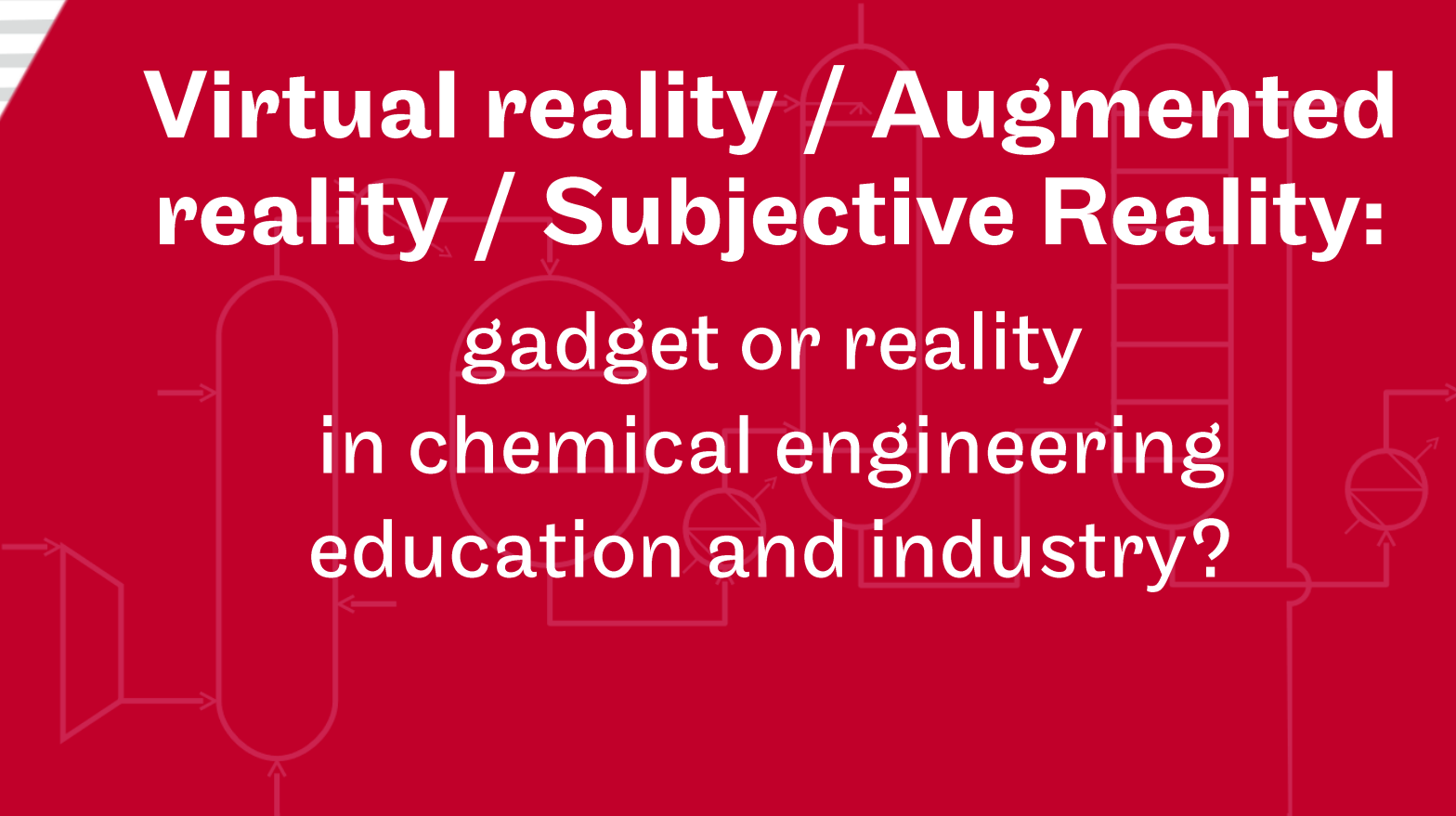


Virtual reality / Augmented reality / Subjective Reality:

gadget or reality
in chemical engineering
education and industry?



Definitions still in a state of flux...

Augmented reality (AR)

- live view of a physical, real-world environment whose elements are “augmented” by virtual inputs such as text, sound, video, graphics, etc.

“standard” devices:

- smartphones or tablet

applications in many fields:

- archaeology, commerce, education, industry, medicine, military, music, navigation, tourism and sightseeing, translation and of course games and visual art

Find the closer metro-station in Paris:



Practice sport at Biarritz beach:



See furnitures inside GAUDI's house in Barcelona:



Nicole CORSYN, Marie DEBACQ – le Cnam, Paris, France

View actors in a medieval castle:





Nicole CORSYN, Marie DEBACQ – le Cnam, Paris, France

Virtual reality (VR)

- computer technology used to generate realistic images, sounds and sometimes other sensations, that simulate a user's physical presence in a virtual or imaginary environment.

dedicated devices:

- several headsets

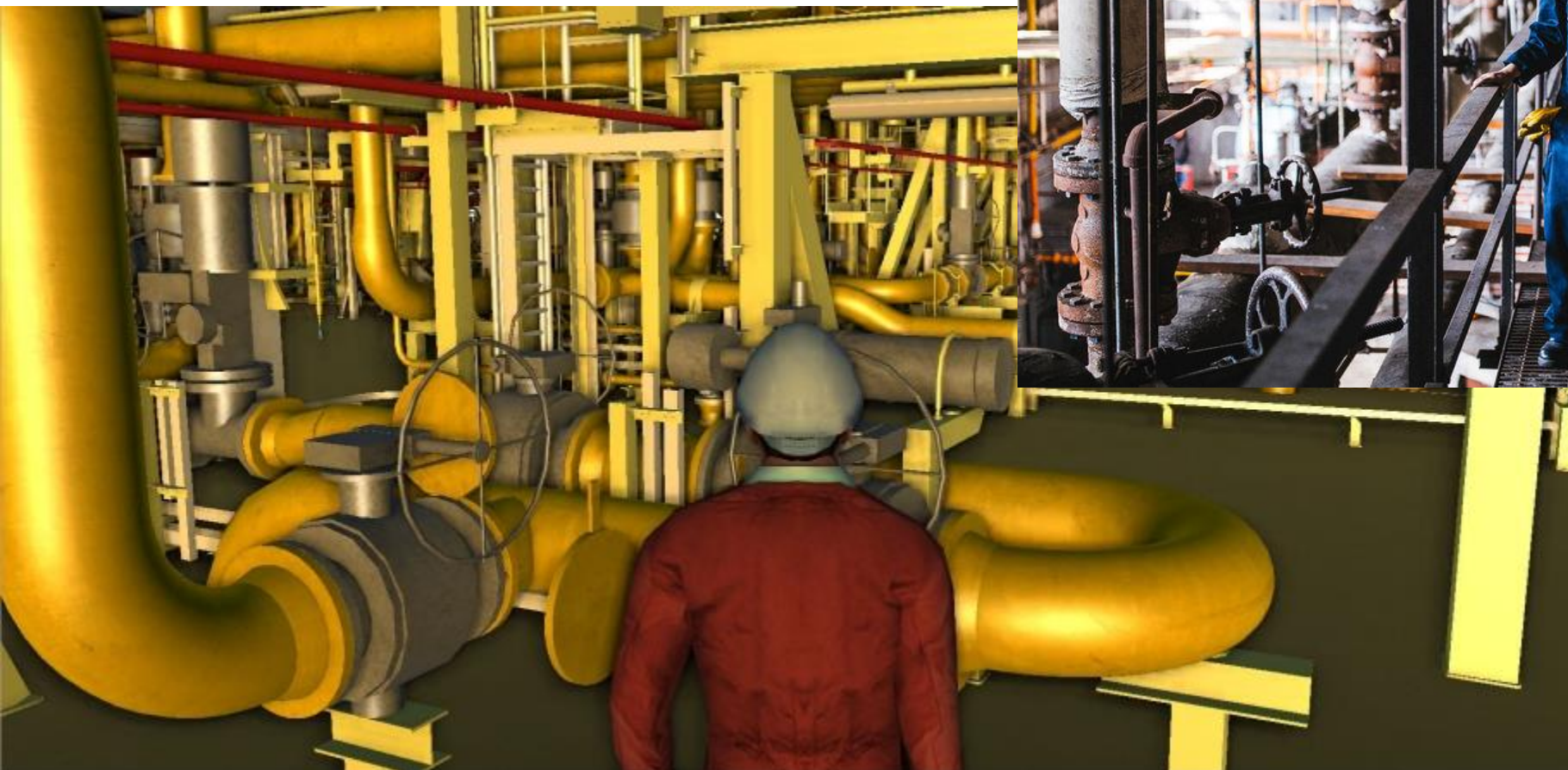
main applications:

- gaming, entertainment, training, (healthcare)



Nicole **CORSYN**, Marie DEBACQ – le Cnam, Paris, France

SIEMENS



Nicole CORSYN, Marie DEBACQ – le Cnam, Paris, France

Subjective reality (SR)

- term in psychology and philosophy denoting the fact that all subjective phenomena are associated with a single point of view
- also called subjective camera or point of view shot (POV shot)

technical device:

- allows one to visualize what another person has done as if looking through their eyes

applications:

- gaming, sports, cinema, (medicine)



youtu.be/-mX-y2q1u9c



Mixed reality (MR)

- Paul MILGRAM: “anywhere between the extrema” (VR and AR)
- merging real and virtual worlds to produce environments where physical and digital objects co-exist and interact in real time
- also called hybrid reality

main environment:

- 360

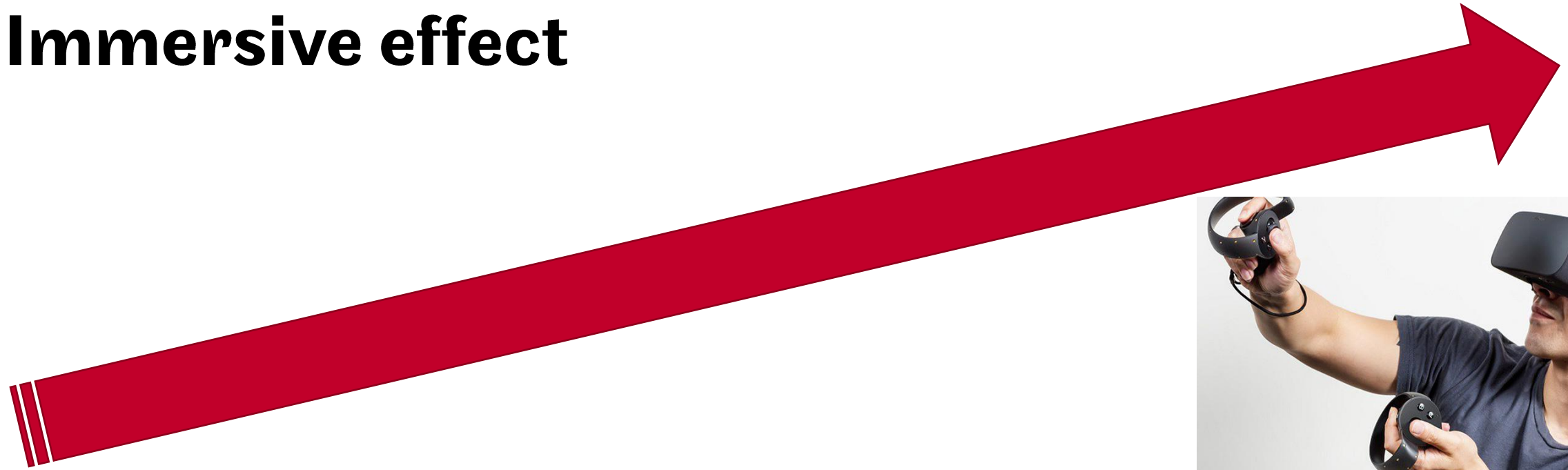
devices:

- computer/smartphone or headsets

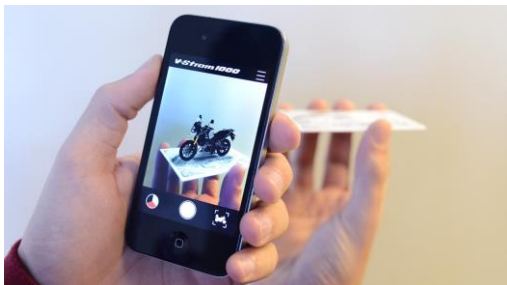
<http://urlz.fr/7IRW>



Immersive effect



AR
smartphone



MR(360)
glasses



VR; POV
headset



Feedback

from our first experiments...

POV shots

tinkered freestyle scooter helmet:

Difficulties:

- avoiding the “Blair Witch” effect
 - ↳ moving slowly during shooting
- correct framing with homemade device
- sound recording
- white balance (between the two cameras)
 - ↳ release announcement of double-camera
- video production very time-consuming!

Advantages

- highly relevant learning environment for chemical engineering labs



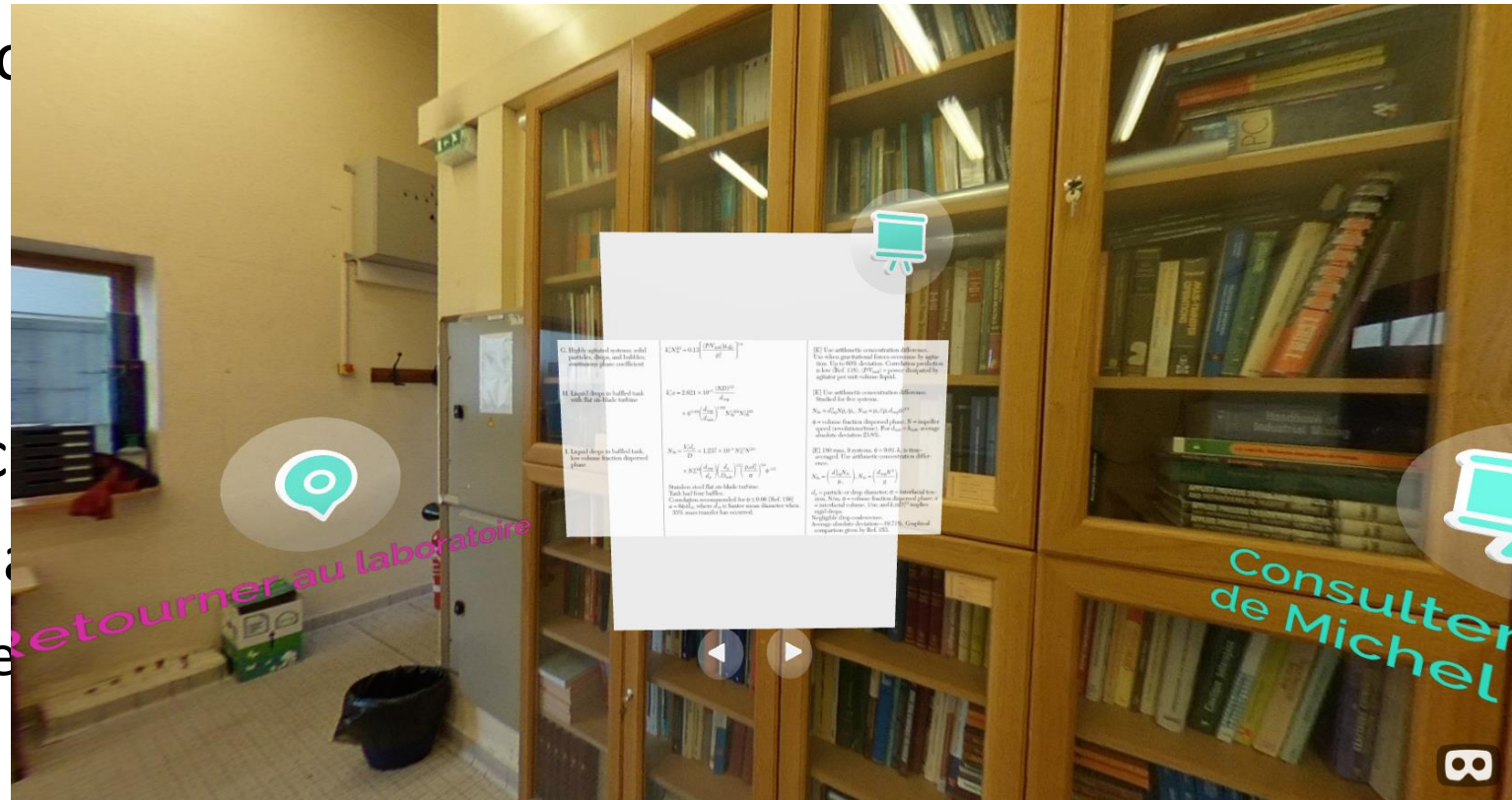
360 experiments

Difficulties:

- cleanliness and lighting of shooting location
- resolution/readability vs location

Advantages

- speed of production
- generic aspect of the procedure
- virtual pooling of several locations
 - ↪ takes advantage



Conclusion

Conclusions and perspectives

Our philosophy:

- low price
- teacher autonomy
- generic approach



Flipped Labs

Next projects:

- extend the use of both processes developed to other labs
- develop new processes (e.g. escape game)

**THANK YOU FOR
YOUR ATTENTION**

We invite you to test our headsets:

**Sunday 15:20-16:20
In front of rooms H & I**