

Recent Advances in Virtual Worlds for Science and Technology Research and Development

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Overview

- Recent virtual world projects for Science or Technology R&D
- Future opportunities for virtual worlds for science and technology R&D

Strategies for Creating Value with Virtual Worlds

- Creating game-based learning environments with virtual worlds
 - _ “Play” and experiential behavior are surprisingly effective way to audition, rehearse, act, fail, and learn
 - _ Mixed reality worlds can link virtual and physical activities
 - _ Virtual worlds are best at providing new *experiences*
 - Virtual work practices
 - Not the same as existing work practices
 - Need to learn what to do, how to do it, and more
 - _ Not obvious how to be faster, better, and cheaper using virtual worlds!

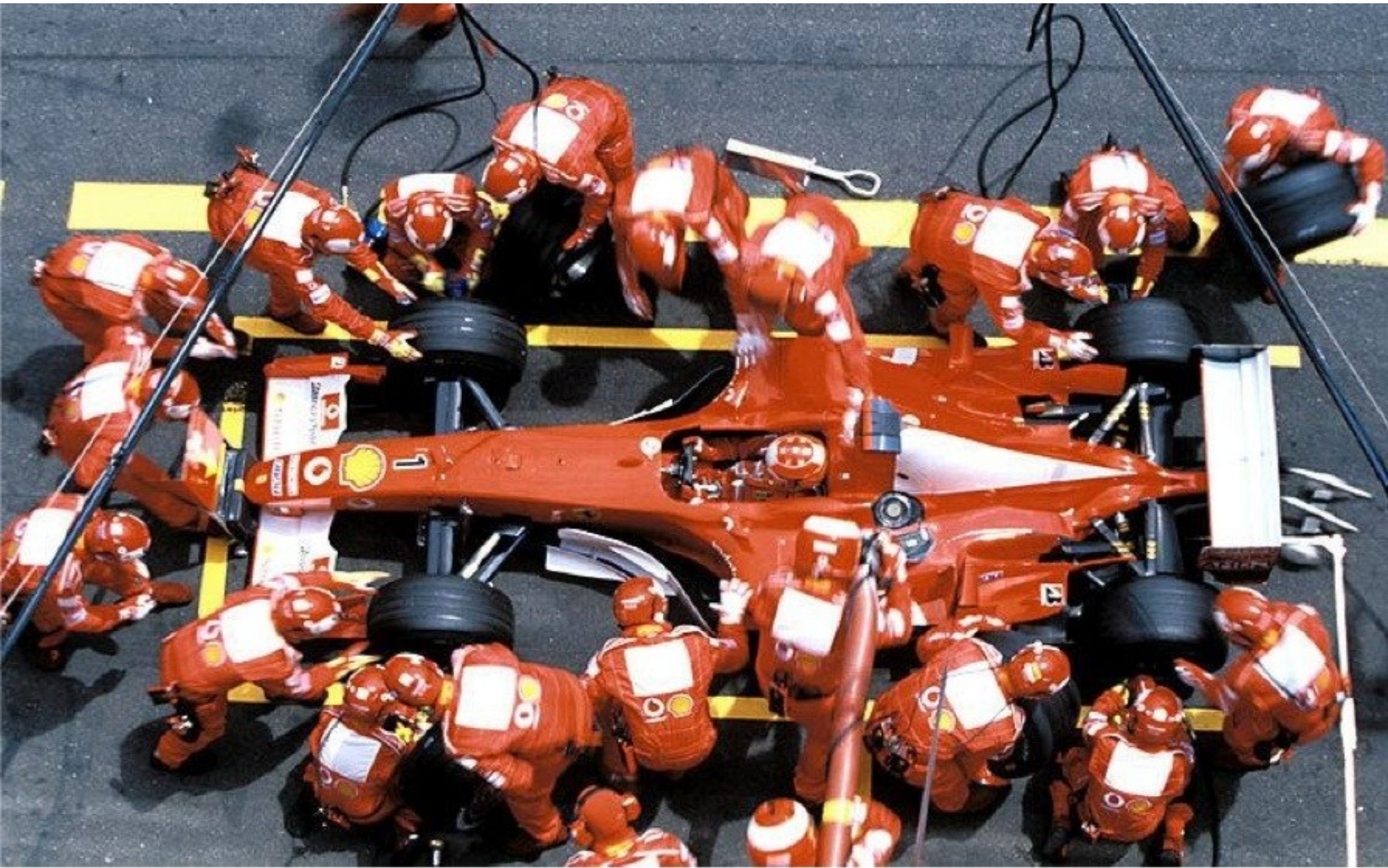
Collaborative meeting work in virtual world



Collaborative work in physical world



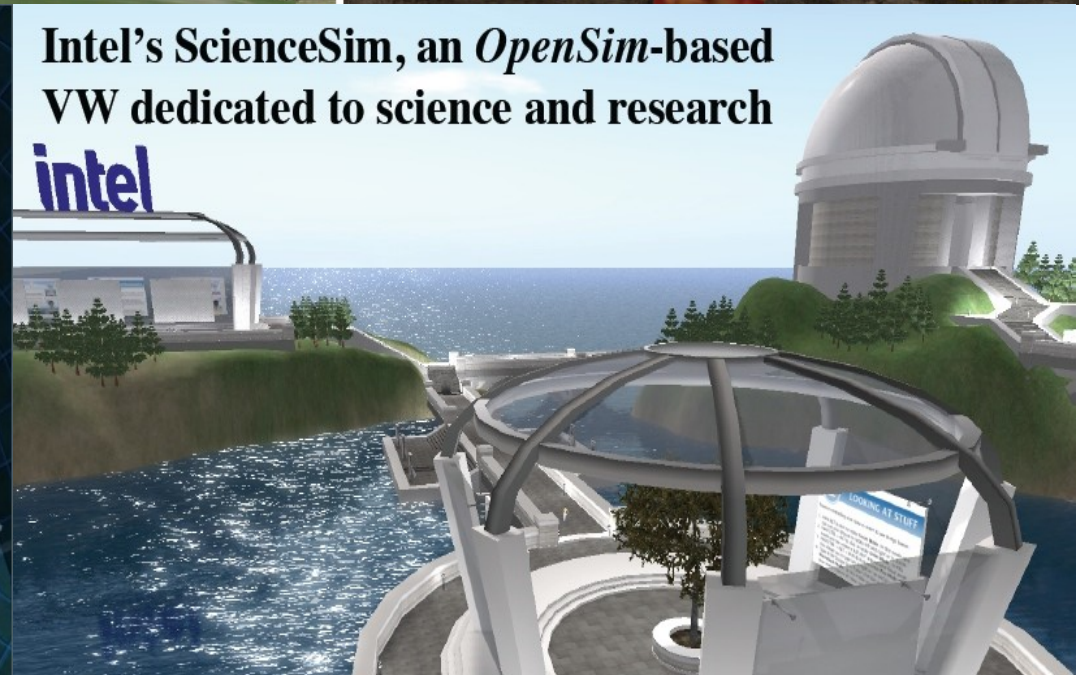
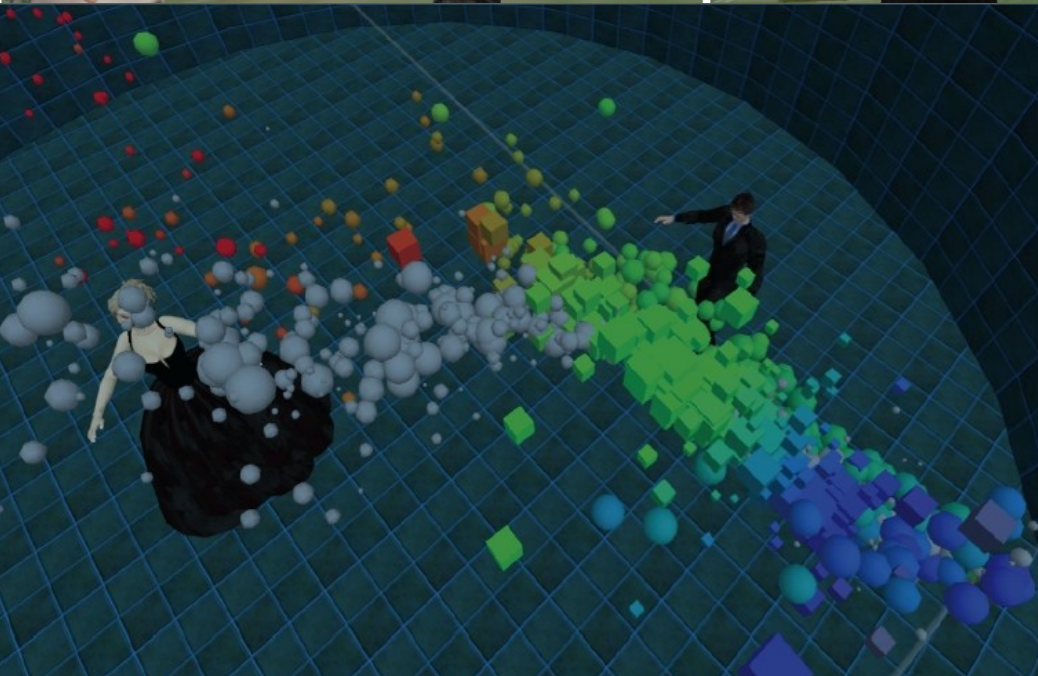
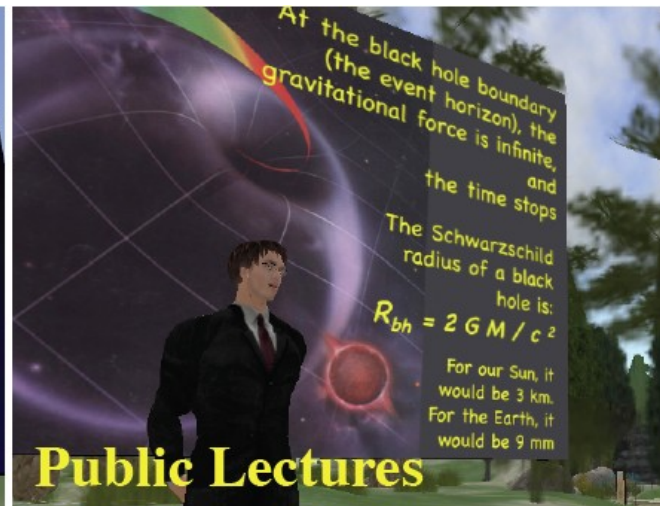
Radically colocated work in physical world



Recent Virtual World Projects for Science and Technology R&D

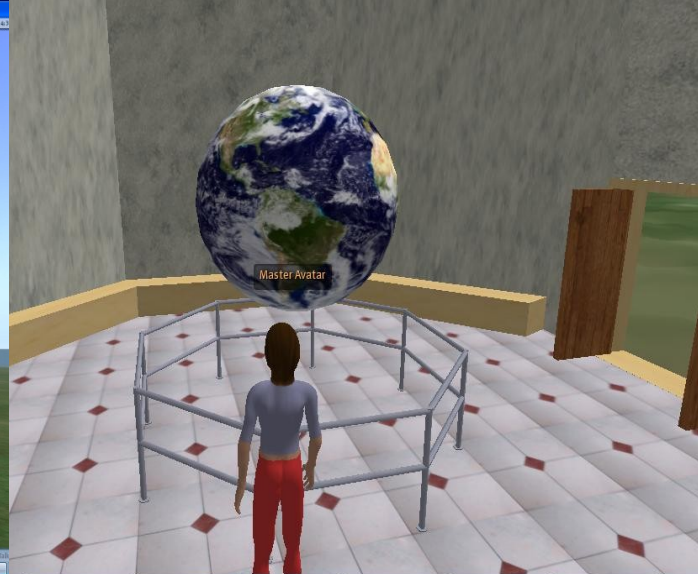
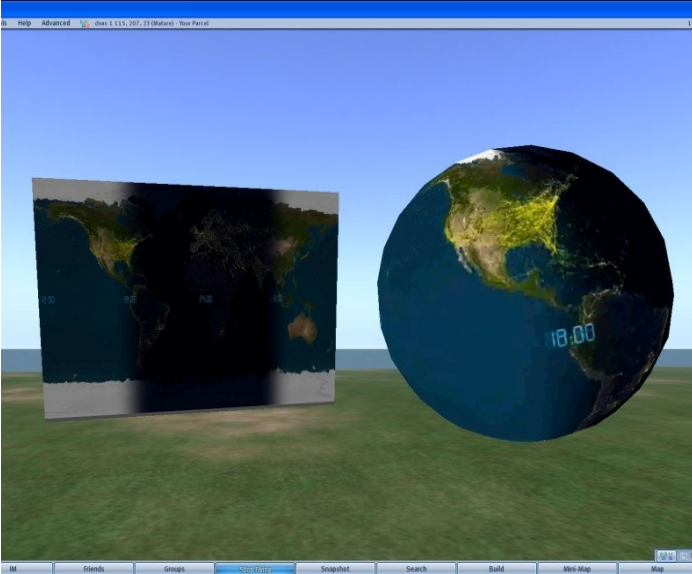
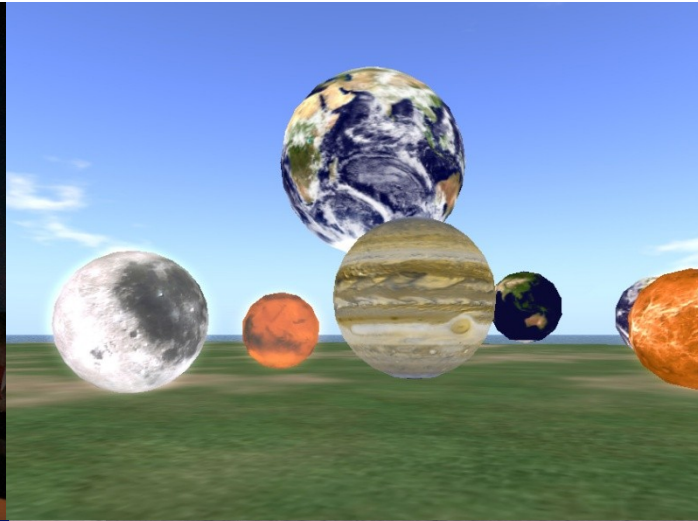
- Collaborative science meetings and immersive simulations
 - Meta Institute for Computational Astrophysics
- Collaborative science learning and data exploration environment with spherical displays at *Discovery Science Center* and in *OpenSim*
 - Science on a Sphere
- Collaborative game world for semiconductor fabrication or nanotechnology design
 - FabLab training simulator
- Envisioning future virtual worlds for possible cultural experiences and new technological innovation opportunities
 - Virtual Life 2010+
 - Immersive motorsports racing experiences
 - Low-cost to high-cost virtual world simulators
 - OutRun @ UCI

Virtual Worlds for Scientific Collaboration: *Meta Institute for Computational Astrophysics*

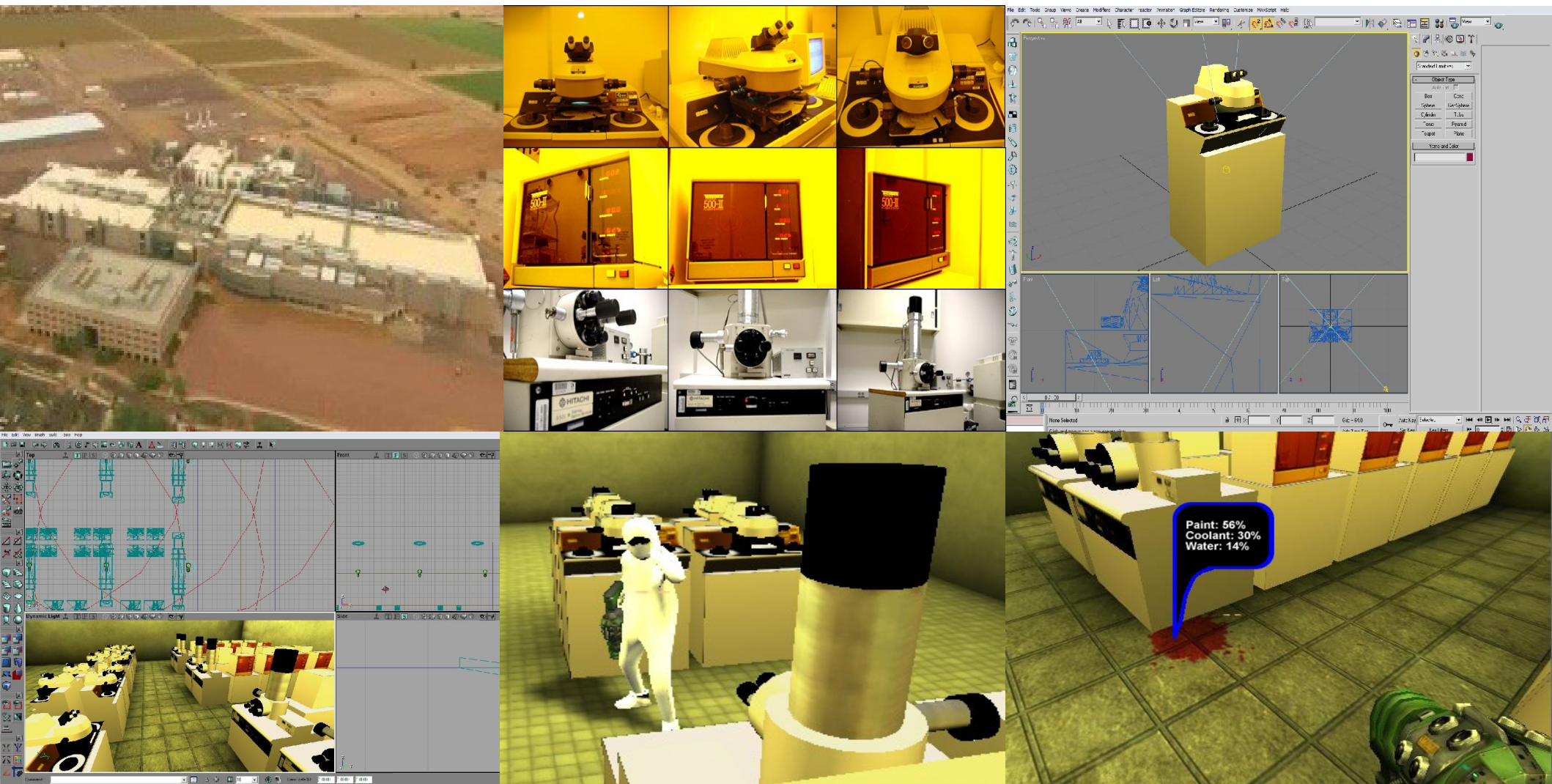


Spherical displays and “spherecasting” support: *Science on a Sphere* installation in *Opensim*

NOAA



Game-based virtual world for semiconductor/nanotech fabrication training, remote presence and diagnosis



FabLab Demo Reel

Semiconductor/nanotechnology fabrication training game

working in a cleanroom

Suit made of
ultra clean material

Battery pack for
air filter system

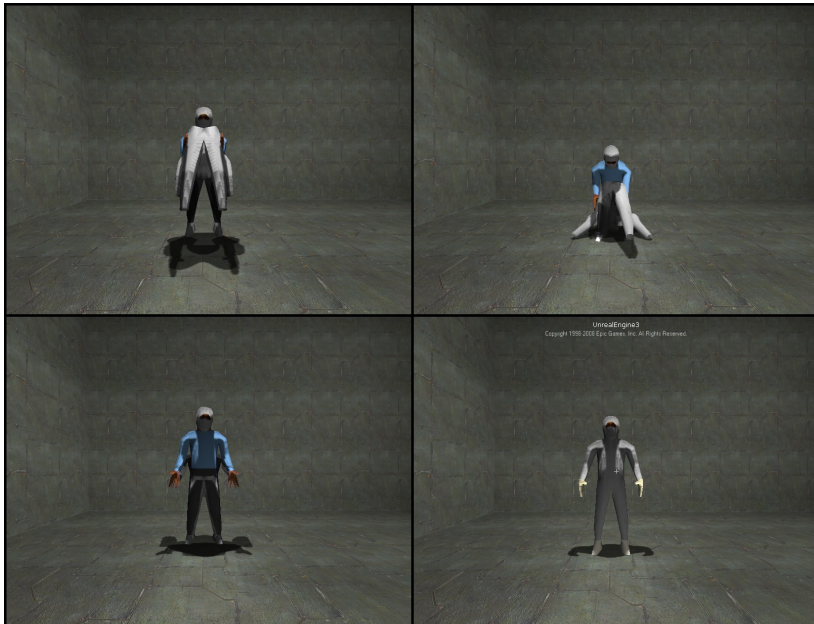
2 pairs of gloves
nylon & latex

2 pieces
of foot gear
disposable
shoe covers &
outer booties

Helmet
includes
air filter
unit

Will also
wear
hairnet
& safety
glasses

Belt



Envisioning collaborative virtual worlds 2010-2012



Virtual Life Demo Reel

Game-Based Virtual World Simulator Interfaces for immersive motorsports racing experiences



Game-based virtual world simulator you can actually drive in physical world! -- *OutRun* @ UCI



Future opportunities for games and virtual worlds

- Key challenges to address/overcome -- *scale and scope of:*
 - *Immersion*
 - *Verisimilitude*
 - *Within worlds*
 - *Spanning physical-virtual worlds*
 - *Co-participation and Collaborative work*
 - *Relocatability (telepresence)*
 - *Decentralized virtual organization*
- *New research center for Computer Games and Virtual Worlds at UCI*
 - <http://cgvw.ics.uci.edu>
 - *Funding from National Science Foundation #0808783, Digital Industry Promotion Agency (Daegu, South Korea), and others.*
 - *Want to come and play with us?*