

Game Mods as an IT Resource for Getting Things Done

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Game IT Summit



GAME DEVELOPERS CONFERENCE
SAN FRANCISCO, CA
MARCH 5-9, 2012
EXPO DATES: MARCH 7-9
2012

Overview

- Enterprise IT
- Some serious games in enterprise settings
- Modding practices
- Example game mods as a strategy for creating enterprise IT solutions
- Lessons learned

Enterprise IT

IT interests:

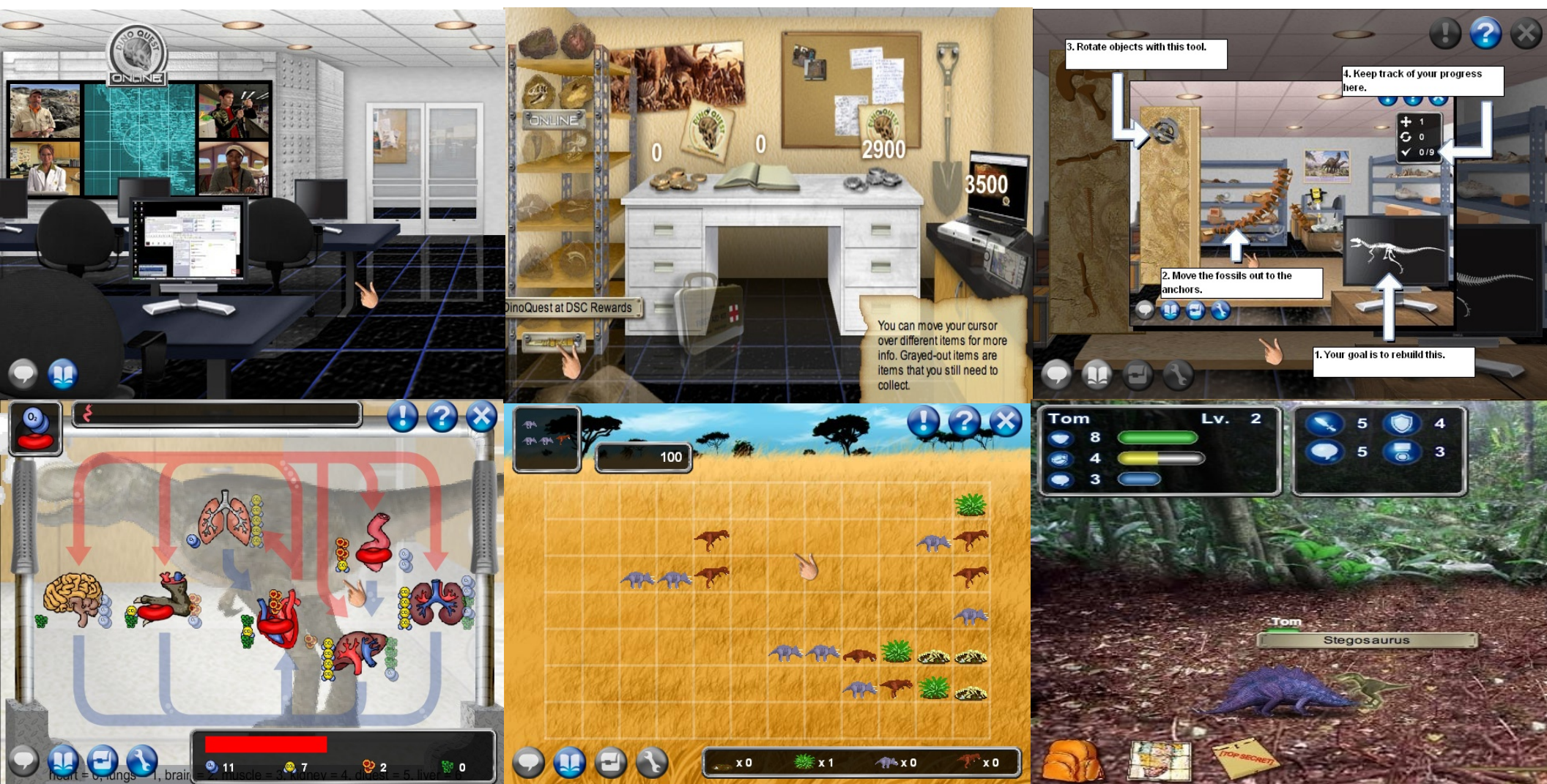
- Interested in innovative, sustainable IT solutions
- Analyzing internal operations and external market opportunities
- Reconfiguring existing systems to support reorganization or organizational transformation
- Often not interested in gamification of extant IT systems

Enterprise IT

IT efforts:

- Focused on development or acquisition of new services, applications, or solutions
- Include installation, integration, configuration, deployment, and support (maintenance)
- Regularly address enterprise training requirements
- May require integration with legacy systems or prototyping of standalone applications

Web-based science learning games for informal science education for a regional science center



<http://www.DQOnline.org/>

Mixed reality games for informal science education at a regional science center



DinoQuest Research Team and Collaboratories:
Diverse Science Role Models (ethnicity, age, gender)



<http://www.DiscoveryCube.org/>

2D, side-scrolling, WoW-inspired, role-playing game and game modding environment (!)



Hacked arcade system -- *OutRun* @ UCI



OutRun: Augmented Reality Driving Video Game ([YouTube](#))

Envisioning collaborative virtual worlds 2010-2012



Virtual Life Demo Reel

Modding

- Practices
 - UI customization (add-ons, dashboards), game conversions, machinima, hacking closed systems (code injection, hooking)
- Tools and techniques
 - Extension via scripting languages
 - Meta-mods (e.g., *Garry's Mod*)
- Domain analysis
 - Understanding enterprise processes
 - Understanding modding and modifiable games

See, [Computer Game Mods, Modders, Modding, and the Mod Scene](#), *First Monday*, 15(5), May 2010.

Games (mods) can support different enterprise activities

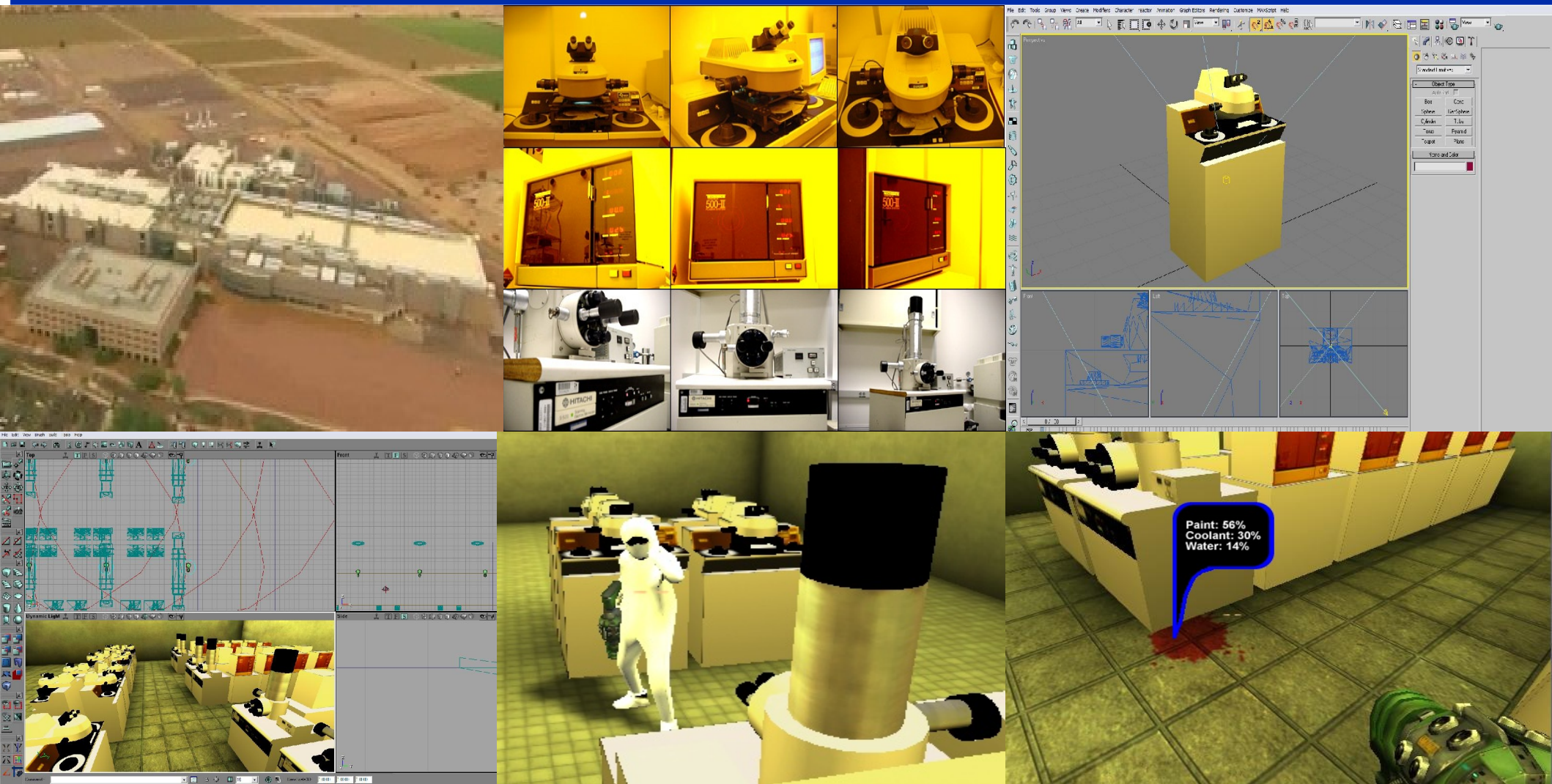
- Group play, presentation, communication, and social interaction
- Training, education, rehearsal, learning
- Prototyping and review of virtual objects, composite systems, etc.
- New commercial product or service demonstration
- Identity role-playing, team building, and other social processes
- Multi-media storytelling and machinima production
- Avatar control and choreography
- Mirrored worlds and memorialization
- Envisioning future business processes
- Semi-automated socio-technical process discovery
- Modeling, visualizing, analyzing, and developing complex security regimes accommodating heterogeneous security policies
- Enabling human behavior transformation (health care)

Enterprise IT problem domain: *semiconductor fabrication*

Progressive Goals:

- Visualize collaborative global manufacturing service engineering processes
- Train fabrication technicians in manufacturing service operations
- Diagnose material spills in fabrication clean rooms (onsite, then remote facilities)
- Train fabrication order management supporting major customers
- Note: *In-house ERP and training systems did not support any of these capabilities*

Semiconductor fabrication training game for diagnosing material spills

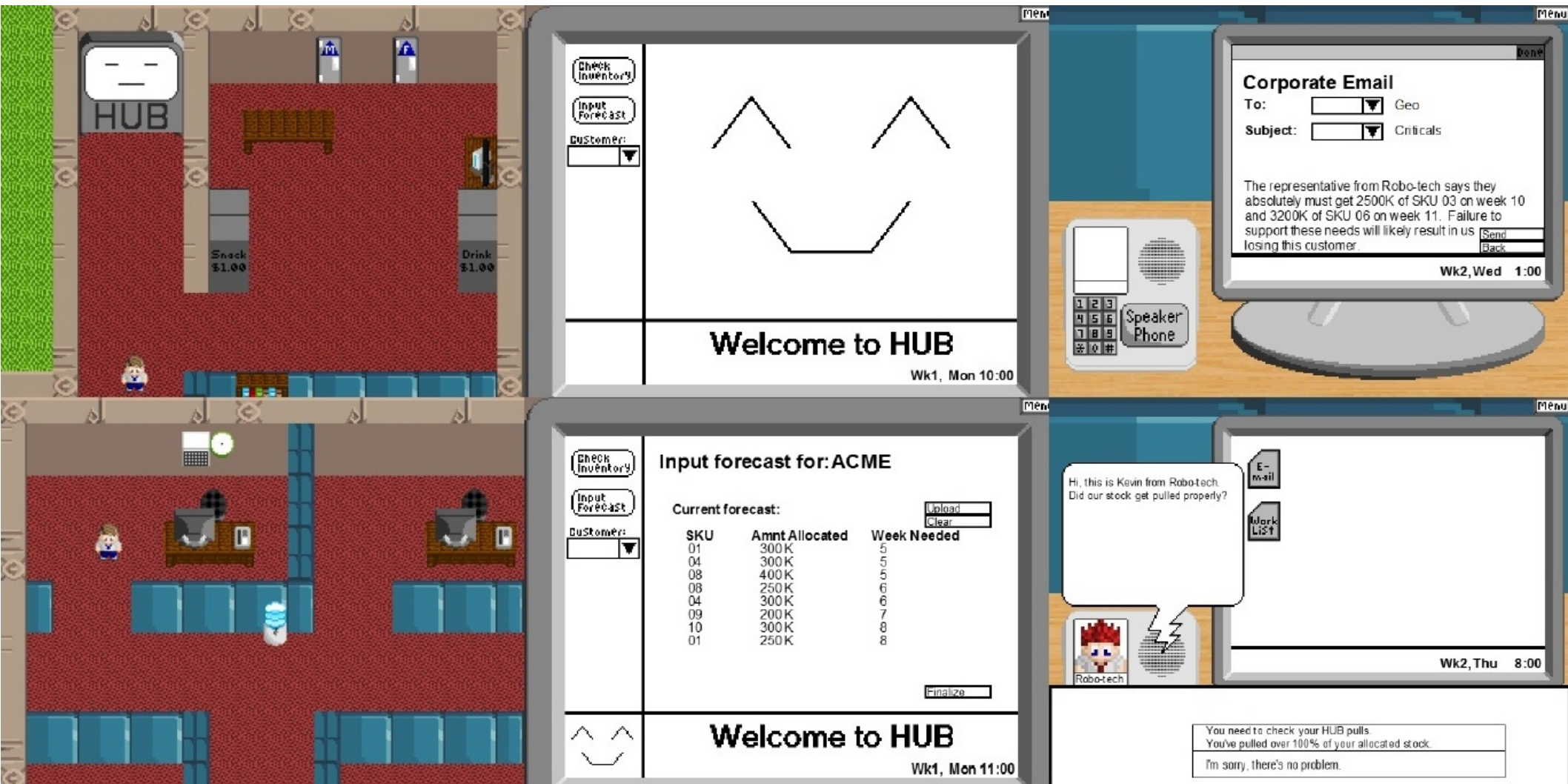


FabLab Demo Reel

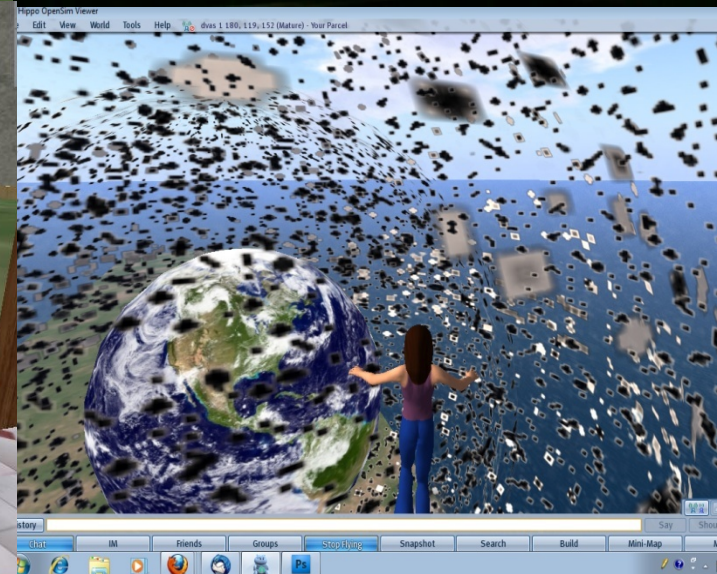
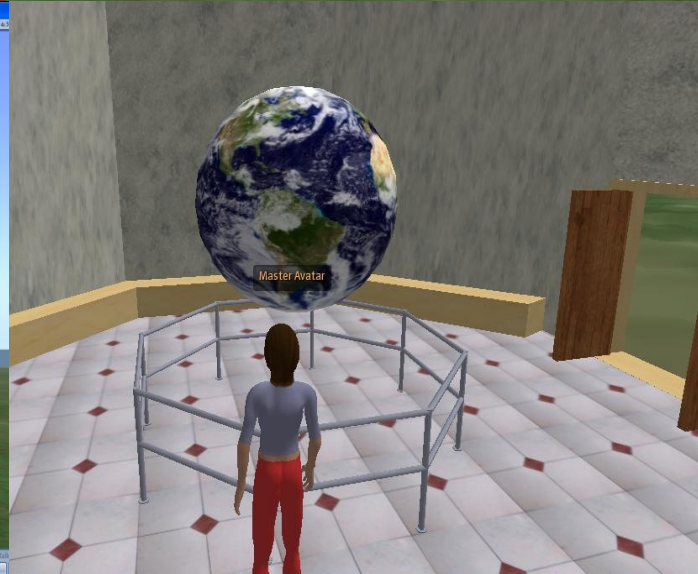
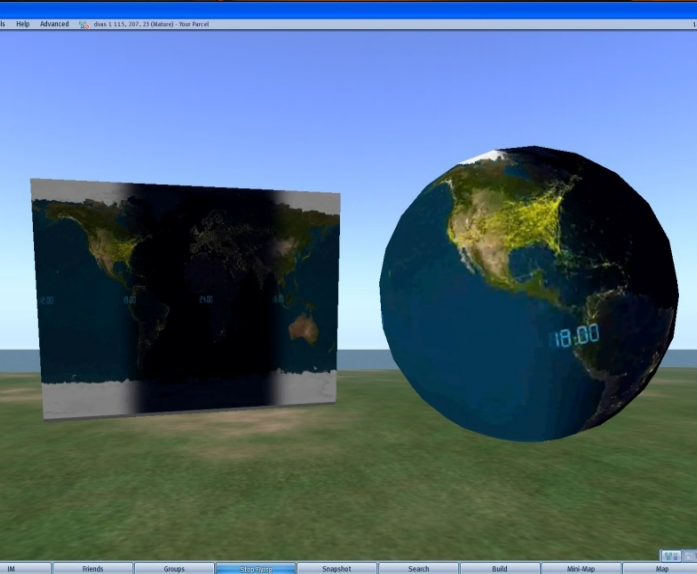
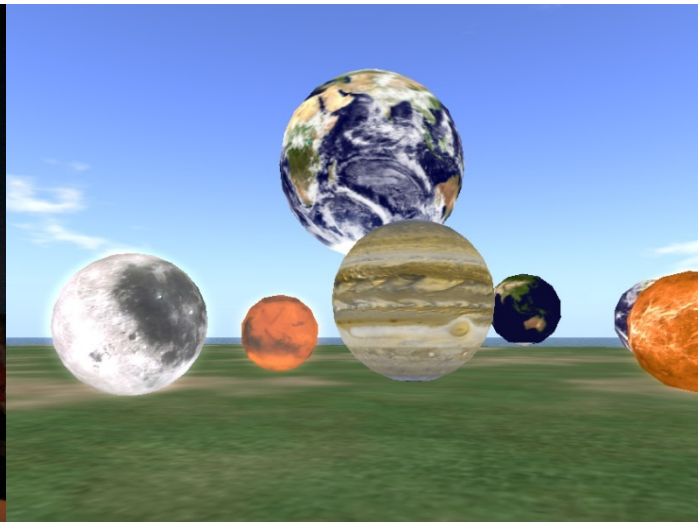
Semiconductor fabrication training: gowning processes



Order management training system game implemented using low-cost, rapid micro-development cycle



Prototype virtual world for space science games interoperating with *NOAA Science on a Sphere* systems using *Opensim* VW platform



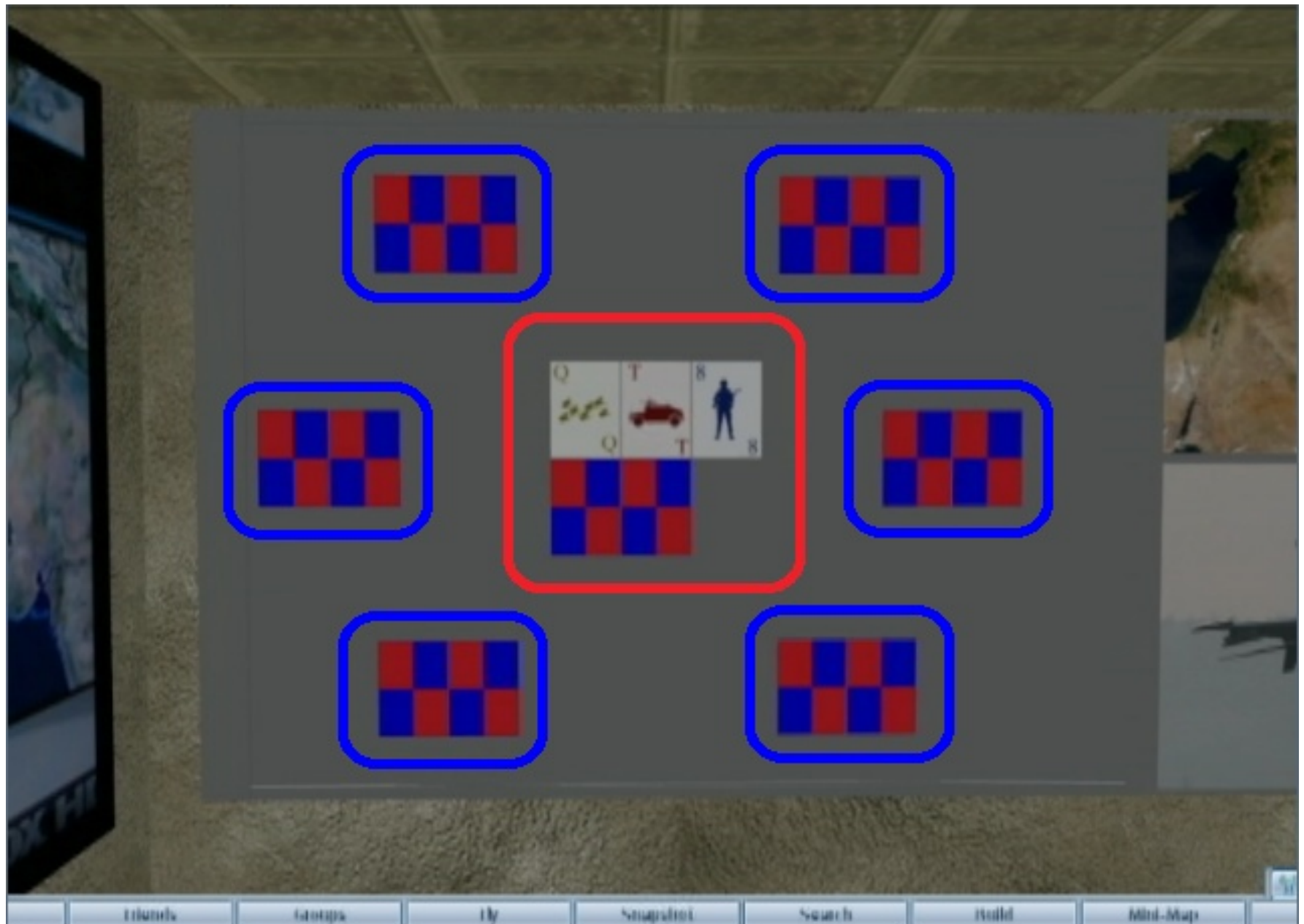
Conventional Command and Control (C2) facility for mission management



Modible game-based virtual world for mission management game play studies



- C2 mission management game: situation awareness with uncertain actions and assets by competitors (aka, *Texas Hold'em*)



C2 mission management: play testing incremental resource allocation with shifting uncertainty and outcomes



Lessons Learned (1)

- Understand enterprise problem domain
 - Actor roles, process flows, resources consumed and produced, IT/tools used
- Understand modifiable games
 - Game levels as enterprise settings
 - Repurpose/remix game play mechanics, event triggers, event types, etc. as domain constructs
- Identify and map enterprise domain constructs to game mod constructs
 - *Magic* happens here!

Lessons Learned (2)

- Modding is a compelling method for rapid prototyping enterprise processes and practices
 - Useful for eliciting user/customer feedback and identifying refinements through experimentation
- Game mods may need to be integrated with other extant (legacy) enterprise IT systems and problem domains
 - Not all modifiable games provide open APIs to integrate or interoperate with external applications
- Sustainable solutions require new game development using commercially licensed game software development kits
 - *Unity, Unreal Development Kit, etc.*

For further information

[Game-Based Virtual Worlds as Decentralized Virtual Activity Systems](#), in W.S. Bainbridge (ed.), *Online Worlds: Convergence of the Real and the Virtual*, Springer, New York, 225-236, 2010.

[Modding as an Open Source Approach to Extending Computer Game Systems](#), in S. Hissam, B. Russo, M.G. de Mendonca Neto, and F. Kan (Eds.), *Open Source Systems: Grounding Research, Proc. 7th. IFIP Intern. Conf. Open Source Systems*, 62-74, IFIP ACIT 365, Salvador, Brazil, October 2011.

[Computer Game Mods, Modders, Modding, and the Mod Scene](#), *First Monday*, 15(5), May 2010.

[Collaborative Game Environments for Informal Science Education: DinoQuest and DinoQuest Online](#), (with R. Nideffer and J. Adams), *IEEE Conf. Collaboration Technology and Systems*, (CTS 2008), Irvine, CA 229-236, May 2008

Acknowledgements

Recent collaborators:

- Craig Brown, Garnet Hertz, Robert Nideffer, Kari Nies, Alex Szeto and others at the UCI Institute for Software Research
- Eduardo Gamez, Eleanor Wynn, and others at Intel
- UCI Video Game Developers Club (students)

Research funding support (No endorsement implied):

- National Science Foundation: Grants #0808783 and #1041918
- Intel
- Center for the Edge, Naval Postgraduate School, Grant #N00244-10-1-0064
- Northrop Grumman Information Systems