Bridging the Virtual and Physical
with a Focus on Education
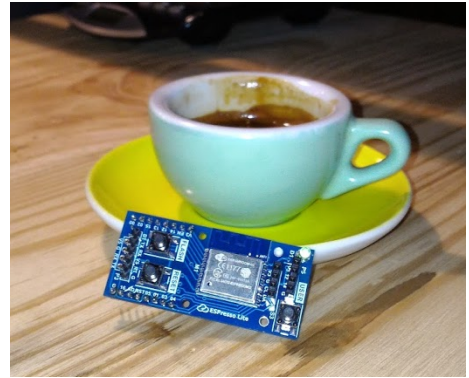
ICT Means Business Conference

Ulrich Norbisrath (University of Tartu)

My Background

- Software Engineering

- Internet of Things

- Education all over the world

- ... and VR/AR

More at https://ulno.net

Death by Powerpoint - Again?

- Are you dead already?

- Is this still/again the way to share ideas and skills today?

- Or the only way the university knows of?

They are all **DEAD**! Well, almost.

From Death by Powerpoint by Alexei Kapterev

The New Normal in the Pandemic

- Hooray, "Death by Powerpoint" = instruction!

- With Zoom = perfect instruction!

- Lots of students love it:
    - at work and in class at the same time
    - or just watch lecture afterwards in 2x speed
      (as interaction nearly impossible anyways)

- Or isn't it – is there another option?
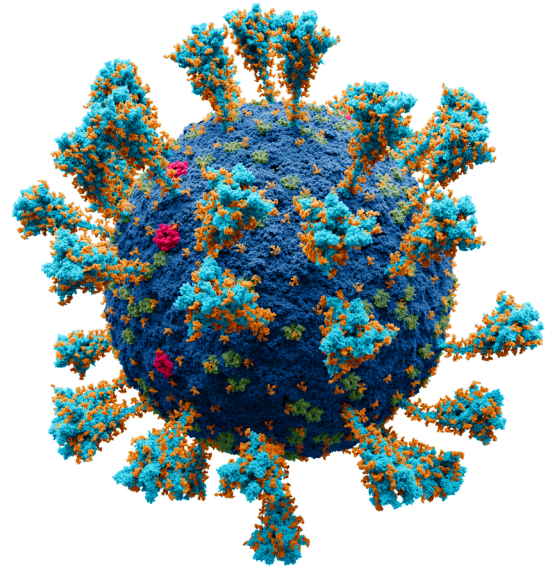
Another Option...

- For education that facilitates interactiveness
- For something inherantly virtual bridging to physical world?

- Could VR be better than Zoom?
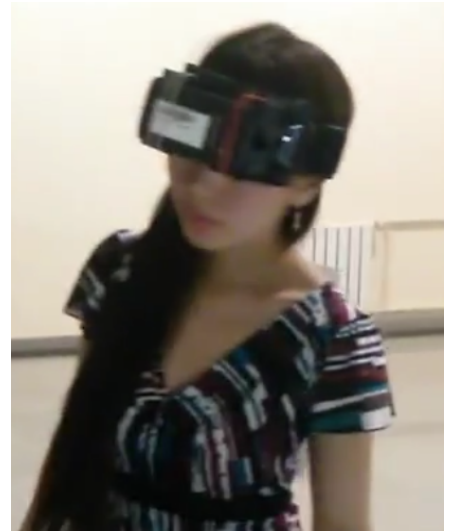
Even ~~Facebook~~ Meta Doesn't Believe

Facebook → Meta → Metaverse

2021-09-21: UINo@MängudeÖÖ

Ready Players? Make education awesome again. (in VR)

Already 2014:

Ludus/Magical Kingdom of Halcydonia Interactive

Quotes from Ready Player One (book):

*Unlike their real-world counterparts, most of the OASIS public school **teachers** seem to **genuinely enjoy** their job, probably ...*

*When Ogden and Kira retired to their home in Oregon they created a **non-profit organization** called Halcydonia Interactive. This company was created to make free adventure games for kids, these games also taught kids math and English.*

*The Halliday Learning Foundation also provided impoverished children around the globe with **free** OASIS **hardware** and **Internet access** so that they could attend school inside the OASIS.*
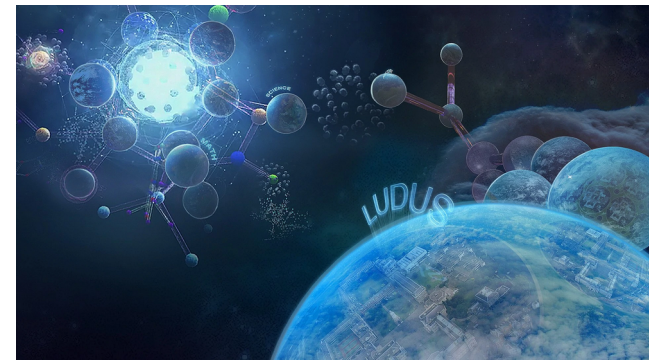
Join me to build the Education of the Future

- Free for everyone -> foundation (like Khan Academy VR)
  - ... that has headset (Oculus 2 Quest class) and decent internet
- Fun and engaging for learners, teachers, and developers
  - respect for each role
- Offer framework to easily develop new content
  - stand-alone and interactive
- Use free and open source tools (Unity might be no, no)
- International and intercultural

- Bonus: works during pandemics
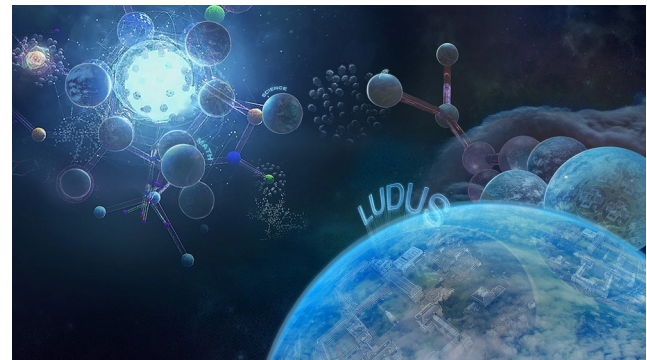
Bridging Physical to VR
IoT+VR → Literal: Digital Twin

- Work and Education in VR (UT/Industry?)

- VR Teleoperation (Autonomous Driving Lab)

- GreenTwins (Taltech, Aalto University, HPC Center Stuttgart, now UT)
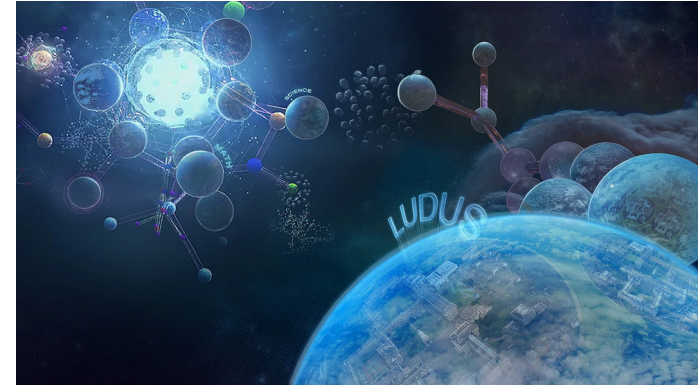
10 Weeks in Estonia

- Projects
  - Education and Work in VR
  - ADL Teleoperation
  - GreenTwin Taltech
- Industry
  - Futulab
  - Blueray
  - EEVR
  - Thinnect

- Teaching
  - System Modeling
  - Mobile Computing and Internet of Things
    - 30 IoT Kits (60 pieces) acquired – all in use
  - Design VR class for next semster finished
    - 30 Oculus Quest 2 acquired – 10 already in use by students
- Advising: current 1 PhD, 8 Masters, 3 Bachelor
  - Training Simulation in VR: 1 finshed PhD
  - CGVR Curriculum Design: 1 current PhD
  - Toy Car Twins: 1 Master, 2 Bachelor
  - Education/ -Frameworks for VR: 3 current Master, (+ 2 future Master)
  - GreenTwins: 2 current Master, 1 Intern
  - Other VR/AR and hybrid with IoT topics: 2 Master, 1 Bachelor

Happy to extend collab on all – contact me!

Let's work together
Better education already without VR?

- Stop hiring our students during studies
  - Prevent short-cutters
  - Allow exploration, mistakes, and real experience
  - Allow critical thinkers
- Maybe we can influence each other?
  - Idea: Exchange program

Ready to Build Some Bridges With Me?

- Better education with or without VR

- Digital Twins

- Active General Collaboration in influencing teaching

Please reach out via chat/email/VR/in-person coffee (find me on https://ulno.net).