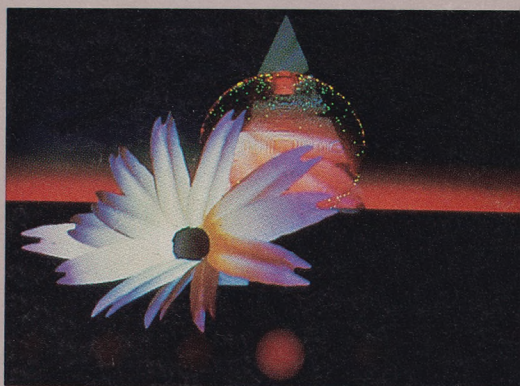


ACM SIGGRAPH 88

*15th Annual Conference
on Computer Graphics
and Interactive Techniques
Atlanta, Georgia
August 1-5, 1988*

*Sponsored by the
Association for Computing
Machinery's Special
Interest Group on
Computer Graphics in
cooperation with the
IEEE Technical Committee
on Computer Graphics.*

FINAL PROGRAM



1



2

TABLE OF CONTENTS

WELCOME TO SIGGRAPH '88	4
SIGGRAPH: THE ORGANIZATION	5
SIGGRAPH EXECUTIVE COMMITTEE	6
SIGGRAPH CONFERENCE PLANNING COMMITTEE	7
SIGGRAPH '88 CONFERENCE COMMITTEE	8
• <i>Technical Program Committee</i>	10
• <i>Panels Committee</i>	12
• <i>Courses Committee</i>	12
• <i>Film and Video Show Jury</i>	12
• <i>Art Show Jury</i>	13
• <i>Professional Support</i>	14
CONFERENCE-AT-A-GLANCE	16
CONFERENCE EVENTS	18
• <i>Technical Program</i>	18
• <i>Panels</i>	19
• <i>Courses</i>	20
• <i>Exhibition</i>	21
• <i>Exhibition Opening Ceremony</i>	21
• <i>Film and Video Show</i>	22
• <i>Art Show</i>	23
• <i>Social Functions</i>	24
• <i>Special Interest Groups</i>	25
• <i>SIGGRAPH Executive Committee Meeting</i>	29
GENERAL INFORMATION	30
• <i>Airline Information</i>	30
• <i>Audio/Visual Service</i>	30
• <i>Child Care</i>	30
• <i>Conference Hotels</i>	31
• <i>Conference Management Office</i>	32
• <i>Exhibition Management Office</i>	32
• <i>First Aid Office</i>	32
• <i>Foreign Currency Exchange</i>	32
• <i>Housing Assistance</i>	32
• <i>Information Counters</i>	32
• <i>Luggage Check</i>	33
• <i>Merchandise</i>	33
• <i>Message Center</i>	33
• <i>Press Briefing</i>	33
• <i>Press Rooms</i>	34
• <i>Registration</i>	34
• <i>Restaurant Information</i>	34
• <i>Shipping Desk</i>	35
• <i>SIGGRAPH Local Groups</i>	35
• <i>Slide Sets</i>	35
• <i>Smoking Policy</i>	35
• <i>Telephone Numbers</i>	35
• <i>Transportation</i>	35

FUNDAMENTALS SEMINAR	36
EDUCATORS WORKSHOP	37
COURSES-AT-A-GLANCE	38
COURSES	40
TECHNICAL PROGRAM-AT-A-GLANCE	68
TECHNICAL PROGRAM	70
EXHIBITORS	94
PRODUCT INDEX	174
EXHIBITS MAP	212
SIGGRAPH '89 CALL FOR PARTICIPATION	216
FUTURE CONFERENCES	234
ACKNOWLEDGEMENTS	235

LEGAL NOTICE

Electronic recording and/or reproduction for commercial purposes in all or part of any technical session, course or other presentation at an ACM SIGGRAPH-sponsored or co-sponsored conference is strictly prohibited without prior written consent of ACM and the speaker.

WELCOME TO SIGGRAPH '88

This is the Fifteenth Annual Conference on Computer Graphics and Interactive Techniques. The program this year reflects the long-term ACM SIGGRAPH policy that the conference present a snapshot of current activity throughout the vast breadth of research, development and applications in computer graphics.

A goal of ACM SIGGRAPH is that the annual conference be of interest to attendees with a variety of backgrounds. Thus the courses include introductory, intermediate and advanced sessions on many diverse subjects; the technical papers focus on research and innovative applications; the panel sessions treat subjects of particular current interest in a less formal way, emphasizing trends; the exhibits provide an opportunity to acquire a feeling for the vast range of graphics hardware, software and services now being marketed; and the birds-of-a-feather and special interest group meetings provide an opportunity for people with a common interest to gather and commune. The film and video show vividly demonstrates the aesthetic use of the hardware, software and algorithms discussed elsewhere in the conference and the art show presents the latest 2-D, 3-D, animated and interactive work of computer graphics artists from all over the world.

It is difficult to properly thank all of the people who worked so hard to make SIGGRAPH '88 happen. Our conference team of volunteers and professionals has cheerfully worked long hours for the past year and a half to make SIGGRAPH '88 a success as well as a memorable experience for our attendees. We'd like to express our appreciation to them, not only for their time and ideas, but also for their spirit of cooperation which made our jobs as co-chairs a pleasure.

The annual SIGGRAPH conference has grown spectacularly in 15 years. Nevertheless, the objective of SIGGRAPH '88 has not been growth, but quality. We hope that quality will be your overriding impression of this year's conference.

We're glad you're here to share with us at SIGGRAPH '88 the exciting new work of the past year.

SIGGRAPH '88 Co-chairs



Andrew C. Goodrich



Adele Newton

SIGGRAPH: THE ORGANIZATION

SIGGRAPH is the Association for Computing Machinery's Special Interest Group on Computer Graphics. Over the years SIGGRAPH has grown to become the world's premier computer graphics forum. Its 12,000 plus members include engineers, architects and planners, artists, animators and filmmakers, software and hardware developers and manufacturers, scientists, mathematicians and many other professionals leading the fields of computer graphics theory, design, implementation and interactive techniques.

In addition to meeting annually at the national conference, SIGGRAPH co-sponsors symposia, workshops and other conferences. These include symposia on small computers in the arts, computational geometry and user interface systems; a conference on document processing systems; interactive 3-D workshops; and a conference co-sponsored with SIGCHI, ACM's Special Interest Group on Computer and Human Interaction.

To promote interaction in local graphics communities, local groups have been formed throughout the world in the Bay Area, Chicago, Delaware Valley, Denver/Boulder, Los Angeles, Minneapolis/St. Paul, New England, New York, Phoenix, Princeton, Rochester, San Diego, Syracuse and Washington, D.C. In addition, SIGGRAPH chapters also are active in France, Lisbon, London and Milan.

ACM SIGGRAPH membership includes subscriptions to SIGGRAPH's publication *Computer Graphics* and as a special edition, the conference proceedings. Membership dues are \$20 for ACM members and associate members, \$12 for ACM student members and \$47 for non-ACM members.

Membership application requests should be addressed to:
Association for Computing Machinery
11 West 42nd Street
New York, NY 10036 USA
212/869-7440

SIGGRAPH EXECUTIVE COMMITTEE

CHAIR

Kellogg S. Booth
University of Waterloo

VICE-CHAIR FOR OPERATIONS

Bruce Eric Brown
Wang Laboratories, Inc.

VICE-CHAIR FOR CONFERENCE PLANNING

James J. Thomas
Battelle Pacific Northwest Laboratories

SECRETARY

Beverly Aquino
Kinetics Inc.

TREASURER

Richard L. Phillips
Los Alamos National Laboratory

PAST-CHAIR

Thomas A. DeFanti
University of Illinois at Chicago

EDITOR-IN-CHIEF

Richard J. Beach
Xerox PARC

DIRECTORS

Michael J. Bailey
Megatek Corporation

Christine A. Barton
Morgan Guaranty Trust Company

Donna Cox
National Center for Supercomputing Applications
University of Illinois—Art and Design

Stephan R. Keith
Sterling Federal Systems

Maureen Stone
Xerox PARC

SIGGRAPH CONFERENCE PLANNING COMMITTEE

James J. Thomas, Chair
Battelle Pacific Northwest Laboratories

Branko J. Gerovac
Digital Equipment Corporation

Andrew C. Goodrich
University of Michigan

Christopher F. Herot
Bitstream Inc.

David D. Loendorf
Los Alamos National Laboratory

Adele Newton
University of Waterloo

Jacqueline M. Wollner
Convex Computer Corporation

Robert J. Young
CAD/CAM Management Consultants

Conference Committees

CONFERENCE CO-CHAIRS

Andrew C. Goodrich
University of Michigan

Adele Newton
University of Waterloo

CONFERENCE COMMITTEE CHAIRS

TECHNICAL PROGRAM-PAPERS

John C. Dill
Simon Fraser University

PANELS

Richard L. Phillips
Los Alamos National Laboratory

COURSES

Michael J. Bailey
Megatek Corporation

EXHIBITS

Carol Byram
Cubicom Corporation

FILM AND VIDEO SHOW

Amie Slate
Cubicom Corporation

ART SHOW

Lucy Petrovich
University of Wisconsin

AUDIO/VISUAL

Michelle Amato
Northeastern University

Maria Palazzi
Rutgers State University-Camden

LOCAL ARRANGEMENTS

E. Jan Hurst
Milestones: The History of
Computer Graphics

MERCHANDISE

Brian Herzog
AT&T Conversant Systems

PUBLIC RELATIONS

B.J. Anderson
The Anderson Report

Conference Committees

REGISTRATION

Ines Hardtke
National Film Board of Canada

SLIDE SETS

Bruce Eric Brown
Wang Laboratories, Inc.

SPEAKER SLIDES

James A. Banister
TRW

SPECIAL INTEREST GROUPS

John E. French, Jr.
GeoQuest Systems, Inc.

STUDENT VOLUNTEERS

Eric G. Bosch
McMaster University Medical Centre

TREASURER

Steven M. Van Frank
Lynxys, Inc.

TECHNICAL PROGRAM CHAIR

John C. Dill

Simon Fraser University

TECHNICAL PROGRAM COMMITTEE

Alan H. Barr

California Institute of Technology

Richard H. Bartels

University of Waterloo

Richard J. Beach

Xerox PARC

Edwin E. Catmull

Pixar

Bernard Chazelle

Princeton University

Hank Christiansen

Brigham Young University

Robert L. Cook

Pixar

Tony D. DeRose

University of Washington

David P. Dobkin

Princeton University

Nick England

Sun Microsystems, Inc.

A. Robin Forrest

University of East Anglia

Alain Fournier

University of Toronto

Donald P. Greenberg

Cornell University

Doris Kochanek

National Film Board of Canada

Conference Committees

Jeffrey Lane
Digital Equipment Corporation

Dan R. Olsen, Jr.
Brigham Young University

Rob Pike
AT&T Bell Laboratories

Tom Sederberg
Brigham Young University

Turner Whitted
Numerical Design, Ltd.

Conference Committees

PANELS COMMITTEE

Christine A. Barton
Morgan Guaranty Trust Company

Sara A. Bly
Xerox PARC

James George
Mesa Graphics

Robert L. Judd
Los Alamos National Laboratory

Michael Keeler
Ardent Computer

David D. Loendorf
Los Alamos National Laboratory

Theodore Reed
Los Alamos National Laboratory

Diana Tuggle
Los Alamos National Laboratory

Manuel Vigil
Los Alamos National Laboratory

COURSES COMMITTEE

Area Coordinator
Sheldon Applegate
Interactive Computer Modelling, Inc.

Area Coordinator
Frank Bliss
Electronic Data Systems

Area Coordinator
Richard Ehlers
Evans and Sutherland

Course Notes Coordinator
Dave Nadeau
Megatek Corporation

FILM AND VIDEO SHOW JURY

Glenn Entis
Pacific Data Images

John Lasseter
Pixar

Jane Wilhelms
University of California, Santa Cruz

Larry Yeager
Apple Vivarium Project

ART SHOW JURY

INTERACTIVE

Patricia Harrison
School of the Art Institute

Sally Rosenthal
ELEKTRA Design Group

Dan Sadowski
MacroMind

Kathy Tanaka
Independent

Jane Veeder
Wavefront Technologies

2D/3D

Frank Dietrich
Silicon Graphics

Kenneth O'Connell
University of Oregon

Edward Pope
University of Wisconsin

PROFESSIONAL SUPPORT

ACM SIGGRAPH '88 CONFERENCE COORDINATOR

Linda Norton

ACM SIGGRAPH CONFERENCE COORDINATOR

Betsy Johnsmiller

ADMINISTRATIVE ASSISTANTS

Cheri Bailey, Courses

Lisa Fremont, Art Show

Ann Merchant, Technical Program

Betty Phillips, Panels

AUDIO/VISUAL MANAGEMENT

Audio Visual Headquarters Corporation

(An Eagle Trust PLC Company)

Jim Bartolomucci

Rich Farnham

Doug Hunt

George Miller

CONFERENCE ACCOUNTING

Smith, Bucklin & Associates, Inc.

Wes Christensen

Ruth Kerns

Leo Strock

CONFERENCE MANAGEMENT

Smith, Bucklin & Associates, Inc.

Susan Argenti

Joy Lee

Deidre Ross

Cynthia Stark

CONFERENCE TRAVEL AGENCY

Association Travel, Inc.

Becky Shapleigh

DECORATOR/DRAYAGE

Andrews-Bartlett & Associates, Inc.

Bob Borsz

Betty Fuller

Ken Gallagher

Barby Patronski

John Patronski

Conference Committees

EXHIBITION MANAGEMENT

Robert T. Kenworthy, Inc.

Hank Cronan

Barbara Voss

GRAPHIC DESIGN

The Watt Group

Teruya Harada

Jennifer Sirek

PROGRAM PRODUCTION

George Wong

PUBLIC RELATIONS

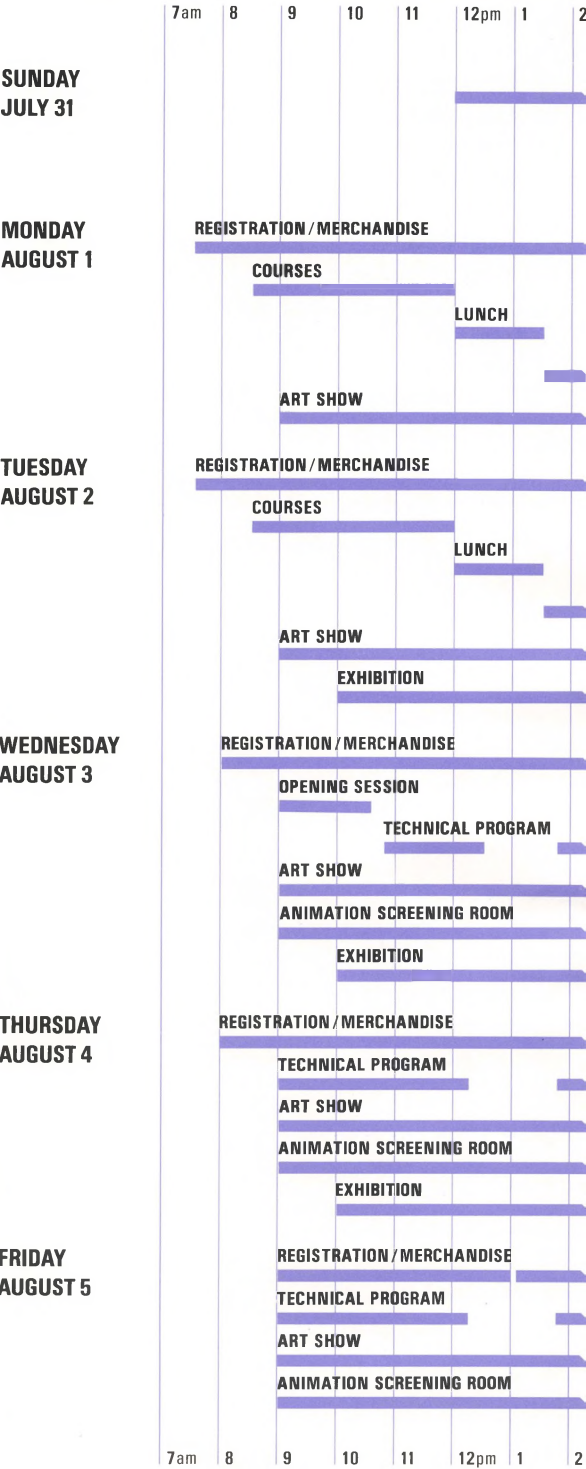
Smith, Bucklin & Associates, Inc.

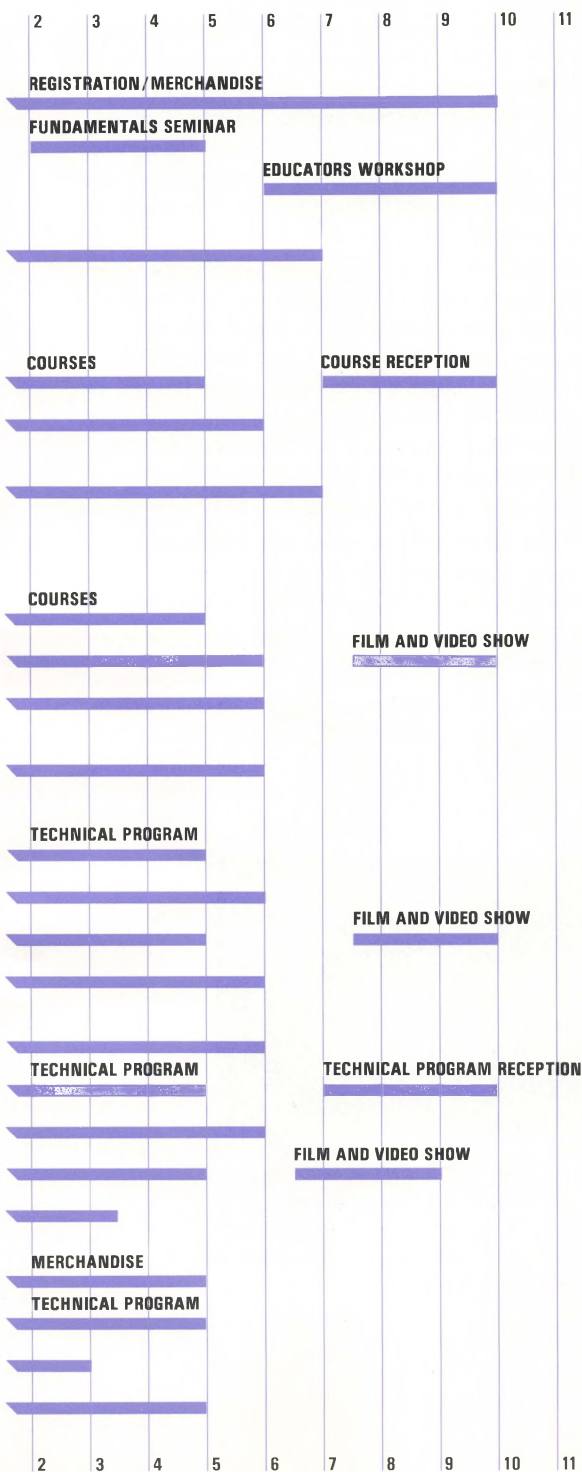
Leona Caffey

Ellen Frisbie

Sheila Hoffmeyer

CONFERENCE-AT-A-GLANCE





TECHNICAL PROGRAM

Researchers responsible for new and significant advances in computer graphics technology present fundamental discoveries and innovations at the SIGGRAPH technical program. The wide variety of papers presented offer techniques and tools for attendees in all areas of computer graphics. The exchange of information regarding state-of-the-art technologies creates an excitement that stimulates new levels of thinking for those who participate.

The SIGGRAPH executive committee made an important change in the program this year by removing the restriction on parallel technical sessions. This change increases the limit on the number of papers it is possible to accept, thereby potentially increasing the breadth of the technical program. However, all papers must continue to meet the high standards of the reviewing committee in order to be chosen. Papers selected for presentation are published in the conference proceedings, as an issue of *Computer Graphics*.

The technical program runs concurrently with the panel sessions, Wednesday through Friday, August 3-5, at the Omni Coliseum adjacent to the Georgia World Congress Center.

Refreshments are served during the morning and afternoon coffee breaks.

Technical program registrants are invited to a Thursday evening reception at the Marriott Marquis Hotel. Transportation is provided between the reception site and all SIGGRAPH '88 hotels.



"...To broaden SIGGRAPH's technical content, for the first time we invited three papers on state-of-the-art applications of computer graphics... we ended up with some really exciting presentations..."

John Dill
Simon Fraser University
SIGGRAPH '88 Technical Program Chair

PANELS

Panel sessions provide opportunities for speculating on the future of computer graphics, voicing controversies about present technologies and obtaining rapid overviews of emerging concepts. Many attendees find the informal structure of the panel sessions allows for a freeflowing exchange of ideas that is unparalleled in the computer graphics community. All sessions are recorded and transcribed for subsequent distribution to attendees.

The panel sessions are held concurrently with the technical program Wednesday through Friday, August 3-5, in the auditorium of the Georgia World Congress Center. Three parallel panel sessions will be held in the Georgia World Congress Center Ballroom on Thursday. Panels registration is included as part of the technical program registration.

Refreshments are served during the morning and afternoon coffee breaks.

Technical program registrants are invited to a Thursday evening reception at the Marriott Marquis Hotel. Transportation is provided between the reception site and all SIGGRAPH '88 hotels.



"...Not only do you hear about the latest developments in computer graphics during the panel sessions, but you also hear about future trends..."

Richard L. Phillips
Los Alamos National Laboratory
SIGGRAPH '88 Panels Chair

COURSES

The full-day course sessions at SIGGRAPH offer attendees an in-depth look at the latest computer graphics technology. The intensity of the course sessions is heightened by the presence of industry experts who have firsthand experience in a variety of areas related to computer graphics. Courses include beginning, intermediate and advanced concepts in all areas of computer graphics. Course notes are included with each session.

The courses are held on Monday and Tuesday, August 1 and 2, in the Georgia World Congress Center.

Course room locations are listed in the convention locator in your registration packet and are posted on a kiosk in the registration area. Lunches are served to course attendees in Hall C in the East Concourse of the Georgia World Congress Center.

Course notes are available for pick up at the merchandise desk in Hall E in the West Concourse of the Georgia World Congress Center.

Course registrants are invited to a Monday evening reception at the Westin Peachtree Plaza Hotel. During the reception, round-trip buses will be provided to Stone Mountain. (See social functions for details.)



“...28 courses, 130 industry experts: you’ll get ideas you can apply immediately...”

Michael Bailey
Megatek
SIGGRAPH '88 Courses Chair

EXHIBITION

EXHIBITION HOURS:

Tuesday, August 2	10 a.m.—6 p.m.
Wednesday, August 3	10 a.m.—6 p.m.
Thursday, August 4	10 a.m.—3:30 p.m.

The SIGGRAPH exhibition is an international showplace for new product introductions. It is also the world's most comprehensive display of state-of-the-art computer graphics hardware and software. SIGGRAPH exhibition attendees have an opportunity to interact with new computer graphics equipment and meet one on one with industry experts who are instrumental in developing new technology. Atlanta is the economic hub of the Southeast and one of the most rapidly expanding high-technology areas in the country.

No one under the age of 16 will be allowed on the exhibit floor.

EXHIBITION OPENING CEREMONY

The SIGGRAPH exhibition officially opens at 10 a.m. on Tuesday, August 2. You are invited to join us for the opening ceremony shortly before 10 a.m. in the registration area located in the exhibit hall of the Georgia World Congress Center.



"...If it's new, it's at SIGGRAPH..."

Carol Byram
Cubicomp
SIGGRAPH '88 Exhibits Chair

FILM AND VIDEO SHOW

The SIGGRAPH film and video show is known as the world's premier event of the year for computer graphics animation. Film makers and computer animation specialists from around the world submit their most technically excellent pieces for this prestigious event. Selected pieces are chosen on the basis of innovation in technology and visual creativity by a jury of computer graphics experts. Audio/visual professionals present the imagery using the highest quality audio/visual technology possible.

The film and video show is presented on three nights, Tuesday through Thursday, August 2-4, in the Omni Coliseum adjacent to the Georgia World Congress Center. All performances will contain the same material.

Admission to one evening of the film and video show and one copy of the film and video show catalog are included with technical program registration and/or course registration. One ticket is issued per conference registrant. Up to five additional film and video show tickets may be purchased by any badged attendee on site. Tickets will go on sale at 1 p.m. on the day of the show. Ticket sales are based on availability. Tickets may be exchanged, subject to availability, Monday through Wednesday, at the special assistance desk.

Extra copies of the film and video show catalog are available for purchase on site. The programs are not available after the conference.



"...Three months ago people all over the world were preparing their entries for the film and video show. Now...are you ready?..."

Amie Slate
Cubicomp
SIGGRAPH '88 Film and Video Show Chair

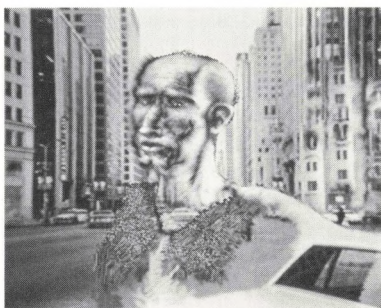
ART SHOW

Real-time interactive techniques are featured at the SIGGRAPH '88 art show. Computer graphics artists from all over the world present their latest 2-D, 3-D, animated and interactive work. This year's committee hopes to create an environment in which artists, scientists, designers and educators can communicate.

The art show video catalog effectively documents the interactive and animation work. The 2-D, 3-D component of the art show is documented in the art show slide set.

The art show is open from 9 a.m. to 6 p.m., Monday through Friday, August 1-5, in Rooms 253-257 of the Georgia World Congress Center.

Admission to the art show and one copy of the art show video catalog are included in the technical and/or course registration fees. Exhibits-only registrants will also be admitted to the art show but will not receive a copy of the art show video catalog.



"...Enjoy it. Experience it. Do it. Why waste time wondering whether or not it is art..."

Lucy Petrovich
University of Wisconsin
SIGGRAPH '88 Art Show Chair

SOCIAL FUNCTIONS

The SIGGRAPH evening receptions give attendees a chance to exchange ideas in a more casual setting. New contacts are made and old friendships are rekindled in a warm and lively atmosphere. During the receptions, attendees are able to mingle with industry experts and meet one on one with technical program and course speakers.

The Monday evening course reception will be held at the Westin Peachtree Plaza Hotel. This magnificent 73-story building is a landmark hotel designed by architect John Portman. Course reception attendees will be served an inviting assortment of hot and cold hors d'oeuvres in the hotel's Peachtree Ballroom.

Round-trip buses will be provided to Stone Mountain during the Monday evening reception. Stone Mountain, Georgia's most spectacular national park, surrounds the largest exposed granite mountain and the largest relief sculpture in the world. After sunset, a brilliant laser show is presented during which laser beams create dramatic stories, fun characters and graphic images choreographed to popular jazz and classical music. The laser show is projected onto a natural one-million-square foot granite screen.

Technical program registrants are invited to a Thursday evening reception at the Marriott Marquis Hotel. The awe-inspiring lobby of the Marriott, with its bubble elevators and original works by contemporary artists, is the most majestic atrium in the South. The technical program reception will be held in the Marquis Ballroom of the Marriott. This reception provides a setting for attendees to relax after an intense conference week.



"... We've planned terrific social events: stimulating conversation with friends and colleagues; lots of food and drink; and someone else gets to clean up!..."

E. Jan Hurst

Milestones: The History of Computer Graphics
SIGGRAPH '88 Local Arrangements Chair

SPECIAL INTEREST GROUPS

Computer graphics enthusiasts with common interests are able to meet and exchange ideas in working meetings at SIGGRAPH. These meetings take the form of user groups, interest groups and birds-of-a-feather sessions.

User groups generally concentrate on a particular vendor, product or group of products. Interest groups convene around subjects which may not have a single product or vendor as their focus, e.g., supercomputers and visualization, image file format and management, and environments for computational mathematics. Birds-of-a-feather groups are different from the others only because their meetings are impromptu. For instance, at SIGGRAPH '87, topics of gatherings scheduled during the conference included electronic publishing, graphics on the Commodore Amiga and X windows. To schedule such meetings and to learn which are already planned, use the sign-up board in the registration area.



"... Perhaps most vigorously of all the elements of the SIGGRAPH conference, the special interest group program seeks to preserve the ease with which individuals may come together and exchange ideas. All attendees are welcome to participate..."

John French
GeoQuest Systems, Inc.
SIGGRAPH '88 Special Interest Groups Chair

Conference Events

The following special interest groups plan to meet during SIGGRAPH '88. For each organization a person is listed whom you may contact for additional information. In addition, check the kiosk in the registration area at the Georgia World Congress Center for updated special interest group information and announcements of additional group meetings.

SATURDAY, JULY 30, 1988

ANSI X3H3.6 Window Management Systems

9:00 a.m.—6:00 p.m.

Georgia World Congress Center, Room 310

Georges Grinstein (617) 452-5000

International Cubicomp User's Group

9:00 a.m.—9:00 p.m.

Omni Hotel at CNN Center, Elizafield Room

Wally Rodriguez (504) 529-6221

SUNDAY, JULY 31, 1988

International Cubicomp User's Group

8:00 a.m.—5:00 p.m.

Omni Hotel at CNN Center, Elizafield Room

Wally Rodriguez (504) 529-6221

ANSI X3H3.6 Window Management Systems

9:00 a.m.—6:00 p.m.

Georgia World Congress Center, Room 310

Georges Grinstein (617) 452-5000

ACM SIGGRAPH Local Groups Annual Meeting

3:00 p.m.—6:00 p.m.

Georgia World Congress Center, Rooms 304/305

Steve Keith (415) 694-4883

International Cubicomp User Group Video Gala

6:00 p.m.—Midnight

Omni Hotel at CNN Center, Rutherford Ballroom

Wally Rodriguez (504) 529-6221

MONDAY, AUGUST 1, 1988

ANSI X3H3.6 Window Management Systems

9:00 a.m.—6:00 p.m.

Georgia World Congress Center, Room 310

Georges Grinstein (617) 452-5000

TUESDAY, AUGUST 2, 1988

AIAA Technical Committee on Interactive Computer Graphics

9:00 a.m.—4:00 p.m.

Georgia World Congress Center, Room 311

Gerald A. Thompson (714) 732-5504

Conference Events

ANSI X3H3.6 Window Management Systems

9:00 a.m.—6:00 p.m.

Georgia World Congress Center, Room 310

Georges Grinstein (617) 452-5000

Macintosh Special Interest Group

1:00 p.m.—2:30 p.m.

Georgia World Congress Center, Room 303

Bill Dyches (404) 449-4947

Symbolics, Inc. Users Group

4:00 p.m.—6:00 p.m.

Georgia World Congress Center, Room 309

Ron Saks (213) 478-0681

WEDNESDAY, AUGUST 3, 1988

Pixar Users Group

8:00 a.m.—10:30 a.m.

Omni Hotel at CNN Center, Swanton Room

Lisa Mackenzie (415) 258-8100, Ext. 8132

ANSI X3H3.8 Application Programmer Interface for Imaging

9:00 a.m.—5:00 p.m.

Georgia World Congress Center, Room 309

Patrick Krolak/Frank Drake (617) 452-5000, Ext. 2693

Student Bulletin Board Session

9:00 a.m.—5:00 p.m.

Georgia World Congress Center, Room 165

Ed Ferguson (207) 581-3930

International IRIS User Forum

Frank Dietrich (415) 960-1980

Arts and Animation Interest Group

11:00 a.m.—1:00 p.m.

Marriott Marquis, Imperial Ballroom

CAD & Geometric Modeling Interest Group

11:00 a.m.—1:00 p.m.

Marriott Marquis, Imperial Ballroom

Scientific Visualization Interest Group

2:00 p.m.—4:00 p.m.

Marriott Marquis, Imperial Ballroom

Visual Simulation Interest Group

2:00 p.m.—4:00 p.m.

Marriott Marquis, Imperial Ballroom

IRIS Application & Technology Forum

5:00 p.m.—7:30 p.m.

Marriott Marquis, Imperial Ballroom

Reception

7:30 p.m.—9:00 p.m.

Marriott Marquis, Imperial Ballroom

Conference Events

International Business Partnerships: The Art and Science
of Matchmaking Seminar on: Business and Technical Aspects

1:30 p.m. — 3:45 p.m.

Georgia World Congress Center, Room 312

Kathleen Kleeman, (404) 656-4504

Computer Graphics Careers

2:00 p.m. — 3:00 p.m.

Georgia World Congress Center, Room 361

Judy Brown (319) 335-5552

Molecular Graphics

2:00 p.m. — 3:30 p.m.

Georgia World Congress Center, Room 360

Michael Pique (619) 457-9775

Realtime Simulation Applications on IRIS Workstations

Users Working Group

2:00 p.m. — 4:30 p.m.

Marriott Marquis, Imperial Ballroom A & B

Sarah E. Stead (817) 280-6157

PostScript User's Group

3:30 p.m. — 6:00 p.m.

Georgia World Congress Center, Room 305

Loren "Buck" Buchanan (301) 589-1545

International Business Partnerships: The Art and Science
of Matchmaking

4:00 p.m. — 6:00 p.m.

Georgia World Congress Center, Room 312

Kathleen Kleeman (404) 656-4504

Association of Unified Aztek Users

4:30 p.m. — 7:00 p.m.

Georgia World Congress Center, Room 304

Stan Barborich (415) 331-6400

Volume Imaging Interest Group

5:00 p.m. — 6:00 p.m.

Georgia World Congress Center, Room 310

Nick England (919) 469-8300

Alias User Group

5:00 p.m. — 9:00 p.m.

Georgia World Congress Center, Room 308

Keith Raymond (416) 362-9181

MOVIE.BYU User Group

5:15 p.m. — 6:30 p.m.

Georgia World Congress Center, Room 311

Judy Evans (801) 378-2812

Conference Events

Users of Graphics and Compatibility System (UGCS)

5:30 p.m. — 7:00 p.m.

Georgia World Congress Center, Room 370

Jack K. Logan (312) 269-3644

Computer Graphics Pioneers

6:00 p.m. — 9:00 p.m.

Westin Peachtree Plaza, Spanish Room

Bert Herzog (313) 763-7479

B.J. Anderson (805) 581-1184

Sun User Group

6:30 p.m. — 9:30 p.m.

Georgia World Congress Center, Room 368

David Howard (415) 691-4343

THURSDAY, AUGUST 4, 1988

Open Discussion on Computer Graphics Education

11:00 a.m. — Noon

Georgia World Congress Center, Room 309

Steve Cunningham (209) 667-3176

Micro Computers in Computer Graphics Education

1:00 p.m. — 2:00 p.m.

Georgia World Congress Center, Room 311

William Joel (914) 471-3240

Graphics Performance Characterization

3:30 p.m. — 4:30 p.m.

Georgia World Congress Center, Room 370

Ken Anderson (805) 581-1184

The PEX Interest Group

4:00 p.m. — 6:00 p.m.

Georgia World Congress Center, Room 270

Randi J. Rost (415) 853-6700

PHIGS+ Birds of a Feather

5:30 p.m. — 7:30 p.m.

Georgia World Congress Center, Room 308

Andries van Dam (401) 863-7600

SIGGRAPH EXECUTIVE COMMITTEE MEETING

The ACM SIGGRAPH Executive Committee holds an open meeting on Thursday, August 4, from 5:30 to 7:00 p.m., in the Confederate/Georgian Rooms of the Westin Peachtree Plaza. All ACM SIGGRAPH members are invited to attend. Refreshments are not served during the meeting.

GENERAL INFORMATION

AIRLINE INFORMATION

A representative from Eastern/Continental Airlines will be available to assist you in making travel arrangements. The desk is located in the Main Entrance Concourse of the Georgia World Congress Center.

AUDIO/VISUAL SERVICES

A/V OFFICE

Audio/visual equipment and assistance is available to speakers. Included in this equipment are 35mm slide trays and blank slides. The A/V office is located in Room 263 in the West Concourse of the Georgia World Congress Center. Questions about audio/visual needs should be directed to this office during the following hours: 9 a.m.-9 p.m. on Sunday and 7:30 a.m.-10 p.m., Monday-Friday. For more information, call the A/V office at (404) 222-5003.

FILM AND VIDEO SHOW OFFICE

Contributors may pick up their films and videotapes Monday-Friday from 9:00 a.m. to noon in Room 155 in the East Concourse of the Georgia World Congress Center.

SPEAKER SLIDE MAKING ROOM

On-site slide making is available for speakers with last minute changes to their presentation. Mac and PC-based systems, with an operator, are available. Also, available is a digital film recorder and on-site E-6 film processing. The slide making room hours are: 8:30 a.m.-5 p.m., Monday-Friday in Dressing Room 8 located behind the Terraces Restaurant.

SPEAKER PREP ROOM

Speakers desiring to review 35mm slides may do so in Room 268 in the West Concourse of the Georgia World Congress Center. Projectors and slide viewer/sorters will be available from 9 a.m.-9 p.m. on Sunday, 7:30 a.m.-7 p.m., Monday-Thursday and 7:30 a.m.-6 p.m. on Friday.

CHILD CARE

For information about child care, contact the concierge desk or guest services department at your hotel. Although most SIGGRAPH '88 hotels offer some sort of child care, the type of service available may vary depending on the hotel.

SIGGRAPH '88 rules and regulations do not permit individuals under 16 years of age admittance to the conference exhibition.

CONFERENCE HOTELS

SIGGRAPH '88 has selected the following hotels to provide rooms for conference participants. In addition to being easily accessible to the Georgia World Congress Center, these hotels offer SIGGRAPH '88 attendees special rates and have personnel available to answer general questions about the conference.

American Hotel
Spring Street at
International Blvd.
Atlanta, GA 30303
(404) 688-8600

Days Inn Downtown
300 Spring Street
Atlanta, GA 30308
(404) 523-1144

Atlanta Hilton & Towers
Courtland &
Harris Streets, N.E.
Atlanta, GA 30043
(404) 659-2000

Holiday Inn Downtown
175 Piedmont Avenue, N.E.
Atlanta, GA 30303
(404) 659-2727

Hyatt Regency Atlanta in
Peachtree Center
265 Peachtree Street
Atlanta, GA 30371
(404) 577-1234

Atlanta Marriott Marquis
265 Peachtree Center Avenue
Atlanta, GA 30303
(404) 521-0000

Omni Hotel at CNN Center
100 CNN Center
Atlanta, GA 30335
(404) 659-0000

Radisson Hotel Atlanta
Courtland & International Blvd.
Atlanta, GA 30303
(404) 659-6500

The Ritz-Carlton Atlanta
181 Peachtree Street, N.E.
Atlanta, GA 30303
(404) 659-0400

*The Westin Peachtree Plaza
Peachtree at International Blvd.
Atlanta, GA 30343-9986
(404) 659-1400

*Headquarters Hotel

CONFERENCE MANAGEMENT OFFICE

Attendees with general questions about the conference may request help from the Conference Management Office in Room 162 in the West Concourse of the Georgia World Congress Center. You may either visit the office or reach them by phoning (404) 222-5007.

EXHIBITION MANAGEMENT OFFICE

Personnel in the Exhibition Management Office, Room 161 in the West Concourse of the Georgia World Congress Center, will be on hand to answer questions concerning the exhibition. You may either visit the office or reach them by phoning (404) 222-5029.

FIRST AID OFFICE

A registered nurse or paramedic is on duty in Room 371 in the West Concourse of the Georgia World Congress Center. Hours of operation for Sunday-Friday are: Sunday, 8 a.m.-10 p.m.; Monday, 7 a.m.-8 p.m.; Tuesday, 7 a.m.-11 p.m.; Wednesday, 8 a.m.-11 p.m.; Thursday, 9 a.m.-9 p.m.; and Friday, 8 a.m.-5 p.m. The first aid telephone number is (404) 656-0653.

FOREIGN CURRENCY EXCHANGE

The SIGGRAPH '88 headquarters hotel offers foreign currency exchange services. In addition, several of the conference hotels provide this service. Contact your hotel for further information.

HOUSING ASSISTANCE

A representative from the Atlanta Convention and Visitors Bureau is available at the housing desk located in the Entrance Concourse of the Georgia World Congress Center. This person is available during registration hours on Sunday, Monday and Tuesday. There are no hours for housing assistance scheduled for Wednesday, Thursday or Friday. Persons requiring such assistance on these days may call the Atlanta Convention and Visitors Bureau at (404) 521-6630.

INFORMATION

The Georgia World Congress Center maintains a permanent information center. It is located in the Main Concourse directly across from the Entrance Concourse. Personnel are available to handle questions beginning at noon on Sunday and thereafter during registration hours.

LUGGAGE CHECK

A luggage check is located to the left of the Main Entrance Concourse behind the Ballroom escalator of the Georgia World Congress Center.

MERCHANDISE

Conference participants interested in purchasing SIGGRAPH '88 course notes, proceedings, slide sets, sweatshirts, calendars, mugs, and film and video show catalogs must pick them up in Hall E in the West Concourse of the Georgia World Congress Center. In addition, participants can purchase SIGGRAPH video reviews. A limited number of conference materials from earlier SIGGRAPH conferences also are available.

Please be aware that film and video show catalogs are included with your technical program and course registration. Additional copies may be purchased at the registration desk.

The merchandise desk in Hall E is open during registration hours.

MESSAGE CENTER

The message center for SIGGRAPH '88 conference participants is located in the Entrance Concourse of the Georgia World Congress Center. The hours of operation are the same as registration hours.

In addition, conference participants may use the message center to send messages to other conference participants. The message center telephone number is (404) 222-5000.

PRESS BRIEFING

Highlights of SIGGRAPH '88 are presented to members of the press on Tuesday, August 2, from 8 to 9 a.m. During the briefing, Carl Machover of Machover Associates Corp., White Plains, N.Y., predicts computer graphics industry trends. SIGGRAPH '88 co-chairs discuss special exhibits, programs, and courses scheduled this year. At the end of the hour, key spokespeople will be available to answer questions.

A private, guided press tour of the exhibition is offered immediately following the question and answer session, from 9 to 10 a.m. This tour is provided for members of the press one hour before its official opening.

PRESS ROOMS

The press office, Room 158 in the West Concourse of the Georgia World Congress Center, serves as a general information center for members of the press. Press should come directly to this room to register and pick up press badges. Telephones, conference course notes, proceedings, a message board and exhibitor press kits are available in this room.

In addition, Room 157 in the West Concourse of the Georgia World Congress Center, is reserved for conducting press interviews. The press interview room has telephones and IBM-compatible personal computers for use by press members.

Press attendance at SIGGRAPH '88 courses is limited to a one-hour visit per course. Members of the press are asked to take seats only after all registrants have been seated.

The press room hours are:

Sunday, July 31	2 p.m.—6 p.m.
Monday, August 1	8 a.m.—6 p.m.
Tuesday, August 2	8 a.m.—6 p.m.
Wednesday, August 3	8 a.m.—6 p.m.
Thursday, August 4	8 a.m.—6 p.m.
Friday, August 5	8 a.m.—noon

REGISTRATION

Registration for all SIGGRAPH '88 activities is in Hall E in the West Concourse of the Georgia World Congress Center during the following hours:

Sunday, July 31	Noon—10 p.m.
Monday, August 1	7:30 a.m.—7 p.m.
Tuesday, August 2	7:30 a.m.—7 p.m.
Wednesday, August 3	8 a.m.—6 p.m.
Thursday, August 4	8 a.m.—6 p.m.
Friday, August 5	9 a.m.—1 p.m.

RESTAURANT INFORMATION

Menus from local restaurants are on display in the Entrance Concourse of the Georgia World Congress Center. Persons staffing the restaurant information desk can assist conference participants in making reservations. This desk is open during conference registration hours.

SHIPPING DESK

A shipping desk is located in Hall E of the Georgia World Congress Center. Next Day Air and 2nd Day Air Service to the United States, Canada and overseas are available for conference attendees. In addition, ground service to the United States and parts of Canada is provided. These accommodations are made available through United Parcel Service.

SIGGRAPH LOCAL GROUPS

Information concerning local SIGGRAPH groups can be obtained in the Entrance Concourse of the Georgia World Congress Center.

SLIDE SETS

SIGGRAPH '88 technical and art show slide sets ordered before the conference must be picked up during the conference. All of the slides sets are available for purchase on site and can be picked up at the conference materials desk in Hall E in the Entrance Concourse of the Georgia World Congress Center. After the conference, slides are available from the ACM Order Department, (800) 342-6626.

SMOKING POLICY

Smoking is not permitted in conference locations.

TELEPHONE NUMBERS

Atlanta Convention and

Visitors Bureau	(404) 521-6630
A/V Office	(404) 222-5003
Conference management office	(404) 222-5007
Emergencies (ambulance, fire, police)	911
Exhibition management office	(404) 222-5029
Film and video show office	(404) 222-5013
First aid	(404) 656-0653
Housing assistance	(404) 222-5014
Message center	(404) 222-5000
Press room	(404) 222-5020
Registration	(404) 222-5016

TRANSPORTATION

Conference participants may travel from conference hotels to the Georgia World Congress Center on regularly scheduled shuttle buses (with the exception of the Omni Hotel at CNN Center). These vehicles operate frequently and are provided for all conference activities. Check for posted schedules on site.

FUNDAMENTALS SEMINAR

***TERMINOLOGY AND FIRST PRINCIPLES
OF COMPUTER GRAPHICS***

Sunday, 2-5 p.m.

CHAIR

Richard L. Phillips, Los Alamos National Laboratory

LECTURER

Richard L. Phillips, Los Alamos National Laboratory,
Los Alamos, NM

TOPICS

- Graphics applications overview
- Introduction to graphics hardware
- Introduction to graphics software
- Graphical human-computer interaction

EDUCATORS WORKSHOP

**COLLABORATION IN COMPUTER GRAPHICS
EDUCATION**

Sunday, 6-10 p.m.

CHAIR

Judith R. Brown, University of Iowa

LECTURERS

Judith R. Brown, University of Iowa, Iowa City, IA

Donna Cox, National Center for Supercomputing Applications,
University of Illinois—Champaign, Champaign, IL

Steve Cunningham, California State University—Stanislaus,
Turlock, CA

Thomas A. DeFanti, University of Illinois at Chicago,
Chicago, IL

Michael B. McGrath, Colorado School of Mines, Golden, CO

Barbara Mones-Hattal, George Mason University, Fairfax, VA

TOPICS

- Introduction/Brown
- Successful computer graphics applications in science and education/DeFanti, Cox
 - Benefits of collaboration between artist and scientist/
Defanti, Cox
 - The interactive image/DeFanti
 - Visualization of mathematical and scientific data/Cox
- Scientific visualization/McGrath
- Computer graphics education in computer science/
Cunningham
 - What computer scientists can gain from artists
 - What computer scientists can offer artists
- Computer graphics education in the arts/Mones-Hattal
 - What artists can gain from computer scientists
 - What artists can offer computer scientists
- Discussion of a project assigned to computer science students
and to art students/Cunningham, Mones-Hattal
- Informal discussion among attendees/Brown

COURSES-AT-A-GLANCE

SIGGRAPH '88 courses will be held in the Georgia World Congress Center from 8:30 a.m. to 12 noon and 1:30 to 5:00 p.m. on Monday and Tuesday, August 1 and August 2. Room assignment information will be available in the conference locator.

COURSES

1	Fundamentals and Overview of Computer Graphics
2	Applying Graphics Standards
3	Introduction to Computer Animation
4	Synthetic Actors: The Impact of Artificial Intelligence and Robotics on Animation
5	Special Effects with Computer Graphics
6	3-D Character Animation by Computer
7	Introduction to Ray Tracing
8	Fractals: Introduction, Basics and Applications
9	Image Synthesis
10	A Consumer's and Developer's Guide to Image Synthesis
11	Introduction to Window Management
12	Introduction to Programming the X Window System
13	The PostScript Page Description Language
14	Digital Typography
15	User Interface Management Systems
16	User Interface Considerations of Windowing Systems
17	Color in User Interfaces
18	Algorithms for Data Representation Graphics
19	Visualization Techniques in the Physical Sciences
20	Computer Graphics in Science
21	Stereoscopic and Multiplanar Computer Graphics
22	Object-Oriented Graphics
23	Introduction to Solid Modeling
24	Curve and Surface Design: From Geometry to Applications
25	Contemporary Approaches to Geometry for Computer Graphics and Computer Aided Design
26	Computational Algebraic Geometry and Geometric Modeling
27	Developments in Physically-Based Modeling
28	Functional Based Modeling

B-Beginning **I**-Intermediate **A**-Advance

	Level	Monday Aug. 1	Tuesday Aug. 2
	B		
	B		
	B		
	I		
	I		
	I		
	B		
	B		
	I		
	I		
	B		
	B		
	I		
	I		
	I		
	I		
	I		
	I		
	I		
	I		
	I		
	I		
	B		
	I		
	I		
	A		
	A		
	A		

1 *FUNDAMENTALS AND OVERVIEW OF COMPUTER GRAPHICS*

Monday–Beginning

CHAIR

Olin Lathrop, Apollo Computer, Inc.

LECTURERS

Norman Badler, University of Pennsylvania, Philadelphia, PA

Richard Fichera, Independent Consultant in Technical Planning
and Marketing, Groton, MA

Olin Lathrop, Apollo Computer, Inc., Chelmsford, MA

Carl Machover, Machover Associates Corporation,
White Plains, NY

TOPICS

- Introduction to computer graphics/Fichera
 - History
 - Display technologies
 - Fundamental concepts
 - Basic hardware architectures
 - The current market
- 3-D Modeling/Badler
 - Operations performed on models
 - Surface and boundary models
 - Volume and CSG models
 - Where do models come from?
- Rendering/Lathrop
 - Wire frame, depth buffer, ray tracing
 - What color is the object at this pixel?
 - Compositioning
 - Aliasing (jaggies and how to deal with them)
- The user's view/Machover
 - The software environment
 - General block diagram
 - Different types of programs and packages
 - The role of standards
 - The output environment
 - Forming the picture
 - Hardcopy/Softcopy
 - The input and system environments
- Demos: How to watch them and what to look for/Fichera,
Machover
 - What you see may not be what you get
 - Representative exhibition products

2

APPLYING GRAPHICS STANDARDS

Tuesday–Beginning

CHAIR

Robert L. Bruns, Template Graphics Software, Inc.

LECTURERS

Robert L. Bruns, Template Graphics Software, Inc., San Diego, CA

Sahib A. Dudani, Advanced Technology Center, Culver City, CA

Richard F. Puk, Puk Consulting Services, Carlsbad, CA

TOPICS

- History of graphics standards/Puk
 - Brief history
 - Differentiation of standards
- Highlights of common features of graphics programming standards/Puk
 - Primitives
 - Attributes
 - Metafile (CGM)
 - Input models
- Major differences of graphics programming tools/Dudani
 - CORE
 - GKS
 - GKS-3D
- Major differences of graphics programming tools/Puk
 - PHIGS
 - PHIGS+
 - PEX
- Application requirements and how tools address them/Bruns
 - 2-D or 3-D
 - Geometric modeling
 - Creating hierarchical graphics data
 - Storing non-graphical data in graphics database
 - Editing graphics data
 - Dynamic interaction with graphics data
 - Multiple views of graphics data
 - Rendering graphics data
 - Performance, perceived and actual
 - Device intelligence
 - High level utilities
- Availability of graphics programming tools/Dudani
 - CORE vendors
 - GKS/GKS-3D vendors
 - PHIGS/PHIGS+/PEX vendors
- Selection criteria for graphics programming tools/All
 - Know your application requirements
 - Know your hardware requirements

3

**INTRODUCTION TO COMPUTER
ANIMATION**

Monday–Beginning

CHAIR

Judson Rosebush, Rosebush Visions Corporation

LECTURERS

James Hahn, Ohio State University, Columbus, OH

Gail B. Goldstein, Rosebush Visions Corporation,
New York, NY

Judson Rosebush, Rosebush Visions Corporation,
New York, NY

Mike Saz, Compugraph Design, New York, NY

TOPICS

- What is animation anyway?/Rosebush
- Temporal Geometry (The Time Axes)/Rosebush
- Input, output, and media (Temporal Imaging)/
Rosebush
- The marriage between computers and animation
(integration, synthesis)/Rosebush
- The flow of production/Saz
- Ways to model build/Saz
- Ways to animate (animation techniques)/Hahn
- Dynamic modeling/Hahn
- Scripting systems (animation languages)/Rosebush

4 ***SYNTHETIC ACTORS: THE IMPACT OF ARTIFICIAL INTELLIGENCE AND ROBOTICS ON ANIMATION***

Tuesday–Intermediate

CHAIR

Daniel Thalmann, University of Montreal

LECTURERS

Nadia Magnenat-Thalmann, University of Montreal, Montreal, Quebec

Daniel Thalmann, University of Montreal, Montreal, Quebec

Brian Wyvill, University of Calgary, Calgary, Alberta

David Zeltzer, MIT Media Laboratory, Cambridge, MA

TOPICS

- Introduction to synthetic actors/Magnenat-Thalmann
 - Overview of human animation
 - Synthetic actors as an interdisciplinary concept
- Actor design and animation/Magnenat-Thalmann, Thalmann
 - Actor modeling
 - Human prototyping
 - Skeleton definition, positioning and animation
 - Joint Local Deformation (JLD) operators for body mapping
- Mechanics and robotics for animating synthetic actors/Thalmann
 - Kinematics and dynamics
 - Path planning and obstacle avoidance
 - Hand animation and object grasping
- Walk and locomotion/Zeltzer
 - Mechanisms of locomotion
 - Locomotion over complex terrains
- Task planning and intelligent activities/Thalmann, Zeltzer
 - Survey of A.I. techniques
 - Knowledge-based animation
 - Behavioral animation
- Facial animation/Wyvill, Thalmann
 - Survey of facial animation techniques
 - Simulation of human speech and expression
 - Abstract Muscle Action (AMA) procedures
 - Facial animation of inbetween synthetic actors
- Soft objects for Character Animation/Wyvill
 - The soft object technique
 - Changing shape
 - Character coherence
 - Heuristics for inbetweening & metamorphosis
- Case studies–films/Magnenat-Thalmann
 - Rendez-vous à Montreal
 - Eglantine
 - Galaxy sweetheart

5 ***SPECIAL EFFECTS WITH COMPUTER GRAPHICS***

Monday–Intermediate

CHAIR

Tom Brigham, New York Institute of Technology

LECTURERS

Tom Brigham, New York Institute of Technology Computer Graphics Lab/CGL Studios, Old Westbury, NY

George Joblove, Industrial Light and Magic, San Rafael, CA

Richard Taylor, Image Point Productions, Inc., Hollywood, CA

Dean Winkler, Post Perfect, New York, NY

TOPICS

- Real-time digital video effects/Winkler
 - Digital tools and digital video, interaction between tools
 - Conceptualization process
 - Interplay of producer, director, effects director and technician
 - Hardware/software issues
- Computer graphics effects and motion pictures/Joblove
 - Traditional film special effects processes
 - Combining computer generated images with effects
 - Image resolution and visual detail in 35mm film
- Special effects software/Brigham
 - Software alternatives to conventional techniques
 - Effects using image and signal processing
 - Registration and tracking
 - Composites and transitions
 - Basis for new effects
- Effects in a production environment/Taylor
 - Design and budgeting of effects techniques
 - New techniques for video opticals
 - Objective solutions to problems in total media land
 - Simulations of human characters and theatrical environments
 - High-resolution TV and the future of film making

6

***3-D CHARACTER ANIMATION BY
COMPUTER***

Tuesday–Intermediate

CHAIR

Bill Kroyer, Kroyer Films, Inc.

LECTURERS

Kevin Bjorke, R/Greenberg & Associates, New York, NY

Charles Gibson, Rhythm & Hues, Culver City, CA

Bill Kroyer, Kroyer Films, Inc., Hollywood, CA

John Lasseter, Pixar, San Rafael, CA

Susan Van Baerle, New York Institute of Technology,
Glen Cove, NY

TOPICS

- Combining character animation by computer with traditional animation processes/Kroyer
- Review and application of motion analysis systems/Bjorke
- Technical innovation in the production of a theatrical feature film/Van Baerle
- Classical principles of timing and staging as applied to computer-animated characters/Lasseter
- Computer-animated characters in a commercial production environment/Gibson

7

INTRODUCTION TO RAY TRACING

Monday–Beginning

CHAIR

Andrew S. Glassner, University of North Carolina at Chapel Hill

LECTURERS

Jim Arvo, Apollo Computer, Inc., Chelmsford, MA

Robert L. Cook, Pixar, San Rafael, CA

Andrew S. Glassner, University of North Carolina at Chapel Hill, Chapel Hill, NC

Eric A. Haines, 3D-Eye, Inc., Ithaca, NY

Pat Hanrahan, Pixar, San Rafael, CA

Paul Heckbert, University of California at Berkeley, Berkeley, CA

TOPICS

- An overview of ray tracing/Glassner
- Intersecting primitive objects/Haines
- Intersecting complex surfaces/Hanrahan
- Surface physics/Glassner
- Distributed ray tracing/Cook
- Efficient ray tracing/Arvo
- Writing a ray tracer/Heckbert
- Research topics

8

FRACTALS: INTRODUCTION, BASICS AND APPLICATIONS

Tuesday–Beginning

CHAIR

Dietmar Saupe, Universität Bremen

LECTURERS

Benoit B. Mandelbrot, IBM T.J. Watson Research Center,
Yorktown Heights, NY and Yale University, New Haven, CT
Heinz-Otto Peitgen, University of California at Santa Cruz,
Santa Cruz, CA and Universität Bremen, Bremen, West Germany
Przemyslaw Prusinkiewicz, University of Regina, Regina,
Saskatchewan

Dietmar Saupe, Universität Bremen, Bremen, West Germany

Richard F. Voss, IBM T.J. Watson Research Center, Yorktown
Heights, NY

TOPICS

- Introduction to fractals/Mandelbrot
 - History of fractals
 - Displacement methods from Greek geometry to modern variants
 - Landscapes with rivers and mountains
- Fractals in nature: From characterization to simulation/Voss
 - Coastlines, mountains and clouds
 - Self-similarity and dimension
 - Generation of the fractal planet
 - Mathematical models
- Algorithms for random fractals/Saupe
 - Spatial methods and spectral synthesis
 - Rendering aspects
 - Simple implementation package
- 2-D/3-D object modeling by L-systems/Prusinkiewicz
 - String rewriting systems and geometric turtle interpretation
 - Modeling of classical fractal curves
 - Modeling of branch structures of plants
- Dynamical systems and fractals/Peitgen
 - Basics of fractal basin boundaries
 - Algorithms for Mandelbrot and Julia sets
 - Iterated function systems
 - Animation



IMAGE SYNTHESIS

Monday–Intermediate

CHAIR

Kenneth I. Joy, University of California at Davis

LECTURERS

Charles W. Grant, Lawrence Livermore National Laboratories, Livermore, CA

Kenneth I. Joy, University of California at Davis, Davis, CA

Nelson L. Max, University of California at Davis, Davis, CA

TOPICS

- Introduction to image synthesis/Grant
 - Definitions
 - Subproblems of image synthesis
 - A classification of visibility determination algorithms
- Z-Buffer algorithms/Grant
 - Depth calculations
 - Micropolygon techniques
 - Shadows
- Painter's algorithms/Grant
 - Sorting and rendering methods
 - Compositing algorithms
 - Shadows
- Scanline algorithms/Joy
 - Survey of methods based on the scanline technique
 - Methods for processing bicubic patches
 - Variations on the scanline technique—shadows
- Ray tracing/Joy
 - Ray/Surface intersection problems
 - Distributed ray tracing
 - Bounding box techniques
 - Space subdivision techniques
- Area subdivision algorithms/Max
 - Methods that utilize area coherency
 - Complexity calculations
- Shading/Max
 - A mathematical formulation of shading models
 - Gouraud, Phong and Cook shading
 - Advanced shading techniques—radiosity
- Antialiasing/Grant
 - Point sampling methods
 - Stochastic sampling
 - Digital filters
- Texturing/Joy
 - Basic texturing methods
 - Antialiasing of textures
 - Multi-dimensional

10

A CONSUMER'S AND DEVELOPER'S GUIDE TO IMAGE SYNTHESIS

Tuesday–Intermediate

CHAIR

Michael F. Cohen, Cornell University

LECTURERS

Michael F. Cohen, Cornell University, Ithaca, NY

Eric A. Haines, 3D-Eye, Inc., Ithaca, NY

Roy A. Hall, Wavefront Technologies, Santa Barbara, CA

James T. Kajiya, California Institute of Technology, Pasadena, CA

Gary W. Meyer, University of Oregon, Eugene, OR

TOPICS

- Local reflection models/Hall
- Reflection mapping/Hall
- Texture mapping/Hall
- Color science/Meyer
- Visual perception issues/Meyer
- Image resolution and antialiasing/Meyer
- Ray tracing/Haines
 - Distributed ray tracing
- Efficiency algorithms in ray tracing/Haines
 - Space and screen subdivisions
 - Light buffers
- Radiosity/Cohen
 - Efficiency considerations
 - Participating media
- Radiosity and ray tracing combinations/Cohen
- Monte Carlo Methods/Kajiya
 - Stochastic ray tracing
- The rendering equation/Kajiya
- Unifying theory/Kajiya

11

**INTRODUCTION TO WINDOW
MANAGEMENT**

Monday–Beginning

CHAIR

Jonathan E. Steinhart, XYZW Systems, Inc.

LECTURERS

Mark Callow, Silicon Graphics, Mountain View, CA

Richard J. Greco, Tektronix, Inc., Beaverton, OR

David A. LaVallee, Sun Microsystems, Inc., Mountain View, CA

Robin Schaufler, Sun Microsystems, Inc., Mountain View, CA

Jonathan E. Steinhart, XYZW Systems, Inc., Palo Alto, CA

TOPICS

- Introduction/Steinhart
- Window Management “operating” systems/Steinhart
- Area management/Steinhart
- Device drivers for frame buffer devices/Greco
- Device drivers for frame buffer devices with color maps and gamma correction/Greco
- Device drivers for video mixer devices/Greco
- Graphics models/Greco
- Task management and scheduling/Schaufler
- Input/Schaufler
- Application program interface/LaValle
- Toolkit model/Callow
- Application program interface survey/LaValle
- Example applications/LaValle
- Future directions and trends/Steinhart

12

**INTRODUCTION TO PROGRAMMING
THE X WINDOW SYSTEM**

Tuesday–Beginning

CHAIR

Oliver Jones, Apollo Computer, Inc.

LECTURERS

Harry M. Hersh, Digital Equipment Corporation, Nashua, NH
Oliver Jones, Apollo Computer, Inc., Chelmsford, MA

TOPICS

- Architecture/Jones
 - Goals
 - Client-server model
 - Vendor and network independence
- “Policy-free” window systems/Hersh
- Hello, World!/Jones
 - A trivial example
- Using X/Hersh
 - Logging in
 - Window managers
 - Xterm
 - Other clients
- Access to information/Jones
- Windows/Jones
- Graphics/Jones
- Color/Hersh
- Overview of input/Jones
 - Protocol review
 - Events
 - Events queue
 - Exposure events
 - Low-level input
- Using input effectively/Hersh
 - Mouse
 - Keyboard
 - Grabs
- Inter-client communications/Jones
 - Cut-and-paste
 - Atoms
 - Properties
 - Selections

13

***THE POSTSCRIPT PAGE
DESCRIPTION LANGUAGE***

Monday–Intermediate

CHAIR

Leo Hourvitz, NeXT, Inc.

LECTURERS

Linda Gass, Adobe Systems, Inc., Mountain View, CA

Leo Hourvitz, NeXT, Inc., Palo Alto, CA

Glenn C. Reid, Adobe Systems, Inc., Mountain View, CA

Andrew I. Shore, Adobe Systems, Inc., Mountain View, CA

TOPICS

- Introduction/Hourvitz
 - What problems does the PostScript language address?
 - Demonstration
- The PostScript language and its facilities/Shore, Gass
 - Syntax
 - Stacks
 - Interpretation
 - Virtual memory
 - Data Types
 - Procedures
 - Dictionaries
- The PostScript imaging model/Reid, Gass
 - Paint through mask
 - Coordinate systems
 - Path construction
 - Filling and stroking
 - Images
 - Fonts
 - Using type
- PostScript Applications/Hourvitz, Reid
 - PostScript-based application programs
 - Display PostScript
 - Interchange formats using the PostScript language
 - Other sources of PostScript information

CHAIR

Jon von Zelowitz, Cubicomp Corporation

LECTURERS

John Collins, Bitstream Inc., Cambridge, MA

Harry Marks, Marks Communications, Inc., Los Angeles, CA

Avi Naiman, University of Toronto, Toronto, Ontario

Sumner Stone, Adobe Systems, Inc., Mountain View, CA

Jon von Zelowitz, Cubicomp Corporation, Hayward, CA

TOPICS

- Introduction/von Zelowitz
 - Historical background
 - Metrics
 - Typefaces and their characteristics
- Outline representations/Stone
 - Survey of representations
 - Type design and type production
 - Designing a family of type
- Bitmaps and scan conversion/Collins
 - Conventional scan conversion
 - Intelligent scan conversion
 - Bitmap representation and storage
- Sampling and Filtering/Naiman
 - Viewing the image
 - Psychophysics
 - Filtering and antialiasing
 - Display devices
- Aesthetic issues/Marks
 - Readability and human perception
 - Type and page design
 - Design for video

15

USER INTERFACE MANAGEMENT SYSTEMS

Monday–Intermediate

CHAIR

Dan R. Olsen, Jr., Brigham Young University

LECTURERS

David J. Kasik, Boeing Computer Services, Seattle, WA

Dan R. Olsen, Jr., Brigham Young University, Provo, UT

Jim Rhyne, IBM T.J. Watson Research Center, Yorktown Heights, NY

TOPICS

- Introduction/Olsen
 - Goals for UIMSs
- Tools to serve users and developers/Olsen
 - Who is involved and what tools do they need?
- Architecture of a UIMS-based application/Olsen
 - Components of the Application
 - External, internal, mixed control
- Presentation issues/Rhyne
 - What must be specified and how it is represented
- Presentation tools/Rhyne
 - Toolkits
 - Specification by example
- Evaluation of user interfaces/Rhyne
 - What kinds of evaluation do we want?
 - What tools are possible to support this evaluation?
- Command and forms dialogues/Olsen
- Window/object/event dialogues/Olsen
- Syntactic dialogues/Kasik
 - Grammars and transition networks
 - Dialog trees
- Impact of UIMSs on software development and structure/Kasik
 - How is the application structured differently?
- Real world experience/Kasik
- Future directions/Olsen

16

***USER INTERFACE CONSIDERATIONS
OF WINDOWING SYSTEMS***

Tuesday–Intermediate

CHAIR

Jack Grimes, Intel Corporation

LECTURERS

Susan Bancroft, Digital Research, Inc., Monterey, CA

Jack Grimes, Intel Corporation, Santa Clara, CA

Wendy Mackay, MIT Project Athena and Digital Equipment Corporation, Cambridge, MA

Aaron Marcus, Aaron Marcus and Associates, Berkeley, CA

Warren Teitelman, Sun Microsystems, Inc., Mountain View, CA

Jane Veeder, Independent, Santa Barbara, CA

TOPICS

- Introduction/Grimes
- User interface improvement based on three case studies/Bancroft
 - Case study #1–Drawing program
 - Case study #2–Interactive output utility
 - Case study #3–Graphics environment setup program
- Building a good user interface out of toolkits/Mackay
 - Using X Version 11 as an example
 - Role of toolkits
 - Videotape examples
- Unexpected applications: Interactive art, artist tool making and user education/Veeder
- User interface considerations for large screen, multi-tasking workstations/Teitelman
 - Workstation vs. PC differences
 - What is OPEN LOOK?
 - The future?
- Human factors of window design/Marcus
 - Typography
 - Symbolism
 - Layout
 - Color
- Panel discussion "Is it too soon to formally standardize the user interface?"/All

17

COLOR IN USER INTERFACES

Monday–Intermediate

CHAIR

Aaron Marcus, Aaron Marcus and Associates

LECTURERS

Aaron Marcus, Aaron Marcus and Associates, Berkeley, CA

Gerald Murch, Tektronix, Inc., Beaverton, OR

TOPICS

- Goals/Marcus
- Terminology/Murch
- Physiology/Murch
- Perception/Murch
- Cognitive aspects related to usability/Marcus, Murch
- Communication and aesthetics/Marcus
- Pragmatics/Marcus
- Closing remarks/Marcus

18

ALGORITHMS FOR DATA REPRESENTATION GRAPHICS

Tuesday–Intermediate

CHAIR

Thomas Wright, Computer Associates

LECTURERS

Lofton Henderson, Henderson Software, Boulder, CO

Thomas Wright, Computer Associates, San Diego, CA

TOPICS

- System architectures/Henderson, Wright
- Non-linear scaling/Wright
- Interpolation and smoothing/Henderson
- Algorithms for 2-D arrays/Wright
- Contouring/Henderson
- Mesh diagrams and hidden lines/Wright
- Mapping/Wright
- Flow and force diagrams/Henderson
- Presentation graphics/Wright
- Scientific animation/Henderson

19

**VISUALIZATION TECHNIQUES IN THE
PHYSICAL SCIENCES**

Monday–Intermediate

CHAIR

Robert S. Wolff, Apple Computer, Inc.

LECTURERS

Robert Haber, University of Illinois, Champaign, IL

Kevin Hussey, Jet Propulsion Laboratory, Pasadena, CA

Lloyd Treinish, National Space Science Data Center,
Greenbelt, MD

Robert S. Wolff, Apple Computer, Inc., Cupertino, CA

Larry Yaeger, Apple Computer, Inc., Cupertino, CA

TOPICS

- Visualization techniques in fluid dynamic systems/Wolff
 - 2-D and 3-D flows
 - Streamline vs. particle system techniques
 - Pseudo-color and shaded relief visualization of scalar quantities
- Image processing techniques for non-image data/Hussey
 - Image Processing as a tool for general science data analysis
 - Terrain rendering algorithms for generalized data sets
 - Use of transparency in multi-parameter data visualization
- Visualization techniques for engineering and design analysis/Haber
 - Methods of data conversion from numerical simulation output to visual systems
 - Interactive visualization tools for design and analysis
 - Hardware systems for scientific visualization
- An interactive, discipline independent data visualization system/Treinish
 - Management and retrieval of multi-dimensional data through a common data format
 - Expert systems as an aid in visualization and data management
- Synergies between entertainment and scientific visualization/Yaeger
 - Computational and I/O Bandwidth requirements
 - Elements of an entertainment production system
 - Particle systems, color maps and polygonal models
 - Production systems for scientific visualizations
- PANEL: The future of scientific visualization–Problems and solutions/All
 - Visualization needs of the scientific research group
 - Hardware and software problems and directions for industry
 - The multi-dimensional, multi-parameter visualization problem
 - Requirements for workstation-based visualization tools
 - Funding of scientific visualization

CHAIR

Robert L. Cook, Pixar

LECTURERS

Alan H. Barr, California Institute of Technology, Pasadena, CA

Robert L. Cook, Pixar, San Rafael, CA

Stefen M. Fangmeier, National Center for Supercomputing Applications, Champaign, IL

Robert Nathan, Jet Propulsion Laboratory, Pasadena, CA

Arthur J. Olson, Scripps Clinic, La Jolla, CA

Thomas Stephenson, The Analytic Sciences Corporation (TASC), Reading, MA

TOPICS

- Planetary image processing/Nathan
 - Corrections and enhancements of scanner data
 - Examples from unmanned planetary exploration program
- Computer Graphics and Biomolecular Modeling/Olson
 - Historical development of molecular modeling scope of activities (naturalism, design, prediction)
 - Synthesis of biomolecular models
 - Sources of information–Integration of data, Interactivity
 - Analysis of biomolecular models
 - Algorithms–Choosing the questions. Statics, Dynamics.
 - Visualization–representing properties and behavior
 - Communication of biomolecular information
- Scientific applications of graphics/Stephenson
 - Superseer–cloud simulation and forecasting
 - Mars viking imagery analysis–shape from shading
 - MARC–A system for simulation and visualization of space mission scenarios
 - Target tracking–discrete Bayesian filtering
 - Calgary Olympics–remote sensing and data fusion
- Teleological modeling/Barr
 - Graphics applications
 - Biomedical applications
- The scientific visualization process/Fangmeier
 - The role of visualization in the computational research cycle
 - The NCSA visualization program
 - Tools and techniques for visual analysis
 - Examples from astrophysics, chemistry, meteorology, nuclear magnetic research, biology, astronomy and seismology

21

STEREOSCOPIC AND MULTIPLANAR COMPUTER GRAPHICS

Monday–Intermediate

CHAIR

Larry F. Hodges, Georgia Institute of Technology

LECTURERS

Larry F. Hodges, Georgia Institute of Technology, Atlanta, GA

Phillip Johnson, Tektronix, Inc., Beaverton, OR

Shaun Love, North Carolina State University, Raleigh, NC

David F. McAllister, North Carolina State University, Raleigh, NC

Lowell Noble, SOCS Research, Monte Sereno, CA

Lawrence D. Sher, Bolt, Beranek and Newman Laboratories, Inc.,
Cambridge, MA

TOPICS

- Overview of 3-D display/Hodges
- Time-multiplexed stereoscopic display/Johnson
- Varifocal mirror display/Sher
- Alternating pairs/moving slit/chromostereoscopic systems/
McAllister
- 3-D cursor/human factors/McAllister
- Stereoscopic transformations/Hodges
- 3-D hardcopy techniques/Love
- Demonstrations of 3-D display technologies

CHAIR

Peter Wisskirchen, Gesellschaft für Mathematik und Datenverarbeitung MBH

LECTURERS

Erich L. Rome, GMD, Gesellschaft für Mathematik und Datenverarbeitung, St. Augustin, West Germany

Peter Wisskirchen, GMD, (German National Research Center for Computer Science), St. Augustin, West Germany

TOPICS

- Introduction to object-oriented systems/Wisskirchen
- Comparing classical and object-oriented graphics systems/Wisskirchen
 - Naming and editing of graphics objects
 - Communication between application and user interface
 - Specialization of a graphics kernel by inheritance.
- Modularization of application and user interface/Wisskirchen
 - Application model, mapping and basic functions
 - Separation facilities in object-oriented systems
- The Model-View-Controller concept/Wisskirchen
 - Establishing the MVC-triad
 - Example of a model with two different user interfaces
- New developments and open problems/Wisskirchen
 - Objects and part-of hierarchies
 - Graphical constraints
 - Graphics and hybrid knowledge representation
- Object-oriented programming in Lisp Environments/Rome
 - Development of object-oriented Lisp extensions
 - Concepts of the New Flavor System: non-hierarchical inheritance, generic functions, method combination
- Object-oriented graphics in Lisp environments/Rome
 - Graphics facilities on the Lisp machine
 - Summary of advanced object-oriented graphics programs on the Lisp machine: dynamic windows, presentation type substrate
 - 3-D modeling
- Application example/Rome
 - Modularization of the functionality of an object-oriented tree editor

23

INTRODUCTION TO SOLID MODELING

Monday–Beginning

CHAIR

George Allen, McDonnell Douglas Corporation

LECTURERS

George Allen, McDonnell Douglas Corporation, Cypress, CA

Robert H. Johnson, CIMDATA, Ann Arbor, MI

James R. Miller, University of Kansas, Lawrence, KS

TOPICS

- Motivation/Johnson
- Schemes for computer representation of solid objects/Allen
- Techniques for constructing and editing solid models/Allen
- General user-interface issues/Allen
- Fundamental geometric algorithms/Miller
- Currently-available applications/Johnson
- Architectural issues/Miller
- Data exchange standards for solid models/Miller
- Special hardware for solid modeling/Allen
- Some open problems, trends and directions/Allen
- Industrial usage of solid modeling/Johnson

24

***CURVE AND SURFACE DESIGN: FROM
GEOMETRY TO APPLICATIONS***

Tuesday–Intermediate

CHAIR

Gerald Farin, Arizona State University

LECTURERS

Robert E. Barnhill, Arizona State University, Tempe, AZ

Gerald Farin, Arizona State University, Tempe, AZ

Thomas Foley, Arizona State University, Tempe, AZ

Gregory M. Nielson, Arizona State University, Tempe, AZ

TOPICS

- Bézier curves/Farin
- Curve interpolation/Barnhill
- B-splines, NURBS/Farin
- Tensor product surfaces/Foley
- Triangular patches/Nielson
- Coons and Gordon surfaces/Barnhill
- Selected topics/Foley
- Geometric continuity/Nielson
- Scattered data interpolation/Foley
- Geometry processing/Barnhill
- Selected topics/Nielson
- Summary and comparison of methods/Farin

25

**CONTEMPORARY APPROACHES
TO GEOMETRY FOR COMPUTER
GRAPHICS AND COMPUTER
AIDED DESIGN**

Monday–Intermediate

CHAIR

Ronald N. Goldman, University of Waterloo

LECTURERS

Brian A. Barsky, University of California at Berkeley,
Berkeley, CA

Tony D. DeRose, University of Washington, Seattle, WA

Ronald N. Goldman, University of Waterloo, Waterloo, Ontario

Thomas W. Sederberg, Brigham Young University, Provo, UT

TOPICS

- Affine geometry/DeRose
 - Affine space
 - Affine coordinates
 - Affine transformations
 - Applications to computer graphics
 - Applications to computer aided design
- Recursive curves and surfaces/Goldman
 - Bézier, Polya, and B-Spline curves and surfaces
 - Recursive evaluation algorithms
 - De Castelijau algorithm
 - Neville algorithm
 - De Boor algorithm
 - Duality
 - Specialized hardware
 - Probabilistic models
- Geometric continuity/Barsky
 - Parametric continuity
 - Beta constraints
 - Shape parameters
 - Beta-splines
 - Nu-splines
 - Wilson-Fowler splines
- Cubic algebraic patches/Sederberg
 - Implicit surfaces
 - Cubic surfaces
 - Tangent continuity
 - Parametrizations
 - Algorithms
 - Geometric modeling

26

COMPUTATIONAL ALGEBRAIC GEOMETRY AND GEOMETRIC MODELING

Tuesday–Advanced

CHAIR

Shreeram S. Abhyankar, Purdue University

LECTURERS

Shreeram S. Abhyankar, Purdue University, West Lafayette, IN

Chanderjit L. Bajaj, Purdue University, West Lafayette, IN

Christoph M. Hoffmann, Purdue University, West Lafayette, IN

TOPICS

- Introduction to analytic and projective geometry
 - Conic sections
 - Points at infinity
 - Affine space/Projective plane
- Introduction to theory of equations
 - Polynomials, power series, rational functions
 - Completing the kth Power
 - Functional linear transformations
- Rudiments of algebraic geometry
 - Algebraic curves
 - Singularities for a curve
 - Tangents at singularities
 - Places of a curve–Newton's theorem
 - Resolution of singularities–Quadratic transformations
 - Bezout's theorem
 - Polynomial, rational and birational maps–Luroth's theorem, Castelnuovo's Theorem
- Computing parametric equations
 - Efficient algorithms for low degree curves and surfaces
 - Genus criterion for the rationality of a curve
- Computing Implicit equations
 - Efficient algorithms for rational parametric curves
 - Extraneous factors problem for rational parametric surfaces and algorithms for surfaces
- Computing surface–surface intersections
 - Numerical high order scheme for implicit-implicit and parametric intersections
 - Adaptive step size selection in tracing
 - Algebraic methods for analyzing and handling singularities

27

DEVELOPMENTS IN PHYSICALLY-BASED MODELING

Monday–Advanced

CHAIR

Alan H. Barr, California Institute of Technology

LECTURERS

John F. Abel, Cornell University, Ithaca, NY

Alan H. Barr, California Institute of Technology, Pasadena, CA

Ronen Barzel, California Institute of Technology, Pasadena, CA

Donald P. Greenberg, Cornell University, Ithaca, NY

John C. Platt, California Institute of Technology, Pasadena, CA

Craig Reynolds, Symbolics, Inc., Los Angeles, CA

TOPICS

- Introduction to physically-based modeling/Barr
 - Teleological modeling
 - Constraint methods
 - Physical modeling
 - Relation to conventional modeling/animation methods
- Numerical methods for physically-based modeling/Platt
- Structural analysis and finite element methods/Abel
- Physically-based rendering methods/Greenberg
- A hierarchical framework for Newtonian mechanics/Barr
- Developments in dynamic constraints/Barzel
- Modeling elastic and plastic objects/Platt
- Issues for a physically-based modeling/animation language/Barr
- Animation sampler/host/Reynolds

CHAIRS

Masa Inakage, The Media Studio

Ken Perlin, New York University

LECTURERS

Alain Fournier, University of Toronto, Toronto, Ontario

Geoffrey Y. Gardner, Grumman Data Systems, Woodbury, NY

Masa Inakage, The Media Studio, Tokyo, Japan

Darwyn R. Peachey, Pixar, San Rafael, CA

Ken Perlin, New York University, New York, NY

TOPICS

- Introduction to functional based modeling/Inakage
- Solid textures and antialiasing issues/Peachey
- Natural scene modeling: clouds and terrain/Gardner
- Parametric surface model: waves and beyond/Fournier
- Fuzzy object modeling: artistic approach/Inakage
- Extension of texture modeling to shape and motion/Perlin

TECHNICAL PROGRAM-AT-A-GLANCE

DAY & TIME	OMNI COLISEUM
WED. 9:00-10:30	OPENING SESSION
10:45-12:30	PAPERS: FAST POLYGON ALGORITHMS
1:45-3:15	PAPERS: VOLUME RENDERING
3:30-5:00	PAPERS: LIGHTING MODELS
THUR. 9:00-10:30	PAPERS: USER INTERFACE
10:45-12:15	PAPERS: NATURAL PHENOMENA
1:45-3:15	PAPERS: PHYSICALLY BASED MODELING I
3:30-5:00	PAPERS: CURVES AND SURFACES
FRI. 9:00-10:30	PAPERS: FILTERING AND TEXTURING
10:45-12:15	PAPERS: HARDWARE SYSTEMS
1:45-3:15	PAPERS: PHYSICALLY BASED MODELING II
3:30-5:00	PAPERS: ANIMATION

<i>GEORGIA WORLD CONGRESS CENTER—BALLROOM</i>	<i>GEORGIA WORLD CONGRESS CENTER—AUDITORIUM</i>
	<i>OPENING SESSION</i>
	<i>INVITED PAPERS: APPLICATIONS OF COMPUTER GRAPHICS</i>
	<i>PANEL: SCREEN POSTSCRIPT</i>
	<i>PANEL: USER INTERFACE TOOLKITS: PRESENT AND FUTURE</i>
<i>PANEL: FOUR PATHS TO COMPUTER ANIMATION: ENTERTAINMENT, BROADCAST, EDUCATION, AND SCIENCE—WILL THEIR FUTURES CONVERGE?</i>	<i>PANEL: PARALLEL PROCESSING FOR COMPUTER VISION AND DISPLAY</i>
<i>PANEL: WHAT CAN WE LEARN BY BENCHMARKING GRAPHICS SYSTEMS?</i>	<i>PANEL: COMPUTER GRAPHICS AND THE CHANGING METHODOLOGY FOR ARTISTS AND DESIGNERS</i>
<i>PANEL: X WINDOW SYSTEM</i>	<i>PANEL: THE REALITY OF COMPUTER GRAPHICS IN THE MOTION PICTURE INDUSTRY</i>
	<i>PANEL: MEDIA TECHNOLOGY</i>
	<i>PANEL: HARDWARE STRATEGIES FOR SCIENTIFIC VISUALIZATION</i>
	<i>PANEL: SOFTWARE DIRECTIONS FOR SCIENTIFIC VISUALIZATION</i>
	<i>PANEL: DESIGNING EFFECTIVE PICTURES: IS PHOTOGRAPHIC REALISM THE ONLY ANSWER?</i>
	<i>PANEL: EXTENDING GRAPHICS STANDARDS TO MEET INDUSTRY REQUIREMENTS</i>

TECHNICAL PROGRAM

OPENING SESSION

9:00-10:30

SIGGRAPH '88 WELCOME

Andrew C. Goodrich, Adele Newton

SIGGRAPH REPORT

Kellogg S. Booth

1988 SIGGRAPH AWARD

Presented by Bertram Herzog

Computer Graphics Achievement Award

Alan H. Barr

CONFERENCE OVERVIEW

Andrew C. Goodrich

Adele Newton

INVITED SPEAKER

Larry Smarr

National Center for Supercomputing Applications

"The Rise of Scientific Visualization—A New Market
for the 1990s"

INVITED PAPERS

APPLICATIONS OF COMPUTER GRAPHICS

This special session arose from an effort of the SIGGRAPH executive committee to broaden the technical content of the annual conference. A task force, chaired by Tom Wright, was formed and met on February 23, 1987, to formulate ways to achieve this goal. A key recommendation of the task force (see *Computer Graphics*, Volume 21, Number 5, October 1987) was to initiate a special session of invited papers on applications of computer graphics in specific technical areas. This session implements that recommendation.

The three groups chosen for this inaugural session represent areas of scientific research and development for which high quality and high performance graphics are critical to the success of the applications.

SIGGRAPH '88 congratulates these authors who represent not only state-of-the-art research and development efforts in their respective technical specialties, but who also represent significant computer graphics expertise.

The three invited papers will be published in the SIGGRAPH '88 conference proceedings.

PAPER

FAST POLYGON ALGORITHMS

10:45-12:30, Omni Coliseum

CHAIR

A. Robin Forrest, University of East Anglia

A Parallel Algorithm for Polygon Rasterization

Juan Pineda, Apollo Computer, Inc.

The Triangle Processor and Normal Vector Shader: A VLSI System for High Performance Graphics

Michael Deering, Schlumberger Palo Alto Research

Stephanie Winner, Schlumberger Palo Alto Research

Bic Schediwy, Schlumberger Palo Alto Research

Chris Duffy, Schlumberger Palo Alto Research

Neil Hunt, Schlumberger Palo Alto Research

An Efficient Algorithm for Finding the CSG Representation of a Simple Polygon

David Dobkin, Princeton University

Leonidas J. Guibas, Stanford University and DEC Systems Research Center

John Hershberger, DEC Systems Research Center

Jack Snoeyink, Stanford University

Subnanosecond Pixel Rendering with Million Transistor Chips

Nader Gharachorloo, IBM

Satish Gupta, IBM

Erdem Hokenek, IBM

Peruvemba Balasubramanian, IBM

Bill Bogholtz, IBM

Christian Mathieu, IBM

Christos Zoulas, IBM

INVITED PAPERS

APPLICATIONS OF COMPUTER GRAPHICS

10:45-12:30, Georgia World Congress Center Auditorium

CHAIR

Hank Christiansen, Brigham Young University

Getting Graphics in Gear: Graphics and Dynamics in Driving Simulation

Rod Deyo, Evans and Sutherland

John Briggs, Evans and Sutherland

Pete Doenges, Evans and Sutherland

Applications of Computer Graphics to the Visualization of Meteorological Data

T.V. Papathomas, AT&T Bell Laboratories

J.A. Schiavone, AT&T Bell Laboratories

B. Julesz, AT&T Bell Laboratories

A Hand Biomechanics Workstation

David E. Thompson, Louisiana State University

William L. Buford, Jr., GWL National Hansen's Disease Center

Lloyd M. Myers, GWL National Hansen's Disease Center

David J. Giurintano, GWL National Hansen's Disease Center

John A. Brewer III, Louisiana State University

PAPER

VOLUME RENDERING

1:45-3:15, Omni Coliseum

CHAIR

Turner Whitted, Numerical Design, Ltd.

A Rendering Algorithm for Visualizing 3-D Scalar Fields

Paolo Sabella, Schlumberger-Doll Research

VBUFFER: Visible Volume Rendering

Craig Upson, Stellar Computer Inc.

Michael Keeler, Ardent Computer

Volume Rendering

Robert A. Drebin, Pixar

Loren Carpenter, Pixar

Pat Hanrahan, Pixar

PANEL

SCREEN POSTSCRIPT

1:45-3:15, Georgia World Congress Center Auditorium

CHAIR

Charles Geschke, Adobe Systems, Inc.

One of the most exciting and controversial areas in display graphics today is the use of PostScript for screen display and window systems. PostScript is an interpretive programming language with powerful, resolution-independent graphics capabilities.

PostScript played a key role in bringing about the desktop publishing revolution and is now a de facto standard for laser printers. In the words of Arthur C. Clarke, "PostScript is the future of words on paper."

Recently several products have brought PostScript to the screen. These range from basic PostScript output display to an entire window system based on PostScript. Printing and screen display can now be driven from a common format.

This panel brings together pioneers and leading developers of PostScript screen technology from Sun Microsystems, Adobe Systems, Digital Equipment Corporation, Silicon Graphics and NeXT. The panelists contrast their different design approaches, discuss 'real-world' applications and speculate on future directions.

PANELISTS

Mark Callow, Silicon Graphics

James Gosling, Sun Microsystems, Inc.

Leo Hourvitz, NeXT, Inc.

Scott McGregor, Digital Equipment Corporation

PAPER

LIGHTING MODELS

3:30-5:00, Omni Coliseum

CHAIR

Donald P. Greenberg, Cornell University

A Progressive Refinement Approach to Fast Radiosity Image Generation

Michael F. Cohen, Cornell University

Shenchang Eric Chen, Cornell University

John R. Wallace, Cornell University

A Ray Tracing Solution to Interreflection

Gregory J. Ward, Lawrence Berkeley Laboratory

Francis M. Rubinstein, Lawrence Berkeley Laboratory

Robert D. Clear, Lawrence Berkeley Laboratory

A New Radiosity Approach by Procedural Refinements for Realistic Image Synthesis

Min-Zhi Shao, Zhejiang University

Qun-Sheng, Zhejiang University

You-Dong Liang, Zhejiang University

PANEL

USER INTERFACE TOOLKITS: PRESENT AND FUTURE

3:30-5:00, Georgia World Congress Center Auditorium

CHAIR

Brad A. Myers, Carnegie Mellon University

The days when people implemented user interfaces from scratch are almost over. Implementers now expect to use some kind of user interface toolkit when constructing their systems. These toolkits may contain such things as mouse-based menus, buttons and scroll-bars, as well as facilities for handling the keyboard. These low level primitives out of which user interfaces are constructed are often called interaction techniques. This panel discusses what interaction techniques can be found in toolkits today, and what will be available in the future. Other topics to be covered include the internal structure of the toolkits (why are they mostly object-oriented?), and tools for helping the programmer use the toolkit (often called user interface management systems).

PANELISTS

Owen Densmore, Sun Microsystems, Inc.

David Goldsmith, Apple Computer, Inc.

Andrew Schulert, On Technology

Smokey Wallace, Digital Equipment Corporation

PAPER

USER INTERFACE

9:00-10:30, Omni Coliseum

CHAIR

Dan R. Olsen, Jr., Brigham Young University

ConMan: A Visual Programming Language for
Interactive Graphics

Paul E. Haeberli, Silicon Graphics

Graphical Search and Replace

David Kurlander, Columbia University

Eric A. Bier, Xerox PARC

A Study in Interactive 3-D Rotation Using 2-D Control Devices

Michael Chen, University of Toronto

S. Joy Mountford, Apple Computer Inc.

Abigail Sellen, University of California, San Diego

PANEL

**FOUR PATHS TO COMPUTER ANIMATION:
ENTERTAINMENT, BROADCAST, EDUCATION,
AND SCIENCE – WILL THEIR FUTURES
CONVERGE?**

9:00-10:30, Georgia World Congress Center Ballroom

CHAIR

Nancy St. John, Pacific Data Images

Scientific graphics gave birth to the computer animation field in the 1960s. In the early 1970s, broadcast and educational computer animation were offshoots from scientific animation, and, in the early 1980s, broadcast animation gave birth to entertainment animation. What will the 1990s bring? Already, entertainment companies are providing computers for scientific and educational use while entertainment and broadcast animation are using more and more science. Will these four fields converge into one field again? Or will there still be science animation as opposed to education animation or entertainment animation rather than broadcast animation?

The panelists attempt to address these questions and will present representative work from their respective fields. A lively discussion should ensue with the presentation of different perspectives of where computer animation will and should go.

PANELISTS

Jim Blinn, Jet Propulsion Laboratory

Bill Kovacs, Pacific Data Images

Carl Rosendahl, Pacific Data Images

Craig Upson, Stellar Computer, Inc.

PANEL

PARALLEL PROCESSING FOR COMPUTER VISION AND DISPLAY

9:00-10:30, Georgia World Congress Center Auditorium

CHAIR

Rae A. Earnshaw, University of Leeds, UK

Current developments in parallel processing are of increasing interest to those concerned with the creation, display and analysis of pictures. This panel explores the impact that developments in parallelism are having in the traditional areas of computer graphics and visualization.

State-of-the-art topics include SIMD machines, VLSI and ULSI architectures for vision and image, high performance visualization of 3-D models, parallel algorithms, low-level vision, theoretical aspects, image segmentation, CSP arrays and transputers, real-time 3-D graphics and pattern recognition.

The following are of great significance:

- Computer graphics and computer vision strategies are being brought together via vision and AI techniques.
- Ingenious developments in parallel architectures are producing systems capable of exploitation in novel and revolutionary application areas.
- The sum total of these tools is a range of powerful and innovative systems that will change the face of computer graphics and the traditional man/machine interface.

PANELISTS

Peter M. Dew, University of Leeds, UK

Henry Fuchs, University of North Carolina at Chapel Hill

Tosiyasu L. Kunii, University of Tokyo, Japan

Michael J. Wozny, Rensselaer Polytechnic Institute and National Science Foundation

PAPER

NATURAL PHENOMENA

10:45-12:15, Omni Coliseum

CHAIR

Alain Fournier, University of Toronto

Harnessing Chaos for Image Synthesis

Michael F. Barnsley, Georgia Institute of Technology

Arnaud Jacquin, Georgia Institute of Technology

Francois Malassenet, Georgia Institute of Technology

Laurie Reuter, Georgia Institute of Technology

Alan D. Sloan, Georgia Institute of Technology

Developmental Models of Herbaceous Plants for Computer Imagery Purposes

Przemyslaw Prusinkiewicz, University of Regina

Aristid, Lindenmayer, University of Utrecht

James Hanan, University of Regina

Plant Models Faithful to Botanical Structure and Development

Ph. de Reffye, Centre de Cooperation Int'l en Recherche

Agronomique pour le Developpement

C. Edelin, Institut de Botanique, USTL

J. Francon, Universite Louis Pasteur

M. Jaeger, Universite Louis Pasteur

C. Puech, Laboratoire d'Informatique de l'Ecole Normale Supérieure

PANEL

**COMPUTER GRAPHICS AND THE CHANGING
METHODOLOGY FOR ARTISTS AND
DESIGNERS**

10:45-12:15, Georgia World Congress Center Auditorium

CHAIR

Alyce Kaprow, The New Studio

As computer graphics become a standard addition in the artist's and designer's studio, the notion of the *process* of visual communication and visual problem solving is changing. Along with this comes a newly defined approach to visual problem solving based on the additional capabilities of the designer/artist. There is also a need to understand the distinct differences between the disciplines of art-making and graphic design, which are often considered one and the same by the developers of graphic systems. Because the computer is capable of synthesizing many tasks and operations, the lines often drawn between visual art, music, poetry, sound and environmental design will become faint, allowing us to define

a new aesthetic. The state of the art, or more accurately, the state of the market, available to artists and designers has a long way to go to make this technology accessible and affordable to all. However, even with all the present limitations and hesitations, it is still a time to become aware of the inevitable changes, and to be a direct participant in the development of this technology. The use of such equipment promises to expand our abilities beyond anything that has been previously investigated. It is essential that those artists and designers who embrace this technology help form it into a meaningful and useful toolbox.

PANELISTS

Rob Haimes, Consultant

Joel Slayton, San Jose University

Paul Souza, WGBH Educational Foundation

PANEL

WHAT CAN WE LEARN BY BENCHMARKING GRAPHICS SYSTEMS?

10:45-12:15, Georgia World Congress Center Ballroom

CHAIR

Ricki Blau, University of California, Berkeley

As a growing user population relies on computer graphics as a tool in everyday work, there is increasing interest in the performance of graphics systems. Recent proposals for standard graphics benchmarks demonstrate this interest. This panel discusses some of these proposals and investigates general issues in measuring the performance of graphics systems. Can a standard set of benchmarks reveal accurate insights to a varied constituency? What are the right and the wrong parameters to measure? How can we obtain the information we want? What comparisons are useful? Panelists consider the structure, contents and interpretation of benchmarks and offer alternative approaches to performance measurement.

The panelists include benchmark designers, system builders and users with wide experience in the performance analysis of software and hardware for graphics. The goal of the panel is to suggest ways to obtain meaningful performance measurements.

PANELISTS

Alan Broder, Mitre Corporation

Mark A. Charette, Electronic Data Systems Corporation

Brian Croll, Sun Microsystems, Inc.

Turner Whitted, Numerical Design, Ltd.

PAPER

PHYSICALLY BASED MODELING I

1:45-3:15, Omni Coliseum

CHAIR

Allan H. Barr, California Institute of Technology

Spacetime Constraints

Andrew Witkin, Schlumberger Palo Alto Research

Michael Kass, Schlumberger Palo Alto Research

The Motion Dynamics of Snakes and Worms

Gavin S.P. Miller, Alias Research Inc.

A Modeling System Based on Dynamic Constraints

Ronen Barzel, California Institute of Technology

Alan H. Barr, California Institute of Technology

PANEL

X WINDOW SYSTEM

1:45-3:15, Georgia World Congress Center Ballroom

CHAIR

George Champine, Digital Equipment Corporation

The X Window System has now been endorsed by every major workstation manufacturer, and is rapidly becoming a de facto industry standard for application interfaces. However, the impact on graphics is far from clear and X is still evolving.

Major issues to be addressed by the panel include: lack of world coordinate output (à la PostScript); relationship to NeWS and MS-Windows; support of images and live video; adequacy of the toolkit; 3-D extensions to X; and role of the X Consortium.

X has generated considerable controversy because it introduces yet another drawing package whose relationship to existing graphics standards is unknown, as is its applicability to graphics applications. This issue is also addressed.

PANELISTS

James Gettys, Digital Equipment Corporation

Georges Grinstein, University of Lowell

Bertram Herzog, University of Michigan

Robert Scheifler, Massachusetts Institute of Technology

PANEL

***THE REALITY OF COMPUTER GRAPHICS
IN THE MOTION PICTURE INDUSTRY***

1:45-3:15, Georgia World Congress Center Auditorium

CHAIRS

Richard Hollander, Video Image Associates

Michael Wahrman, deGraf/Wahrman, Inc.

This panel addresses the state of computer generated imagery in the film industry as it exists today. It is five years since the release of Tron and the use of computer generated effects in the motion picture industry is still quite limited. Many of the people in the field of computer graphics believe that Hollywood is moving inexorably in the direction of computer generated imagery for special effects and animation, but in the industry itself there is no such perception. In fact, one occasionally hears computer graphics described as "cold, expensive, over-rated and of no particular interest to the movie-going audience."

This panel discusses the attitudes of the Hollywood entertainment creative and decision-making community towards computer graphics, animation and special effects. Questions to be discussed include:

- Who uses computer graphics today?
- Why they don't use more of it?
- Why is the perception that there is no audience demand?
- What can be done to improve the acceptance of this medium in the film industry?

PANELISTS

Mike Fink, Peak's Island Productions

Kirk Thatcher, Henson Associates

Ralph Winter, Paramount Studios

PAPER

CURVES AND SURFACES

3:30-5:00, Omni Coliseum

CHAIR

Tony D. DeRose, University of Washington

Rendering Trimmed NURBS with Adaptive Forward Differencing

Michael Shantz, Sun Microsystems, Inc.

Sheue-Ling Chang, Sun Microsystems, Inc.

A Recursive Evaluation Algorithm for a Class of Catmull-Rom
Splines

Phillip J. Barry, University of Waterloo

Ronald N. Goldman, University of Waterloo

Hierarchical B-Spline Refinement

David R. Forsey, University of Waterloo

Richard H. Bartels, University of Waterloo

PANEL

HARDWARE STRATEGIES FOR SCIENTIFIC VISUALIZATION

9:00-10:30, Georgia World Congress Center Auditorium

CHAIR

Robert Haber, National Center for Supercomputing Applications and University of Illinois at Urbana-Champaign

This panel explores competing strategies for hardware systems that respond to the needs of scientific visualization in today's world of large-scale numerical simulations. The panelists debate the merits of a variety of system architectures, ranging from systems based on PCs, to workstations, to supercomputers. New technologies for networking and distributed graphics are presented for post-simulation analysis and real-time, interactive monitoring and steering of numerical simulations.

Visualization users and vendors examine how well the computer graphics industry is responding to the needs of the scientific visualization community by asking the following questions:

- Do technologies ported from CAD/CAM and commercial animation adequately serve the needs of scientists?
- Do they deal with the real bottlenecks in the visualization process?
- Is the level of integration of graphics hardware, software tools and video animation equipment adequate?
- And is the visualization market large enough to support the rate of product development that scientists are demanding?

PANELISTS

Jim Clark, Silicon Graphics

Thomas A. DeFanti, University of Illinois at Chicago

Lou Doctor, Raster Technologies, Inc.

Frank Moss, Stellar Computer, Inc.

PAPER

HARDWARE SYSTEMS

10:45-12:15, Omni Coliseum

CHAIR

Nick England, Sun Microsystems, Inc.

High-Performance Polygon Rendering

Kurt Akeley, Silicon Graphics

Tom Jermoluk, Silicon Graphics

Virtual Graphics

Douglas Voorhies, Apollo Computer, Inc.

David Kirk, Apollo Computer, Inc.

Olin Lathrop, Apollo Computer, Inc.

A Display System for the Stellar Graphics Supercomputer
Model GS1000

Brian Apgar, Stellar Computer, Inc.

Bret Bersack, Stellar Computer, Inc.

Abraham, Mammen, Stellar Computer, Inc.

PANEL

**SOFTWARE DIRECTIONS FOR SCIENTIFIC
VISUALIZATION**

10:45-12:15, Georgia World Congress Center Auditorium

CHAIR

Gordon Bancroft, NASA/Ames Research Center

This panel focuses on the visualization needs of scientists and engineers. How are they being addressed by current trends in software? What tools are available now? How are they being used? What still needs to be provided?

Key topics to be discussed are: existing and emerging standards for visualization; support for network environments and distributed applications; the role of commercial animation packages; new techniques such as volume visualization; and how one deals with the huge quantities of data involved in scientific visualizations.

Other issues to be addressed are:

- Where will new developments come from?
- What will be required of end-users?
- What can be expected from software providers?
- How can research activities in computer graphics be translated into tools for scientists?
- How can the scientific community share and coordinate ongoing developments?

PANELISTS

Roy Hall, Wavefront Technologies

Mike Kaplan, Ardent Computer

Al Lopez, Apollo Computer, Inc.

Alvy Ray Smith, Pixar

PAPER

PHYSICALLY BASED MODELING II

1:45-3:15, Omni Coliseum

CHAIR

Edwin E. Catmull, Pixar

Terrain Simulation Using a Model of Stream Erosion

Alex D. Kelley, Arizona State University

Michael C. Malin, Arizona State University

Gregory M. Nielson, Arizona State University

Modeling Inelastic Deformation: Viscoelasticity, Plasticity,
Fracture

Demetri Terzopoulos, Schlumberger Palo Alto Research

Kurt Fleischer, Schlumberger Palo Alto Research

Constraint Methods for Flexible Models

John C. Platt, California Institute of Technology

Alan H. Barr, California Institute of Technology

PANEL

***DESIGNING EFFECTIVE PICTURES:
IS PHOTOGRAPHIC REALISM THE
ONLY ANSWER?***

1:45-3:15, Georgia World Congress Center Auditorium

CHAIRS

Steven Feiner, Columbia University

Jock Mackinlay, Xerox PARC

With each passing year, advances in software and hardware have allowed us to generate increasingly more realistic images. Although the quest for photographic realism offers us a compelling touchstone by which to measure our progress, it emphasizes only one of many possible pictorial styles. This panel addresses important questions about the creation of effective computer graphic images, such as:

- When is realism needed?
- When is a stylized image more appropriate?
- How can different modeling and rendering styles be combined in the same image?
- How does the cost of attaining realism affect the mixture of realistic and stylized aspects?
- What are the principles for designing effective images?
- Can appropriate designs be selected automatically to fit the particular user and situation?

PANELISTS

Jim Blinn, Jet Propulsion Laboratory

Donald P. Greenberg, Cornell University

Margaret A. Hagen, Boston University

PAPER

ANIMATION

3:30-5:00, Omni Coliseum

CHAIR

Doris Kochanek, National Film Board of Canada

Collision Detection and Response for Computer Animation

Matthew Moore, University of California at Santa Cruz

Jane Wilhelms, University of California at Santa Cruz

Realistic Animation of Rigid Bodies

James K. Hahn, Ohio State University

Motion Control by Optimal Control

Lynne Shapiro Brotman, AT&T Bell Laboratories

Arun N. Netravali, AT&T Bell Laboratories

PANEL

***EXTENDING GRAPHICS STANDARDS TO
MEET INDUSTRY REQUIREMENTS***

3:30-5:00, Georgia World Congress Center Auditorium

CHAIR

Albert J. Bunshaft, IBM Corporation

Users are forcing the coexistence of graphics systems with ease of use and performance as their requirements. At the same time, product developers are concerned about upward compatibility as well as exploitation of technology. There are still a number of technical questions remaining as to which path is the best to follow. This panel covers possible extensions to GKS, PHIGS and X-Windows by discussing the efforts to understand and improve these standards. The panel members represent implementers, researchers and independent consultants who have participated in the development of these systems.

The most recent status of efforts in these areas are discussed including the GKS Revision Cycle, PHIGS+, X-PEX and other related activities. This panel updates the technical community on these efforts and exposes them to opposing viewpoints. The audience is encouraged to express their opinions. The panel members focus on the following subjects: extending existing graphics standards; PHIGS+—extensions to PHIGS for curves, surfaces, light source modeling and shading; and extending X Window Systems for high-performance 3-D graphics.

PANELISTS

Salim Abi-Ezzi, Rensselaer Polytechnic Institute

Gregory D. Laib, IBM Corporation

Richard Puk, Puk Consulting Services

EXHIBITORS



"...there's so much to see at SIGGRAPH it's overwhelming..."

Shirley Reilly
Senior Engineer
Metheus

ABEKAS VIDEO SYSTEMS, INC.

Booth 2244

101 Galveston Drive
Redwood City, California 94063
(415) 369-5111
Mark Pinkel
Marketing Manager

Using an Ethernet port, the A60 Digital Disk Recorder provides the perfect interface to animation computers for both video transfer and machine control. Playback functions of the A60 may also be controlled via Ethernet. The A64 Digital Disk Recorder provides real-time layering in the CCIR 601 digital format. Whether used in the edit suite or in the graphics room, the A64 is the ultimate compositing tool.

ACADEMIC PRESS, INC.

Booth 2228

1250 Sixth Avenue
San Diego, California 92101
(619) 699-6599
C. Joyce Sikora
National Exhibits Manager

New titles: *Curves and Surfaces for Computer Aided Geometric Design* by Gerald Farin. *Creating User Interfaces by Demonstration* by Brad Myers. See the first volumes of a new series: Computer Graphics Technology and Applications. From the desktop: *Desktop Video: A Guide to Personal and Small Business Video Production*. *Desktop Publishing Type and Graphics*.

ACI ARCHITECTURAL COMPUTER INTELLIGENCE

Booth 427

Franz Josef-Strasse 33
Salzburg, Austria A-5020
01143 662/71792
Walter Staudinger
User Group Contact:
Karl Stucklberger

ACI manufactures Integrated Software-System for use in the field of A/E/C. This system—named APC Architectural Planning Coordinating—is based on a AI-Database. The modules are: 3D-CAD with AI-features, SPEC and CALC in Spread Sheets with Text-Connection, DATABASE for Interface-Management.

ACM COMPUTER SCIENCE CONFERENCE (CSC '89)

Registration Lobby

EMACS Department

University of Louisville

Louisville, Kentucky 40292

Arthur M. Riehl

It is time to plan for CSC '89, February 21-23, 1989, in Louisville, Ky. Whether you are interested in presenting a paper, attending exhibits, the Employment Register or having your company exhibit, stop by our booth for detailed information.

ACM SIGGRAPH SHOW DAILY

Booth 1544

119 Russell Street

Littleton, Massachusetts 01460

(508) 486-9501

Robert Holton

Publisher

Audrey Vasilopoulos

Managing Editor

The ACM SIGGRAPH '88 Show Daily covers show news, conference programs, major conference events, product news and developments, listing of exhibitors, floor plan, convention city entertainment and restaurant guide. The daily also covers new developments in computer graphics that are featured in the SIGGRAPH '88 conference program.

ADDISON-WESLEY PUBLISHING COMPANY

Booth 425

Jacob Way

Reading, Massachusetts 01867

(617) 944-3700

Carolyn Berry

Senior Marketing Manager

Addison-Wesley Publishing Company is a leading publisher of computer science and engineering books and software. The display features *Designing the User Interface*, by Ben Shneiderman, as well as the recently published, *An Introduction to Digital Typography*, by Richard Rubenstein. Also featured is *Computer Graphics*, by Rod Salmon and Mel Slater, and the classic *Fundamentals of Interactive Computer Graphics* by James Foley and Andries van Dam.

ADVANCED ELECTRONICS DESIGN, INC.

Booth 650

440 Potrero Avenue
Sunnyvale, California 94086
(408) 733-3555
Robert W. Deisher
Manager, Graphics Products

AED demonstrates the COLORWARE CARDS family of high-performance, board-level graphics products for the VME bus and Micro VAX Q-Bus. They provide 1280 x 1024 resolution with 8-bit planes as well as firmware support for X-window, TEK 4100 and VT100. Highlighting the demonstration, the new 1280 VE product offers enhanced performance derived from a multiprocessor architecture based on the 68030.

ADVANCED MICRO DEVICES

Booth 2118

901 Thompson Place
P.O. Box 3453
Sunnyvale, California 94088
(408) 732-2400
Michael Krell
Manager, Presentation Technology

AMD is a developer of integrated circuits serving the computation and communications marketplaces. A major market area for AMD is VLSI devices for graphics and display, including the Am81C458 Color Palette, the Am95C60 Quad Pixel Dataflow Manager QPDM and the Am29000 32-bit RISC microprocessor.

ADVANCED TECHNOLOGY CENTER

Booth 755

5711 Slauson Avenue
Suite 238
Culver City, California 90230
(213) 568-9119
Frank J. Braunlich
Sales Manager

ATC offers TwinTerm terminal emulators, GRAFPAK-GKS, P-CUBED image processing and Exelgraph business/presentation graphics. TwinTerm: Tektronix 4208, 4107, 4105 and DEC VT2XX emulation, GRAFPAK-GKS: Graphics subroutine library. GRAFPAK-CGM: For long-term picture storage. P-CUBED: For image processing and algorithm development. Exelgraph provides 50 predefined charts and custom chart formats.

ALIAS RESEARCH INC.

Booth 1048

110 Richmond Street East, 5th floor

Toronto, Ontario, Canada M5C 1P1

(416) 362-9181

Keith Raymond

Marketing Manager

Alias Research will be demonstrating a complete line of 3-D computer graphics systems for the design and animation professional. The most advanced modeling and animation techniques will be presented. Also in the booth will be 3-D Systems SLA/1 which produces plastic parts from models created with the ALIAS system.

ALLIANT COMPUTER SYSTEMS CORPORATION

Booth 1318

One Monarch Drive

Littleton, Massachusetts 01460

(617) 486-4950

Lew Brown

Marketing Manager

User Group Contact: Terry Holden

Marketing

Alliant Computer Systems Corp. manufactures a complete line of parallel processing mini-supercomputers for compute intensive engineering and scientific applications.

ANAKIN RESEARCH INC.

Booth 2318

100 Westmore Drive, Unit 11C

Rexdale, Ontario, Canada M9V 5C3

(416) 744-4246

Wim Grift/Wolfgang Dinger

EasyI Sales Manager

User Group Contact: Reid Eddy

Product Support Specialist

EasyI is a pressure sensitive 1024 x 1024 Pixel input tablet for IBM PC/XT/AT compatible systems and Amiga computers. The user can draw/trace directly into the computer with ordinary pen/pencil on paper. Applications include desktop publishing, presentation systems, touch control, animation and art.

ANALOG DEVICES, INC.

Booth 2408

Two Technology Way
Norwood, Massachusetts 02062
(617) 329-4700
Bob Fine

Applications Engineering Manager

For graphics and imaging applications, Analog Devices will display the ADSP-2100A high-speed numeric processor, the ADSP-2101 high-speed microcomputer, the ADSP-3212/3222 40MFLOPS 64-bit IEEE floating-point chipset, and the new single-chip ADSP-3264 31-MFLOPS 64-bit IEEE floating-point multiplier, ALU and register file. Data converters include the 12-bit 35ns AD568 and AD668 DACs, the ADV471/ADV478 triple 6-/8-bit DACs with on-chip RAM and control circuitry, the 8-bit 250/300MHz AD9701/AD9703 DACs. Three 8-bit flash ADCs offer 35 to 200MSPS conversion rates; the 8-bit AD9502 RS-170 video digitizer includes a video amp with dc restoration, sync detector and separator, phase-locked pixel clock oscillator and an 8-bit ADC.

ANL (ASSOCIATION NATIONALE DU LOGICIEL)

Booth 726

Campus Scientifique
Bld des Aiguillettes
Vandoeuvre, France 54500
33 83 91 21 58
Jacques Guidon
Director

ANL is a scientific group with: CNET (National Center for Research on Telecommunications); CNRS (National Center for Scientific Research); INRIA (National Institute for Research in Computer Science and Automatic); and MRES (Ministry of Research and University). At SIGGRAPH, ANL will demonstrate products from INRIA, CNRS and from small french companies.

Exhibitors

APOLLO COMPUTER

Booth 936

330 Billerica Road

Chelmsford, Massachusetts 01824

(617) 256-6600

Paul Bemis

Product Marketing

User Group Contact: Andrea Woloski

Apollo's systems and networks are used for computer aided engineering, design and manufacturing, as well as for electronic publishing, software development, AI Research and application development, architectural engineering, personal computing, financial analysis, mainframe technical processing and a host of other commercial and technical applications.

APPLE COMPUTER, INC.

Booth 1158

20525 Mariani Avenue

Cupertino, California 95014

(408) 996-1010

David Kulbarsh

Marketing Programs Manager, Technical Markets

Apple's Technical Markets Group will showcase a variety of hardware and software solutions, including the Macintosh family of computers, laserwriters, scanners, color and monochrome monitors, and system software. Technically advanced characteristics of the Macintosh family to be featured include graphical user interface, multi-tasking and high-performance systems. In addition, Apple will demonstrate third party solutions and advanced technology third party input/output devices.

APPLIED VISUAL TECHNOLOGIES, INC.

Booth 2344

15230 N. 75th Street, Suite 1030

Scottsdale, Arizona 85260

(602) 951-1747

Boyd Mangum

Vice President, Marketing

AVT will exhibit the Vision series of presentation products, ranging from the low-cost vision 100 and 200, available as software only, or as turnkey system, to the Vision 400, 600, & 700 design stations. Division HRCS image capture system, offering 4000 line resolution and 16 million colors, will also be displayed.

Exhibitors

ARDENT COMPUTER

Booth 1636

880 W. Maude Avenue
Sunnyvale, California 94086
(408) 732-0400

Steve Blank

Vice President of Marketing

Ardent Computer developed its Titan Graphics Supercomputer to support interactive graphics capabilities by using its vector and integer units for graphics computation. To complement Titan's graphics hardware, Ardent developed a high-level graphics software library—Dore (Dynamic Object Rendering Environment) to integrate the computation and analysis of complex data with advanced computer graphics.

ASSOCIATION FOR COMPUTING MACHINERY

Entrance Concourse

11 W. 42nd Street
New York, New York 10036
(212) 869-7440

Lillian Isreal

Manager, Membership Services and Marketing

Association for Computing Machinery (ACM) will be displaying its major journals, including *Transactions of Graphics* (TOG), Special Interest Group (SIG) newsletters and conference proceedings. SIGGRAPH newsletters and conference proceedings will be featured in addition to a viewing of past SIGGRAPH Video Reviews. Anyone wishing to join ACM SIGGRAPH (or any other SIG) may do so at the membership booth in the Entrance Concourse.

AT&T GRAPHICS SOFTWARE LABS

Booth 1148

10291 North Meridian, Suite 275
Indianapolis, Indiana 46290
(317) 844-4364

Laura VandenDries

Communications Manager

AT&T GSL will feature the TOPAS and RIO graphics software applications. TOPAS automates the creation of 3-D solid models and animation sequences for professional applications in graphic design, packaging design and video production. RIO is a 2-D object-oriented color design and layout package. Both packages can output to a variety of hardcopy devices at up to 4096 line resolution.

Exhibitors

AT&T PIXEL MACHINES

Booths 1148,1247

One Executive Drive, 3rd Floor
Somerset, New Jersey 08873
(201) 563-2281

Kathy Creighton-Dunphy
Marketing/Sales Support Manager

AT&T will exhibit a family of graphics supercomputers expressly designed for applications requiring real-time rendering and animation of 3-D objects, visual simulation, and data analysis and display. They offer up to 820 MFLOPS peak computing power; consists of a VME parallel interface, one or two transformation pipelines, a parallel array of up to 64 pixel processors, and a video controller for RGB and video output.

AUTOTASC CORPORATION

Booth 545

7825 E. Evans Road
Suite 500
Scottsdale, Arizona 85260
(602) 483-7983

Leo Dragomani
Manager, Advertising and Sales Promotion

Autotasc will exhibit productivity enhancement products designed for Targeted Application Specific Computers, including AutoCAD and P-CAD workstations, a new Display Card combining EGA, full 15-bit color and live video frame capture.

AV VIDEO/MONTAGE PUBLISHING, INC.

Booth 2126

25550 Hawthorne Blvd., #314
Torrance, California 90505
(213) 373-9993

Joy McGrath-Zapp
Publisher/President

AV Video, the monthly magazine of production techniques for the hands-on professional, is edited especially for readers and buyers who create and use audio/visuals, video and computer graphics on an everyday basis. It contains "how-to" and product-application articles that give the reader in-depth coverage of new and existing equipment, materials and services.

AZTEK, INC.

Booth 536

17 Thomas

Irvine, California 92718

(714) 770-8406

Randy R. Juhl

Graphics Director

User Group Contact: Randy R. Juhl

Graphics Director

AZTEK, Inc. offers a series of total solution, graphic communications systems to facilitate your production requirements from concept to production output in print, film and video.

Input for these systems is with tablet, stylus or scanner.

A 24-hour, on-site support service contract ensures you of constant productivity.

BARCO ELECTRONICS, INC.

Booth 844

1500 Wilson Way

Smyrna, Georgia 30082

(404) 432-2346

Frank Genovese

Director of Sales and Marketing

Barco Electronics, Inc. is exhibiting its comprehensive range of high-resolution, large-screen video/data/graphics projection systems, as well as its range of flexible video/RGB color display monitors.

BARCO-INDUSTRIES, INC.

Booth 2030

472 Amherst Street, Suite 16

Nashua, New Hampshire 03063

(603) 880-1430

Piet H. Lesage

National Sales and Marketing Manager

Barco-Industries presents the Calebrator™, a new series of microprocessor controlled monitors, allowing the user to control all parameters of the monitor. As the monitor has an auto-alignment function, it is ideally used where accurate color reproduction is necessary. Barco-Industries further displays monitors used in the printing and publishing, medical, and GIS industry.

BENCHER, INC.

Booth 2154

333 W. Lake Street
Chicago, Illinois 60606
(312) 263-1808
Todd Zimmerman

Benchmer will be exhibiting a complete line of copystands capable of holding up to 30 lb. cameras to be used in conjunction with Image Capture, Video Conversion, Video Digitalization and Slide Animation. M3 Videostand for large format cameras. Copymate stand for cameras up to 8 lbs. Perfect for high-resolution black and white cameras.

BENCHMARK TECHNOLOGIES LIMITED

Booth 2156

5 Penrhyn Road
Kingston upon Thames
Surrey, England KT1 2BT
44 01 541 1944
Mike King
Business Manager

benchMark will be launching a 16-bit video output module and a real-time frame grabber add-on for the highly acclaimed benchMark GIP graphics/image processor at SIGGRAPH '88. The GIP is designed for all graphics and image processing requirements where high-screen resolution, large image memory and fast responses are specified.

BROOKTREE CORPORATION

Booth 130

9950 Barnes Canyon Road
San Diego, California 92121
(619) 452-7580
Elizabeth A. Baird

Manager of Marketing Communications

Brooktree, a producer of the most technologically advanced products in the electronic graphics industry, is exhibiting several new RAMDACs this year; a 135 MHz RAMDAC with an on-chip user definable cursor; a PS/2 compatible true color RAMDAC capable of producing 16.8M colors simultaneously; and a 360 MHz single channel bipolar RAMDAC.

BRUNING COMPUTER GRAPHICS

Booth 1536

777 Arnold Drive

Martinez, California 94553

(415) 372-7568

Cindi Phillips

Marketing Communications Coordinator

User Group Contact: Don Cornell

Marketing Director

Bruning manufactures and sells the ZETA line of professional 8-pen plotters. High throughput, high resolution, and high speed are just a few of the ZETA characteristics. A-E size plotters are available and with pen changes "on-the-fly." We're sure there's one to meet your application needs—business graphics, mechanical, architectural, etc.

BRUNING/KMW

Booth 743

653 S. Melrose Street

Placentia, California 92670

(714) 528-2111

Cindi Phillips

Marketing Communications Coordinator

User Group Contact: Tim McNally

Supply Director

Bruning/KMW offers a wide variety of pen plotter supplies for the ZETA line of professional plotters along with HP, HI, Calcomp, etc.

BTS BROADCAST TELEVISION SYSTEMS, INC.

Booth 954

2300 S. 2300 West

Salt Lake City, Utah 84119

(801) 972-8000

Al Jensen

Manager, Marketing Communications

User Group Contact: Jeff Davis

Manager, Graphics

BTS will demonstrate EPIC™, a network-based product for computing, processing, displaying and recording computer images. The system combines high-performance image computation with a unique digital video network and allows expansion in both performance and number of users. EPIC is a system for end users and system integrators.

BYTE BY BYTE CORPORATION

Booth 2163

9442 Capital of Texas Highway North

Suite 150

Austin, Texas 78759

(512) 343-4357

Scott A. Peterson

President

User Group Contact: Floyd Wray

Marketing

Byte by Byte Corporation develops and markets visualization tools for the Macintosh II and Amiga personal computers.

The Sculpt-Animate 3-D professional software series brings sophisticated, yet low-cost, 3-D design and animation to the personal computer. Rendering options include wireframe, solid modeling, scanline or ray tracing.

CADKEY, INC.

Booth 2420

27 Hartford Turnpike

Vernon, Connecticut 06066

(203) 647-0220

Mary O'Neil

Trade Show Coordinator

Cadkey, Inc. will feature its latest version of Cadkey 3 for PC-CADD 3-D design applications. Technical professionals can utilize Cadkey 3's fully integrated 2-D/3-D drafting and design system and benefit from its features, including: geometric modeling, detailed dimensioning, display manipulation, entity management, geometric analysis, solids rendering, calculation of mass properties, and more.

CAHNERS PUBLISHING COMPANY

Booth 344

275 Washington Street

Newton, Massachusetts 02158

(617) 964-3030

Corie Rand

Group Trade Show Coordinator

Publishers of specialized business magazines.

EDN is written for engineering managers and design engineers working in the electronics OEM. *EDN* covers new advances in electronic technology and provides articles and product reviews that help readers utilize those advances in their design. *EDN NEWS* provides news of products, technology, and careers for engineers and engineering managers. *ELECTRONIC BUSINESS* is a business magazine for the management team in electronics, computer and systems companies.

Exhibitors

CELCO

Booth 1818

70 Constantine Drive
Mahwah, New Jersey 07430
(201) 327-1123
Art Weirgin
Sales Engineer

User Group Contact: Pete Constantine
Sales Engineer
(714) 985-9868

CELCO is exhibiting its complete line of digital color film recorders including the CELCO PROFESSIONAL. CELCO sets a new standard for performance with this innovative addition to the CELCO 8000, CELCO 5000, CELCO JUNIOR and CELCO MICRO models. CELCO may also be contacted at: 1150 E. 8th St., Upland, CA 91786; (714) 985-9868.

CFE

Booth 726

81 rue Beranger
Chatillon, France 92320
33.1 46 38 37 08
Jerome Lenoble
General Manager

User Group Contact: P. Marzolf

CFE produces VME or PC/AT format boards which provide frame accurate editing to most SONY, AMPEX, JVC professional range of products: VES 88 PC: SONY VO 5850; VES 88 H PC and VES VME: BVV, Betacam, 1 inch recorders.

CHROMATICS, INC.

Booth 1229

2558 Mountain Industrial Blvd.
Tucker, Georgia 30084
(404) 493-7000
Peggy Grimm
Manager, Marketing Communications

Chromatics, Inc. displays real-time, high-performance CX2000 Le Mans™ and rugged Baja™ Colorgraphic Workstations. Features include 1,000,000 2-D vectors per second, VME bus and support for VMS and UNIX operating systems. New CX2000 enhancements include SUN 3E general purpose CPU, real-time frame grabber, communications interface processor, multiple heads and 3-D shading processor.

Exhibitors

CHUGAI BOYEKI (AMERICA) CORPORATION

Booth 2507

55 Mall Drive

Commack, New York 11725

(516) 864-9700

Glenn P. Wolk

Sales Manager/Cadvision Display Monitors

CBC will exhibit and demonstrate its Cadvision line of 20" high-resolution display monitors. Featured are the CPD-2010 (640 x 480), CPD-2030 (1024 x 768), and CPD-2040 (1280 x 1024) to handle any application to CAD/CAM/CAE, 3-D solid modeling, or presentation graphics on dedicated workstations to PC-based systems.

CIRCUIT STUDIOS, INC.

Booth 347

5420 Butler Road

Bethesda, Maryland 20816

(301) 656-5918

Garri Garripoli

President

User Group Contact: Walt Luthy

Business Manager

Circuit Studios, Inc. presents its own Velocity 3-D Modeling and Animation System—a configurable package designed to optimize advanced hardware to provide real-time, solid-shaded modeling, animation and rendering—beyond the scope of traditional methods. An easy-to-learn, icon-driven user interface makes Velocity the most immediately useful 3-D production tool on the market.

CMP PUBLICATIONS

Booth 2353

600 Community Drive

Manhasset, New York 11030

(516) 562-5906

Frank Nardi

Manager, Trade Shows

Computer Systems News, is the OEM/VAR computer newsweekly.

COLORGRAPHIC COMMUNICATIONS CORPORATION

Booth 407

5388 New Peachtree Road

Atlanta, Georgia 30341

(404) 455-3921

Elyse Mintz

Vice President

Colorgraphic Communications will introduce its EGA² Graphic Board for use with a PC/AT. Using the one EGA² card, two separate screens can be displayed on two separate monitors using one PC. New monitors with variable syncs will be shown. CEBRA 286, an integrated diskless PC/AT, will also be featured.

COMMODORE BUSINESS MACHINES, INC.

Booth 1836

1200 Wilson Drive

West Chester, Pennsylvania 19380

(215) 431-9100

Paul Higginbottom

Amiga Product Manager

User Group Contact: Peter Baczor

Technical Support Manager

Commodore Business Machines will feature desktop presentation systems. The booth will be arranged into application workstations demonstrating desktop presentation capabilities, such as video and live slide presentations on the Commodore Amiga. A variety of desktop presentation tools, integrated with the Commodore Amiga personal computers, including professional video, graphics, professional-quality genlocks and high-quality color and monochrome output devices will also be displayed.

COMPUGRAPHIC CORPORATION

Booth 1646

200 Ballardvale

Wilmington, Massachusetts 01887

(617) 658-5600

Kathryn L. Kane

Project Manager

Compugraphic Presentation Series includes turnkey design workstations for the creation of 35mm slides, color overheads and color hardcopy. Peripheral devices available include 300 DPI Capture Systems, electronic projection devices, video capture and paint.

COMPUTER-AIDED ENGINEERING/PENTON PUBLISHING

Booth 1925

1100 Superior Avenue
Cleveland, Ohio 44114
(216) 696-7000

John Hartnett
Publisher, Computer, Electronics Group

CAE magazine is edited for engineering management involved with the use of computers for the design and analysis of products or components, and those using computers to engineer manufacturing systems or to program computer-controlled machinery, as well as the consultants providing software.

COMPUTER CHROME, INC.

Booth 432

2417 W. Larpenteur Avenue
St. Paul, Minnesota 55113
(612) 646-2442

Jim Kronschnabel
President

Computer Chrome, Inc. is a full service 35mm slide and graphics lab. Since 1975 Computer Chrome has produced high-quality original and duplicate slides and related products for clients on a local and national basis. Our services include: computer generated slides; duplicates; cibachrome stats and transparencies; slide mount imprinting; and laser typesetting.

COMPUTER GRAPHICS REVIEW

Booth 401

730 Boston Post Road
Sudbury, Massachusetts 01776
(617) 443-4671

Bonnie Kameny
Exhibit Manager

Focus is on the *S. Klein Computer Graphics Review* magazine; the *S. Klein Newsletter on Computer Graphics* and other specialized publications all related to computer graphics and its applications, especially CAD/CAM, image processing and presentation graphics.

COMPUTER GRAPHICS TODAY

Booth 238

50 West 23rd Street
New York, New York 10010
(212) 645-1000
Robert Waldner
Promotion Director

Computer Graphics Today is a monthly tabloid providing complete coverage of industry news, all application areas, and the latest technological developments. It is the link between the application user and the industry supplier. Free copies and subscriptions are available at the booth.

COMPUTER GRAPHICS WORLD

Booth 1544

119 Russell Street
Littleton, Massachusetts 01460
(508) 486-9501
Robert Holton
Publisher

Hope Mascott
Marketing Services Manager

Computer Graphics World provides focused coverage of significant new technological trends and product development within the industry including first-hand reports of how computer graphics are being applied in manufacturing, business and the arts. *Computer Graphics World* is the only international publication to concentrate its editorial on the application-driven segments of the computer graphics market.

COMPUTER PICTURES MAGAZINE

Booth 1810

2 Village Square West
Clifton, New Jersey 07011
(201) 546-4600
Dean Ross Eaker
Publisher

Computer Pictures has pioneered computer graphics and animation for the last five years with staff written editorial and with the advertising support of leading users and manufacturers alike. In addition to special features on NASA and leading TV networks, every issue contains: A special 32-page section on the production and use of animation and special effects for TV/Broadcast graphics; Scientific Visualization; and Hi-end graphic workstations. *Computer Pictures* has been singled out to be involved with and support the Video Film shows presented by NCGA, BDA, ITS, FOSE and Computer Graphics NY. It also produces a library on video cassettes for the advancement of CGI and computer graphics in general.

CONTROL SYSTEMS, INC.

Booth 706

2675 Patton Road
St. Paul, Minnesota 55113
(800) 826-4281

Sheila Egan

Marketing Communications Manager

Introducing the Artist RealVision high-resolution image capture/display in 16 million colors—featuring Targa software compatibility, flicker free display, single screen, NTSC/PAL, double buffering of full images.

For graphics users, the Artist 10 MC features high-resolution/performance for the PS/2 50/60/70/80. PC/AT controllers include the Designer 12 running AutoSolid, the Artist 12 with single screen capability, and the Artist 8.

CONVEX COMPUTER CORPORATION

Booth 2312

701 N. Plano Road
Richardson, Texas 75083
(214) 952-0200

Paul Lambert

Third Party Products Manager

User Group Contact: Sally Pringle

Trade Show Coordinator

CONVEX Computer Corporation demonstrates its C Series supercomputers running several computationally intensive graphics applications including computer animation, image processing and scientific visualization. C Series supercomputers offer users scalar, vector and parallel technology for fast processing, huge physical memory for large applications, and high-speed connectivity to graphics devices.

COVID, INC.

Booth 226

2400 W. 10th Place, Suite #4
Tempe, Arizona 85281-5128
(800) 638-6104, (602) 966-2221

Susan S. Schoch

Marketing Manager

New 100 MHz RGB switches, distribution amplifiers and accessory cables are being unveiled as an addition to Covid, Inc.'s exhibit of "Universal" PCs, terminals and graphic workstations, data monitors, film cameras and screen printers. Dealer inquiries welcome. A free Master Interface List is available at the booth.

CROSFIELD DICOMED INC.

Booth 1118

11401 Rupp Drive

Burnsville, Minnesota 55337

(612) 895-3000

Trevor Haworth

Senior Vice President Sales and Marketing

User Group Contact: Marcy Mittelstaedt

User Group Liaison

CROSFIELD ELECTRONICS, INC.

Booth 2400

65 Harristown Road

Glen Rock, New Jersey 07452

(201) 447-5800

Gary Dolgins

Vice President Marketing

Galaxy 9000 series of high-performance workstations from an established electronic equipment supplier. The Galaxy 9000 is designed specifically for fast high-resolution graphics manipulation. The series is ideal for OEM's and systems integrators.

CRTC, INC.

Booth 2302

2164 E. Broadway Road

Tempe, Arizona 85282

(602) 921-9638

Richard L. Kopp

CUBICOMP CORPORATION

Booth 1336

21325 Cabot Blvd.

Hayward, California 94545

(415) 887-1300

Martin J. Stein

Vice President Marketing

User Group Contact: Leslie Evans

User Group Liaison

Cubicomp will be showing its PictureMaker and Vertigo animation systems featuring the PictureMaker 60/R with full modeling and animation capabilities using its RACE render accelerator, as well as the Vertigo V2000 workstation-based system which provides the power to support highly sophisticated imagery with complex animation sequences. New features and enhancements will be demonstrated.

CYBERWARE LABORATORY, INC.

Booth 656

2062 Sunset Drive

Pacific Grove, California 93950

(408) 373-1441

Frank Carrico

Marketing Director

Cyberware rapid 3-D digitizer with IRIS, SUN and MACII platforms. Echo software for studio productions and technical image analysis. The system scans complex surfaces, such as the human face, making 250,000 measurements in 15 seconds. Echo software offers real-time displays and provides tools for model reconstruction.

DALIM COMPUTER GRAPHIC SYSTEMS

Booth 726

7 rue de l'Universite

Strasbourg, France 67000

33 88 25 14 28

F. Meyer

Managing Director

Whether you work in presentation graphics, packaging, illustration, advertising success often means translating the best design concept into the best imagery. Dalim offers not only the highest picture resolution available today, but is also hardware independent. Software modules run under standard operating systems and combine in high-resolution Pixel and Vector operation. This flexibility allows optimum integration in the customers existing environment. The prestigious name of our clients in various fields of activity are our best promotion.

DATA TRANSLATION, INC.

Booth 2022

100 Locke Drive

Marlboro, Massachusetts 01752

(617) 481-3700

Bernadette M. Morrissey

Product Marketing Manager

Data Translation manufactures plug-in boards and software for image processing and graphic applications for various computer systems. Highlighting color processing are the DT2871 (HSI) color frame grabber for the IBM PC/AT, a member of DT-Connect, and ColorCapture for the MAC II, an RGB frame grabber supporting color image editing application packages.

DEFINICON SYSTEMS, INC.

Booth 2212

1100 Business Center Circle
Newbury Park, California 91320
(805) 499-0652

Clark Dyer
Director of Marketing

Powerful 32-bit microprocessors using a PC interface for I/O high-resolution graphics, parallel processors, support software for research and development in the MS-DOS environment, outstanding customer service and technical support.

DIAQUEST, INC.

Booth 230

1440 San Pablo Avenue
Berkeley, California 94702
(415) 526-7167

Louise R. Ledeen
Product Marketing Manager

Diaquest, Inc. will be demonstrating its family of video/computer graphics products for a variety of applications in both still image and animation environments. Diaquest develops and markets hardware and software for use in graphic arts, industrial imaging and scientific visualization.

DIGITAL ARTS

Booth 1922

7370-Q Opportunity Road
San Diego, California 92111-2225
(619) 541-2055

Sheldon Liebman
Vice President, Sales and Marketing

Digital Arts will feature DGS 2.1, the latest version of our advanced, PC/AT software for 3-D modeling, animation and rendering. New rendering features include unlimited lights, surfaces and polygons, as well as soft-edged shadows. Animation improvements include nine individually adjustable motion channels and multiple morphing targets.

DIGITAL EQUIPMENT CORPORATION

Booth 1136

146 Main Street
Maynard, Massachusetts 01754
(617) 493-9857
Glen Zimmerman
Marketing Specialist

Paul Cremins
Marketing Specialist

Digital Equipment will demonstrate its capability to address the issues of choice, productivity and performance in an enterprise wide computing environment. Highlighted will be: A full line of H/W Platforms from the Desktop, such as VAXmate, to the family of workstations ranging from the VAXstation 2000 to the 3D VAXstation 8000. All under VAX/VMS ultrix and MS-DOS Operating Environments.

DIMENSION TECHNOLOGY LIMITED

Booth 1808

Unit 8
Acton Vale Industrial Park
Cowley Road
London, England W3
44 740 1480
Raj Singh
Managing Director

Dimension Technology will be showing their device-independent software for business and presentation graphics, for use on EGA, VGA, Co-Processor or Sun/Apollo workstations. A wide range of hardcopy output devices are supported.

DISPLAYTEK, INC.

Booth 645

1355 Holmes Road
Elgin, Illinois 60123
(312) 931-2100
Carl Cobb
Director, Sales and Marketing

DisplayTEK, Inc. (formerly Motorola Display Systems) manufactures a complete line of CRT display monitors with sizes ranging from 5" to 19". The high-performance product line will be featured in both landscape and portrait modes with resolutions up to 150 dpi providing a 2300 x 1700 pixel display format for all high-resolution display applications.

Exhibitors

DOTRONIX, INC.

Booth 2018

160 First Street, S.E.
New Brighton, Minnesota 55112
(612) 633-1742
Lary Johnson
Show Manager

Dotronix, Inc. will be showing its line of graphic imaging displays that are setting industry standards. Featuring the C6000 high-resolution color display, the M2400 monochrome, the DXC 10" color multimode, the MD6000 for medical imaging and DTG2000 high-resolution monochrome.

DUBNER COMPUTER SYSTEMS, INC.

Booth 1643

6 Forest Avenue
Paramus, New Jersey 07652
(201) 845-8900
Bob Webb
Vice President, Marketing

Dubner's integrated product line is directed toward the digital domain. Graphics Factory features two 4:2:2 display channels for multi-user character generation, paint, animation and still/store. TURBO, a digital composite full-color paint system features Presentation Graphics software and animation. All graphics on display are fully antialiased to meet the most demanding production requirements.

DYNAIR ELECTRONICS, INC.

Booth 644

5275 Market Street
San Diego, California 92114
(619) 263-7711
Lorrie Davis
Marketing Communications Manager

Dynair will display a direct fiber optic interface which is a video switcher (multiplexer).

EASTMAN KODAK COMPANY

Booth 1706

343 State Street
Rochester, New York 14650
(716) 724-3313
George D. Winter
Exhibits Coordinator

Eastman Kodak Company will be represented by the Motion Picture/Audio Visual Products Division, the Electronic Photography Division and the Copy Products Division.

Exhibitors

EIKONIX

Booth 1718

15 Wiggins Avenue
Bedford, Massachusetts 01730
(617) 275-3232
Kurt D. Dossin

Manager, Marketing Communications

Eikonix introduces its new family of software-compatible, digital imaging camera systems, as well as new interfaces for IBM PS/2 and Apple Macintosh II computers, and Truevision TARGA and TrueVista video graphics display boards. The Eikonix 1435 Slide Scanner is a desktop color scanner (2800 dpi resolution) for 35mm mounted and unmounted slides, single frames and film strips, and aperture cards.

ELECTROHOME DISPLAY SYSTEMS

Booth 212

809 Wellington Street North
Kitchener, Ontario, Canada N2G 4J6
(519) 744-7111

Murray Hackbart
Engineer

User Group Contact: Bruce Brown
Marketing Manager

Electrohome will exhibit 13" and 19" Vari-Scan color monitors that are CGA, EGA, PGA, VGA and PS/2 compatible. The 1300 and 1900 series both feature 15.75 to 34 KHz horizontal scan rates, TTL and analog inputs, short and long persistence phosphors, and tinted non-glare or cleared polished tubes.

ELECTROHOME PROJECTION PRODUCTS

Booth 218

809 Wellington Street, North
Kitchener, Ontario, Canada N2G 4J6
(519) 744-7111

Tom Sutherland
Marketing Manager

User Group Contact: Jim Cooney
Sales Manager/Regional

Projection Products will display their complete line of Data/Graphics Projection systems. Featuring the new ECP3000 three-lens projector, that scans and locks from 15-50 KHz and the ECP Graphics that scans and locks from 15-80 KHz. Both new products feature a powerful microprocessor that controls all functions including full digital zone convergence from an infrared remote control.

Exhibitors

ELECTRONIC SYSTEMS PRODUCTS, INC.

Booth 636

1301 Armstrong Drive

Titusville, Florida 32780

(407) 269-6680

Peg Whitmore

Manager Marketing Communications

User Group Contact: Don Pitts

Vice President Sales

Electronic Systems Products is an industry leader in the design, development and manufacture of high-resolution computer/video projection systems. Its Esprit projectors offer a complete range of displays to satisfy requirements for medium through ultra high-resolution color graphics. They include video bandwidths to 100 MHz, upgradable models and self-diagnostic capability.

ENGINEERING MECHANICS RESEARCH CORPORATION

Booth 451

1707 W. Big Beaver Road

Troy, Michigan 48084

(313) 643-6222

Lloyd Bastian

General Manager

NISA II offers the latest finite element analysis technology. The large and diverse finite element library coupled with the pre- and post-processor (Display II) interactive and color graphics capabilities, extensive analysis features, shape and structural optimization (NISAOPT), fatigue and fracture analysis (ENDURE), and 3D compressible and incompressible fluid flow (NISA/3D FLUID) give the user the ability to take the product from concept to final design.

ENGINEERING TOOLS MAGAZINE

Booth 2520

Ten Holland Drive

Hasbrouck Heights, New Jersey 07604

(201) 393-6070

Joy Nichols

Sales Support Manager

Exhibitors

ESD: THE ELECTRONIC SYSTEM DESIGN MAGAZINE

Booth 326

1900 W. Park Drive, Suite 200
Westborough, Massachusetts 01581
(617) 898-3210

Cynthia Reehl
Sales Promotion Manager

ESD provides comprehensive coverage of the computer-related OEM marketplace with editorial focus on four integrated, in-depth sections: Systems Architecture, Imaging and Graphics, Advanced ICs and VLSI Design Technology. Visit the booth for a free sample issue.

EVANS & SUTHERLAND COMPUTER CORPORATION- INTERACTIVE SYSTEMS DIVISION

Booth 444

540 Arapeen Drive
Salt Lake City, Utah 84108
(801) 582-5847

Don Garner
Vice President, Sales

E&S designs, builds, sells and services high-performance 3-D computer graphics systems for applications requiring complex, dynamic high-quality wireframe representations of 3-D model data and high-quality shaded renderings of polygonal data on the same raster display. Stereo viewing is also available to provide additional 3-D visualization cues.

FAROUDJA LABORATORIES, INC.

Booth 446

946 Benicia Avenue
Sunnyvale, California 94086
(408) 245-1492

Isabell Faroudja
Vice President

RGB to NTSC Video Encoder with adaptive comb filters, key delay and components input option. S-VHS connector. NTSC to RGB Video Decoder with adaptive comb filter, chroma enhancement, RGB and components outputs, S-VHS connector. Component to RGB/RGB to Components Transcoder with color balance and color bars generator, Betacam connector.

FLAMINGO GRAPHICS

Booth 1554

875 Main Street

Cambridge, Massachusetts 02139

(617) 661-1001

Bob Lang

President

Flamingo Graphics provides customized graphics software to OEM's. Products include a large library of outline fonts, software for rendering gray-scaled text and image processing routines. Flamingo will demonstrate a spline-based drawing program that generates vector and PostScript output. Flamingo has developed applications for Truevision's Targa/Vista framebuffers, and has co-developed RIO with AT&T's Graphics Software Labs.

FOLSOM RESEARCH, INC.

Booth 2253

526 E. Bidwell Street

Folsom, California 95630

(916) 985-2481

Ed Hart

Sales Engineer

F.R.I. is exhibiting its new Monarch CGC Color Graphics Converter, which converts any high-resolution image to both RS170A RGB and NTSC formats in real-time. For use with video recorders, disks and projectors, the Monarch CGC can be used with nearly any workstation or terminal.

FOR-A CORPORATION OF AMERICA

Booth 237

320 Nevada Street

Newton, Massachusetts 02160

(617) 244-3223

Gary Carter

National Sales Manager

FOR-A Corporation of America manufactures a wide range of video and audio products for a variety of applications in image processing, teleproduction and related disciplines. This year, FOR-A is introducing the HMC-1000 Multicam, multiple format high definition video camera. Enhancing this product, FOR-A will feature the VTG-12H Video Timer and VTW-210H HDTV Character Generator.

Exhibitors

FOREFRONT GRAPHICS CORPORATION

Booth 2318

500 Sheppard Avenue East

Suite 309

Willowdale, Ontario, Canada M2N 6H7

(416) 226-4434

Frank Squizzato

Vice President Sales

Forefront Image Recorder accepts direct video input allowing the recording to instant or conventional film types of any on-screen image (including IBM VGA, 8514A, PGA, EGA/Apple Macintosh II/#9/Truevision and others), without using software drivers. Current Polaroid Palette owners can have their units upgraded to any Forefront model.

FRENCH EXPOSITIONS IN THE U.S., INC.

Booths 524, 626, 726

810 Seventh Avenue

New York, New York 10019

(212) 265-5676

Elizabeth Wolf

Director

French collective exhibit. See individual alphabetical listing: CFE, TDI Thomson Digital Images, Vision 3D, GETRIS IMAGES and ANL Association Nationale du Logiciel.

GAMMADATA COMPUTER LTD.

Booth 225

Slington House

Rankine Road

Basingstoke, England R924 OPH

44 256 468 186

Allan Blythe

C.E.O.

Manufacturer of high-performance video printers, to take copy of any color screen up to 160 MHz bandwidth, and to print copy on paper or overhead transparency, all without need of any software or overheads in the host or workstation.

GE DVI TECHNOLOGY VENTURE

Booth 2202

David Sarnoff Research Center, CN5300

Princeton, New Jersey 08543

(609) 734-2211

Paula Zimmerman

Video Producer/Director

The GE DVI Technology Venture has been formed to commercialize and promote DVI technology as a worldwide interactive video and graphics standard. The first DVI products, the DVI development kit (boardset, system software, authoring tools, and documentation), and DVI delivery system (for end-users) will be available in the first quarter of 1989.

GENERAL ELECTRIC COMPANY, PROJECTION DISPLAY PRODUCTS OPERATION

Booth 1018

Electronics Park, Bldg. 6-205

Syracuse, New York 13221

(315) 456-3277

Robert J. Brockman

Manager, Marketing and Sales

Large Screen Video Projectors including the newest developments in both light valve and CRT models will be demonstrated. Projectors shown include models suitable for both video and computer data display.

Exhibitors

GENIGRAPHICS CORPORATION

Booth 712

4906 W. Taft Road
Liverpool, New York 13088
(315) 451-6600
Jan McConnell

Manager, Special Events

Genigraphics Corporation designs, manufactures and sells a broad line of computer graphic workstations and film recorders for presentation graphics and the graphic arts industry worldwide. It also operates 24 service centers in North America providing design and production of 35mm slides presentations and various other graphic design services.

GETRIS IMAGES

Booth 726

16 chemin du Vieux Chene—ZIRST
Meylan, France 38240
33 76 90 19 58
Jean-Frencois Miribel
General Manager

GETRIS is an integrated 2-D and 3-D videographics workstation. Distinguishing features include real-time cel animation, advanced video painting and the Digital Arts 3-D software. GETRIS is particularly well suited to applications such as post-production, television graphics and corporate communication.

GOVERNMENT OF ONTARIO—MINISTRY OF INDUSTRIAL TRADE AND TECHNOLOGY

Booth 2318

1100 Circle 75 Parkway, Suite 620
Atlanta, Georgia 30339
(404) 956-1981
Cliff Coward
Commercial Officer

Six Ontario companies will be presenting their unique graphics products.

Exhibitors

GRAFPOINT

Booth 1912

1485 Saratoga Avenue
San Jose, California 95129
(408) 446-1919
Corley Phillips
President

Grafpoint is demonstrating its line of Tektronix emulation software for PCs/MAC IIs: TGRAF for host-based applications requiring terminal emulation; TNET for networking applications (including DEC Net DOS); and TPORT for running Tektronix-compatible software on your PC or MAC II. Recent additions to our line of software include: TLINK, a language conversion utility program, and TGRAF-715 combination software and hardware.

GRAPHIC CONTROLS

Booth 1907

189 Van Rensselaer Street
P.O. Box 1271
Buffalo, New York 14240
(716) 853-7500
Alfred F. Tymm
Marketing Communications Manager

Graphic Controls is exhibiting its line of pen plotter supplies, which includes: media (both paper and film), disposable plotter pens to fit most pen plotters, inks and adapters. Also, electrostatic printer/plotter supplies, thermal transfer media, thermal paper, impact ribbons and ink-jet paper and cartridges.

GRAPHON CORPORATION

Booth 2044

1980 Concourse Drive
San Jose, California 95131
(800) GRAPHON
Mason Killebrew
Director of Marketing

High-resolution color and monochrome terminals offer Regis and Tektronix graphics, true zoom and pan, and raster operators. The new hardhat series uses a Nema-12 sealed enclosure for shop floor environments. GRAPHON will also demonstrate an X-window system architecture using a bitmapped terminal without the expense of an Ethernet connection.

Exhibitors

GRUNDER & ASSOCIATES, INC.

Booth 2450

5925 Beverly

Mission, Kansas 66202

(913) 831-0188

James Grunder

President

Yem computer/radar scan converters; color encoders; sync generators. Yem manufactures complete range on scan converters, converting computer graphics from CAD to CGA into NTSC or PAL standard signals. Scan converters feature real-time, 8-bit process with internal flicker elimination, gen lockable RS-170A and EBU standards output.

GTCO CORPORATION

Booth 518

7125 Riverwood Drive

Columbia, Maryland 21046

(301) 381-6688

Anne Hageman

Marketing Assistant/Graphic Designer

User Group Contact: Janet Anderson

Dealer Sales Manager

GTCO will exhibit its range of input/output devices for use in computer graphic applications such as CAD, CAE, Mapping, Graphic Arts, 3-D Modeling, Estimating, Desktop Publishing, etc. Product lines being exhibited include: Micro DIGI-PAD[®], DIGI-PAD[®], DIGIPAD PC[™], GT Mouse[™], CADcontroller[™], NOMAD[™], Dimension 6[™], and AUTOLOT[™].

HELIOS SYSTEMS

Booth 325

1996 Lundy Avenue

San Jose, California 95131

(408) 432-0292

Michael L. Brown

Director, Sales and Marketing

HELIOS SYSTEMS has the unique distinction of being the only "Full-Line" supplier of memory expansion boards for Sun Microsystems users. HELIOS offers support for the Sun2 Multibus and VME bus family, Sun 3/100 and 200 series, and Sun 4/200 series, in single board configurations ranging from 2-32 Mbytes.

HEWLETT-PACKARD COMPANY

Booth 1036

3404 East Harmony Road
Fort Collins, Colorado 80525
(303) 229-4225
Judy Edwards
Show Coordinator

Hewlett-Packard is a broad based computing supplier with a full range of graphics products including interactive graphics workstations, printers, plotters, input devices and animation products.

HITACHI AMERICA, LTD.

Booth 836

50 Prospect Avenue
Tarrytown, New York 10591-4698
(914) 332-5800
M. Takebayashi
Marketing Manager

Hitachi America, Ltd. highlights a large selection of 15" and 19" monitors featuring state-of-the-art color resolution, a complete line of digitizer tablets in a variety of sizes and a PC LAD-based software package that provides all the features of a large system. Also on display, the new LCD large screen display unit.

HI-TECH MARKETING CORPORATION

Booth 1856

5460 Hoffner Avenue, Bldg. 4
Orlando, Florida 32812
(407) 277-8686
Gregory F. Gustin
President

User Group Contact: Robert Kyanko
Senior Software Systems Engineer

The hi-tech Marketing Corporation (HTM) specializes in the manufacture and distribution of real-time image generator systems. HTM's RVS™ systems feature the Paragon series, a new design concept for high-end, real-time (30-60Hz) image generators at low cost. Paragon displays 1,000-10,000 polygons, and available features include texture mapping, antialiasing, sun shading and multiple moving models and eyepoints.

HOUSTON INSTRUMENT DIVISION OF AMETEK

Booth 818

8500 Cameron Road

Austin, Texas 78753

(512) 835-0900

Dan Miller

Product Manager

Houston Instrument manufactures input and output devices for computer graphics, including: automatic optical scanning device and digitizing tablets for inputting graphics; low-cost pen plotters for outputting computer assisted drafting and business graphics.

HOWTEK INC.

Booth 412

21 Park Avenue

Hudson, New Hampshire 03051

(603) 882-5200

Sally Carlson Keane

Marketing/Communications Manager

Howtek will exhibit its line of color peripherals for the IBM PC and MAC II, including: Scanmaster 300 dpi, flat bed digital color scanner; the Scanmaster/35, 35mm film scanner; Photomaster analog film scanner; and Pixelmaster plain paper, color ink jet printer.

IEEE COMPUTER SOCIETY

Booth 1844

10662 Los Vaqueros Circle

Los Alamitos, California 90720

(714) 821-8380

Dawn Peck

Advertising Director

Frieda Koester

CS Press Marketing Manager

The Computer Society, one of the most prestigious professional associations in the world, serves its members through numerous publications, conferences and workshops. Membership Information, magazines and textbooks will be on display.

IKEGAMI ELECTRONICS (USA), INC.

Booth 718

37 Brook Avenue

Maywood, New Jersey 07607

(201) 368-9171

Donald Mason

Administrative Sales Manager/Display Division

User Group Contact: Donald Mason

Administrative Sales Manager/Display Division

Ikegami exhibits a complete line of color and monochrome, high-quality raster-scan graphic monitors. Our modern and unique enclosures provide a family appearance to our entire line. Our products combine a reliable high-resolution monitor with attractive compact enclosures having a small footprint. Also available are our Large Screen Projection Systems, TPP-1000 (on exhibit), TPP-700 and TPP-50HLB.

ILFORD PHOTO CORPORATION

Booth 600

W. 70 Century Road

Paramus, New Jersey 07653

(201) 265-6000

Julie Levy

Marketing Communications Coordinator

User Group Contact: Jim Wiley

Cibacopy System Business Development Manager

The Cibacopy System 120 and 1012 are photographic color copiers that produce full-color quality prints and transparencies from a variety of originals including 3-D objects. The Cibacopy System 120 is a console color unit with all the features of a conventional office copier.

IMAGE INNOVATION LTD.

Booth 2344

Innovation House, 292 Worten Road

Isleworth, Middlesex, England TW7 6EL

1 847-1841

Freddie Whitelaw

IMAGEWARE RESEARCH & DEVELOPMENT INC.

Booth 2318

250 Esplanade, Suite 201
Toronto, Ontario, Canada M5A 2W3
(416) 367-8699
Ian Jaffray
President

Chris Wallace
Vice President, Marketing

ImageWare Research and Development Inc. introduces ImagePaint, image processing software, used to produce "Painterly" computer animation and graphics effects in video post-production. Painterly refers to video images that have been processed to resemble various painting media such as watercolor, charcoal, pen and ink. ImagePaint has been used in commercial work, music videos, corporate videos and broadcast series.

IMAGRAPH CORPORATION

Booth 1952

800 W. Cummings Park
Woburn, Massachusetts 01801
(617) 938-5480
Mariana Haven
Marketing Manager

Imagraph will be demonstrating high-resolution graphic controller boards for UNIX/386 market, with X.11 window environment. For MS-DOS, color Desktop publishing, window 2.3 (Microsoft) & Pagemaker 3.0 & Ventura. For medical imaging, 1024 x 768 x 12 + 4, 12-bit high-resolution frame grabber, 1280 x 1024 x 8, 40MHz, PAL, HDTV.

INMOS CORPORATION

Booth 2006

P.O. Box 16000
Colorado Springs, Colorado 80935
Mark Hopkins
(719) 630-4636

INTELLIGENT LIGHT, INC.

Booth 2306

17-01 Pollitt Drive

P.O. Box 65

Fair Lawn, New Jersey 07410

(201) 794-7550

John Mitrano

Marketing Manager

User Group Contact: Edward Weed

Manager of Product Development

Intelligent Light provides a complete family line of computer animation workstations, servers and graphic products for advanced computer animation production. The GW-4348 Graphic Workstation will be on demonstration along with other new graphic products and software features. The main feature will be the powerful GW-10000 Graphic Workstation based on Apollo's new personal supercomputer workstation. Applications are in film/video and scientific/engineering.

INTERACTIVE MACHINES, INC.

Booth 1528

26588 Agoura Road

Calabasas, California 91302

(818) 707-1880

Debbie M. Warrick

Sales Administrator

IMI is a high-performance, 3-D computer graphics company, and is pleased to announce the IMI-600R Supercomputer Graphics System, which has the ability to manipulate 3-D shaded, solid models in real-time. The 600R raster system produces up to 160,000 3-D polygons/second with each polygon fully transformed and anti-aliased, Gouraud-shaded and all hidden surfaces removed.

INTERNATIONAL SOFTWARE CORPORATION

Booth 312

528 Commons Drive

Golden, Colorado 80401

(303) 526-0388

Scott Masters

President

IOLINE CORPORATION

Booth 240

12020—113th Avenue N.E.

Kirkland, Washington 98034

(206) 821-2140

Gary Kerr

Marketing Communications Manager

Dick Wetzsteon

Marketing Support Representative

Factory representatives will demonstrate the latest in IOLINE pen plotter technology; automatic pen changer and roll-feed system performance options; and PlotServe Plus, the company's new floppy disk-based file server. IOLINE products integrate easily to form a comprehensive, high-performance plotting system.

IRIS GRAPHICS

Booth 2108

12 Jacob Way

Reading, Massachusetts 01867

(617) 438-1500

Peter Alpers

Manager of Communications

IRIS Graphics designs and manufactures device- and size-independent continuous-flow color ink jet printers, which generate images that are virtually indistinguishable from film-based proofing products. IRIS has an installed base in the graphic arts, CAD/CAM, industrial design, textile design, seismic mapping and color-capable newspaper industries.

ITHACA SOFTWARE, INC.

Booth 1653

902 W. Seneca Street

Ithaca, New York 14850

(607) 273-3690

Aline Bernstein

Technical Sales Representative

HOOPS is a 3-D graphics development system built around an innovative object-oriented structure that greatly simplifies the design and production of advanced interactive graphics applications. Features include: hierarchical graphics database, hidden line/surface removal, and a device-independent interface. Supports VMS, UNIX, DOS, Mac II and X-Windows.

KMW SYSTEMS CORPORATION

Booth 1418

6034 W. Courtyard Drive

Austin, Texas 78730

(512) 338-3000

Jean Richards

Vice President, Business Administrator

Featured is the newest graphics processor from KMW Systems—the Vexcel GT, an optional Ethernet attachment and spooler allow multiple users to share the Vexcel GT and its attached hardcopy device. Also shown is the KMW complete line of protocol converters and channel interfaces.

KURTA CORPORATION

Booth 552

3007 E. Chambers

Phoenix, Arizona 85017

(602) 276-5533

Trini Gemo

Marketing/Communications Manager

Kurta Corporation is the technological leader in innovative input systems which feature hardware and software solutions with lifetime warranties. Kurta will feature its full line of graphic tablets ranging from 6" x 9" to 42" x 60". Keyboard macros, dynamic scaling and cordless pointing devices are unique cornerstones of Kurta's solutions.

LASERGRAPHICS, INC.

Booth 1936

17671 Cowan Avenue
Irvine, California 92714
(714) 660-9497
Candice K. Tuttle
Marketing Manager

Lasergraphics offers a complete line of high-quality rasterizers, including: Rascol® II, a PC board level rasterizer and Rascol® III, a stand-alone for mainframe application, film recorders for IBM PCs (or compatibles), Macintosh and mainframes, and color printing systems for the production of high-resolution presentation graphics.

LAZERUS

Booth 1850

2821 9th Street
Berkeley, California 94710
(415) 845-1237

LAZERUS 832 supergraphics workstations represent significant sales performance increases over the already high-speed 432 line. The LAZERUS performs real-time animation, highest-quality rendering and ray-tracing in a single high-performance computer. IPROCESS, an integrated image-processing software. Enhanced *RADIANT*, menu-driven full-function 3-D animation/creation environment. "CONVERT! for AutoCAD users" animates models in real-time or renders highest-quality directly to film, videotape or slide.

LEADER INSTRUMENTS CORPORATION

Booth 251

380 Oser Avenue
Hauppauge, New York 11788
(516) 231-6900
George Gonos
Product Marketing Manager

Leader Instruments Corporation, a manufacturer of general purpose test instrumentation for over 30 years, is serving the test needs of the high-resolution video industry by manufacturing high-quality, sophisticated yet easy to use programmable RGB video generators.

LUNDY ELECTRONICS & SYSTEMS, INC.

Booth 930

One Robert Way
Glen Head, New York 11545
(516) 671-9000
Jeff Leibowitz
Marketing Manager

UltraGraf 88 provides users with the highest resolution in the industry today—4096 x 4096. As such, it is perfect for applications where high precision is critical, such as automobile design, ship design, aircraft design or any other complex design process involving interactive components. UltraGraf 88 operates with PDGS™ mechanical design software and Lundy's versatile UltraGraphics® software package.

LYON LAMB VIDEO ANIMATION SYSTEMS, INC.

Booth 1930

4531 Empire Avenue
Burbank, California 91505
(818) 843-4831
Sheryl Gossard
Administration/Sales

User Group Contact: Steven Sarafian
Eastern Regional Sales Manager

Lyon Lamb Video Animation Systems will introduce a new generation of real-time, high-resolution video converters which output standard NTSC (RS-170A) video from a wide range of high-resolution computer graphic workstations and displays, with no loss of graphic information. Also featured are VTR controllers for recording computer animation to videotape, including the VAS-Delta and Mini-VAS.

MACHINE DESIGN/PENTON PUBLISHING

Booth 1925

1100 Superior Avenue
Cleveland, Ohio 44114
(216) 696-7000
John Hartnett
Publisher/Computer, Electronics Group

Machine Design magazine provides information for design engineers on new technologies, industrial developments, research and development activities, products and engineering procedures for designing manufactured products. Articles address the information needs of inter-disciplinary engineers as well as those with interest focused in specific technologies.

MACINTOSH TODAY

Booth 618

501 2nd Street, 6th Floor
San Francisco, California 94107
(415) 978-3144
Jody Daniels

Macintosh Today is the newsweekly that has what volume buyers want: a global, integrated perspective on the microcomputer industry; timeliness; side-by-side product comparisons; trends and new technologies; profiles of Macintosh users; useful tips; industry news; and inside information.

MACWEEK

Booth 2235

525 Brannan Street
San Francisco, California 94107
(415) 882-7370
Cynthia Ahart

MANAGEMENT GRAPHICS, INC.

Booth 2254

1401 East 79th Street
Minneapolis, Minnesota 55425
(612) 854-1220
Myron Hladun
Director, Promotional Marketing

Management Graphics will have on display Solitaire™ Image Recorder, a digital film recorder for high-speed high-resolution multi-format imaging; QM-1 Network Concentrator,™ data collection for the creation of boardroom quality presentation material in predesigned or custom formats or from a variety of PC based creation software; TTS/Tri-Master,™ a standalone system for high-production designing and imaging; Easy Slider,™ slide creation software for the Apple Macintosh; and MGITalk,™ slide creation communication utility for the IBM PC.

MANAGEMENT GRAPHICS, INC.

Booth 2318

1450 Lodestar Road
Toronto, Ontario Canada M3J 3C1
(416) 638-8877
George Klein
President

Peter Rudge
U.S. Sales and Marketing

MGI has as its focus the production of high-quality desktop presentations. PC-Slide allows users to quickly create visibly outstanding business graphics which can be converted into high-quality 35mm slides, color overheads or printed presentation material. MGI will introduce the newest member of the PC-Slide family of computer graphics software at SIGGRAPH '88. This package combines simplicity, speed and flexibility in the Microsoft Windows environment. This mouse-driven software provides ASCII and Metafile data import facilities, built-in charts and powerful drawing capabilities. The PC-Slide FontEditor will also be introduced. It lets one design custom text styles and logos for PC-Slides.

MATROX ELECTRONIC SYSTEMS, LTD.

Booth 1518

1055 St. Regis Blvd.
Dorval, Quebec, Canada H9P 2T4
(514) 685-2630
Ray Snow
Marketing Manager

Matrox is a world sales leader in the design and manufacture of high-performance processors for both graphics and image processing applications. At SIGGRAPH '88, Matrox will be exhibiting a new family of graphics processors (PG series) for the AT and PS/2 with display resolution ranging from 640 x 480 to 1280 x 1024. Matrox will also be showing a high-performance image processor for Sun workstation.

MEASUREMENT SYSTEMS INC.

Booth 1826

121 Water Street
Norwalk, Connecticut 06854
(203) 838-5561
Donald W. Fisher
Marketing Manager

On display: cursor controls and other input devices including joysticks, trackballs, forcesticks, mice, dial boxes and button boxes. They are all available with Quadrature, Serial RS-232 or RS-422, or parallel binary interfaces.

MEDIA CYBERNETICS

Booth 1958

8484 Georgia Avenue
Silver Spring, Maryland 20910
(301) 495-3305
Pava W. Cohen

Director of Marketing Communications

Media Cybernetics develops graphics and imaging software. The company will present sophisticated high-resolution and color image processing software: and popular HALO '88 based graphics packages: Halovision, a vision product, Dr. HALO 111, a paint program, and HALO DPE for desktop publishing.

MEGASCAN TECHNOLOGY, INC.

Booth 1812

4000 Kenneth Drive
Gibsonia, Pennsylvania 15044
(412) 443-5820
Edward J. Morton

Director of Sales & Marketing

Lisa K. Stover
Administrative Assistant

On display the Ultra-High-Resolution Gray Scale Raster Display Monitor—UHR-2007—2560 x 2048 x 8 bit x 200 dpi with Ultra High-Resolution Frame Buffer and Display Processor—FDP-2103/FDP-2107/FDP-2111-4,8, and 12-bits per pixel controllers. Also Ultra-High-Resolution Monochrome Raster Display Monitor—UHR-3000—4096 x 3300 x 1-bit x 300 dpi with Ultra-High Resolution Frame Buffer and Display Processor—FDP-3000/FDP-3100—high-performance controllers.

MEGATEK CORPORATION

Booth 1330

9645 Scranton Road
San Diego, California 92121
(619) 455-5590
Gerry MacDonald

Coordinator, Marketing Communications

Megatek will demonstrate the SIGMA 20™, its new Sun-based graphics workstation. Interactive display terminals will also be featured: 9100 for high-speed wireframe applications; 9300 for fast surface rendering applications; 900 for real-time dynamics with shaded objects. Target markets include defense, animation, scientific and engineering applications.

MEIKO SCIENTIFIC CORPORATION

Booth 1356

6201 Ascot Drive
Oakland, California 94611
(415) 530-3055

Jon Peddie
Marketing

Meiko supplies the Computing Surface, a parallel supercomputer seamlessly spanning a performance range of one Megaflop to Gigaflops and incorporating semiconductor memory of one Megabyte to Gigabytes.

Meiko will demonstrate systems at SIGGRAPH specially configured for demanding graphics applications, particularly rendering.

MERCURY COMPUTER SYSTEMS, INC.

Booth 2144

600 Suffolk Street
Lowell, Massachusetts 01854
(508) 458-3100

Patricia Moy
Marketing Communications

The MC 3200 Series consists of single-board, completely software programmable co-processing systems for AT bus, VME bus and NuBus based workstations and microcomputers. Designed to accelerate the compute-intensive portions of any C or Fortran program, the MC 3200 products provide balanced scalar and vector performance at a rate of 20 Mflops/10 Mips. The MC 3200 may be used for most scientific and engineering applications.

METHEUS CORPORATION

Booth 1230

5510 N.E. Elam Young Parkway
Hillsboro, Oregon 97124
(503) 640-8000

Karla S. Vecchiet
Director of Marketing

Metheus Corporation, founded in 1981, is a leading supplier of high-performance computer graphics display products. The company's products are sold to original equipment manufacturers, value-added resellers, and end-users in the CAD/CAM/CAE, computer imaging, and defense and aerospace industries.

Exhibitors

MICROFIELD GRAPHICS, INC.

Booth 2200

9825 SW Sunshine Court
Beaverton, Oregon 97005
(503) 626-9393

Jack Liskear

Vice President Marketing/Sales

Microfield Graphics will be displaying its T8 Color Graphics Controller for IBM AT's and compatibles, and the newly introduced T8/2 Color Graphics Controller for the IBM PS/2. Both products support 4 and 8-bit pixels at a resolution of 1280 x 1024. The T8/2 provides VGA compatibility, while the T8 provides CGA or EGA emulation, all on a single screen.

MICROTIME INC.

Booth 243

1280 Blue Hills Avenue
Bloomfield, Connecticut 06002
(203) 252-4242

Chris K. Smith

MINOLTA CORPORATION

Booth 1917

101 Williams Drive
Ramsey, New Jersey 07446
(201) 825-4000

John T. McCasland

Marketing and Sales Manager

Minolta Corporation will demonstrate its TV Color Analyzer used to objectively set the color balance on color CRT's. Also, they will demonstrate their various light and color measuring instruments.

MIRUS CORPORATION

Booth 2336

445 South San Antonio Road
Los Altos, California 94022
(415) 949-5544

Wes Henderson

Director Sales

User Group Contact: Jeff Wilbur
Product Manager

The Mirus FilmPrinter™ is the first 35mm slidemaking system that takes advantage of the graphics power and point-and-click simplicity of the Macintosh. As easy to use as the Apple Laserwriter, the FilmPrinter images both object and bit-mapped graphics with the complete family of 35 LaserWriter compatible fonts. Slides are produced from popular graphics and presentation software in more than 16 million colors and with up to 8000 lines of Scalable Resolution.™

MITSUBISHI ELECTRONICS AMERICA, INC.

Booth 1944

991 Knox Street

Torrance, California 90502

(213) 515-3993

Evie Turner

Corporate Communications Manager

User Group Contact: Evie Turner

Corporate Communications Manager

Mitsubishi Electronics displays high-resolution color monitors that are fully auto-tracking over wide frequency ranges, in sizes from 16" to 37". Its new color printer with built-in video interface produces fast hardcopy output from presentation graphics software; a 300 dpi color printer produces up to B size formats.

MITSUBISHI INTERNATIONAL CORPORATION

Booth 2230

701 Westchester Ave.

White Plains, New York 10604

(914)997-4999

Anna C. Mateus

Marketing Coordinator

Shinko will introduce its new CHC-336 with a built-in intelligent graphics controller. This creates near total universality with a host of computer graphics systems. Shinko also offers a complete line of thermal transfer color printers in 200 & 300 DPI for both A & B size. Apollo, Sun Targa are available as well as an optional RGB Video Processor with multiplexing.

MONITERM

Booth 2150

5740 Green Circle Drive

Minnetonka, Minnesota 55343

(612) 935-4151

Henry Neils

Marketing Director

Moniterm will exhibit its Viking product line which includes 19" monochrome, gray-scale and color monitors; 24" monochrome monitors; high-resolution monitors for the OEM market; and controller boards for compatibility with either PCs or Macintosh computers.

Exhibitors

MORGAN KAUFMANN PUBLISHERS, INC.

Booth 663

2929 Campus Drive, Suite 260

San Mateo, California 94403

(415) 578-9911

Jennifer Ballentine

Marketing Manager

Morgan Kaufmann Publishers specializes in books and conference proceedings in advanced computer science and AI. On display, an introduction to splines for use in computer graphics and geometric modeling; Graphics Interface '88; and other titles in graphics, vision, human-computer interaction and related areas.

MULTIWIRE DIVISION

Booth 512

250 Miller Place

Hicksville, New York 11801

(516) 933-8300

Rod Stroehr

Production Manager

Multiwire Division will be exhibiting its line of high density-discrete wired circuit boards.

NATIONAL COMPUTER GRAPHICS ASSOCIATION (NCGA)

Booth 2418

2722 Merrilee Drive, Suite 200

Fairfax, Virginia 22031

(703) 698-9600

Martha Filson

Sales Coordinator

User Group Contact: Marjorie Rothrock

Coordinator, Individual Member Services

Stop by, pick up our material and join NCGA! See what we have planned:

NCGA Mapping & GIS '88—Orlando, Florida,
September 12-15, 1988!

NCGA CAD/CAM '88—Boston, Massachusetts,
October 9-12, 1988!

NCGA '89—10th annual conference in Philadelphia,
Pennsylvania, April 16-20, 1989!

NATIONAL SEMICONDUCTOR CORPORATION

Booth 2218

2900 Semiconductor Drive
Santa Clara, California 95052-8090
(408) 721-5404

Seamus Coyle

Marketing Manager—Graphics Products

National will be exhibiting its Advanced Graphics Chip Set, a family of VLSI building block integrated circuits for a wide range of high-performance video graphics and printer applications. Included in the family is the DP8500 Raster Graphics Processor, a high-speed (20 MHz) CMOS programmable processor for bit mapped graphics systems.

NATIONAL TECHNICAL INFORMATION SERVICE

Booth 235

5285 Port Royal Road
Springfield, Virginia 22161
(703) 487-4807

Lois Grooms

Software Product Manager

The NTIS exhibit focuses on two federally-developed graphic computer programs. DATAPLOT, an integrated, high-level language for graphics, modeling, and analysis will be demonstrated. Information on MicroGCS—an easy-to-learn, easy-to-use approach to computer graphics, will be displayed. Material on other computer products will also be available.

NEC HOME ELECTRONICS (USA), INC.

Booth 436

1255 Michael Drive
Wood Dale, Illinois 60191
(312) 860-9500

Christine Rehberg

Trade Show Administrator

NEC Home Electronics will display a new product category with two CD ROM products and accompanying software. In addition, NEC will show its two monochrome: the 14-inch MultiSync GS and the 16-inch Monograph System, designed for desktop publishing. Also displayed will be the popular MultiSync II, the MultiSync Plus, and the 19" MultiSync XL.

NEC HOME ELECTRONICS (USA), INC. — PROFESSIONAL SYSTEMS DIVISION

Booth 336

1255 Michael Drive
Wood Dale, Illinois 60191
(312) 860-9500
Ken Bylsma
Application Engineer

On exhibit will be NEC's complete family of multiple synchronous data monitors and projectors. These include the DM-series of data monitors in 20", 26" and 30" screen sizes. Also, the DP5200A 52" rear screen data projector and DP-1200A 120" data projector. All have a horizontal scanning frequency of 15-36 KHz.

NEO-VISUALS

Booth 1260

1200 Eglinton Avenue, E. Suite 404
Toronto, Ontario, Canada M3C 1H9
(416) 443-9811
Bob Munroe

NETWORKED PICTURE SYSTEMS, INC.

Booth 2211

3690 Freedom Circle
Santa Clara, California 95054-1207
(408) 748-1677
Theresa A. Marcroft
Marketing Manager

Page Express™ offers image input and manipulation (photo retouch & image assembly), electronic page composition, text is automatically typeset and flowed onto a page. This turnkey system offers high-resolution images and text, the entire Pantone® library of colors, and Bitstream® fonts. Final pages (images & text) are output in CYMK separations.

NICHIMEN AMERICA, INC.

Booth 2258

225 N. Michigan Avenue, Suite 2322
Chicago, Illinois 60601
(312) 938-8887
Greg Altman
National Sales and Marketing Manager

The Comtec 3555 is a 3-D, real-time, color graphics terminal with a high-speed DEC-VAX interface for scientific, engineering and graphic entertainment applications. Features include the transformation of 50,000 3-D polygons/second (z-buffered, Gouraud shaded), 300,000 vectors/second, Phong shading, cross sectioning, texture mapping, splines and depth cueing.

Exhibitors

NIKON INC.

Booth 506

623 Stewart Avenue

Garden City, New York 11530

(516) 222-0200

Victor Goldsztejn

Sales and Marketing Manager, Electronic Imaging Division

On display will be 35mm Nikon Film Scanners.

N.I.S.E., INC.

Booth 664

20018 State Road

Cerritos, California 90701

(213) 860-8609

Roelof R. Jonker

President/General Manager

User Group Contact: Donna Davis

Secretary

"Rembrandt" Model 3500F Analog RGB/TTL Photographic Hardcopy system for slides or print film up to 1024 X 1024 pixel resolution will be on display. Also, "Ruebens" Model 3700F Analog RGB/TTL Photographic recorder for 64KHz systems up to 2,000 pixel resolution. "Renoir" Model 3600F High-Resolution Digital Recorder camera for slides or prints up to 8" X 10".

NISSEI SANGYO AMERICA, LTD.

Booth 2236

800 South Street

Waltham, Massachusetts 02154

(617) 893-5700

Nancilee Franklyn

Trade Show Manager

User Group Contact: Nancilee Franklyn

Trade Show Manager

Nissei Sangyo America, Ltd. will display the latest line of Hitachi built ultra-high-resolution, color and monochrome monitors. On display will be the newly designed 19", 16" and 15" color monitors running at frequencies from 48 KHz through 80 KHz with resolutions to 1664 X 1248. Nissei Sangyo will also show its new line of 15" through 21" UHR monochrome displays. These units incorporate the same industrial design as the color family of monitors.

NTH GRAPHICS

Booth 2236

1807-C W. Braker Lane

Austin, Texas 78758

(512) 832-1944

Jerry Norman

Vice President

The Nth 3-D Engine™ renders, transforms, shades and interactively picks 3-D objects in seconds—giving PC-based design systems the speed and graphics capability of \$50,000 graphics workstations. The Nth Engine™ display controller increases PC CAD productivity with two-second zooms and pans, Zoomslides™ and Nth View™.

NUMBER NINE COMPUTER CORPORATION

Booth 1446

725 Concord Avenue

Cambridge, Massachusetts 02138

(617) 492-0999

Karen Miller

Director, Marketing Communications

Number Nine features its Pepper Graphics System family of intelligent display cards demonstrating a broad array of industry-leading software applications. The shared-memory, multi-processor Pepper architecture is packaged into unique graphics cards that meet the specific needs of display-list CAD, image processing, corporate presentation and personal publishing.

NUMONICS CORPORATION

Booth 530

101 Commerce Drive

Montgomeryville, Pennsylvania 18936

(215) 362-2766

Morris B. Bowles

National Sales Manager

User Group Contact: Morris B. Bowles

National Sales Manager

Numonics will demonstrate their 2000, 5000 and 7000 Series lines of products including the new Model 2207 thin profile digitizer and the new A to E size Model 7191 Plotter. Also being demonstrated is the Manager Mouse line of mice including the world's only cordless mouse.

OMNICOMP GRAPHICS CORPORATION

Booth 736

1734 W. Belt North
Houston, Texas 77043
(713) 464-2990
Anthony G. Masraff
President

Omnicom specializes in the design and manufacture of high-performance graphics display controllers and systems. Omnicomp's products provide the systems integrator with multi-channel graphics solutions in a wide array of applications and environments, ranging from PC systems to mainframes.

OPTOTECH, INC.

Booth 2327

740 Woolen Road, #104
Colorado Springs, Colorado 80915
(303) 570-7500
Laura O'Neill

OXBERRY

Booth 335

180 Broad Street
Carlstadt, New Jersey 07072
(201) 935-3000
Jim Aneshansley
Director of Marketing

Oxberry will display computer film cameras for off-loading high-resolution film recorders. Cameras are available in all film formats from 16mm to 70mm for slide, print and cinemagraphic production. Also on display will be the FX-35 stand for special computer effects and slide duplication.

PANASONIC INDUSTRIAL COMPANY, DISPLAY COMPONENTS DIVISION

Booth 1608

Two Panasonic Way
Secaucus, New Jersey 07094
(201) 348-5278, 392-4578
Bruce Jeniec
Sales/Marketing Manager
Alan Dragon
Manager of Application Engineering

On display will be Ultra High Resolution Cathode Ray Tubes, High Resolution Plasma Display Panels 1024 X 800 and High Resolution Data Displays, Color and Monochrome.

Exhibitors

PANASONIC INDUSTRIAL COMPANY

Booth 1618

Two Panasonic Way
Secaucus, New Jersey 07094
(201) 348-7000

Panasonic will highlight its line of optical disc products featuring a 5¼" WORM drive, 8" and 12" optical memory disc recorders and players. A super high-resolution color display monitor and series of monochrome monitors for the desktop publishing industry are also being shown.

PANSOPHIC SYSTEMS, INC.

Booth 1654

709 Enterprise Drive
Oak Brook, Illinois 60521
(312) 572-6000

John J. Schwan

Director of Marketing, Graphics Products Company

Pansophic Systems will be demonstrating its new graphics workstation, StudioWorks, providing capabilities for 2-D and 3-D art, charting, text page layout, image capture, paint, and animation. StudioWorks is the only low-cost turnkey system providing a spectrum of capabilities from 2-D slide-making through 3-D video animation.

PARALLAX GRAPHICS, INC.

Booth 1918

2500 Condensa Street
Santa Clara, California 95051
(408) 727-2220

Stu Taylor

Manager, Technical Sales Support

Darlene Dawson

Sales Support—Users Group Coordinator

Parallax Graphics features graphics controllers, videographics controllers and full video in a window support with X-Windows and PNeWS, for IBM AT/RTs and compatibles, SUN Microsystems and other VME compatible systems and DEC/Q-bus compatible systems.

Exhibitors

PERITEK CORPORATION

Booth 236

5550 Redwood Road
Oakland, California 94619
(415) 531-6500

Joannie Montagne

Marketing Communications Manager

User Group Contact: Victor R. Gold, Jr.
President

Peritek offers the widest range of graphics boards for DEC's UNIBUS (VAX and PDP) and Q-bus (MicroVAX and LSI-11). Product introductions at SIGGRAPH are: X-Windows support software for high-resolution 1024 x 1024 graphics applications; and Peritek's new RGB to NTSC encoder for applications converting computer generated RGB graphics to television video signal.

PHOTRON LIMITED

Booth 2412

Jingumae 6-12-15, Shibuyaku
Tokyo 150, Japan
0381486-3471

Hideo Osato

Product Manager

The FSC-64000 Frame Scan Converter converts high-resolution graphics in real-time to RS-170A video. Transfers 1280 x 1024 60Hz non-interlaced (60 to 65 kHz) to RS-170A RGB component and composite NTSC.

PIXAR

Booth 1626

3240 Kerner Blvd.
San Rafael, California 94901
(415) 258-8100

User Group Contact: Lisa MacKenzie
Marketing

Pixar will be debuting a product line in photorealistic image synthesis, products which use Pixar's recently introduced RenderMan™ Interface. In addition, the low-priced Pixar II image computer will be demonstrating a variety of applications, including volumetric rendering and remote sensing analysis.

Exhibitors

PIXELWORKS, INC.

Booth 445

7 Park Avenue
Hudson, New Hampshire 03051
(603) 880-1322

Richard Grant
Marketing Specialist

User Group Contact: Richard Grant
Marketing Specialist

The Clipper Graphics Series of high-performance graphics controllers sets new standards for price/performance. Performance of 10 million pixels/second line draw and polygon fill, full support for shading, rendering, and 3-D manipulations and more. All this at workstation performance on 286 and 386 class machines. Support resolutions to 1280 X 1024 X 256 colors.

POLHEMUS NAVIGATION SCIENCES

Booth 701

P.O. Box 560
Colchester, Vermont 05446
(802) 655-3159

Thomas Knoflick
Marketing Manager

User Group Contact: James Krieg
Program Manager

Polhemus will demonstrate their product line of 3-D computer input devices that measure both position and orientation of the sensor or stylus. A new 3-D solid modeler software package for the Macintosh will also be displayed.

PRESENTATION PRODUCTS MAGAZINE

Booth 603

513 Wilshire, Blvd., Suite 344
Santa Monica, California 90401
(213) 455-1414

Bill Slapin
Publisher

Larry Tuck
Editor

Presentation Products magazine is published monthly for individuals who buy or specify products used to create and deliver presentations.

PRIMAGRAPHS LIMITED

Booth 2464

Melbourne Science Park
Melbourne, NR. Royston
Hertfordshire, England SG8 6EJ
763-62041

Barry Challinor
Sales/Marketing Director

User Group Contact: Roy White
Managing Director

Primagraphics will be demonstrating its modular range of graphics processing and image handling systems based upon 68020 and 68030 processors including Primagraphics own bit-slice processors, high-resolution Display Controllers, TV resolution, display controllers and the Virtuoso, frame grabber and store.

PRIME COMPUTER, INC.

Booth 2050

Prime Park
Natick, Massachusetts 01760
(617) 655-8000

Paul Lavallee
Manager of Product Marketing

Prime will feature its PXCL 5500 high performance color graphics workstation, which combines the CPU power needed for compute-intensive applications with extremely fast graphics technology in a single system. The system's implementation of balanced power enables users to interact efficiently with complex 3-D images and to manipulate them in real time.

PRIOR DATA SCIENCES

Booth 2318

240 Michael Cowpland Drive
Kanata, Ontario, Canada K2M 1PG
(613) 591-7235

Kester Hamilton
Vice President, Marketing

PRIOR Data Sciences, known for its performance software products and real-time systems, offers a level 2b implementation of GKS, with a 2c implementation available on selected drivers. PRIOR's GKS/C is available on UNIX, VMS and DOS operating systems, with C, FORTRAN and Ada callable libraries meeting the ANSI/ISO binding. Also offered is InterMAPhics, an interactive mapping and graphics presentation system.

PROFESSIONAL PRESS

Booth 1800

921 Bethlehem Pike

Spring House, Pennsylvania 19477

(215)542-7008

Lisa Hangey

Show Coordinator

Professional Press publishes DEC- and Hewlett-Packard-specific magazines. *DEC Professional* features networking, hardware software applications and industry trends. *VAX Professional*, the software journal for VMS, is the only technical journal specifically for VMS, its applications and use. *HP Professional* concentrates on Hewlett-Packard technology, systems, products, applications and marketplace issues.

QMS, INC.

Booth 1030

One Magnum Pass

Mobile, Alabama 36618

(205) 633-4300

Cheryl M. Shelley

Public Relations Specialist

QMS, Inc, a leader in the rapidly expanding non-impact print systems-market, offers the broadest selection of intelligent laser and thermal transfer printers available for use in desktop publishing, computer-aided publishing, engineering and scientific graphics, word processing and a wide variety of other applications.

QUANTUM DATA INC.

Booth 542

2111 Big Timber Road

Elgin, Illinois 60123

(312) 888-0450

Allen Jorgensen

President

Quantum Data Inc. will feature video signal generators with variable scan and pixel rates to 400 MHz, for manufacturers and users of video monitors. Applications include demonstration, design, manufacturing, quality control and servicing of video monitors.

RAINBOW IMAGES, INC.

Booth 524

181 Metro Drive, Suite 520

San Jose, California 95110

(408) 971-7600

Russell Runge

Sales Manager

User Group Contact: George King

Technical Support Manager

Rainbow Images, Inc., will demonstrate the 3-D animation system EXPLORE. EXPLORE is a computer graphics software system composed of four independent modules: two modeling modules (polygonal and free-form surface modeling), a module for complex animation scenes, and a visualization module that offers a vast range of full-color rendering possibilities.

RAINBOW TECHNOLOGIES

Booth 1802

18011-A Mitchell South

Irvine, California 92714

(714) 261-0228

Lynda Dahl

Director of Marketing

Rainbow Technologies will display its line of hardware keys that stop unauthorized use of software. Being announced is the SentinelPro, a product based on Rainbow's own ASCII designed chip. It is half the size of the standard Software Sentinel and offers even more protection for developers.

RAPID TECHNOLOGY CORPORATION

Booth 430

125 Burroughs Drive

Amherst, New York 14226

(716) 839-3503

Steven Levine

User Group Contact: Henryk Szejenwald

RTC offers personal ASAP's of "Application-Specific Array Processors" geared toward IBM-PC/XTAT and compatibles. A current product offering is the RTI "BOLT" array processor card microcoded to provide graphics acceleration in the 14 Megaflop range. This low cost add-on delivers image processing and rendering capability within anyone's price range.

RASTEROPS CORPORATION

Booth 558

10161 Bubba Road
Cupertino, California 95014
(408) 446-4090
Patti Walters

Marketing Communications Specialist

RasterOps is the market leader in high-resolution 24-bit and 8-bit color graphic displays for the Macintosh II. Used in desktop publishing, video imaging and CAD/CAM applications, the RasterOps' TruColor series of ColorBoards displays photograph quality images on RasterOps 19" Color Trinitron monitors.

RASTER TECHNOLOGIES

Booth 1318

Two Robbins Road
Westford, Massachusetts 01886
(508) 692-7900
Dianne Capps
Marketing Communications Manager

User Group Contact: Katy Patrick
Marketing Specialist

Raster Technologies will demonstrate the Model One Family of high-performance 2-D and 3-D graphic systems and the GX4000 Family of 3-D graphics accelerators for the Sun-3 and Sun-4 workstations. The GX4000 Family delivers one million 3-D vectors-per-second performance in a standards-based environment.

RGB TECHNOLOGY

Booth 1848

2550 Ninth Street
Berkeley, California 94710
(415) 848-0180
Carol Fogel
Sales Manager

User Group Contact: Carl Lyle
Vice President Operations

The RGB/Videolink converts high-resolution RGB graphics to television (NTSC) video for tape recording and projection. The system performs line and pixel averaging, sync generation and encoding, and outputs composite (NTSC) video in real time. An enhanced RGB/Videolink PLUS offers video mixing for overlaying computer graphics with live or prerecorded video.

RICOH CORPORATION

Booth 2265

180 Passaic Ave

Fairfield, New Jersey 07006

(201) 808-3625

Dana M. Berzin

OEM Planning Manager

RON SCOTT, INC.

Booth 352

1000 Jackson Boulevard

Houston, Texas 77006

(713) 529-5868

Ron Scott

President

Software supporting Truevision™, PictureMaker™ and Matrix products. Quick Picture Recorder drives Matrix film recorders. QUtilities™ manipulates hi-resolution images and supports PictureMaker™ images with a TARGA board. Qonvert™ converts popular image file formats, SQALE™ shrinks or expands any size image up to 8K. QFX™ adds glow, emboss, shadow, filter and hi-con effects to images.

SAMPO CORPORATION OF AMERICA

Booth 329

5550 Peachtree Industrial Boulevard

Norcross, Georgia 30071

(404) 449-6220

George Korzeniewski

Vice President

Sampo will display 13" and 19" high-and medium-resolution color display monitors; RGBI and Analog input; 9", 12", 14", 15", 19" and 23" high-resolution monochrome display monitors; 15.75 to 89 KHz horizontal fixed frequency, resolutions up to 1600 X 1280; also multi-frequency color monitors; CRT Terminals; 80286 and 80386 personal computers; and add-on boards.

SECTOR COMPUTER SYSTEMS, INC.

Booth 217

5795 Canal Road
Cleveland, Ohio 44125
(216) 524-5858

Chet King
Marketing Account Manager

Throughout the years, Sector has been dedicated to servicing our DEC, GA, IBM and TI customers with a full range of custom service programs. Sector offers standard and extended coverage maintenance contracts, and on-site or depot repair. Equipment dependent on customers' needs is sold, exchanged or repaired. Our reliability, outstanding service and expertise have made Sector a leader in computer service.

SEIKO INSTRUMENTS

Booth 946

1130 Ringwood Court
San Jose, California 95131
(408) 943-9100

Kim Marker
Marketing Communications Specialist

User Group Contact: Cheryl Landman
Manager, Marketing Communications

Seiko will demonstrate a full line of intelligent thermal transfer color hardcopiers, suitable for a broad range of applications from PC-based environments to high-end workstations. Models shown are specialized for different copy sizes, resolutions, computer interface types and integral vector-to-raster data conversion. Also featured is the GR-4400 Series Advanced Raster Displays, with 3-D and 2-D capabilities and world-class performance speed of 400,000 vectors/second.

SHIMA SEIKI U.S.A. INC.

Booth 828

22 Abeel Road
Cranbury, New Jersey 08512
(609) 655-4788

Helen Estakhrian
Marketing

Shima Seiki will exhibit a high-resolution, high-speed computer graphic paint system. The system can be expanded to include 3-D capabilities, wire frame modeling, polygon rendering at 50,000 polygons/second and real-time texture mapping. Other options include large scale hard disk and optical disk storage, input scanners and high-quality printers.

SIGGRAPH '89

Entrance Concourse

Conference Co-Chairs

Branko J. Gerovac

Christopher F. Herot

Exhibits Chair

Carolyn Hayes

SIGGRAPH '89, the 16th Annual Conference on Computer Graphics and Interactive Techniques, will be held 31 July-4 August 1989 in Boston, Mass. For details on how you can contribute to the success of this conference, please see the call for participation at the end of this program or pick one up at the booth. Posters and pins will also be distributed. For conference information, call 312-644-6610. For exhibition information, call 212-752-0911.

SILICON GRAPHICS

Booths 1236, 1248

2011 Stierlin Road

Mountain View, California 94043

(415) 960-1980

Toni Gripper

Marketing Manager, Trade Shows

User Group Contact: Frank Dietrich,

Iris User Program Manager

Silicon Graphics Inc., designs, manufactures, markets and services high-performance superworkstations, which are used for conceptual design, analysis and simulation of 3-D objects and phenomena. Silicon Graphics sells its IRIS-4D Series Superworkstations to OEMS, VARs and end user organizations through a worldwide direct sales force. Silicon Graphics works with Geometry Partners who provide applications software solutions for key markets. Founded in 1981, Silicon Graphics has shipped over 7000 systems to more than 600 customers worldwide.

SOCIETY FOR INFORMATION DISPLAY

Booth 2301

c/o Palisades Institute for Research Services, Inc.

201 Varick St., Suite 1140

New York, New York 10014

(212) 620-3388

Hildegard Hammond

Managing Editor, Information Display

The Society for Information Display (SID) was founded in 1962 to promote the use of electronic information display and—through conferences and publications—to facilitate the exchange of ideas in this highly interdisciplinary field. SID will display copies of its quarterly journal, *Proceedings of the SID*, and its monthly magazine, *Information Display*.

SOFPAC INC.

Booth 2318

215 Stafford Road

Unit 107

Nepean, Ontario, Canada K2H 9C1

(613) 726-1908

Peter Karneef

President

Sofpak GKS is a high-performance, low cost graphics development tool for PCS running DOS and QNX. Also, Sofpak will be demonstrating AVA, the audio/voice adapter for use in desktop presentation systems.

SOFTIMAGE, INC.

Booth 1647

3510 Blvd. St. Laurent, Suite 214

Montreal, Quebec Canada H2X 2V2

(514) 845-1636

Laurent Lauzon and Richard Mercille

Technical Supervisors

User Group Contact: Char Davies

Marketing Supervisor

SOFTIMAGE will introduce the SOFTIMAGE 4-D Creative Environment, the most effective 3-D animation, simulation and rendering system on the market. The software package, besides having all the features of the best 3-D systems, offers unprecedented features in an interactive system such as skeleton-based modeling and animation, infinite hierarchy, uncommonly subtle patches and simulation of physical laws. Applications include scientific visualization, industrial design, photo-realist art, and computer animation for TV and film.

SOFTWARE MAGAZINE

Booth 326

1900 W. Park Drive, Suite 200
Westborough, Massachusetts 01581
(617) 366-2031
Cynthia Reehl
Sales Promotion Manager

Software Magazine serves 90,000 software designers, developers and managers in DP/MIS organizations throughout corporate America. Visit Software's booth for a free sample issue.

SOLID IDEAS, INC.

Booth 354

3160 Commonwealth Drive, Suite 190
Dallas, Texas 75247
(214) 631-1197
Scott M. Grey
Vice President/Sales and Marketing

Solid Ideas will demonstrate the CubAssist II Utilities, a system of software tools and production techniques designed to support users of the Cubicomp PictureMaker®. Over 130 easy-to-use and fully-documented utilities allow users to get the most from their systems.

SONY CORPORATION OF AMERICA

Booth 418

10833 Valley View Street
Cypress, California 90630
(714) 229-4189
Dana L. May
Communications Administration

Products include: Full line of high-resolution monitors, CAD/CAM/CAE/CGA, multiscan and flat panel monochrome. Also CCD cameras and video printer.

SONY INFORMATION SYSTEMS

Booth 318

Sony Drive
Park Ridge, New Jersey 07656
(201) 930-1000
Tony Micci
Marketing Manager

Electronic Still Image cameras, super high-resolution video camera (1050 lines), two-inch floppy disk color image storage system, 12" optical disk storage system, color printer, high-resolution monitors and a digital transmission system will be displayed.

SPACE RESEARCH INSTITUTE

Booth 308

84/32 Profsoyuznaya
Moscow 117810 GSP 7
USSR
333-53-01
Leo Chesalin
Department Chief

Space Research Institute demonstrates its new, IBM PC/XT/AT standard 3-card unit—SVIT, designed for high-speed digital image processing. Includes up to 2 MByte video memory with display resolution up to 768*544 pixels and backfeed processing. Look Up Tables for 1024 on-screen colors simultaneously. Software open design, and program packages developed for a variety of applications.

SPACEWARD MICROSYSTEMS

Booth 2330

3/5 Soho Street
London, England W1V 5FA
(01) 734-9617
Kaarin Weber
Marketing/PR Executive

User Group Contact: Kaarin Weber
Marketing/PR Executive

Spaceward will be exhibiting their full range of computer graphics systems.

SPRINGER-VERLAG NEW YORK, INC.

Booth 2517

175 Fifth Avenue
New York, New York 10010
(212) 460-1600
Julie Cieben
Exhibits Assistant

Springer-Verlag has been making graphic impressions on its readers for more than 15 years. This year, they are displaying at booth #2517 a most impressive collection of high-level graphics books, including: The NeWs Book, CGM and CGI, Illumination and Color In Computer Graphics, and The Science of Fractals.

***STAR TECHNOLOGIES, INC. —
GRAPHICON PRODUCTS DIVISION***

Booth 746

P.O. Box 13951

Research Triangle Park, North Carolina 27709

(919) 361-3800

Bradley H. Wyckoff

Senior Product Marketing Engineer

Developer of the Graphicon family of graphics processors, the Graphicon 1700 Simulator is capable of rendering and manipulating 2000 shaded polygons at 30 frames per second. The Graphicon 1700 renders 30,000 Gouraud shaded polygons per second. Primary applications include out-the-window simulation C³I, molecular modeling.

STELLAR COMPUTER INC.

Booth 852

85 Wells Avenue

Newton, Massachusetts 02159

(617) 964-1000

Sharon Cullina

Manager, Exhibits and Promotions

Stellar exhibits the Stellar Graphics Supercomputer GS1000, a system with 20+ MIPS integer performance, 40 MFLOPS vector and scalar floating-point performance, and graphics rendering at 150,000 Gouraud-shaded polygons per second. The GS1000 enables real-time visualization of scientific and technical information for applications like MCAE, molecular modeling, animation, image processing and CFD.

STEPSTONE

Booth 2012

75 Glen Road

Sandy Hook, Connecticut 06482

(203) 426-1875

Stacey A. Wildenberg

Telemarketing Manager

User Group Contact: Jeffrey Burnett

Vice President Marketing

Stepstone offers a family of object-oriented products based on the Objective-C language. The Objective-C interpreter provides interactive interpret/debug/inspect facilities for both C and Objective-C applications. For users who build platform independent, custom iconic user interface applications, Stepstone provides 1Cpak 201, a graphical user interface library of Objective-C classes.

STEREOGRAPHICS CORPORATION

Booth 1943

2171-H E. Francisco Blvd.
San Rafael, California 94901
(415) 459-4500
Dave Holbrook
OEM Sales Manager

Computer Graphics technology has evolved from B&W to color, from 2-D to 2 ½-D to 3-D, and now to stereo 3-D, the most sophisticated graphics tool available for visualizations of data. StereoGraphics Corporation offers the only flicker-free, stereo 3-D tools that are plug-compatible with any unmodified computer.

STRUCTURAL RESEARCH AND ANALYSIS CORPORATION

Booth 2427

1661 Lincoln Blvd., #100
Santa Monica, California 90404
(213) 452-2158
Andrea Mendelsohn
Marketing

User Group Contact: Blaine Anderson
President

COSMOS/M is a complete, self-contained, finite element analysis package. This program performs stress, structural, dynamic, thermal, fluid, magnetic and nonlinear analysis on a PC.

SUMMAGRAPHS CORPORATION

Booth 810

777 State Street Extension
Fairfield, Connecticut 06430
(203) 384-1344
George Hesse
Product Manager

Summagraphics presents its full line of computer graphics tablets in a variety of applications including CAD, desktop publishing and presentation graphics. On display is the Bit Pad Plus a 12" x 12" active area tablet for IBM™ PC, Macintosh™ II and SE. Also featured are the SummaSketch Series in 6" x 9", 12" x 12", and 12" x 18" and the Microgrid II a high accuracy, large active area graphics tablet.

SUN MICROSYSTEMS, INC.

Booth 918

2550 Garcia Avenue

Mountain View, California 94043

(415)960-1300

John Loiacono

Public Relations Specialist

User Group Contact: David Howard

Sun Microsystems, Inc. is the world's leading supplier of network-based distributed computing systems, including technical workstations, graphics and applications accelerators and systems, servers and VNX operating system and productivity software.

SUPERCOMPUTING REVIEW

Booth 303

8445 Camino Santa Fe

San Diego, California 92121

(619) 452-4224

John R. Wilmott

Marketing Director

Supercomputing Review is the first complete guide to high-performance computing. It includes: a comprehensive overview of the industry; a directory of hardware and software vendors; and superb color illustrations for the entire sphere of high-performance machines, from supercomputers to superworkstations. It showcases the finest graphics from the fields of engineering, science and animation.

SYMBOLICS GRAPHICS DIVISION

Booth 1346

1401 Westwood Blvd. 3rd Floor

Los Angeles, California 90024

(213) 478-0681

Ann Newman

Director of Marketing

User Group Contact: Matt O'Malley

President of Symbolics Graphics

Symbolics offers fully integrated Computer Graphics Systems for 3-D Animation and 2-D Animation and Paint with output for video (NTSC, PAL, and HDTV), film and print. Bundled configurations include hardware, software, training and service. SCOPE is a developmental image processing system consisting of a Symbolics Computer and a PIXAR Image Computer.

TAXAN USA CORPORATION

Booth 529

18005 Cortney Court

City of Industry, California

(818) 810-1291

Linda Fujii

TDI THOMSON DIGITAL IMAGES

Booth 524

22, rue Hegesippe Moreau

Paris, France 75018

33-1 43 87 58 58

Denis Schlumberger

Marketing Manager

TDI Systems division presents the latest version of its 3-D animation package: EXPLORE. This highly interactive system is demonstrated on the new Silicon Graphics superworkstation. EXPLORE's newest additions include model deformation and articulated animation tools and interfaces for most CAD systems and high definition output devices. TDI image division features a selection of its most recent 3-D computer animated television, commercial, cinema and corporate productions.

Exhibitors

TECHEXPORT, INC.

Booth 244

One North Avenue
Burlington, Massachusetts 01803
(617)229-6900
Charles L. Sharp
Vice President Marketing

Techexport, a subsidiary of the Showmut Bank, provides a complete export program for leading companies in the field of computer graphics. Techexport takes responsibility for export marketing, including sales, service, advertising, export licensing, exhibitions, customs, foreign exchange and credit. The Techexgroup operates through eight subsidiary offices in Europe and distributes throughout the world.

TECH-SOURCE INC.

Booth 300

1175 Spring Centre South, Suite D
Altamonte Springs, Florida 32714
(407) 788-9100
Richard E. Bendfelt
Director of Sales

Tech-Source will exhibit high performance VME graphics controllers capable of supporting 4-32 planes with overlays, compatible with Sun 3/E, Sun 3/160, Sun 3/260, Sun 4/260, Motorola, Delta Series, Heurikon, AT&T and other VME compatible systems. Comprehensive software support for PHIGS, GKS, Pixrect, Suntools, etc.

TEKTRONIX INC.

Booth 2454

P.O. Box 500, MS 48-300
Beaverton, Oregon 997077
(503) 627-6110

Tektronix will display 3-D Stereoscopic Display and Liquid Crystal Shutters.

TEKTRONIX INC.

Booth 2350

P.O. Box 1000, MS 63-635
Wilsonville, Oregon 97070-1000
(800) 225-5434

Tektronix will display 4200 and 4300 series graphics workstations and terminals. 2-D, 3-D, 3-D stereo, with 20,000 polygons/sec, 340,000 3-D vectors/sec, and 450,000 2-D vectors/sec. Thermal transfer color graphics printers with 300 dots/inch, 16 million colors, fast screen copy, high-resolution. Interfaces to many popular workstations, PCs and systems.

TEST & MEASUREMENT SYSTEMS, INC.

Booth 763

2934 Corvin Drive
Santa Clara, California 95051
(408)720-8877
Pat Vinciguerra

HIGH

64 levels of gray 300 dots/inch ideal for private and military surveillance, weathermapping and medical applications.

HIGH RESOLUTION COLOR VIDEO PRINTER, Model TPG-4300
4096 colors, 300 dpi resolution and a built-in smart RGB-video interface unit for OEM applications in computer graphics.

PROGRAMMABLE VIDEO GENERATORS

Complete line of ASTRO DESIGN programmable video generators.

TEXAS INSTRUMENTS

Booth 1058

P.O. Box 1443
Houston, Texas 77251-1443
(713) 274-2000
Scott Huckaby
Graphics Market Communications Manager

Texas Instruments exhibits leadership semiconductor components for computer graphics systems. Included is the popular TMS34010 Graphics Systems Processor, ATC88XX 32-bit Processor Family, TMS4461 256K and TMS44C251 Megabit Video RAMs, TMS34061 Video System Controller, and TMS34070 Color Palette.

TEXAS MEMORY SYSTEMS, INC.

Booth 1830

9888 Bissonnet, #470
Houston, Texas 77036
(713) 771-8200
Hope Marcotte
Staff Programmer

The SAM-600/800/1000 Mass Memory Systems provide up to 1-Gbyte capacity, 200 MB/sec. bandwidth and 16 I/O ports. The GFB20 Graphic Frame Buffer supports real-time animation with 1024 X 1024 X 8 bit frames. Interfaces with VMEbus, FPS-264, DEC, Gould and Concurrent systems.

Exhibitors

TEXNAI INC.

Booth 2249

No. 620, 2-1, Udagawa-cho, Shibuyku

Tokyo, Japan 150

03 4646927

Norie Hiraide

TIME ARTS, INC.

Booth 1456

3436 Mendocino Avenue

Santa Rosa, California 95403

(707)576-7722

Laura Malone

Marketing Director

Scott Gross

V.P. Research & Development

Time Arts will demonstrate LUMENA & CRYSTAL 3-D software, for three applications.

GRAPHIC DESIGN

Creating comps for ads and packaging—outputting to color printers.

PRESENTATION GRAPHICS

Developing slides incorporating photos and art and type—outputting to a film recorder.

VIDEO

Creating special effects with software controlled lights, camera angles, tilts and zooms—outputting to video tape.

TOSHIBA AMERICA

Booth 756

1101A Lake Cook Road

Deerfield, Illinois 60015

(312) 945-1500

Craig Westcott

Assistant Manager, Sales & Marketing

Toshiba is exhibiting color high-resolution monitors, display tubes and LCDs. The FLAT & SQUARE (FS) displays are featured. The FS Invar mask and flatter faceplate achieve superior ergonomics. The new 21" FS 31, 5KHz-64KHz automatic scanning color monitor and 21" FS 64KHz fixed frequency color monitor with 21", 31mm and .26mm color tubes.

Exhibitors

TRIDENT INTERNATIONAL, INC.

Booth 2511

Central Florida Research Park
3290 Progress Drive, Suite 155
Orlando, Florida 32826
(407)282-3344

Debra K. Day
National Sales Manager

Trident, an American Company, is displaying their high-resolution and ultra-resolution large screen projectors in booth 2511. Also being featured is the portable T-200, Computer Visual System (an all-in-one training device). These multi-scan micro-processor based-units are targeted at high-performance applications.

TRUEVISION INC. (FORMERLY AT&T EPICENTER)

Booth 1436

7351 Shadeland Station, Suite 100
Indianapolis, Indiana 46265-3921
(800)858-True

Truevision[®] microcomputer graphics products enable users to process images with television-quality resolution. Our newest products are the ultimate in power and flexibility in high-resolution frame capture and display; ATVista[™] for IBM ATs and NuVista[™] for Macintosh[®] IIs. The new VIDI/O BOX is a high-quality encoder/decoder for s-video and NTSC.

UNIVERSITY OF LOWELL

Booth 1949

One University Avenue—CPE
Lowell, Massachusetts 01854
(617) 452-5000 ext. 2693
Frank A. Drake, Jr.

Research Manager

Graphics products and projects to be displayed include GKS (level 2B), CGI, CGM and software for the visualization of scientific data (running under the X-window system). Imaging products and projects include the Imaging Kernal System (IKS), the ImPP high-performance coprocessor, a high-resolution graphics adapter, and image synthesis software.

UNIVISION TECHNOLOGIES INC.

Booth 138

12 Cambridge Street
Burlington, Massachusetts 01803
(617) 273-5388
Larry Taitelbaum
Vice President, Sales

User Group Contact: Warren Mootrey
Director of Marketing

Univision Technologies, Inc. manufactures high-resolution graphics controllers producing photographic quality images. All controllers are single board and are compatible with IBM-AT, VME and Q-Bus computers. Featured at SIGGRAPH '88 will be the UDC-3400 full color controller with 32-bit planes for the VME and the UDC-2600 for the AT-bus.

UNIX WORLD MAGAZINE/TECH VALLEY PUBLISHING

Booth 2225

444 Castro Street
Mountain View, California 94041
(415) 940-1500
Elizabeth Martin
Marketing Coordinator

UNIX World is directed to the multi-user, multi-tasking computer systems market. Editorial focuses on multi-user computer systems, associated peripherals, software and their effects on the use and design of systems. Editorial content defines and interprets major industry trends: provides hardware and software product reviews, market analysis, practical tutorials and industry news.

VERSATEC, A XEROX COMPANY

Booth 1218

2710 Walsh Avenue
Santa Clara, California 95051
(408) 988-2800
Dale Richmond
Director of Product Marketing

Stop by the Versatec booth to see the latest in raster plotting with the world's first wide format laser plotter producing E-size drawings. The new low-cost pen plotter compatible 8500 series of electrostatic plotters will also be in operation producing complex drawings.

Exhibitors

VIDEOMEDIA SED INC.

Booth 327

211 Weddell Drive

Sunnyvale, California 94089

(408) 745-1700

Tim Andrew

Technical Support

User Group Contact: Stan Sult

Product Manager

On display will be the V-Lan Universal Control Network. Using the V-Lan engine, any graphic, animation or any computer with RS232 out can drive VTR's (serial, parallel, RS-232), laser disk, etc. Up to 20 devices can be controlled at a low cost and easily interfaced.

VIDEO SYSTEMS MAGAZINE

Booth 302

9221 Quivira Road

Overland Park, Kansas 66215

(913) 541-6626

John Torrey

Marketing Director

Video Systems Magazine offers video professionals tested ways to help validate the effectiveness of video productions. Every issue contains planning and presentation methods, along with the latest technical facts and production theories.

VISION 3 D

Booth 726

Immeuble Le Prologue—BP 213

Labège Innopole, France 31320

(33) 61 54 33 47

M. Michel Brunet

Managing Director

User Group Contact: Dominique Vincent

Export Manager

At SIGGRAPH, VISION 3 D will show its 3-D digitizers:—Videolaser V3D 2/600/General Purpose—Videolaser V3D 1/300/Head and all documents about his complete set of products 3-D digitizers.

Exhibitors

VISUAL INFORMATION, INC.

Booth 2136

16309 Doublegrove

La Puente, California 91744

(818)918-8834

Mary Ann Enoberg

Manager, Marketing Communications

Scott Campbell

Sales Administration

WACOM COMPANY, LTD

Booth 247

Ikebukuro Yayoi Bldg.

4P 4-394-11 Kebukuro Tosima-ku

Tokyo, Japan 191

81-3985-7911

Moriyoshi Haraguchi

International section, Sales department

As the first cordless digitizer manufacturer in the world, WACOM exhibits a new series of cordless digitizers. Not requiring a cord, magnet or battery for the cursor and stylus, the SD series realized the ultimate combination of performance and operational ease. The series also offers epoch making pressure sensitive stylus for CG designers.

WALDMANN LIGHTING COMPANY

Booth 239

1714 S. Wolf Road

Wheeling, Illinois 60090

(312) 520-1060

Val Kelly

Marketing Manager

User Group Contact: Dale B. Jones

President

Waldmann will be displaying office task lighting specifically designed for open-office panel furniture systems, computer/CAD workstations and drafting systems.

Exhibitors

WASATCH COMPUTER TECHNOLOGY

Booth 343

123 E. 200 South
Salt Lake City, Utah 84111
(801) 575-8043
Mary M. Ware
Marketing Director

Wasatch Computer Technology is demonstrating the PC-1024 Illustration System; used to create raster imagery at high-resolution (1024 X 768), the PC-4096 Presentation System; used to create object-oriented images at 4000 lines of resolution. In addition, Wasatch is exhibiting the Wasatch High Resolution Scanner, 3-D Presentation Graphics System, and samples from Full Color Frame Grab, Wasatch Slide Scanner and Interface with CGM and desktop publishing.

WAVEFRONT TECHNOLOGIES, INC.

Booth 608

530 E. Montecito Street
Santa Barbara, California 93103
(805) 962-8117
Kelly Eckberg
Marketing Coordinator

User Group Contact: Mark Sylvester
Director of Support

Wavefront's 3-D Dynamic Imaging System offers high-quality, realistic imagery which is motion-dynamic. This computer animation and simulation allows CAD databases to become a central resource across a wide spectrum from engineering design to marketing communications. The system uses ray tracing with multiple light sources and mapping to generate photo-real images. It consists of four modules—Model, Preview, Image and Medit.

WINSTED CORPORATION

Booth 546

10901 Hampshire Avenue South
Minneapolis, Minnesota 55438
(612) 944-8556
Randy Smith
Sales

Computer graphics workstations. Winsted's catalog features 10 new consoles that adjust up and down, in and out, tilt, turn and roll where you want them.

Exhibitors

XTAR CORPORATION

Booth 2130

9915C Business Park Avenue

San Diego, California 92131

(619) 271-4440

Rik Thistle

Director of Marketing and Sales

XTAR introduces the Falcon-PC graphics system for real-time PC AT based applications. Displays 30,000 flat shaded polygons/sec, fills polygons at 160 million pixels/sec, 256 colors and 1024 X 1024 resolution.

ZENITH COMPONENTS

Booth 641

1000 Milwaukee Avenue

Glenview, Illinois 60025

(312)391-7733

Zenith presents high-resolution color and monochrome displays for OEMs including the Flat Tension Mask color monitor and Acoustic Touch Technology.

ZENOGRAPHICS, INC.

Booth 258

19752 MacArthur Blvd., Suite 220

Irvine, California 92715

(714) 851-2266

Lisa Stella

Marketing Communications/Trade Show Coordinator

User Group Contact: Lisa Stella

User Group Coordinator

Zenographics introduces Pixie, a new charting and drawing program with the simplest, most obvious user interface yet devised for presentation graphics. In technical terms, it's called direct manipulation. To you, it means instant learning—and because it's so visual, Pixie is one program you'll never forget.

ZIFF-DAVIS PUBLISHING COMPANY

Booth 1548

One Park Avenue

New York, New York 10016

(212) 503-3500

Linda Bunis

Trade Show Manager

Ziff-Davis Publishing Company will display: *Digital Review*, a leading DEC-specific newspaper covering the full line of DEC systems to serve those individuals at VAX and PDP sites with purchasing authority and *PC Week*, a national newspaper of corporate microcomputing providing product reviews and features on implementation of PCs.

PRODUCT INDEX

BOOTH ARTIFICIAL INTELLIGENCE

- 427 ACI Architectural Computer Intelligence
- 425 Addison-Wesley Publishing Company
- 1158 Apple Computer, Inc.
- 2212 Definicon Systems Inc.
- 663 Morgan Kaufmann Publishers, Inc.
- 2350 Tektronix, Inc.

BOOTH BUSINESS GRAPHICS SOFTWARE

- 755 Advanced Technology Center
- 2318 Anakin Research Inc.
- 726 ANL (Association Nationale du Logiciel)
- 1158 Apple Computer, Inc.
- 2344 Applied Visual Technologies, Inc.
- 1148 AT&T Graphics Software Labs
- 536 AZTEK Inc.
- 1836 Commodore Business Machines, Inc.
- 1646 Compugraphic Corporation
- 1118 Crosfield Dicomed Inc.
- 1336 Cubicomp Corporation
- 726 Dalim Computer Graphic Systems
- 1808 Dimension Technology Ltd.
- 1643 Dubner Computer Systems, Inc.
- 2318 Forefront Graphics Corporation
- 1912 Grafpoint
- 836 Hitachi America, Ltd.
- 1653 Ithaca Software
- 1850 Lazerus
- 2318 Management Graphics Inc.
- 2254 Management Graphics, Inc.
- 1958 Media Cybernetics
- 2230 Mitsubishi International Corporation
- 1446 Number Nine Computer Corporation
- 1654 Pansophic Systems, Inc.
- 946 Seiko Instruments USA
- 2350 Tektronix, Inc.
- 2136 Visual Information, Inc.
- 343 Wasatch Computer Technology
- 258 Zenographics, Inc.

BOOTH CAD/CAM/CAE

- 427 ACI Architectural Computer Intelligence
- 2118 Advanced Micro Devices
- 1048 Alias Research
- 2318 Anakin Research Inc.
- 936 Apollo Computer
- 1158 Apple Computer, Inc.
- 1636 Ardent Computer
- 1148 AT&T Graphics Software Labs
- 545 Autotasc Corporation
- 1536 Bruning Computer Graphics
- 743 Bruning/KMW
- 2163 Byte by Byte Corporation
- 2420 Cadkey, Inc.
- 1229 Chromatics, Inc.
- 2507 Chugai Boyeki (America) Corporation
- 1836 Commodore Business Machines, Inc.
- 706 Control Systems Inc.
- 2312 Convex Computer Corporation
- 656 Cyberware Laboratory, Inc.
- 2212 Definicon Systems Inc.
- 212 Electrohome Display Systems
- 218 Electrohome Projection Products
- 451 Engineering Mechanics Research Corporation
- 237 FOR-A Corporation of America
- 1912 Grafpoint
- 2044 GraphOn
- 518 GTCO Corporation
- 1036 Hewlett-Packard Company
- 836 Hitachi America, Ltd.
- 818 Houston Instrument
- 240 Ioline Corporation
- 2108 Iris Graphics
- 1653 Ithaca Software
- 552 Kurta Corporation
- 1850 Lazerus
- 930 Lundy Electronics & Systems, Inc.
- 1330 Megatek Corporation
- 2200 Microfield Graphics Inc.
- 2230 Mitsubishi International Corporation
- 2150 Moniterm
- 512 Multiwire Division

Product Index

- 2258 Nichimen America, Inc.
- 506 Nikon Inc.
- 2236 Nissei Sangyo America, Ltd.
- 1804 Nth Graphics
- 1446 Number Nine Computer Corporation
- 530 Numonics Corporation
- 445 Pixelworks, Inc.
- 701 Polhemus Navigation Science
- 2050 Prime Computer
- 1030 QMS, Inc.
- 1318 Raster Technologies
- 217 Sector Computer Systems, Inc.
- 946 Seiko Instruments USA
- 1236, Silicon Graphics
- 1248
- 1647 Softimage, Inc.
- 418 Sony Corporation of America
- 852 Stellar Computer Inc.
- 1943 Stereographics Corporation
- 2427 Structural Research & Analysis Corporation
- 810 Summagraphics Corporation
- 918 Sun Microsystems, Inc.
- 2350 Tektronix, Inc.
- 756 Toshiba
- 138 Univision Technologies
- 1218 Versatec, A Xerox Company
- 726 Vision 3D
- 2136 Visual Information, Inc.

BOOTH CARTOGRAPHY

- 2318 Anakin Research Inc.
- 726 ANL (Association Nationale du Logiciel)
- 1636 Ardent Computer
- 2156 benchMark Technologies Limited
- 1229 Chromatics, Inc.
- 1836 Commodore Business Machines, Inc.
- 2212 Definicon Systems Inc.
- 1912 Grafpoint
- 240 Ioline Corporation
- 2108 Iris Graphics
- 1653 Ithaca Software
- 2200 Microfield Graphics Inc.
- 2230 Mitsubishi International Corporation
- 235 National Technical Information Service
- 1446 Number Nine Computer Corporation
- 1943 Stereographics Corporation
- 810 Summagraphics Corporation
- 2350 Tektronix, Inc.

BOOTH COM DEVICES/FILM RECORDERS

- 536 AZTEK Inc.
- 1818 CELCO
- 726 CFE
- 1118 Crosfield Dicomed
- 2253 Folsom Research, Inc.
- 664 N.I.S.E., Inc.

BOOTH COMMUNICATIONS

- 726 ANL (Association Nationale du Logiciel)
- 936 Apollo Computer
- 1158 Apple Computer, Inc.
- 1836 Commodore Business Machines, Inc.
- 1646 Compugraphic Corporation
- 1706 Eastman Kodak Company
- 212 Electrohome Display Systems
- 218 Electrohome Projection Products
- 1912 Grafpoint
- 1036 Hewlett-Packard Company
- 836 Hitachi America, Ltd.
- 1418 KMW Systems Corporation
- 2230 Mitsubishi International Corporation
- 506 Nikon Inc.
- 736 Omnicomp Graphics Corporation
- 2050 Prime Computer
- 918 Sun Microsystems, Inc.

BOOTH *COMPUTER ANIMATION SYSTEMS*

- 427 ACI Architectural Computer Intelligence
- 1318 Alliant Computer Systems Corporation
- 1048 Alias Research
- 2318 Anakin Research Inc.
- 726 ANL (Association Nationale du Logiciel)
- 936 Apollo Computer
- 1158 Apple Computer, Inc.
- 1636 Ardent Computer
- 1148 AT&T Graphics Software Labs
- 536 AZTEK Inc.
- 2156 benchMark Technologies Limited
- 954 BTS Broadcast Television Systems, Inc.
- 2163 Byte by Byte Corporation
- 1818 CELCO
- 347 Circuit Studios, Inc.
- 1836 Commodore Business Machines, Inc.
- 706 Control Systems Inc.
- 2312 CONVEX Computer Corporation
- 1336 Cubicomp Corporation
- 2212 Definicon Systems Inc.
- 230 Diaquest, Inc.
- 1922 Digital Arts
- 1643 Dubner Computer Systems, Inc.
- 218 Electrohome Projection Products
- 237 FOR-A Corporation of America
- 2202 GE DVI Technology Venture
- 712 Genigraphics Corporation
- 726 Getris Images

BOOTH *COMPUTER ANIMATION SYSTEMS*

- 518 GTCO Corporation
- 1036 Hewlett-Packard Company
- 1856 hi-tech Marketing Corporation
- 2306 Intelligent Light, Inc.
- 1528 Interactive Machines, Inc.
- 1653 Ithaca Software
- 1850 Lazerus
- 1930 Lyon Lamb Video Animation Systems
- 1330 Megatek Corporation
- 2258 Nichimen America, Inc.
- 1654 Pansophic Systems, Inc.
- 2464 Primagraphics Limited
- 2050 Prime Computer
- 524 Rainbow Images, Inc.
- 1318 Raster Technologies
- 2257 RGB Technology
- 828 Shima Seiki
- 1236, Silicon Graphics
- 1248
- 1647 Softimage, Inc.
- 354 Solid Ideas, Inc.
- 852 Stellar Computer Inc.
- 918 Sun Microsystems, Inc.
- 1346 Symbolics Graphics Division
- 524 TDI Thomson Digital Images
- 244 Techexport, Inc.
- 1456 Time Arts
- 138 Univision Technologies Inc.
- 726 Vision 3D
- 2136 Visual Information, Inc.
- 608 Wavefront Technologies, Inc.
- 2130 Xtar Corporation

BOOTH CONSULTANTS

- 451 Engineering Mechanics Research Corporation
- 1812 MegaScan Technology, Inc.
- 512 Multiwire Division

BOOTH CORE STANDARD SOFTWARE

- 1318 Alliant Computer Systems Corporation
- 1850 Lazerus
- 1058 Texas Instruments

BOOTH DESKTOP COMPUTERS

- 2118 Advanced Micro Devices
- 2318 Anakin Research Inc.
- 1158 Apple Computer, Inc.
- 1836 Commodore Business Machines, Inc.
- 1036 Hewlett-Packard Company
- 1850 Lazerus
- 2150 Moniterm
- 1804 Nth Graphics
- 445 Pixelworks, Inc.
- 558 RasterOps Corporation
- 329 Sampo Corporation of America
- 918 Sun Microsystems, Inc.
- 138 Univision Technologies
- 2136 Visual Information, Inc.

BOOTH DISPLAY GENERATORS

- 1318 Alliant Computer Systems Corporation
- 936 Apollo Computer
- 2156 benchMark Technologies Limited
- 954 BTS Broadcast Television Systems, Inc.
- 1229 Chromatics, Inc.
- 407 Colorgraphic Communications Corporation
- 1836 Commodore Business Machines, Inc.
- 706 Control Systems Inc.
- 2212 Definicon Systems Inc.
- 230 Diaquest, Inc.
- 1643 Dubner Computer Systems, Inc.
- 218 Electrohome Projection Products
- 237 FOR-A Corporation of America
- 1528 Interactive Machines, Inc.
- 1850 Lazerus
- 251 Leader Instruments Corporation
- 1804 Nth Graphics
- 1918 Parallax Graphics, Inc.
- 1626 Pixar
- 1848 RGB Technology
- 1058 Texas Instruments
- 2136 Visual Information, Inc.
- 2130 Xtar Corporation

BOOTH DRAFTING SYSTEMS

- 2318 Anakin Research Inc.
- 1158 Apple Computer, Inc.
- 1836 Commodore Business Machines, Inc.
- 237 FOR-A Corporation of America
- 1907 Graphic Controls
- 1446 Number Nine Computer Corporation
- 918 Sun Microsystems, Inc.
- 2350 Tektronix, Inc.
- 2136 Visual Information, Inc.

BOOTH ELECTRICAL/ELECTRONIC SYSTEMS

- 2118 Advanced Micro Devices
- 936 Apollo Computer
- 1036 Hewlett-Packard Company
- 1446 Number Nine Computer Corporation
- 918 Sun Microsystems, Inc.

BOOTH ENGINEERING WORKSTATIONS

- 2118 Advanced Micro Devices
- 1318 Alliant Computer Systems Corporation
- 1048 Alias Research
- 936 Apollo Computer
- 1158 Apple Computer, Inc.
- 1636 Ardent Computer
- 2420 Cadkey, Inc.
- 726 CFE
- 1229 Chromatics, Inc.
- 1836 Commodore Business Machines, Inc.
- 2212 Definicon Systems Inc.
- 451 Engineering Mechanics Research Corporation
- 1912 Grafpoint
- 518 GTCO Corporation
- 1036 Hewlett-Packard Company
- 836 Hitachi America, Ltd.
- 1528 Interactive Machines, Inc.
- 1850 Lazerus
- 1330 Megatek Corporation
- 2200 Microfield Graphics Inc.
- 2230 Mitsubishi International Corporation
- 2150 Moniterm
- 1804 Nth Graphics
- 1446 Number Nine Computer Corporation
- 445 Pixelworks, Inc.
- 2050 Prime Computer
- 1318 Raster Technologies
- 946 Seiko Instruments USA
- 1236, Silicon Graphics
- 1248
- 1647 Softimage, Inc.
- 852 Stellar Computer Inc.
- 1943 Stereographics Corporation
- 918 Sun Microsystems, Inc.
- 2350 Tektronix, Inc.
- 2136 Visual Information, Inc.
- 546 Winsted Corporation

BOOTH ERGONOMICS—FURNITURE

- 1646 Compugraphic Corporation
- 546 Winsted Corporation

BOOTH ERGONOMICS—HARDWARE

- 1646 Compugraphic Corporation
- 506 Nikon Inc.
- 2236 Nissei Sangyo America, Ltd.

BOOTH ERGONOMICS—WORKSTATIONS

- 936 Apollo Computer
- 1836 Commodore Business Machines, Inc.
- 1646 Compugraphic Corporation
- 1118 Crosfield Dicomed Inc.

BOOTH GKS SOFTWARE

- 755 Advanced Technology Center
- 936 Apollo Computer
- 1229 Chromatics, Inc.
- 1036 Hewlett-Packard Company
- 1952 Imagraph Corporation
- 736 Omnicomp Graphics Corporation
- 445 Pixelworks, Inc.
- 918 Sun Microsystems, Inc.
- 2350 Tektronix, Inc.
- 1949 University of Lowell

BOOTH GRAPHIC DIGITIZERS

- 2318 Anakin Research Inc.
- 2408 Analog Devices, Inc.
- 1836 Commodore Business Machines, Inc.
- 1646 Compugraphic Corporation
- 2022 Data Translation, Inc.
- 230 Diaquest, Inc.
- 1718 EIKONIX
- 237 FOR-A Corporation of America
- 518 GTCO Corporation
- 836 Hitachi America, Ltd.
- 818 Houston Instrument
- 2306 Intelligent Light, Inc.
- 552 Kurta Corporation
- 2230 Mitsubishi International Corporation
- 530 Numonics Corporation
- 701 Polhemus Navigation Science
- 946 Seiko Instruments USA
- 810 Summagraphics Corporation
- 244 Techexport, Inc.
- 2350 Tektronix, Inc.
- 1436 Truevision Inc.
- 1949 University of Lowell
- 726 Vision 3D

BOOTH GRAPHIC DISPLAYS

- 1318 Alliant Computer Systems Corporation
- 936 Apollo Computer
- 1158 Apple Computer, Inc.
- 545 Autotasc Corporation
- 2030 Barco-Industries, Inc.
- 954 BTS Broadcast Television Systems, Inc.
- 1229 Chromatics, Inc.
- 2507 Chugai Boyeki (America) Corporation
- 407 Colorgraphic Communications Corporation
- 1836 Commodore Business Machines, Inc.
- 1646 Compugraphic Corporation
- 706 Control Systems Inc.
- 2400 Crosfield Electronics Inc.
- 2022 Data Translation, Inc.
- 2212 Definicon Systems Inc.
- 230 Diaquest, Inc.
- 645 DisplayTEK, Inc.

- 2018 Dotronix Inc.
- 1706 Eastman Kodak Company
- 212 Electrohome Display Systems
- 218 Electrohome Projection Products
- 444 Evans & Sutherland
- 2253 Folsom Research, Inc.
- 237 FOR-A Corporation of America
- 718 Ikegami Electronics (USA), Inc.
- 1952 Imagraph Corporation
- 1528 Interactive Machines, Inc.
- 1850 Lazerus
- 1518 Matrox Electronic Systems Ltd.
- 1330 Megatek Corporation
- 1230 Metheus
- 2200 Microfield Graphics Inc.
- 1944 Mitsubishi Electronics
- 2230 Mitsubishi International Corporation
- 2150 Moniterm
- 2258 Nichimen America, Inc.
- 2236 Nissei Sangyo America, Ltd.
- 1804 Nth Graphics
- 1446 Number Nine Computer Corporation
- 1608 Panasonic Industrial Company DCD
- 2412 Photron Limited
- 1626 Pixar
- 445 Pixelworks, Inc.
- 2464 Primagraphics Limited
- 558 RasterOps Corporation
- 1318 Raster Technologies
- 1848 RGB Technology
- 329 Sampo Corporation of America
- 946 Seiko Instruments USA
- 1236, Silicon Graphics
- 1248
- 418 Sony Corporation of America
- 1943 StereoGraphics Corporation
- 2350 Tektronix, Inc.
- 756 Toshiba
- 2511 Trident International, Inc.
- 1436 Truevision Inc.
- 138 Univision Technologies Inc.
- 2130 Xtar Corporation
- 641 Zenith Components

BOOTH GRAPHICS AIDED DRAFTING

- 2318 Anakin Research Inc.
- 936 Apollo Computer
- 1158 Apple Computer, Inc.
- 545 Autotasc Corporation
- 2163 Byte by Byte Corporation
- 1836 Commodore Business Machines, Inc.
- 2212 Definicon Systems Inc.
- 237 FOR-A Corporation of America
- 1912 Grafpoint
- 240 Ioline Corporation
- 552 Kurta Corporation
- 2230 Mitsubishi International Corporation
- 2258 Nichimen America, Inc.
- 1804 Nth Graphics
- 217 Sector Computer Systems, Inc.
- 918 Sun Microsystems, Inc.
- 2350 Tektronix, Inc.
- 2136 Visual Information, Inc.

BOOTH GRAPHICS ARTS SYSTEMS

- 1048 Alias Research
- 2318 Anakin Research Inc.
- 936 Apollo Computer
- 1158 Apple Computer, Inc.
- 2344 Applied Visual Technologies, Inc.
- 1148 AT&T Graphics Software Labs
- 545 Autotasc Corporation
- 536 AZTEK Inc.
- 2156 benchMark Technologies Limited
- 954 BTS Broadcast Television Systems, Inc.
- 2163 Byte by Byte Corporation
- 1836 Commodore Business Machines, Inc.
- 1646 Compugraphic Corporation
- 706 Control Systems Inc.
- 2400 Crosfield Electronics Inc.
- 1336 Cubicomp Corporation
- 2212 Definicon Systems Inc.
- 230 Diaquest, Inc.
- 1922 Digital Arts
- 1808 Dimension Technology Ltd.
- 1554 Flamingo Graphics
- 237 FOR-A Corporation of America
- 712 Genigraphics Corporation

- 2108 Iris Graphics
- 552 Kurta Corporation
- 1850 Lazerus
- 2254 Management Graphics, Inc.
- 2230 Mitsubishi International Corporation
- 2211 Networked Picture Systems, Inc.
- 2050 Prime Computer
- 558 RasterOps Corporation
- 828 Shima Seiki
- 1647 Softimage, Inc.
- 354 Solid Ideas, Inc.
- 918 Sun Microsystems, Inc.
- 1346 Symbolics Graphics Division
- 244 Techexport, Inc.
- 2350 Tektronix, Inc.
- 1456 Time Arts
- 138 Univision Technologies Inc.
- 2136 Visual Information, Inc.
- 343 Wasatch Computer Technology

BOOTH GRAPHICS STANDARDS PACKAGES

- 755 Advanced Technology Center
- 936 Apollo Computer
- 1158 Apple Computer, Inc.
- 1636 Ardent Computer
- 1229 Chromatics, Inc.
- 1646 Compugraphic Corporation
- 1036 Hewlett-Packard Company
- 1952 Imagraph Corporation
- 1653 Ithaca Software
- 2230 Mitsubishi International Corporation
- 2218 National Semiconductor Corporation
- 1446 Number Nine Computer Corporation
- 1626 Pixar
- 445 Pixelworks, Inc.
- 2050 Prime Computer
- 1318 Raster Technologies
- 918 Sun Microsystems, Inc.
- 2350 Tektronix, Inc.
- 1058 Texas Instruments
- 1949 University of Lowell

BOOTH HARDCOPY; PHOTOGRAPHS

- 1158 Apple Computer, Inc.
- 1148 AT&T Graphics Software Labs
- 536 AZTEK Inc.
- 1818 CELCO
- 1706 Eastman Kodak Company
- 2318 Forefront Graphics Corporation
- 600 Ilford Photo Corporation
- 664 N.I.S.E., Inc.
- 335 OXBERRY
- 343 Wasatch Computer Technology

BOOTH HARDCOPY; SLIDES

- 1158 Apple Computer, Inc.
- 1148 AT&T Graphics Software Labs
- 536 AZTEK Inc.
- 1818 CELCO
- 1836 Commodore Business Machines, Inc.
- 1646 Compugraphic Corporation
- 1118 Crosfield Dicomed Inc.
- 1808 Dimension Technology Ltd.
- 1554 Flamingo Graphics
- 2318 Forefront Graphics Corporation
- 600 Ilford Photo Corporation
- 2306 Intelligent Light, Inc.
- 1936 Lasergraphics, Inc.
- 664 N.I.S.E., Inc.
- 335 OXBERRY
- 224 Techexport, Inc.
- 343 Wasatch Computer Technology

BOOTH HARDCOPY; VIDEO PAPER

- 536 AZTEK Inc.
- 1836 Commodore Business Machines, Inc.

BOOTH HARDCOPY; VIDEO PAPER

- 230 Diaquest, Inc.
- 1706 Eastman Kodak Company
- 225 Gammadata Computer Ltd.
- 2050 Prime Computer
- 1848 RGB Technology
- 946 Seiko Instruments USA
- 418 Sony Corporation of America
- 318 Sony Information Systems Co.
- 763 Test & Measurement Systems, Inc.

BOOTH HIGH-PERFORMANCE GRAPHICS PROCESSORS

- 2118 Advanced Micro Devices
- 650 Advanced Electronics Design, Inc.
- 1318 Alliant Computer Systems Corporation
- 2408 Analog Devices Inc.
- 936 Apollo Computer
- 1158 Apple Computer, Inc.
- 1636 Ardent Computer
- 1247 AT&T Pixel Machines
- 545 Autotasc Corporation
- 1754 Autographix, Inc.
- 2156 benchMark Technologies Limited
- 954 BTS Broadcast Television Systems, Inc.
- 2420 CADKEY, Inc.
- 1229 Chromatics, Inc.
- 1836 Commodore Business Machines, Inc.
- 1646 Compugraphic Corporation
- 706 Control Systems Inc.
- 2400 Crosfield Electronics Inc.
- 2022 Data Translation, Inc.
- 2212 Definicon Systems Inc.
- 444 Evans & Sutherland
- 237 FOR-A Corporation of America
- 2202 GE DVI Technology Venture
- 712 Genigraphics Corporation
- 1036 Hewlett-Packard Company
- 1528 Interactive Machines, Inc.
- 1418 KMW Systems Corporation
- 1936 Lasergraphics, Inc.
- 1850 Lazerus
- 1518 Matrox Electronic Systems Ltd.
- 1812 MegaScan Technology, Inc.
- 1230 Metheus
- 2200 Microfield Graphics Inc.
- 2230 Mitsubishi International Corporation
- 2218 National Semiconductor Corporation
- 2211 Networked Picture Systems, Inc.
- 2258 Nichimen America, Inc.
- 1804 Nth Graphics
- 736 Omnicomp Graphics Corporation
- 1918 Parallax Graphics, Inc.
- 1626 Pixar
- 445 Pixelworks, Inc.
- 2464 Primagraphics Limited
- 2050 Prime Computer
- 1318 Raster Technologies
- 1236, Silicon Graphics
- 1248

- 746 Star Technologies, Inc., Graphicon Products Division
- 852 Stellar Computer Inc.
- 918 Sun Microsystems, Inc.
- 300 Tech-Source Inc.
- 2350 Tektronix, Inc.
- 1058 Texas Instruments
- 1949 University of Lowell
- 608 Wavefront Technologies, Inc.
- 2130 Xtar Corporation

BOOTH HIGH-RESOLUTION GRAPHIC DISPLAY SYSTEMS

- 2118 Advanced Micro Devices
- 1318 Alliant Computer Systems Corporation
- 936 Apollo Computer
- 1158 Apple Computer, Inc.
- 1636 Ardent Computer
- 545 Autotasc Corporation
- 2030 Barco-Industries, Inc.
- 2156 benchMark Technologies Limited
- 1229 Chromatics, Inc.
- 1836 Commodore Business Machines, Inc.
- 1646 Compugraphic Corporation
- 706 Control Systems, Inc.
- 2400 Crosfield Electronics Inc.
- 2022 Data Translation, Inc.
- 2212 Definicon Systems Inc.
- 230 Diaquest, Inc.
- 2018 Dotronix Inc.
- 1706 Eastman Kodak Corporation
- 212 Electrohome Display Systems
- 218 Electrohome Projection Products
- 636 Electronic Systems Products
- 444 Evans & Sutherland
- 2253 Folsom Research, Inc.
- 237 FOR-A Corporation of America
- 518 GTCO Corporation
- 1036 Hewlett-Packard Company
- 836 Hitachi America, Ltd.
- 1952 Imagraph Corporation
- 1528 Interactive Machines, Inc.
- 1936 Lasergraphics, Inc.
- 1850 Lazerus
- 1518 Matrox Electronic Systems Ltd.
- 1812 MegaScan Technology, Inc.
- 1330 Megatek Corporation

- 1230 Metheus
- 2200 Microfield Graphics Inc.
- 1944 Mitsubishi Electronics
- 2230 Mitsubishi International Corporation
- 2150 Moniterm
- 2211 Networked Picture Systems, Inc.
- 2258 Nichimen America, Inc.
- 506 Nikon Inc.
- 2236 Nissei Sangyo America, Ltd.
- 1804 Nth Graphics
- 1446 Number Nine Computer Corporation
- 736 Omnicomp Graphics Corporation
- 1618 Panasonic Industrial Company
- 1918 Parallax Graphics, Inc.
- 2412 Photron Limited
- 1626 Pixar
- 445 Pixelworks, Inc.
- 2464 Primagraphics Limited
- 542 Quantum Data Inc.
- 558 RasterOps Corporation
- 1318 Raster Technologies
- 1848 RGB Technology
- 329 Sampo Corporation of America
- 946 Seiko Instruments USA
- 828 Shima Seiki
- 1236, Silicon Graphics
- 1248
- 418 Sony Corporation of America
- 318 Sony Information Systems Co.
- 746 Star Technologies, Inc., Graphicon Products Division
- 852 Stellar Computer Inc.
- 1943 StereoGraphics Corporation
- 244 Techexport, Inc.
- 2350 Tektronix, Inc.
- 1830 Texas Memory Systems, Inc.
- 756 Toshiba
- 2511 Trident International, Inc.
- 1949 University of Lowell
- 138 Univision Technologies Inc.
- 2136 Visual Information, Inc.
- 343 Wasatch Computer Technology
- 608 Wavefront Technologies, Inc.
- 2130 Xtar Corporation

BOOTH IMAGE PROCESSING

- 755 Advanced Technology Center
- 1318 Alliant Computer Systems Corporation
- 2408 Analog Devices
- 726 ANL (Association Nationale du Logiciel)
- 1158 Apple Computer, Inc.
- 1636 Ardent Computer
- 1148 AT&T Graphics Software Labs
- 1247 AT&T Pixel Machines
- 2156 benchMark Technologies Limited
- 954 BTS Broadcast Television Systems, Inc.
- 1836 Commodore Business Machines, Inc.
- 706 Control Systems Inc.
- 2312 CONVEX Computer Corporation
- 2400 Crosfield Electronics Inc.
- 2022 Data Translation, Inc.
- 2212 Definicon Systems Inc.
- 230 Diaquest, Inc.
- 1922 Digital Arts
- 1706 Eastman Kodak Company
- 1718 EIKONIX
- 237 FOR-A Corporation of America
- 2202 GE DVI Technology Venture
- 726 Getris Images
- 1036 Hewlett-Packard Company
- 1952 Imagraph Corporation
- 1418 KMW Systems Corporation
- 1850 Lazerus
- 1518 Matrox Electronic Systems Ltd.
- 1958 Media Cybernetics
- 1812 MegaScan Technology, Inc.
- 2230 Mitsubishi International Corporation
- 2218 National Semiconductor Corporation
- 2211 Networked Picture Systems, Inc.
- 506 Nikon Inc.
- 1446 Number Nine Computer Corporation
- 736 Omnicomp Graphics Corporation
- 1918 Parallax Graphics, Inc.
- 1626 Pixar
- 2464 Primagraphics Limited
- 1030 QMS, Inc.
- 1848 RGB Technology
- 352 Ron Scott, Inc.
- 217 Sector Computer Systems, Inc.
- 354 Solid Ideas, Inc.
- 1647 Softimage, Inc.

- 418 Sony Corporation of America
- 308 Space Research Institute
- 852 Stellar Computer Inc.
- 918 Sun Microsystems, Inc.
- 1346 Symbolics Graphics Division
- 244 Techexport, Inc.
- 1058 Texas Instruments
- 1830 Texas Memory Systems, Inc.
- 1436 Truevision Inc.
- 1949 University of Lowell
- 138 Univision Technologies Inc.
- 726 Vision 3D
- 608 Wavefront Technologies, Inc.

BOOTH INPUT DEVICES

- 2318 Anakin Research Inc.
- 2408 Analog Devices
- 1158 Apple Computer, Inc.
- 1229 Chromatics, Inc.
- 1836 Commodore Business Machines, Inc.
- 1646 Compugraphic Corporation
- 656 Cyberware Laboratory, Inc.
- 2022 Data Translation, Inc.
- 1718 EIKONIX
- 237 FOR-A Corporation of America
- 518 GTCO Corporation
- 1036 Hewlett-Packard Company
- 818 Houston Instrument
- 412 Howtek, Inc.
- 552 Kurta Corporation
- 1939 Lyon Lamb Video Animation Systems
- 1826 Measurement Systems
- 506 Nikon Inc.
- 530 Numonics Corporation
- 701 Polhemus Navigation Science
- 946 Seiko Instruments USA
- 318 Sony Information Systems Co.
- 810 Summagraphics Corporation
- 244 Techexport, Inc.
- 2350 Tektronix, Inc.
- 726 Vision 3D
- 343 Wasatch Computer Technology

BOOTH INTERACTIVE GRAPHICS TERMINALS

- 755 Advanced Technology Center
- 1158 Apple Computer, Inc.
- 1636 Ardent Computer
- 2156 benchMark Technologies Limited
- 954 BTS Broadcast Television Systems, Inc.
- 2163 Byte by Byte Corporation
- 1229 Chromatics, Inc.
- 407 Colorgraphic Communications Corporation
- 1836 Commodore Business Machines, Inc.
- 2400 Crosfield Electronics Inc.
- 444 Evans & Sutherland
- 2202 GE DVI Technology Venture
- 1912 Grafpoint
- 2044 GraphOn
- 1528 Interactive Machines, Inc.
- 1850 Lazerus
- 1330 Megatek Corporation
- 2211 Networked Picture Systems, Inc.
- 2258 Nichimen America, Inc.
- 1446 Number Nine Computer Corporation
- 1318 Raster Technologies
- 329 Sampo Corporation of America
- 946 Seiko Instruments USA
- 828 Shima Seiki
- 746 Star Technologies, Inc., Graphicon Products Division
- 918 Sun Microsystems, Inc.
- 2350 Tektronix, Inc.
- 343 Wasatch Computer Technology
- 2130 Xtar Corporation

BOOTH LOW COST GRAPHICS SYSTEMS

- 2318 Anakin Research Inc.
- 936 Apollo Computer
- 1158 Apple Computer, Inc.
- 1636 Ardent Computer
- 1148 AT&T Graphics Software Labs
- 545 Autotasc Corporation
- 536 AZTEK Inc.
- 2163 Byte by Byte Corporation
- 2420 CADKEY, Inc.
- 1229 Chromatics, Inc.
- 1836 Commodore Business Machines, Inc.
- 1336 Cubicomp Corporation
- 2212 Definicon Systems Inc.
- 230 Diaquest, Inc.
- 1808 Dimension Technology Ltd.
- 1643 Dubner Computer Systems, Inc.
- 1554 Flamingo Graphics
- 1912 Grafpoint
- 2044 GraphOn
- 1036 Hewlett-Packard Company
- 1856 hi-tech Marketing Corporation
- 1850 Lazerus
- 1230 Metheus
- 2230 Mitsubishi International Corporation
- 2211 Networked Picture Systems, Inc.
- 1804 Nth Graphics
- 1446 Number Nine Computer Corporation
- 736 Omnicomp Graphics Corporation
- 445 Pixelworks, Inc.
- 524 Rainbow Images, Inc.
- 918 Sun Microsystems, Inc.
- 244 Techexport, Inc.
- 2350 Tektronix, Inc.
- 1058 Texas Instruments
- 1456 Time Arts
- 1949 University of Lowell
- 2136 Visual Information, Inc.
- 2130 Xtar Corporation

BOOTH MANUFACTURING SYSTEMS

- 1158 Apple Computer, Inc.
- 656 Cyberware Laboratory, Inc.
- 2044 GraphOn
- 512 Multiwire Division
- 1804 Nth Graphics
- 918 Sun Microsystems, Inc.

BOOTH MECHANICAL DESIGN SYSTEMS

- 1048 Alias Research
- 936 Apollo Computer
- 1158 Apple Computer, Inc.
- 1636 Ardent Computer
- 2420 CADKEY, Inc.
- 1836 Commodore Business Machines, Inc.
- 656 Cyberware Laboratory, Inc.
- 2212 Definicon Systems Inc.
- 451 Engineering Mechanics Research Corporation
- 1912 Grafpoint
- 240 Ioline Corporation
- 552 Kurta Corporation
- 2200 Microfield Graphics Inc.
- 512 Multiwire Division
- 1804 Nth Graphics
- 1236, Silicon Graphics
- 1248
- 852 Stellar Computer Inc.
- 918 Sun Microsystems, Inc.
- 2136 Visual Information, Inc.

BOOTH MONITORS

- 1158 Apple Computer, Inc.
- 844 Barco Electronics, Inc.
- 2030 Barco-Industries, Inc.
- 1229 Chromatics, Inc.
- 2507 Chugai Boyeki (America) Corporation
- 407 Colorgraphic Communications Corporation
- 1836 Commodore Business Machines, Inc.
- 230 Diaquest, Inc.
- 645 DisplayTEK, Inc.
- 2018 Dotronix Inc.
- 212 Electrohome Display Systems
- 836 Hitachi America, Ltd.
- 718 Ikegami Electronics (USA), Inc.
- 1952 Imagraph Corporation
- 1812 MegaScan Technology, Inc.
- 1944 Mitsubishi Electronics
- 2150 Moniterm
- 336 NEC Home Electronics (USA), Inc.,
Professional Systems Division
- 2236 Nissei Sangyo America, Ltd.
- 1618 Panasonic Industrial Company
- 1608 Panasonic Industrial Company DCD
- 329 Sampo Corporation of America
- 418 Sony Corporation of America
- 318 Sony Information Systems Co.
- 756 Toshiba
- 641 Zenith Components

BOOTH NUMERICAL CONTROL (NC,CNC,DNC)

- 1158 Apple Computer, Inc.
- 656 Cyberware Laboratory, Inc.
- 726 Vision 3D

BOOTH PIPING SYSTEMS

- 427 ACI Architectural Computer Intelligence

BOOTH PLOTTERS

- 1158 Apple Computer, Inc.
- 1536 Bruning Computer Graphics
- 743 Bruning/KMW
- 518 GTCO Corporation
- 1036 Hewlett-Packard Company
- 836 Hitachi America, Ltd.
- 818 Houston Instrument
- 240 Ioline Corporation
- 1804 Nth Graphics
- 530 Numonics Corporation
- 1218 Versatec, A Xerox Company

BOOTH PRINTERS

- 1158 Apple Computer, Inc.
- 1646 Compugraphic Corporation
- 1706 Eastman Kodak Company
- 225 Gammadata Computer Ltd.
- 412 Howtek, Inc.
- 2108 IRIS Graphics
- 1936 Lasergraphics, Inc.
- 1944 Mitsubishi Electronics
- 2230 Mitsubishi International Corporation
- 506 Nikon Inc.
- 1030 QMS, Inc.
- 2265 Ricoh Corporation
- 418 Sony Corporation of America
- 2350 Tektronix, Inc.
- 763 Test & Measurement Systems, Inc.
- 1218 Versatec, A Xerox Company

BOOTH PROJECTORS

- 1158 Apple Computer, Inc.
- 226 Covid, Inc.
- 1706 Eastman Kodak Company
- 218 Electrohome Projection Products
- 636 Electronic Systems Products
- 1850 Lazerus
- 336 NEC Home Electronics (USA), Inc., Professional Systems Division
- 644 N.I.S.E., Inc.
- 1943 StereoGraphics Corporation
- 2511 Trident International, Inc.

BOOTH PUBLICATIONS

- 425 Addison-Wesley Publishing Company
- 2126 AV Video/Montage Publishing
- 344 Cahners Publishing Company
- 1925 Computer Aided Engineering, Penton Publishing
- 401 Computer Graphics Review
- 238 Computer Graphics Today
- 1544 Computer Graphics World,
ACM SIGGRAPH Show Daily
- 1810 Computer Pictures Magazine
- 326 HSD Magazine
- 2520 Engineering Tools Magazine
- 1844 IEEE Computer Society
- 1925 Machine Design, Penton Publishing
- 618 Macintosh Today
- 663 Morgan Kaufmann Publishers, Inc.
- 235 National Technical Information Service
- 603 Presentation Products Magazine
- 1800 Professional Press
- 326 Software Magazine
- 2520 Engineering Tools Magazine
- 2517 Springer-Verlag New York, Inc.
- 303 Supercomputing Review
- 2225 UNIX World Magazine
- 1548 Ziff-Davis Publishing Co.

BOOTH RESEARCH SYSTEMS

- 1636 Ardent Computer
- 656 Cyberware Laboratory, Inc.
- 1850 Lazerus
- 1626 Pixar
- 1647 Softimage, Inc.
- 852 Stellar Computer Inc.
- 918 Sun Microsystems, Inc.

BOOTH ROBOTICS

- 2022 Data Translation, Inc.
- 237 FOR-A Corporation of America
- 726 Vision 3D
- 608 Wavefront Technologies, Inc.

BOOTH SOFTWARE

- 427 ACI Architectural Computer Intelligence
- 755 Advanced Technology Center
- 1158 Apple Computer, Inc.
- 536 AZTEK Inc.
- 954 BTS Broadcast Television Systems, Inc.
- 2163 Byte by Byte Corporation
- 2420 CADKEY, Inc.
- 1336 Cubicomp Corporation
- 2022 Data Translation, Inc.
- 230 Diaquest, Inc.
- 1922 Digital Arts
- 1808 Dimension Technology Ltd.
- 451 Engineering Mechanics Research Corporation
- 1554 Flamingo Graphics
- 1912 Grafpoint
- 1036 Hewlett-Packard Company
- 836 Hitachi America, Ltd.
- 1653 Ithaca Software
- 552 Kurta Corporation
- 1850 Lazerus
- 1330 Megatek Corporation
- 2230 Mitsubishi International Corporation
- 235 National Technical Information Service
- 2211 Networked Picture Systems, Inc.
- 1446 Number Nine Computer Corporation
- 1626 Pixar
- 2464 Primagraphics Limited
- 2050 Prime Computer
- 524 Rainbow Images, Inc.
- 352 Ron Scott, Inc.
- 1647 Softimage, Inc.
- 354 Solid Ideas, Inc.
- 2012 The Stepstone Corporation
- 524 TDI Thomson Digital Images
- 2350 Tektronix, Inc.
- 1058 Texas Instruments
- 1949 University of Lowell
- 2136 Visual Information, Inc.
- 608 Wavefront Technologies, Inc.
- 258 Zenographics, Inc.

BOOTH STAND-ALONE IMAGE PROCESSING

- 1158 Apple Computer, Inc.
- 1148 AT&T Graphics Software Labs
- 2156 benchMark Technologies Limited
- 2400 Crosfield Electronics Inc.
- 2022 Data Translation, Inc.
- 237 FOR-A Corporation of America
- 1036 Hewlett-Packard Company
- 1856 hi-tech Marketing Corporation
- 1850 Lazerus
- 1618 Panasonic Industrial Company
- 2464 Primagraphics Limited
- 852 Stellar Computer Inc.
- 1346 Symbolics Graphics Division
- 608 Wavefront Technologies, Inc.

BOOTH TABLETS

- 2318 Anakin Research Inc.
- 1158 Apple Computer, Inc.
- 1836 Commodore Business Machines, Inc.
- 518 GTCO Corporation
- 818 Houston Instrument
- 552 Kurta Corporation
- 810 Summagraphics Corporation
- 244 Techexport, Inc.
- 2350 Tektronix, Inc.
- 247 Wacom Company, Ltd.

BOOTH *TURNKEY SYSTEMS—HARDWARE*

- 1318 Alliant Computer Systems Corporation
- 2344 Applied Visual Technologies, Inc.
- 1636 Ardent Computer
- 536 AZTEK Inc.
- 954 BTS Broadcast Television Systems, Inc.
- 1836 Commodore Business Machines, Inc.
- 1646 Compugraphic Corporation
- 1118 Crosfield Dicomed Inc.
- 1336 Cubicomp Corporation
- 230 Diaquest, Inc.
- 1808 Dimension Technology Ltd.
- 237 FOR-A Corporation of America
- 726 Getris Images
- 1856 hi-tech Marketing Corporation
- 2306 Intelligent Light, Inc.
- 1850 Lazerus
- 1930 Lyon Lamb Video Animation Systems
- 2254 Management Graphics, Inc.
- 2211 Networked Picture Systems, Inc.
- 524 Rainbow Images, Inc.
- 329 Sampo Corporation of America
- 1647 Softimage, Inc.
- 1346 Symbolics Graphics Division
- 343 Wasatch Computer Technology
- 608 Wavefront Technologies, Inc.

BOOTH *TURNKEY SYSTEMS—SOFTWARE*

- 2344 Applied Visual Technologies, Inc.
- 1636 Ardent Computer
- 536 AZTEK Inc.
- 1646 Compugraphic Corporation
- 1118 Crosfield Dicomed Inc.
- 1336 Cubicomp Corporation
- 230 Diaquest, Inc.
- 1922 Digital Arts
- 1808 Dimension Technology Ltd.
- 451 Engineering Mechanics Research Corporation
- 726 Getris Images
- 1856 hi-tech Marketing Corporation
- 2306 Intelligent Light, Inc.
- 1850 Lazerus
- 2254 Management Graphics, Inc.
- 2211 Networked Picture Systems, Inc.
- 524 Rainbow Images, Inc.
- 1647 Softimage, Inc.
- 524 TDI Thomson Digital Images
- 343 Wasatch Computer Technology
- 608 Wavefront Technologies, Inc.

BOOTH VIDEO DIGITIZERS & DISPLAYS

- 1158 Apple Computer, Inc.
- 2408 Analog Devices
- 545 Autotasc Corporation
- 954 BTS Broadcast Television Systems, Inc.
- 1836 Commodore Business Machines, Inc.
- 706 Control Systems Inc.
- 2022 Data Translation, Inc.
- 230 Diaquest, Inc.
- 1643 Dubner Computer Systems, Inc.
- 2253 Folsom Research, Inc.
- 237 FOR-A Corporation of America
- 2202 GE DVI Technology Venture
- 1036 Hewlett-Packard Company
- 1952 Imagraph Corporation
- 1930 Lyon Lamb Video Animation Systems
- 1518 Matrox Electronic Systems Ltd.
- 2230 Mitsubishi International Corporation
- 1446 Number Nine Computer Corporation
- 2412 Photron Limited
- 2464 Primagraphics Limited
- 1848 RGB Technology
- 308 Space Research Institute
- 1943 StereoGraphics Corporation
- 244 Techexport, Inc.
- 1436 Truevision Inc.
- 138 Univision Technologies
- 726 Vision 3D

BOOTH VIDEO DISCS

- 1158 Apple Computer, Inc.
- 230 Diaquest, Inc.
- 1518 Matrox Electronic Systems Ltd.
- 1618 Panasonic Industrial Company

BOOTH VIDEO PROJECTORS

- 1158 Apple Computer, Inc.
- 844 Barco Electronics, Inc.
- 230 Diaquest, Inc.
- 218 Electrohome Projection Products
- 636 Electronic Systems Products
- 1018 General Electric Company,
Projection Display Products Operation
- 718 Ikegami Electronics (USA), Inc.
- 1850 Lazerus
- 336 NEC Home Electronics (USA), Inc., Professional
Systems Division
- 2511 Trident International, Inc.

BOOTH VIDEO TAPE RECORDERS

- 230 Diaquest, Inc.
- 2306 Intelligent Light, Inc.
- 1930 Lyon Lamb Video Animation Systems
- 336 NEC Home Electronics (USA), Inc., Professional
Systems Division
- 1848 RGB Technology

MISCELLANEOUS

BOOTH ADVANCED IMAGING; DESKTOP PUBLISHING

1030 QMS, Inc.

A/E/C SOFTWARE

427 ACI Architectural Computer Intelligence

*ANIMATION WORKSTATION;
PC BASED REAL TIME CEL*

726 Getris Images

*ANNUAL COMPUTER GRAPHICS TRADE SHOW
AND CONFERENCE; ASSOCIATION*

2418 NCGA (National Computer Graphics Association)

ANTI-ALIASED TEXT; IMAGE SOFTWARE

2318 Forefront Graphics Corporation

ARRAY PROCESSORS

2022 Data Translation, Inc.

CATHODE RAY TUBES

1608 Panasonic Industrial Company DCD

756 Toshiba

2450 Grunder & Associates, Inc.

*COMPUTER ANIMATION SOFTWARE;
IMAGE COMPOSITION SOFTWARE*

354 Solid Ideas, Inc.

COMPUTER FILM CAMERAS

335 OXBERRY

*COMPUTER-VIDEO INTERFACE PRODUCTS;
RGB SWITCHES & DISTRIBUTION AMPLIFIERS*

226 Covid, Inc.

COMPUTER TO VTR INTERFACES

327 Videomedia

COPROCESSING SYSTEMS

2144 Mercury Computer Systems, Inc.

CRT COLOR ANALYZERS; LIGHT METERS

1917 Minolta Corporation

C³I; SIMULATION

746 Star Technologies, Inc., Graphicon Products Division

DESKTOP PRESENTATION SYSTEMS

1706 Eastman Kodak Company

DIGITAL DISK RECORDERS

2244 Abekas

*DIGITAL FILM RECORDING;
GRAPHICS NETWORKING SYSTEMS*

2254 Management Graphics, Inc.

*DISK/TAPE SUBSYSTEMS;
MEMORY EXPANSION BOARDS*

325 Helios Systems

DYNAMIC IMAGING SYSTEMS

608 Wavefront Technologies, Inc.

*ELECTROSTATIC MEDIA AND TONERS;
PEN PLOTTER SUPPLIES*

1907 Graphic Controls

*FONTS-OUTLINES AND BITMAPS;
OEM SOFTWARE DEVELOPERS*

1554 Flamingo Graphics

FRENCH COLLECTIVE EXHIBIT

524 French Expositions in the U.S., Inc.

626 French Expositions in the U.S., Inc.

726 French Expositions in the U.S., Inc.

*FULL COLOR ELECTRONIC PRE-PRESS SYSTEM;
PAINT/IMAGE MANIPULATIONS SYSTEM*

2211 Networked Picture Systems, Inc.

FULL COLOR PAINT AND ANIMATION SYSTEMS

1643 Dubner Computer Systems, Inc.

GENLOCK (VIDEO OVERLAY)

1836 Commodore Business Machines, Inc.

GRAPHICS INTEGRATED CIRCUITS

2218 National Semiconductor Corporation

GRAPHICS SOFTWARE

1456 Time Arts

*HIGH FREQUENCY VIDEO DISTRIBUTION
SYSTEMS; HIGH-RESOLUTION VIDEO
GENERATORS*

763 Test & Measurement Systems, Inc.

GRAPHICS SUPERCOMPUTERS

1636 Ardent Computer

HIGH-PERFORMANCE GRAPHIC COMPONENTS

130 Brooktree Corporation

***HIGH-PERFORMANCE GRAPHICS
WORKSTATIONS***

1330 Megatek Corporation

***HIGH-RESOLUTION FILM RECORDERS;
RASTERIZING CO-PROCESSORS***

1936 Lasergraphics, Inc.

IMAGE COMPUTERS; RENDERING SYSTEMS

1626 Pixar

INTEGRATED CIRCUITS

2118 Advanced Micro Devices

INTELLIGENT GRAPHICS CONTROLLERS

2230 Mitsubishi International Corporation

INTERACTIVE VIDEO; MULTI-MEDIA

2202 GE DVI Technology Venture

JOYSTICKS; TRACKBALLS

1826 Measurement Systems

LIQUID CRYSTAL DISPLAYS

756 Toshiba

***MAINTENANCE SERVICE—
DEC, GA, IBM PC & TI***

217 Sector Computer Systems, Inc.

MEMBERSHIP INFORMATION

1844 IEEE Computer Society

***MULTIPORTED, HIGH BANDWIDTH,
MASS MEMORY SYSTEMS***

1830 Texas Memory Systems, Inc.

***NTSC VIDEO ENCODERS,
NTSC TO RGB VIDEO DECODERS***

446 Faroudja Laboratories Inc.

***OEM ANIMATION PRODUCTS;
STILL IMAGE VIDEO SYSTEMS***

230 Diaquest, Inc.

OPTICAL SCANNER

818 Houston Instrument

***OSCILLOSCOPES/GENERATORS; TEST
INSTRUMENTATION/HIGH RESOLUTION
GENERATORS***

251 Leader Instruments Corporation

PC-BASED SYSTEMS

329 Sampo Corporation of America

PLASMA DISPLAY PANELS

1608 Panasonic Industrial Company DCD

PLOTTER SUPPLIES

743 Bruning/KMW

PRE-PRESS SYSTEMS

1118 Crosfield Dicomed Inc.

PRESENTATION GRAPHICS SOFTWARE

2318 Management Graphics Inc.

*PRODUCTIVITY AND SOFTWARE
DEVELOPMENT TOOLS*

2012 The Stepstone Corporation

PROFESSIONAL ORGANIZATION; PUBLICATIONS

2301 Society for Information Display

REAL-TIME PC BASED GRAPHICS SYSTEMS

2130 Xtar Corporation

SCAN CONVERTERS

2253 Folsom Research, Inc.

1848 RGB Technology

*SCANNERS AND DIGITAL IMAGING
CAMERA SYSTEMS*

1718 EIKONIX

SCIENTIFIC SIMULATION

1647 Softimage, Inc.

SCIENTIFIC VISUALIZATION

1943 StereoGraphics Corporation

852 Stellar Computer Inc.

SOFTWARE PROTECTION

1802 Rainbow Technologies

TASK LIGHTING

239 Waldmann Lighting Company

TERMINAL EMULATION SOFTWARE

1912 Grafpoint

TERMINAL EMULATORS

755 Advanced Technology Center

TEST EQUIPMENT; VIDEO TEST GENERATORS

542 Quantum Data Inc.

3-D ANIMATION WORKSTATIONS

524 Rainbow Images, Inc.

3-D DIGITIZERS

656 Cyberware Laboratory, Inc.

*3-D RAY TRACING ANIMATION;
VISUALIZATION TOOLS*

2163 Byte by Byte Corporation

3-D WORKSTATIONS

1236, Silicon Graphics
1248

*VIDEO ANIMATION CONTROLLER;
VIDEO CONVERTER/FILE SERVER*

1930 Lyon Lamb Video Animation Systems

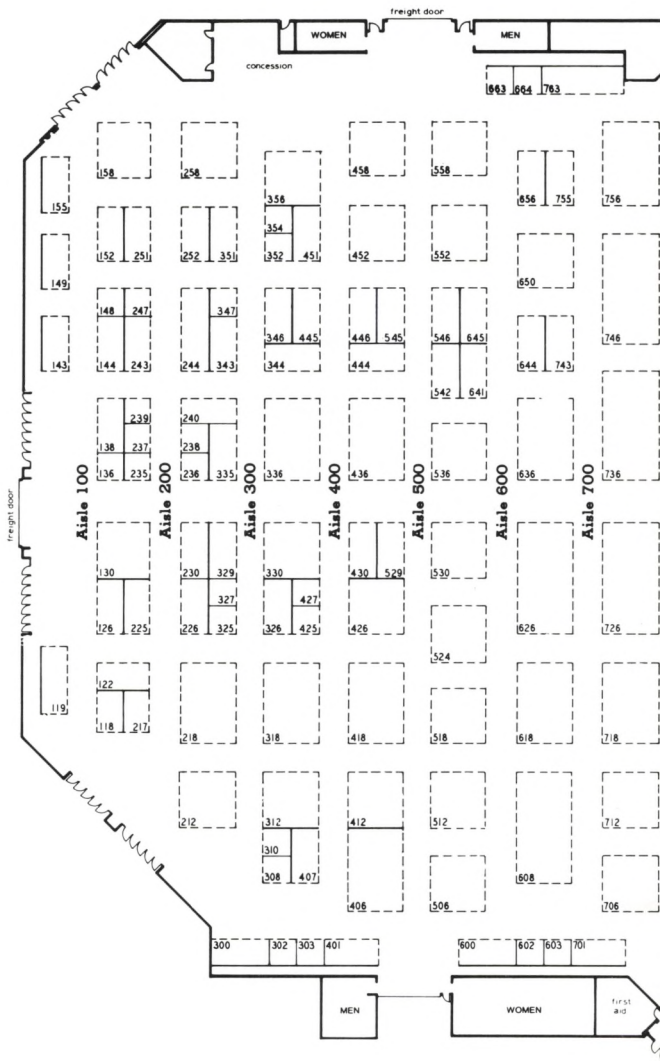
*VIDEO DISTRIBUTION (FIBER OPTICS);
VIDEO SWITCHERS (MULTIPLEXERS)*

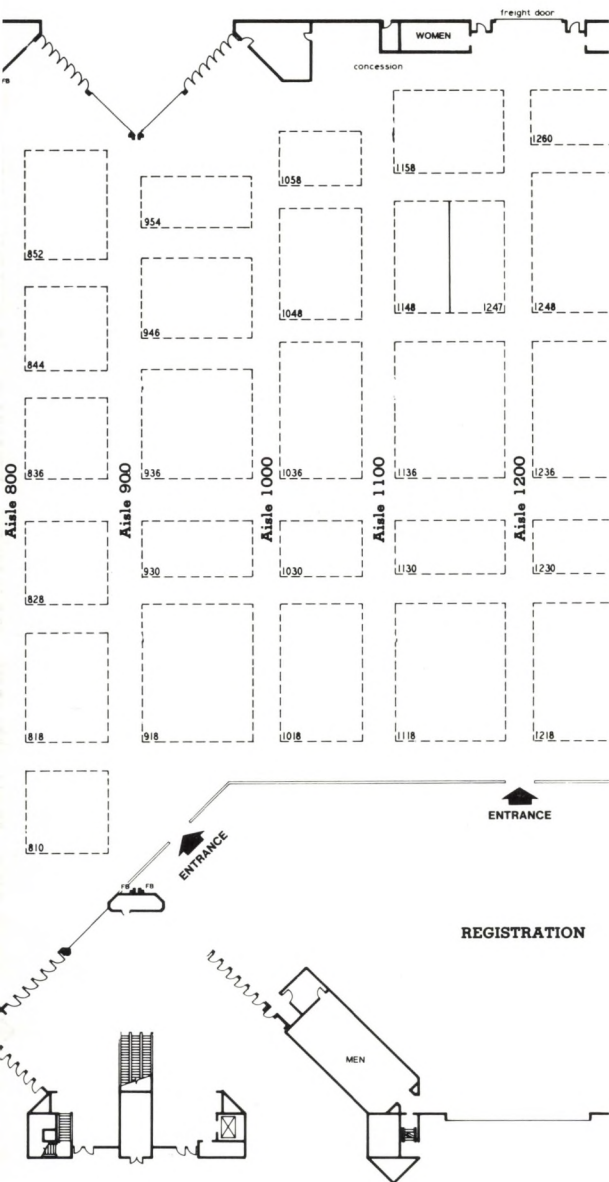
644 DYNAIR Electronics, Inc.

*VIDEO GRAPHICS PROCESSORS;
VIDEO WINDOWING*

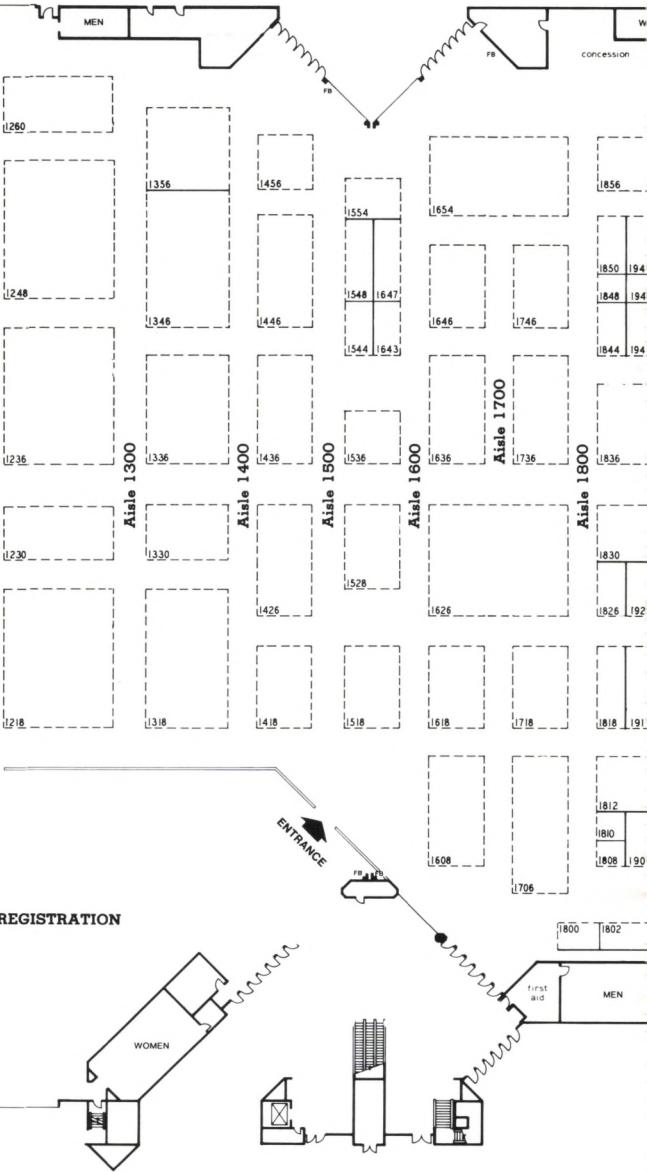
1918 Parallax Graphics, Inc.

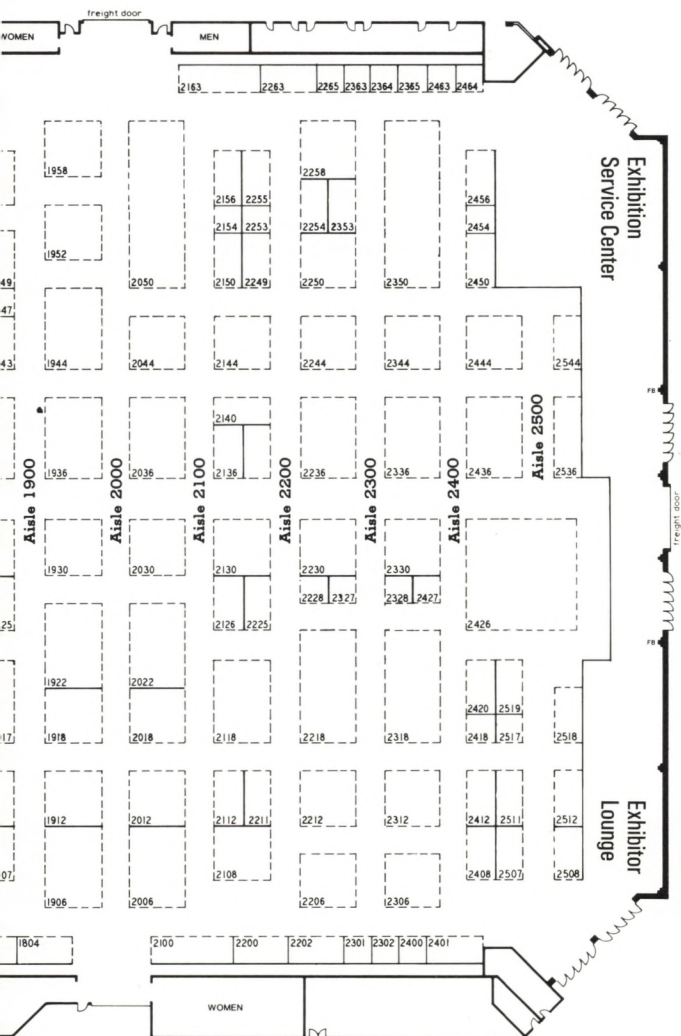
EXHIBITS MAP





Floor Plan





ACM SIGGRAPH '88
AUGUST 1-5, 1988
GEORGIA WORLD CONGRESS CENTER
ATLANTA, GA

CALL FOR PARTICIPATION

ACM SIGGRAPH '89

16th Annual Conference on Computer Graphics and Interactive
Techniques

Boston, Massachusetts

31 July—4 August 1989

Sponsored by the Association for Computing Machinery's
Special Interest Group on Computer Graphics in cooperation
with the IEEE Technical Committee on Computer Graphics

THE CONFERENCE

Computer graphics has moved into the mainstream of modern technology. More than just pretty pictures, computer graphics today provides solutions to problems in areas as diverse as automobile design, medical imaging, scientific visualization, and corporate presentations. As the technology has grown more powerful and less expensive, it is becoming a part of everyday life.

Each year the annual SIGGRAPH conference brings together forward-thinking computer graphics experts in varied fields who share a need and curiosity for creative solutions in this emerging technology. Unlike any other conference, it is an annual happening that combines practical applications with whimsical pursuits, scientists with artists, and intense educational sessions with entertaining live performances. Spirited social events in the stimulating city of Boston will provide an ideal setting for attendees to mingle with the eclectic crowd that is SIGGRAPH.

The technical program forms the nucleus of the annual SIGGRAPH conference and is referred to as "the technical engine that drives the computer graphics industry." The technical program is made up of paper presentations, panel sessions, and courses which are all essential parts of this important forum.

The SIGGRAPH '89 conference committee is currently seeking submissions for the papers, panels, courses, exhibits, computer graphics theater, art show, and slide sets. We invite you to contribute to the world's premier computer graphics event by participating in SIGGRAPH '89.

PAPERS

SIGGRAPH is widely regarded as the preeminent forum for scholarly papers on computer graphics. Each year, papers presented at SIGGRAPH serve to keep members of the industry informed about the state of the art in computer graphics, including developments in hardware, software, and theory. The proceedings from each conference become invaluable references to many computer graphics professionals.

As the field of computer graphics has broadened, the scope of the SIGGRAPH conference has broadened also. The papers committee hopes to reflect this growth in the SIGGRAPH '89 paper sessions.

Previously unpublished papers in all areas of computer graphics and interactive techniques are invited for formal review for the paper sessions. Appropriate topics include, but are not limited to, algorithms, animation, applications, CAE/CAD/CIM, color, computational geometry, geometric modeling, graphics hardware, graphics systems, image synthesis, and interaction techniques.

This year for the first time, survey papers in all areas of computer graphics are being solicited for publication in the conference proceedings. Suitable topics for surveys include, but are not limited to, ray tracing, surface modeling, visible surface algorithms, and the use of stochastic techniques in computer graphics.

Research papers should contain original results or describe a novel application and meet ACM standards for a scholarly publication. Because of the tight review and production cycles, acceptance or rejection of a paper must be based on the paper as submitted, which should therefore be complete and refined. This procedure allows the timely presentation of new results while maintaining the publication standards of a reviewed journal.

Research papers should include a 100 to 300 word abstract, explain how the reported results relate to the work, and discuss the significance of the work. The paper should present sufficient detail of the new work plus appropriate background to enable the reviewers to assure themselves that the ideas are presented correctly and that the work described could be duplicated. The maximum final formatted length of the accepted papers will be eight double-column pages, which corresponds to approximately 20 double-spaced typewritten pages.

Call for Participation

Survey papers should include a 100 to 300 word abstract, be comprehensive in reviewing the field, and contain a technically thorough bibliography. A reasonable guideline for paper lengths is 50 double-spaced typewritten pages.

Five copies of each paper must be received by Tuesday, 10 January 1989. Papers not in the technical program office at that time will not be reviewed. Acceptance notification will be by March 1989 and final, camera-ready papers will be due in mid-May 1989.

Five copies of video or film material integral to a research paper should accompany the paper. All such material will be returned. It is recommended that video material be submitted in VHS format. Three-quarter inch format will also be accepted.

Contributors are encouraged to call the SIGGRAPH conference management office at 312-644-6610 to request an author's packet. These packets provide further detail about ACM publication standards, submission guidelines, and the SIGGRAPH reviewing process.

Call for Participation

Send paper submissions to:

Jeffrey Lane
SIGGRAPH '89 Papers Chair
Digital Equipment Corporation
100 Hamilton Avenue
Palo Alto, CA 94301
415-853-6741
lane@decwse.dec.com

Papers Committee

Alan H. Barr
California Institute of Technology

Forest Baskett
Silicon Graphics

Richard J. Beach
Xerox PARC

Russell Brown
Evans and Sutherland

Ingrid Carlbom
Consultant

Loren Carpenter
PIXAR

Edwin E. Catmull
PIXAR

Elaine Cohen
University of Utah

Robert L. Cook
PIXAR

Tony D. DeRose
University of Washington

Nick England
Sun Microsystems, Inc.

A. Robin Forrest
University of East Anglia

Alain Fournier
University of Toronto

Donald P. Greenberg
Cornell University

Call for Participation

Leo Guibas
DEC Systems Research Center

Rob Pike
AT&T Bell Laboratories

Spencer Thomas
University of Michigan

Turner Whitted
Numerical Design, Ltd.

Jane Wilhelms
University of California, Santa Cruz

PANELS

The SIGGRAPH panels offer attendees an opportunity to exchange ideas on timely topics in an informal atmosphere. Appropriate topics for the SIGGRAPH '89 panels include: current controversies in computer graphics, computer art, and computer animation; scientific visualization; graphics workstation performance metrics; what graphics has done for medicine, engineering, and the basic sciences; and the focus of the computer graphics industry.

Proposals are invited for panel sessions at SIGGRAPH '89. Accepted panels will be presented in parallel with the papers. Panel selection will be based on the importance, originality, focus, and timeliness of the issues covered. The potential for lively discussion and debate between panelists, and between the panel and audience, will also be considered. Successful panels will have no more than five panelists, including the chair. Panel sessions will be 90 minutes in length. No more than 30 minutes will be allowed for position statements by the panelists.

A brief panel description will appear in the conference proceedings. All panel sessions will be recorded, transcribed, and made available to technical program attendees after the conference. Panel members will be asked to agree to publication of their remarks and visuals.

A panel proposal should be no more than two pages in length. It should include a description of the topic to be discussed and position statements by each of the panelists. A cover sheet with panel title, panelists' names, affiliations, and panel organizer's name, affiliation, address, and phone number should be included.

Five copies of each panel proposal must be received by Tuesday, 10 January 1989. No late submissions will be considered. Acceptance notification will be by March 1989.

Call for Participation

Contributors are encouraged to call the SIGGRAPH conference management office at 312-644-6610 to request an author's packet. These packets provide further detail about ACM publication standards, proposal guidelines, and the SIGGRAPH reviewing process.

Send panel proposals to:

Robert L. Judd
SIGGRAPH '89 Panels Chair
Los Alamos National Laboratory
P.O. Box 1663, MS-B272
Los Alamos, NM 87545
505-667-7356
bj@lanl.gov

PANELS COMMITTEE

Christine Barton
Morgan Guaranty

Alyce Kaprow
The New Studio

Michael Keeler
Ardent Computer

David D. Loendorf
Los Alamos National Laboratory

Theodore N. Reed
Los Alamos National Laboratory

COURSES

As interactive computer graphics expands into new areas, more people are eager to learn about what it is, how it can be used, and how it can be implemented. SIGGRAPH courses have become an important feature of the conference and offer a leading edge forum for educating computer graphics professionals. A variety of topics associated with computer graphics and interactive techniques is covered. Courses complement the other SIGGRAPH conference activities by providing more depth in particular topic areas.

Course content is based on level of difficulty. There are beginning level courses for those new to the field and intermediate and advanced level courses for more experienced professionals. SIGGRAPH courses give attendees a chance to take an in-depth look at topics of their choice in intensive all-day sessions. Some of the top lecturers and researchers in the field are featured in the SIGGRAPH courses.

Proposals are invited for courses to be presented at the SIGGRAPH '89 conference. The courses will each be one day long (seven class hours) and will be taught on Monday and Tuesday of the conference week. Course notes will be distributed to each course attendee and will also be available for sale at the conference.

A proposal must include a brief description of the material to be presented, the level of the course (beginning, intermediate, or advanced), an outline of the topics with time allotments, and proposed speakers. Each course should limit the number of speakers to four including the chair. Course chairs should also submit a one to two sentence summary that highlights the course content. Selections will be based on the outline and the quality of the offering. The number of courses that can be accepted is limited to the number of available rooms in and around the Hynes Convention Center.

Five copies of the proposal must be received by the courses committee by Tuesday, 10 January 1989. Acceptance notification will be by March 1989.

Call for Participation

Contributors are encouraged to call the SIGGRAPH conference management office at 312-644-6610 to request an author's packet. These packets provide further detail about ACM publication standards, proposal guidelines, and the SIGGRAPH reviewing process.

Send course proposals to:

Gereda B. Pruitt
SIGGRAPH '89 Courses Chair
Digital Equipment Corporation
146 Main Street, ML01-3/U69
Maynard, MA 01754
508-493-6262
pruitt@milrat.dec.com

COURSES COMMITTEE

Frank Bliss
Electronic Data Systems

Mark Henderson
Arizona State University

Richard L. Phillips
Los Alamos National Laboratory

Dick Rubinstein
Digital Equipment Corporation

Connie U. Smith
L & S Computer Technology Inc.

Maryam Taghdiri
Technology Management Corporation

EXHIBITION

The SIGGRAPH exhibition is an internationally recognized showcase of the newest and most exciting computer graphics technology. In 1989, over 250 exhibitors are expected to display and demonstrate their products and services, using 100,000 square feet of exhibit space. Over 30,000 attendees are expected to attend the SIGGRAPH '89 exhibition.

The exhibition offers attendees a chance to interact with new computer graphics equipment and meet one-on-one with industry experts. This year's show is being held at the new Hynes Convention Center, Boston's state-of-the-art conference facility which opened early in 1988.

Exhibitors are encouraged to call the SIGGRAPH exhibition management office at 212-752-0911 to request an exhibitor prospectus.

Carolyn Hayes
SIGGRAPH '89 Exhibits Chair

COMPUTER GRAPHICS THEATER

The powerful synergy between creativity and high technology is demonstrated each year during the SIGGRAPH computer graphics theater.

A moving aural and visual experience, the computer graphics theater is a highlight of the conference week for many SIGGRAPH attendees. Each year the most stunning and sophisticated computer graphics motion imagery is contributed from around the world. Entries are currently being sought for the SIGGRAPH '89 computer graphics theater in the areas of scientific visualization, motion research, education, art, and entertainment. A special effort is being made to include live performance and stereoscopic 3-D movies. The deadline for entries is Tuesday, 9 May 1989.

Entries will also be considered for the animation screening room which will offer an ongoing program representing all aspects of the field.

Contributors are encouraged to call the SIGGRAPH conference management office at 312-644-6610 to request a guide for contributors. This guide provides further detail, entry guidelines, the reviewing process for the SIGGRAPH computer graphics theater, and the address to which entries should be sent.

Sally N. Rosenthal
SIGGRAPH '89 Computer Graphics Theater Chair

ART SHOW

The SIGGRAPH '89 art show will be a high-quality juried exhibition of contemporary computer artworks. A wide range of styles and techniques for aesthetic communication will be represented. Two-dimensional wall and frame buffer works, sculpture and installation works, animations, and poly-dimensional works on videotape are sought for the art show.

The art show committee is soliciting essays placing computer art in the larger art-critical, art-historical tradition for publication in the art show catalog.

Essays should include a 100 word abstract. The maximum length of the accepted essays will be 20 double-spaced type-written pages.

The art show slide set will be selected from entries received for the art show. The 35mm images will be sold at the conference and by ACM SIGGRAPH after the conference.

The art show deadlines are:

- Essays must be received by Tuesday, 10 January 1989.
- Two-dimensional wall and frame buffer works, 3-D sculpture and installation entries must be received by Tuesday, 28 February 1989.
- Animations and poly-dimensional entries on videotape must be received by Tuesday, 9 May 1989.

Contributors are encouraged to call the SIGGRAPH conference management office at 312-644-6610 to request a guide for contributors. This guide provides further detail, entry guidelines, and the SIGGRAPH art show reviewing process.

Send art show entries to:

Mark Resch
SIGGRAPH '89 Art Show Chair
Rensselaer Polytechnic Institute
Troy, NY 12180-3590
518-276-6274
resch@yy.cicg.rpi.edu

TECHNICAL SLIDE SETS

The technical slide set represents the state of the art in computer graphics. The 35mm images will be sold at the conference and offered by ACM SIGGRAPH after the conference as a publication documenting computer graphics for the year. Images are selected on the basis of techniques, algorithms, and procedures which are new or improved over previously published works. The visual content will also be considered. The deadline for submissions is Friday, 24 March 1989. Early submissions will be considered for conference promotional pieces and advertising. The slide submission form will be published in *Computer Graphics*, Vol. 22, No. 5, (October 1988 issue), or may be obtained from the slides chair.

For further information concerning slides, please contact:

Bruce Eric Brown
SIGGRAPH '89 Slides Chair
Wang Laboratories, Inc.
One Industrial Avenue
Lowell, MA 01851
508-967-4297
bruce__brown@3d.dec.com

CALL FOR TEAPOTS

SIGGRAPH '89 has chosen a teapot as its logo for the conference in Boston. The teapot has significance to the conference committee for two reasons:

- In 1773, a group of colonists in Boston threw a tea party in the Boston Harbor that has been talked about for centuries. (SIGGRAPH '89 would like the conference to go down in computer graphics history as an event that shapes the future of the industry.)
- In 1974, while writing his dissertation at the University of Utah, Martin Newell picked up the teapot on his desk one afternoon and built a computer graphics database for it that has been passed around ever since. His original teapot is now on display in the Boston Computer Museum. (The SIGGRAPH '89 conference committee hopes to provide attendees with data that can be used repeatedly to solve problems in different areas of computer graphics.)

SIGGRAPH '89 is currently collecting a set of computer generated teapots of both historic and modern design. If you have a 35mm image you wish to submit, please contact Bruce Brown. Selected images will be used in conference publicity and for other SIGGRAPH promotional purposes.

SIGGRAPH '89 CONFERENCE COMMITTEE

CONFERENCE CO-CHAIRS

Branko J. Gerovac
Digital Equipment Corporation

Christopher F. Herot
Bitstream Inc.

Conference Coordinator

Molly Morgan Kuhns

Papers

Jeffrey Lane
Digital Equipment Corporation

Panels

Robert L. Judd
Los Alamos National Laboratory

Courses

Gereda B. Pruitt
Digital Equipment Corporation

Exhibits

Carolyn Hayes
Sun Microsystems, Inc.

Computer Graphics Theater

Sally N. Rosenthal
ELEKTRA Design Group

Art Show

Mark Resch
Rensselaer Polytechnic Institute

Audio/Visual

Joan Collins
Joan Collins & Associates

Local Arrangements

Gwen Bell
The Computer Museum

Materials

James A. Banister
TRW

Public Relations

Carol Byram
Cubicomp Corporation

Registration

Brian Herzog
AT&T Conversant Systems

Call for Participation

Special Interest Groups

John E. French, Jr.
GeoQuest Systems, Inc.

Technical Slide Sets

Bruce Eric Brown
Wang Laboratories, Inc.

Treasurer

Steven M. Van Frank
Lynxys, Inc.

SIGGRAPH Vice Chair for Conference Planning

James J. Thomas
Battelle Pacific Northwest Laboratories

ACM SIGGRAPH Conference Coordinator

Betsy Johnsmiller

Conference Accounting

Smith, Bucklin & Associates, Inc.

Conference Management

Smith, Bucklin & Associates, Inc.

Exhibition Management

Robert T. Kenworthy, Inc.

Graphic Design

Watzman+Keyes Information Design

Organization Development Consultant

Overgard Associates

Public Relations

Smith, Bucklin & Associates, Inc.

Service Contractor

Andrews-Bartlett

MAJOR DUE DATES

All deadlines are firm and will be strictly observed. This allows a fair selection process and time for production of printed materials.

Paper Submissions:

10 January 1989

Jeffrey Lane
SIGGRAPH '89 Papers Chair
Digital Equipment Corporation
100 Hamilton Avenue
Palo Alto, CA 94301
415-853-6741
lane@decwse.dec.com

Panel Proposals:

10 January 1989

Robert L. Judd
SIGGRAPH '89 Panels Chair
Los Alamos National Laboratory
P.O. Box 1663, MS-B272
Los Alamos, NM 87545
505-667-7356
bj@lanl.gov

Course Proposals:

10 January 1989

Gereda B. Pruitt
SIGGRAPH '89 Courses Chair
Digital Equipment Corporation
146 Main Street, ML01-3/U69
Maynard, MA 01754
508-493-6262
pruitt@milrat.dec.com

Computer Graphics Theater Entries:

9 May 1989

Sally N. Rosenthal
SIGGRAPH '89 Computer Graphics Theater Chair

Art Show Entries:

Essays

10 January 1989

Two-dimensional wall and frame buffer works,

3-D sculpture and installations

28 February 1989

Animations and poly-dimensional works on video

9 May 1989

Mark Resch

SIGGRAPH '89 Art Show Chair

Rensselaer Polytechnic Institute

Troy, NY 12180-3590

518-276-6274

resch@yy.cicg.rpi.edu

Slide Submissions:

24 March 1989

Bruce Eric Brown

SIGGRAPH '89 Slides Chair

Wang Laboratories, Inc.

One Industrial Avenue

Lowell, MA 01851

508-967-4297

bruce__brown@3d.dec.com

Student Volunteer Information:

SIGGRAPH '89 Conference Management

Smith, Bucklin and Associates, Inc.

111 E. Wacker Drive

Suite 600

Chicago, IL 60601 USA

312-644-6610

Early Registration Deadline:

23 June 1989

For information about the conference, contact:

SIGGRAPH '89 Conference Management

Smith, Bucklin and Associates, Inc.

111 E. Wacker Drive

Suite 600

Chicago, IL 60601 USA

312-644-6610

For information about the exhibition, contact:

SIGGRAPH '89 Exhibition Management

Robert T. Kenworthy, Inc.

866 United Nations Plaza

New York, NY 10017 USA

212-752-0911

FAX: 212-223-3034

FUTURE CONFERENCES

SIGGRAPH '89

July 31-August 4, 1989

Boston, Massachusetts

Co-chairs:

Branko J. Gerovac

(508) 480-6647

Christopher F. Herot

(617) 497-6222

SIGGRAPH '90

August 6-10, 1990

Dallas, Texas

Co-chairs:

David D. Loendorf

(505) 665-0866

Jacqueline M. Wollner

(214) 952-0243

SIGGRAPH '91

July 29-August 2, 1991

Las Vegas, Nevada

SIGGRAPH '93

August 2-6, 1993

Anaheim, California

ACKNOWLEDGEMENTS

CONFERENCE SUPPORT

SIGGRAPH '88 A/V and panels wish to thank General Electric for the use of their MLV video and PJ-5055 video projectors.

SLIDES

SIGGRAPH '88 and the speaker slides chair wish to thank the companies and individuals who produced slides for the conference. These computer generated slides will be used in the courses, panels and technical paper presentations. We greatly appreciate companies' donations of time, equipment, software and in some cases, labor and materials.

Pre-conference slides:

Pacific Data Group, Santa Clara, CA
Chartmasters, San Francisco, CA
Sheridan College, Oakville, Ontario, Canada
Visual Media Group, Los Angeles, CA

On-site:

Matrix Instruments, Orangeburg, NY

CREDITS:

1. "Space Pyramid IV," © 1987, Robert L. Bowers, Jr., Ohio State University, Advanced Computing Center for the Arts and Design.
2. "The Nob Space II," © 1986, Takeshi Shibamoto, JVC Japan.
3. "Depth of Feel," © 1986, Jim Dixon, Pacific Data Images, Inc.
4. "Temple-Z. Land," © 1986, Apollo Computer Inc.
5. "Bobby," © 1987, M. Ontani and B. Spadacini, RGB Computer Graphics Service, Milan, Italy.

TRADEMARKS

UNIX is a trademark of AT&T.

NeWS is a trademark of Sun Microsystems, Inc.

PostScript is a trademark of Adobe Systems Inc.

X Window System is a trademark of MIT.

NOTES

NOTES

NOTES

NOTES



3



4



5