



### **Don Brutzman**

Don Brutzman is Technical Director for 3D Visual Simulation and Networked Virtual Environments in the MOVES Institute. As an Associate Professor at the Naval Postgraduate School in Monterey California, he is a member of two Academic Groups: Undersea Warfare (UW) and Modeling, Virtual Environments and Simulation (MOVES). He is an investigator in the NPS Center for Autonomous Underwater Vehicle (AUV) Research. His research interests include underwater robotics, real-time 3D computer graphics, artificial intelligence and high-performance networking. He is a member of the Institute of Electrical and Electronic Engineers (IEEE), the Association for Computing Machinery (ACM) Special Interest Group on Graphics (SIGGRAPH) and the American Association for Artificial Intelligence (AAAI).

Professor Brutzman is a founding member of the non-profit Web3D Consortium Board of Directors. He represents Web3D as the Advisory Committee Representative to the World Wide Web Consortium (W3C). Together with research associate Don McGregor, he designed and developed the influential DIS-Java-VRML open-source implementation of the Distributed Interactive Simulation (DIS) protocol, thus enabling shared multi-user virtual worlds via regular Web browsers. Currently he leads the VRML 200x / Extensible 3D (X3D) Graphics Specification Task Group. X3D is the third-generation version of the Virtual Reality Modeling Language (VRML) international standard. He further directs development of the virtual reality transfer protocol (vrtp), designed to integrate the necessary network functionality (client, server, peer-to-peer multicast and network monitoring) for large-scale Web-based virtual environments.

Professor Brutzman is a board member of non-profit Sea Lab Monterey Bay, which is designing and building a youth-oriented year-round residential science camp. This partnership includes participation and support from over two-dozen research and educational institutions around Monterey Bay. He also leads the SIGGRAPH Online effort, which will record and publish over 100 hours of instructional video, papers and slidesets via Web-based multimedia distribution.

Dr. Brutzman is a retired submarine officer who has conducted testing of advanced capability underwater equipment. Current research work includes the development of underwater robot software, in combination with comprehensive virtual-world modeling of underwater hydrodynamics, sonar and robot hardware response. This physics-based virtual world development supports the Acoustic-Radio Interactive Exploratory Server (ARIES), a highly capable fourth-generation Autonomous Underwater Vehicle (AUV) designed, built and operated at NPS. In related work, he co-directs the Scenario Authoring and Visualization for Advanced Graphical Environments (SAVAGE) research project, which is modeling a joint amphibious raid and showing how 3D virtual environments can be automatically generated from operations orders. Together these many efforts will elevate interactive networked 3D graphics to become an open, first-class media type supporting science and education on the World Wide Web.

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