Visualization.

Imaging.

Computer Graphics.

Whatever term you use, the Application Visualization System (AVS) is now the worldwide standard for that spectacular industry. And now, AVS '93 puts The Magic of Science in your hands with spellbinding visualization power.

AVS '93 blends a masterful mix of workshops, tutorials, and lectures; mesmerizing panels and video reviews; plus entrancing exhibits. It's a wondrous world of visualization capabilities that make the magic of science work for you.

Join us for a spell. You'll see.

AVS '93, the 2nd Annual International AVS User Group Conference and Exhibition, is presented by the International AVS Center and the North Carolina Supercomputing Center (NCSC), a division of MCNC, in cooperation with the AVS Consortium. The AVS Consortium consists of Advanced Visual Systems Inc., CONVEX Computer Corporation, Digital Equipment Corporation, Hewlett-Packard Company, IBM, Kubota Pacific Company Inc., and SUN Microsystems Inc.

AVS '93 provides a one-of-a-kind, international forum for AVS users and developers to share information and exchange ideas for the advancement of AVS. The conference features technology-oriented exhibitions, tutorials, workshops, lectures, panels, and video screenings. Conference topic include computational chemistry, computational fluid dynamics, earth sciences, education and research, geographic information systems and remote sensing, image analysis, medical imaging, molecular modeling, oil and gas exploration, scientific visualization, structural analysis, and more.

Proceedings

MCNC publishes the proceedings volume for distribution to AVS '93 registrants at the conference. Extra copies can be purchased for $50 after the conference.

Program Committee

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Toledo, OH

General Track B Chair
STEPHEN FRANKLIN, University of California at Irvine, Office of Academic Computing, Irvine, CA

Sessions

Panels

Panelists offer candid and provocative discussion and debate on trends, controversies, and viewpoints in the visualization industry and address a broad range of AVS topics, including virtual reality, packet video, and education.

Lectures and Workshops

International experts from industry and academia present lectures and conduct hands-on workshops on emerging visualization techniques and AVS uses in such areas as medical imaging, molecular

modeling, geographic information systems, and chemistry.
Note: Workshops require basic AVS user knowledge.

AVS Video Review Theatre

The AVS Video Review Theatre showcases everyday examples of completed works and works in progress by AVS users from around the world. Questions and submissions should be forwarded to Steve Thorpe, NCSC, Post Office Box 12889, 3021 Cornwallis Road, Research Triangle Park, NC 27709-2889, telephone 919-248-1161,
email avs@ncsc.org.

Special-Focus Groups

Special-focus groups bring together people with mutual interests to meet, exchange ideas, and share and compare information on a wide variety of visualization topics.

Tutorials

Tutorials provide hands-on training by experts who offer beginning and basic courses on AVS use as well as how to use third-party, AVS-compatible software. Tutorials require basic knowledge of AVS except courses in the AVS Animator, the Geometry Viewer, the Network Editor, and the Overview of AVS 5.

Exhibition

The exhibition features technology-sharing demonstrations by the AVS Consortium members and other AVS product-related vendors and users. The exhibition is held Monday and Tuesday, May 24 and 25, from 11 a.m. to 3 p.m., and Wednesday, May 26, from 11 a.m. to 2 p.m. Exhibition admission is included as part of the AVS '93 registration fee. Tickets to attend only the exhibition may be purchased for $25 at the AVS '93 registration booth.

For additional information and a copy of the exhibitor prospectus, contact Ann Cadran, Conference Associate, MCNC, Post Office Box 12889, 3021 Cornwallis Road, Research Triangle Park, NC 27709
Telephone: 919-248-1432
Fax: 919-248-1445
Email: cadran@mcnc.org

Medical/ Biomedical and Image Synthesis

Chair: MARC KESSLER, University of Michigan Medical School,
Ann Arbor, MI

Lectures

Design and Simulation of 3-D Conformal Radiotherapy
Using AVS
(#ML9-1, 9 - 9:45 a.m. Monday)
MARC KESSLER, University of Michigan Medical School, Radiation Oncology,
Ann Arbor, MI

New Methods for Visualizing the Structure of Biological Molecules
(#ML10-1, 10 - 10:45 a.m. Monday)
DAN PEISACH, Brandeis University,
Waltham, MA

Visualizing Physiological Data
(#ML3-1, 3 - 3:45 p.m. Monday)
STEPHEN PRICE, Loma Linda University Medical Center, Loma Linda, CA

Interactive Data Exploration and Telecollaboration in Biomedicine Using AVS
(#ML4-1, 4 - 4:45 p.m. Monday) GUDRAN J. KLINKER, Cambridge Research Laboratory, Digital Equipment Corporation, Cambridge, MA

Hyperspectral Imaging Spectrometer Data Analysis Using AVS
(#TL9-1, 9 - 9:45 a.m. Tuesday)
JEFF COCHAND, TASC, Reading, MA
Visualization of Air Flow of a Rat's Nasal Airway Using AVS and FIDAP
(#TL10-1, 10 - 10:45 a.m. Tuesday)
JULIA S. KIMBELL, Chemical Industry Institute of Toxicology, Research Triangle Park, NC

Building Medical Imaging Applications Using Khoros Modules Ported into AVS
(#TL3-1, 3 - 3:45 p.m. Tuesday)
JOHN RASURE AND TOM SAUER,
The Khoros Group, University of New Mexico, Department of EECE,
Albuquerque, NM

AVS and Radiotherapy Treatment Planning
(#TL4-1, 4 - 4:45 p.m. Tuesday)
E. LOREN BUHLE JR., University of Pennsylvania, School of Medicine,
Philadelphia, PA

Holographic Display of
Medical Image Data

(#WL9-1, 9 - 9:45 a.m. Wednesday)
MICHAEL DALTON, Voxel,
Laguna Hills, CA

Simultaneous Usage of Homologous Points, Lines, and Planes for Optimal 3-D Linear Registration of Multimodality Imaging Data
(#WL10-1, 10 - 10:45 a.m. Wednesday)
GREGG LEICHTMAN, Cedars-Sinai Medical Center, The Laser Research Center, Los Angeles, CA

3-D Image Segmentation
in MR Images
(#WL2-1, 2 - 2:45 p.m. Wednesday)
LLOYD MYERS, University of Washington, School of Medicine, Department of Biological Structures, Seattle, WA

Workshop

Visualization and Analysis of Multidimensional Biomedical Images Using ANALYZE
(#MW9-1, 9 - 11:45 a.m. Monday; #MW2-1, 2 - 4:45 p.m. Monday; #TW9-1, 9 - 11:45 a.m. Tuesday; #TW2-1, 2 - 4:45 p.m. Tuesday; WW#9-1, 9 - 11:45 a.m. Wednesday;
#WW2-1, 2 - 4:45 p.m. Wednesday)
RICHARD ROBB AND DENNY HANSEN,
Mayo Clinic, Rochester, MN
Note: Basic AVS knowledge is required.

Earth Sciences

Chair:
THERESA RHYNE, Martin Marietta/
U.S. EPA Scientific Visualization Center, Research Triangle Park, NC

Lectures

Developing an AVS-Based Training Program for Environmental Researchers at the U.S. EPA
(#ML9-2, 9 - 9:45 a.m. Monday)
THERESA RHYNE, Martin Marietta/
U.S. EPA Scientific Visualization Center, Research Triangle Park, NC

Basin Modeling with AVS (#ML10-2, 10 - 10:45 a.m. Monday)
ANNETTE WALSH, Mobil Exploration and Producing Technical Center, Dallas, TX

Flood Plane Visualization for the Snake River Plain

(#ML3-2, 3 - 3:45 p.m. Monday)
L. ERIC GREENWADE, Visualization and Imaging Team, Idaho National Engineering Laboratory, Idaho Falls, ID

Circulation and Plume Tracking in the Massachusetts Bay
(#ML4-2, 4 - 4:45 p.m. Monday)
EVELYN WRIGHT AND RICHARD P. SIGNELL,
U.S. Geological Survey,
Woods Hole, MA

UAMworld: A User-Friendly Distributed Environment for Execution Analysis and Visualization of the Urban Airshed Model
(#TL9-2, 9 - 9:45 a.m. Tuesday)
STEVE CHALL, North Carolina Supercomputing Center,
Research Triangle Park, NC

The Weather on Jupiter
(#TL10-2, 10 - 10:45 a.m. Tuesday)
TIM DOWLING, Massachusetts Institute of Technology, Department of Earth, Atmosphere, and Planetary Science,
Cambridge, MA

Use of AVS in Meteorology
(#TL3-2, 3 - 3:45 p.m. Tuesday)
BILL BAUMAN, U.S. Air Force/ North Carolina State University,
Raleigh, NC

A User's Perspective of AVS in an Engineering Analysis Environment
(#TL4-2, 4 - 4:45 p.m. Tuesday)
MIKE GLASS, Sandia National Laboratories, Computational Fluid Dynamics, Albuquerque, NM

Airshed Photochemical Model
(#WL9-2, 9 - 9:45 a.m. Wednesday)
CARY MCGREGOR, California Air Resources Board, Sacramento, CA

Atmospheric Science Using AVS
(#WL10-2, 10 - 10:45 a.m. Wednesday)
PHILIP C. CHEN, Fujitsu America Inc., San Jose, CA

Visualizing the Influence of Building Projects in Environmentally Sensitive Areas
(#WL2-2, 2 - 2:45 p.m. Wednesday)
HARALD MAYER, Joanneum Research Institute for Information Systems,
Graz, Austria

Workshop

SurfCube
(#MW9-2, 9 - 11:45 a.m. Monday; #TW2-2, 2 - 4:45 p.m. Tuesday;
#WW9-2, 9 - 11:45 a.m. Wednesday)
TIM HAYS, Landmark Graphics,
Houston, TX
Note: Basic knowledge of AVS is required.

Geographic Information Systems (GIS) and Remote Sensing

Chair: CHUCK HANSEN, Los Alamos National Laboratory, Los Alamos, NM

Lectures

PAMAP-GIS in AVS
(#ML9-3, 9 - 9:45 a.m. Monday)
PAMAP Technologies Corporation,
Victoria, BC, Canada

Database System Management for the Sequoia Project Using Postgres and AVS
(#ML10-3, 10 - 10:45 a.m. Monday)
MIKE KOCHEVAR, Digital Equipment Corporation — Sequoia Project, San Diego Supercomputing Center,
La Jolla, CA

Natural Disaster Modeling in the Geological Sciences to Facilitate Public Policy Decision-Making
(#ML3-3, 3 - 3:45 p.m. Monday)
ERIC FROST; San Diego State University, Computer Imaging, Visualization, and Animation Center,
San Diego, CA

Building Remote Sensing Applications Using Khoros
Modules Ported into AVS
(#ML4-3, 4 - 4:45 p.m. Monday)
JOHN RASURE AND TOM SAUER,
The Khoros Group, University of New Mexico, Department of EECE,
Albuquerque, NM

GIS and Visualization
(#TL9-3, 9 - 9:45 a.m. Tuesday)
WILLIAM IVEY, North Carolina Supercomputing Center,
Research Triangle Park, NC

Parallel Processing Support for GIS
(#TL10-3, 10 - 10:45 a.m. Tuesday)
WOJTEK FURMANSKI,
Syracuse University, Syracuse, NY

Using AVS to Further NASA Space Science Research and Mission Planning
(#TL3-3, 3 - 3:45 p.m. Tuesday)
DAVID MCNABB, University of Maryland, Advanced Visualization Laboratory, College Park, MD

Environmental Use of a Laser Range Finder and AVS
(#TL4-3, 4 - 4:45 p.m. Tuesday)
DON JONES AND ERIN THORNTEN,
Battelle-Pacific Northwest Laboratory,
Richland, WA

Modeling with Artisan in AVS
(#WL9-3, 9 - 9:45 a.m. Wednesday)
MIKE BONNAIN, SET Technology,
Boulder, CO

On the Use of 3D in GIS Using AVS
(#WL10-3, 10 - 10:45 a.m. Wednesday)
JESSE DRIVER, Kubota Pacific, Santa Clara, CA

Workshop

GIS Visualization Using
PAMAP in AVS
(#MW2-2, 2 - 4:45 p.m. Monday; #TW9-2, 9 - 11:45 a.m. Tuesday;
#WW2-2, 2 - 4:45 p.m. Wednesday)
PAMAP Technologies Corporation,
Victoria, BC, Canada
Note: Basic AVS knowledge is required.

General A

Chair: TOM PALMER,
Cray Research/North Carolina Supercomputing Center,
Research Triangle Park, NC

Lectures

Sonification in AVS

(#ML9-4, 9 - 9:45 a.m. Monday)
BRIAN KAPLAN, Indiana University, Center for Innovative Computer Applications, Bloomington, IN

Visualization of a Simulation Catalog of Numerical Hydrodynamics
(#ML10-4, 10 - 10:45 a.m. Monday)
SHAWN MEHAN, University of North Carolina, Chapel Hill, NC

CLI Hints and Tips
(#ML3-4, 3 - 3:45 p.m. Monday)
HOWARD WATKINS, Intera Information Technologies Ltd., Abingdon, Oxon, United Kingdom

Distributed Methodologies for Animation Using AVS
(#ML4-4, 4 - 4:45 p.m. Monday)
LARRY DIAMOND, Schlumberger Laboratory for Computer Science,
Austin, TX

Experiences in Developing
AVS-Layered Applications
(#TL9-4, 9 - 9:45 a.m. Tuesday)
RALPH FOLZ, Sciviz — Scientific Visualization Associates Inc.,
Concord, MA

The Practical Use of AVS to Aid the Visualization of 3-D Semiconductor Device Simulation
(#TL10-4, 10 - 10:45 a.m. Tuesday)
Jonathan Cox, UNIVERSITY OF MANCHESTER, DEPARTMENT OF COMPUTER SCIENCE, MANCHESTER, UNITED KINGDOM

Optical Device Modeling: Debugging and Visualizing with AVS
(#TL3-4, 3 - 3:45 p.m. Tuesday)
PASCAL LANDI, Hoechst Celanese Corporation, Summit, NJ

Visualization on Massively Parallel Computers Using AVS
(#TL4-4, 4 - 4:45 p.m. Tuesday)
CHUCK HANSEN, Los Alamos National Laboratory, Advanced Computing Laboratory, Los Alamos, NM

AVS Functional Visualization: Extracting Algebraic Expressions from Distributed Numbers
(#WL9-4, 9 - 9:45 a.m. Wednesday)
RON KRIZ, Virginia Polytechnic Institute and State University, Blacksburg, VA

Interactive Simulations of Focus Wave Modes Using AVS
(#WL10-4,10 - 10:45 a.m. Wednesday)
JOHN SHALF, Virginia Polytechnic Institute and State University,
Blacksburg, VA

Finite Element Data Visualization Using UCD

(#WL2-4, 2 - 2:45 p.m. Wednesday)
LARRY SCHOOF, Sandia National Laboratories, Albuquerque, NM

Scientific Animation Tips-n-Tricks
(#WL3-4, 3 - 3:45 p.m. Wednesday)
CHRIS LANDRETH, North Carolina Supercomputing Center, Research Triangle Park, NC

Workshop

Importing Your Data into and Visualization Techniques for
AVS Data Formats
(#MW9-3, 9 - 11:45 a.m. Monday topic uses UCD data; #TW2-3,
2 - 4:45 p.m. Tuesday topic uses field data; #WW9-3, 9 - 11:45 a.m.
Wednesday topic uses chemistry data
MARY STEPHENSON AND JON VAGI,
North Carolina Supercomputing Center, Research Triangle Park, NC
Note: This workshop is designed for intermediate users and is not suitable for beginners.

Chemistry and Molecular Modeling

Chair: DOUGLAS SMITH, University of Toledo, Toledo, OH

Lectures

Quantum Chemistry Using the AVS Chemistry Viewer
(#ML9-5, 9 - 9:45 a.m. Monday)
DOUGLAS SMITH, University of Toledo, Department of Chemistry,
Toledo, OH

Using AVS as an Internal Design Tool: Prototyping Code for Future Versions of SPARTAN
(#ML10-5, 10 - 10:45 a.m. Monday)
JOE LEONARD, Wavefunction Inc.,
Irvine, CA

Visualizing Molecular Orbital Generated Dynamic Reaction Processes with AVS
(#ML3-5, 3 - 3:45 p.m. Monday)
GEORGE FAMINI, ERDEC, Aberdeen Proving Ground, Aberdeen, MD

AVS and CFD in the Chemical Process Industries
(#ML4-5, 4 - 4:45 p.m. Monday)
MICHAEL RANGITSCH, Dow Chemical USA, Plaquemine, LA

Precision Engineering Visualization with AVS
(#TL9-5, 9 - 9:45 a.m. Tuesday)
KEN FLURCHICK, North Carolina Supercomputing Center, Research Triangle Park, NC

SAVS: An Integrated Approach to Data Acquisition, Manipulation, and Visualization
(#TL10-5, 10 - 10:45 a.m. Tuesday)
Edward P. Szuszczewicz, SCIENCE APPLICATIONS INTERNATIONAL CORPORATION, MCLEAN, VA

AVS in Crystallography and Molecular Biology
(#TL3-5, 3 - 3:45 p.m. Tuesday)
LYNN TEN EYCK, University of California at San Diego, Department of Chemistry, La Jolla, CA

AVS for Molecular Modeling
(#TL4-5, 4 - 4:45 p.m. Tuesday)
MIKE PIQUE AND BRUCE DUNCAN,
The Scripps Research Institute, Department of Molecular Biology,
La Jolla, CA

AVS and the Naval
Research Laboratory
(#WL9-5, 9 - 9:45 a.m. Wednesday)
ROBERT ROSENBERG, Naval Research Laboratory, Washington, DC

Resin Transfer Mold Process Simulation Using AVS
(#WL10-5, 10 - 10:45 a.m. Wednesday)
DOUG MACRAE, Virginia Polytechnic Institute and State University, Blacksburg, VA

Workshops

Introduction to the
Chemistry Viewer
(#MW9-4, 9 - 11:45 a.m. Monday; #TW9-4, 9 - 11:45 a.m. Tuesday;
#WW9-4, 9 - 11:45 a.m. Wednesday)
UPUL OBEYSEKARE, Science and Visualization Laboratory, Naval Research Laboratory,
Washington, DC, and
MARK BENZEL,
Molecular Simulations Inc., Sunnyvale, CA
Note: Basic AVS knowledge is required.

Advanced Features of the Chemistry Viewer
(#MW2-4, 2 - 4:45 p.m. Monday; #TW2-4, 2 - 4:45 p.m. Tuesday;
#WW2-4, 2 - 4:45 p.m. Wednesday)
UPUL OBEYSEKARE, Science and Visualization Laboratory, Naval Research Laboratory, Washington, DC,
and MARK BENZEL, Molecular Simulations Inc., Sunnyvale, CA

Note: Basic AVS knowledge is required.

General B

Chair: STEPHEN FRANKLIN, University of California at Irvine, Office of Academic Computing, Irvine, CA

Lectures

IDL: The Interactive Data
Language for AVS
(#ML9-6, 9 - 9:45 a.m. Monday)
DAVID STERN, Research Systems Inc., Boulder, CO

Approaches to Interapplication Communications for AVS
(#ML10-6, 10 - 10:45 a.m. Monday)
DAVID MCNABB, University of Maryland, Advanced Visualization Laboratory, College Park, MD

Visual Correlation of Lightning Strikes and BT Alarms
(#ML3-6, 3 - 3:45 p.m. Monday)
GRAHAM WALKER, BT Laboratories, Visualization Systems Research, Martlesham Heath, Ipswich, United Kingdom

Visualization in Scientific Computing: Uses in University Education
(#ML4-6, 4 - 4:45 p.m. Monday)
STEPHEN FRANKLIN, University of California at Irvine, Office of Academic Computing, Irvine, CA

Handling Very Large
Structural Models
(#TL9-6, 9 - 9:45 a.m. Tuesday)
KEITH REDNER, Sciviz — Scientific Visualization Associates Inc., Concord, MA

The Nature of Scientific Visualization
(#TL10-6, 10 - 10:45 a.m. Tuesday)
ALAN BARNUM-SCRIVENER, Advanced Visual Systems Inc., Laguna Hills, CA

Multidimensional Visualization with AVS Applied to Semiconductor Simulation
(#TL3-6, 3 - 3:45 p.m. Tuesday)
FRANKLIN BODINE, National Center for Computational Electronics, Beckman Institute, University of Illinois at Urbana-Champaign, Urbana, IL

Preserving Your Model Integrity
(#TL4-6, 4 - 4:45 p.m. Tuesday)
KEITH REDMAN, Sciviz — Scientific Visualization Associates Inc., Concord, MA

Dataflow Networks for Multilevel Simulation of Industrial Problems
(#WL9-6, 9 - 9:45 a.m. Wednesday)
MENG LEAN, XEROX Corporation, North Tarrytown, NY

Architecture of the AVS Kernel: Understanding How to Get Maximum Efficiency from Your Network
(#WL10-6, 10 - 10:45 a.m. Wednesday)
JEFF VROOM, Advanced Visual Systems Inc., Waltham, MA

Nondestructive Testing Using AVS
(#WL2-6, 2 - 2:45 p.m. Wednesday)
SUSAN B. WARMBRODT, Failure Analysis Associates, Inc., Menlo Park, CA

2nd Annual User Group Meeting
(#WL3-6, 3 - 3:45 p.m. Wednesday)
STEPHEN FRANKLIN, University of California, Office of Academic Computing, Irvine, CA

Workshop

IDL: The Interactive Data Language for AVS
(#MW2-3, 2 - 4:45 p.m. Monday; #TW9-3, 9 - 11:45 a.m. Tuesday; #WW2-3 2 - 4:45 p.m. Wednesday)
DAVID FANNING, Research Systems Inc., Boulder, CO
Note: Basic AVS knowledge is required.

Tutorials A

MAPLE5 and AVS
(#MT9-1, 9 - 9:45 a.m. Monday; #TT10-1, 10 - 10:45 a.m. Tuesday; #WT11-1, 11 - 11:45 a.m. Wednesday)
BENTON LEONG, Waterloo Maple Software, Waterloo, Ontario, Canada, and
Lyle Wiedeman, University of California at Irvine, Irvine, CA
Note: Basic AVS knowledge is required.

Image and Volume Data Processing Under AVS — Medical, MRI, GIS, Remote Sensing, and Oil and Gas Exploration
(#MT4-2, 4 - 4:45 p.m. Monday; #TT9-2, 9 - 9:45 a.m. Tuesday; #WT10-2, 10 - 10:45 a.m. Wednesday)
STEVE BONG AND BOB KING, Crystal Image Technologies, Huntsville, AL
Note: Basic AVS knowledge is required.

Theoretical Crystallography
with AVS
(#MT11-1, 11 - 11:45 a.m. Monday; #TT2-1, 2 - 2:45 p.m. Tuesday; #WT3-1, 3 - 3:45 p.m. Wednesday)

DON JONES AND ERIN THORNTEN, Battelle-Pacific Northwest Laboratory, Richland, WA
Note: Basic AVS knowledge is required.

The Rational Engineering Visualizer

(#MT2-1, 2 - 2:45 p.m. Monday; #TT3-1, 3 - 3:45 p.m. Tuesday; #WT4-1, 4 - 4:45 p.m. Wednesday)
KEITH REDNER, Sciviz — Scientific Visualization Associates Inc., Concord, MA
Note: Basic AVS knowledge is required.

Introduction to the AVS Animator

(#MT3-1, 3 - 3:45 p.m. Monday; #TT4-1, 4 - 4:45 p.m. Tuesday; #TT5-1, 5 - 5:45 p.m. Tuesday; #TT6-1, 6 - 6:45 p.m. Tuesday; #WT9-1, 9 -9:45 a.m. Wednesday)
HAM LORD, Advanced Visual Systems Inc., Waltham, MA

Mathematica and AVS

(#MT4-1, 4 - 4:45 p.m. Monday;
#TT9-1, 9 - 9:45 a.m. Tuesday; #WT10-1, 10 - 10:45 a.m. Wednesday)
MATHEMATICA, Wolfram Research Inc.,
Champaign, IL
Note: Basic AVS knowledge is required.

Introduction to the Geometry Viewer

(#TT5-2, 5 - 5:45 p.m. Tuesday; #TT6-2, 6 - 6:45 p.m. Tuesday)
KEN FLURCHICK, North Carolina Supercomputing Center, Research Triangle Park, NC

Tutorials B

Applications of AVS in the Earth Sciences at Oxford

(#MT9-2, 9 - 9:45 a.m. Monday; #TT10-2, 10 - 10:45 a.m. Tuesday; #WT11-2, 11 - 11:45 Wednesday)
KEITH REFSON, Oxford University, Department of Earth Sciences,
Oxford, United Kingdom
Note: Basic AVS knowledge is required.

Multipolarization Workstation (MPWS) Software

(#MT10-2, 10 - 10:45 a.m. Monday; #TT11-2, 11 - 11:45 a.m. Tuesday; #WT2-2, 2 - 2:45 Wednesday)
CHRIS WILLIS, GEC-Marconi Research Center, Gread Baddow, Chelmsford, Essex, United Kingdom
Note: Basic AVS knowledge is required.

Writing Code in C Using the AVS Module Generator

(#MT11-2, 11 - 11:45 a.m. Monday; #TT2-2, 2 - 2:45 p.m. Tuesday; #WT3-2, 3 - 3:45 p.m. Wednesday)

LARRY GELBERG, Advanced Visual Systems Inc., Waltham, MA
Note: Basic AVS knowledge is required.

Overview of AVS 5.0
(#MT2-2, 2 - 2:45 p.m. Monday; #TT3-2, 3 - 3:45 p.m. Tuesday; #WT9-2, 9 - 9:45 a.m. Wednesday)
HAM LORD OR LARRY GELBERG, Advanced Visual Systems Inc., Waltham, MA

Introduction to the Network Editor
(#MT3-2, 3 - 3:45 p.m Monday; #TT4-2, 4 - 4:45 p.m. Tuesday; #TT8-2, 8 - 8:45 a.m. Tuesday; #WT4-2,
4 - 4:45 p.m. Wednesday; #WT8-2,
8 - 8:45 a.m. Wednesday)
STEVE THORPE, International AVS Center/North Carolina Supercomputing Center, Research Triangle Park, NC

How to Visualize Your CFD Data Using AVS-FLOW
(#MT10-1, 10 - 10:45 a.m. Monday; #TT11-1, 11 - 11:45 a.m. Tuesday; #WT2-1,
2 - 2:45 p.m. Wednesday)
TARO ISHIGURO, ADAM NET LTD., Yushima, Bunkyo-ku, Tokyo, Japan
Note: Basic AVS knowledge is required.

AVS as an Educational and Instructional Tool
(#MP9-1, 9 - 9:45 a.m. Monday)
STEPHEN FRANKLIN, University of California at Irvine, Irvine, CA

Future Technology Needs for Medical Imaging
(#MP10-1, 10 - 10:45 a.m. Monday)
MARC KESSLER, University of Michigan Medical School, Radiation Oncology,
Ann Arbor, MI

Virtual Reality
(#MP11-1, 11 - 11:45 a.m. Monday)
DAVID BENNETT, International AVS Center/North Carolina Supercomputing Center, Research Triangle Park, NC

Data Management
(#MP2-1, 2 - 2:45 p.m. Monday)
TERRY MYERSON, North Carolina Supercomputing Center, Research Triangle Park, NC

Khoros: A Visual Software Development Environment

(#MP3-1, 3 - 3:45 p.m. Monday)
JOHN RASURE AND TOM SAUER,
The Khoros Group, University of New Mexico, Department of EECE,
Albuquerque, NM

Future Directions and
Features for AVS
(#MP4-1, 4 - 4:45 p.m. Monday)
Dave Kamins, Advanced Visual Systems Inc., Waltham, MA

Parallel Computing with AVS
(#TP9-1, 9 - 9:45 a.m. Tuesday)
TERRY MYERSON, North Carolina Supercomputing Center, Research Triangle Park, NC

Distributed Computing with AVS
(#TP10-1, 10 - 10:45 a.m. Tuesday)
TERRY MYERSON, North Carolina Supercomputing Center, Research Triangle Park, NC

Optimal Configurations for AVS Hardware
(#TP11-1, 11 - 11:45 a.m. Tuesday)
DAVID BENNETT, International AVS Center/North Carolina Supercomputing Center, Research Triangle Park, NC

AVS Developers and Porters Panel
(#TP2-1, 2 - 2:45 p.m. Tuesday)
STEVE THORPE, International AVS Center/North Carolina Supercomputing Center, Research Triangle Park, NC

Reception and Keynote Address

Because you'll need plenty of time to experience the many exciting attractions in the Lake Buena Vista area, AVS '93 presents only one evening of conference activities. From 5:15 to 7 p.m. on Monday, May 24, the AVS Gala Reception features a magnificent variety of appetizing hors d'oeuvres and canapes guaranteed to satisfy the most discriminating taste. The reception's focal point is the keynote address, from 5:45 - 6:15 p.m. At 7 p.m., activities move on to the first AVS Video Review Theatre.

Keynote Speaker is to be announced.

AVS Video Review Theatre

The AVS '93 Committee is collecting AVS user videos from around the world and assembling a review of users' most interesting work representing every discipline. This hour of AVS videos dramatically demonstrates how AVS is being used by others. To contribute work for this showing, contact Steve Thorpe, International AVS Center/North Carolina Supercomputing Center, Post Office

Box 12889, 3021 Cornwallis Road, Research Triangle Park, NC 27709-2889, telephone 919-248-1161, email avs@ncsc.org.

Advance Registration

The conference registration form at the back of this booklet (or a copy) should be used to subr advance registration for AVS '93. Early registrations postmarked on or before March 1, 1993, receive a $75 discount. The advance registration deadline is May 14. All registrations must be accompanied by payment. After May 14, 1993, registrations must be done on-site. The hands-on workshops and tutorials have limited space and may not be available to late registrants.

On-Site Registration

On-site registration is Sunday and Monday, May 23 and 24, from 7 a.m. to 5 p.m. at the WALT DISNEY WORLD DOLPHIN.

Conference staff will be available on-site at all times to assist attendees with questions. Late registrants may be put on waiting lists for workshops and tutorials.

Registration Discounts

Member Discount: Each AVS User Group member qualifies for a member discount.

Student Discount: To qualify for a student discount, a registrant must submit a copy of a current A or IEEE student membership card or a copy of a current student identification card.

Government Discount: To qualify for a government discount, a registrant must submit a copy of a current government identification card.

Nonprofit Discount: To qualify for a nonprofit discount, registrants must provide a copy of their organization's 501(c)(3) status from the IRS.

Payment

A check, money order, or valid MasterCard or Visa card authorization must accompany all registrations. Checks or money orders must be in U.S. funds drawn on U.S. banks and made payable to MCNC. Send payment and conference registration form to:

MCNC
Post Office Box 12889
3021 Cornwallis Road
Research Triangle Park
NC 27709-2889
USA
Attention:

Rebecca Gebuhr-McCloskey
Fax: 919-248-1445

Registration will not be accepted without payment.

The registration fee covers participation in all exhibits, all panels, all lectures, up to two tutorials and one workshop; one copy of the workshop proceedings; all registration materials; refreshments during breaks; AVS Video Review Theatre; and an evening reception with canapes and hors d'oeuvres. Tutorials and workshops are subject to availability due to limited seating and limited commitment o workstations. Attendees may participate in additional workshops and tutorials at the rate of $150 per workshop and $50 per tutorial. The first 200 registrants receive a complimentary AVS '93 mug. There is no reduced fee for attending only part of the conference.

Refunds

To receive a 100% refund, a written request must be received before May 1, 1993. Send wri requests to:

MCNC
Post Office Box 12889
3021 Cornwallis Road
Research Triangle Park
NC 27709-2889
USA
Attention:
Rebecca Gebuhr-McCloskey

No verbal requests for refunds will be accepted. No refunds will be issued after May 1, 1993.

Airline Information

Orlando International Airport accommodates most major airlines that serve the area surroundi the WALT DISNEY WORLD DOLPHIN. Service carriers include Delta, American, Bahamasair, British Airways, Continental, Iceland, KLM, Northwest, Sky Bus, Trump Shuttle, TWA, United, USAir, and Virgin Atlantic.

Local Transportation

The WALT DISNEY WORLD DOLPHIN is located at 1500 EPCOT Resorts Boulevard in Lake Buena Vista, two miles southwest of the Interstate 4 and State Route 536 intersection. Rental cars are available at Orlando International Airport. In addition, buses depart the airport for the WALT DISNE WORLD DOLPHIN every half hour with fares of $12.50 for adults and $9.50 for children ages 4-1 Taxi fare from the airport to the WALT DISNEY WORLD DOLPHIN is approximately $25.

WALT DISNEY WORLD DOLPHIN

All AVS '93 events are held at the WALT DISNEY WORLD DOLPHIN, a year-round resort in the center of the WALT DISNEY WORLD Resort between EPCOT Center and The Disney-MGM Studios Theme Park. The hotel is located near Typhoon Lagoon, Pleasure Island, and the MAGIC KINGDOM® Park. The WALT DISNEY WORLD DOLPHIN has seven restaurants and four lounges offering an extraordinary variety of American, Chinese, and Italian cuisine.

AVS '93 has a reserved block of discounted rooms at the WALT DISNEY WORLD DOLPHIN.

Daily rates for single or double: $130
Government, student, or nonprofit: $100 single, $120 double (current and valid identification m be presented to the hotel in order to receive these rates)
Extra-person charge per room: $15
Children under age 18: Free with parents (using existing bedding)
Sales tax: 6%
Resort tax: 4%
Check-in time: 3 p.m.
Check-out time: 11 a.m.
Payment: Personal checks, money orders, or valid credit card

Please make reservations directly with the WALT DISNEY WORLD DOLPHIN by sending in the hotel registration form in the back of this booklet, by fax at 407-934-4710, or by mail. Please indicate you affiliation with MCNC's International AVS User Group Conference and Exhibition.

Accommodations for Guests with Disabilities

The WALT DISNEY WORLD DOLPHIN has 43 accessible rooms designed for guests with limited mobility, including guests in wheelchairs. For more information on special-needs accommodations a the WALT DISNEY WORLD DOLPHIN, telephone 1-800-227-1500.

Spouse/Family Program

The WALT DISNEY WORLD DOLPHIN offers numerous services to assist guests with transportation and admission to a variety of attractions such as the EPCOT Center, Disney-MGM Studios Theme Park, Typhoon Lagoon, Pleasure Island, the MAGIC KINGDOM Park, River Country, and Discovery Island.

The WALT DISNEY WORLD DOLPHIN itself contains numerous boutiques and gift shops and features the following amenities.

Supervised youth programs
Game rooms
Health studio
Grotto pool
White-sand beach

Tennis courts
Volleyball courts
Sailboats and paddle boats
Nearby golf courses

Further details are available through the WALT DISNEY WORLD DOLPHIN reservations desk, telephone 1-800-227-1500.

Area Attractions

The seven theme lands of the WALT DISNEY WORLD Magic Kingdom Park are designed to bring out the child in everyone. Main Street U.S.A. is a re-creation of turn-of-the-century America. Adventureland features a jungle cruise and an encounter with pirates. Other areas are Frontierland, Liberty Square, Fantasyland, Tomorrowland, and Mickey's Starland. All feature theme rides and shov

The newest addition to the WALT DISNEY WORLD theme park family is the Disney-MGM Studios Theme Park. Visitors can stroll Hollywood Boulevard as it was in the magical '30s and '40s, and the take the fabulous Backstage Studio Tour with Catastrophe Canyon, a special effects adventure. The Magic of Disney Animation features a walk through the fascinating world of animation. Disney-MGM Studios Theme Park offers exciting opportunities to see actual movies and television shows being made, from filming to postproduction.

WALT DISNEY WORLD attractions also feature enough golf courses and tennis courts to challenge even the most accomplished athlete. And theme-oriented nightclubs create worlds of excitement to celebrate till dawn.

Questions?

Administrative questions regarding AVS '93 should be directed to Rebecca Gebuhr-McCloskey at 919-248-1841, email gebuhr@mcnc.org. Technical questions and questions about AVS User Group membership should be directed to David Bennett at 919-248-1182, email avs@ncsc.org. Exhibiti questions should be directed to Ann Cadran at 919-248-1432, email cadran@mcnc.org.
AVS Video Review Theatre questions should be directed to Steve Thorpe at 919-248-1161, email avs@ncsc.org.

2nd Annual International AVS User Group Conference & Exhibition

PLEASE PRINT OR TYPE.

Name ____

Organization ____

Address ____

City/State/Zip or postal code ____

Country ____________________ Email address ____________________

Telephone number ____________________ Fax Number ____________________

Course Selection

Advance registration is required for all lectures, tutorials, workshops, and panels in order to coordina
Space availability cannot be guaranteed at on-site registration. Tutorials and workshops are hands-on
knowledge of AVS. Exceptions are the Network Editor, AVS Animator, the Geometry Viewer, and the
5.0 tutorials.

Indicate course numbers in the appropriate time slots. Print clearly.

MONDAY	9:00 - 12:00	2:00 - 5:00
Workshops	[ ]	[ ]

MONDAY	9-9:45	10-10:45	11-11:45	2-2:45	3-3:45	4-4:45
Lectures	[ ]	[ ]			[ ]	[ ]
Tutorials	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Panels	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

TUESDAY	9:00 - 12:00	2:00 - 5:00
Workshops	[ ]	[ ]

TUESDAY	8-8:45	9-9:45	10-10:45	11-11:45	2-2:45	3-3:45	4-4:45	5-5:45
Lectures		[ ]	[ ]			[ ]	[ ]	
Tutorials	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
	6-6:45							
	[ ]							
Panels		[ ]	[ ]	[ ]	[ ]			

WEDNESDAY	9:00 - 12:00	2:00 - 5:00
Workshops	[ ]	[ ]

WEDNESDAY	8-8:45	9-9:45	10-10:45	11-11:45	2-2:45	3-3:45	4-4:45
Lectures		[ ]	[ ]		[ ]	[ ]	
Tutorials	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

The registration fee covers exhibits, panels, lectures, up to two tutorials and one workshop, one copy of the workshop proceedings, registration materials, refreshments during breaks, AVS Video Review Theatre, and an evening reception.

	Early Registration (postmarked on or before March 1, 1993)	After 3/1/93
AVS user group member	$495	$570
Nonmember	$545	$620
(You must provide a copy of current identification or documentation for the following categories.)		
Student/government/nonprofit member of AVS user group	$395	$470
Student/government/nonprofit nonmember	$445	$520
Each additional workshop (one included with base registration)	$150	$150
Each additional tutorial (two included with base registration fee)	$ 50	$ 50

Base registration fee $__________

Additional workshops (each @ $150)

$__________

Additional tutorials (each @ $ 50)

$__________

TOTAL $__________

Please fax or mail your registration form. Make fees payable to MCNC by check, money order, MasterCard, or Visa. Checks must be in U.S. dollars and drawn on U.S. banks. Telephone registrations will not be accepted. Faxed registrations must include credit card numbers and signatures. The deadl for advance registration is May 14, 1993. After May 14, 1993, you must register on site. MCNC cannot responsible for or confirm registrations mailed after this date.

Check ☐ MasterCard ☐ Visa ☐ Credit card number ____________________

Amount $________________

Name as it appears on credit card __________________________ Expiration date_______

Authorized signature (required) ____

Cancellation/Refund Policy

Written cancellations received before May 1, 1993, will receive full refund of conference registration fee.

Complete and return this form with your payment to

MCNC

Post Office Box 12889 3021 Cornwallis Road

Research Triangle Park, North Carolina 27709-2889 USA

Phone 919-248-1841 Fax 919-248-1445

Attention: Rebecca Gebuhr-McCloskey

KEEP A COPY FOR YOUR RECORDS.

AVS '93

2nd Annual International AVS User Group Conference and Exhibition

WALT DISNEY WORLD DOLPHIN

1500 EPCOT Resorts Boulevard

Post Office Box 22653

Lake Buena Vista, FL 32830-2653

407-934-4290

Please type or print all information.

Name ____

Organization ____

Address ____________________________________ Mail Stop ______________

City ____________________________________ State ________________________

Zip ________________________________ Country ________________________

Telephone # __________________________ Fax # __________________________

Arrival date __________________________ Departure Date ____________________

(Check in 3 p.m.; check out 11 a.m.)

Room Fees (If selected room is unavailable, one at the nearest rate will be reserved. Rates are subje to 6% sales tax and 4% resort tax.) Published rates are applicable two days prior and two days aft the conference dates.

Student/government/nonprofit rate: $100 single, $120 double (Proper documentation must be presented for this category.)

Regular conference rate: $130 single/double

Room required ____

Sharing room with ____

Special requests ____

☐ Smoking ☐ Nonsmoking ☐ Accessible room

Payment

Enclosed is a check or money order for $_________

Credit card (circle one) MasterCard Visa American Express Diners Club

Enroute JOE Carte Blanche Discover

Credit card #____________________________________ for $______________

Credit card expiration date ____

Name as appears on credit card (please print)_________________________________

Signature of credit card holder ____

Conference rate applies only to reservations made up until April 20. Every effort will be made to confirm room selection. A deposit equal to one night's stay is required to hold a reservation. Failure to cancel a reservation five days prior to arrival results in forfeit of deposit. Reservations are subject to cancellatio deposit is not received. Extra-person charges are $15 per night. Children under 18 may stay at no cost w parents, provided no extra bedding is needed.

Complete and return this form with your payment or credit card authorization to WALT DISNEY WORLD DOLPHIN,1500 EPCOT Resorts Boulevard, Post Office Box 22653, Lake Buena Vista, FL 32830-265 Fax 407-934-4710. DO NOT SEND THIS FORM TO MCNC.