

Game-Based Virtual Worlds: Research, Development and Deployment Projects at UCI

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Center for Computer Games and Virtual Worlds

<http://cgvw.ics.uci.edu>

University of California, Irvine

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Motivation

What are we doing?

- Empirical research and technology prototyping of CGVWs that support challenge problems in science, health care, energy, environmental, and defense studies

Why are we doing this?

- CGVWs are both *technology* and *new media*
 - this represents a new opportunity area for research and innovation
- Enable immersive and transformative experiences that facilitate learning through R&D and Play
- Engage new students and emerging scholars

Collaborators

Faculty

– Thomas Alspaugh, Yunan Chen, Andre van der Hoek, Alfred Kobsa, Crista Lopes, Gloria Mark, Bonni Nardi, Robert Nideffer

Post-Doctoral Scholars

– Hazel Asuncion (UWash), Garnet Hertz (UCI), Chris Jensen (Google)

Research Staff

– Yuzo Kanomata, Kari Nies, Alex Szeto

External Partners

– Aerospace Corp., Discovery Science Center, EON Reality Inc., Intel Research, Naval Postgraduate School, Northrop-Grumman, Panasonic Shikoku Electronics, San Francisco Symphony, UCI Calit2, UCI Video Game Developers Club.

Empirical Research Problems

- Cooperation, coordination, and collaboration within and through GBVW
- Development, evolution, innovation, modding
- Learning and organizational transformation
- Permeability of physical-virtual system boundaries
- Privacy, security (Intellectual Property), trust

Scacchi, W., Kobsa, A., Lopes, C., Mark, G., Nardi, B., Redmiles, D., & Taylor, R. N. (2008). *Decentralized virtual activities and technologies: A socio-technical perspective* Institute for Software Research Report, UCI-ISR-08-04, December.

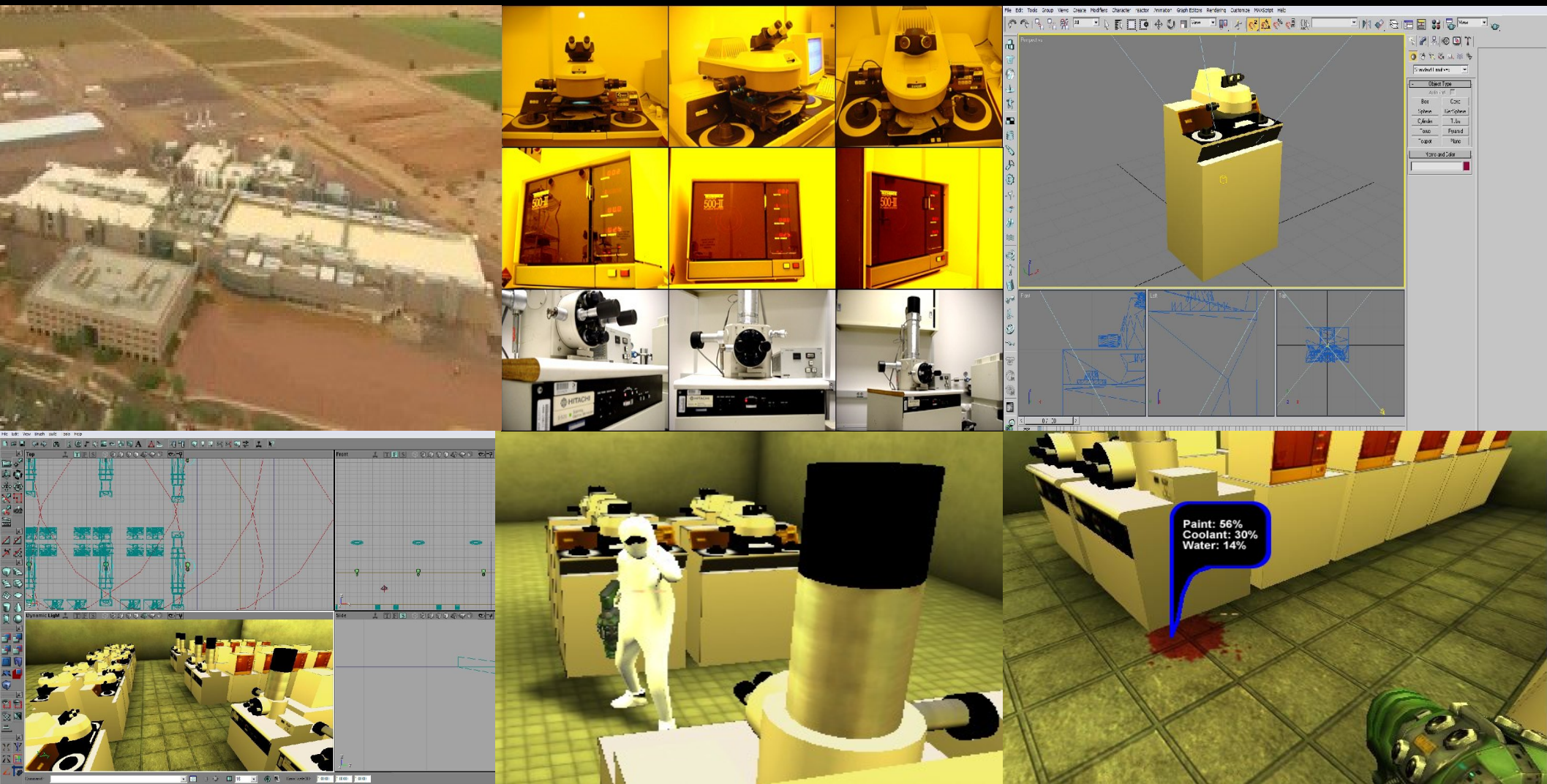
Web-based science learning games for informal science education for K-6 students and families



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

Scacchi, W., Nideffer, R. and Adams, J. (2008), *A Collaborative Science Learning Game Environment for Informal Science Education*, in *New Frontiers for Entertainment Computing*; P. Ciancarini, R. Nakatsu, M. Rauterberg, M. Roccetti (Eds.); Boston: Springer, 71–82.

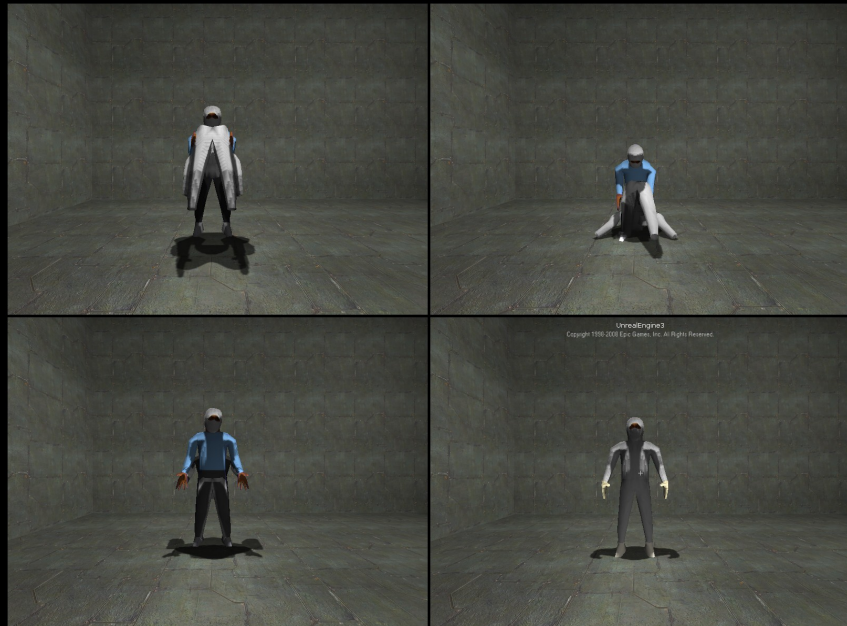
Semiconductor/nanotechnology fabrication training game



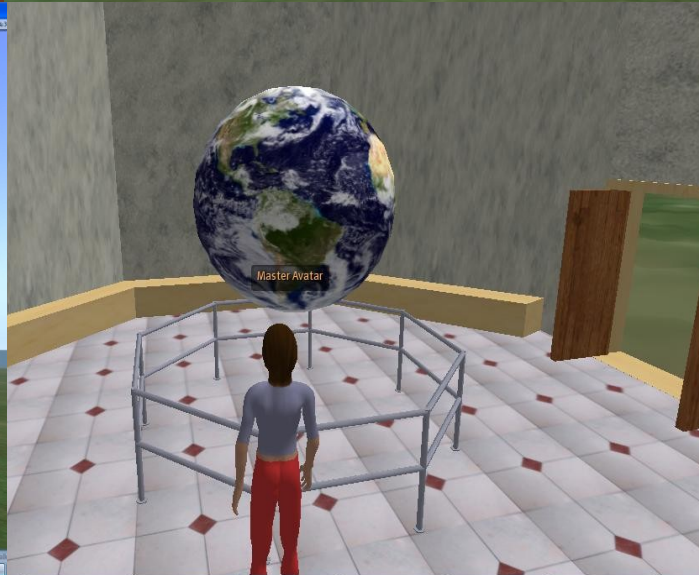
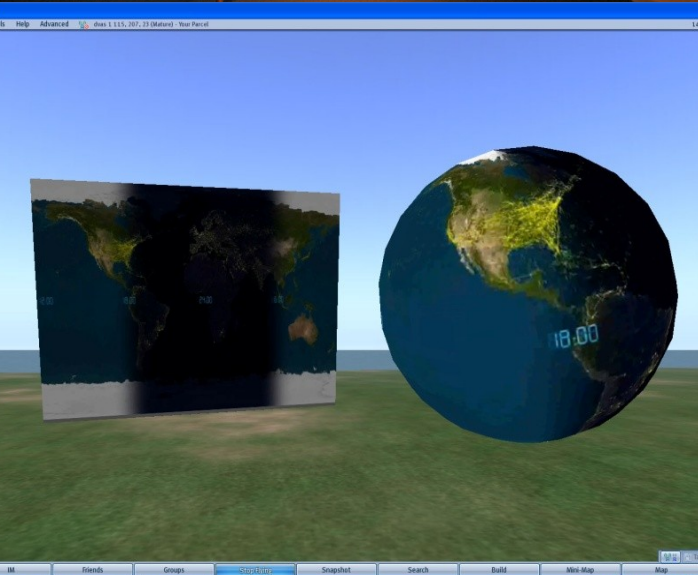
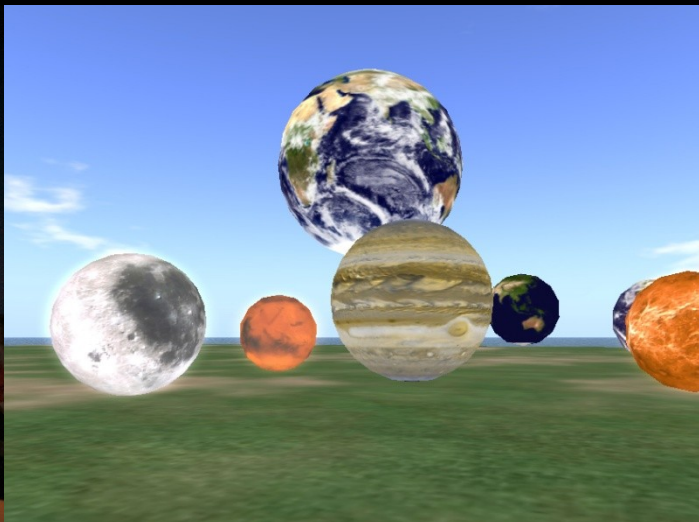
FabLab Demo Reel

Scacchi, W. (2010). [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.

Semiconductor/nanotechnology fabrication training game



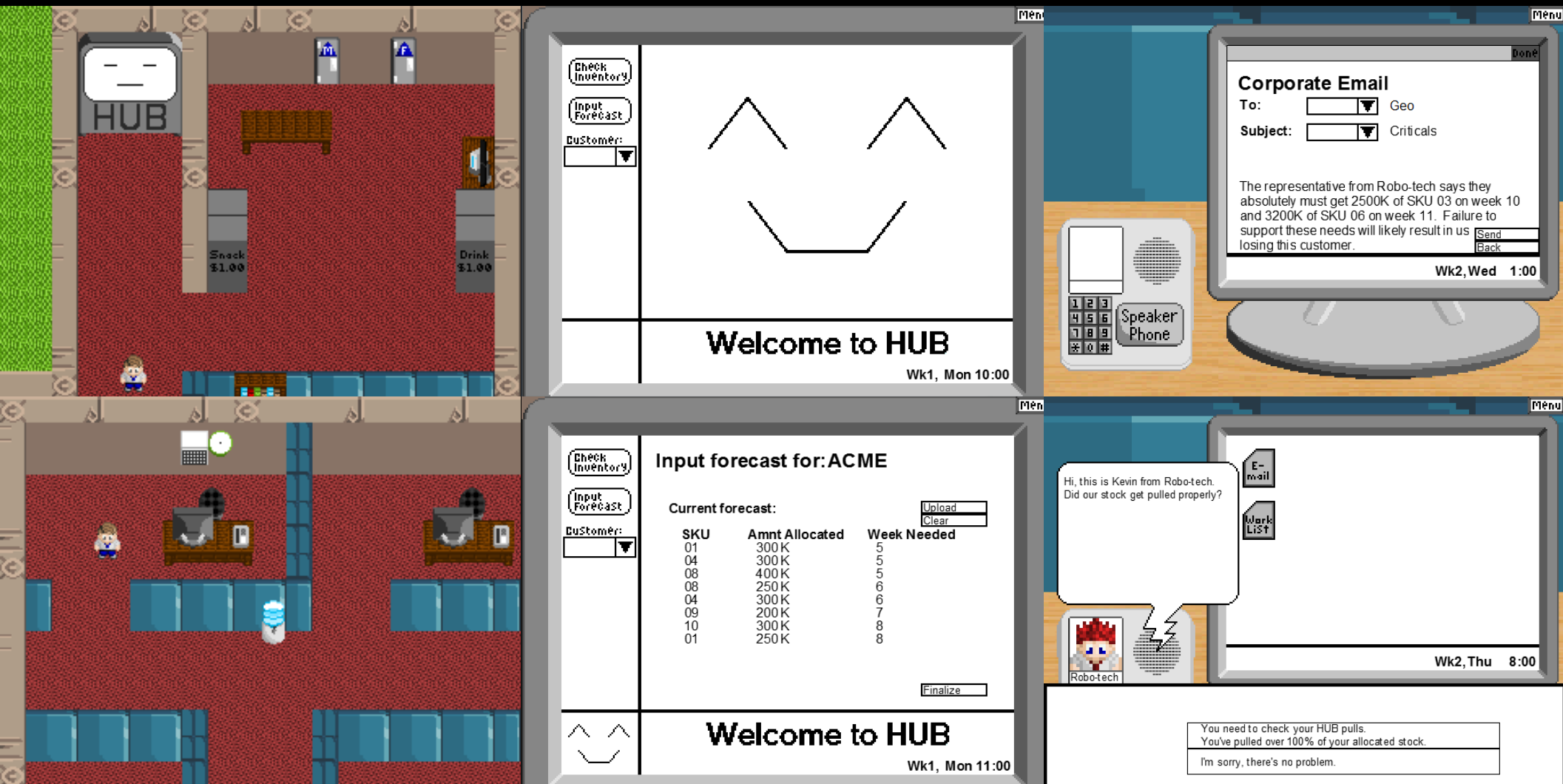
Planetary science data visualization and “spherescasting” support: *NOAA Science on a Sphere* installation in *Opensim* VW platform



VW for experimental studies in decentralized command and control centers



CBA: Customer relations training system implemented using low-cost, rapid micro-development cycle



2D, side-scrolling, *World of Warcraft* inspired, role-playing game and CGVW development/modding kit

Aoedipus.net



Game-based VW incorporating real-world news feeds and geopolitically located Twitter feeds



Game-based VW simulator interfaces for immersive motorsports racing experiences



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

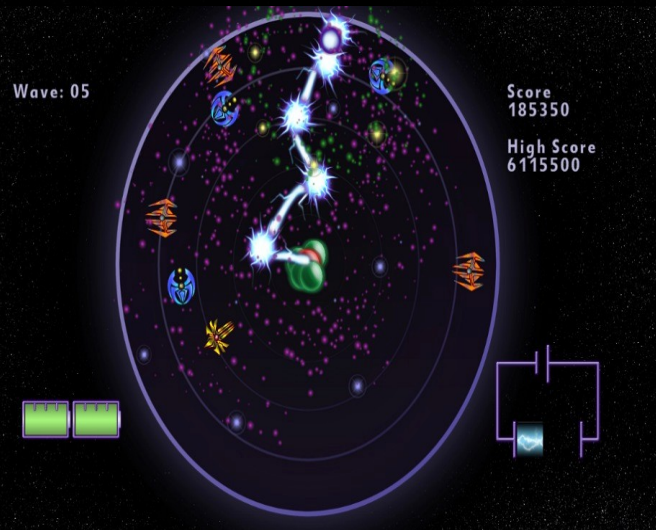


<http://www.conceptlab.com/outrun>

CGVW Laboratory and experimental game devices



Computer games developed by UCI undergraduates



Selected research findings and results

- W. Scacchi, *et al.* (2011). *The Future of Research and Challenges in Computer Games and Virtual Worlds*, Final Report, Institute for Software Research, (to appear).

<http://www.isr.uci.edu/~wscacchi/GameLab/CGVW-Workshop-FinalReport.pdf>

Future opportunities for games and virtual worlds

- Key challenges to address or overcome -- *scale and scope of:*
 - Immersion
 - Verisimilitude
 - Within worlds
 - Spanning physical-virtual worlds
 - (Deleting the) boundaries between collaborative *work* and *play*
 - Relocatability (telepresence)
 - GBVW as decentralized virtual organizations

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