Bruce D. Campbell

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Research Overview
Research into effective information science, computer science and visualization tools to support collaborative group processes for science and industry. Promotion of distributed cognition effectiveness through shared artifacts, objects, and computer-mediated social processes.

Education
Ph.D., Systems Engineering, University of Washington, 2010.
Adapting Simulation Environments for Emergency Response Planning and Training.
Researched effective graphical interfaces and simulated game play for improving insight and understanding in emergency response operations for a county-wide hospital evacuation scenario.

M.S., Computer Science, Rensselaer Polytechnic Institute, 1997.
3D Collaborative Multiuser Worlds for the Internet

M.S., Information Science, University of Wisconsin, 1990.
No Thesis Option via Wisconsin Alumni Research Foundation Fellowship

B.S., Accounting, University of Delaware, *summa cum laude*, 1985.
Research in Effective International Constant Dollars Accounting Methods

Experience
Faculty, Rhode Island School of Design, 2007 to Present
Consultant, Bruce Donald Campbell, 2007 to Present
Research Scientist and Lecturer, University of Washington, 1997 to 2007
Research Associate, University of Washington, 1996
Project Manager, Travelers Insurance Company, 1990-1995
Public Accountant and Financial Analyst, Various Organizations, 1986-1990

Representative Projects

- Interactive web-based river network informatics pipeline for hydrology science support. Data manipulation using Python to feed HTML5/JavaScript informatics and visual analysis application.
- JavaScript front-end and PHP back-end for a WAMP stack port from .NET/SQL server for marketing department of large multiple-location organization.
- Real-time global visualization platform for considering emergency response scenarios, with an emphasis on visual planning and training tools to support group activities.
- Developed computing infrastructure and software for a new government funded regional visual analytics research center.
- Lead architect for development of an agent-based simulation environment (*RimSim*) for improving distributed cognition among first responder jurisdictions to major natural crises events around the Pacific Rim.
- Lead architect and developer of an Earth Sciences data visualization pipeline consisting of six components (data acquisition, metadata encoding, datastream transport, visualization pipeline, desktop exploration products, advanced classroom exploratory interfaces).
- Interface developer for a physical soil and vegetation hydrology modeling software (DHSVM 2) to provide a Web interface for model set up and scenario run from Internet-connected clients.
- Transition team for spin-off human interface technology laboratory in New Zealand (six-month

consulting).

- Virtual worlds applications development:

  - Virtual Endeavor World - an interactive 3-D virtual environment for education on undersea tectonic plate spreading center habitats.

  - Virtual Big Beef Creek - an interactive 3-D virtual environment for exploring geography, ground water issues, salmon habitat and land use.

  - Virtual Anatomy Lab - an interactive 3-D virtual environment for exploring gross human anatomy.

  - Virtual Playground - an architecture for scalable, rapidly produced, on-line, 3-D meeting spaces.

- Worked with in-browser 3-D virtual world development for the Meet3D software platform. Participated in OWorld virtual platform architecture development with occasional proof-of-concept implementations, including promotion of Adobe's Atmosphere product that adopted Meet3D architecture.

- Designed and directed a distributed database project performing work load analysis for six field offices across the United States.
- Designed and coordinated a groupware project connecting lead underwriters in 24 commercial lines field offices across the United States to discuss risk management issues in pursuing new markets.

Representative Publications

12. Campbell, B. D., Samsel, F. (2015), "Pursuing Value in Art-Science Collaborations", I*EEE Computer Graphics and Applications*, vol. 35, no. 1, 2015, pp. 6–11.

11. Campbell, B. D., Storemer, M. (2012), The Watersheds Project: Community-based Modeling to Support Watershed Quality, in proceedings of the *8th International Aquarium Congress*, Cape Town, South Africa, Sept 9-13.

10. Campbell, B. D., Weaver, C. E. (2011), RimSim Response Hospital Evacuation: Improving Situation Awareness and Insight through Serious Games Play and Analysis, *International Journal of Information Systems for Crisis Response and Management*, 3(3), pp. 1-15

9. Campbell, B. D., Schroder, K. E., Weaver, C. A. (2010), RimSim Visualization: An Interactive Tool for Post-event Sense Making of a First Response Effort, In Proceedings of the *7th International Conference on Information Systems for Crisis Response and Management*, ISCRAM 2010, Seattle, WA, May 2-5.

8. Campbell, B. D., Schroder, K. E. (2009), Training for emergency response with RimSim:Response!, In Proceedings of the *2009 SPIE Defense, Security + Sensing Conference*, Orlando, FL, Apr 13-17.

7. Campbell, B. D., Mott, W. F., (2008) Personal Connection to the Ocean Via On-line Interactive Experiences, In Proceedings of the *7th International Aquarium Congress*, Shanghai, China, Oct 19-24.

6. B. Campbell, O. Mete, T. Furness, S. Weghorst, Z. Zabinsky (2008), "Emergency Response Planning and Training through Interactive Simulation and Visualization with Decision Support", *2008 IEEE International Conference on Technologies for Homeland Security*, Boston, MA, May 22-24.

5. Thanapakpawin, P., Richey, J., Thomas, D., Rodda, S., Campbell, B., Logsdon, M. (2007), Effects of landuse change on the hydrologic regime of the Mae Chaem river basin, NW Thailand, *Journal of Hydrology* 334:2, pp. 215-230 (February).

4. Kiyokawa, K.; Billinghurst, M.; Campbell, B.; Woods, Eric.; (2003), "An Occlusion-Capable Optical See-through Head Mount Display for Supporting Co-located Collaboration", In Proceedings of the I*nternational Symposium on Mixed and Augmented Reality*, Tokyo, Japan, October 8-10.

3. Campbell, B., Collins, P., Hadaway, H., Hedley, N. and Stoermer, M. (2002). “Web3D in Ocean Science Learning Environments: Virtual Big Beef Creek”, In Proceedings of the *2002 Web3D Symposium,* pp. 85-91., Tempe, AZ, Feb 24-28.

2. Campbell, B.; Rosse, C.; Brinkley, J.F (2001), “The Virtual Anatomy Lab: A Hands-on Anatomy Learning Environment”, In Proceedings of the *Medicine Meets Virtual Reality (MMVR2001) Conference*, Newport Beach, CA, January 22-24.

1. Schwartz, P., Bricker, L., Campbell, B., Furness, T., Inkpen, K., Matheson, L., Nakamura, N., Shen, L., Tanney, S., and Yen, S. (1998), “Virtual Playground: Architectures for a Shared Virtual World”, In the ACM Proceedings of the *Virtual Reality Software and Technology (VRST) Conference*, Taipei, Taiwan, November 2, 1998.