



University of Applied Sciences and Arts Northwestern Switzerland  
School of Applied Psychology



**AWARDS**  
Aviation Virtual & Augmented Reality Summit  
5 – 6 June 2018 - IATA Geneva, Switzerland

# VR meets Applied Psychology

University of Applied Sciences and Arts Northwestern Switzerland (FHNW)

School of Applied Psychology (APS)

Institute Humans in complex Systems (MikS)

## **FHNW - School of Applied Psychology (APS): Competence center for occupational, organizational and business psychology**

### **Future-oriented design**

Optimization of cooperation models between humans, technology and organization with an empirical approach



### **Sociotechnical design of digital transformation**

Use of innovative methods and technologies for sustainable developments



### **Transfer into practice**

Analysis, evaluation and design of work processes, innovative products and services

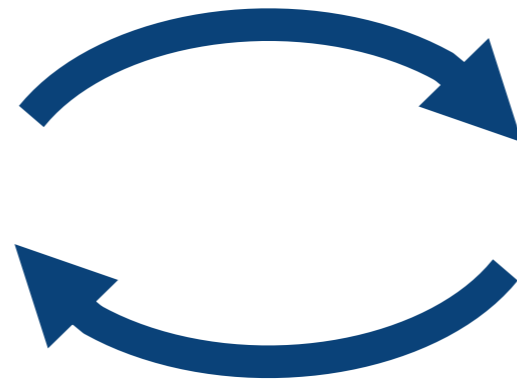


## Why should Virtual Reality and Psychology meet (more often)?



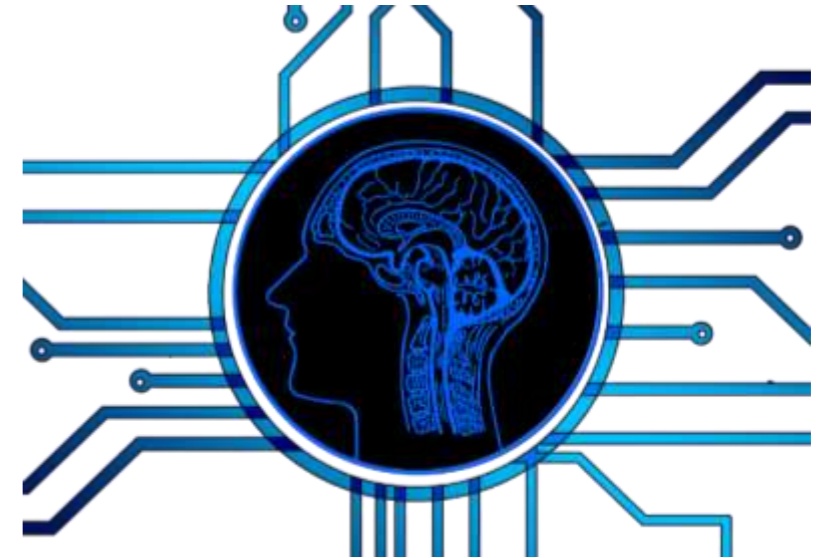
### Virtual Reality

«A computer generated digital environment that can be **experienced** and **interacted** with as if that environment **were real.**» (Jerald, 2016, p. 537)



**Technology**  
(Hardware, Game Engine)

**Content**  
(Visual, Functionality, Story)



### Psychology

Understanding human **experience** and **behaviour**

Jerald, J. (2016). *The VR book: human-centered design for virtual reality*. New York: ACM.

# Virtual Technologies & Innovation Lab (VTI-Lab, FHNW)

## Selected study:

### 1. Driving simulator: safe pedestrian crossings



## Sample study: Driving simulator, detecting pedestrians at crossings (2016-17)





# Human senses and sensory processing (simplified)



**Human senses**

- Vision
- Smell
- Hearing
- Taste
- Touch
- (Pain)
- Vestibular system (!)
- Proprioception (!)

**Immersion**  
(e.g. HW, ...-fidelity, predisposition)



**Simulation sickness**



**Presence** (e.g. Slater, 2009)  
«Illusion of being there»

Slater, M. (2009). Place illusion and plausibility can lead to realistic behaviour in immersive virtual environments. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 364(1535), 3549–3557.

# Virtual Technologies & Innovation Lab (VTI-Lab, FHNW)

**Selected study:**

**2. Virtual prototyping: virtualized dough sheeter**



## Sample study: Virtual prototyping, virtualized bakery machine (2017)





# Virtual Technologies & Innovation Lab (VTI-Lab, FHNW)

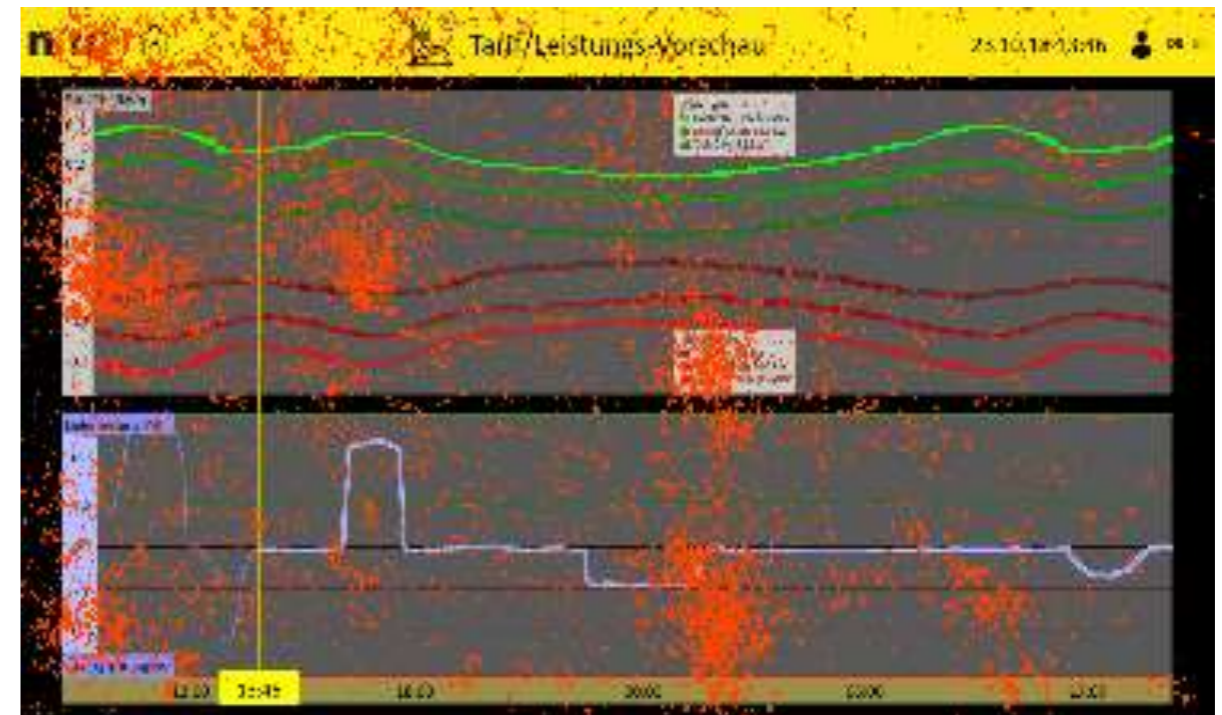
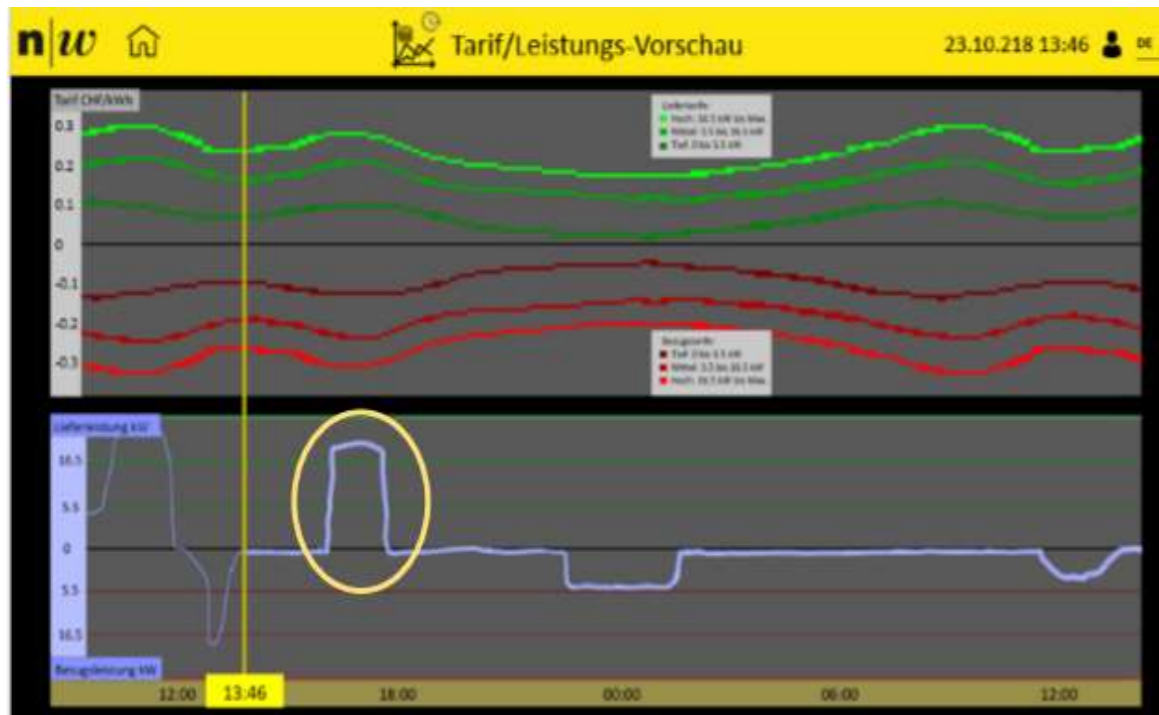
**Selected study:**

## **3. Virtual prototyping: usability evaluation “house manager”**

## Sample study: Virtual prototyping, usability evaluation «house manager» (2017)



## Sample study: Virtual prototyping, usability evaluation «house manager» (2017)



## Conclusions

VR applications with potential for more than WOW

- Education, trainings
- Evaluations: surveys, usability etc.
- Assessments, personnel selection
- Consumer research
- Awareness raising activities, marketing
- Data visualizations
- ... and many more

## Content

- Visuals
- Functionalities
- Storytelling – ... and much more

## Users / Evaluations

- Technology acceptance
- Effectiveness of the purpose
- ... and much more

**Unlock the potentials of VR and include psychology into your projects!**



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Thank you for your attention

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Team Aviation/Airport Security, Virtual Technologies & Innovation Lab (VTI-Lab)