

A photograph of two women in a virtual reality environment. The woman on the right is wearing a VR headset and holding two controllers, looking upwards. The woman on the left is looking at her phone. The scene is dimly lit with a blue tint.

**LES APPLICATIONS**

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**DE LA RÉALITÉ VIRTUELLE**

# Domaines et besoins

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## Santé

- Formation par la simulation (geste...)
- Recherche
- Thérapeutique

## Militaire

- Formation, entraînement par la simulation
- Gestion, supervision d'opérations

## Construction et urbanisme

- Information, visite
- Étude
- Gestion

## Culturel

- Jeux
- Visite virtuelle
- Création
- Diffusion

## Science et recherche

- Exploration de phénomènes, analyse de données
- Enseignement, diffusion
- Collaboration

## Industrie & services

- Marketing
- Revue de projet, collaboration
- Design
- Ingénierie, conception
- Ergonomie
- Simulation
- Production
- Maintenance
- Formation

...

# Simulation chirurgicale (laparoscopie)



Rensselaer Polytechnic Institute, 2010



CAE Healthcare 2016

# Simulation chirurgicale (laparoscopie)



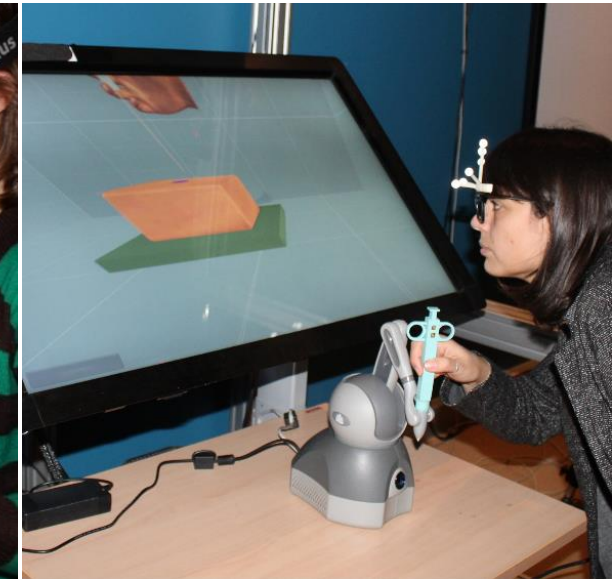
University of Magdeburg 2017



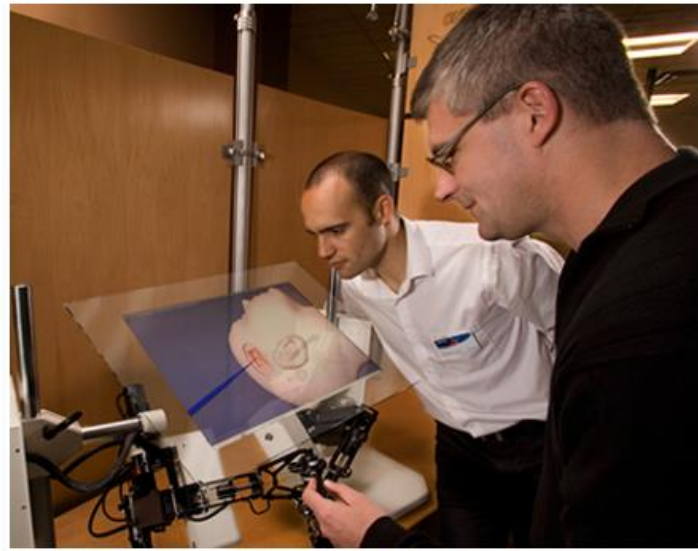
Symbionix LAP Mentor at the Jump Trade Simulation & Education Center 2015

# Simulation chirurgicale

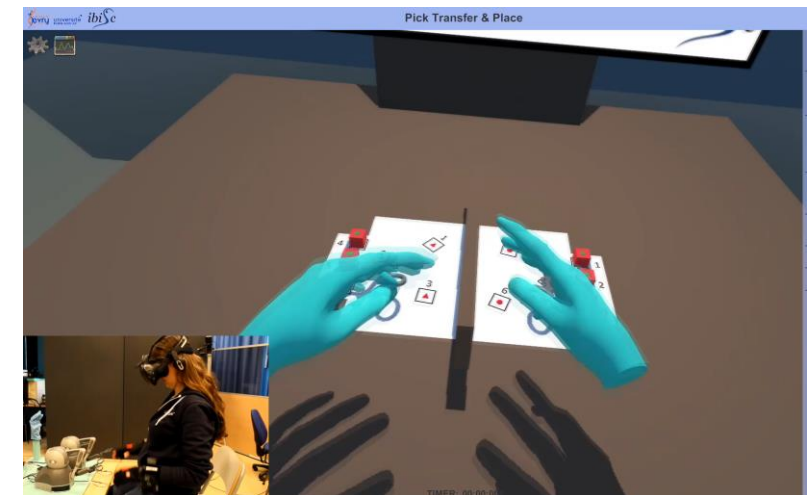
Ohio Supercomputer Center



NRC Industrial Materials Institute



IBISC



# Simulation médicale



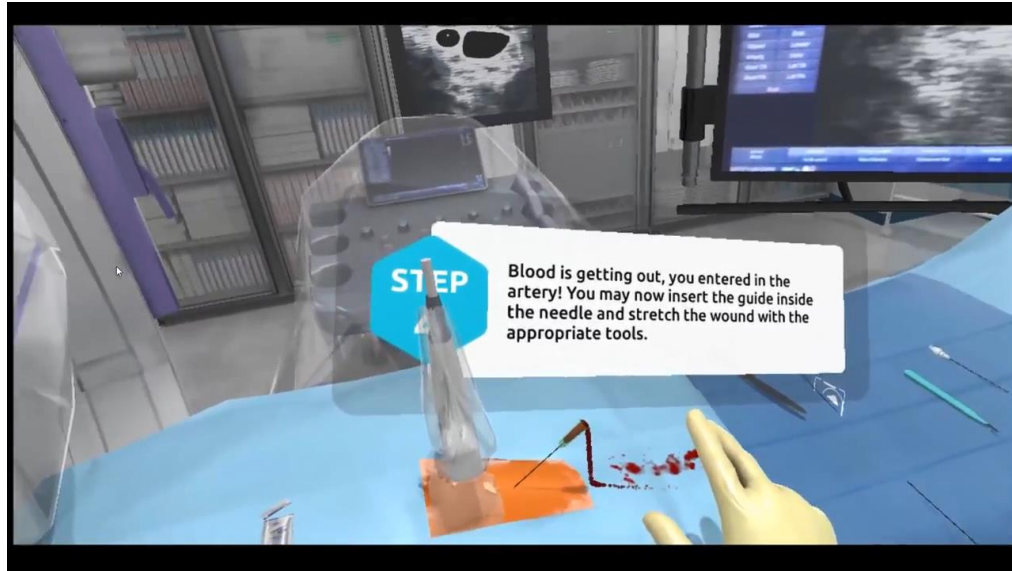
D'un seul geste – France 3 2019



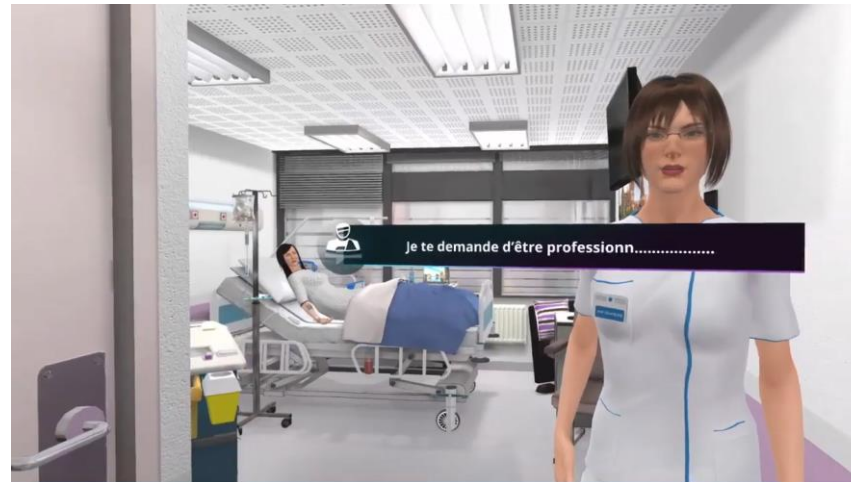
VirTeaSy Implant Pro, Didhaptic



# Simulation médicale

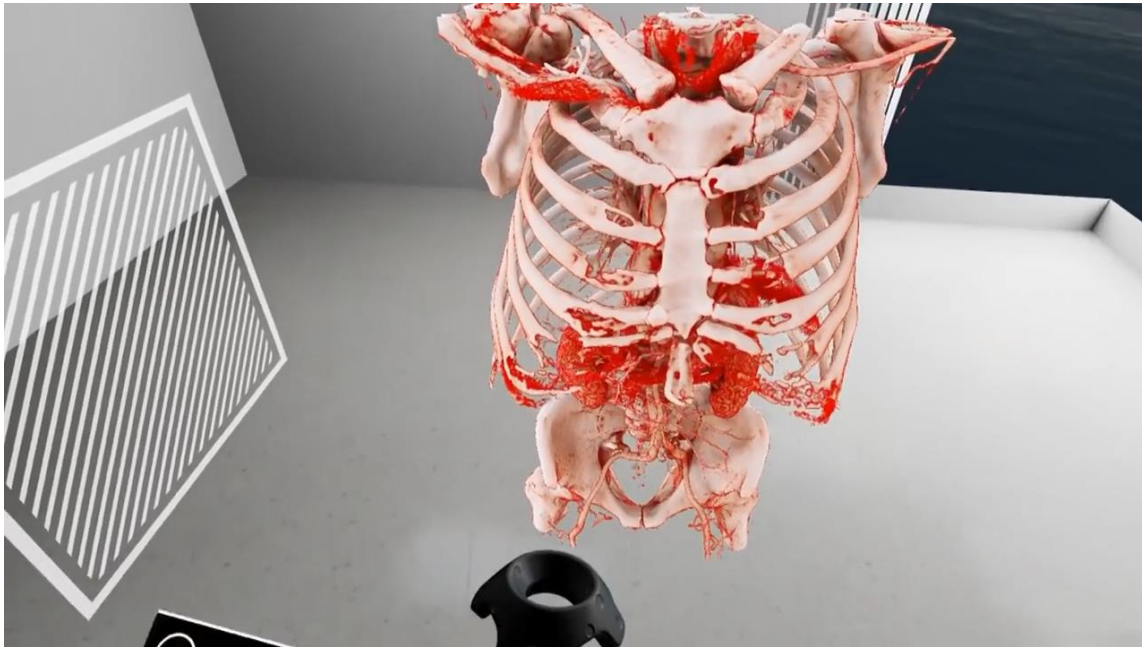


SimForHealth



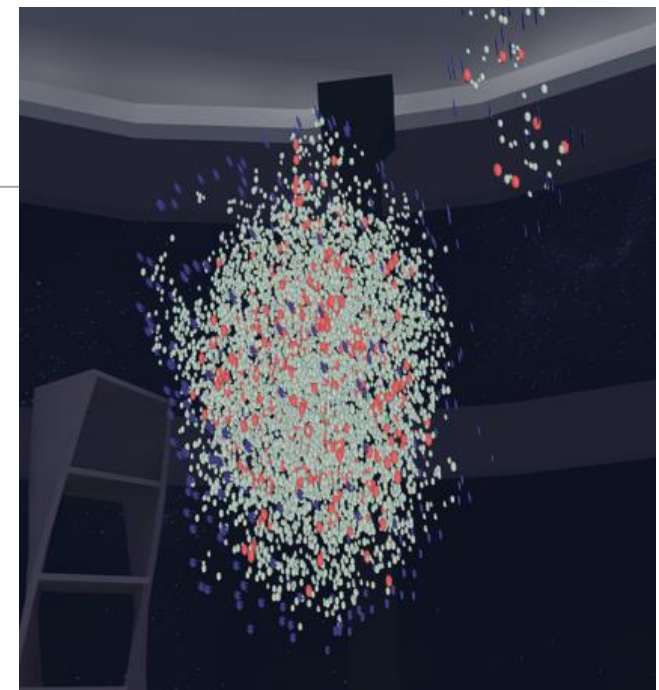
# Reconstitution 3D

« Double virtuel »  
Étude de maladie  
Planification d'opération  
Guidage augmenté lors de l'opération



Basel University 2016

Cancer Research UK Cambridge  
Institute (CRUK) 2017

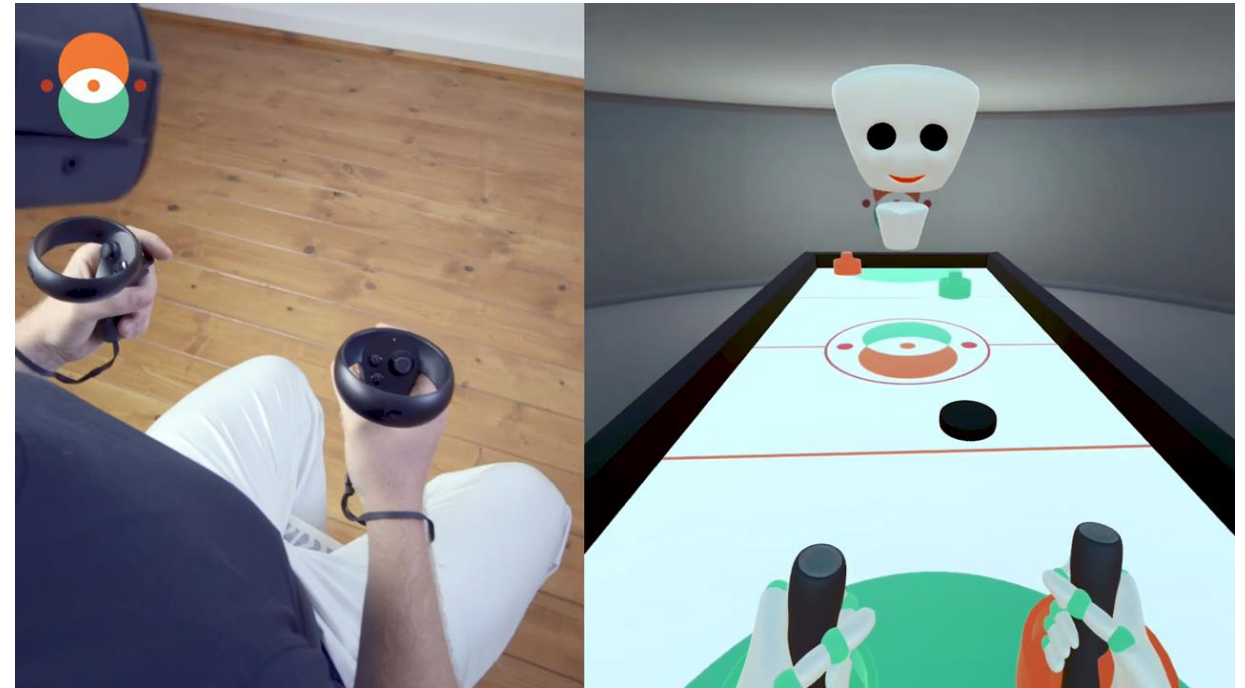


Arte 2014





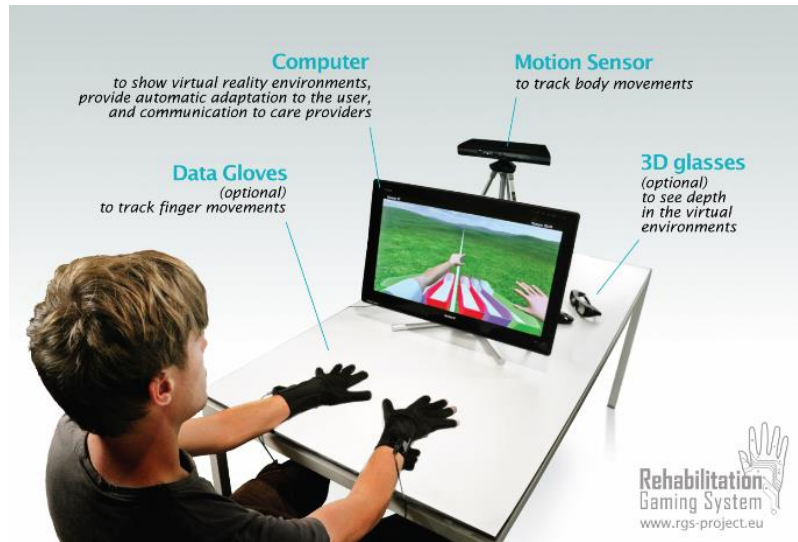
# Rééducation du membre supérieur



VirtualRehab 2017

Rewellio 2019

# Rééducation du membre supérieur



Eodyne (Rehabilitation Gaming System) 2019

# Rééducation du membre supérieur

IBISC – Clinique Les 3 Soleils  
2019-2022

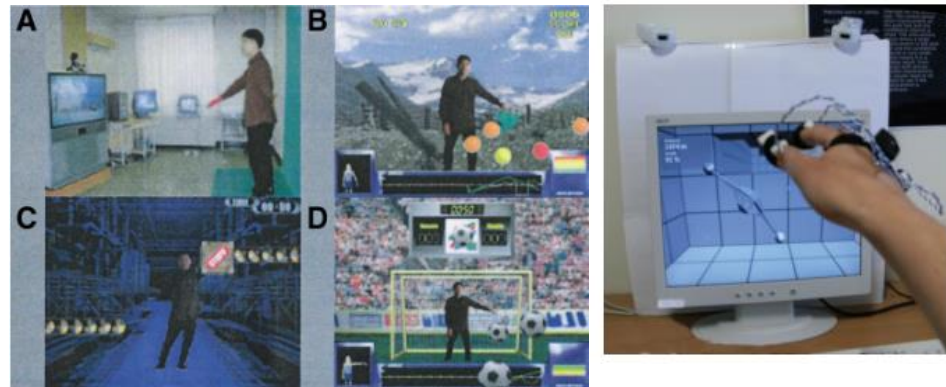
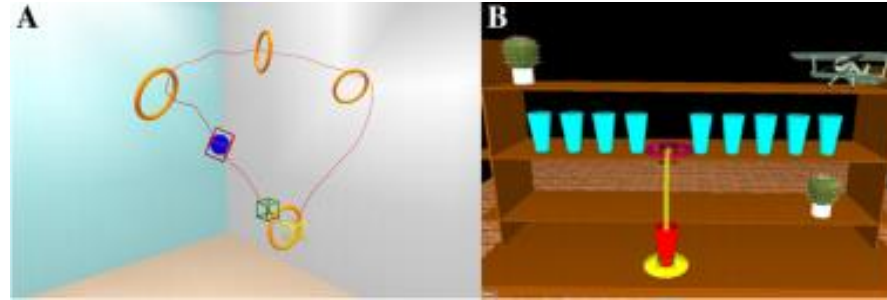


Figure 1 (See legend on next page)

[Eng 2007, Standen 2011, Jang 2005,  
Kiper 2011, Shin 2014, Turolla 2013, ...]

# Rééducation du membre inférieur



Zebris 2018

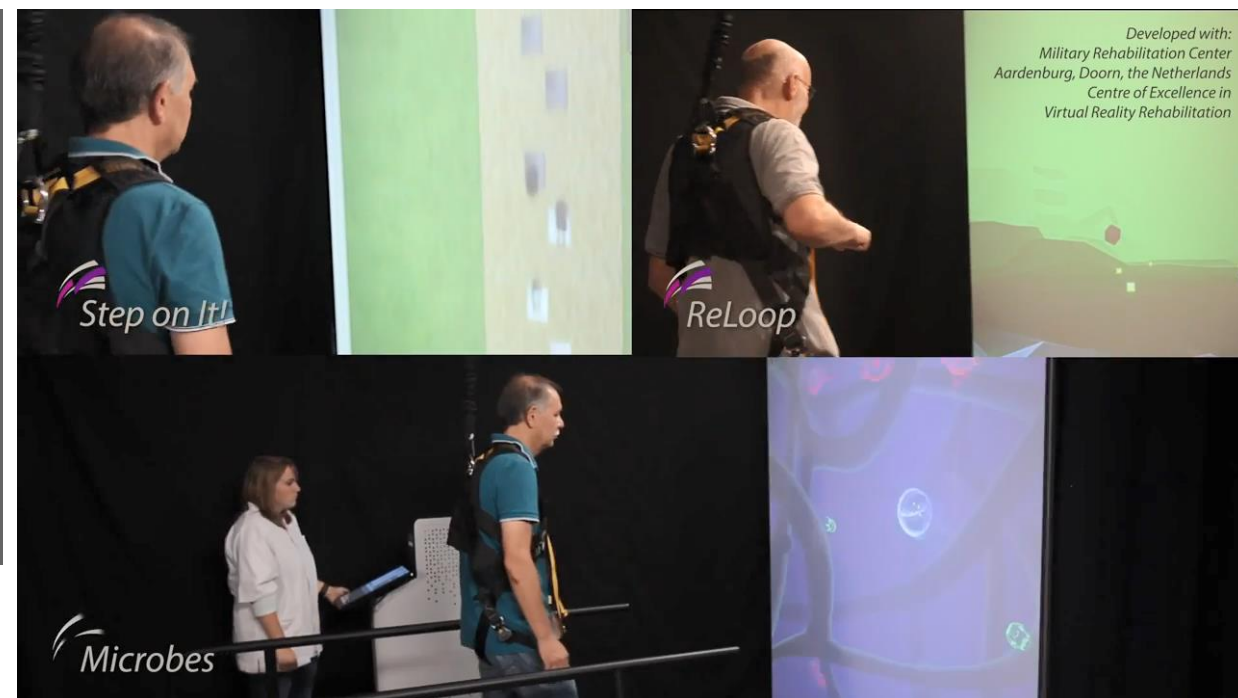


ETH Zurich

# Rééducation du membre inférieur



Cleveland Clinic 2017



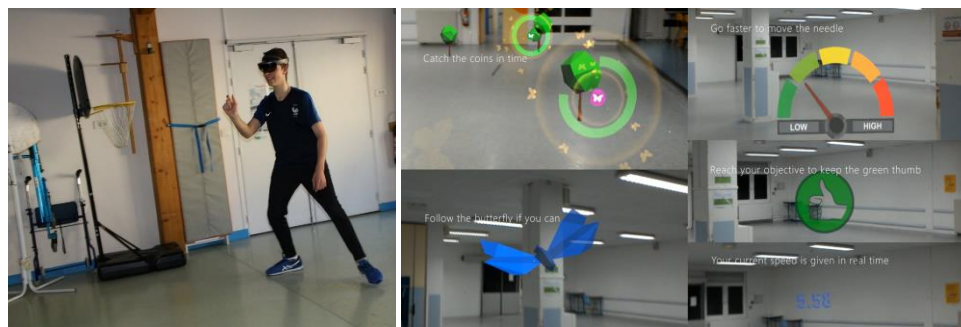
Developed with:  
Military Rehabilitation Center  
Aardenburg, Doorn, the Netherlands  
Centre of Excellence in  
Virtual Reality Rehabilitation

Motek Medical 2014



University of Pittsburgh  
2008

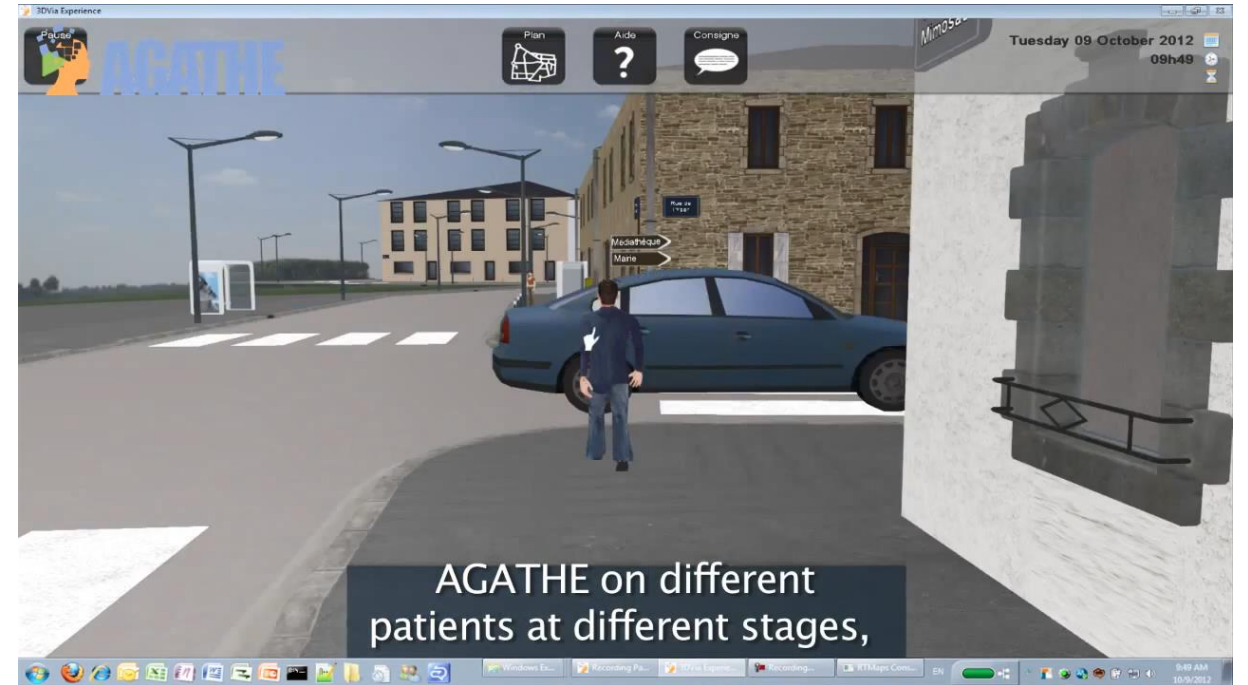
IBISC/Fondation  
Poidatz 2019-2022



# Thérapie cognitive



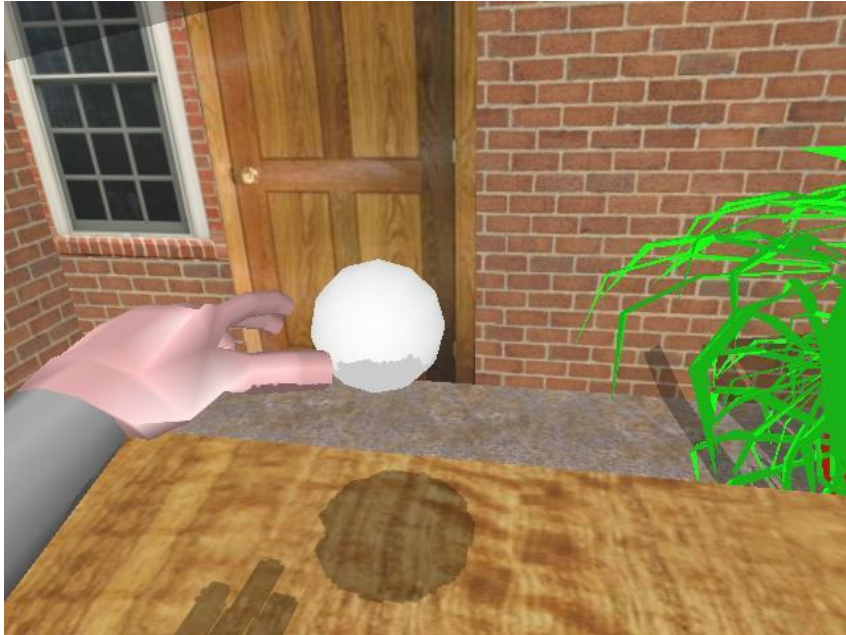
Dassault Systèmes – France 5 2009



Projet Agathe 2013

# Thérapie cognitive

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Advanced Interface Group, Manchester University, 2006

# Phobias & Addictions



Hopital La Timone – AFP 2015

HITLab



C2Care 2019





# Douleur

Douleurs de soins  
Douleurs chroniques



Children's Hospital Los Angeles 2017



UCSF Benioff Children's Hospital Oakland 2016



Seattle's Harborview Burn Center 2005

# Stress & Troubles post-traumatiques

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US Department of Defense Congressionally Directed  
Medical Research Programs 2009



USC ICT – ABC News 2016

# Santé/Sport

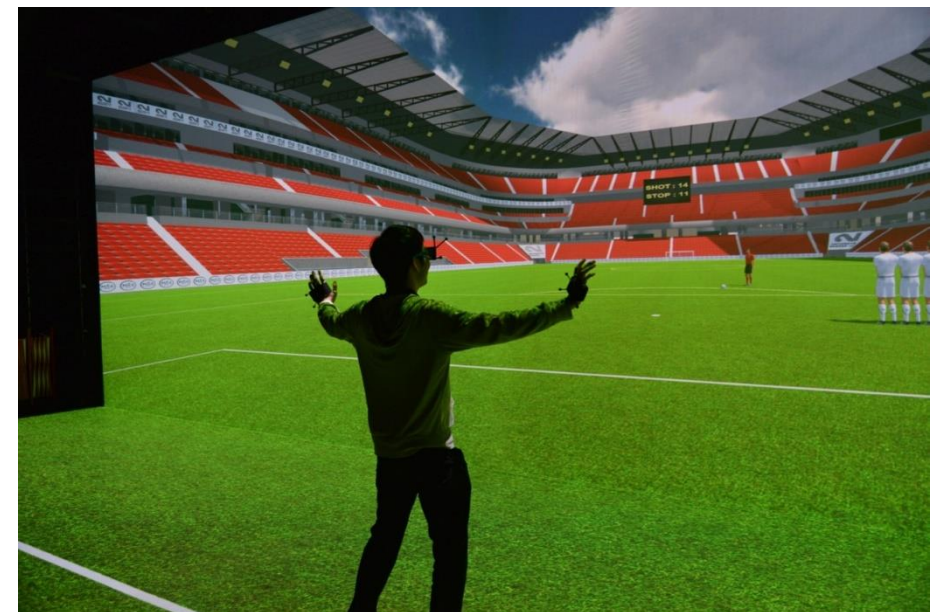
Etude du geste sportif  
Thérapie motrice par le sport  
Accompagnement d'exercices (fitness...)

CRVM, 2007



INRIA,

INRIA 2017

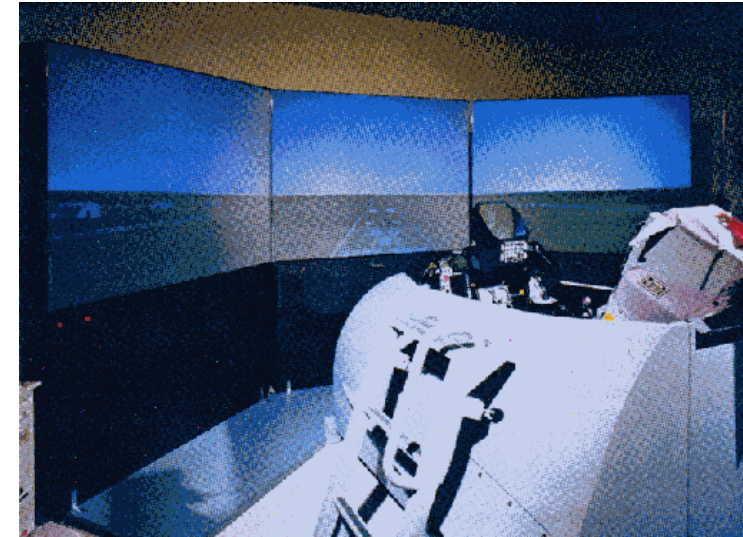


# Militaire

Entraînement de soldats  
Simulation de conduite de véhicules  
Simulation d'arme, de combats  
Formation au déminage



[Nautilus]



[Rapport OTAN, Danemark, 2003]



# Militaire

SITAC 3D : représentation de situation tactique pour les opérations navales [DCNS, Clarté]

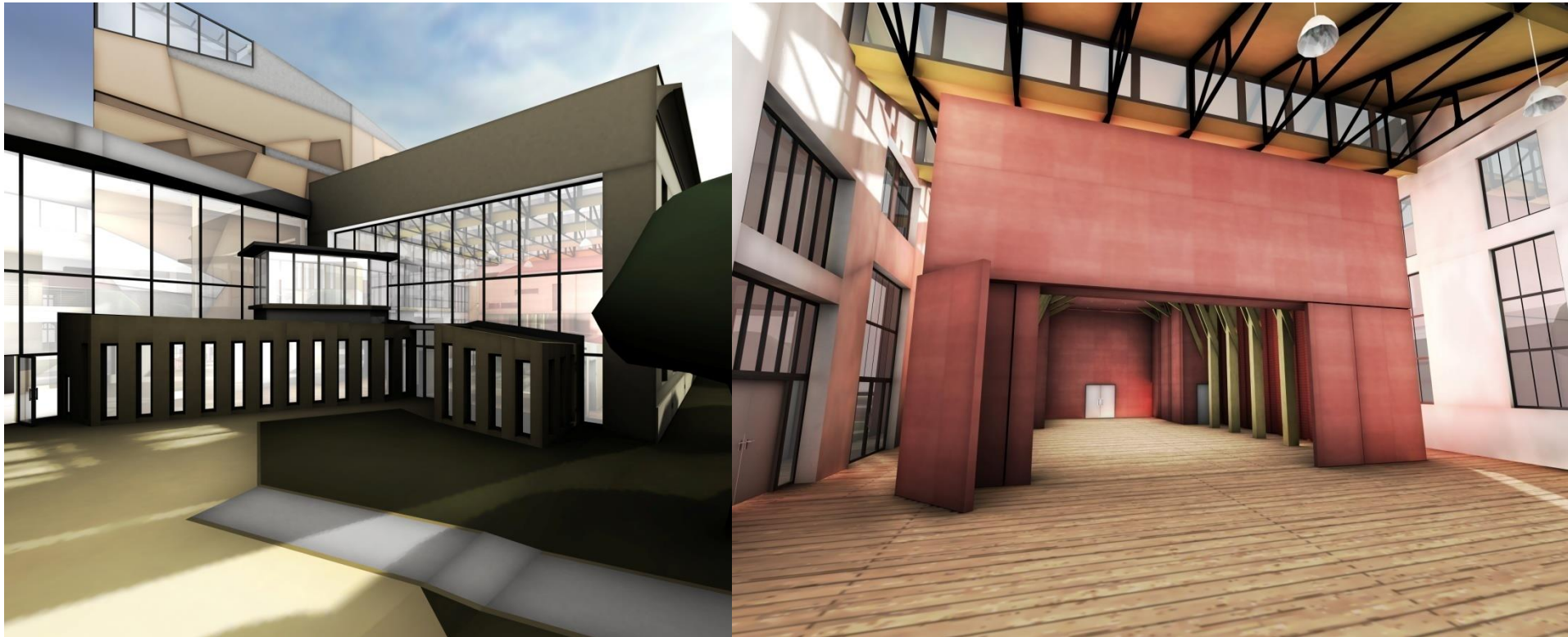


# Construction et urbanisme

Visite de bâtiment ou site urbains  
Ergonomie, ambiance, sécurité...



[CRVM]



[Le2i, 2005]

# Urbanisme et transports

Sensibilisation, étude environnementale,  
urbanisme

Transports

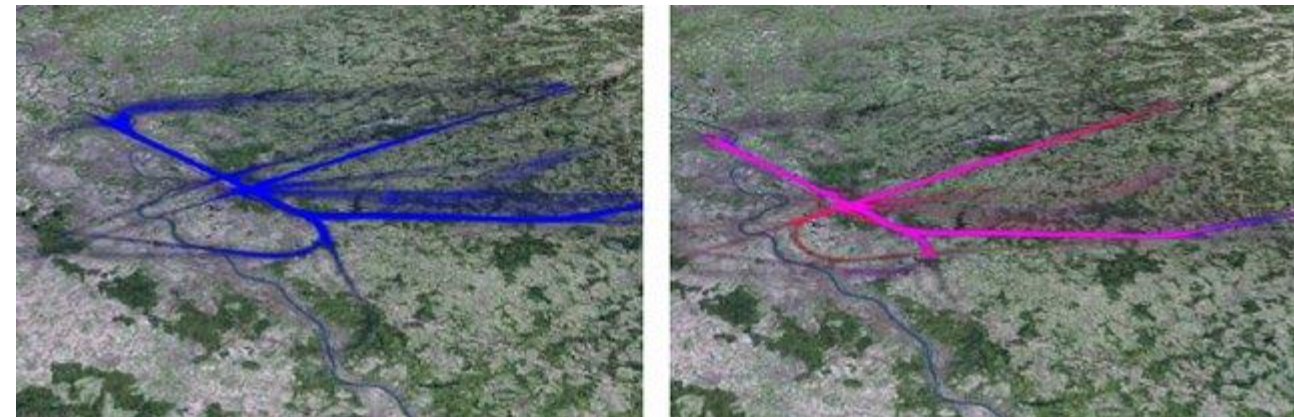
SIG



Cireve, Univ. Caen



Air-Traffic Data, Buschman et al. 2015



# Formation

## Geste technique



[Le2i, 2005]



Projection d'enduit



Marouflage du Mesh



[Virtual Technical Trainer, 2005]



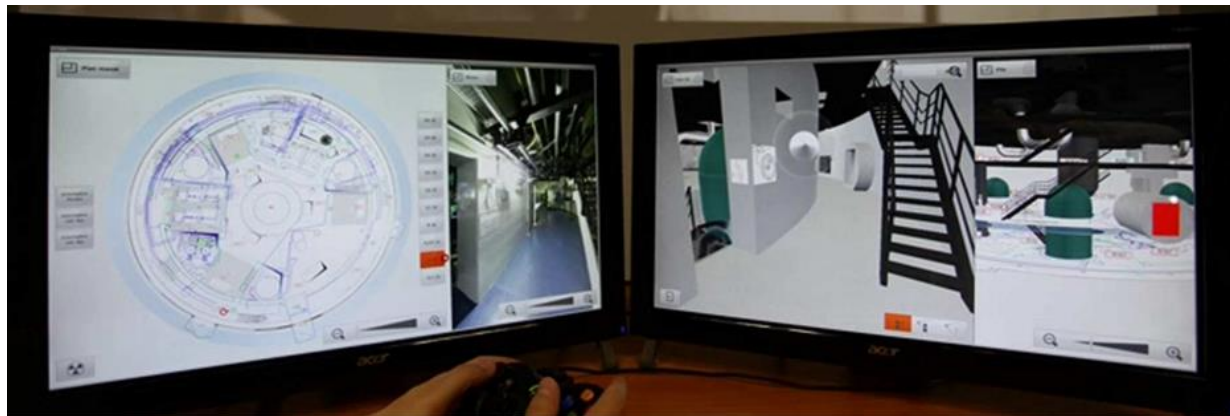
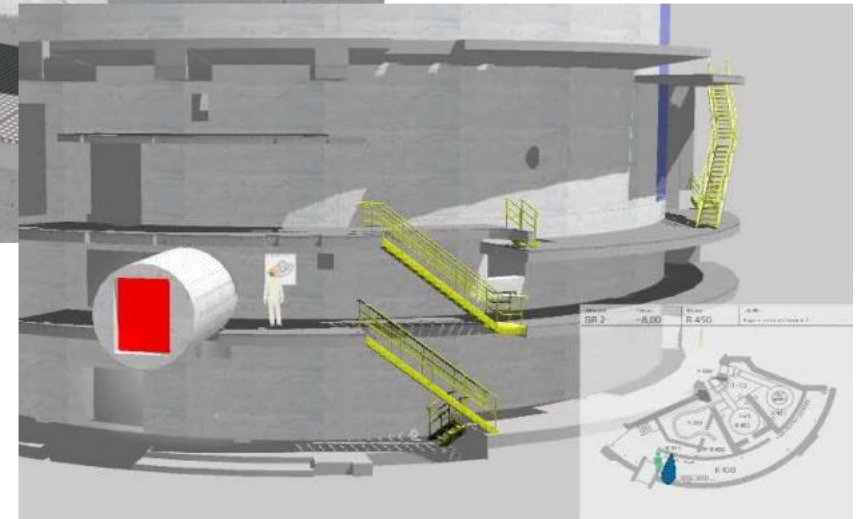
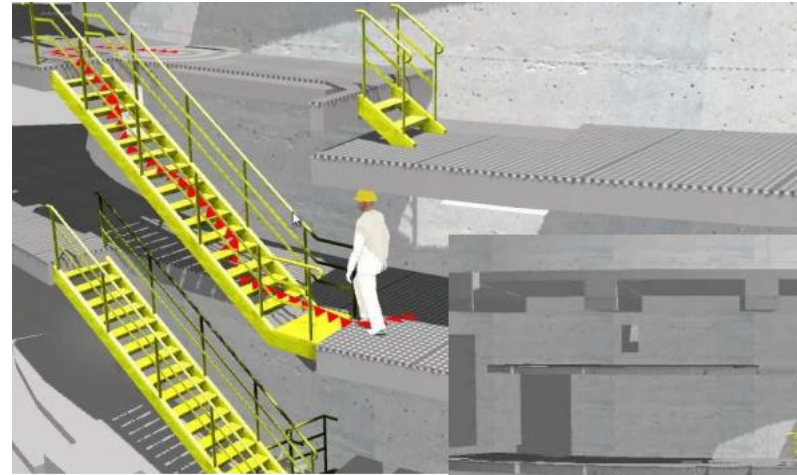
[ETICS VR, Clarté, St Gobain, 2010]



# Formation

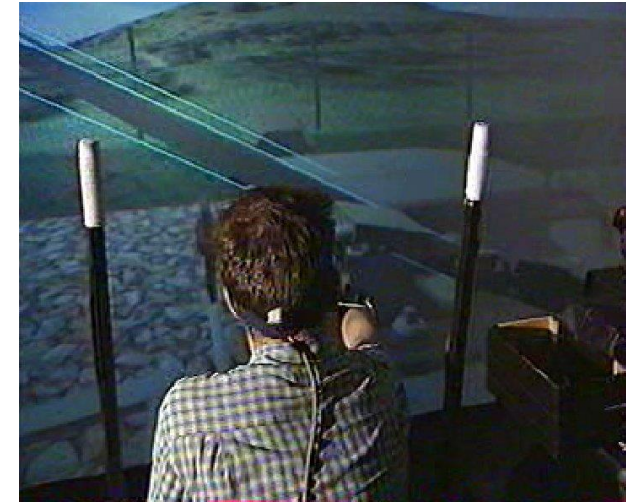
## Visite virtuelle

EDF



# Formation

## Simulateur de voies à la SNCF

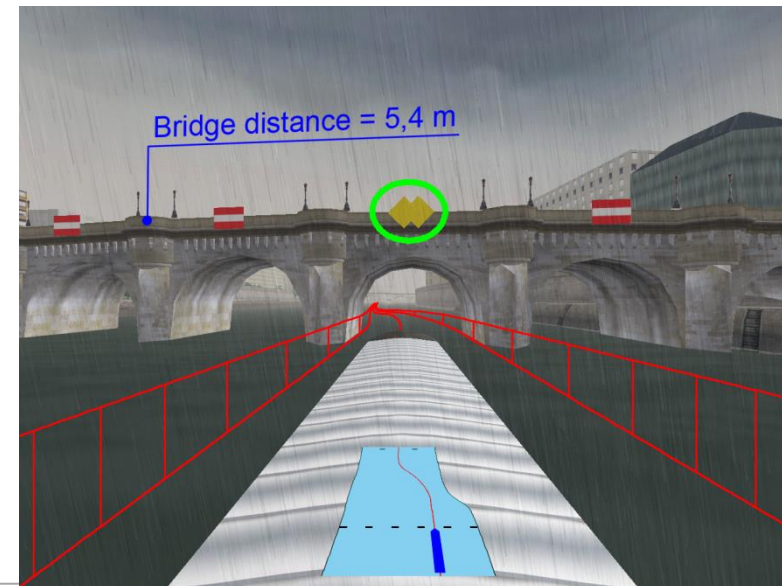
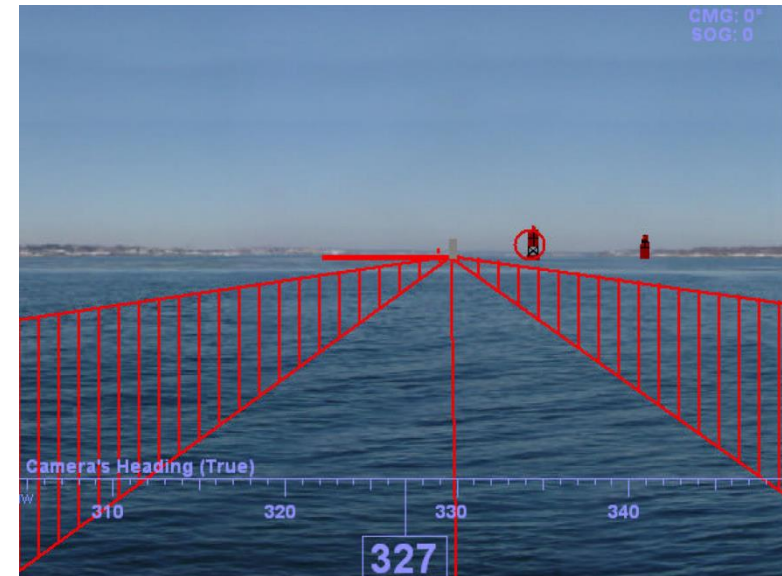


# Formation

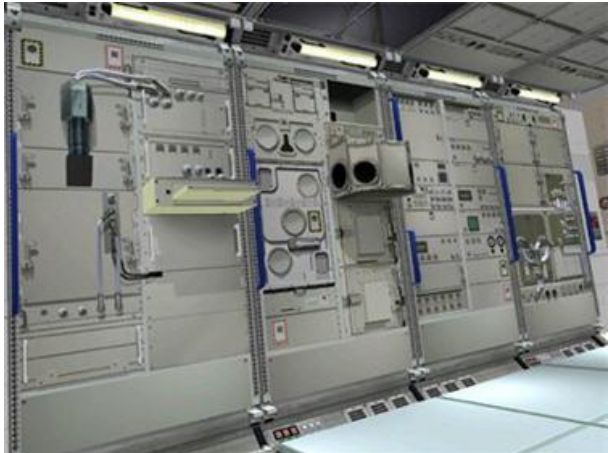
## Navigation fluviale



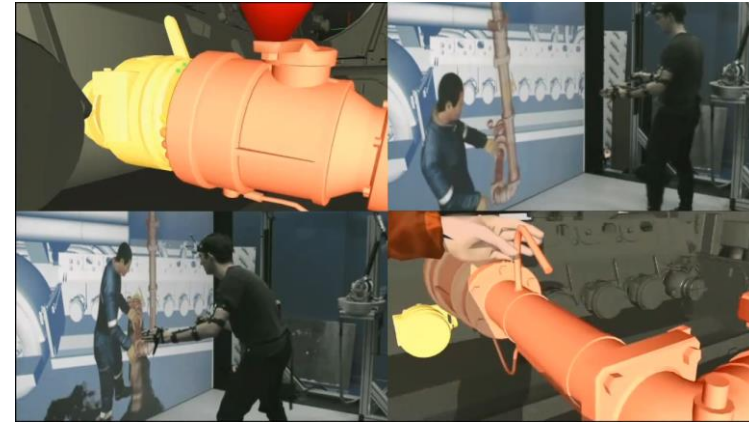
[Heudiasyc, CETMEF, 2010]



# Formation



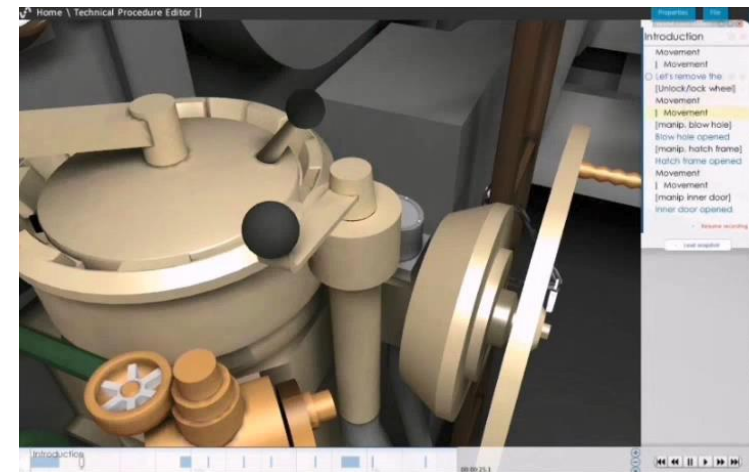
[Station ISS, Silicon Worlds]



[V3S (Virtual Reality for Safe Seveso Substractors), Heudiasyc et al. 2011]



[MacGregor]

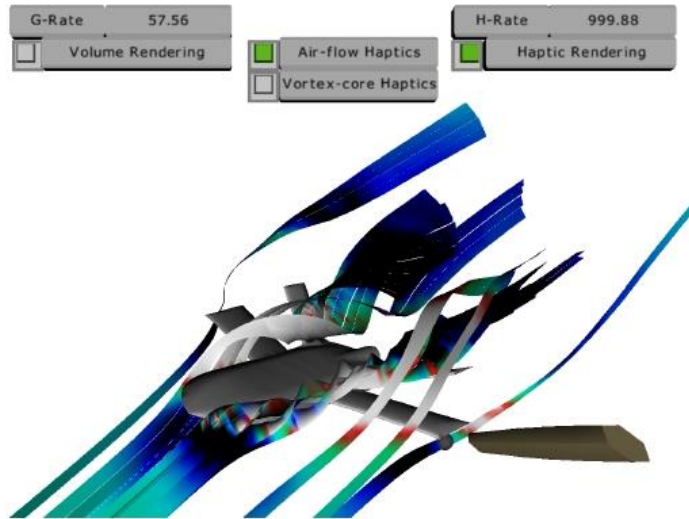


[DCNS, Reviatech. 2011]

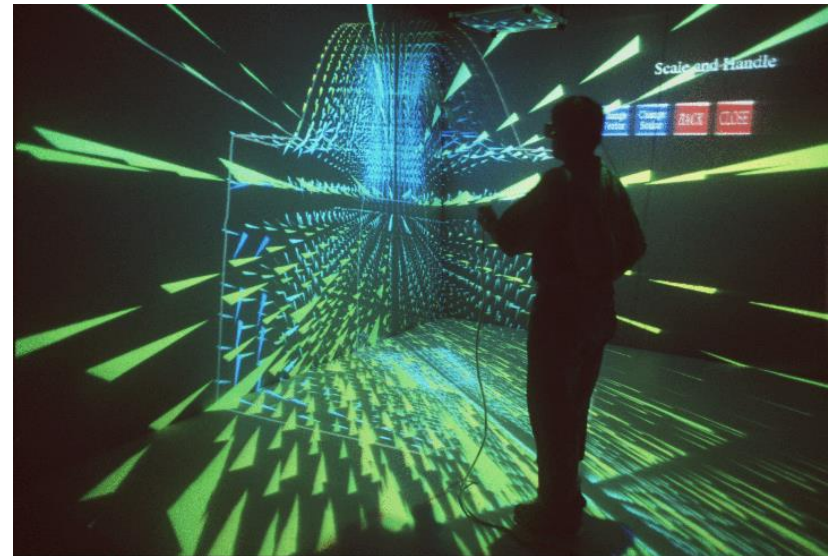
# Science et recherche

Visualisation et analyse de données complexes et/ou massives

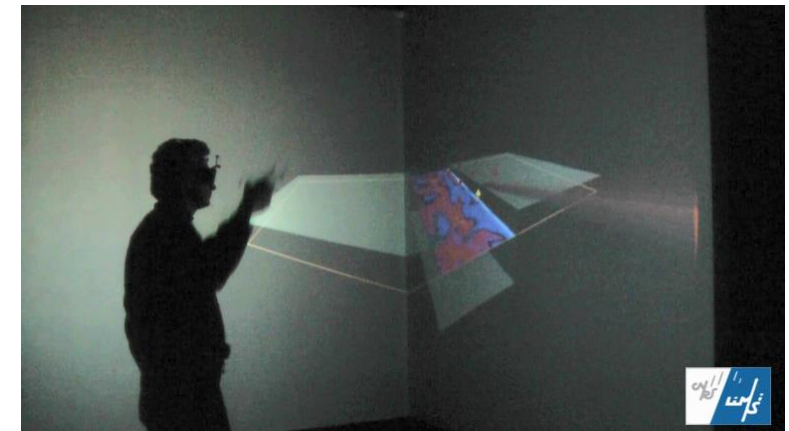
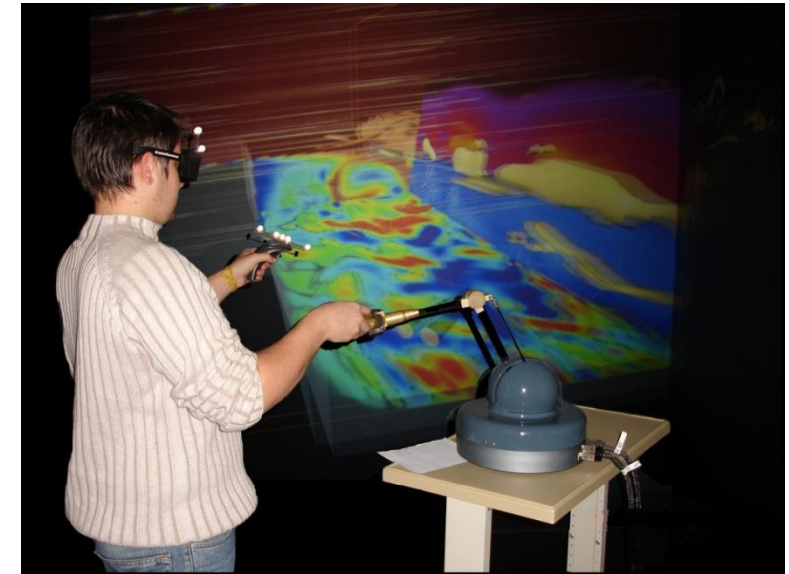
[LIMSI-CNRS, 2007]



[NVIS, 2005]



Iowa State Univ. 2000

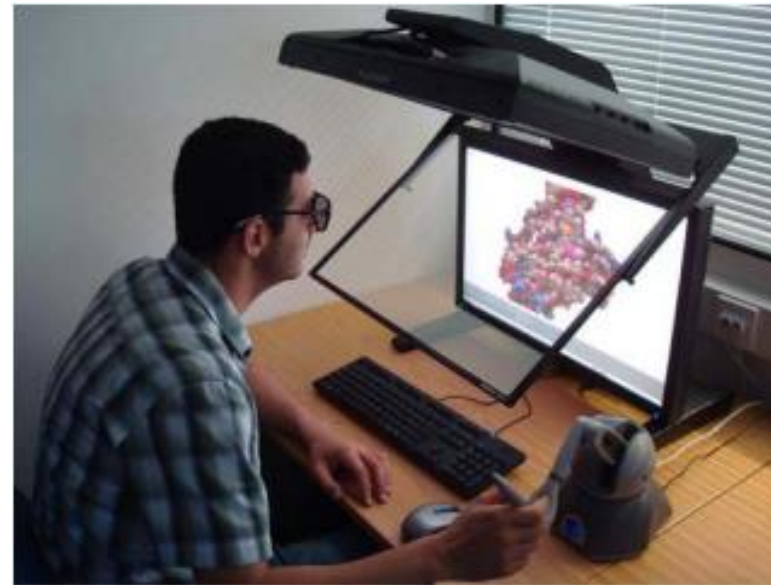


# Science et recherche

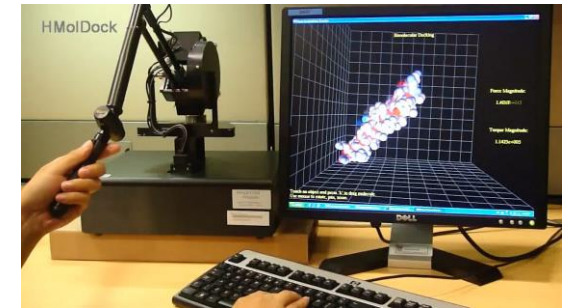
## Compréhension de phénomènes



[LIMSI-CNRS, 2007]



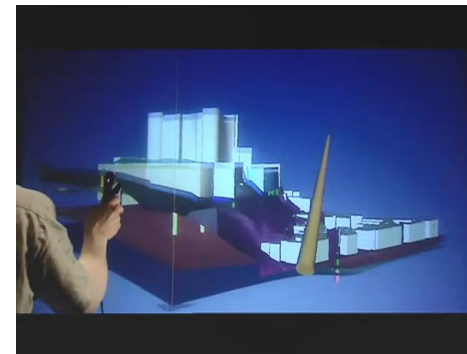
[HaptiMol]



[HMolDock 2011]



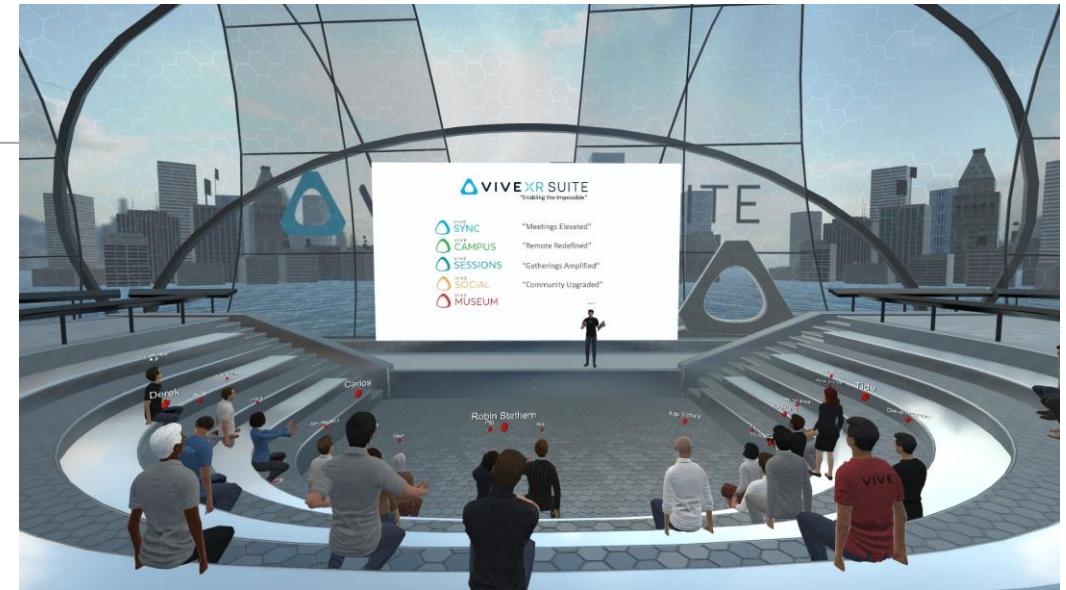
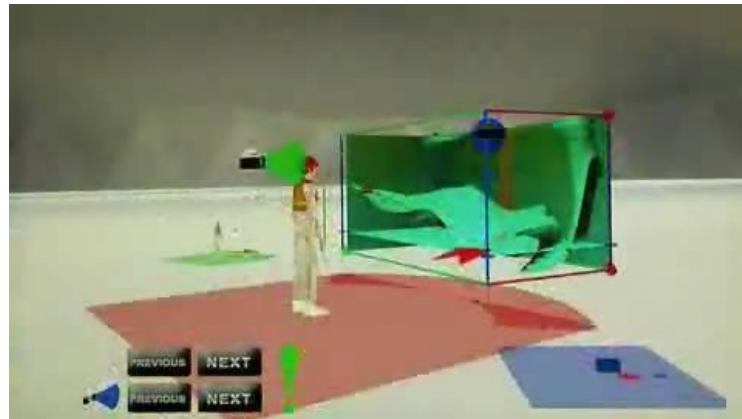
[IBISC, BRGM, 2008]



# Travail collaboratif / télétravail



[Part@ge, 2008]



Engage VR



Teemew

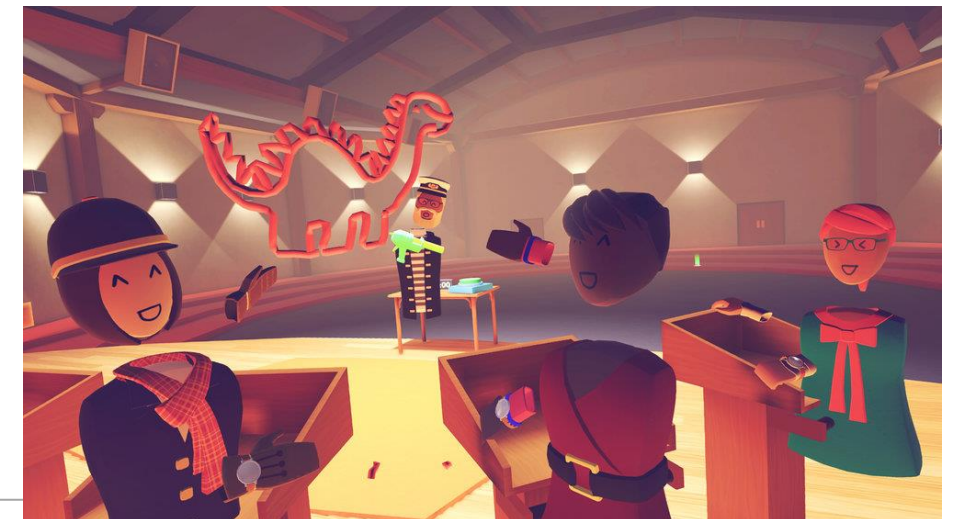
# Réseaux sociaux



VR Chat



Altspace VR



Rec Room VR



# Etudes marketing

## Magasin virtuel d'expérimentation commerciale



[CAOR – Mines de Paris 2002]

