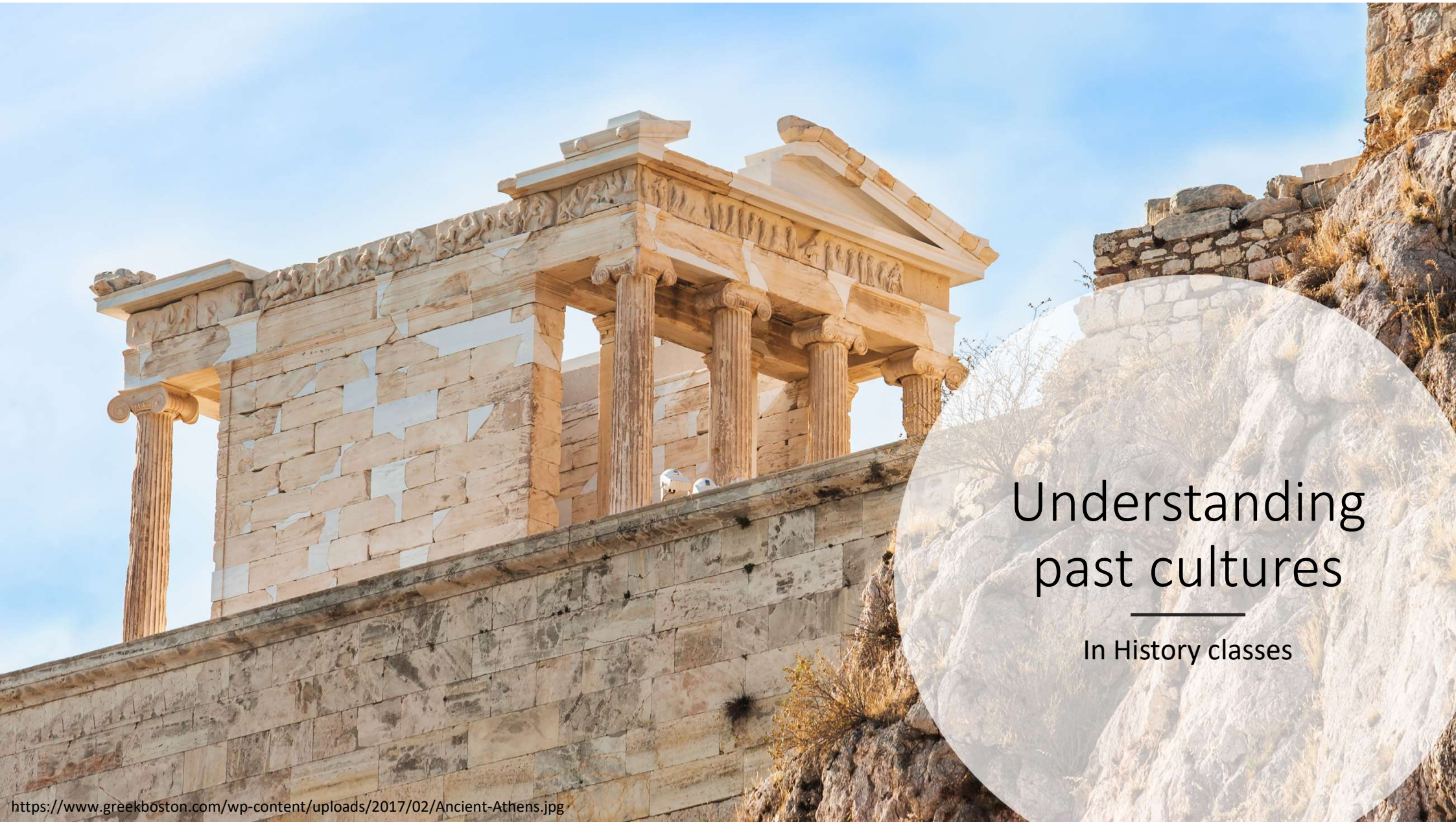
Implementation

In schools

https://www.ee.co.za/wp-content/uploads/2018/07/sangari-031-08-2018.jpg



https://image.winudf.com/v2/image1/Y29tLlJlcHRpbGVTb2Z0LkNoZW1pc3RyeUFSX3NjcmVlbl8yXzE1NDkzMzA4ODZfMDg4/screen-2.jpg?fakeurl=1&type=.jpg



Understanding past cultures

In History classes

https://www.greekboston.com/wp-content/uploads/2017/02/Ancient-Athens.jpg

From: “Assassin’s Creed – Origins” - https://static.fore.4pcdn.de/premium/Screenshots/06/83/92553606-vollbild.jpg

https://images.amcnetworks.com/bbcamerica.com/wp-content/uploads/2017/08/WW_1920x1080.jpg

From: “Red Dead Redemption 2” https://i.redd.it/c8sxlu8ykru11.png

Geometry

The interactive part

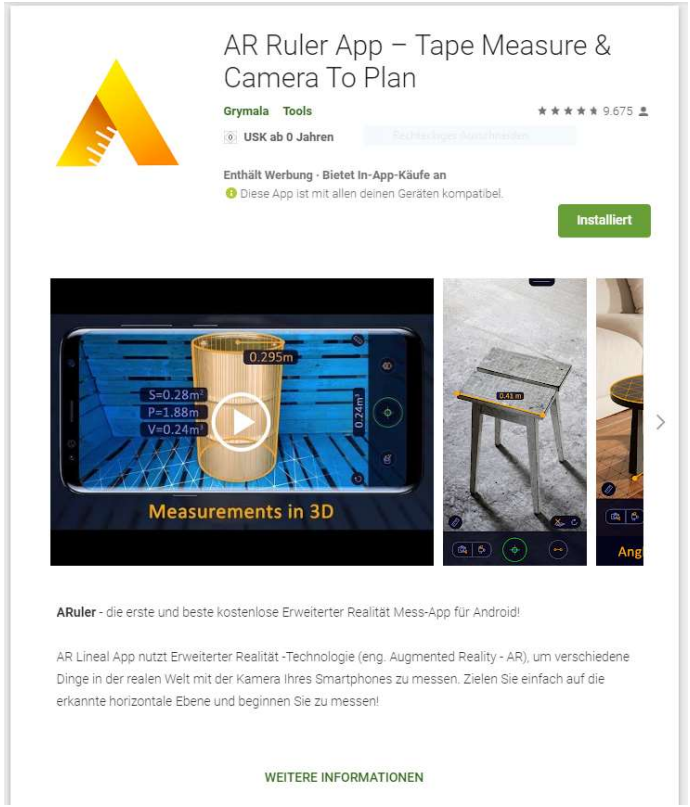
How big is 1m² ?

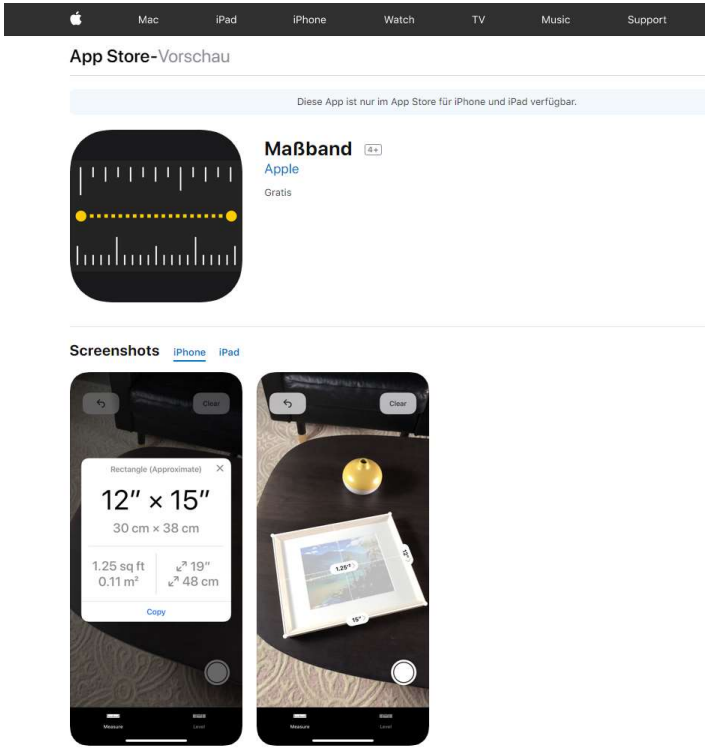
Use the tape to create a 1m² square on the floor!

How big are $2m^2$?

Use the tape to create a $2m^2$ square on the floor!

Download an AR App on your Smartphone!



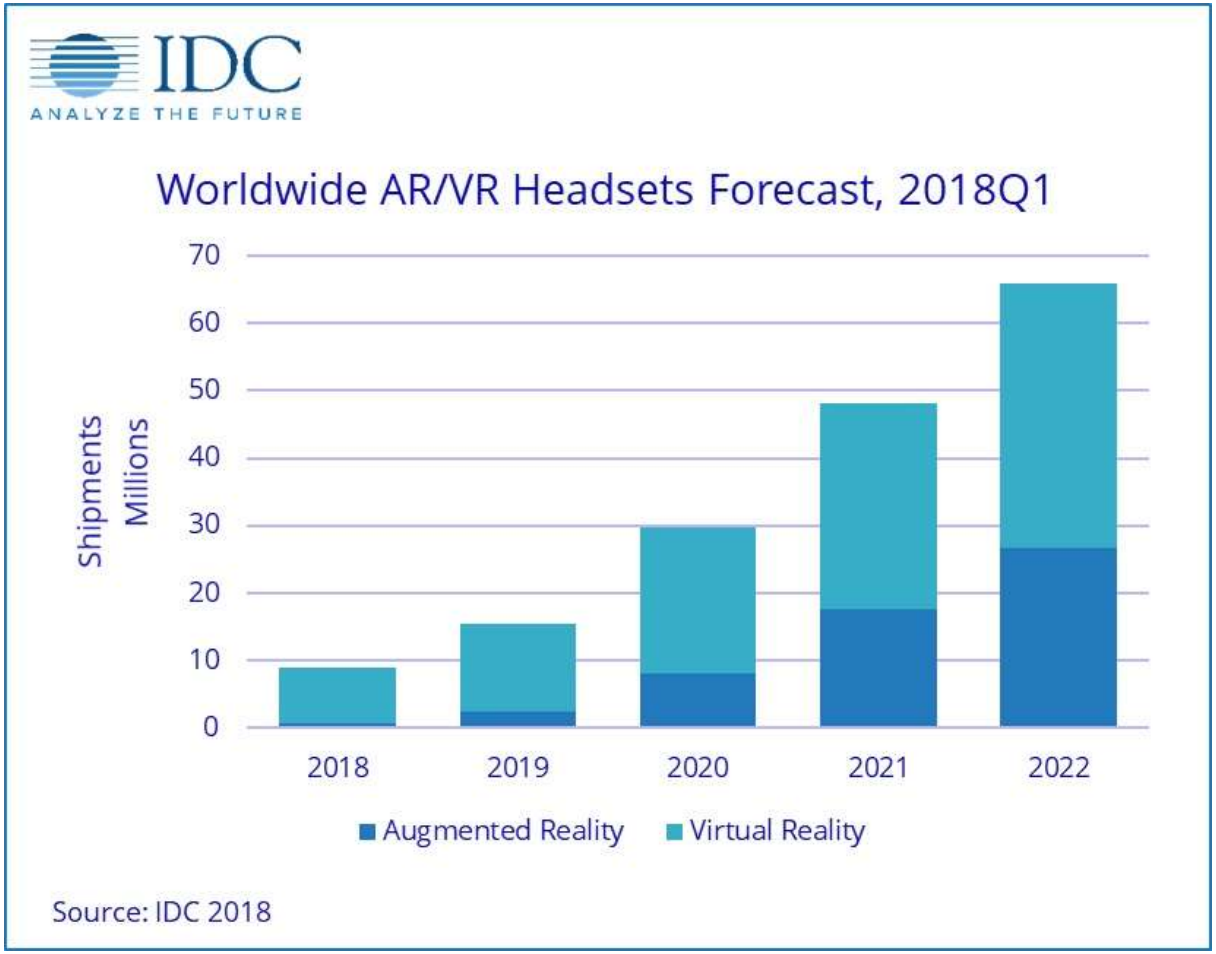


Use an AR App on your smart phone for measurement!

1. How big is our square?
2. Find another surface to measure!
3. Measure an object for volume!

Outlook

AR / VR will be relevant in the future!



Sources

“Augmented Reality and Virtual Reality Are on the VRge of Growth, Says IDC” - https://www.idc.com/getdoc.jsp?containerId=prUS44001618

The XR factor: The incredible potential of extended reality – https://www.digitalpulse.pwc.com.au/extended-reality-xr-essentials-101/

Microsoft HoloLens2 Website –

https://www.microsoft.com/de-de/hololens