FANTASTIC VOYAGES IN A VIRTUAL WORLD

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TECHNOLOGY COMES OF AGE

- Virtual and Augmented Reality has captured the imagination for many years
- Only recently has the technology started to deliver
- Was cumbersome and uncomfortable
- Now capable, immersive, accessible and affordable

BEYOND GAMES

- Gaming has driven development

- VR is a way to interact with games organically

- Continues to be its biggest market

- However, much like the history of the GPU, the market is moving into other areas more applicable to research

NEWS AND MEDIA

- Immersive experience of world news

- Simple 360° video but effective

- Viewable with mobile VR and headsets

- Video resolution is important:

  - 4K is great for normal viewing

  - But results in poor quality when wrapped around

- 16K+ video capture has implications for data storage
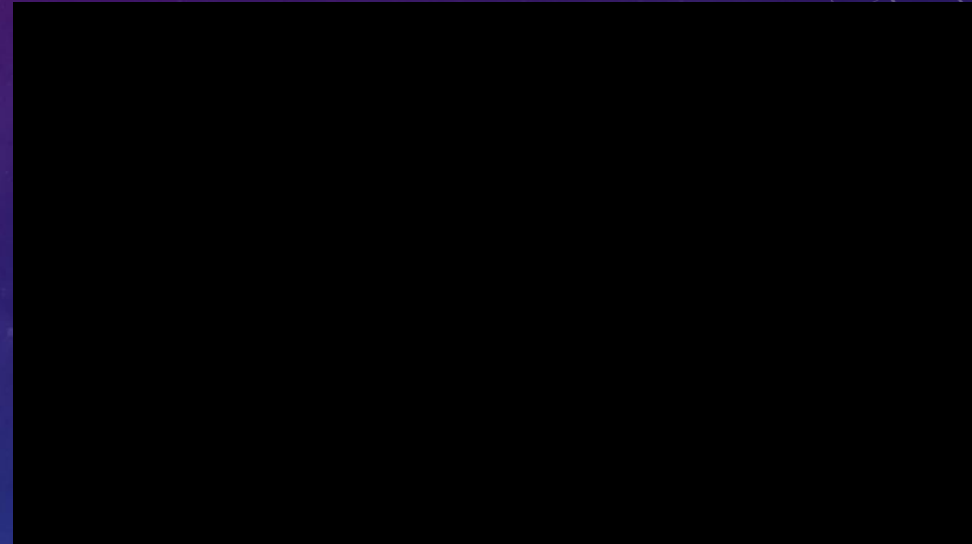
First Ever War Zone in 360° Virtual Reality
- Welcome to Aleppo

https://www.youtube.com/watch?v=Nxxb_7wzvJI

ART AND SCULPTURE

- Google Tilt Brush
https://www.tiltbrush.com/

- Oculus Medium
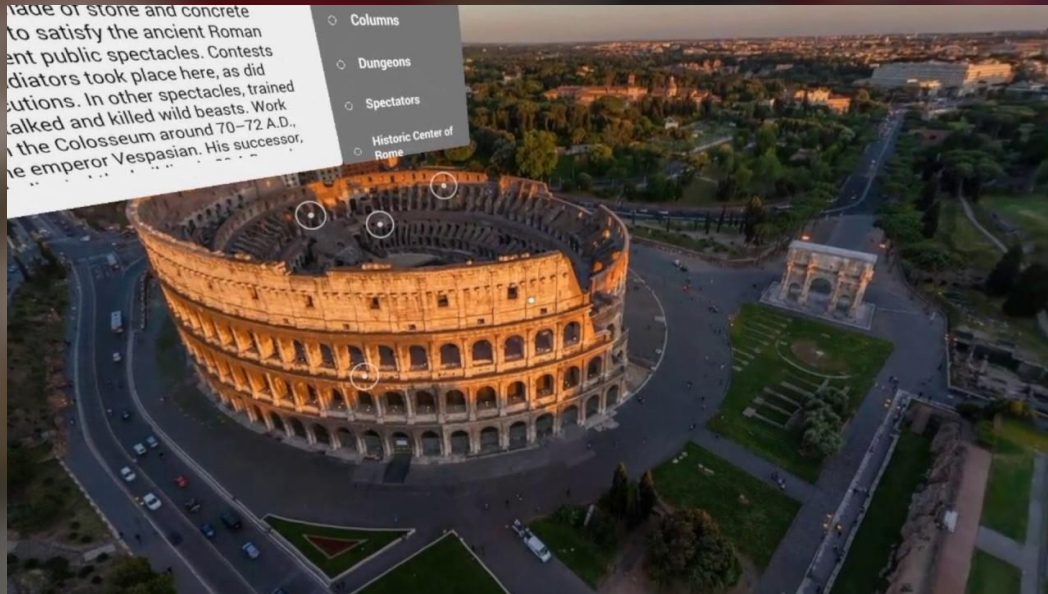https://www.oculus.com/medium/

MEDICAL TEACHING AND SIMULATION

- Physiology of the Eye – Steam VR App

- Teaches about the anatomical structures and physiology

- Real-time and interactive training modes

- https://store.steampowered.com/app/582200/The_Physiology_of_the_Eye/
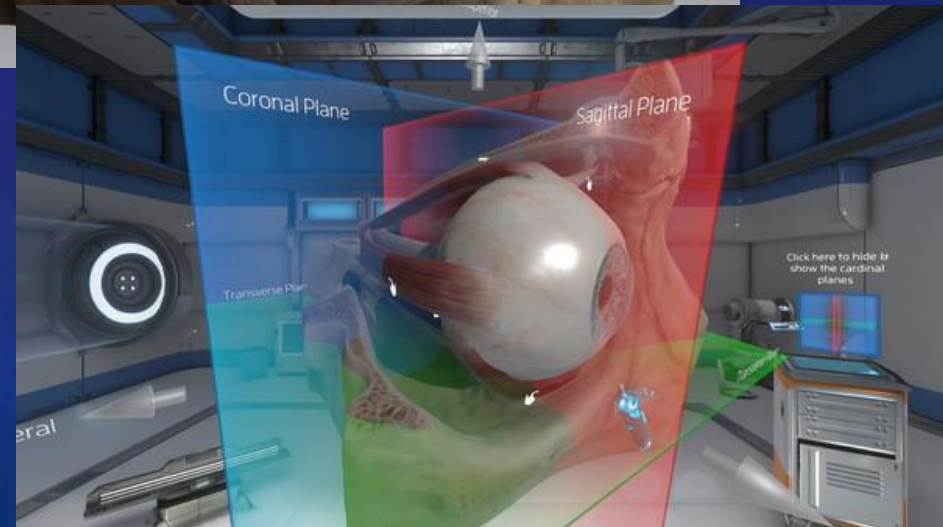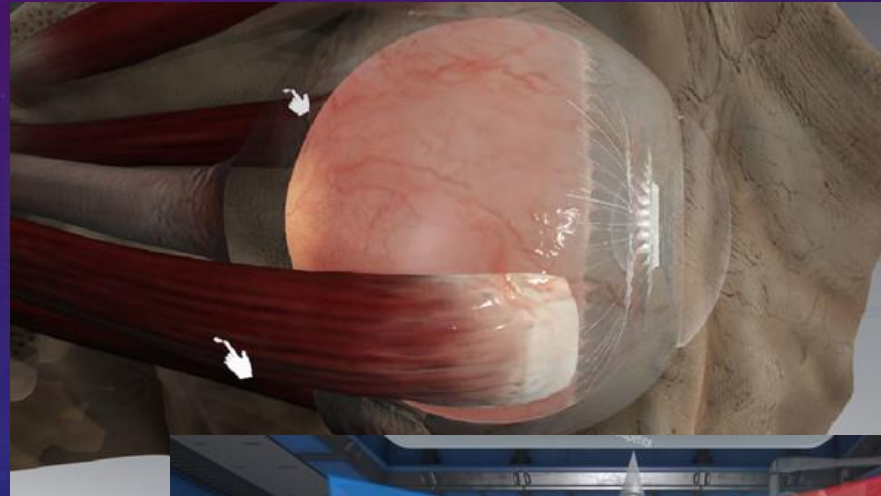
EDUCATION AND OUTREACH - GRAND EXPEDITIONS

- Google Expeditions and other apps let people explore places around the world

- See otherwise inaccessible locations

- Great for school groups

- Used for public engagement with University research

ENCHANTMENT UNDER THE SEA

- theBlu: Whale Encounter

- Transports audiences deep under the ocean

- On to the deck of a sunken ship

- Face to face with the largest species on earth

- An encounter which creates a sense of uncanny scale and unexpected empathy

- https://transport.wevr.com/theblu-whale-encounter

BENEFITS OF VR TECHNOLOGY

- Like data visualization, VR/AR is effective because it shifts the balance between perception and cognition

- Visual cortex is fast and efficient – seeing is easy

- Cerebral cortex is slow and dumb - thinking is hard

- Frees cognition to aid understanding
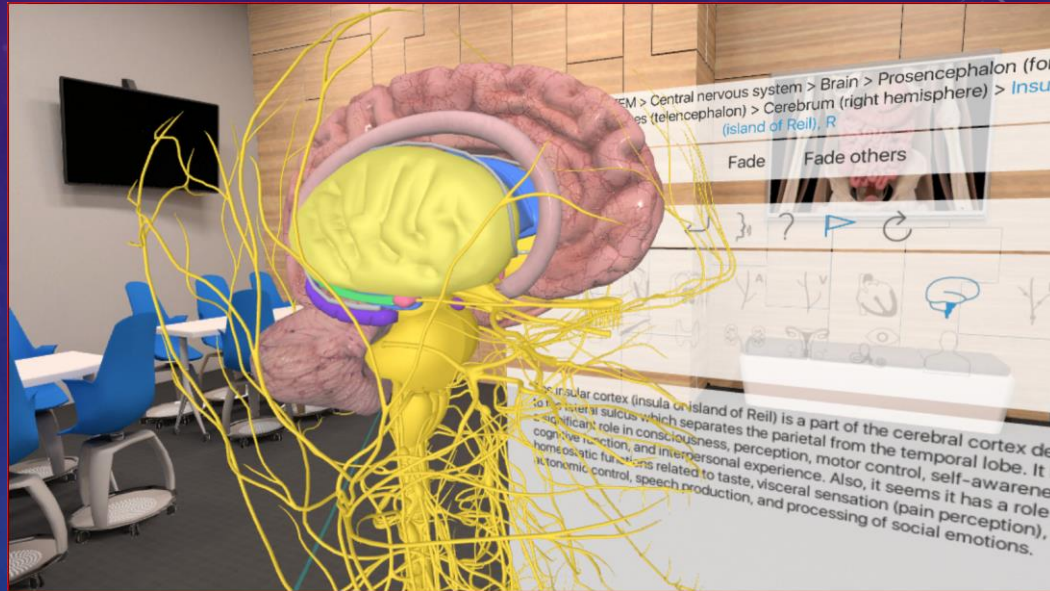
IN THE MOMENT

- "Presence is understood as referring to the subjective feeling of being in a virtual environment while transiently unaware of one's real location and surroundings and of the technology that delivers the stream of virtual input to the senses."

- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2695391/#G1

GROWING COMMUNITY

- There are now several groups on campus, exploring and supporting VR applications:
  - DigiLab for student learning
  - Medical School – Tony Payton
  - Psychology
  - Business School
  - Manchester Museum
  - Dermatology (soon)
- Plans for spin-out company to aid app development

WHERE DO WE FIT IN?

- Researchers asking Research IT for help

- VR/AR is a newer but expansive and growing field with yet more specialism required

- Data visualization field is well established but still expanding in usage and outreach

- We already specialise in RSE, HPC/HTC infrastructure, data management and consultancy

- We have experience of data visualization and development in the VR/AR world

# THE VISUALIZATION AND DATA ANALYSIS LABORATORY

- Formally announcing vDAL

- Our small lab space based in B38 Sackville

- Add to the growing network of labs on campus

OUR MODEST EQUIPMENT

- High-end workstation with dual GTX-1080 GPUs

- HTC Vive Headset and controllers

- LEAP Motion – for desktop and headset use

- zSpace workstation – passive stereo display with precision controller

- Google Pixel and Daydream headset for mobile-based low-cost VR
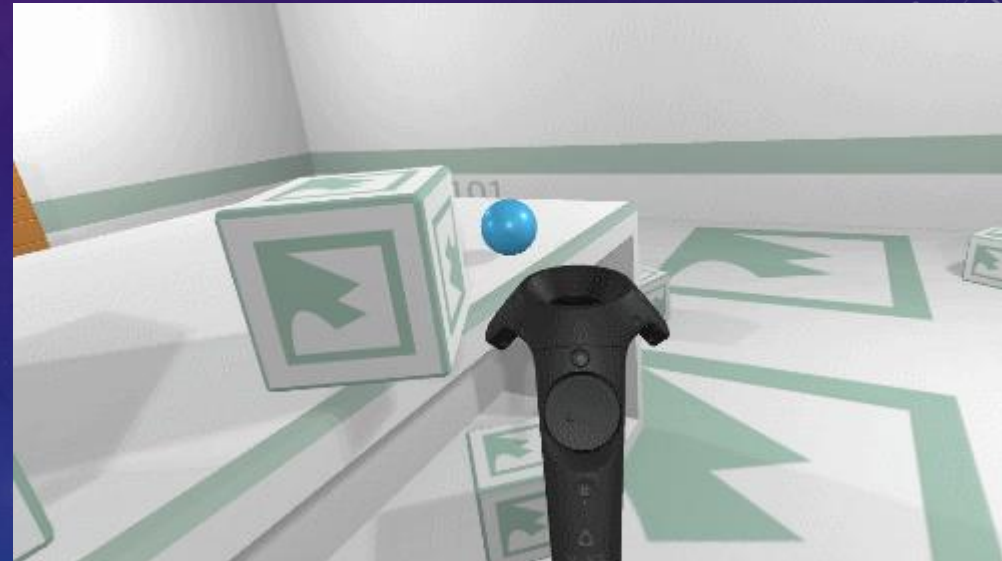
WHAT WE CAN DO
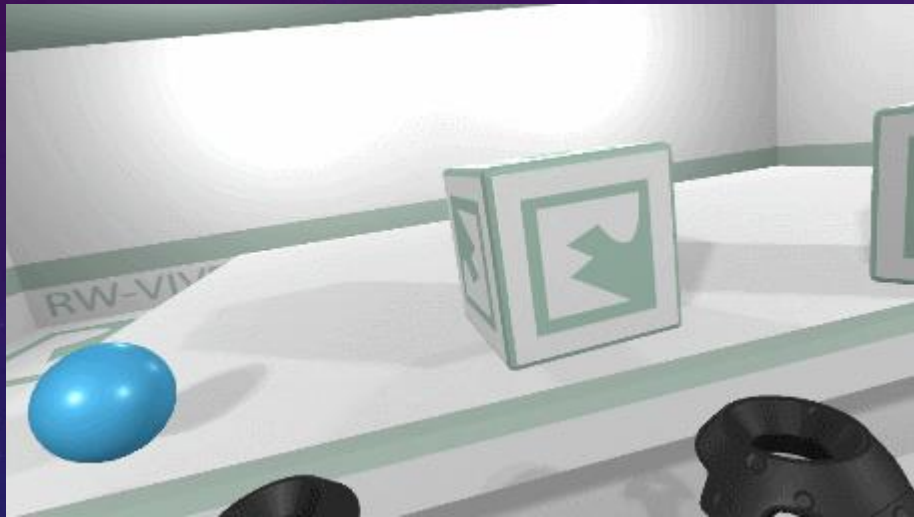
- Access to shared hardware, software and peripherals
- Access to experience and knowledge
- Testing environment with hands-on RSE support

WHAT WE CAN DO

- Consultancy –what is achievable and affordable

- Grants – writing advice and assistance

- Integrated with our successful RSE team

- Develop prototypes and proof-of-concept solutions

- Work with other partners

WHAT WE CAN'T DO

- We're not 3D modellers or digital artists
- We're unlikely to start employing people into such roles
- We can't develop the equivalent of a $0.5B AAA video game

WE WANT TO BE TOGETHER

- Growing community of similar labs

- Desire to share hardware, software, knowledge and experience

- Grant submitted by the Psychology group to help develop a network

- Our intent is to join up and aid with themed Research IT Club events

- As ever, all driven by researcher demands

COMING SOON

- Establish vDAL as a service

- Rob Haines and I to write a new and improved ~~Moonshot~~ Business Case for further investment

- Launch a vDAL support website

- AR – HoloLens and beyond

- Your project?

MANY THANKS

- For further information please contact:
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- Or for the whole team:
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- Ask your questions now....