

State and Outlook of XR Technologies for “Social & Interaction”

Pablo Cesar, CWI



CWI

Centrum Wiskunde & Informatica

About me

CWI: Centrum Wiskunde & Informatica

- National Research Institute for Mathematics and Computer Science (founded in 1946)
- Staff: 55 permanent, 40 postdocs, 70 PhDs
- CWI registered the '.nl' domain (1986)
- 1st connection between Europe and the Internet (17 November 1988)
- Topics examples:
 - Holland's first computer
 - Height/Strength dykes
 - Algol-68, Python and SMIL



DIS@CWI



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- VR and Immersive Media
- QoE
- Social IoT and Smart Textiles
- Experience-Aware Networking
- Connected Shared Experiences
- Multi-Screen Media Consumption

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CHI
2019



ACM MMSys'19

June 18 - 21, 2019 in Amherst, Massachusetts, USA



Connected Environments

BUILDING BLOCK #1

Connected Environments



A PLACE OF ENERGY AND INSPIRATION FOR MUSIC AND THE ARTS



Connected Environments: Coaching



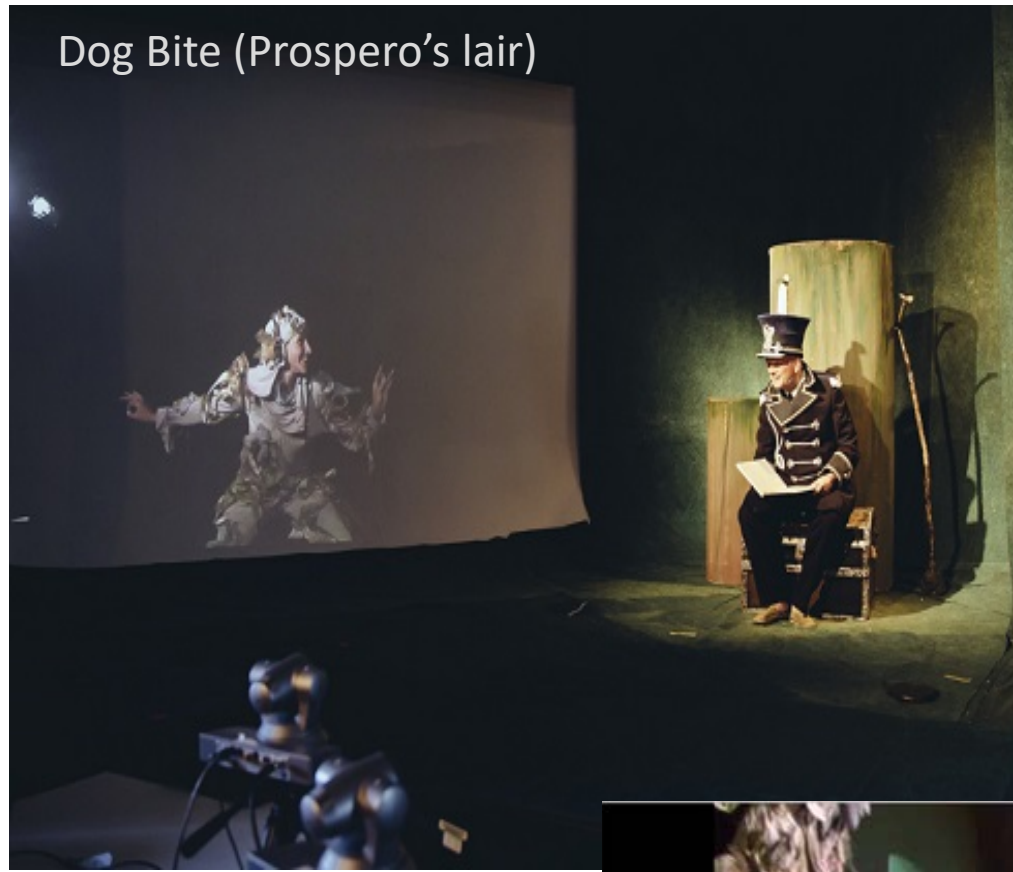
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Dog Bite (Prospero's lair)



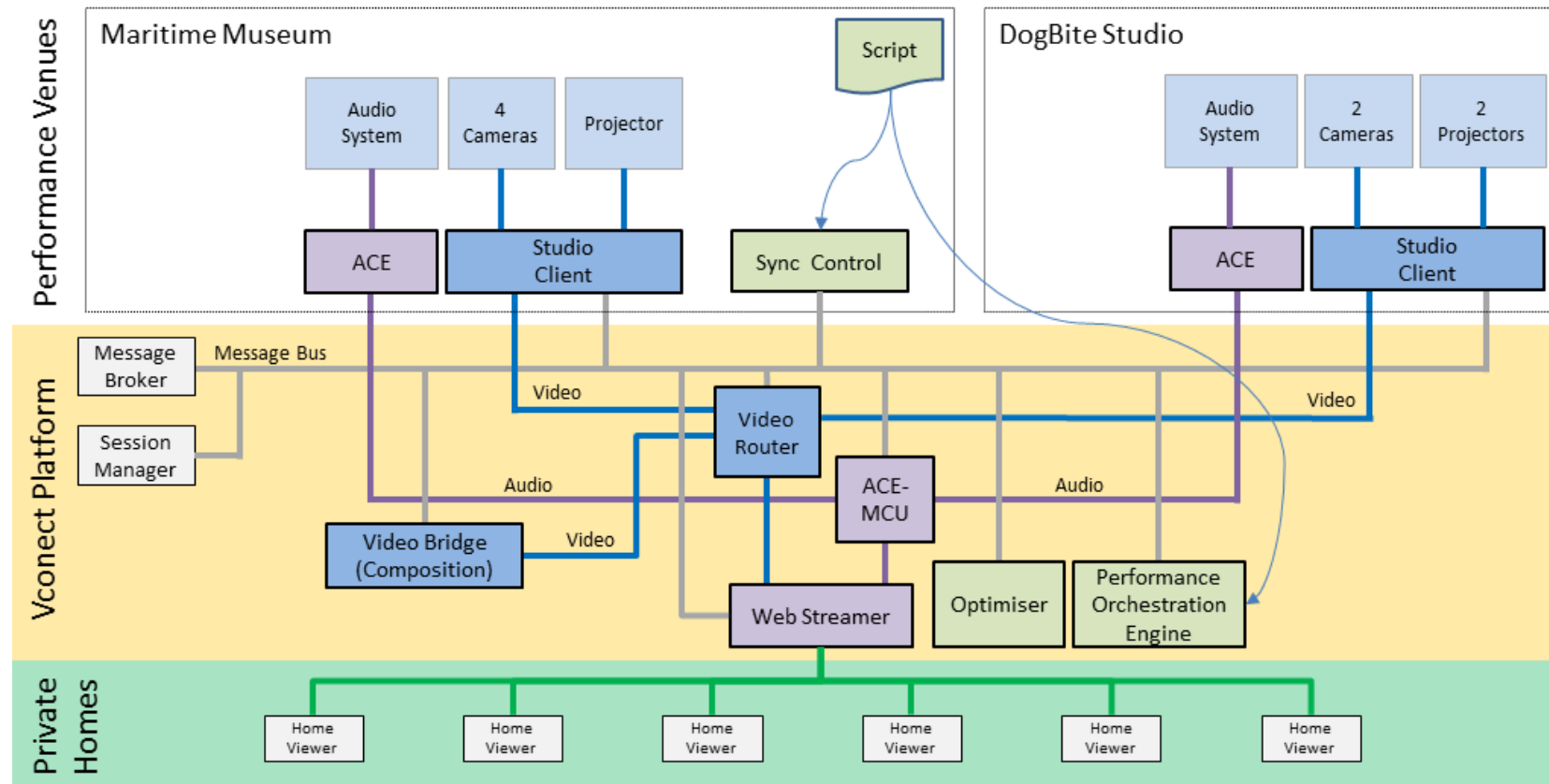
Maritime Museum (The Island)



Home viewers



Connected Environments: Distributed Theatre

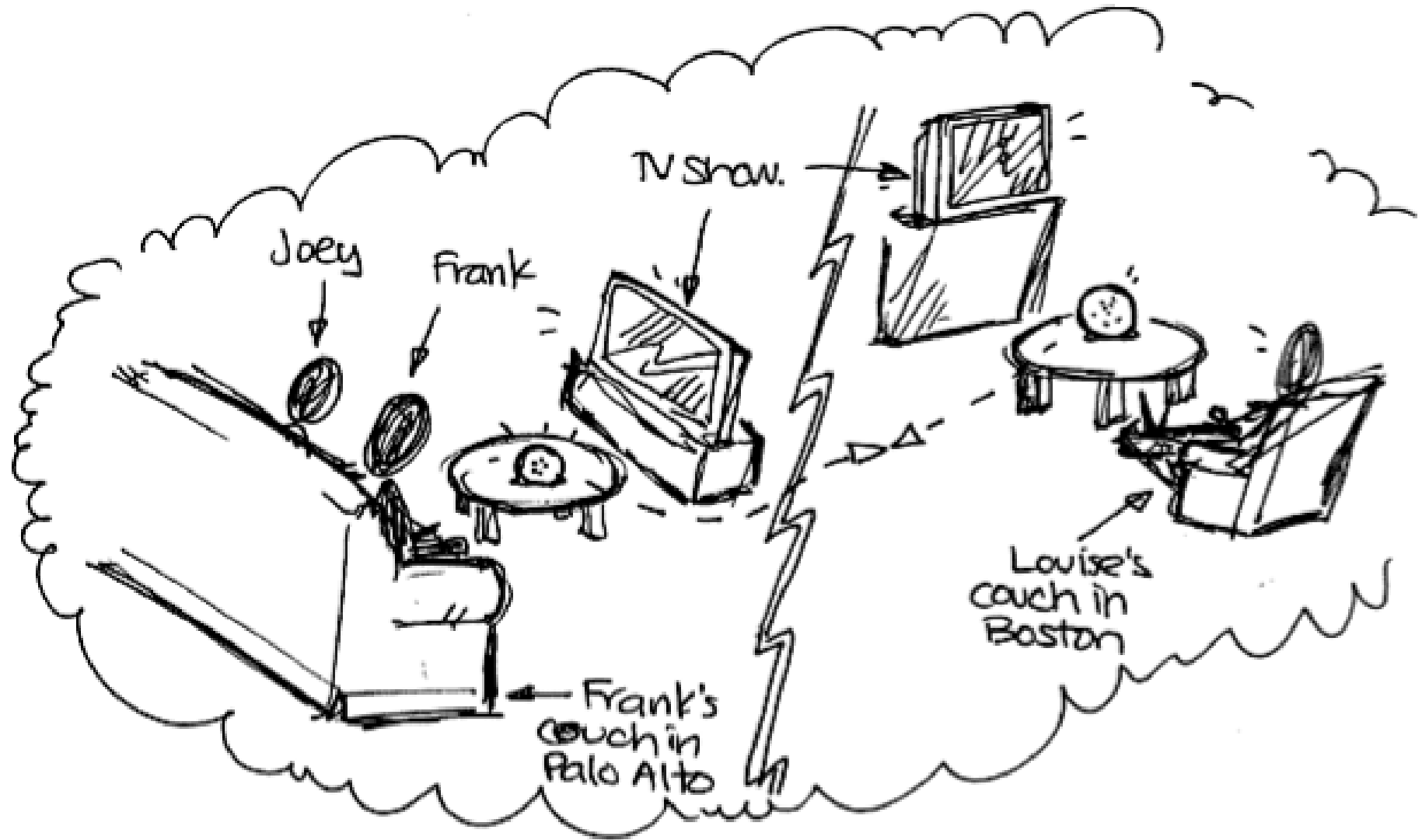


Connected Environments: Distributed Theatre



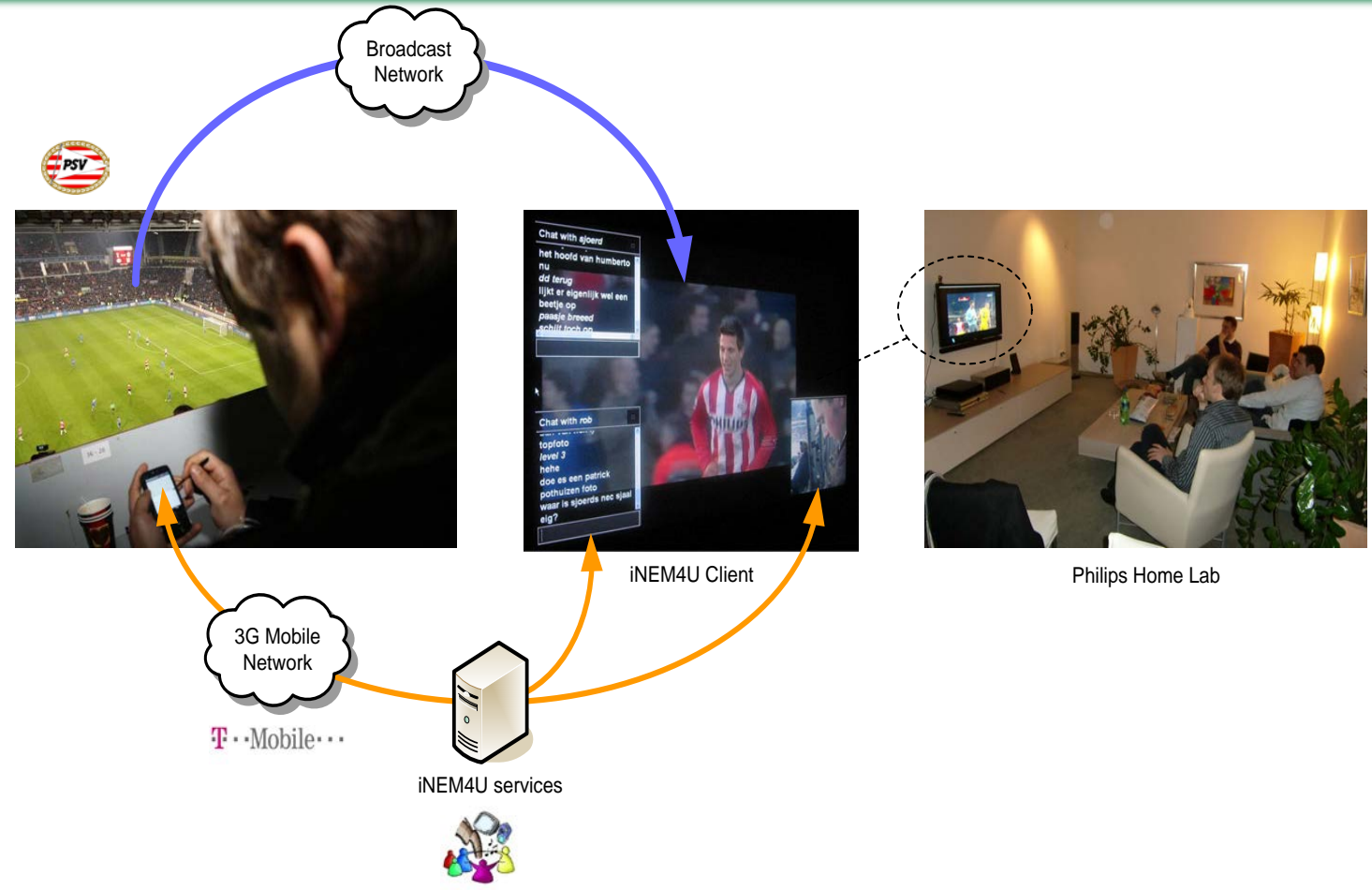
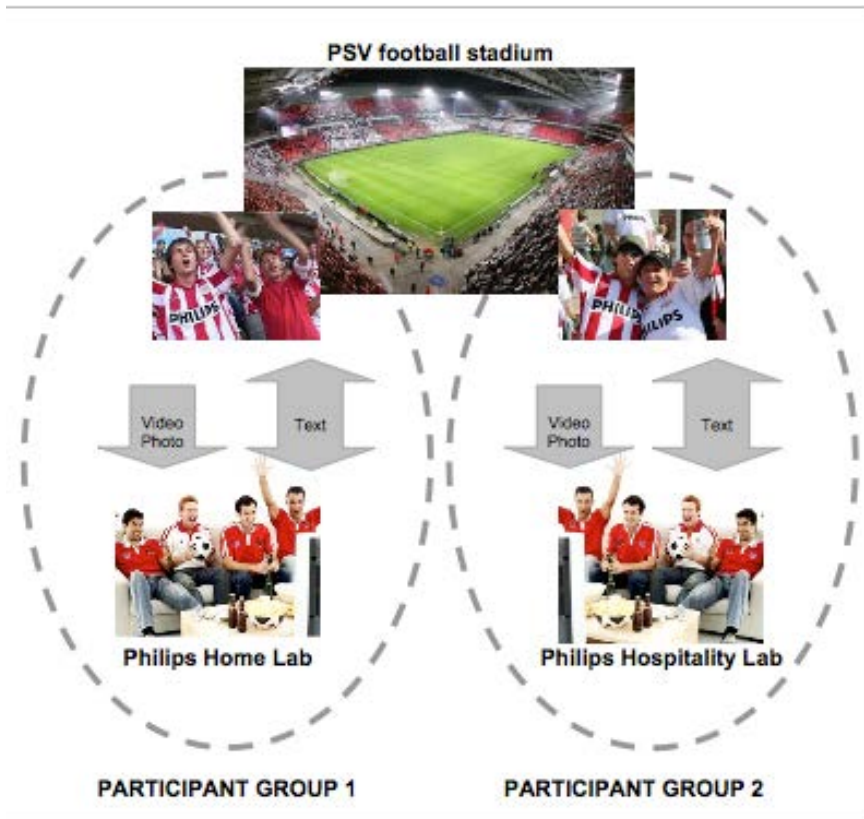
Together

BUILDING BLOCK #2



L. Oehlberg, N. Ducheneaut, J.D. Thornton, R.J. Moore, E. Nickell, Palo Alto Research Center, 2006
Social TV: Designing for Distributed, Sociable Television Viewing

Togetherness: watching TV



Togetherness: playing games



Togetherness: playing games



Togetherness: playing games



Togetherness: playing games



Immersion

BUILDING BLOCK #3

Immersion: multi-sensory

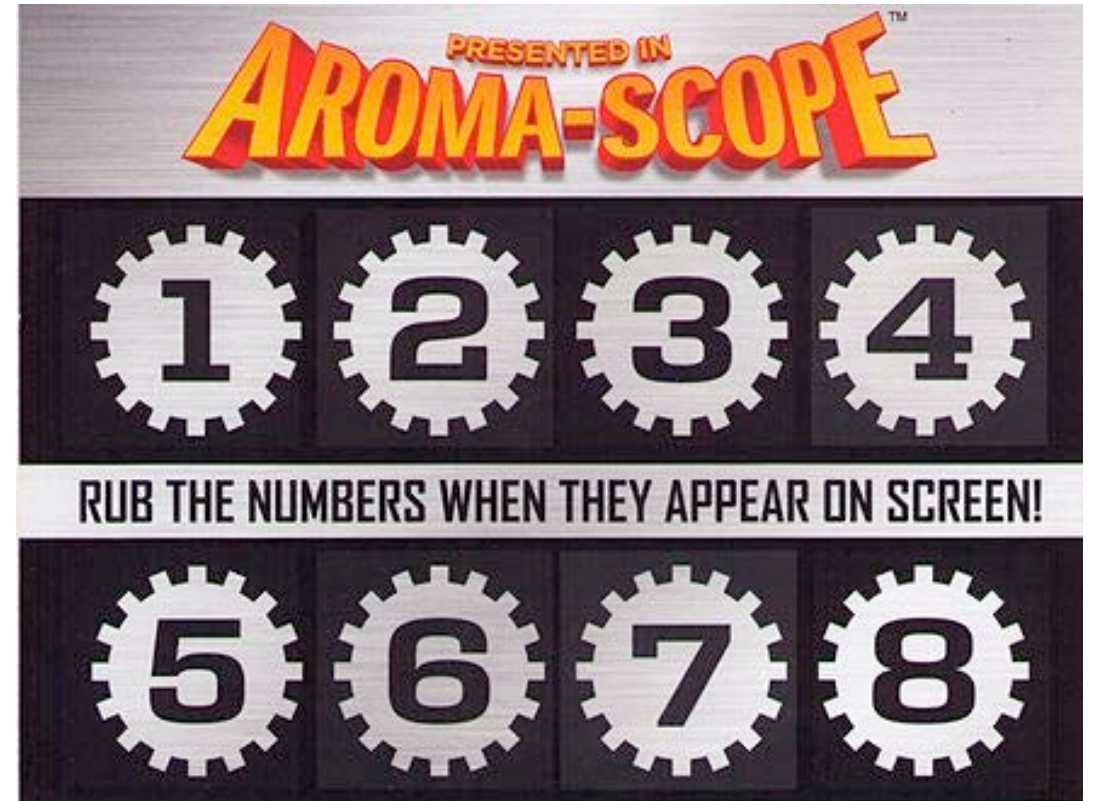


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The Kentucky Fried Movie (1977)
https://www.youtube.com/watch?v=TCq_nzlou0Q

Immersion: multi-sensory



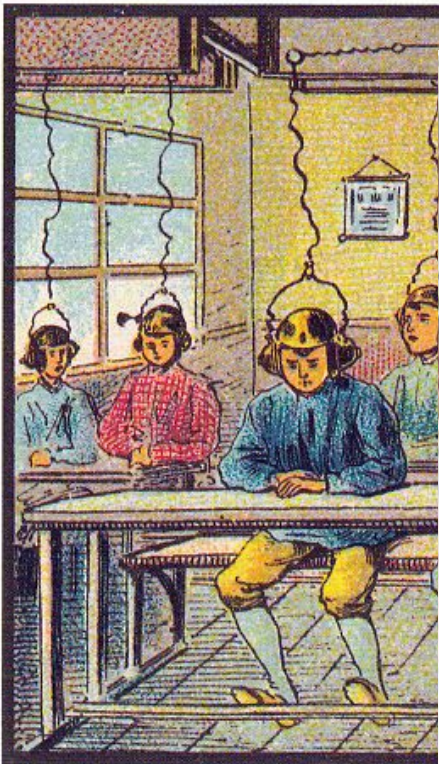
Immersion: extra powers (flying)



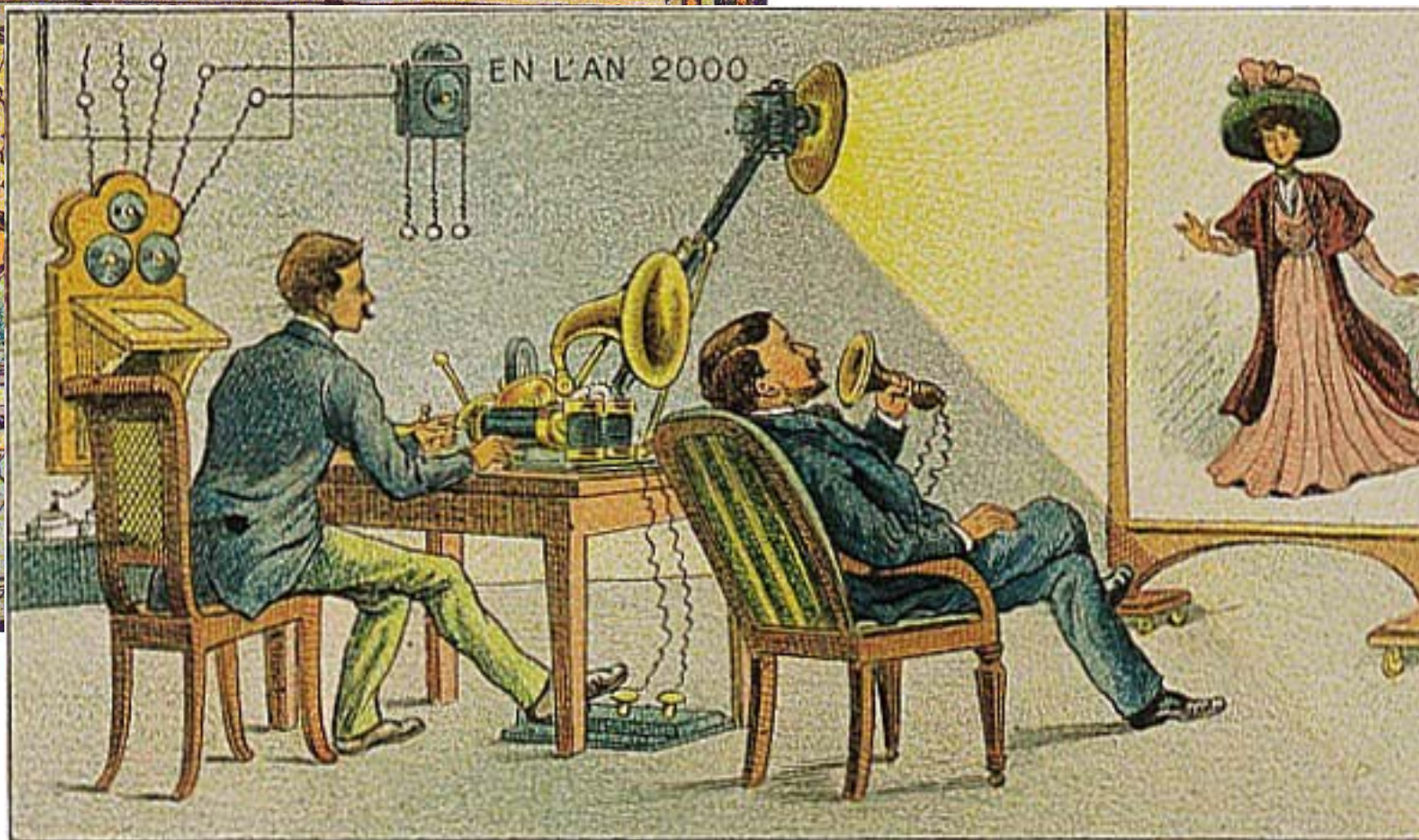
Immersion: locomotion



Towards Social Virtual Reality



At School

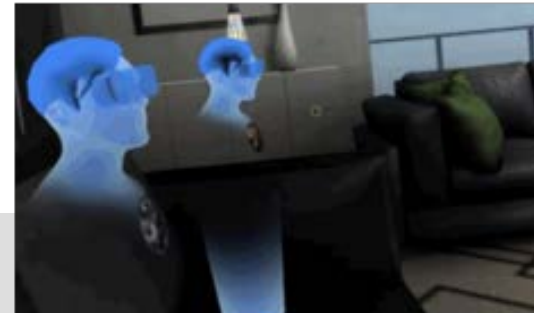


**A 19th-Century Vision of the Year 2000: by Jean-Marc Côté and other artists
France in 1899, 1900, 1901 and 1910**

Towards Social VR: Avatars



facebook Spaces



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Centrum V

Towards Social VR: Avatars

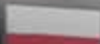




livelike



38:24



1

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EXPLOSIVE
SPEED

NIKE AIR CORDIAL

Towards Social VR: Avatars



Fox Sports VR Social Teaser, 2017

<https://www.youtube.com/watch?v=1wqzxR225Cc>



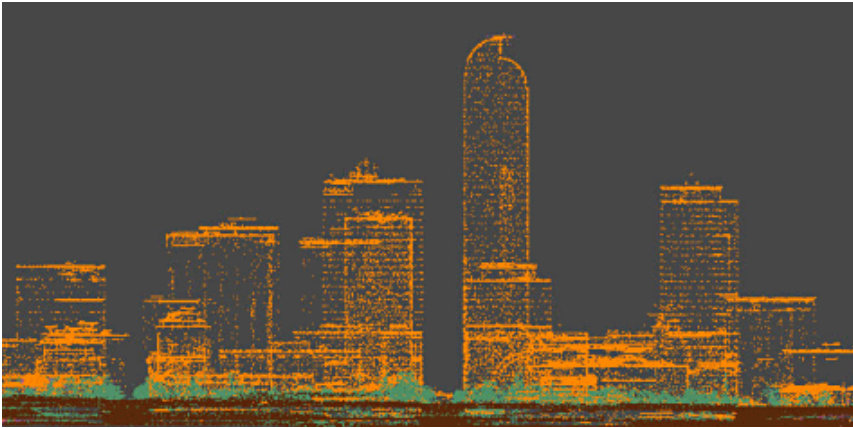
Oculus Venues Demo Footage - Go, Gear VR, 2018

<https://www.youtube.com/watch?v=IKoVaYKjYNY>

Realistic enough?



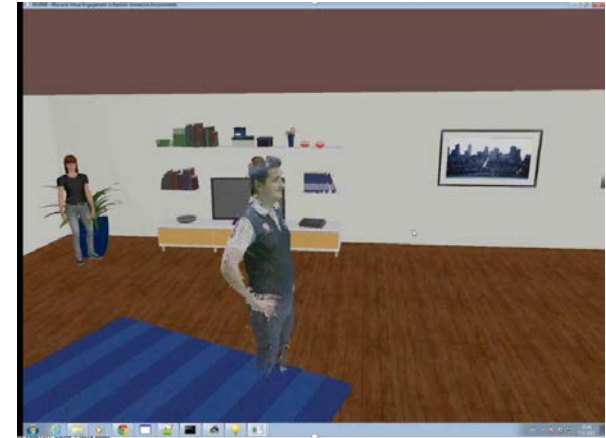
Towards Social VR: Replicants



Gis: Lidar: <http://www.cadalyst.com/cadalyst/gis-tech-news-99-13394>



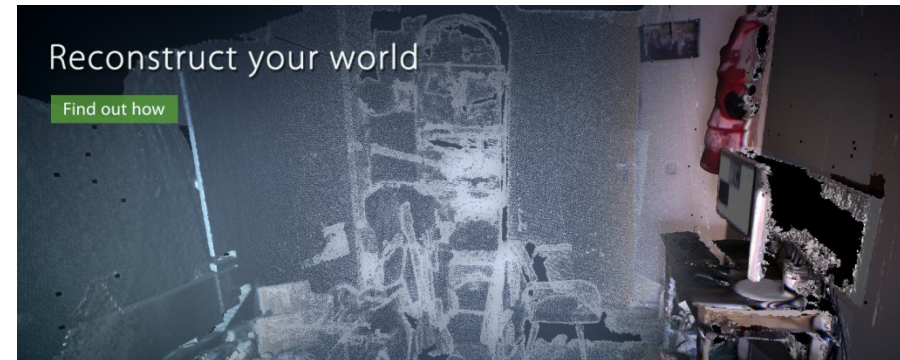
Cultural heritage (images): Culture3D Cloud



Mixed Reality



GIS: Aerial Imaging
http://www.flightlinegeographics.com/3D_Point_Cloud.html

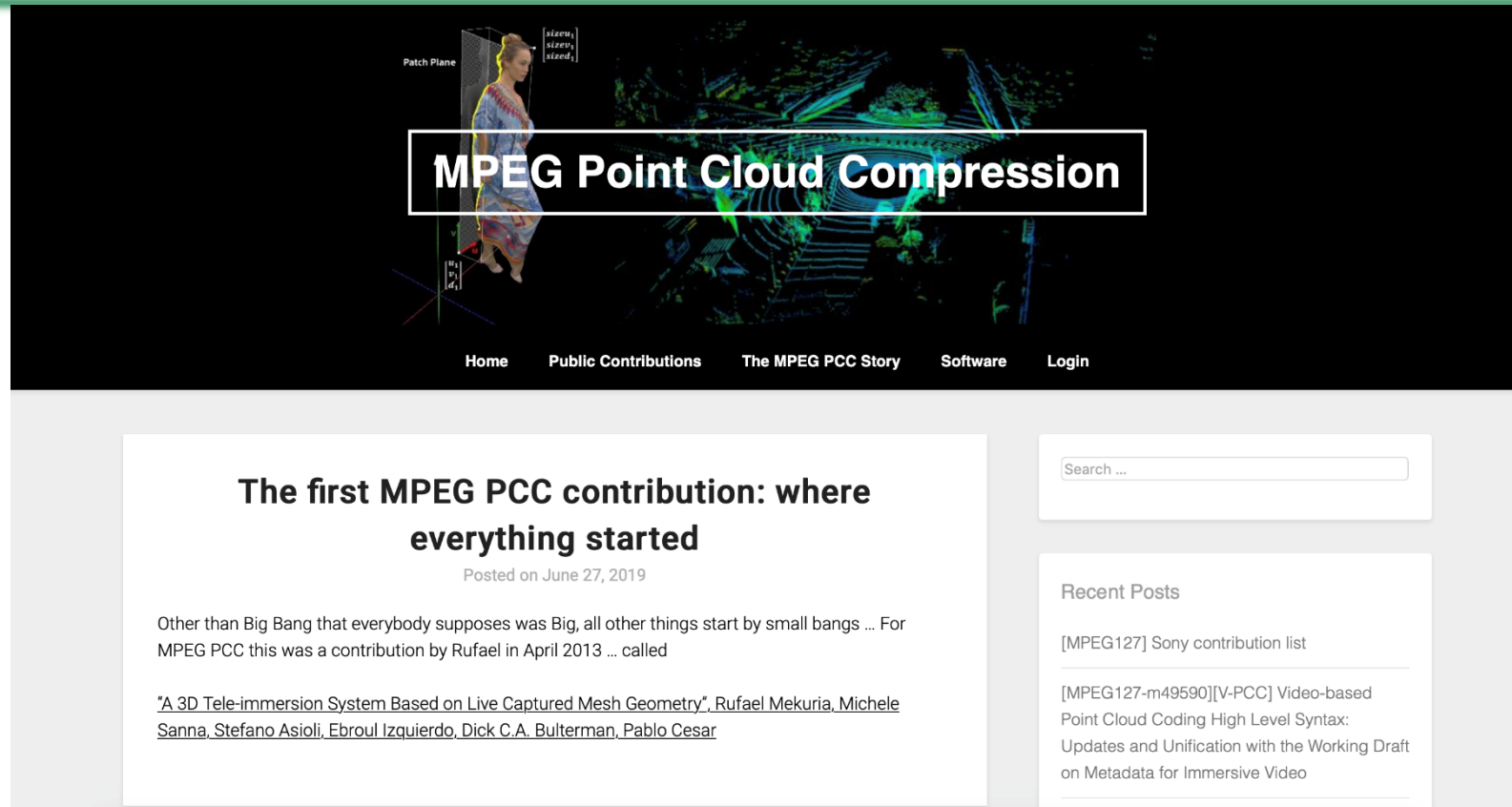


Robotics: lidar, kinect: www.pointclouds.org

Towards Social VR: Replicants



Towards Social VR: Replicants



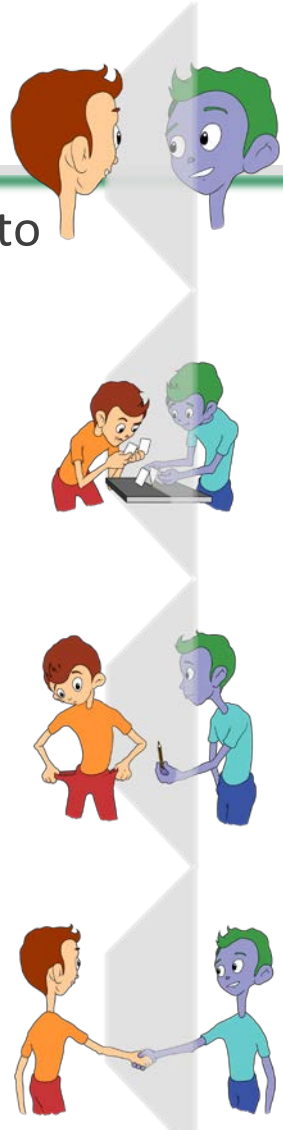
Challenges

The challenge is to develop new tools for creating and interacting in virtual environments, to make interactions

- Naturalistic: representations of people and worlds, communication
- Collaborative: enabling real-time interactions
- Responsive: adaptable to the user's needs
- Sociable: integrated experiences

Open challenges

- Sensors, cameras, and understanding
- Amount of data
- Standardization
- QoE and Production Techniques



Thanks!

Pablo Cesar
CWI, Amsterdam
p.s.cesar@cwi.nl



VRTogether

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