

RE-IMAGINING LEARNING: AUGMENTING LEARNING IN HIGHER EDUCATION

25 June 2019
PLNT, Leiden

Welcome

Marcus Specht (director LDE CEL)

Centre for Education
and Learning



#ReimaginingLearning2019

Center for Education and Learning

- Multi-method multi-disciplinary research
- Linking research, innovation, and professionalisation
- Document research outcomes and translates them to practice
- Initiating research driven by everyday educational challenges of LDE



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Leiden
The Netherlands



Learning, Shared Awareness, **Augmentation**, Virtual

Worlds, **Sensors**, Immersion, Simulations. Complex

Processes, Learner Agency, **Spatial Abilities**,

Active Exploration, **Authentic** Educational Settings,

Deliberate Practice, Expertise, Collaboration and

Annotation, **360° Video**, Design Patterns

How can AR/VR be used for what objectives in HE?

Evidence driven Research & Innovation



Welcome

Michelle Olmstead (director Centre for Innovation)



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People First in Innovation

The Centre for Innovation has a vision to
create impact in how people **learn, live,**
and **work.**

Our mission is to **identify and explore**
transformative trends in a digital world,
creating **innovative methods,**
products and solutions for Leiden
University and its partners.



#ReimaginingLearning2019



UNIVERSITIES JOIN FORCES!

THE OPEN SOURCE 3D BODY MODEL

An initiative of:



Leiden University
Medical Center



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centre4innovation.org

Let's build a HUB!

Sharing VR and AR apps for
education and research
Sharing knowledge on building
and implementing apps.

An initiative of:



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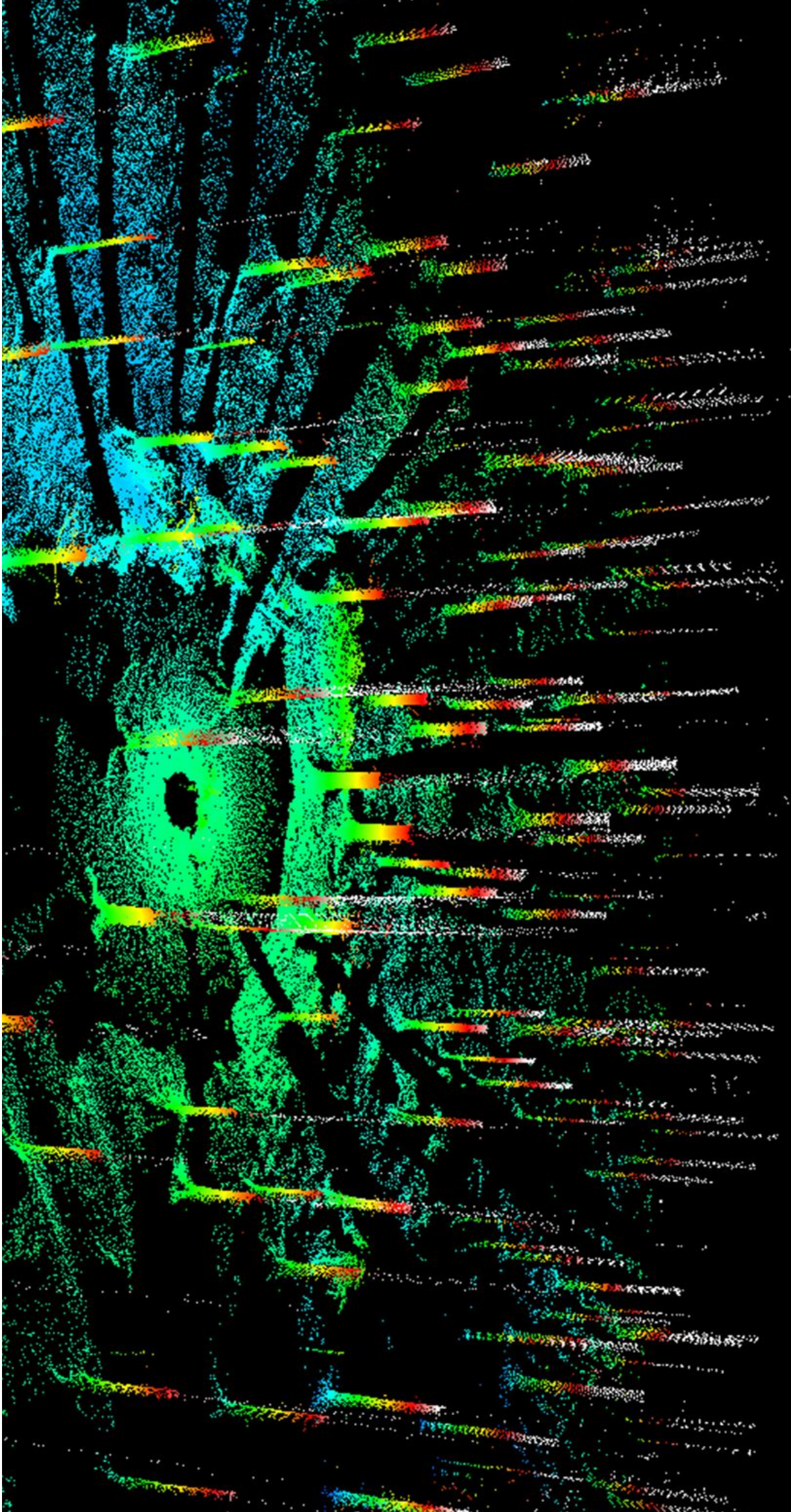
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Keynote: *A travel guide to immersive learning spaces*

Thomas Ginn, Jelger Kroese and Leontine van Melle (CFI)





Who are we?



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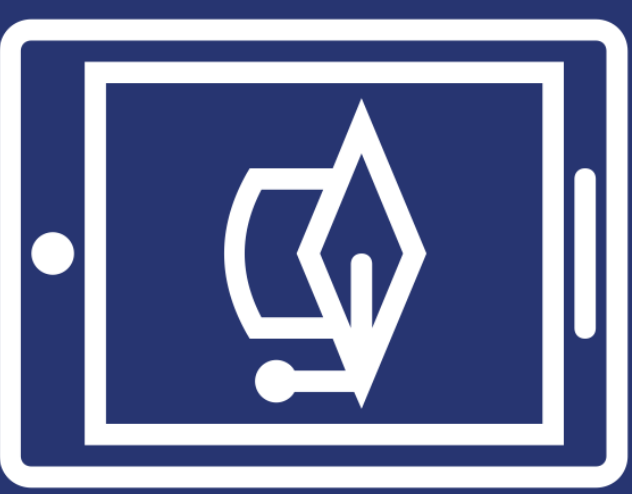
Why are we experimenting with immersive technologies?



1. Missing Link



2. Enrich education

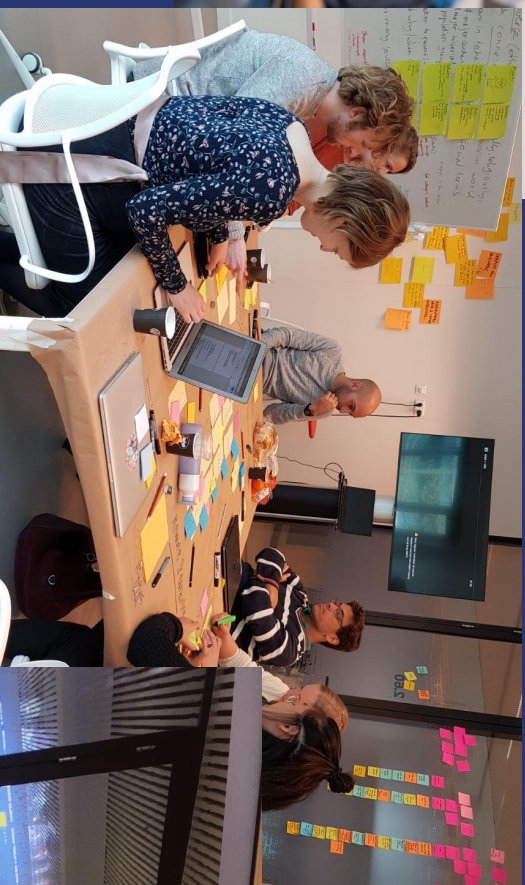


**3. Prepare the
University**

How do we reach these goals?



Exploring



Investigating



Creating

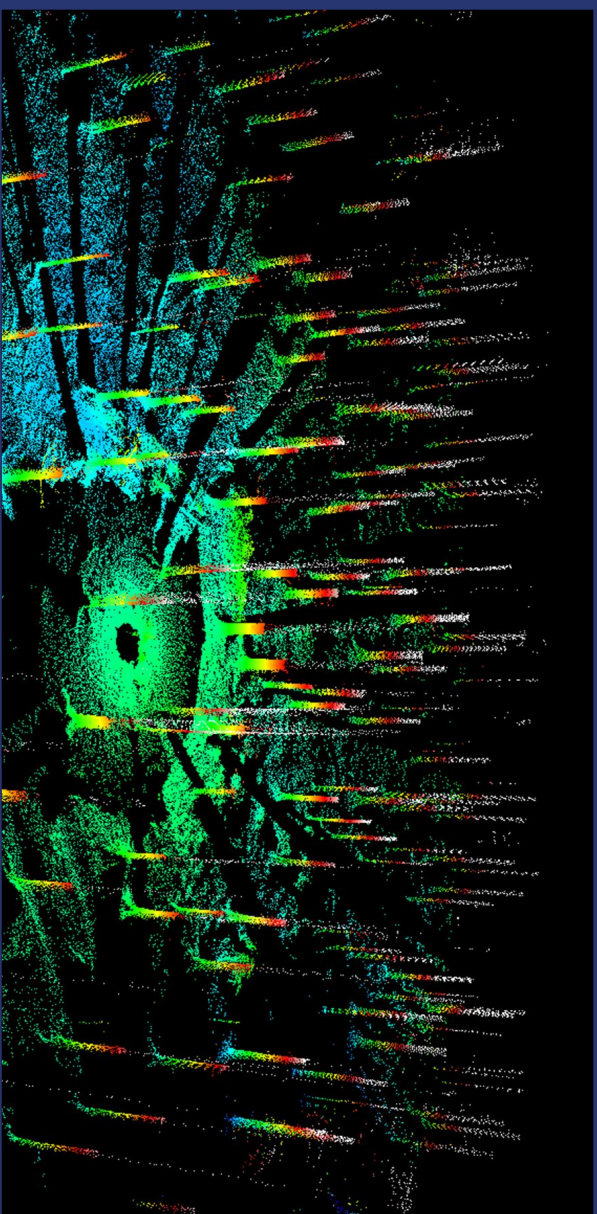
What have we created?



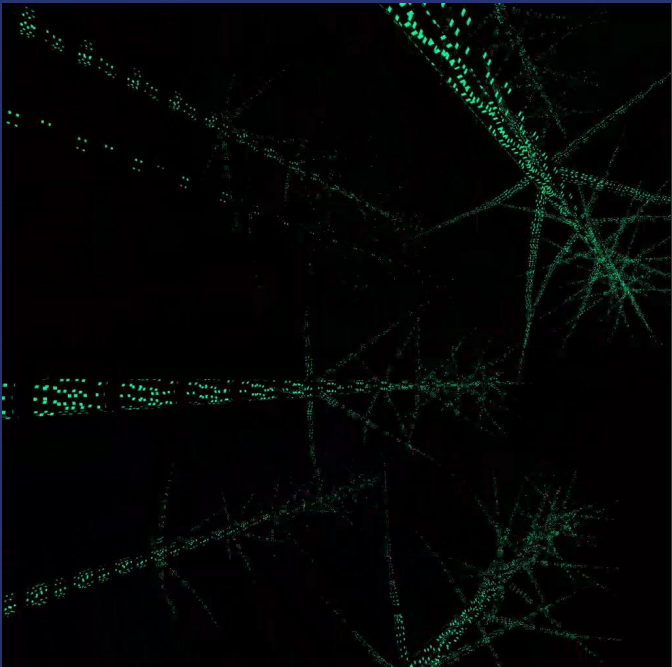
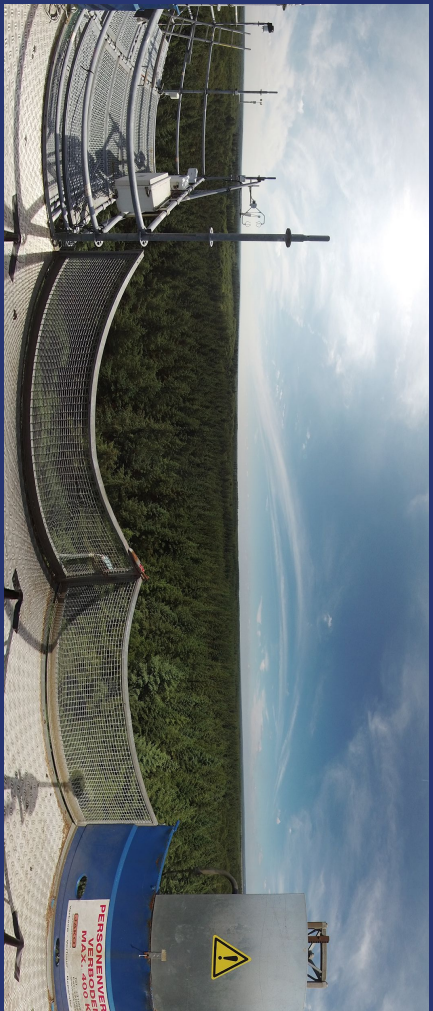
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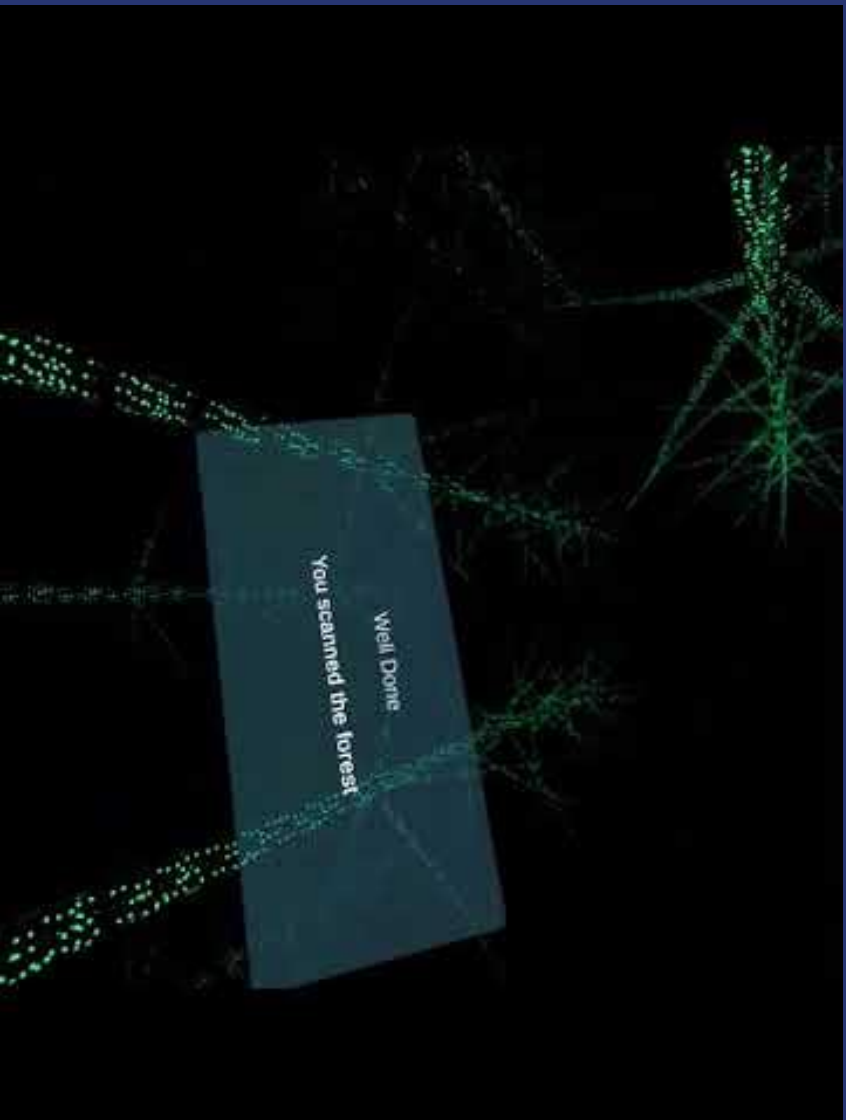


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**Affective
learning**



**Open up the
inaccessible**

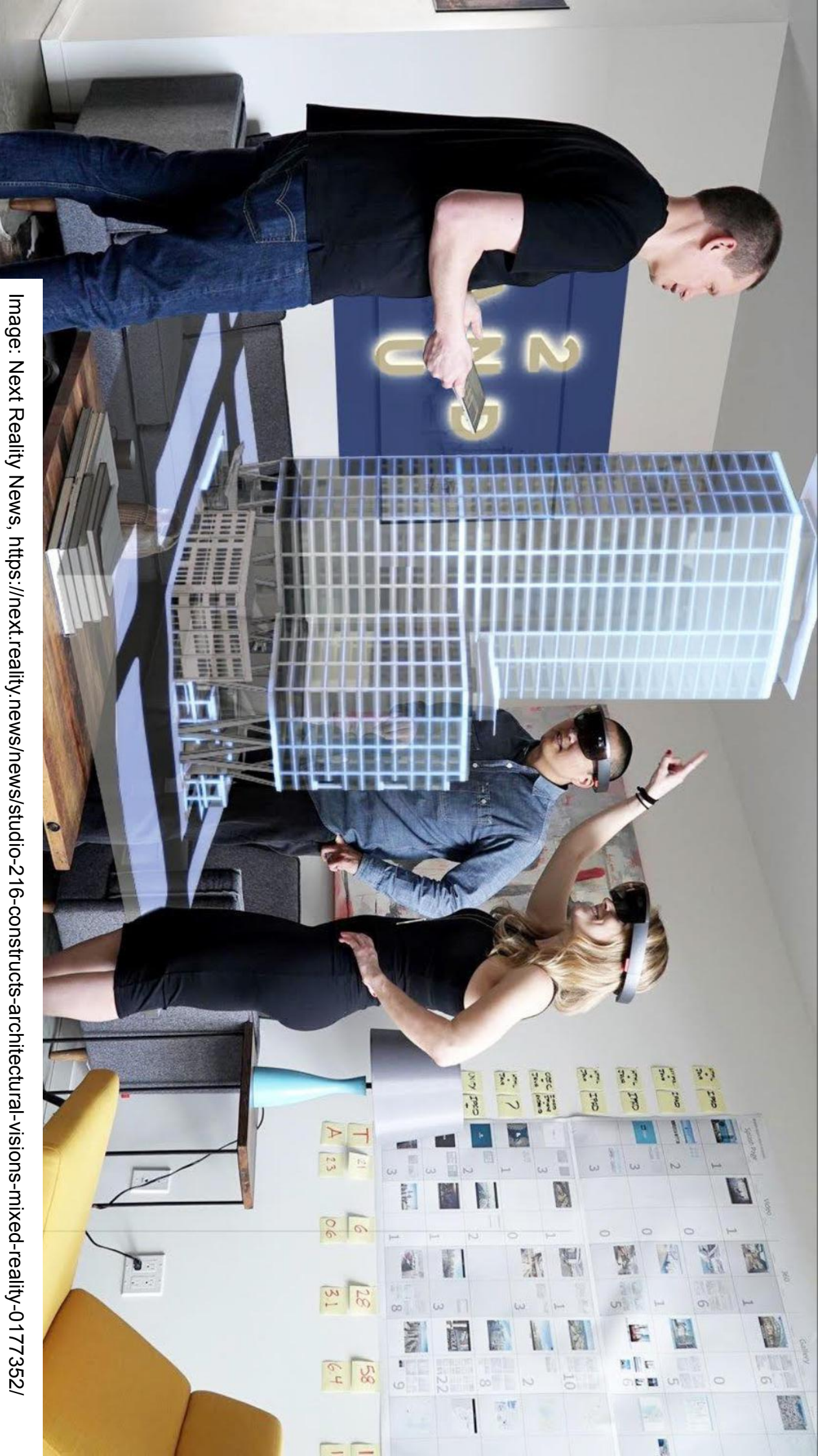
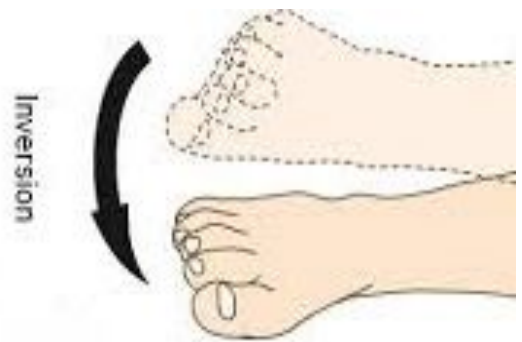


Image: Next Reality News, <https://next.reality.news/news/studio-2-16-constructs-architectural-visions-mixed-reality-0177352/>

Educational Challenge

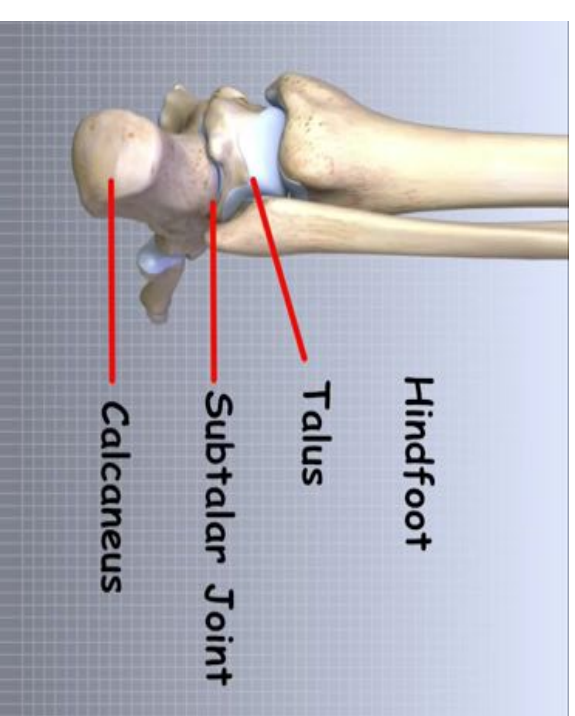
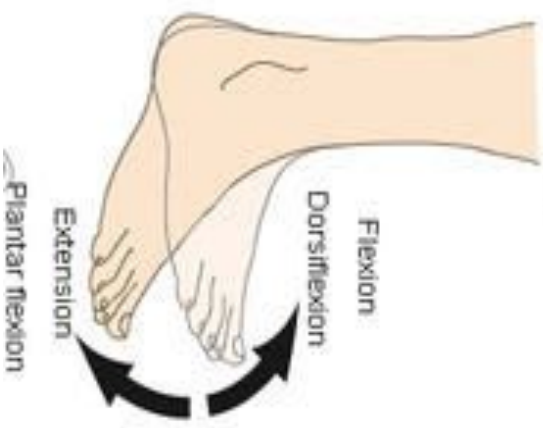
Supination



Pronation



Flexion/Extension



Dynamic Anatomy



**Improved
spatial
insight**

**Social
learning**

**Improved
spatial
insight**

**Social
learning**

Embodiment



▶ Afspelen

DynamicAnatomy

Centre for Innovation Leiden University • Education > Instructional tools

↳ Verlanglijstje

DynamicAnatomy is an interactive application for HoloLens created by Leiden University Centre for Innovation and Leiden University Medical Center. In this application you will learn the dynamic 3D anatomy of the ankle joint.

Meer

3
PEGI



Gratis

Downloaden

...

▲ Zie systeemvereisten

Results & Conclusions

Our Journey



2015



2016



2017



2018



2019



2020

HoloLens image: Windows Central, <https://www.windowscentral.com/microsoft-hololens> - HoloLens 2: Microsoft, <https://news.microsoft.com/microsoft-at-nwci9/photos/microsoft-hololens-2>

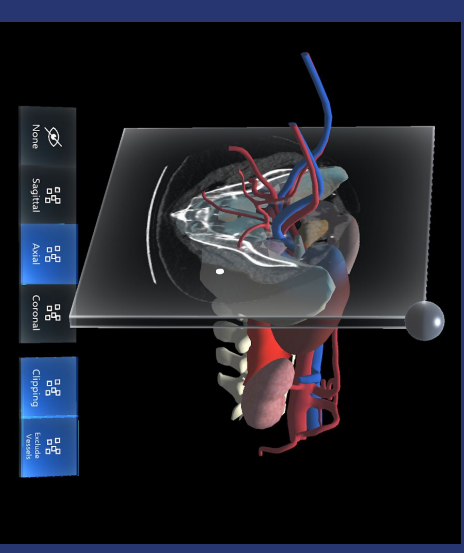
AR projects



Teaching Anatomy in Bachelor programme



Teaching Clinical Reasoning in Master programme (internal medicine)



@ Leids Universitair Medisch Centrum

360 VR pilot projects



Archaeology



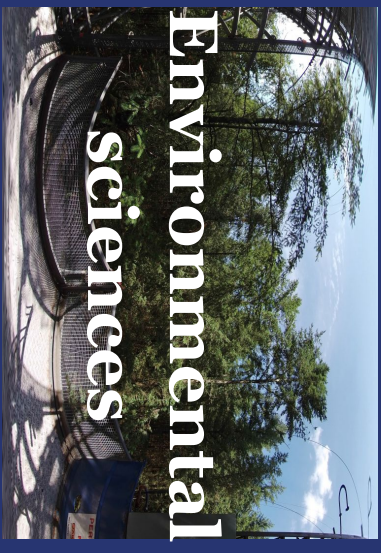
Lab safety



Anthropology



Internal
ward
medicine



Environmental
sciences



Teaching
academy



Elderly
care



Medical
behaviour

Important lesson & recommendation

- Never do many PARALLEL innovation pilots
- Work in a multi-disciplinary team from the start
- And...



How do teachers use AR/VR for learning?

**Learn from
your own body
movements**

**Social & active
learning**

**Multimodal
learning**

**Affective
learning**

**Making places
accessible**

**Learn in a
safe &
controlled
way**

**Offer
consistent &
repeatable
experiences**

**Acquire
professional
skills**

**Social &
active
learning**

**Affective
learning**

**Acquire
professional
skills**

*“I gained more
confidence”*

*“It sounds a bit cliché, but it
really feels like you’re there.”*

*“I think in 2030 Virtual Reality will be as regular
and normal to use as a powerpoint.”*

Summing up



1. Go and Experiment!
2. Accessible Technology, no magic leap!
3. Codesign in teams

INNOVATE WITH US

To collaborate with us and learn more about our work please visit the Centre for Innovation website to read our stories, get in touch and sign up for our newsletter

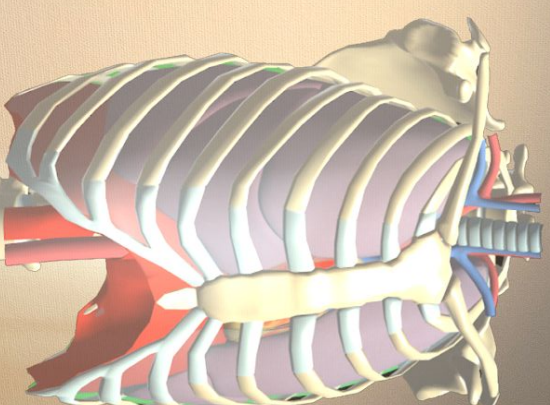
www.centre4innovaiton.org



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Premiere – CFI and LUMC present:

AugMedicine: Lung Cases

Leontine van Melle, Jelger Kroese, Arianne Pieterse, Franka Luk
(CFI / LUMC)





Educational Challenge

Clinical reasoning:

A complex process of how we reason through data and arrive at a medical decision

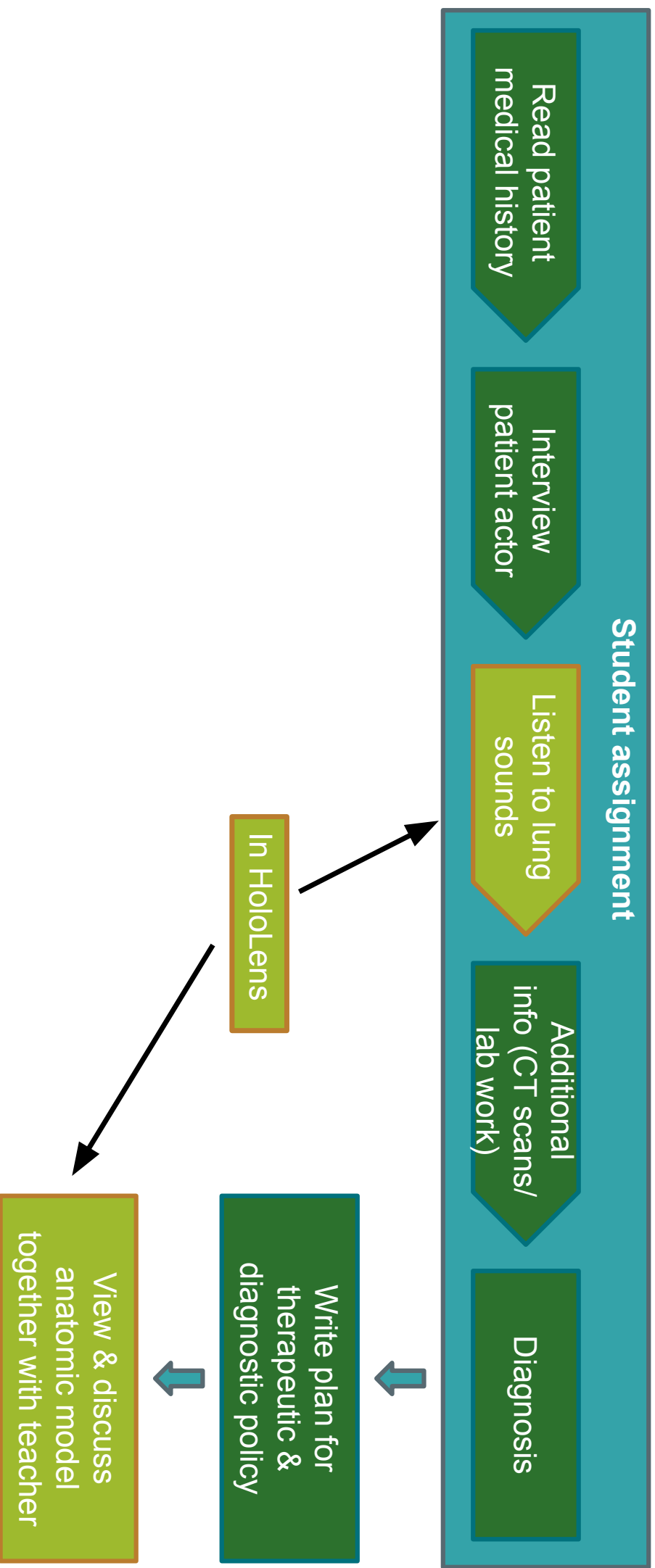
How to get from a complaint to the correct diagnosis?

Educational Challenge

Integration of

Cognitive skills & Psychomotor skills

Integration in curriculum



Spatial Sound



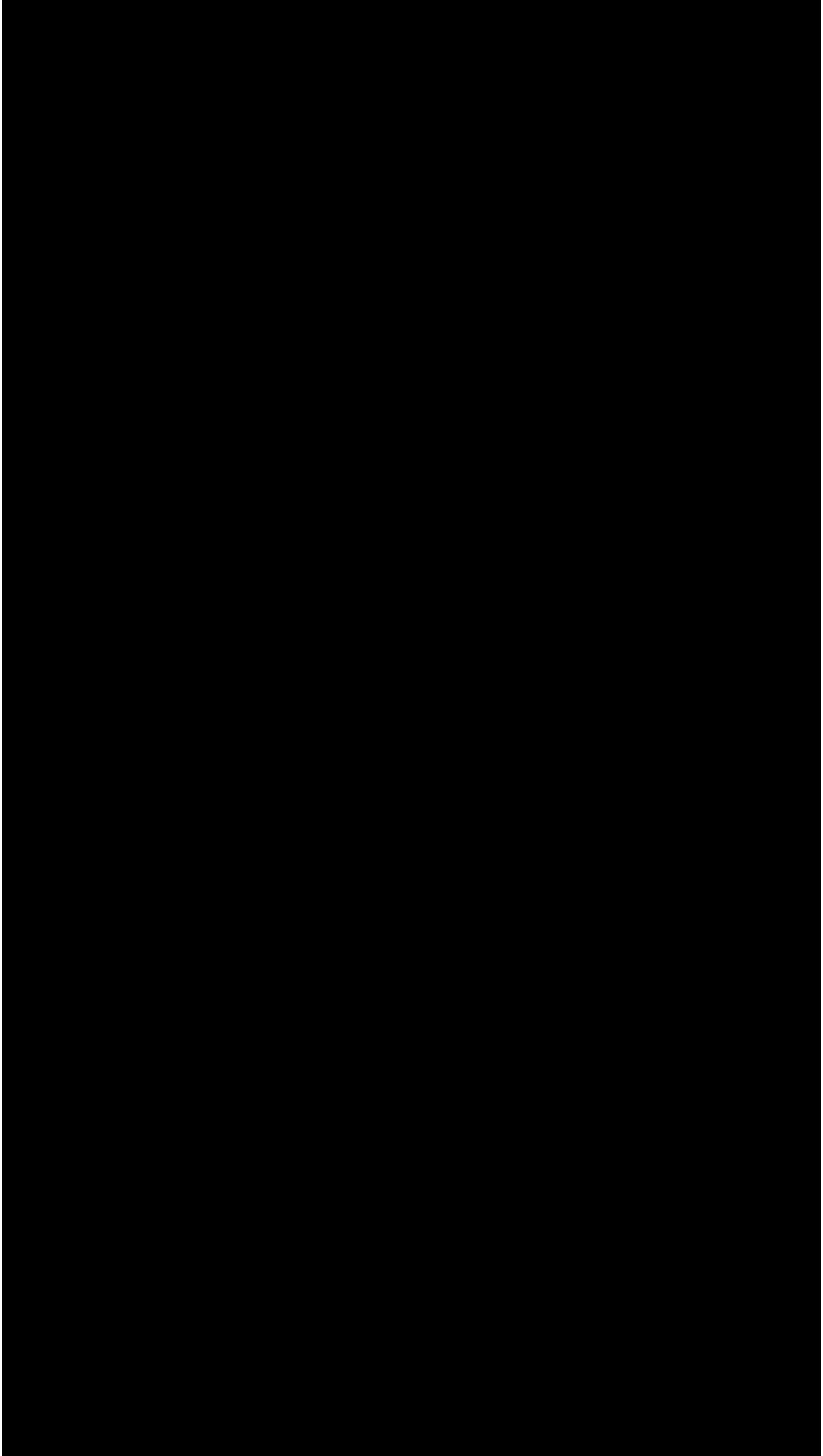
Image: TechQuarters, <https://www.techquarters.com/virtual-reality-microsoft-hololens/>

Object tracking



Image: Meijers, A. (2017), <https://www.youtube.com/watch?v=loCCO4drYZ0I>





Discussion:

Where do we foresee AR / VR going in the future – in education and beyond?

Moderation: Carel Jansen & Donna Schipper
(Centre for Innovation)



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Where will AR / VR be in ten years?

Moderators:

Donna Schipper

Carel Jansen

What are we going to do? The rules of the game.



Where is AR / VR in ten years?

What are we going to do? The rules of the game.

The starting panel:

- Farshida Zafar
- Marcus Specht
- Martijn Stellingwerf
- Michelle Olmstead
- Timo Kos

Statement 1: AR/VR in 2029

In 2029, the AR/VR hype is just another tool, alongside computers, phones, books, etc.

In 2029, AR and VR are more and more deeply integrated in everyday life. Everyone wears AR/VR contact lenses or glasses. On average we spend 30 minutes per day in a virtual world.

Statement 2: Education in 2029

It was proven that experience based learning is the best learning method. We cannot imagine practising education without AR and VR anymore.

We expected too much from AR and VR in education. OK, we use it sometimes, but it is not mainstream in education.



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Statement 2: Education in 2029

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Statement 3: Education in 2029

A VR or AR experience is seen as just another medium to put your message out. For example, many students use VR as alternative for a written graduation thesis.

Making a VR or AR experience is still seen as a profession for which you should be trained.

Statement 4: AR or VR in 2029?

In 2029 the 'VR' Hype will be gone, but AR is used more and more in education.

In 2029 there are lots of VR apps, but AR is still too complicated and expensive to be used widely in education.

Statement 5: AR in 2029

AR glasses are a hit! 80% of the population has one or more at home.

Nobody uses glasses anymore for AR. But everywhere there are 'hologram rooms' catered to very specific learning goals.

Keynote: Designing for Engagement Using Mixed Reality and Applied Games

Assoc. Prof. Stephan Lukosch (TU Delft)