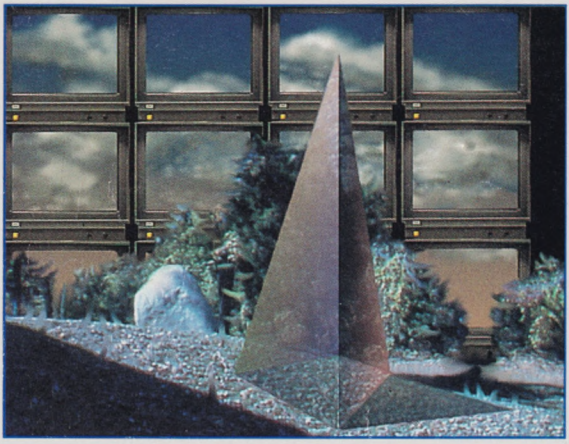
FINAL
PROGRAM

acm

1987

SIGGRAPH



ANAHEIM, CA JULY 27-31, 1987

EXECUTIVE DEPARTMENT
STATE OF CALIFORNIA

A PROCLAMATION
by the Governor of the State of California

WHEREAS, computer graphics play a significant role in our society, from science to industry and medicine to the arts; and

WHEREAS, California's citizens, businesses and schools are directly involved in furthering the many positive directions of computer graphics; and

WHEREAS, it is important for computer graphic professionals to promote the continuation of computer graphics education and to ensure the proliferation of the industry's applications; and

WHEREAS, approximately 30,000 professionals from throughout the computer graphics industry in the United States, Europe and Japan will meet to share ideas and concepts at SIGGRAPH '87;

NOW, THEREFORE, I, GEORGE DEUKMEJIAN, Governor of the State of California, do hereby proclaim the week of July 27, 1987 as Computer Graphics Week in California.

IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 11th day of June 1987.

George Deukmejian

Governor of California

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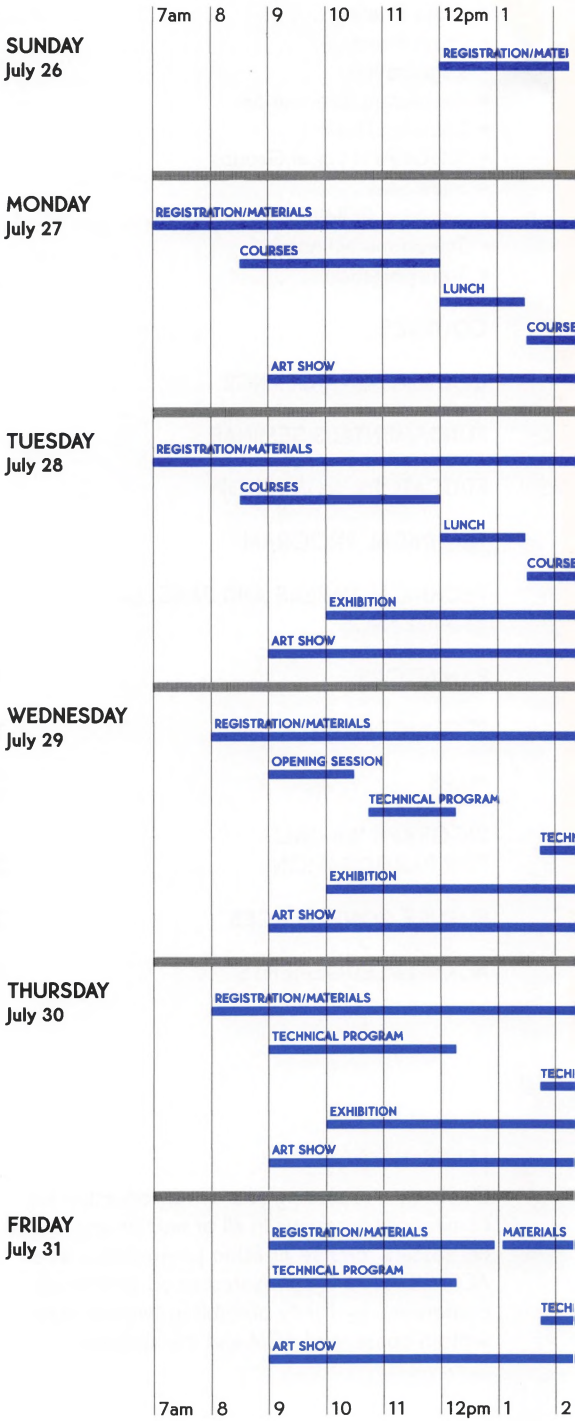
CONFERENCE-AT-A-GLANCE



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CAD/CAM Management Consultants

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Joan Collins & Associates

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ART SHOW

Joanne P. Culver
LAZERUS

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REGISTRATION

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The Anderson Report

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Computer Associates/ISSCO

VOLUNTEER COORDINATOR

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James A. Banister, Assistant
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JURY COORDINATOR

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Downtown Mars

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Dean Eaker
Computer Pictures Magazine

FINE ART

Joanne P. Culver
LAZERUS

MUSIC VISUALIZATION

Peter Gabriel

THEATRICAL MOTION-PICTURES

Philippe Bergeron
Whitney/Demos Productions

Jeff Kleiser
Jeff Kleiser Associates

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University of Utah

Terry Dowd
Terry Dowd, Inc.

Darcy Gerbarg
School of Visual Arts

Gay Graves
NASA

Laurin Herr
Pacific Interface

Louise Ledeen
GESI

Barbara Mones-Hattal
Montgomery College

Jeffrey Murray
The Holography Institute

Lorraine Nichols
Nichol Graphics

Patric Prince
California State University, Los Angeles

Larry Shaw
The Exploratorium

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Molly S. Morgan

ACM SIGGRAPH CONFERENCE COORDINATOR

Betsy Johnsmiller

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Pat Costello, Co-chair
Janice Heiler, Panels
Crimson Indigo, Art Show
Subhana Menis, Technical Program
Betty Norton, Co-chair
Martha J. Schlegel, Courses

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Audio Visual Headquarters Corporation
(A Samuelson Group Company)
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Alan Dwan
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Hank Cronan
Barbara Voss

GRAPHIC DESIGN

Nichol Graphics
Lorraine Nichols

TECHNICAL PROGRAM

The technical program is considered to be the leading forum for the presentation of the most recent research advances in computer graphics. The program has become known worldwide as a dynamic and powerful educational setting where the best new computer graphics technology comes to life. New concepts are presented to attendees by many of the industry's leading graphics experts. The technologies described in the SIGGRAPH technical program set the pace in the computer graphics industry.

Over 140 papers were carefully reviewed by the SIGGRAPH '87 technical program committee. Papers selected for presentation are published in the conference proceedings, *Computer Graphics*, Volume 21, Number 4. Previous SIGGRAPH conference proceedings have become standard references in the field.

The technical program runs concurrently with the panel sessions, Wednesday through Friday, in the Anaheim Convention Center Arena.

Refreshments are served during the morning and afternoon coffee breaks.

Technical program registrants are invited to a Thursday evening reception hosted at the Marriott Hotel, across the street from the convention center. Transportation is provided between the reception site and most conference hotels.

PANEL SESSIONS

The panel sessions provide an alternative format to the technical papers for presenting the varying views of the panelists on selected areas of computer graphics. Panelists share their opinions on techniques and applications in a lively forum, enabling the audience to gain new insights or viewpoints. During the panel sessions, attendees have an opportunity to interact with the industry's most advanced leaders. Panels are an important part of the conference and complement the formal technical program and courses.

Panel sessions are held in conjunction with the technical papers, Wednesday through Friday, in Marriott Hall of the Marriott Hotel. Panels are also held in the Anaheim Room of the convention center on Friday. Panels registration is included as part of the technical program registration.

Refreshments are served during the morning and afternoon coffee breaks.

COURSES

The courses include beginning, intermediate and advanced levels of concepts in several areas of computer graphics and application techniques. Attendees learn about topics of their choice as they hear first-hand experiences from seasoned experts in the field. The SIGGRAPH '87 courses committee received a record number of proposals. After an extensive review process, 11 new and exciting courses were selected, in addition to 19 established favorites from previous years.

Courses are held on Monday and Tuesday at the Anaheim Convention Center and surrounding hotels.

Course room locations are listed in the course locator in your registration packet and are posted on a kiosk in the registration area. Lunches are served to course attendees. Check course locator for the location of your luncheon.

Course notes are available for pick up at the conference materials desk in the registration area, California Room, of the Anaheim Convention Center.

Course registrants are invited to a Monday evening reception at nearby Knott's Berry Farm. Transportation is provided between the reception site and the Anaheim Convention Center starting at 6:30 p.m.

EXHIBITION

Exhibition hours:

Tuesday, July 28	10 a.m. to 6 p.m.
Wednesday, July 29	10 a.m. to 6 p.m.
Thursday, July 30	10 a.m. to 3:30 p.m.

Over 250 exhibiting companies are expected to utilize 127,500 square feet of space in the Anaheim Convention Center. The latest advances in computer graphics technology are displayed and demonstrated, enabling attendees to view state-of-the-art products and services at this international exhibition.

Southern California is one of the world's capitols of computer graphics which makes it an ideal setting for SIGGRAPH — the industry's centerpiece show. The excitement of this dynamic location, combined with the high-powered energy of the SIGGRAPH exhibition, ensures a spectacular event for exhibit attendees.

The SIGGRAPH '86 exhibit survey reports that 88 percent of conference attendees have buying influence over products exhibited. The survey also reports that 67 percent of the attendees were planning to buy or lease at least one of the products or services exhibited as a result of what they saw.

If you choose to attend the exhibits-only portion of the conference, you must register on-site. No one under the age of 16 will be allowed on the exhibit floor.

EXHIBITION OPENING CEREMONY

The largest SIGGRAPH exhibition to date officially opens at 10 a.m. on Tuesday, July 28. We invite you to join us for the ribbon cutting ceremony shortly before 10 a.m. at the entrance to Hall 2 in the registration area, California Room.

FILM AND VIDEO SHOW

The SIGGRAPH film and video show is a world-renowned showcase for the most creative and contemporary computer graphics applications. The show contains a selection of outstanding computer graphics animation in the following categories: research, corporate communication, science and industry, broadcast computer graphics, fine art, music visualization and theatrical motion-pictures.

The high-tech, show-biz atmosphere of this Southern California location will contribute to the electricity of the SIGGRAPH '87 film and video show. A spectacular extravaganza of computer graphics motion imagery is planned.

The film and video show is presented on three nights, Tuesday through Thursday, in the Anaheim Convention Center Arena.

Additional film and video show tickets may be purchased at registration on the day of the show. Each registrant can purchase up to five tickets, subject to availability. Attendees will be given a film and video show program at the door prior to each show. Extra copies of the programs are available for purchase on-site; the programs are not available after the conference.

ART SHOW

The art show features a selection of the latest visual achievements of artists and designers using computer-generated techniques. It reflects the exciting synergy between creative individuals and computers in producing complex, creative and aesthetic ideas.

The SIGGRAPH '87 art show emphasizes an exploratory and informative environment where attendees learn how and why the computer is used. Animation, unique visual devices, scientific and statistical design, and 3-dimensional interactive installations are included, in addition to more traditional art forms. Recent advances in computer image production, as well as new developments in digital audio, ensure an unparalleled screening of these communication techniques.

The art show is open from 9 a.m. to 6 p.m., Monday through Thursday and 9 a.m. to 3 p.m. on Friday in the Orange County Room of the Anaheim Convention Center.

Admission to the art show and a copy of the art show catalog are included in conference registration fees. Additional copies of the art show catalog are available for purchase. The catalogs are not available after the conference.

SOCIAL FUNCTIONS

The receptions offer a time to meet and talk informally with other professionals in a casual setting. These social functions often provide the opportunity to develop contacts for future research and development.

Extra tickets for the evening receptions are on sale at registration during the conference registration hours.

Course attendees are invited to a reception Monday evening at nearby Knott's Berry Farm. Attendees will be served chicken dinners from the famous "Chicken House" in Gold Rush Camp. Following dinner, attendees may meet with other professionals and enjoy the camaraderie of new and renewed acquaintances or they may enter Knott's theme park. At the park attendees may enjoy the western ghost town specialty shops or any number of thrilling rides including Montezooma's Revenge. Transportation, dinner and a theme park ticket are included with course registration.

Technical program registrants will sample foods from around the world in a Thursday evening reception hosted at the Marriott Hotel, across the street from the convention center. Delicacies from the Orient, Italy and Mexico will contribute to the international flavor of this gala reception. Hearty greetings and the buzz of animated conversation give life each year to this event. The reception is included with the technical program registration. This year the reception will start early, at 6 p.m., to allow attendees time to see the film and video show later in the evening.

SPECIAL INTEREST GROUPS

SIGGRAPH '87 is a gathering place for many people with common interests and thus provides an excellent opportunity for working meetings with colleagues. Continuing a SIGGRAPH tradition, many such groups will come together during the conference, usually in the conference facilities. These meetings take one of three forms: user groups, interest groups and birds-of-a-feather groups.

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., user interface management systems, molecular graphics and ACM SIGGRAPH local groups. Birds-of-a-feather groups are different from the others only because their meetings are impromptu. For instance, at SIGGRAPH '86, display technologies, 3-D volumetric imaging and graphics on the Apple Macintosh, were topics of gatherings scheduled during the conference. To schedule such meetings and to learn which are already planned, use the sign-up board in the registration area.

The following special interest groups are planning to meet during SIGGRAPH '87. 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 Anaheim Convention Center for updated special interest group information and announcements of additional group meetings.

Saturday, July 25, 1987

Cubicomp User Group
9:30 a.m. to 9 p.m.
Anaheim Hilton & Towers
Avila Rooms A & B
Jay T. Sullivan (415) 362-1196

Sunday, July 26, 1987

Cubicomp User Group
9:30 a.m. to 9 p.m.
Anaheim Hilton & Towers
Avila Rooms A & B
Jay T. Sullivan (415) 362-1196

Monday, July 27, 1987

ANSI X3H3.6
9 a.m. to 5 p.m.
Anaheim Hilton & Towers
Santa Monica Room
Georges Grinstein (617) 452-5000, Ext. 2681

Lasergraphics User's Group
10 a.m. to noon
Anaheim Hilton & Towers
Oceanside Room
Holly Boyce Demetrescu (714) 660-9497

ANSC X3H3.3 CGM Implementers and Users
5:30 p.m. to 7:30 p.m.
Anaheim Hilton & Towers
San Simeon Rooms A & B
Peter R. Bono (203) 464-9350

Tuesday, July 28, 1987

ANSC X3H3.4 Language Bindings
8:30 a.m. to 6 p.m.
Anaheim Hilton & Towers
Malibu Room
Madeleine R. Sparks (205) 837-7610, Ext. 410

ANSI X3H3.6
9 a.m. to 5 p.m.
Anaheim Hilton & Towers
Santa Monica Room
Georges Grinstein (617) 452-5000, Ext. 2681

Curve Based Type Processing
10 a.m. to noon
Anaheim Hilton & Towers
Capistrano Room A
Barbara Ross (714) 474-1188

Image File Format and Management
10 a.m. to noon
Anaheim Hilton & Towers
Monterey Room
Cecil M. Thornhill (813) 666-3832

Macintosh Users Group
4 p.m. to 6 p.m.
Anaheim Hilton & Towers
La Jolla Room
Dennis Karlstad (612) 481-2277

IRIS International Users Group
4 p.m. to 7 p.m.
Anaheim Hilton & Towers
Avila Rooms A & B
Zsuzsanna Molnar (415) 960-1980

Wednesday, July 29, 1987

PIXAR Users Group
(NOTE: For PIXAR users only)
8 a.m. to 10 a.m.
Anaheim Hilton & Towers
Monterey Room
Lisa MacKenzie (415) 499-3600, Ext. 8132

ANSC X3H3.4 Language Bindings
8:30 a.m. to 6 p.m.
Anaheim Hilton & Towers
Malibu Room
Madeleine R. Sparks (205) 837-7610, Ext. 410

Evans & Sutherland Users Group
9 a.m. to noon
Anaheim Hilton & Towers
San Simeon Rooms A & B
Neil Jon Harrington (801) 582-5847

Small Computers in the Arts
Noon to 1:30 p.m.
Anaheim Hilton & Towers
Avila Room B
Dick Moberg (215) 834-1511

Symbolics Graphics Users Group
1 p.m. to 2 p.m.
Anaheim Convention Center
Pacific Room D
Andy Kopra (213) 478-0681

SIGGRAPH Education—Computer Graphics in Computer Science
1 p.m. to 2 p.m.
Anaheim Convention Center
Pacific Room F
Mark Ohlson (617) 793-5647

SIGGRAPH Career Information Project
2 p.m. to 3 p.m.
Anaheim Convention Center
Pacific Room E
Judith R. Brown (319) 335-5552

Molecular Graphics
2 p.m. to 3:30 p.m.
Anaheim Convention Center
Pacific Room B
Michael Pique (619) 457-9775

VersaCAD User Group
2 p.m. to 4 p.m.
Anaheim Convention Center
Pacific Room A
Jennifer Aurand (714) 847-9960

SIGGRAPH Education Committee: Graphics in Engineering
3 p.m. to 4 p.m.
Anaheim Convention Center
Pacific Room F
Mike McGrath (303) 273-3434

Users Working Group for Real-Time Simulation Applications on IRIS Workstations
3 p.m. to 5 p.m.
Anaheim Hilton & Towers
Oceanside Room
Sarah E. Stead (817) 280-6157

Gould Inc., Imaging & Graphics User Group
3 p.m. to 5:30 p.m.
Anaheim Hilton & Towers
Redondo Room
Mark Byrkit (703) 352-9760

Computer Graphics in Scientific Research & Education
5 p.m. to 6:30 p.m.
Anaheim Hilton & Towers
Manhattan Room
Pauline Ores (212) 998-3379

Alias User Group
5 p.m. to 10 p.m.
Anaheim Hilton & Towers
Lido Room A
Gwen McNair (416) 362-9181

Movie.BYU User Group
5:15 p.m. to 6:30 p.m.
Anaheim Convention Center
Pacific Room C
Hank Christiansen (801) 378-6325

Users of the Graphics Compatibility System (UGCS)
5:30 p.m. to 6:30 p.m.
Anaheim Convention Center
Pacific Room D
Jack K. Logan (312) 269-3644

Trancept User Group
5:30 p.m. to 7:30 p.m.
Anaheim Hilton & Towers
El Capitan Rooms A & B
Phyllis F. Flynn (919) 828-7406

Best Graphics Under the Sun
6 p.m. to 7:45 p.m.
Anaheim Hilton & Towers
San Simeon Rooms A & B
Sandy Meltzer (415) 691-4341

Thursday, July 30, 1987

ACM/SIGGRAPH Local Groups
7:30 a.m. to 9:30 a.m.
Quality Inn
Orangewood Room 2
Stephan R. Keith (415) 694-6197

SIGGRAPH Education: Computer Graphics in the Arts
11 a.m. to noon
Anaheim Convention Center
Pacific Room B
Barbara Mones-Hattal (301) 279-5174

Environments for Computational Mathematics
12:15 p.m. to 3:15 p.m.
Anaheim Convention Center
Pacific Room A
Dennis Arnon (415) 494-4425

Computer Graphics Education
12:30 p.m. to 2 p.m.
Anaheim Convention Center
Pacific Room D
William J. Joel (914) 471-3240, Ext. 614, 610

AZTEK Users Group
12:30 p.m. to 2:30 p.m.
Anaheim Convention Center
Pacific Room E
Stan J. Barbarich (415) 331-6400

Macintosh Users Group
4 p.m. to 6 p.m.
Anaheim Hilton & Towers
La Jolla Room
Dennis Karlstad (612) 481-2277

Friday, July 31, 1987

3-D Volume Imaging
10 a.m. to noon
Anaheim Convention Center
Pacific Room E
Nick England (919) 828-7406

SIGGRAPH EXECUTIVE COMMITTEE MEETING

The ACM SIGGRAPH Executive Committee holds an open meeting on Wednesday, July 29, from 5:30 to 7:30 p.m., in Rooms Avila A and B of the Anaheim Hilton. All ACM SIGGRAPH members are invited to attend. Refreshments are not served during the meeting.

GENERAL INFORMATION

AIRLINE INFORMATION

Elegant Travel and United Airlines are offering a full-service desk to assist you in making travel arrangements. The desk is located in the North Lobby of the Anaheim Convention Center. Hours are: Monday-Thursday, 8 a.m. to 6 p.m. and Friday, 9 a.m. to 6 p.m.

AUDIO/VISUAL SERVICES

A/V OFFICE

The A/V office is in Newport Beach Room 17, North Lobby, of the Anaheim Convention Center. Speakers are provided with general A/V assistance, including 35mm slide trays and blank slides. If you have questions regarding any of your A/V requirements, please come to the A/V office. The office is open Sunday, 9 a.m. to 9 p.m., Monday-Thursday, 7:30 a.m. to 10 p.m. and Friday, 7:30 a.m. to 6 p.m. The telephone number is (714) 490-2721.

SPEAKER FILM AND VIDEO PREP

A film and video room is available in Laguna Room 19 of the Anaheim Hilton, for speakers to review 16mm films and 3/4-inch U-Matic NTSC videotapes. The room is open Sunday, 9 a.m. to 9 p.m., Monday-Thursday, 7:30 a.m. to 10 p.m. and Friday, 7:30 a.m. to 6 p.m.

SPEAKER SLIDE PREP

Slide prep for speakers is also available in Laguna Room 19 of the Anaheim Hilton, for speakers to review 35mm slides. Slide viewer/sorters and projectors are available Sunday, 9 a.m. to 9 p.m., Monday-Thursday, 7:30 a.m. to 10 p.m. and Friday, 7:30 a.m. to 6 p.m.

FILM AND VIDEO SHOW OFFICE

The film and video show office is located in Costa Mesa Rooms 11 and 12, North Meeting Rooms, of the Anaheim Convention Center. The office is open for contributors to pick up their films and videotapes Monday-Friday, 9 a.m. to noon.

CHILD CARE

Child care services are provided by most SIGGRAPH '87 hotels. Contact the concierge desk or the guest services department of your hotel for information on types of child care services offered.

In accordance with the rules and regulations governing SIGGRAPH '87, no one under 16 is admitted to the conference exhibition.

CNTV

A SIGGRAPH cable news program is offered to SIGGRAPH attendees on local hotel television channels and in the registration area, California Room, of the Anaheim Convention Center. The 30-minute news programs feature interviews with key people in the computer graphics industry, highlights of the conference program and updates of conference activities. Check with CNTV daily to see what's new and exciting.

CONFERENCE HOTELS

Alicante Princess
100 Plaza Alicante
Harbor & Chapman
Garden Grove, CA 92640
(714) 971-3000

The Anaheim Hilton & Towers
(Headquarters Hotel)
777 Convention Way
Anaheim, CA 92802-3497
(714) 750-4321

Anaheim Marriott
700 West Convention Way
Anaheim, CA 92802
(714) 750-8000

Conestoga Hotel
1240 South Walnut
Anaheim, CA 92802
(714) 535-0300

Disneyland Hotel
1150 West Cerritos Avenue
Anaheim, CA 92802
(714) 778-6600

Emerald of Anaheim
1717 South West Street
Anaheim, CA 92802
(714) 999-0990

Holiday Inn Anaheim
1850 South Harbor Boulevard
Anaheim, CA 92802
(714) 750-2801

Hyatt Anaheim
1700 South Harbor Boulevard
Anaheim, CA 92802
(714) 772-5900

Inn at the Park
1855 South Harbor Boulevard
Anaheim, CA 92802
(714) 750-1811

Jolly Roger Inn
640 West Katella Avenue
Anaheim, CA 92802
(714) 772-7621

Quality Inn Anaheim
616 Convention Way
Anaheim, CA 92802
(714) 750-3131

Sheraton-Anaheim Hotel
1015 West Ball Road
Anaheim, CA 92802
(714) 778-1700

CONFERENCE MANAGEMENT OFFICE

If you need assistance or have general questions about the conference, SIGGRAPH '87 staff members are available to help you in Garden Grove Room 4, North Meeting Rooms, of the Anaheim Convention Center. The telephone number is (714) 490-2726.

CONFERENCE MATERIALS

SIGGRAPH '87 course notes, proceedings, slide sets, t-shirts, picture sets, mugs, art show catalogs, and film and video show programs are available for pick-up in the registration area, California Room. SIGGRAPH video reviews and a limited supply of previous SIGGRAPH conference materials are also available.

Note: film and video show programs will be distributed at the door prior to each show. Additional copies may be purchased at registration.

This year we have added a new item, picture sets. Each set contains four 8"x10" computer-generated images. Two different sets are available for purchase during the conference.

All conference materials must be picked up by 5 p.m. on Friday, July 31 at the conference materials desk in the registration area, California Room, of the Anaheim Convention Center.

For your convenience, a shipping desk is set up in the registration area, California Room, of the Anaheim Convention Center. Seko Air Freight provides air freight services to the United States, Canada and overseas countries, in addition to arranging for UPS shipments to the United States and parts of Canada.

DISNEYLAND TICKETS

SIGGRAPH '87 will offer discounted tickets to Disneyland during conference week. The tickets are available to all attendees for $14 each in the North Lobby of the Anaheim Convention Center.

EXHIBITION MANAGEMENT OFFICE

If you have any questions pertaining to the industry exhibition, contact the personnel in the exhibition management office in the Mezzanine, Hall 2, of the Anaheim Convention Center. The telephone number is (714) 490-2400.

FIRST AID

A registered nurse is on duty Sunday-Friday during the following hours: Sunday, 8 a.m. to 10 p.m.; Monday, 7 a.m. to 8 p.m.; Tuesday, 7 a.m. to 11 p.m.; Wednesday, 8 a.m. to 11 p.m.; Thursday, 9 a.m. to 9 p.m.; and Friday, 8 a.m. to 5 p.m.

The first aid room is adjacent to the registration area, California Room, of the Anaheim Convention Center. The telephone number is (714) 999-8950.

FOOD SERVICE

During the exhibition, a full-service restaurant is operating in the rear of Hall 1. In addition, snacks will be available in the restaurant areas noted on each exhibit floor plan on pages 236-239.

FOREIGN CURRENCY EXCHANGE

The headquarters hotel and several of the conference hotels can exchange foreign currency. Check with your hotel to see if they provide this service.

HOUSING ASSISTANCE

A representative from the Anaheim Visitors and Convention Bureau is available at the housing desk in the North Lobby of the Anaheim Convention Center on Sunday from noon to 10 p.m. and Monday and Tuesday from 7 a.m. to 7 p.m. to assist SIGGRAPH '87 registrants in making hotel accommodations.

SIGGRAPH '87 registrants needing housing assistance Wednesday, Thursday and Friday may contact the Anaheim Visitors and Convention Bureau between 8:30 a.m. and 5 p.m. at (714) 999-8999.

INFORMATION COUNTERS

The conference information and assistance center is located in the registration area, California Room, of the Anaheim Convention Center. Personnel are available to handle questions beginning at noon on Sunday and thereafter during registration hours.

LUGGAGE CHECK

A luggage check is located in the Heritage Lobby between Halls 1 and 2 of the Anaheim Convention Center for your convenience.

MESSAGE CENTER

A message center for SIGGRAPH '87 attendees is located in the North Lobby of the Anaheim Convention Center. The message center telephone number is (714) 635-8440.

Message center personnel also accept personal messages from one conference participant to another. The message center is open beginning at noon on Sunday and thereafter during registration hours.

PRESS BRIEFING

SIGGRAPH '87 highlights are presented to the media during the press briefing on Tuesday, July 28, at 8 a.m. in Huntington Beach Rooms 5 and 6, North Meeting Rooms, of the Anaheim Convention Center. Following a short question and answer session, early admission to the exhibition floor is granted to members of the press.

PRESS ROOM

Fullerton Rooms 7 and 8, North Meeting Rooms, of the Anaheim Convention Center are the center for press activities during SIGGRAPH '87. Members of the press should come directly to the press room to register and pick up press badges. Press kits, telephones, conference course notes and proceedings are available in this room. For your convenience, there will also be a FAX machine. Individual interviews with SIGGRAPH '87 spokepersons, exhibitors and others may be scheduled in the press interview rooms, Huntington Beach 5 and 6. Both rooms are open Sunday, 2 p.m. to 6 p.m.; Monday-Thursday 8 a.m. to 6 p.m.; and Friday 8 a.m. to noon.

REGISTRATION

Registration for all SIGGRAPH '87 activities is in the California Room of the Anaheim Convention Center during the following times:

Sunday, July 26	noon to 10 p.m.
Monday, July 27	7 a.m. to 7 p.m.
Tuesday, July 28	7 a.m. to 7 p.m.
Wednesday, July 29	8 a.m. to 6 p.m.
Thursday, July 30	8 a.m. to 6 p.m.
Friday, July 31	9 a.m. to 1 p.m.

Members of the press should proceed directly to the press room for registration. Press badges are distributed in Fullerton Rooms 7 and 8, North Meeting Rooms, of the Anaheim Convention Center. Conference materials may be purchased until 5 p.m., Friday, July 31.

RESTAURANT INFORMATION

Menus of local restaurants are on display at the restaurant information desk in the North Lobby of the Anaheim Convention Center. Personnel can assist conference attendees in making reservations at area restaurants. This desk is open during registration hours.

SHIPPING DESK

A shipping desk is set up in the registration area, California Room, of the Anaheim Convention Center. Seko Air Freight provides air freight services to the United States, Canada and overseas countries. They can also handle UPS shipments to the United States and parts of Canada.

SIGGRAPH LOCAL GROUPS

Information concerning local SIGGRAPH groups can be obtained in the North Lobby of the Anaheim Convention Center.

SLIDE SETS

SIGGRAPH '87 has created three slide sets; the technical set which shows the most state-of-the-art technology in computer graphics; the industry set which comes from the exhibitors and represents the most current hardware and software available; and the art set which includes slides from the SIGGRAPH '87 art show.

All slides sets can be purchased at the on-site registration counter and picked up at the conference materials desk in the registration area, California Room, of the Anaheim Convention Center. After the conference, slides can be ordered from the ACM Order Department by calling (800) 342-6626.

SMOKING POLICY

There is no smoking allowed in conference locations.

TELEPHONE NUMBERS

Airline Desk	(714) 490-2407
Anaheim Convention Center and Visitors Bureau	(714) 999-8999
A/V management office	(714) 490-2723
A/V office	(714) 490-2721
Conference management office	(714) 490-2726
Emergencies (ambulance, fire, police)	(714) 999-8950
Exhibition management office	(714) 490-2400
First aid	(714) 999-8950
Housing assistance	(714) 490-2738
Message center	(714) 635-8440 and 635-8441
Press room	(714) 490-2730
Registration	(714) 490-2733

TRANSPORTATION

Frequent shuttle bus service is provided between most SIGGRAPH '87 hotels listed in this program and the Anaheim Convention Center. Signs are posted on-site. Shuttle buses are running for all conference activities.

COURSES
FUNDAMENTALS SEMINAR
EDUCATORS WORKSHOP

SIGGRAPH '87 courses are held at the Anaheim Convention Center and surrounding hotels from 8:30 a.m. to noon and 1:30 to 5:00 p.m. on Monday and Tuesday, July 27 and 28. Room

COURSES	*B = Beginning	I = Intermediate
1	Fundamentals and Overview of Computer Graphics	
2	Documentation Graphics	
3	Animation Appreciation	
4	Integrating Music and Graphics	
5	3-D Character Animation by Computer	
6	*The Mechanical Universe*: An Integrated View of a Larg	
7	Advanced Computer Animation	
8	Special Effects with Computer Graphics	
9	Computer Animation Using Video Techniques	
10	Computer Animation: 3-D Motion Specification and Con	
11	Applying Graphics Standards	
12	Using the PHIGS Standard	
13	Introduction to Ray Tracing	
14	Object-Oriented Geometric Modeling and Rendering	
15	Fractals: Introduction, Basics and Perspectives	
16	The Modeling of Natural Phenomena	
17	Topics in Physically-Based Modeling	
18	Quadtree and Octree Methods	
19	Geometry for Computer Graphics and Computer Aided	
20	The Geometry of Curve and Surface Design	
21	Human-Computer Interaction: Selected Theories, Techn	
22	User Interface Management Systems	
23	Introduction to Window Management	
24	Color in Computer Graphics	
25	Introduction to Solid Modeling	
26	Advanced Topics in Solid Modeling	
27	Computer Graphics and the Sciences	
28	Computer Graphics and Animation in the Physical Scien	
29	Algorithms for Data Representation Graphics	
30	Digital Image Processing Fundamentals	

assignment information is included on the course locator in your registration packet and is posted in the registration area.

A = Advanced	Level*	Monday July 27	Tuesday July 28
	B	■	
	I		■
	B	■	
	I		■
	I	■	
e Scale Animation Project	A		■
	A	■	
	I		■
	B	■	
trol	A		■
	I	■	
	I		■
	B	■	
	I		■
	B	■	
	I		■
	A	■	
	I		■
Design	I	■	
	I		■
ologies and Techniques	I	■	
	I		■
	B	■	
	I		■
	B	■	
	A		■
	A	■	
ces	I		■
	I	■	
	B		■

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, Groton, MA
Olin Lathrop, Apollo Computer, Inc., Chelmsford, MA
Carl Machover, Machover Associates, 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?
  Compositing
  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

DOCUMENTATION GRAPHICS

Tuesday—Intermediate

CHAIR

Richard J. Beach, Xerox PARC

LECTURERS

Richard J. Beach, Xerox PARC, Palo Alto, CA
Chuck Bigelow, Bigelow & Holmes, San Francisco, CA
Jock Mackinlay, Xerox PARC, Palo Alto, CA
Maureen C. Stone, Xerox PARC, Palo Alto, CA

TOPICS

- Introduction/Beach
  Why high-quality illustrated documents are hard
- Notes on marking/Bigelow
- Imaging systems architecture/Stone
- 2-D Imaging model/Stone
- Page description languages/Beach
- Color imaging issues/Stone
- Digital typography issues/Bigelow
- Editing, formatting and interchanging illustrated documents/Beach
- Integrated illustration sources/Stone
- Graphical style/Beach
- Automated graphical design aids/Mackinlay
- Wrapup and future directions/Beach

3

ANIMATION APPRECIATION

Monday—Beginning

CHAIR

Maxine D. Brown, University of Illinois-Chicago

LECTURERS

Maxine D. Brown, University of Illinois-Chicago, Chicago, IL
Glenn Entis, Pacific Data Images, Sunnyvale, CA
Laurin Herr, Pacific Interface, New York, NY
George Joblove, Industrial Light & Magic, Lucasfilm Ltd., San Rafael, CA
Douglas S. Kay, Industrial Light & Magic, Lucasfilm Ltd., San Rafael, CA
Jeff Kleiser, Jeff Kleiser Associates, Hollywood, CA
Sylvie Rueff, Jet Propulsion Laboratory, Pasadena, CA
Larry Yaeger, Apple Computer, Inc., Los Angeles, CA

TOPICS

- Overview of the computer graphics animation process/Yaeger
- How to build objects and scenes/Joblove
- How to render objects and scenes/Kay
- Animating objects and scenes/Entis
- Computer graphics animation for science and animation/Rueff
- Selling computer graphics to the film industry/Kleiser
- So, you want to do computer graphics: survey of hardware, software and systems/Herr

4

INTEGRATING MUSIC AND GRAPHICS

Tuesday—Intermediate

CHAIR

Bruce McDiffett, Nebulus Systems

LECTURERS

William Buxton, University of Toronto, Toronto, Ontario, Canada
David Levitt, MIT Media Lab, Cambridge, MA
Bruce McDiffett, Nebulus Systems, Los Angeles, CA
Todd Rundgren, Alchemedia Productions, Woodstock, NY
Tom Seufert, Visual Music Productions, Tarzana, CA
Ed Tannenbaum, Eddeo, Inc., Crockett, CA

TOPICS

- A review of currently available hardware and software/McDiffett
- Adding music to commercials, starting a "visual band"/Seufert
- Real-time video systems/Tannenbaum
- User interfaces, predictions for music/graphics based on the development of computer music/ Buxton
- Visual tools for analyzing and creating music/ graphics compositions/Levitt
- Music industry developments, maintaining artistic integrity/Rundgren

5

3-D CHARACTER ANIMATION BY COMPUTER

Monday—Intermediate

CHAIRS

Bill Kroyer, The Kroyer Company
Philippe Bergeron, Whitney/Demos Productions

LECTURERS

Chris Bailey, formerly of Digital Productions, Los Angeles, CA
Philippe Bergeron, Whitney/Demos Productions, Los Angeles, CA
Bill Kroyer, The Kroyer Company, Los Angeles, CA
John Lasseter, PIXAR, San Rafael, CA
Tim McGovern, formerly of Robert Abel & Associates, Hollywood, CA
Frank Thomas, Walt Disney Productions, Burbank, CA
Susan Van Baerle, New York Institute of Technology, Old Westbury, NY
Chris Wedge, Ohio State University, Columbus, OH

TOPICS

- Introduction/Kroyer
- Character animation in "Breaking the ice"/ Bergeron
- Model interpolation and shape distortion/Bailey
- Animation principles applied to computer animation/Lasseter
- Live action as a reference tool/McGovern
- The future of character animation by computer/Thomas
- Designing choreography for specific work stations/Van Baerle
- Procedural-assisted animation systems/Wedge

6

THE MECHANICAL UNIVERSE: AN INTEGRATED VIEW OF A LARGE SCALE ANIMATION PROJECT

Tuesday—Advanced

CHAIR

James F. Blinn, Jet Propulsion Laboratory

LECTURER

James F. Blinn, Jet Propulsion Laboratory, Pasadena, CA

TOPICS

- Scientific and mathematical metaphors
- Graphic design issues
- The animation software
- Production logistics
- The video recording system
- Things that didn't work
- Production of SIGGRAPH demo reels

7

ADVANCED COMPUTER ANIMATION

Monday—Advanced

CHAIR

Judson Rosebush, Rosebush Visions Corporation

LECTURERS

Norman I. Badler, University of Pennsylvania, Philadelphia, PA
Dick Rauh, The Optical House, New York, NY
Judson Rosebush, Rosebush Visions Corporation, New York, NY
Ralph Winter, Paramount Pictures, Los Angeles, CA

TOPICS

- Introduction
- Media and temporal recording
- Animation basics
- Integration of computers and animation
- Action creation techniques
- Interpolation techniques
- Kinematics and constraints
- Dynamics
- Simulation
- Scripting systems for compositing
- Scripting systems for action
- Character action and the simulacrum
- Management systems
- Organization of the studio
- Finishing

8

SPECIAL EFFECTS WITH COMPUTER GRAPHICS

Tuesday—Intermediate

CHAIR

Tom Brigham, New York Institute of Technology

LECTURERS

Tom Brigham, New York Institute of Technology, Old Westbury, NY
Doug Kay, Industrial Light & Magic, Lucasfilm Ltd., San Rafael, CA
Maury S. Rosenfeld, The Post Group, Hollywood, CA
Richard Taylor, Light FX, Santa Monica, CA

TOPICS

- Real-time digital video effects/Rosenfeld
  - Digital tools in the video medium, interaction between tools
  - Conceptualization process
  - Interplay of producer, director, effects director and technician
  - Hardware/software issues
- Computer graphics effects and motion pictures/Kay
  - 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
  - Animating with photographic textures
- 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 filmmaking

9

COMPUTER ANIMATION USING VIDEO TECHNIQUES

Monday—Beginning

CHAIR

Ed Kramer, Compugraph Designs

LECTURERS

Carol Chiani, The Video Computer Animation Workshop, New York, NY
Ed Kramer, Compugraph Designs, New York, NY
Maury S. Rosenfeld, The Post Group, Hollywood, CA
Dean M. Winkler, Post Perfect, New York, NY

TOPICS

- Introduction/Kramer
  - The video edit bay
  - Analog animation systems
  - Digital video technology and the BOSCH FGS-4000
- Paint systems/Chiani
  - Glossary of paint system terms
  - Low-end animation capabilities
  - High-end animation capabilities
- 3-D Systems/Rosenfeld
  - Animating with the ADO
  - The MIRAGE, the BOSCH FGS-4000 and the WAVEFRONT
  - The Digital Disk Recorder (Abekas A-62)
- High-end video technology/Winkler
  - NTSC, RGB and Digital Video
  - The WAVEFRONT
  - Evaluating animation technology

10

COMPUTER ANIMATION: 3-D MOTION SPECIFICATION AND CONTROL

Tuesday—Advanced

CHAIR

David J. Sturman, New York Institute of Technology

LECTURERS

Julian Gomez, RIACS, NASA Ames Research Center, Moffett Field, CA
Roger Gould, Pacific Data Images, Sunnyvale, CA
Glenn McQueen, New York Institute of Technology, Old Westbury, NY
David J. Sturman, New York Institute of Technology, Old Westbury, NY
Jane Wilhelms, University of California, Santa Cruz, CA

TOPICS

- Introduction/Sturman
- Interactive animation/Sturman
- Dynamic analysis/Wilhelms
- Event-driven animation/Gomez
- Script-based animation/Gould
- Conventional techniques for computer animation/McQueen

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APPLYING GRAPHICS STANDARDS

Monday—Intermediate

CHAIR

Gary Romans, TEMPLATE Graphics Software

LECTURERS

Robert Bruns, TEMPLATE Graphics Software, San Diego, CA
Gunther Pfaff, GTS-GRAL, Darmstadt, West Germany
Richard F. Puk, Puk Consulting Services, Carlsbad, CA
Gary Romans, TEMPLATE Graphics Software, San Diego, CA

TOPICS

- Technical overview of CORE/Romans
- Technical overview of GKS/Pfaff
- Technical overview of PHIGS/Puk
- Functional comparison of CORE, GKS and PHIGS/Bruns
- CORE applications/Romans
- GKS applications/Pfaff
- PHIGS applications/Puk
- Discussions and questions/All

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USING THE PHIGS STANDARD

Tuesday—Intermediate

CHAIR

Deborah U. Cahn, Boeing Computer Services

LECTURERS

Salim Abi-Ezzi, Rensselaer Polytechnic Institute, Troy, NY
Deborah U. Cahn, Boeing Computer Services, Seattle, WA
Eileen McGinnis, Sun Microsystems, Inc., Mountain View, CA
David M. Shuey, McDonnell Douglas Information Systems, St. Louis, MO

TOPICS

- Overview of PHIGS as a standard/Cahn
- Technical overview/McGinnis
- Case studies/Abi-Ezzi
  Menu System
  Windtron
- Advanced topics/McGinnis
- Case studies/Shuey
  Interactivity
- Extensions to ANSI PHIGS
  ISO
  PHIGS+
- Implementation experience/Abi-Ezzi
- What is available in the marketplace/Shuey

13

INTRODUCTION TO RAY TRACING

Monday—Beginning

CHAIR

Andrew Glassner, University of North Carolina at Chapel Hill

LECTURERS

Robert L. Cook, PIXAR, San Rafael, CA
Andrew Glassner, University of North Carolina, Chapel Hill, NC
Eric Haines, 3D-Eye, Ithaca, NY
Pat Hanrahan, PIXAR, San Rafael, CA
Paul Heckbert, PIXAR, San Rafael, CA
L. Richard Speer, Animation Research, Inc., Spokane, WA

TOPICS

- An overview of ray tracing/Glassner
- Geometry review/Hanrahan, Haines
- Survey of ray-object intersections/Haines, Hanrahan
- Surface physics/Glassner
- Distributed ray tracing/Cook
- Survey of efficient algorithms/Speer
- Writing a ray tracer/Heckbert
- Animation and ray tracing/Glassner

14

OBJECT-ORIENTED GEOMETRIC MODELING AND RENDERING

Tuesday—Intermediate

CHAIR

Paolo Sabella, Schlumberger-Doll Research

LECTURERS

Kurt Fleischer, Schlumberger Palo Alto Research, Palo Alto, CA
Phillip Getto, Rensselaer Polytechnic Institute, Troy, NY
Eric Grant, University of North Carolina, Chapel Hill, NC
William Lorensen, General Electric Research, Schenectady, NY
Paolo Sabella, Schlumberger-Doll Research, Ridgefield, CT

TOPICS

- Introduction/Lorensen
  - Motivation
  - Object-oriented terminology
  - C implementation
  - Animation application
  - Ray tracing application
- Geometric knowledge bases/Sabella
  - Integrating non-geometric knowledge with models
  - Reservoir modeling application
  - Strobe/InterLisp implementation
- Procedural models/Grant
  - Complex scene composition
  - Specializing algorithms with objects
  - C++ implementation
- Animation systems/Getto
  - Animation application
  - Object-directed rendering algorithms
  - C implementation
- Modeling testbed/Fleischer
  - Generalization of CSG representation
  - Physical object prototypes
  - Flavors/ZetaLisp dynamic classes implementation

15

FRACTALS: INTRODUCTION, BASICS AND PERSPECTIVES

Monday—Beginning

CHAIR

Heinz-Otto Peitgen, University of California

LECTURERS

Michael F. Barnsley, Georgia Institute of Technology, Atlanta, GA
Robert L. Devaney, Charles River Campus, Boston, MA
Heinz-Otto Peitgen, University of Bremen and University of California, Santa Cruz, CA
Dietmar Saupe, University of Bremen and University of California, Santa Cruz, CA
Richard D. Voss, IBM Watson Research Center, Yorktown Heights, NY

TOPICS

- Introduction/Peitgen
- Survey and history of fractals/Voss
  - Fractal dimension
  - Exact and statistical self-similarity
  - Basic algorithms and concepts
- Algorithms for random fractals/Saupe
  - Brownian motion
  - Displacement algorithms
  - Spectral synthesis
- Deterministic and fantastic fractals/Peitgen
  - Basics of fractal basin boundaries
  - Algorithms for fractal basin boundaries
  - Animation of Julia and Mandelbrot sets
- Dynamical systems and fractals/Devaney
  - Strange attractors
  - Chaotic dynamics and fractals
  - Animation of exploding Julia sets
- Fractal modeling of real world objects/Barnsley
  - Iterated function systems
  - Merge of fractals—the collage algorithm
  - Specific modeling and rendering examples

16

THE MODELING OF NATURAL PHENOMENA

Tuesday—Intermediate

CHAIR

Alain Fournier, University of Toronto

LECTURERS

Jules Bloomenthal, Xerox PARC, Palo Alto, CA
Alain Fournier, University of Toronto, Toronto, Ontario, Canada
Peter Oppenheimer, New York Institute of Technology, Old Westbury, NY
William T. Reeves, PIXAR, San Rafael, CA
Alvy Ray Smith, PIXAR, San Rafael, CA

TOPICS

- Modeling in computer graphics
- Traditional modeling primitives and their properties
- Types of models for natural phenomena
- Useful concepts for natural phenomena
- Grammar-based models and the role of stochastic elements
- Implicit surface definitions and their use
- Particle systems as modeling primitives
- Parametrization and animation of complex models
- Integration with existing modeling/ rendering systems

17

TOPICS IN PHYSICALLY-BASED MODELING

Monday—Advanced

CHAIR

Alan H. Barr, California Institute of Technology

LECTURERS

Alan H. Barr, California Institute of Technology, Pasadena, CA
Ronen Barzel, California Institute of Technology, Pasadena, CA
David Haumann, Ohio State University, Columbus, OH
John Platt, California Institute of Technology, Pasadena, CA
Demetri Terzopolis, Schlumberger Palo Alto Research, Palo Alto, CA
Andrew Witkin, Schlumberger Palo Alto Research, Palo Alto, CA

TOPICS

- Introduction to physically-based modeling
- Force/energy methods
- Numerical solution methods of differential equations
- Dynamic constraints
- Modeling flexible objects
- Model building with energy functions
- Generic modeling and image capture
- Goal-oriented motion
- Animation sampler

18

QUADTREE AND OCTREE METHODS

Tuesday—Intermediate

CHAIRS

Hanan Samet, University of Maryland
Donald J. Meagher, Octree Corporation

LECTURERS

Donald J. Meagher, Octree Corporation, San Jose, CA
Hanan Samet, University of Maryland, College Park, MD
Clifford A. Shaffer, University of Maryland, College Park, MD
Robert E. Webber, Rutgers University, New Brunswick, NJ

TOPICS

- Overview of hierarchical data structures/ Samet
- Use of hierarchical data structures in geographic information systems/Shaffer
- Use of octrees in solid modeling and synthetic image generation/Meagher
- Low-cost implementation in simple VLSI hardware of octree-based processors/Meagher
- Use of quadtrees and octrees in computer graphics/Webber

19

GEOMETRY FOR COMPUTER GRAPHICS AND COMPUTER AIDED DESIGN

Monday—Intermediate

CHAIR

Ronald N. Goldman, Control Data Corporation

LECTURERS

James F. Blinn, Jet Propulsion Laboratory, Pasadena, CA
Tony DeRose, University of Washington, Seattle, WA
Ronald N. Goldman, Control Data Corporation, Arden Hills, MN
Tom Sederberg, Brigham Young University, Provo, UT

TOPICS

- Vector geometry/Goldman
  - Vector algebra
  - Metric formulas
  - Affine transformations
- Projective geometry/Blinn
  - Homogeneous coordinates
  - Conic sections
  - Quadric surfaces
  - Perspective
- Differential geometry/DeRose
  - Tangents, normals and curvature
  - Osculating circles and parabaloids
  - Geometric continuity
  - Beta-splines
- Algebraic geometry/Sederberg
  - Resultants
  - Implicitization, inversion and intersection of curves and surfaces
  - Geometric modeling with algebraic patches

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THE GEOMETRY OF CURVE AND SURFACE DESIGN

Tuesday—Intermediate

CHAIR

Gerald Farin, Arizona State University

LECTURERS

Wolfgang Boehm, Technical University Braunschweig, West Germany
Gerald Farin, Arizona State University, Tempe, AZ
Harry McLaughlin, Rensselaer Polytechnic Institute, Troy, NY

TOPICS

- Bézier curves/Farin
  - Introduction
  - Recursive definition
  - Properties of Bézier curves
  - Differential geometry
- Composite curves/Boehm
  - B-splines
  - Visual continuity
  - Rational and conic curves
  - Implicit curves
- Curve applications/McLaughlin
  - Interpolation
  - Offsets
  - Interrogation
  - Conversions
- Surfaces I/Boehm
  - Tensor products
  - Coons patches
  - Box splines
- Surfaces II/McLaughlin
  - Differential geometry
  - Bézier triangles
  - Recursive definitions
- Surface applications/Farin
  - Interpolation
  - Scattered data
  - Interrogation methods
  - Intersections

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HUMAN-COMPUTER INTERACTION: SELECTED THEORIES, TECHNOLOGIES AND TECHNIQUES

Monday—Intermediate

CHAIRS

William Buxton, Xerox EUROPARC
Ronald Baecker, University of Toronto

LECTURERS

Ronald Baecker, University of Toronto, Toronto, Ontario, Canada
William Buxton, Xerox EUROPARC, Cambridge, England
Brad Myers, University of Toronto, Toronto, Ontario, Canada

TOPICS

- Chunking and phrasing/Buxton
- Haptic input/Buxton
  - The myth of device independence
  - Input devices
  - Two handed input
  - Techniques for comparison
- Audio I/O/Buxton
  - Non-speech output
  - Speech I/O
- Window systems/Myers
- Interaction techniques/Baecker
  - Command-line dialogues
  - Menu systems
  - Direct manipulation
  - Character/gesture recognition
  - Speech-based interaction

22

USER INTERFACE MANAGEMENT SYSTEMS

Tuesday—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
James R. Rhyne, IBM Watson Research Center, Yorktown Heights, NY

TOPICS

- Introduction/Olsen
  - Goals for UIMSs
  - Tools to serve users and developers
  - Architecture of a UIMS-based application
- External Issues/Rhyne
  - Presentations
  - Representation of presentations
  - Tools for presentation specification
  - Evaluation of user interfaces
- Dialogue specifications/Olsen, Kasik
  - Command and forms dialogues
  - Window/object/event dialogues
  - Syntactic dialogues
- UIMS usage/Kasik
  - Impact of UIMSs on software development and structure
  - Review of real world experiences
- Future directions in UIMS research/Olsen

23

INTRODUCTION TO WINDOW MANAGEMENT

Monday—Beginning

CHAIR

Jonathan E. Steinhart, American Information Technology, Inc.

LECTURERS

Dan Ganek, Apollo Computer, Inc., Chelmsford, MA
James Gosling, Sun Microsystems, Inc., Mountain View, CA
Richard J. Greco, Textronix, Inc., Wilsonville, OR
Edwin V. Post, American Information Technology, Inc., Cupertino, CA
Jonathan E. Steinhart, American Information Technology, Inc., Cupertino, CA

TOPICS

- Introduction/Steinhart
- Quick review of graphics/Greco
- The window management problem/Steinhart
- A software window manager/Ganek
- Survey of existing window managers/Post, Gosling
- Windowing in diverse hardware/software environments/Greco, Gosling
- The ANSI "Display Management" project/ Steinhart
- Toolkits and other higher level functions/ Gosling
- Writing applications for window management/Post
- Future directions and trends/All

24

COLOR IN COMPUTER GRAPHICS

Tuesday—Intermediate

CHAIR

Aaron Marcus, Aaron Marcus and Associates

LECTURERS

Aaron Marcus, Aaron Marcus and Associates, Berkeley, CA
Gerald Murch, Tektronix, Inc., Beaverton, OR
Philip Robertson, University of Toronto, Toronto, Ontario, Canada

TOPICS

- Basic terminology and concepts
- Physiological basis of color
- Color perception schema
- Color models and spaces
- Color vision deficiency, illusions
- User manipulation and selection
- Screen/hardcopy conversion issues
- Cognitive issues for usability
- Color assignment and coding
- Relativity and redundancy
- Preferences, performance, learning
- User interface design
- Psychological, cultural issues
- Aesthetics, harmonious palettes
- Product identity, marketing issues
- Case studies

25

INTRODUCTION TO SOLID MODELING

Monday—Beginning

CHAIR

George Allen, McDonnell Douglas Corporation

LECTURERS

George Allen, McDonnell Douglas Corporation, Cypress, CA
Bob Johnson, R.H. Johnson & Associates, Ann Arbor, MI
James R. Miller, Control Data Corporation, Arden Hills, MN

TOPICS

- Introductory overview/Allen
  - Rationale for solid modeling
  - Schemes for representing solids
  - Construction and editing techniques
  - Possible applications
  - Hardware for solid modeling
- Analysis of solid models/Miller
  - Ray tracing
  - Intersecting curves and surfaces
  - Boundary evaluation
  - Calculation of mechanical properties
- Industrial usage of solid modeling/Johnson
  - Typical industrial applications
  - Benefits, accomplishments and concerns

26

ADVANCED TOPICS IN SOLID MODELING

Tuesday—Advanced

CHAIR

James R. Miller, Control Data Corporation

LECTURERS

James R. Miller, Control Data Corporation, Arden Hills, MN
Mike Pratt, Cranfield Institute of Technology, Cranfield, Bedford, England
Jaroslaw Rossignac, IBM Watson Research Center, Yorktown Heights, NY
Spencer Thomas, University of Utah, Salt Lake City, UT
Kevin Weiler, General Electric, Schenectady, NY

TOPICS

- Introduction and overview/Miller
- Offsetting solid models/Rossignac
  - Definitions and properties
  - Analysis of offset solids
  - Description of experimental system
  - Applications of offsetting
- Modeling with sculptured solids/Thomas
  - Boolean Set Operations
  - Representations of trimmed free-form surfaces
  - Examples from a working system
- Non-manifold geometric boundary modeling/ Weiler
  - Definitions
  - Recent advances in Non-manifold boundary modeling
  - The radial edge data structure
  - Non-manifold topology manipulation operators
- Form features in solid modeling/Pratt
  - Feature representation
  - Feature recognition
  - Design by features
  - Applications by features

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COMPUTER GRAPHICS AND THE SCIENCES

Monday—Advanced

CHAIR

Robert L. Cook, PIXAR

LECTURERS

Alan H. Barr, California Institute of Technology, Pasadena, CA
James F. Blinn, Jet Propulsion Laboratory, Pasadena, CA
Loren C. Carpenter, PIXAR, San Rafael, CA
Robert L. Cook, PIXAR, San Rafael, CA
Robert A. Drebin, PIXAR, San Rafael, CA
Robert Haber, University of Illinois, Urbana, IL
Arthur J. Olsen, Scripps Clinic, La Jolla, CA

TOPICS

- Biological applications/Barr
- Physics applications/Blinn
- Image analysis and display/Carpenter
- Medical applications/Drebin
- Engineering applications/Haber
- Biochemical applications/Olsen

28

COMPUTER GRAPHICS AND ANIMATION IN THE PHYSICAL SCIENCES

Tuesday—Intermediate

CHAIR

Robert S. Wolff, Jet Propulsion Laboratory

LECTURERS

Douglas W. Balcom, Jet Propulsion Laboratory, Pasadena, CA
Larry Barels, Wavefront Technologies, Santa Barbara, CA
Kevin J. Hussey, Jet Propulsion Laboratory, Pasadena, CA
Robert Judd, Los Alamos National Laboratory, Los Alamos, NM
Nelson Max, Lawrence Livermore National Labs, Livermore, CA
Craig Upson, National Center for Supercomputing Applications, Champaign, IL
Robert S. Wolff, Jet Propulsion Laboratory, Pasadena, CA

TOPICS

- Overview/Wolff
- Visualization paradigms/Upson
- Turn-key animation systems for the physical sciences/Barels
- Molecular modeling using computer animation/Max
- Workstation graphics for science analysis/Judd
- Image processing as a tool for science data analysis/Hussey
- Vector-graphic analysis tools for the low budget scientist/Balcom

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ALGORITHMS FOR DATA REPRESENTATION GRAPHICS

Monday—Intermediate

CHAIR

Thomas Wright, Computer Associates/ISSCO

LECTURERS

Lofton Henderson, Henderson Software, Boulder, CO
Thomas Wright, Computer Associates/ISSCO, San Diego, CA

TOPICS

- System architectures/Henderson
- Nonlinear scaling/Wright
- Interpolation and smoothing/Henderson, Wright
- Contouring/Henderson
- Mesh diagrams and hidden lines/Wright
- Mapping/Wright
- Flow and force diagrams/Henderson
- Presentation graphics/Wright
- Scientific animation/Henderson

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DIGITAL IMAGE PROCESSING FUNDAMENTALS

Tuesday—Beginning

CHAIR

R.C. Gonzalez, University of Tennessee and Perceptics Corporation

LECTURER

R.C. Gonzalez, University of Tennessee and Perceptics Corporation, Knoxville, TN

TOPICS

- Introduction
- Digital image fundamentals
- Image transforms
- Image enhancement
- Image restoration
- Encoding (data compression)
- Image segmentation and description

FUNDAMENTALS SEMINAR
TERMINOLOGY AND FIRST PRINCIPLES OF COMPUTER GRAPHICS

Sunday, 3-6 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
TEACHING COMPUTER GRAPHICS: AN INTERDISCIPLINARY APPROACH

Tuesday, 6:30-10:30 p.m.

CHAIR

Judith R. Brown, University of Iowa

LECTURERS

James F. Blinn, Jet Propulsion Laboratory, Pasadena, CA
Judith R. Brown, University of Iowa, Iowa City, IA
Lleana Costea, California State University, Northridge, CA
Donna Cox, University of Illinois, Champaign, IL
Steve Cunningham, California State University-Stanislaus, Turlock, CA
Kenneth I. Joy, University of California, Davis, CA
Isaac Kerlow, Pratt Institute, New York, NY
Michael McGrath, Colorado School of Mines, Golden, CO
Barbara Mones-Hattal, Montgomery College, Rockville, MD
Kenneth O'Connell, University of Oregon, Eugene, OR
Mark Ohlson, Worcester Polytechnic Institute, Worcester, MA

TOPICS

- Introduction/Brown
- Art track
  - Overview and certificate programs/Mones-Hattal
  - BFA Programs: Graphics with traditional art program/Kerlow
  - Beyond the traditional art curriculum/Cox
  - Grants and budgets/O'Connell
- Computer Science track
  - Overview of courses; laboratory environment/Cunningham
  - SIGGRAPH recommended course content/Ohlson
  - Advanced and graduate courses/Joy
- Engineering track
  - Trends and practices in graphics education for lower division classes/Costea
  - Trends and practices in graphics education for upper division classes/McGrath

TECHNICAL PROGRAM
PAPERS AND PANELS

TECHNICAL PROGRAM PAPI

		ANAHEIM CONVENT
		Arena
WEDNESDAY	9:00-10:30	Opening Ceremony
	10:45-12:15	Papers: Animation
	1:45-3:15	Papers: Ray Tracing
	3:30-5:00	Papers: Graphics Systems
THURSDAY	9:00-10:30	Papers: Surface Rendering
	10:45-12:15	Papers: Curve and Surface Algorithms
	1:45-3:15	Papers: Volumetric Modeling
	3:30-5:00	Papers: Hardware Algorithms
FRIDAY	9:00-10:30	Papers: Dynamic Constraints
	10:45-12:15	Papers: 2-D Algorithms
	1:45-3:15	Papers: Texturing and Shadowing
	3:30-5:00	Papers: Lighting Models

AND PANELS-AT-A-GLANCE

CENTER	MARRIOTT HOTEL
naheim Room	Marriott Hall
	Panel: Where Do User Interfaces Come From?
	Panel: SIGKIDS
	Panel: Traditions and the Future of Character Animation
	Panel: Tool Kits: A Product of Their Environments
	Panel: Supercomputer Graphics
	Panel: Computer Graphics in Fashion
	Panel: The Physical Simulation and Visual Representation of Natural Phenomena
anel: Managing a Computer Graphics Production Facility	Panel: Software Tools For User Interface Management
anel: A Comparison of VLSI Graphic Solutions	Panel: Computer-Aided Industrial Design: The New Frontiers
	Panel: Pretty Pictures Aren't So Pretty Anymore: A Call for Better Theoretical Foundations
	Panel: Integration of Computer Animation With Other Special Effects Techniques

OPENING CEREMONY AND AWARD PRESENTATIONS

9:00-10:30, Arena

SIGGRAPH '87 WELCOME
James J. Thomas, Robert J. Young

SIGGRAPH REPORT
Kellogg S. Booth

1987 SIGGRAPH AWARDS
Presented by **Bertram Herzog**

Computer Graphics Achievement Award
Recipient: **Donald P. Greenberg**

Steven A. Coons Award
Recipient: **Robert L. Cook**

INTRODUCTION TO PAPERS AND PANELS
Maureen C. Stone, Sara A. Bly

PAPERS

ANIMATION

10:45-12:15, Arena

CHAIR

James F. Blinn, Jet Propulsion Laboratory

A Muscle Model for Animating Three-Dimensional Facial Expression
Keith Waters, Middlesex Polytechnic

Flocks, Herds and Schools: A Distributed Behavioral Model
Craig W. Reynolds, Symbolics Graphics Division

Principles of Traditional Animation Applied to 3-D Computer Animation
John Lasseter, PIXAR

PANEL

WHERE DO USER INTERFACES COME FROM?

10:45-12:15, Marriott Hall

CHAIR

Christopher F. Herot, Javelin Software Corporation

Everyone who builds a graphics system has to build a user interface. Once the design of such interfaces was left almost entirely to the intuition of the individual programmer. Today, empirical studies promise to replace the intuitive design method. Proponents of the intuitive approach claim that attempts to codify principles of user interface design stifle innovation, that human factors research is too narrow to prescribe solutions, and that rigorous testing is too time-consuming. Others claim that the fields of human factors and psychology have much to offer and need not be cumbersome or expensive.

This panel explores how these issues affect the practitioner faced with the task of designing a graphics system.

PANELISTS

Stuart Card, Xerox Corporation
Bruce Tognazzini, Apple Computer, Inc.
Kent Norman, University of Maryland
Andrew Lippman, Massachusetts Institute of Technology

PAPERS
RAY TRACING

1:45-3:15, Arena

CHAIR

Turner Whitted, Numerical Design, Ltd.

Principles and Applications of Pencil Tracing
Mikio Shinya, Nippon Telegraph and Telephone Corporation
Tokiichiro Takahashi, Nippon Telegraph and Telephone Corporation
Seiichiro Naito, Nippon Telegraph and Telephone Corporation

Fast Ray Tracing by Ray Classification
James Arvo, Apollo Computer, Inc.
David Kirk, Apollo Computer, Inc.

Generating Antialiased Images at Low Sampling Densities
Don P. Mitchell, AT&T Bell Laboratories

Ray Tracing JELL-O™ Brand Gelatin
Paul S. Heckbert, Dessert Foods Division of PIXAR

PANEL
SIGKIDS

1:45-3:15, Marriott Hall

CHAIRS

Creighton Helsley, Rockwell International
Coco Conn, Homer and Associates

A panel of 7th-to-12th graders share their experiences in creating award-winning graphics projects for a computer science competition. They show a videotape of themselves in action, and answer questions about what they've learned from the experience. This panel gives the audience a chance to see what computer graphics offers the innovative students of today.

PANELISTS

Scott Crow—12th grade, Grant High School, Sherman Oaks, CA
Robert Holtz—8th grade, Chaminade Prep, Northridge, CA
Joshua Horowitz—4th grade, Open School: Center for Individualization, Hollywood, CA
Eddie Lew—11th grade, Hollywood High School, Hollywood, CA
Ben Novida—12th grade, Garfield High School, Los Angeles, CA
Joe Savella—12th grade, Garfield High School, Los Angeles, CA

DISCUSSANT

Margaret Minsky, Massachusetts Institute of Technology

PAPERS

GRAPHICS SYSTEMS

3:30-5:00, Arena

CHAIR

Richard J. Beach, Xerox PARC

GRAPE: An Environment to Build Display Processes
Tom Nadas, University of Toronto
Alain Fournier, University of Toronto

FRAMES: Software Tools for Modeling, Rendering and Animation of 3-D Scenes
Michael Potmesil, AT&T Bell Laboratories
Eric M. Hoffert, AT&T Bell Laboratories

The Reyes Image Rendering Architecture
Robert L. Cook, PIXAR
Loren Carpenter, PIXAR
Edwin Catmull, PIXAR

PANEL
TRADITIONS AND THE FUTURE OF CHARACTER ANIMATION

3:30-5:00, Marriott Hall

CHAIR

John Lasseter, PIXAR

Character animation using the computer is becoming more exciting and accepted today. However, its roots are grounded in the traditional character animation of Walt Disney Studios, as well as other studios around the world. Understanding the evolution, personality development, design issues, production methods and the current technology of traditional character animation will better develop the state of the art of computer character animation.

The panelists discuss the past, present and future of Disney animation, high-quality character animation for television, and character animation in Europe. Excerpts from their work in animation are also shown.

PANELISTS

Brad Bird, freelance director
Alex Carola, director, Graphoui Studio, Brussels
John Musker, director, Walt Disney Studios
Frank Thomas, directing animator, Walt Disney Studios

PAPERS

SURFACE RENDERING

9:00-10:30, Arena

CHAIR

Tony DeRose, University of Washington

Accurate Triangulations of Deformed, Intersecting Surfaces
Brian Von Herzen, California Institute of Technology
Alan H. Barr, California Institute of Technology

Adaptive Forward Differencing for Rendering Curves and Surfaces
Sheue-Ling Lien, Sun Microsystems, Inc.
Michael Shantz, Sun Microsystems, Inc.
Vaughn Pratt, Stanford University

Ray Tracing Complex Models Containing Surface Tessellations
John M. Snyder, California Institute of Technology
Alan H. Barr, California Institute of Technology

PANEL

TOOL KITS: A PRODUCT OF THEIR ENVIRONMENTS

9:00-10:30, Marriott Hall

CHAIR

Ken Perlin, R/Greenberg Associates

Are some environments inherently better than others for building computer graphics tool kits? A panel of noted builders of tool kits who work in different software environments state their distinctly different views on this question.

What kinds of commitments affecting graphics software are made simply by the choice of an environment in which to work? Panelists argue the relative merits of using UNIX, LISP, object-oriented environments, or none of the above.

PANELISTS

James F. Blinn, Jet Propulsion Laboratory
Tom Duff, AT&T Bell Laboratories
Bill Lorensen, GE Corporate R&D Center
Craig Reynolds, Symbolics, Inc.

PAPERS

CURVE AND SURFACE ALGORITHMS

10:45-12:15, Arena

CHAIR

Elaine Cohen, University of Utah

Boundary Evaluation of Non-Convex Primitives to Produce Parametric Trimmed Surfaces
Gary A. Crocker, Calma Company
William F. Reinke, Calma Company

Discrete Beta-Splines
Barry Joe, University of Alberta

Direct Least-Squares Fitting of Algebraic Surfaces
Vaughan Pratt, Stanford University

PANEL
SUPERCOMPUTER GRAPHICS

10:45-12:15, Marriott Hall

CHAIR

Richard Weinberg, University of Southern California

Now that the worldwide installed base of supercomputers is nearly 200, they are playing an increasing role in the scientific computing community, and supercomputer graphics is growing in importance. The National Science Foundation's creation of five national supercomputer centers has made these large scale systems widely available to scientists and researchers. How will access to the world of megaflops affect graphics programming and scientific research? The panel discusses strategies for supercomputer graphics.

PANELISTS

Donald P. Greenberg, Cornell University
Michael Keeler, San Diego Supercomputing Center
Nelson Max, University of California Davis and Lawrence Livermore National Laboratory
Craig Upson, National Center for Supercomputing Applications
Larry Yaeger, Apple Computer, Inc.

PAPERS
VOLUMETRIC MODELING

1:45-3:15, Arena

CHAIR

Henry Fuchs, University of North Carolina at Chapel Hill

Set Operations on Polyhedra Using Binary Space Partitioning Trees
William C. Thibault, Georgia Institute of Technology
Bruce F. Naylor, AT&T Bell Laboratories

Marching Cubes: A High Resolution 3-D Surface Construction Algorithm
William E. Lorensen, General Electric Company
Harvey E. Cline, General Electric Company

Efficient Algorithms for 3-D Scan-Conversion of Parametric Curves, Surfaces and Volumes
Arie Kaufman, State University of New York at Stony Brook

PANEL
COMPUTER GRAPHICS IN FASHION

1:45-3:15, Marriott Hall

CHAIR

Jane Nisselson, New York Institute of Technology

Computer animated characters are now reaching an engaging level of expressiveness and animacy. But when your character goes up to accept its academy award, what is it going to wear? The answer to this question can be found in the techniques being developed for representing clothes.

The panel provides an introduction to computer graphics for modeling clothing. Panelists speak on a broad range of topics, from methods for modeling realistic cloth objects, to current uses of computer graphics in the fashion industry.

PANELISTS

Jerry Weil, AT&T Bell Laboratories
Ronald Gordon, Microdynamics
Jim Charles, ESPRIT

PAPERS

HARDWARE ALGORITHMS

3:30-5:00, Arena

CHAIR

Edwin E. Catmull, PIXAR

Real-Time Manipulation of Texture-Mapped Surfaces
Masaaki Oka, Sony Corporation
Kyoya Tsutsui, Sony Corporation
Akio Ohba, Sony Corporation
Yoshitaka Kurauchi, Sony Corporation
Takashi Tago, Sony Corporation

Shading Bicubic Patches
Michael Shantz, Sun Microsystems, Inc.
Sheue-Ling Lien, Sun Microsystems, Inc.

A Parallel Processor Architecture for Graphics Arithmetic Operations
John G. Torborg, Raster Technologies, Inc.

PANEL
THE PHYSICAL SIMULATION AND VISUAL REPRESENTATION OF NATURAL PHENOMENA

3:30-5:00, Marriott Hall

CHAIR

Craig Upson, National Center for Supercomputing Applications

Within computer graphics and animation, two major sub-disciplines have developed: graphics for entertainment or artistic purposes and graphics for scientific or technical purposes. Computer scientists working on entertainment applications have emphasized the correct visual representation of natural phenomena and have developed ad hoc physical simulations to accomplish this. Computer scientists working in the physical sciences have devoted their efforts to the underlying physics for simulating phenomena, with little emphasis on the visual presentation.

In recent years these two approaches have begun to reach the limits of their ability to work without each other. The realism required in entertainment graphics is beyond that obtainable without physically realistic models. Similarly, numerical simulations in the physical sciences are complex to the point of being incomprehensible without visual representations. Can scientific simulations and visual representations come together, or must they forever be apart?

PANELISTS

Alan H. Barr, California Institute of Technology
William T. Reeves, PIXAR
Robert S. Wolff, Jet Propulsion Laboratory
Steven Wolfram, Complex Systems Research Institute

PAPERS
DYNAMIC CONSTRAINTS

9:00-10:30, Arena

CHAIR

Donald P. Greenberg, Cornell University

Elastically Deformable Models
Demetri Terzopoulos, Schlumberger Palo Alto Research
John Platt, California Institute of Technology
Alan Barr, California Institute of Technology
Kurt Fleischer, Schlumberger Palo Alto Research

Controlling Dynamic Simulation with Kinematic Constraints, Behavior Functions and Inverse Dynamics
Paul M. Isaacs, Cornell University
Michael F. Cohen, Cornell University

Energy Constraints on Parameterized Models
Andrew Witkin, Schlumberger Palo Alto Research
Kurt Fleischer, Schlumberger Palo Alto Research
Alan Barr, California Institute of Technology

PANEL
SOFTWARE TOOLS FOR USER INTERFACE MANAGEMENT

9:00-10:30, Marriott Hall

CHAIR

Dan R. Olsen, Jr., Brigham Young University

This panel discussion is a follow-on to a 1986 SIGGRAPH-sponsored workshop on "Software Tools for User Interface Development." The workshop in '86 consisted of discussions in the areas of windowing systems, user interface management systems, and graphical interaction techniques. This panel provides the opportunity to discuss these issues in a wider forum. Each panel participant has been selected to represent one of the four subgroups into which the workshop was divided: 1) goals for user interface tools; 2) needs of the interface designer; 3) software environment for user interface tools; and 4) internal architecture of user interface tools.

PANELISTS

David J. Kasik, Boeing Computer Services
Peter Tanner, University of Waterloo
Brad Myers, University of Toronto
Jim Rhyne, IBM Watson Research Center

PANEL
MANAGING A COMPUTER GRAPHICS PRODUCTION FACILITY

9:00-10:30, Anaheim Room

CHAIRS

Wayne Carlson, Cranston/Csuri Productions
Larry Elin, Abel Image Research

The computer graphics industry, as no other, combines the disciplines of science, art and business, and presents graphics facility managers with unique problems not faced by their counterparts in other industries. The growing proliferation of computer graphics systems for animation production, for CAD/CAM, and for all uses in the arts and engineering, has created a new wave of managers who share the same plight: how to succeed in the world of computer graphics.

Panel members share stories, problems, solutions and insights for new managers who frequently are not prepared for this challenging position. This panel is also helpful for experienced managers who will be pleased to find that they are not alone with their problems.

MODERATOR

Larry Elin, Abel Image Research

PANELISTS

Wayne Carlson, Cranston/Csuri Productions
Pete Fosselman, McDonnell Douglas Corporation
Ken Dozier, Interactive Machines, Inc.
Carl Rosendahl, Pacific Data Images

PAPERS

2-D ALGORITHMS

10:45-12:15, Arena

CHAIR

Rob Pike, AT&T Bell Laboratories

Rectangular Convolution for Fast Filtering of Characters
Avi Naiman, University of Toronto
Alain Fournier, University of Toronto

Character Generation Under Grid Constraints
Roger D. Hersch, Swiss Federal Institute of Technology

An Efficient New Algorithm for 2-D Line Clipping: Its Development and Analysis
Tina M. Nicholl, University of Western Ontario
D.T. Lee, Northwestern University
Robin A. Nicholl, University of Western Ontario

PANEL

COMPUTER-AIDED INDUSTRIAL DESIGN: THE NEW FRONTIERS

10:45-12:15, Marriott Hall

CHAIR

Del Coates, San Jose State University

Would you choose a car or a favorite piece of furniture without considering how it looks? Behind every product is an industrial designer, and behind every great designer there is a great graphics system—or is there?

This panel shows how computers are being used by innovative industrial designers in widely different settings: a major automobile manufacturer, a large maker of communications products, and a well-known industrial design firm. Panelists show their work and focus on designers' needs that are not met by current systems.

PANELISTS

Bruce Claxton, Motorola Corporation
Fred Polito, frogdesign
David Royer, Ford Motor Company

PANEL

A COMPARISON OF VLSI GRAPHIC SOLUTIONS

10:45-12:15, Anaheim Room

CHAIR

Edward R. Rodriguez, National Semiconductor

Recent developments in VLSI graphic devices are bringing sophisticated graphics techniques to more affordable levels. Functionality and performance once found only in high-end systems are being made available to lower cost desktop implementations. These VLSI devices have become system level designs that require a high level of architectural understanding.

This panel session provides the hardware and software designers with a comparison of these VLSI offerings, clearly pointing out the architectural philosophies and trade-offs associated with specific implementations.

PANELISTS

Brent Wientjes, Texas Instruments, Inc.
Tom Crawford, Advanced Micro Devices
Jack Grimes, Intel Corportion
John Blair, National Semiconductor

DISCUSSANT

Jack Bresenham, Winthrop College

PAPERS
TEXTURING AND SHADOWING

1:45-3:15, Arena

CHAIR

Franklin C. Crow, Xerox PARC

Planar 2-Pass Texture Mapping and Warping
Alvy Ray Smith, PIXAR

Bidirectional Reflection Functions from Surface Bump Maps
Brian Cabral, Lawrence Livermore National Laboratory
Nelson Max, Lawrence Livermore National Laboratory
Rebecca Springmeyer, Lawrence Livermore National Laboratory

Rendering Antialiased Shadows With Depth Maps
William T. Reeves, PIXAR
David H. Salesin, Stanford University
Robert L. Cook, PIXAR

PANEL
PRETTY PICTURES AREN'T SO PRETTY ANYMORE: A CALL FOR BETTER THEORETICAL FOUNDATIONS

1:45-3:15, Marriott Hall

CHAIR

Rae A. Earnshaw, University of Leeds, UK

Analysis and exposition of the theoretical bases for computer graphics and CAD are becoming increasingly important. Software systems and display hardware are now so sophisticated that the deficiencies in the underlying models of displayed images can be more clearly seen. Consistency, accuracy, robustness and reliability are some key issues upon which the debate now focuses. Vendors and pragmatists feel satisfied if the results are "correct" most of the time. Theoreticians are horrified at the lack of rigor and formalism in many of the ad hoc approaches adopted by current work. This panel challenges the assumption that the pragmatic approach is adequate.

PANELISTS

Jack E. Bresenham, Winthrop College
David P. Dobkin, Princeton University
A. Robin Forrest, University of East Anglia
Leo J. Guibas, Stanford University and DEC Systems Research Center

PAPERS
LIGHTING MODELS

3:30-5:00, Arena

CHAIR

Robert L. Cook, PIXAR

The Zonal Method for Calculating Light Intensities in the Presence of a Participating Medium
Holly E. Rushmeier, Cornell University
Kenneth E. Torrance, Cornell University

A Shading Model for Atmospheric Scattering Considering Luminous Intensity Distribution of Light Sources
Tomoyuki Nishita, Fukuyama University
Yasuhiro Miyawaki, Hiroshima University
Eihachiro Nakamae, Hiroshima University

A 2-Pass Solution to the Rendering Equation: A Synthesis of Ray Tracing and Radiosity Methods
John R. Wallace, Cornell University
Michael F. Cohen, Cornell University
Donald P. Greenberg, Cornell University

PANEL

INTEGRATION OF COMPUTER ANIMATION WITH OTHER SPECIAL EFFECTS TECHNIQUES

3:30-5:00, Marriott Hall

CHAIR

Christine Z. Chang, R/Greenberg Associates

Computer animation is used increasingly as a special effects technique in film and video production. Integrated with other imaging techniques such as motion control, stand animation, live action and optical printing, it can be a useful tool as well as a final element. Among other things, information can be shared with other computer controlled cameras, or images can be generated for rotoscoping or for mattes. In fact, the final special effect may be largely dependent on computer imagery yet not contain a single computer-generated pixel.

The panelists discuss their specific approaches and experiences in utilizing computer graphics with other techniques in the production of special effects.

PANELISTS

Tad Gielow, Walt Disney Studios
Eben Ostby, PIXAR
Randy Roberts, Abel/Omnibus
Drew Takahashi, Colossal Pictures

EXHIBITORS PRODUCT INDEX

ABEKAS VIDEO SYSTEMS, INC.

Booth 3144

101 Galveston Drive
Redwood City, California 94063
(415) 369-5111
Junaid Sheikh
Lance Kelson

New for SIGGRAPH, the A60 Digital Disk Recorder is a real-time component digital recording device ideal for recording single frames from graphics systems. Ethernet & SCSI ports provide digital video transfer from computer graphics devices. The A64 Digital Disk Recorder is a 4:2:2 component digital playback device, switcher and recording device all in one. The A64, a DVR-1000, and the A53-D make it possible to create a 4:2:2 digital edit suite capable of real-time layering, editing and effects.

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Belinda Goodmark
National Exhibits Coordinator

Academic Press publishes advanced texts, monographs and journals in all areas of computing, including books for professionals. Of special interest is the book by Hopgood et al., *Introduction to the Graphical Kernel System*, now in its second edition. A new series, *Computer Graphics Technology and Applications*, will begin publication in late 1987. Also of interest: *Desktop Publishing Type and Graphics* on display at the Academic Press exhibit booth.

ADDISON-WESLEY PUBLISHING COMPANY

Booth 2045

Route 128
Reading, Massachusetts 01867
(617) 944-3700
Carolyn Berry
Senior Marketing Manager

Addison-Wesley is a key publisher of computer graphics books, most notably the classic *Fundamentals of Interactive Computer Graphics* by James Foley and Andries van Dam. Stop by booth #2045 to see their complete line of books and hear an announcement concerning the newest in computer graphics from Addison-Wesley.

ADEX CORPORATION

Booth 3539

105 Albright Way
Los Gatos, California 95030
(408) 866-2077
Wolfgang G. Widera
Sales Manager

User Group Contact: Marcos Woehrmann
Director, Software Engineering

ADEX introduces the single-monitor solution option for the ChromaGraph Series of high-resolution color graphics controllers. The range of resolution covers 1024x768 up to 1280x 1024 with memory capabilities from ½ MByte to 2 MBytes. The ChromaGraph graphics controller family is complemented by a line of 19" high-resolution RGB monitors and a 80386 based AT type microcomputer which will also be introduced at the show.

ADVANCED ELECTRONICS DESIGN, INC.

Booth 2530

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

Advanced Electronics Design will demonstrate the COLORWARE CARDS family of high-performance board-level graphics products for the VME Bus and the MicroVAX Q-Bus. COLORWARE CARDS provide 1280x1024 resolution with 8 bit-planes and drawing speeds of 100k vectors/sec. The products feature TEK 41XX and VT100 compatibility including firmware support for X-Window.

ADVANCED MICRO DEVICES

Booth 1153

901 Thompson Place
P.O. Box 3453
Sunnyvale, California 94088
(408) 982-6291
Guido Carasso
Strategic Marketing Engineer

Advanced Micro Devices, a semiconductor manufacturer, will feature a multi-QPDM system with hardware windows as well as several single QPDM systems. The product line includes devices for high-resolution, multi-color graphics.

ADVANCED TECHNOLOGY CENTER

Booth 1112

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

Along with GRAFPAK-GKS, SOFTERM terminal emulators, image processing and business graphics, ATC offers: Micro-GKS: PC GKS implementation (FORTRAN and C) that supports numerous display devices and includes metafiles, GDPs and escape functions; SOFTERM 4107: Tektronix 4107 emulator; and GRAFPAK-CGM: Picture metafiles conforming to the three encoding formats of the CGM standard.

AESTHEDES, INC.

Booth 1470

21515 Hawthorne Boulevard, Suite 1090
Torrance, California 90503
(213) 540-5451
James R. Myrick
Director of Marketing Support

Aesthedes is a computer graphics design system. Almost any designer can use this system regardless of their skill or background. A designer can take an idea from a thumbnail sketch quickly through to print production. With a high-resolution vector database, Aesthedes drives all the output devices necessary for comps, accurate camera-ready mechanicals or directly to color separations.

ALIAS RESEARCH INC.

Booth 3002

110 Richmond Street East, Suite 504
Toronto, Ontario, Canada M5C 1P1
(416) 362-9181
Arthur Bell
Vice President Marketing

User Group Contact: Wade Howie
Manager Marketing Support

ALIAS Research will unveil the ALIAS/2 providing, for the first time, a "one-box" solution for any 3-D modeling and design application. Other new features will be 3-D image compositing on the PIXAR, the "Faster Caster"® and easy to use natural phenomena techniques all via the Alias User Interface.

ALLIANT COMPUTER SYSTEMS CORPORATION

Booth 2354

One Monarch Drive
Littleton, Massachusetts 01460
(617) 486-4950
Terry Holden
Trade Show Manager

User Group Contact: Virginia Small
Marketing Communications

Alliant Computer Systems Corporation will demonstrate its FX/Series™ mini-supercomputers, which offer high-speed vector and parallel processing for computationally intense applications such as visualization. Alliant will demonstrate integration of its systems with a variety of graphics devices and workstations, using ANSR (Alliant Network Supercomputing Resources) tools such as NFS, NCS, the X-Window System and NeWS.

AMERICAN VIDEO COMMUNICATIONS, INC.

Booth 1240

10541 Humbolt Street
Los Alamitos, California 90720-5401
(213) 493-3771
Lawrence Pell
President

User Group Contact: Bob Kremel
Vice President of Sales

American Video Communications provides ways for groups to share information in real-time and increase control, efficiency and effectiveness of management information centers, C^3I, data fusion, corporate communications, training, marketing and MRP. Highlights will include the new Hughes 1000 color light valve projector, the 800 Monochrome projector, and the Trooper.

AMPEX CORPORATION

Booth 1301

401 Broadway
Redwood City, California 94063

Ampex will feature video graphics and effect systems designed to communicate via the CCIR-601 Digital network standard. Included are the AVA-3, video art system; ADO, digital effects system; and ESS-3, graphic composition/storage system.

APOLLO COMPUTER, INC.

Booth 2024

330 Billerica Road
Chelmsford, Massachusetts 01824
(617) 256-6600, Ext. 4889
Marketing Communications

User Group Contact: Andrea Woloski
Senior Marketing Communications Specialist

Apollo will demonstrate its new generation of DOMAIN workstations and DOMAIN Graphics Resources, a comprehensive toolkit for applications developers. Highlighted will be an industry leader for low-end color graphics, the Series 3000 Personal Workstation, and the new DN590 Turbo 3-D solids and imaging workstation, the highest-performance graphics workstation in Apollo's history.

APPLE COMPUTER, INC.

Booth 2042

20525 Mariani Avenue
Cupertino, California 95014
(408) 996-1010
Corporate Headquarters

Apple will be demonstrating the Macintosh™ in engineering for enhancing technical productivity and engineering/design related tasks. Featured will be the technically advanced characteristics of the Macintosh family with multi-windowing, graphical user interface, high-performance 68,000 family of CPUs, with a full selection of Apple products in third party engineering software.

ASSOCIATION FOR COMPUTING MACHINERY

North Lobby, Hall 3

11 W. 42nd Street
New York, New York 10036
(212) 869-7440
Lillian Israel
Manager, Membership Services and Marketing

Association for Computing Machinery (ACM) will be displaying its major journals, including *Transactions on Graphics* (TOG), Special Interest Group (SIG) newsletters and conference proceedings. SIGGRAPH newsletters and past conference proceedings will be featured in addition to a computer graphics slide show. Anyone wishing to join ACM SIGGRAPH (or any other SIG), may do so at the membership booth in the North Lobby, Hall 3.

AST RESEARCH INC.

Booth 3548

2121 Alton Avenue
Irvine, California 92714
(714) 863-1333
Shirley Smith
Trade Show Manager
Sandy Arteaga
Trade Show Coordinator

AST Research, Inc. will feature their Desktop Publishing Workstation, the AST Premium Publisher, consisting of the AT-compatible Premium/286 personal computer, a high-performance workstation engine that runs at 10/8/6 MHz, the AST TurboScan optical page scanner, a high-resolution, high-speed 300 DPI document scanner and the AST TurboLaser, a high-performance laser printer that produces near-typeset quality at a speed of eight originals per minute.

AT&T ELECTRONIC PHOTOGRAPHY & IMAGING CENTER (EPICenter)

Booth 2236

7351 Shadeland Station, Suite 100
Indianapolis, Indiana 46256-3921
(800) 858-TRUE

AT&T's EPICenter will demonstrate its TRUEVISION® microcomputer graphics products which enable AT&T and IBM compatibles to process images with television-quality resolution. Our newest board, VISTA, has power and flexibility for high-resolution frame capture and display. Some applications for TRUEVISION hardware and software include: graphic design and presentation, video production, picture databases, image processing and digital pre-press.

AT&T GRAPHICS SOFTWARE LABS

Booth 2236

10291 N. Meridian, #275
Indianapolis, Indiana 46290
(317) 844-4364
Steve G. Kukla

AT&T Graphics Software Labs will present SoftVision™, software products supporting the TRUEVISION® TARGA. RIO, RIO Production Center, TARGA CAD driver, Image Station and a new product for 3-D modeling and animation.

AT&T PIXEL MACHINES

Booth 2236

Crawford's Corner Road, Room 4K220
Holmdel, New Jersey 07733
(201) 949-0565
Alessandro Piol
Marketing Manager

AT&T Pixel Machines manufactures and sells a line of high-performance, programmable display processors. Employing a parallel architecture, the pixel machine's family is designed for interactive, high-quality 3-D graphics and image processing applications.

AVAX GRAPHICS, INC.
Booth 3532

3756 Cardiff Avenue, Suite 210
Los Angeles, California 90034
(213) 836-0920
Masanobu Shimada
President

User Group Contact: Masao Arai
Customer Relation

AVAX Graphics is a manufacturer of computer animation systems. Its features include CD-ROM graphic library, digital synthesizer, human interface (MCX-I) and low-cost video input unit. The BX series (510, 310, 210) has a broad application, such as broadcasting, promotion, company presentation, education and designing.

AV VIDEO/MONTAGE PUBLISHING, INC.
Booth 2654

25550 Hawthorne Boulevard, #314
Torrance, California 90505
(213) 373-9993
Joy McGrath Zapp
Publisher

AV VIDEO is for readers who use video, computer graphics and audio visuals in their professional capacities in business, industry, government, health care, financial, service and educational institutions. Every month they publish a wide variety of hands-on, tutorial articles relating to all aspects of video, computer graphics and audio visual production and presentation.

AZTEK, INCORPORATED
Booth 3028

17 Thomas
Irvine, California 92718
(714) 770-8406
Patsy Miller
Marketing Coordinator

User Group Contact: Phillips M. Lippincott
President

AZTEK offers a modular product line of turnkey state-of-the-art computer graphics systems, software and services; including high-resolution color graphic systems used for professional graphic arts, business graphics presentations, publishing, training and advertising applications. All peripherals and software product additions are designed for upward expansion capability.

BARCO ELECTRONICS, INC.

Booth 3054

1500 Wilson Way, Suite 250
Atlanta, Georgia 30080
(404) 432-2346
Frank J. Genovese
Director of Sales and Marketing

Barco Electronics, Inc. will exhibit video, data and graphic projectors; color monitors; receivers/monitors and data displays.

BARCO-INDUSTRIES, INC.

Booth 3034

472 Amherst Street, Suite 10
Nashua, New Hampshire 03063
(603) 880-1430
Peter Paelinck
General Manager

Barco-Industries, Inc. will be demonstrating its top-of-the-line computer displays used in high-end applications such as medical ultrasound, medical 3-D modeling, computer aided publishing, animation and high-end CAD/CAM.

BENSON, A SCHLUMBERGER COMPANY

Booth 2524

385 Ravendale Drive
Mountain View, California 94043
(415) 964-7900
Mark A. Macgillivray
Director, MarCom

Benson's 30-year experience in digital plotting technology continues. Color and monochrome electrostatic plotters, with their built-in controllers, have established definitive benchmarks in speed, quality and reliability. The single-pass Color Electrostatic System, for example, can produce complex E-size drawings in less than four minutes.

Color and monochrome thermal transfer plotters combine high-resolution and easy usage with low cost to provide a solution for any application.

BROADCAST TELEVISION SYSTEMS, A joint company of Bosch & Phillips

Booth 1432

2300 S. 2300 West
Salt Lake City, Utah 84119
(801) 972-8000
Jeff Davis
Graphics Product Manager

BTS expands its graphics network through new products and product upgrades. The FGS-4500, upgraded from the GS-4000, has new hardware and software. New features include solid texturing, texture wrapping and elevation mapping. The Satellite Renderer, a new off-line product, renders variable resolution images up to 4000 lines. Information will be available about the Pixelerator, a new product to be shown at SMPTE.

BROOKTREE CORPORATION

Booth 1214

9950 Barnes Canyon Road
San Diego, California 92121
(619) 452-7580
Cynthia Jones
Marketing Secretary

BRUNING COMPUTER GRAPHICS

Booth 2436

777 Arnold Drive
Martinez, California 94553
(415) 372-7568
Gary Hasenfus
Director of Marketing/Sales

Bruning Computer Graphics will demonstrate their line of ZETA products, for applications ranging from business graphics to CAD/CAM; from mapping and cartography to scientific and biomedical. The ZETA 8 and ZETA 887 offer A and B size plotting and the ZETA 800 series offers D and E size, roll and single sheet plotting. The ZETADRAF 900 A-E size single sheet drafting plotter offers high quality and throughput.

BRUNING COMPUTER GRAPHICS

Booth 1210

653 S. Melrose Street
Placentia, California 92670
(714) 528-2111
Tim McNally
Director of Marketing

Bruning Computer Graphics carries a complete line of disposable plotter pens to fit most of today's popular pen plotters. The pens are available in fiber, rolling ball, labyrinth rolling ball and liquid ink types. In addition, the company also offers a line of plotter accessories, including pen caddies and plotter stands.

CAHNERS PUBLISHING COMPANY

Booth 2550

275 Washington Street
Newton, Massachusetts 02158
(617) 964-3030
Kathy Doyle
Director of Marketing Services

User Group Contact: The Lynx Group,
Lisa Stewart
Tradeshow coordinator

Cahners Publishing Company publishes *Mini-Micro Systems, Electronic Business* and *EDN*. *Mini-Micro Systems* is written for computer professionals at OEM, reseller and high-volume user organizations. *Electronic Business* is a business magazine for managers and executives in electronics, computer and systems companies. *EDN* is written for engineering managers and design engineers working in the electronics OEM.

CALCOMP

Booth 2502

2411 W. La Palma
Anaheim, California 92801
(714) 821-2000
Marietta Schoenherz
Trade Show Manager

CalComp will demonstrate its full line of computer graphics peripherals including large and small format digitizers, color and monochrome raster plotters, vector plotters, color thermal transfer printer/plotters and high-resolution graphics displays.

CAPTION
Booth 1328

24, Rue Du Bignon
Rennes, France 35000
(33) 99 53 84 44
Patrick B. LeClerc
Director

CAPTION will present CUBI 7, a high-performing image synthesis system. Image generation uses a combination of different techniques including Z-buffer and ray-tracing. Used as a UNIX workstation or as a graphic terminal, the CUBI 7 hardware allows a parallel execution and a pipelined image generation.

CELCO
Booth 3332

1150 E. 8th Street
Upland, California 91786
(714) 985-9868
Peter M. Constantine
Engineering Sales Manager

User Group Contact: Peter M. Constantine
Engineering Sales Manager

CELCO will exhibit its complete line of digital color film recorders including the latest addition —CELCO BABY. CELCO sets a new standard for performance with this innovative new product. CELCO will also demonstrate CELCO 8000, CELCO 5000, CELCO JUNIOR and CELCO MICRO digital film recorders.

CFE—COMPAGNIE FRANCAISE D'EQUIPEMENT
Booth 1325

81, rue Beranger
Chatillon, France 92320
(33-1) 46.38.37.08
Jacques Picard
Export Manager

CFE produces two IBM PC/XT/AT compatible cards which provide frame accurate editing to any AMPEX and SONY professional range of video recorders. The U-MATIC version of the board will drive the SONY 5850 without any need to modify the recorder or utilization of time code. The BROADCAST board will control the rest of the SONY range as well as AMPEX VPR3, VPR6 and CVR40.

CH PRODUCTS

Booth 2670

1225 Stone Drive
San Marcos, California 92069
(619) 744-8546
Dan Hayes
Vice-President
Jim Putt
Engineering Manager

CH Products will display the MICROSTICK, a professional point-and-select device designed for CAD/CAM, graphics and text editing applications that provides output modes compatible with mice and digitizing pads. A complete line of precision analog and digital joysticks for OEM applications requiring X-Y-Z positioning control will also be displayed.

CHIEF MANUFACTURING INC.

Booth 3432

14310 Ewing Avenue South
Burnsville, Minnesota 55337
(612) 894-6280
Dale R. Glomsrud
National Sales and Marketing Manager

Chief Manufacturing Inc. will feature video projector stands which accommodate a full range of video projectors and video projector stand accessories.

CHROMATICS, INC.

Booth 2442

2558 Mountain Industrial Boulevard
Tucker, Georgia 30084
(404) 493-7000
Larry Morrissey
Manager—New Products Technical Marketing

Introducing Chromatics next dimension in color graphics, they will demonstrate the Colorgraphic™ Display System capable of producing 1,000,000 fully transformed vectors per second and programmed through a standard GKS package. Popular features include 32-bit VME-bus, GKS windows and Ethernet. Also being displayed are the CX and CX II systems featuring the frame grabber and shading processor.

CIRCUIT STUDIOS, INC.

Booth 3630

5420 Butler Road
Bethesda, Maryland 20816
(301) 656-5918
Garri Garripoli
President

Velocity 3D Motion Control and Video Animation System is a unique and powerful tool for creating complex animations and motion studies outputing directly to video tape. Solid, shaded models and lighting are manipulated in real-time; interactively through iconic menus. Advanced shading models, texture mapping, reflections and paint output to 8,000-line resolution.

COLORGRAPHICS SYSTEMS, INC.

Booth 3434

6400 Enterprise Lane
Madison, Wisconsin 53719
(608) 274-5786
William Schultz
Vice President—Marketing and Sales

User Group Contact: Robert Miller
National Sales Manager

ColorGraphics Systems will feature the new ArtStar 3D Plus, a combination 8-, 24- and 32-bit graphics paint and animation system. Based on the Motorola 68020 processor, the ArtStar 3D provides fast 3-D rendering, object creation, and real-time animation previewing. Other enhancements such as 3-D text capabilities, will be demonstrated.

COMMODORE BUSINESS MACHINES, INC.

Booth 2066

1200 Wilson Drive
West Chester, Pennsylvania 19380
(215) 431-9100
David Archambault
Manager, Special Markets

User Group Contact: Pete Baczor
Manager, Customer Support

Commodore will feature the new open architecture Amiga 2000 and the Amiga 500, both compatible with Amiga V1.2 software. Commodore and third party developers are showing Genlocks, framegrabbers, 3-D solid modeling, ray tracing and pipelined processes.

COMPUGRAPHIC CORPORATION

Booth 3254

200 Ballardvale Street
Wilmington, Massachussetts 01887
(617) 658-5600, Ext. 7451
Jeffrey Angelson
Manager Marketing

User Group Contact: Jeffrey Angelson
Manager Marketing

Compugraphic Corporation features electronic publishing systems, layout and composition systems, imagesetters, plain paper typographic printers and slide-making systems.

COMPUTER-AIDED ENGINEERING MAGAZINE

Booth 1622

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

Computer-Aided Engineering Magazine is a monthly magazine devoted to the technical application of computer graphics and computer analytics to the functions of design and manufacturing. CAE covers all aspects of the integration of computers and computer-support equipment as it applies to these functions, technical office automation and technical publishing.

COMPUTER FRIENDS, INC.

Booth 3001

14250 N.W. Science Park Drive
Portland, Oregon 97229
(503) 626-2291
Jimmie Moglia
Director

User Group Contact: Wendy L. Stebbins

Computer Friends will display a turnkey color display system for the Mac 512K, the Mac Plus and the Mac SE. SUPERCHROMA allows the user to color any Macintosh file using 256 simultaneous, on-screen colors, plus full NTSC or PAL compatibility. MODERN ARTIST is a color paint program for the Mac II.

COMPUTER GRAPHICS LABORATORIES INC.

Booth 1020

405 Lexington Avenue
New York, New York 10174
(212) 557-5130, (516) 686-7833
Larry Green
Marketing Program Manager

Three systems will be featured: IMAGES II+, InstaMation and Trillium. IMAGES II+ is a high-resolution electronic graphics system with applications that include reproduction quality presentation graphics, high-resolution illustration, photo retouching and broadcast quality video animation. InstaMation is a real-time animation system featuring video digitization, image retouching, genlock and digital chroma-key with external video sources. Trillium is a low-cost, high-performance, real-time 3-D visual simulation system.

COMPUTER GRAPHICS NEW YORK '88

Booth 3546

8300 Greensboro Drive, Suite 1110
McLean, Virginia 22102
(703) 893-4545
David J. Small
Exhibition Manager

The 4th Annual Computer Graphics New York Show & Conference will be held February 22-24, 1988 at the Javits Convention Center. This event is a foremost venue to meet buyers from Fortune 1000 companies looking to utilize the latest computer graphics solutions.

COMPUTER GRAPHICS TODAY

Booth 1208

50 W. 23rd Street
New York, New York 10010
(212) 645-1000
Michael Boyajian
Assistant Publisher/Marketing Manager

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

COMPUTER GRAPHICS WORLD, A Pennwell Publication

Booth 2013

119 Russell Street
P.O. Box 1112
Littleton, Massachusetts 01460
(617) 486-9501
Hope Mascott
Marketing Services Manager

Computer Graphics World is a monthly magazine focusing on all applications of computer graphics, including CAD/CAM/CAE, presentation and analytical graphics, architectural design, scientific and medical imaging, mapping, animation video and electronic publishing. CGW is a single source of computer graphics news, market analyses, new product information, technological trends and graphics applications.

COMPUTER PICTURES MAGAZINE
Booth 2043

2 Village Square West
Clifton, New Jersey 07011
(201) 546-4600
Richard McCarthy
Marketing Director

Computer Pictures Magazine is designed to keep readers informed, aware and fully knowledgeable about the significant software and hardware developments in the computer graphics field. *Computer Pictures* covers the full spectrum of business, broadcast, television production and teleproduction, the new audio-visual and corporate graphics all within a full color format of six issues a year.

THE COMPUTER SOCIETY OF THE IEEE
Booth 2554

10662 Los Vaqueros Circle
Los Alamitos, California 90720
(714) 821-8380
Dawn Peck
Advertising Director

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.

COMPUTER SYSTEMS NEWS
Booth 2574

600 Community Drive
Manhasset, New York 11030
(516) 365-4600

The OEM computer newsweekly.

COMPUTERWORLD/DIGITAL NEWS
Booth 2622

375 Cochituate Road, Box 9171
Framingham, Massachussetts 01701-9171
(617) 879-0700
Audrey A. Shohan
Marketing Services Manager

Computerworld, the newsweekly for the computer community, will be distributing copies of its most recent issue, along with copies of Computerworld Focus on "Software." *Digital News* is a bi-weekly newspaper covering product and industry news related to Digital Equipment Corporation's VAX line of computer systems.

CONOGRAPHIC CORPORATION

Booth 1212

17841 Fitch
Irvine, California 92714
(714) 474-1188
Barry Weisenberg
Marketing Associate

Conographic Corporation will display the ConoVision 2800 high-resolution display for desktop publishing that displays two-page spreads on the screen and doubles laser print output to 600x 300 dpi; ConoFonts^{DTP} downloadable fonts for page layout programs and the HP Series II laser printer; the ConoDesk 6000 fast, Postscript-compatible controller board for the IBM XT/AT, Personal System/2 Model 30, and the Compaq 386.

CONRAC CORPORATION, DISPLAY PRODUCTS GROUP

Booth 3116

600 N. Rimsdale Avenue
Covina, California 91722
(818) 966-3511
Gene Ornstead
Director of Marketing

User Group Contact: William Ems
Director of Sales

Conrac's new 7250 Series with Auto-Trak™ gives new meaning to the term multi-application monitor. Features include: large 19" high-resolution CRT; full compatibility with IBM's MDA, CGA, EGA and PGC boards; variable resolution to 1024x1024 pixels (interlaced) 15.75 KHz to 37 KHz Auto-Trak™; auto switching for 40 MHz analog and 16/64 color TTL; auto internal/external sync select; color stability through full contrast range. The 7250 Series is ideal for everything from text to high-resolution color graphics.

CONTROL DATA

Booth 3216

8100 34th Avenue South (HQAO2E)
Minneapolis, Minnesota 55440
(612) 853-3448, (612) 642-3848
Thomas W. Johnston (612) 853-2713
Manager, Business Shows

User Group Contacts: Ron Ward and
Linda Rust-Kuehn

Control Data will display and demonstrate its line of high-performance, high-capacity magnetic disk and tape, and optical disk products. These include the 5.25," 8," 9," and 14" magnetic disk drives; Keystone half-inch reel and Patriot half-inch cartridge tape drives; LD 1200 optical drive and three CD ROM units. The CIM Division, originators of the ICEM solution for mechanical design will demonstrate the CYBER 910 line of workstations with integrated graphics processing.

CONVEX COMPUTER CORPORATION

Booth 1403

701 North Plano Road
Richardson, Texas 75081
(214) 952-0242
Sally Pringle
Marketing Communications Specialist

User Group Contact: Sally Pringle
Marketing Communications Specialist

Convex will demonstrate the Convex C1 supercomputer running Ray Tracing Corporation's software which solves design problems in computer animation, radar, sonar, mission planning, image and signal processing, optical research and molecular modeling. By using the Convex C1's large contiguous memory and integrated vector processing, Ray Tracing Corporation has achieved 30X performance over scalar superminicomputers.

CRAY RESEARCH, INC.

Booth 3308

1333 Northland Drive
Mendota Heights, Minnesota 55120
(612) 681-3651
William Samayoa
Senior Graphics Analyst

Cray Research, Inc. designs, manufactures, markets and supports the most powerful computer systems available. Cray systems are installed worldwide and are used by industry and government for scientific and engineering processing and simulation. CRAY X/MP and CRAY-2 supercomputers are used for such diverse applications as weather forecasting, structural analysis, aerodynamic simulation, nuclear safety, oil reservoir modeling, seismic processing, basic research and computer graphics.

CUBICOMP CORPORATION

Booth 2158

21325 Cabot Boulevard
Hayward, California 94545
(415) 887-1300
Martin J. Stein
Vice President of Marketing

Cubicomp will be showing enhanced capabilities to PICTUREMAKER/30 and PICTUREMAKER/20. These 3-D graphics systems are designed to meet the needs of the corporate communications and training markets, as well as traditional broadcast.

DALIM COMPUTER GRAPHIC SYSTEMES

Booth 1321

7, rue de L'Universite
Strasbourg, France 67000
(33-1) 88.25.14.28
F. Meyer
Export Manager

Dalim will feature high-resolution computer graphic systems on IBM (or MVAX) and Tektronix 412X Series which output to drum laser scanner (over 30,000 lines) for print industries to film recorders (slides for communication 2000x 4000x8000 lines) and to various peripherals such as plotters, laser cutters and printers. Dalim will also feature the Dalim Paint System. Dalim has PC programs for business graphics and designs various software for logo and fonts creations animation with special interface to CAD/CAM and scientific programs.

DATA TRANSLATION, INC.

Booth 3354

100 Locke Drive
Marlboro, Massachusetts 01752
(617) 481-3700
John Molinari
Product Marketing Manager

Data Translation manufactures plug-in boards and software for real-time image processing and array processing on PC's, MicroVAX II and VMEbus computer systems. Products include Frame Grabbers, Frame Processors and Floating-Point Array Processors. Data Translation is the originator of DT-Connect, an interface specification that allows frame grabber boards to plug directly into array processor boards for accelerated signal (DSP) and image processing.

DEFINICON SYSTEMS INC.

Booth 3642

1100 Business Center Circle
Newbury Park, California 91320
(805) 499-0652
Jennifer Jones
Sales Promotion

See real-time parallel computation of Mandelbrot and Julia Sets on our new 16 million color Solids Modeling System for MSDOS PC's. AUTOCAD™ using Definicon's 25 MHz 68020 with 32-bit 82786 close coupled graphics co-processor will also amaze your senses.

DIAQUEST INC.

Booth 1237

1440 San Pablo Avenue
Berkeley, California 94702
(415) 527-7700
Louise Ledeen

Diaquest's products, the DQ-422 VideoGraphics Interface, Action Animator and Imagizer, provide video capture and frame accurate animation, integrating computer graphics systems with professional video technology. SONY Still Image Systems Group products, the ProMavica and CSS-100 still image systems and the new High Resolution System will be shown.

DICOMED CORPORATION

Booth 2402

12000 Portland Avenue, South
P.O. Box 246
Minneapolis, Minnesota 55440-0246
(612) 885-3000
Rebecca McManus
Manager, Marketing

User Group Contact: Marcia Mittelstaedt
Manager, Sales Administration

DICOMED will show a range of compatible solutions for presentation design applications including PresenterPC, PRODUCERxp 100 and Paint. PresenterPC: Version 3.0 is IBM PC-compatible software for business graphics design with features for charts and text/graphics. PRODUCERxp 100 is a multi-tasking system that combines a high-performance design station with a MediaManager QCR recorder and simultaneously creates, transmits, processes and records. Paint applications include full-color paint/video scanning, and combines raster/vector data for spectrum of presentation/design.

DIGITAL ARTS
Booth 1542

7370-Q Opportunity Road
San Diego, California 92111-2225
(619) 541-2055
Sheldon Liebman
Vice President/Sales and Marketing

User Group Contact: Sheldon Liebman
Vice President/Sales and Marketing

Digital Arts will present the latest version of DGS 1.0, a 3-D graphics and animation software for PCs. The new features for DGS 1.0 include better and faster modeling and scripting tools, variable resolution rendering and anticipated support for the AT&T VISTA 32 frame-buffer card.

DIGITAL EQUIPMENT CORPORATION
Booth 2224

200 Baker Avenue
West Concord, Massachusetts 01742
(617) 897-5111
Kevin Hughes
Marketing Specialist

Digital Equipment Corporation will display their compatible family of high-performance graphics workstations including the new VAXstation 2000. Highlighted will be Digital's ability to network both workstations and larger VAX systems in a mixed UNIX and VMS environment. Some of Digital's cooperative marketing participants will also demonstrate their products in the Digital booth.

DUBNER COMPUTER SYSTEMS, INC.
Booth 2027

6 Forest Avenue
Paramus, New Jersey 07652-5214
(201) 845-8900
Bob Webb
Vice President, Marketing

User Group Contact: Evelyn Bronson
Marketing

Dubner will exhibit its full-color, NTSC TURBO Paint System. Featuring all brushes and effects of a top-of-the-line video painting system, the TURBO adds high speed processing, expanded memory, animation software, anti-aliased fonts, 4-way color ramps, color correction and motion suppression. The system includes 20 MByte disk drive, sync generator and pressure sensitive stylus. Optional external disk storage devices are available.

DUNN INSTRUMENTS

Booth 2649

7001 Loisdale Drive
Springfield, Virginia 22150
(703) 922-4600
Tony Reynolds
National Sales Manager

User Group Contact: Page Milliken
Region Manager

Dunn Instruments manufactures film recorders for high-quality output on color film. Dunn's exhibit includes the Multicolor, offering direct screen compatibility with today's highest resolution graphics systems with output to six optional film-backs, and the CompactColor which offers resident 8"x10" film format and optional 35mm, 4"x 5," 8"x10" and cine capability.

DUNN INSTRUMENTS

Booth 3049

145 Third Street
San Rafael, California 94901
(415) 457-7872
Tom Harrington
Sales Manager

Dunn Instruments will display the DFR 8000 System consisting of a file server and a digital film recorder for non-impact printing of color images. The DFR 8000 System accepts a digital file and produces continuous tone, fully saturated photographic output as slides, movies, prints, transparencies, negatives and color separations.

DYNAIR ELECTRONICS, INC.
Booth 2648

5275 Market Street
San Diego, California 92114
(619) 263-7711
Phyllis L. Lynch
Manager, Marketing Communications

Dynair Electronics will introduce DYNASTY 100, a 100 MHz bandwidth multiplexer (routing switcher) which offers clean signal processing of 1280x1024 60 Hz non-interlaced computer generated graphics. Use of Laser Trimmed Hybrids and unique stripline backplane are just a few of the design implementations which help to increase bandwidth for overall system performance. DYNASTY 100 carries an exclusive five-year manufacturer's warranty.

EASTMAN KODAK COMPANY
Booth 2268

343 State Street
Rochester, New York 14650
(716) 724-4765
George D. Winter
Exhibits Coordinator

User Group Contact: Addison Steven
Coordinator, Marketing

The Motion Picture and Audio Visual Products Division will feature the Kodak DATASHOW Computer Data Projector, a self-contained unit that displays computer-generated images on any large projection screen, even in normal room light. Also being shown is the Kodak DATASHOW System for large screen projection of real-time PC images using LCD technology with overhead projectors.

EIKONIX CORPORATION (A Kodak Company)
Booth 2260

23 Crosby Drive
Bedford, Massachusetts 01730
(617) 275-5070
Elaine Bresnick
Director of Marketing

EIKONIX will demonstrate the EIKONIX 1000, the newest member of its family of digital imaging products. Representatives will be available to discuss recent enhancements to other products including the faster editing features of the latest version of the CADScan 4434. Applications for EIKONIX digital imaging camera systems include: color graphics, CAD, remote sensing, medical imaging and microscopy mapping.

ELECTROHOME LIMITED

Booth 1040

809 Wellington Street North
Kitchener, Ontario, Canada N2G 4J6
(519) 744-7111
Tom Sutherland or Bruce Brown
Marketing Manager

Electrohome will exhibit a complete line of large screen projection systems, including a second generation CAD/CAM projector and a new three lens projector with built-in microprocessor functions including digital convergence. The Display Systems group will show 13″ and 19″ high-resolution VARI-SCAN monitors for computer graphics and CAD/CAM applications.

ELECTRONIC SYSTEMS PRODUCTS

Booth 1426

1301 Armstrong Drive
Titusville, Florida 32780
(305) 269-6680
Glenn Caswell
Manager, Technical Services

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.

ELOGRAPHICS, INC.

Booth 3243

105 Randolph Road
Oak Ridge, Tennessee 37830
(615) 482-4100
Robert Highfill

Elographics originated resistive-membrance technology and currently has a large installed base of touch screens. The company will exhibit its touch screens, add-on peripherals, development software, touch screen/monitor systems, a new line of plastic screens, and the popular Elographics glass-based screen. Elographics' touch screens are used for process control, medical, retail, interactive video, military, and financial applications. All screens have excellent resolution and linearity.

ENTER COMPUTER, INC.

Booth 1023

6867 Nancy Ridge Drive, Suite D
San Diego, California 92121
(619) 450-0601
Robert Curtis
Vice President, Marketing

Enter Computer, Inc. will announce the new model SP1000 CAD Plotter, an A-D size high-performance HP/GL compatible plotter for use in PC-based CAD systems. In addition, Enter Computer will show the model SP600 A-B size plotter and TYP-SET Lettering Software.

EQUITABLE LIFE LEASING

Booth 1348

10251 Vista Sorrento Parkway
San Diego, California 92112
(619) 458-4400
William C. Taylor
Executive Vice President-Marketing

Equitable Life Leasing provides leasing/financing services for a variety of technological equipment including CAD/CAM equipment, printers, plotters, workstations, computers and computer peripherals. Products offered: operating leases and national vendor programs.

ESD: THE ELECTRONIC SYSTEM DESIGN MAGAZINE

Booth 1008

Westborough Office Park
1900 W. Park Drive
Westborough, Massachusetts 01581
(617) 277-1120, (800) 367-1120
William A. Gannon
Publisher

ESD: provides comprehensive coverage of the computer-related OEM marketplace with editorial coverage broken into four integrated, in-depth sections: Systems Architecture, Imaging and Graphics, Advanced ICs and VLSI Design Technology.

EVANS & SUTHERLAND COMPUTER CORPORATION

Booth 2136

540 Arapeen Drive
Salt Lake City, Utah 84108
(801) 582-5847
Don Garner
Vice President, International Sales Manager

User Group Contact: Neil J. Harrington
Manager, Product Applications

Evans & Sutherland will demonstrate a new 3-D terminal using the company's new Shadowfax Technology VLSI circuitry. This new technology displays fully anti-aliased, calligraphic quality wire-frame images on a raster display with full 3-D dynamic control. Screen resolution is 8192x 6912; graphics features include real-time dynamics of wire-frame images, image calculation and display, and compatibility with existing E&S PS 340 and PS 350 programs.

EVROZ ELECTRONIQUE

Booth 1324

3, Sente Des Dorees
Paris, France 75019
(33-1) 42.03.30.43
Maurice Rozenberg
Export Manager

EVROZ ELECTRONIQUE will display the TELEVROZ, a complete system for overlay graphics on TV images. It includes hardware for display, controlling a laser disk and the associated software. Also on display is LeCodex, a solution for desktop publishing, image processing and document management. Any A 4/picture, drawing, text can be scanned, displayed on a high-resolution color screen, processed and printed on a laser printer.

FAIRLIGHT INSTRUMENTS INC.

Booth 1600

2945 Westwood Boulevard
Los Angeles, California 90064
(213) 470-6280
Michael N. Callen
CVI Project Manager

Fairlight Instruments will be exhibiting CVI PLUS, a low-cost video effects and graphics generator based on the existing CVI, but with redesigned hardware and software to expand its facilities and improve performance to the limits of its resolution.

FLAMINGO GRAPHICS

Booth 3344

222 Alewife Brook Parkway
Cambridge, Massachusetts 02138
(617) 868-1111
Robert Lang
President

Flamingo Graphics provides customized graphics software to OEM's. Products include outline fonts and object-oriented software for text and image manipulation. Flamingo will demonstrate real-time character generation from outlines to grey-scaled bitmaps on a PC/AT. Flamingo and AT&T are co-developers of RIO, a PC/AT based, object-oriented, draw and image processing, presentation graphics system.

FLOATING POINT SYSTEMS, INC.

Booth 3416

3601 S.W. Murray Boulevard
Beaverton, Oregon 97005
(503) 641-3151
Jack Lee
Product Specialist

User Group Contact: Doug Giese
Vice-President, ARRAY

Floating Point Systems, provider of high-speed computing in graphics and image processing, will feature the following product lines: FPS-5000 and MP32 array processors, M64 Series Mini-supercomputers and T Series Supercomputers. A demonstration of the M64/330 Superstation™ will be given at the booth.

FLYING MOOSE SYSTEMS AND GRAPHICS

Booth 2051

The Clinton House
Ithaca, New York 14850
(607) 273-3690
Gary Wayne
Vice President

User Group Contact: Carl Bass
Vice President Research

Flying Moose Systems produces HOOPS, a device-independent, 3-D graphics package. HOOPS features a hierarchical segment structure, hidden surface removal, light source rendering and high level input utilities. HOOPS is built around an object oriented architecture making the system powerful, flexible and easy to use. HOOPS is designed for scientific and engineering applications.

FRENCH EXPOSITIONS IN THE U.S., INC.

Booth 1320

810 Seventh Avenue
New York, New York 10019
(212) 265-5676
E. Wolf
Director

French Collective Exhibit; see individual company listings.

FTG DATA SYSTEMS

Booth 2374

10801 Dale Street, Suite J-2
P. O. Box 615
Stanton, California 90680
(714) 995-3900
Donna Clark
Marketing Manager

FTG's EMU-TEK Terminal Emulation Software can display host-based graphics on an MS-DOS/PC-DOS personal computer. Emulating a Tektronix 4107 graphics terminal and a DEC VT100 terminal, EMU-TEK Seven Plus is the newest in FTG's series of graphics terminal emulation products. FTG also markets light pen products for the IBM PC and PC compatibles.

GAMMADATA COMPUTER GmbH

Booth 2575

Planegger Street 16-18
8034 Germering
Munich, West Germany
089 841 90 08
Klaas Felske
Manager for Sales, Marketing, Service

Gammadata specializes in high-performance videoprinters. The family of GammaColor Videoprinters covers the full range from medium resolution (ink jet A4 120 dpi) to high-resolution (Thermotransfer A3 300 dpi). All units can be connected to video displays up to 1280x1024 dots (125 MHz) producing high quality prints with 4096 colors.

GEMS OF CAMBRIDGE LTD.

Booth 1604

Carlyle House, Carlyle Road
Cambridge, Great Britain CB4 3DN
44 (223) 32 38 18
John Allan
Sales Manager

User Group Contact: John Allan
Sales Manager

GEMS of Cambridge Ltd. manufactures image processing workstations and is demonstrating GEMSYS 35, a host-independent workstation with a 24-bit display resolution of 1480x1024 pixels. Each workstation can support up to 262 MByte of local semiconductor memory and an image processing accelerator using floating point transputers.

GENERAL ELECTRIC, DVI TECHNOLOGY

Booth 3622

David Sarnoff Research Center, CN 5300
Princeton, New Jersey 08543
(609) 734-2884, 734-3120
David Ripley
DVI Applications Manager

User Group Contact: Holly Faubel
Video Producer/Designer

DVI, Digital Video Interactive, is a new integrated video and graphics technology providing one hour of full-screen motion video, high-speed 3-D graphics and high-quality audio from a compact disc. Not limited to CD-ROM applications, DVI's custom VLSI chip set contains a general purpose microcoded programmable pixel processor which runs at 12.5 MIPS.

GENERAL ELECTRIC COMPANY, PROJECTION DISPLAY PRODUCTS OPERATION

Booth 2102

Electronics Park 6-205
Syracuse, New York 13221
(315) 456-2152
Robert Brockman
Manager, Marketing and Sales

General Electric—Projection Display will exhibit a Multiple Line Rate Talaria large screen video projector as well as the commercial line of Imager large screen video projectors.

GENERAL ELECTRIC—SILICON SYSTEMS TECHNOLOGY DEPARTMENT

Booth 2542

One Micron Drive
Research Triangle Park, North Carolina 27709
(919) 544-8120
Kathy Holoman
Program Manager, Marketing Communications

GE-SSTD will demonstrate the Graphicon™ 1700, the latest release in the Graphicon family of high-resolution, high-performance 3-D display processors for interactive computer applications. The Graphicon™ 1700 combines four special purpose accelerators with 1280x1024x40 Bit Depth and Frame Buffer Memory, and supports X-Windows with added overlay planes. The Graphicon enhances general purpose workstations or mainframes through Ethernet or direct parallel connections.

GENERAL PARAMETRICS CORPORATION

Booth 1464

1250 Ninth Street
Berkeley, California 94710
(415) 524-3950
Priscilla Rowe
Public Relations Manager

General Parametrics will demonstrate its complete line of presentation products: VideoShow 160, PhotoMetric 200, the newly introduced ColorMetric 20 Graphics Card, the PrintMaker series and PictureIt software. GPC's proprietary technology, MacroVision, lets users create and make high-resolution video, slide and hard copy graphic presentations in 1000 colors.

GENIGRAPHICS CORPORATION

Booths 3016, 3128

4806 W. Taft Road
Liverpool, New York 13088-0591
(607) 729-9181
John E. Brewer
Manager, Corporate Communications

User Group Contact: Susan Mastronardi
President, Association of Genigraphics Users

Genigraphics offers a complete line of artist's workstations and advanced imaging systems for business graphics, design/illustration and videographics applications. Genigraphics will exhibit PC-based PGP workstations, advanced paint/frame grab system, data collectors and the new Masterpiece 8740 film recorder. Demonstrations of advanced business graphics, paint, 3-D modeling and video animation capabilities will be given.

GIMEOR

Booth 1322

42-44, rue Madame de Sanzillon
Clichy, France 92110
33-1 47.30.92.93
Philippe Lerondeau
Export Manager

GIMEOR features 3-D volumetric CAD software, Archetrion CAD software package for industry to building industry; and 3-D volumetric computers.

GOULD INC., IMAGING AND GRAPHICS DIVISION

Booths 2514, 2616

46360 Fremont Boulevard
Fremont, California 94538
(415) 498-3200
Tony Warren
Technical Support, Marketing

User Group Contact: Mark Byrkit
Training, Marketing

Gould Imaging & Graphics Division manufactures and distributes digital image processing and display systems worldwide. Gould image processors are used in remote sensing, medical/life science, printing/publishing and industrial automation applications. Gould image processors range from the FD5000 and our top-of-the-line IP8000 for standard resolution processing to the newest high-resolution IP9000. Gould image processors interface with most popular mini/microcomputers.

GRAFPOINT

Booth 2276

1485 Saratoga Avenue
San Jose, California 95129
(408) 249-7951
Brad Sharp
Sales Manager

Grafpoint will demonstrate its line of Tektronix emulation software for PCs: TGRAF for host-based applications requiring terminal emulation; TNET for networking applications; and TPORT for running Tektronix compatible software on a PC. New at the show: TGRAF-15 LR, offering 4105/4107/4115 protocols, supports the IBM EGA w/ GMEC and the IBM PS/2 Display Adaptor.

GRAFTEL SYSTEMS, INC.

Booth 1656

400 Executive Boulevard
Elmsford, New York 10523
(914) 592-3700
Jack Flynn
Vice President Sales and Marketing

Graftel Systems will feature the VP240 Video Processor providing a hardware solution to the problem of printing color hardcopy from graphics displays. It acquires, stores and outputs complete pages of color graphics from a screen to a color printer without software overhead. The VP240 accepts RGB input and can be adapted to most graphics terminals.

GRAPHIC CONTROLS CORPORATION

Booth 3247

189 Van Rensselaer Street
Buffalo, New York 14240
(609) 424-2200, Ext. 219
Norman R. Huber
Marketing Communications Specialist

Graphic Controls will feature a wide selection of plotter supplies for both pen and electrostatic plotters. Disposable and refillable plotter pens, accessories, paper, vellums and films are offered for pen plotters. Also offered is a full line of toners and media for electrostatic plotters.

GRAPHON CORPORATION

Booth 1340

1901 S. Bascom Avenue
Campbell, California 95008
(408) 371-8500
Mason Killebrew
Director of Marketing

GraphOn will introduce its GO-400 Series Color Composite Terminals supporting Tektronix and DEC graphics and alphanumerics. Each terminal features multiple graphics emulations with perfect accuracy, high-resolution, high-performance Trinitron displays and fast throughput. Also displayed will be the GO-200 Series of monochrome composite terminals featuring a wide range of graphics capabilities.

GRAVI-PRODUCTIONS

Booth 1224

80 Avenue des Buttes de Coesmes
Rennes, France 35700
89.38.66.38
Gilles Briend

Gravi-productions features computer animation, and industrial and city planning simulation.

GTCO CORPORATION

Booth 2600

7125 Riverwood Drive
Columbia, Maryland 21046
(301) 381-6688
George Helser
Vice President, Sales and Marketing

GTCO will exhibit a range of peripherals for computer graphics, including the DIGI-PAD PC,™ a line of low-cost digitizers for PC compatibles; the CAD controller,™ a multi-function graphics controller with 1024x768 resolution; the NOMAD™, a 3-D image mover; for the Macintizer™, a Macintosh Integrated Digitizer; the Micro DIGI-PAD,® small low-cost tablets; and the DIGI-PAD® high-performance digitizers.

KARL GUTMANN INCORPORATED
Booth 3540

605 Education Road
Cornwall, Ontario, Canada K6H 5V6
(613) 932-0108
Barry Bingley
Manager of Marketing

Karl Gutmann Incorporated will feature CAD-TECH, specialized furniture for the CAD/CAM user.

HEWLETT-PACKARD
Booth 2202

3404 E. Harmony Road
Ft. Collins, Colorado 80525
(303) 226-3800
Glenda McCall
Graphics Product Marketing

Hewlett-Packard features a full range of graphics capabilities: 2-D graphics especially suited for EE; mapping; desktop publishing; high-performance 3-D graphics suited for interactive solid modeling; molecular modeling; architectural engineering; robotics; imaging and animation. The new HP-PA superworkstation will be featured.

HITACHI AMERICA, LTD.
Booth 2142

50 Prospect Avenue
Tarrytown, New York 10591
(914) 332-5800
Trish Storms
Public Relations Specialist

Hitachi America will highlight 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 CAD based software package which provides all the features of a large system.

HTM (hi-tech MARKETING CORPORATION)
Booth 3048

5454 Hoffner Avenue, Building 1
Orlando, Florida 32812
(305) 277-8686
Gregory F. Gustin
President

User Group Contact: Douglas Swallow
Senior Software Engineer

HTM announces PARAGON, the newest Realtime Visual Simulation (RVS™) system now available through HTM, manufacturer of the Black Box RVS.™ PARAGON displays 1000-10000 polygons at a 30/60 Hz update rate (60 Hz refresh) and features 1024x1024 resolution with anti-aliasing, texture mapping, sun shading, multiple moving models/eyepoints and dynamic distortion correction.

HOUSTON INSTRUMENT DIVISION OF AMETEK
Booth 2414

8500 Cameron Road
Austin, Texas 78753
(512) 835-0900, Ext. 434
Kevin F. Pflaum
Trade Show Manager

Houston Instrument will show several products from its line of intelligent pen plotters and graphics digitizers. The SCAN-CAD™ Plotter Accessory, an option to the company's line of low-cost, high-performance DMP-50 Series drafting plotters, allows the plotters to serve as both input and output devices.

HOWTEK INC.
Booth 1104

21 Park Avenue
Hudson, New Hampshire 03051
(603) 882-5200
Raymond Rocque
Vice President, Marketing

HUGHES AIRCRAFT COMPANY

Booth 1240

6155 El Camino Real
Carlsbad, California 92008
(619) 931-3619
Bill Clendinning
Marketing Manager

Hughes Aircraft will feature two models of Liquid Crystal Light Valve projectors: Model 800 for black and white images and Model 1000 for full color images. Both models are very useful for presentation of large, high-resolution computer data. Applications include "war rooms," CAD/CAM presentations, computer teleconferencing and software education. Projected resolution can exceed 1280x1280 pixels.

HUMAN DESIGNED SYSTEMS, INC.

Booth 3140

3440 Market Street
Philadelphia, Pennsylvania 19104
(215) 382-5000
Michael Kantrowitz
Director of Marketing

Human Designed Systems will exhibit a new family of DEC and Tektronix compatible terminals that offer high-resolution, fast drawing speeds and many other graphics and alphanumeric features. The HDS2000 Series is designed to offer "high-end" alphanumeric and graphic terminal features.

ICEX, INC.

Booth 1013

740C S. Pierce Avenue, Suite 15
Louisville, Colorado 80027
(303) 666-5400
LaNell Svoboda
GRAFkit Representative

User Group Contact: Stu Henderson
Products Support Manager

GRAFkit is a complete package based on and including a GKS ANSI/ISO Standard, designed for scientific, engineering, and technical data display on VAX systems. It organizes multi-dimensional data, producing numerous high level graphics, as well as extensive map data overlays, on a wide variety of output devices.

IKEGAMI ELECTRONICS (USA), INC.

Booth 3108

37 Brook Avenue
Maywood, New Jersey 07607
Dick Spallone
NSM Display Monitors

User Group Contact: Jim Dempsey
RSM Display Monitors
(415) 449-1794

Ikegami, manufacturer of raster scan display monitors, will exhibit their complete line of color and monochrome display monitor. The exhibit will include their new enclosure of ergonomic design —a lightweight system with small footprint.

IMAGE INNOVATION LIMITED

Booth 3102

Innovation House
292 Worton Road
Isleworth, Middlesex, Great Britain TW7 6EL
(44) 1-847-1841
Susan Forbes
Managing Director

Image Innovation will feature the Vision 400, a low-cost entry system to high-resolution computer graphics; the Vision 600 Plus, a medium-cost 4000/8000 line computer graphics system with CAD file interchange option; the Vision 24, a video system to full broadcast standard; and the Vision HRCS, image capture at high-resolutions, captures and manipulates within Vision system, and outputs at 4000 lines.

IMAGRAPH CORPORATION

Booth 3428

800 W. Cummings Park
Woburn, Massachusetts 01801
(617) 938-5480
Robert Wang
President

Imagraph Corporation will exhibit and display a large family of medium to high-resolution graphic controller boards. Imagraph's controllers are based upon a new generation of VLSI graphic chip, the Hitachi HD63484 combined with 256K (64Kx4) Video RAM technology. In addition, a number of popular IBM PC CAD/CAM/CAE, imaging, emulation and software development packages are supported.

IMAPRO (1986) CORPORATION

Booth 3301

1760 Courtwood Crescent
Ottawa, Ontario, Canada K2C 3L3
(613) 727-9554
Ingrid van Leeuwen
Marketing Manager

Imapro will feature the PG3000, the QCS-450 and the MVP+. The PG3000 is an AT-based graphics workstation combining full-resolution photography with vector graphics, video, paint and text to output to high-resolution recording devices. The QCS-450 is a high-resolution color scanner that provides resolutions of up to 3000 ODPI (output dots per inch). The MVP+ is mapped above 640K, runs at 12 MHz and combines raster with vector input.

INFORMATION DISPLAY
Booth 3431

c/o Palisades Institute for Research Services, Inc.
201 Varick Street, Suite 1140
New York, New York 10014
(212) 620-3371
Jay Morreale
Advertising Manager

Information Display is an official monthly publication of the Society for Information Display. *Information Display* covers the latest development in electronic, electromechanical, and hard-copy display devices; display systems and applications; human factors and standards.

INMOS CORPORATION
Booth 3402

P.O. Box 16000
Colorado Springs, Colorado 80935
(303) 630-4362
Brad Hartman
Microcomputer Marketing Manager

INMOS offers a range of products that enable graphics system designers to exploit parallel processing and other high-speed components. From the 40-processor transputer evaluation module, through low-cost PC-based development tools, down to the transputer ICs themselves, every stage of system implementation is supported. INMOS offers high-speed static RAMS, DSP and color graphics components.

INTEGRA AMERICA, INC
Booth 1626

8 Athlone Way
Menlo Park, California 94025
(415) 366-7810
Art Scott
President

INTEGRA/MITSUBISHI INTERNATIONAL CORPORATION
Booth 1134

333 S. Hope Street, Suite 2500
Los Angeles, California 90071
(213) 687-2957
Miki Hirai
Manager, OA Products

Integra/Mitsubishi International will demonstrate I-CUBE SYSTEM, a high-speed 3-D solid modeling and rendering computer graphics system; S-CUBE, bi-directional ray tracing based software featuring fast and precise algorithms; C-CUBE, expandable parallel architecture system with a 32-bit processing element and a ray tracing engine.

INTEL CORPORATION

Booth 1572

3065 Bowers Avenue
Santa Clara, California 95051
(408) 496-7833
Mark Olson
Product Marketing Manager, Graphics Group

Intel introduces a new Pallette/DAC to its graphics family of integrated circuits. Customers will demonstrate a broad range of affordable systems including: image processing; executive networking workstations; high-resolution PC AT graphics boards for CAD/CAM/CAE; desktop publishing and office automation systems; graphics, artificial intelligence and engineering workstations, and industrial embedded graphics displays.

INTELLIGENT LIGHT, INC.

Booth 3302

P.O. Box 65
Fairlawn, New Jersey 07410
(201) 794-7550
John P. Mitrano
Marketing Manager

User Group Contact: Ed Weed
Customer Support Manager

Intelligent Light, Inc., a leading supplier of computer animation software and hardware technology for workstations from Apollo Computer, will feature the GW-3000 turnkey system with video tape and film output. Intelligent Light will also introduce new workstation products and software features at the show. Applications for Intelligent Light products are scientific/engineering and broadcast/industrial animation.

INTERACTIVE MACHINES, INC.

Booth 2560

26588 Agoura Road
Calabasas, California 91302
(818) 707-1880
Tony Glinskas
Vice President, Sales and Marketing

Interactive Machines, Inc., (IMI) will display real-time graphics solutions. IMI is known for high-resolution, visually accurate images. IMI will demonstrate animated scenes with applications for avionics, robotics and aerospace using high-resolution CRT's and laser projection.

IOLINE CORPORATION

Booth 1307

19417-36th Avenue West, Suite D-1
Lynnwood, Washington 98036
(206) 775-7861
Gary Kerr
Marketing Communications Manager

IOLINE Corporation, a manufacturer of large-format pen plotters, will demonstrate their LP3700 and LP4000 plotters capable of drawing on any media-size business card through 36"x81." Special product features include an automatic multi-pen changer, HyperBUFFER option, which adds memory and intelligence, and non-volatile memory (NOV RAM).

I.S.G. TECHNOLOGIES INC.

Booth 2473

3030 Orlando Drive
Mississauga, Ontario, Canada L4V 1S8
(416) 672-2100
Richard Mackay
Director, Graphics Systems

I.S.G. Technologies Inc. will feature the 3DFX 3200, a graphics display system for high-performance, high-resolution applications requiring real-time shading and hidden surface removal. Also featured will be the 3DMV medical imaging system which reconstructs 3-D images from 2-D CT scanner images, utilizing sophisticated processing algorithms and an interactive menu to display, in real-time, GIROUD shaded 3-D images of such geometrically complex structures as the spine or skull.

ISLAND GRAPHICS

Booth 2031

4000 Civic Center Drive
San Rafael, California 94903
(415) 491-1000
Rand Schulman
Vice President Corporate Development

Island Graphics is a supplier of graphics software applications to OEMs in the areas of image processing, publishing and pre-press, and broadcast video products. Current work includes a diverse range of products from desktop publishing and computer-based stripping stations to sophisticated paint and animation systems.

JUPITER

Booth 2057

1100 Marina Village Parkway
Alameda, California 94501
(415) 523-9000
Glen W. Meyer
Director of Sales and Marketing

Jupiter designs and manufactures display processors for imaging and graphics applications. Sun and MicroVAX computers are supported under SunOS, VMS and Ultrix. Special features include 2560x2048 memory in 4-bit increments, each with independent pan and zoom, programmable video output (up to 1280x1024x60 Hz NI), bit slice processor with writeable control store.

KMS ADVANCED PRODUCTS, INC.

Booth 2047

3850 Research Park Drive
Ann Arbor, Michigan 48106
(313) 769-1100
Arnold Proehl
Products Manager

Ruggedized Microcomputers specifically engineered for operation under harsh environmental conditions will be displayed by KMS. The RMC 1000/2000 Ruggedized Microcomputers are 100 percent IBM PC/XT/AT compatible and designed to improve productivity in environments that cause other computers to fail. Video Multiplexers that let hardcopy devices become a shared resource will also be displayed.

KMW SYSTEMS CORPORATION

Booth 2460

6034 Courtyard
100 Shepherd Mountain Plaza
Austin, Texas 78730-5014
(512) 288-1453
Jean Richards
Vice President, Business Administration

KMW Systems will exhibit The Right Connections with the complete line of vector to raster converters. The latest addition to this line, the Vexcel GT, a high-performance graphics element processor that maximizes CPU performance will be featured. More Right Connections on display will include the VP-10 and VP-30 graphics processors, and the Auscom 8911A Channel Interface for IBM connectivity.

KOH-I-NOOR RAPIDOGRAPH, INC.

Booth 1116

100 North Street
Bloomsbury, New Jersey 08804
(201) 479-4124
Jim Sorris
Product Manager, Plotter Supplies

User Group Contact: Ed Brickler
Technical Representative, Plotter Supplies

Koh-I-Noor Rapidograph is a manufacturer and distributer of plotter supplies including pens, inks and media for all the most popular plotters. They also distribute the rotring NC Scriber plotting system.

KONTRON ELECTRONICS

Booth 1412

630 Clyde Avenue
Mountain View, California 94039-7230
(415) 965-7020, (800) 227-8834
Kenneth A. Charles
Marketing Manager-Image Processing

User Group Contact: Greg Galat
Sales Development Manager-Datasystems

Kontron Electronics will feature datasystems such as the OEM/VAR product line of computer graphic subsystems and peripherals, including AMD-QPDM graphics controller card on AT bus, and complete terminals, digitizer tablets in sizes from 12″x12″ to 51″x67,″ and an 80286 motherboard and computer which operates at 12 MHz to 1 MByte to 4 MByte RAM. Kontron will also feature image processing systems, with complete hardware and software systems, both standalone and sub-systems for hosts such as VAX, MicroVAX or SUN-3 Workstations.

KURTA CORPORATION

Booth 3316

4810 S. 35th Street
Phoenix, Arizona 85040
(602) 276-5533
Sally Hinderland
Manager, Advertising/Public Relations

User Group Contact: Gary Fitzgerald
National Sales Manager

Kurta Corporation, founded in 1979, develops, markets and supports technologically advanced input systems for desktop publishing, business and presentation graphics, graphic arts, video imaging, spreadsheets and CAD/CAM/CAE. Kurta is the developer of the only cordless input system for microcomputers.

LASERGRAPHICS, INC.

Booth 1476

17671 Cowan Avenue
Irvine, California 92714
(714) 660-9497
A. William Brown
Director of Sales and Marketing

Lasergraphics will demonstrate its full line of color hardcopy systems and rasterizing computers which drive today's most popular color output devices, with over one million colors and virtually unlimited software compatibility, PC to mainframe. Products to be shown include the CPS, Color Printing System, PFR, Personal Film Recorder, MFR, Mainframe Film Recorder, Rascol II and Rascol III series rasterizers.

LAZERUS

Booth 3053

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

LAZERUS "Developers of Intelligent Machines for Intelligent Users" announce the following new products: LAZERUS 432 supermini graphics computer, *RADIANT* software for high quality, 3-D imaging, and THE DIRECTOR II—the latest in user interfaces. A leader in technology, LAZERUS continues its tradition of commitment to excellence through the development of new products and dedicated support of existing customers.

LENCO, INC., ELECTRONICS DIVISION

Booth 2652

300 N. Maryland Street
Jackson, Missouri 63755
(314) 243-3147
Mark Hill
International Sales Manager

User Group Contact: David Aufdenberg
National Technical Services Manager

Lenco Computer Products Group manufactures equipment that will interface compatible computer systems to a videotape environment. Lenco's encoding (RGB to NTSC) and decoding (NTSC to RGB) product line includes the PC resident series: EN-10, EN-15, DC-20; and the broadcast series: PCE-466, CCE-850, PCD-473. Lenco's sync generators include: CSL-710, PSG-412 and PSG-313.

LOGIGRAPHICS, INC.

Booth 1456

1050 Walnut, Suite 325
Boulder, Colorado 80302
(303) 443-0191
Jeff Burton
Director of Strategic Planning

User Group Contact: Jeff Burton
Director of Strategic Planning

LogiGraphics, Inc. markets low-cost, high-performance modeling and animation systems based on the IBM PC/AT. The Renaissance Graphics Subsystem (RGS) features a 640x485x 24 pixel frame buffer with double buffering and a C-language interface to sophisticated 3-D functions. Available software packages include CAD/CAM and animation programs.

LSI LOGIC SCIENCES, INC.

Booth 2536

10808 Fallstone Road
Houston, Texas 77099
(713) 879-0536
Judith H. Atchley
Product Manager

LSI LOGIC SCIENCES, manufacturer of graphic processors, film recorders, PC compatible products and mainframe VRCs, will feature the Turbograph 300, the Turbograph 700 and the Turbograph 2100. The Turbograph 300 is an IBM PC board, standalone, that generates rasters displayable on thermal, ink jet and impact printer/plotters. The Turbograph 700 is for CAD/CAM applications, page, continuous plot. The Turbograph 2100 is a slide/recorder that produces 35mm slides, prints at 2048 dpi.

LYON LAMB VIDEO ANIMATION SYSTEMS, INC.

Booth 1216

4531 Empire Avenue
Burbank, California 91505
(818) 843-4831
Gary Hooks
Sales Manager

Lyon Lamb Video Animation Systems will feature the HRC (High Resolution Converter) which will convert up to 1280x1024 60 Hz Non-interlaced RGB graphics to NTSC video or low-resolution RGB with no loss of graphic information. Also featured are VTR controllers for recording graphics to videotape including VAS DELTA, BAS IV & V, and the new Mini VAS (PC Graphics), and the ENC VI Color Encoder/Sync generator for converting video (RS-170) RGB to NTSC or Component Video.

MACGUFF LIGNE

Booth 1224

14 Rue Portefoin
Paris, France 75003
(1) 48.04.98.97
Philippe Sonrier

MacGuff Ligne will feature 3-D computer animation.

MANAGEMENT GRAPHICS, INC.

Booth 1015

1401 E. 79th Street
Minneapolis, Minnesota 55420
(612) 854-1220
Carol Hamilton
Marketing Administrator

User Group Contact: Dean Alban
President

The Management Graphics, Inc., (MGI) product line features the new Solitaire™ Image Recorder, a revolutionary film recorder with an imaging speed of less than a minute for 4K images. Solitaire also features the ability to shoot 8K images at high speed. Also featured is the TTS/Tri-Master,™ a standalone turnkey slidemaking system for high-production designing and imaging.

MASSCOMP
Booth 2166

1 Technology Park
Westford, Massachusetts 01886
(617) 692-6200
Gregory D. Cullen
Graphics Product Manager

MASSCOMP's MC5000 family of multiprocessor systems will demonstrate several applications which take advantage of unique capabilities in integrated data acquisition imaging and graphics. MASSCOMP will display medical imaging and molecular modeling on the Helios graphics accelerator, an industry leader in 3-D graphics performance. Come and use Laboratory Workbench, the data acquisition interface, to set up your own experiment to collect data and display the results in real-time.

MATROX ELECTRONIC SYSTEMS LTD.
Booth 3228

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

Matrox is a leader in the design and manufacture of board level graphics and image processors. Matrox products are plug-compatible with most major industrial buses including: Multibus I & II, VMEbus, Q-bus and PC-Bus. At SIGGRAPH '87, Matrox will introduce a new 1280x1024 single board graphics processor for the PC-AT. Based on the TI-34010, the PG-1281 features speed and performance characteristics previously unavailable on the AT.

MAXIMUM STRATEGY INC.
Booth 3443

160 E. Virginia Street, #235
San Jose, California 95112
(408) 275-1209
Delmer Masters
President

Maximum Strategy Inc. introduces the STRATEGY 1 File Access Controller, a powerful new product for the rigid disk drive marketplace. The STRATEGY 1 File Access Controller is capable of increasing sustained data transfer rates using standard rigid disk drives.

MEASUREMENT SYSTEMS, INCORPORATED

Booth 3618

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

User Group Contact: Tom R. Brass
General Sales Manager

Measurement Systems offers a line of high-performance controls including handgrips, joysticks and trackballs. All reflect the importance placed on ergonomics in successful equipment design. Controls are available with various interfaces: analog, pulse, coded digital, parallel binary or serial RS232 or RS422. Customized controls and functions are also available.

MEDIA CYBERNETICS, INC.

Booth 3422

8484 Georgia Avenue, Suite 200
Silver Spring, Maryland 20910
(301) 495-3305
Doug Paxson
Product Manager

Media Cybernetics will demonstrate their HALO-based microcomputer graphics and imaging software: Image-Pro, HALO DPE (Desktop Publishing Editor), Dr. HALO II and Nimbus. The "New Technology" section will highlight R&D efforts in advanced color printing techniques, raster editing and scanning of A-E size documents, and a variable cache virtual page management.

MEGASCAN TECHNOLOGY INC.

Booth 1346

4005 Vista Vue
Gibsonia, Pennsylvania 15044
(412) 443-5820
Edward J. Morton
Director, Sales and Marketing

User Group Contact: Edward J. Morton
Director, Sales and Marketing

Megascan will present a high-performance display sub-system for 3000-line raster scanned images including a large capacity image memory and ultra high-speed display processor. Monitors provide the high image quality and features include 4096x3300 addressable and viewable resolution, 300DPI, 72 Hz non-interlaced refresh, 19" (diagonal) CRT, 244 KHz scan rate, all with single gun technology. Standard interfaces to workstations are available.

MEIKO INCORPORATED

Booth 3040

6201 Ascot Drive
Oakland, California 94611
(415) 530-3055
Cynthia Peddie
Marketing Manager

User Group Contact: Jon Peddie
Vice President, Marketing

Meiko will exhibit its COMPUTING SURFACE, a 4000 MFLOPS true MIND parallel processor with over 300, 32-bit, 10-MIP RISC-like processors with floating point co-processors. It can have any number of processors, with no upper limit, in an amorphous topology. Configuration is set by an electronic switching network, accommodating the needs of the application.

MERCURY COMPUTER SYSTEMS, INC.

Booth 1233

Wannalancet Technology Center
600 Suffolk Street
Lowell, Massachusetts 01854
(617) 458-3100
John Montelione
Marketing Vice President

Mercury Computer Systems develops and supplies high-speed co-processors and accelerators for compute intensive engineering and scientific applications. Its board-level products enable customers using PCs, workstations and embedded computer systems to run sophisticated signal and image processing applications, plus computer aided engineering, modeling/simulation and scientific computing tasks. A significant new product will be announced.

MERET INCORPORATED

Booth 2475

1815 24th Street
Santa Monica, California 90404
(213) 828-7496
Rebecca Axelrod
Trade Show Coordinator

MERET Inc. will exhibit its line of fiber optic components and transmission systems, including: RGB video to 120 MHz, high-resolution 300 MHz video, and TTL/ECL links to 150Mbps. Applications include: TEMPEST environments, military displays, CAD/CAM, medical and other high-resolution imaging. Links are available as board-mountable hybrids, OEM boards, desktop units, or rack mountable chassis systems.

METHEUS CORPORATION

Booth 2124

5510 N.E. Elam Young Parkway
Hillsboro, Oregon 97123
(503) 640-8000
Angus Mitchell
Director of Marketing

User Group Contact: John Hughes
Vice President, Sales and Marketing

Metheus, the Graphics Company, manufactures a wide range of graphics controllers. Featured at SIGGRAPH '87 will be the 1000 high-performance Series, low-cost, high-resolution graphics controllers for the PC; the 1000 VM Series, custom VLSI based VMEbus graphics controllers; and the 3000 Series, modular graphics controllers with up to 2Kx2K displayable resolutions and from 4 to 32-bit planes.

MICROFIELD GRAPHICS, INC.

Booth 3005

8285 S.W. Nimbus Avenue, Suite 161
Beaverton, Oregon 97005
(503) 626-9393
Suzanne Seigneur
Marketing

Microfield Graphics, Inc. produces high-resolution color graphics controllers for the IBM PC/AT, PC/RT and bus compatible machines. All graphics controllers are single board, offer a variety of resolutions and plane depths, CGA or EGA emulation, full programmability and an ANSICGI graphics interface.

MICROILLUSIONS

Booth 1204

17408 Chatsworth Street
Granada Hills, California 91344
(818) 360-3715
Jim Steinert
Marketing

Microillusions presents a premier CAD product for the Amiga. Dynamic CAD gives you features like: precision down to .0001," auto dimensioning; schematic auto routing; net listing; parts list reporting; Gerber Photoplotter,™ compatibility, full plotter support, large libraries, full entry, edit functions, 8192 levels, multiple resolution and color isometric presentation.

MICRO MAGIC

Booth 2174

261 Hamilton Avenue, Suite 320B
Palo Alto, California 94301
(415) 327-9107
David Youlton
President

User Group Contact: David Youlton
President

Micro Magic is a software corporation with a 3-D drawing and animation program for the Amiga computer, called FORMS IN FLIGHT. Micro Magic will demonstrate this powerful, easy to use, 3-D graphics package designed for both the serious and casual user. Please stop by our booth for a demo.

MINOLTA CORPORATION
Booth 2053

101 Williams Drive
Ramsey, New Jersey 07446
(201) 825-4000
Timothy J. McCann
Technical Representative

Minolta will be demonstrating the complete line of photometry and colorimetry test instrumentation including the new CS-100 non-contact portable tristimulus spot colorimeter.

MITSUBISHI ELECTRONICS AMERICA, INC.
Booth 3508

991 Knox Street
Torrance, California 90502
(213) 515-3993
Evie Turner
Advertising/Promotion Coordinator

The Mitsubishi Electronics' exhibit will feature several new automatic scanning monitors, compatible with a wide variety of graphics cards. These monitors range in size from the 14" desktop Diamond Scan to the 37" floor model for presentation graphics applications. Mitsubishi will also demonstrate the compatibility of their high-resolution color thermal transfer printers with PC graphics controller boards.

MITSUBISHI INTERNATIONAL CORPORATION
Booth 1246

520 Madison Avenue, GMD-B
New York, New York 10022
(212) 605-2359
Georgiana Samuel
Sales Representative

Shinko offers a complete line of color thermal transfer printers from the mini 100 series (4"x5"), to medium 335 (8½"x11"), to the large CHC-65 (11"x17") printers. Thousands of shades of color can be produced on both paper and transparency stock. Apollo, Sun and Targa drivers are available as well as an optional RGB video processor with multiplexing capabilities.

MITSUI & COMPANY (USA), INC.

Booth 1108

One California Street, Suite 3000
San Francisco, California 94111
(415) 765-1147
Riichi Okuda
Assistant General Manager

Mitsui & Company is pleased to present SPIDER (Subroutine Package for Image Data Enhancement and Recognition), a transportable image processing software package developed by the Electrotechnical Laboratory, Agency of Industrial Sciences and Technology, MITI in Japan. SPIDER stores 350 various image processing algorithms (422 subroutines) in a Fortran subroutine library.

MITSUI COMTEK CORPORATION

Booth 3231

12980 Saratoga Avenue, #B
Saratoga, California 95070
(408) 725-8525
Hidetoshi Nohara
General Manager

Mitsui will introduce the MITSUI CP-386 CAD SYSTEM-I which consists of an Intel 80386-based personal computer, 1024x768 high-speed color graphics controller card and a 20" high-resolution color monitor.

MODGRAPH, INC.

Booth 1133

149 Middlesex Turnpike
Burlington, Massachusetts 01803
(617) 229-4800
Don Berman
President

MONITERM

Booth 1016

5740 Green Circle Drive
Minnetonka, Minnesota 55343
(612) 935-4151
Nancy Cornish
Marketing Coordinator

User Group Contact: Henry Neils
Marketing Director

Moniterm will exhibit two products: the Viking 1 and the Viking 10. The Viking 1 is a 19" monochrome monitor and controller board configured at 1280x960, 66 Hz, non-interlaced. The Viking 10 is 19" color monitor and controller board configured at 1024x768, 60 Hz, non-interlaced. Both systems have controllers which utilize the Hitachi ACRTC chip.

MONITRONIX CORPORATION

Booth 1564

929 Eastwind Drive
Westerville, Ohio 43081
(614) 891-3232
Beth Catlett
Marketing Coordinator

Monitronix Corporation offers a family of high-performance color monitors. The MX-200 offers 120 MHz bandwidth, 1280x1024 resolution and 48-74 KHz scan rates. The MX-4190 offers 160 MHz bandwidth, 1600x1280 resolution and 48-90 KHz scan rates. Both monitors have the same unique modular design that yields ease of repair and a low MTTR.

MORGAN KAUFMANN PUBLISHERS, INC.

Booth 2674

95 First Street
Los Altos, California 94022
(415) 941-4960
Todd R. Armstrong
Marketing Assistant

Morgan Kaufmann Publishers will feature two books: *Introduction to the Use of Splines in Computer Graphics*, by Richard H. Bartels, John C. Beatty and Brian Barsky and *Readings in Human-Computer Interaction*, edited by Ronald Baecker and William A. S. Buxton. Morgan Kaufmann Publishers specializes in undergraduate and graduate level texts, research and reference works, and professional conference proceedings.

MOTOROLA INC., DISPLAY SYSTEMS

Booth 2039

1299 E. Algonquin Road
Schaumburg, Illinois 60196
(312) 576-7700
Carl Cobb
Director, Sales and Marketing

Motorola Display Systems will feature both high- and very high-resolution CRT monitors designed for workstation and desktop publication applications. The Lambda II series will resolve 120 dots per inch (1600x1280x16) for 19″ and 17″ portrait or landscape configurations. Both color and monochrome monitors will be displayed.

MULTIWIRE DIVISION/KOLLMORGEN CORPORATION

Booth 2468

250 Miller Place
Hicksville, New York 11801
(516) 933-8300
Gerard R. Stoehr
Product Manager

Multiwire Division offers high-speed, high-density discrete wired circuit boards for production and prototype applications. Design Engineering for Crosstalk Management. Standard Prototype Breadboard Panels will be on display.

NATIONAL COMPUTER GRAPHICS ASSOCIATION

Booth 1662

2722 Merrilee Drive, Suite 200
Fairfax, Virginia 22031
(703) 698-9600
Martha Filson
Sales Coordinator

See what NCGA has planned!
NCGA Computer Art & Design Conference—Chicago, Illinois, August 10-14, 1987.
NCGA CAD/CAM '87—Boston, Massachusetts, August 17-20, 1987
NCGA Mapping & GIS '87—San Diego, California, November 9-12, 1987.
NCGA '88—the 9th annual conference in Anaheim, California, March 20-24, 1988.

NATIONAL DESIGN, INCORPORATED
Booth 3202

12885 Research Boulevard, Suite 105
Austin, Texas 78750
(512) 454-4007
Charles B. Nagel
President

User Group Contact: Mark Ellsworth
Marketing Manager

National Design will feature GENESIS 1024, an XT/AT based graphics card using the TMS 34010. Supporting variable resolutions up to 1024x768, GENESIS is ideal for CAD and desktop publishing. Supported software includes ISO CGI, META-windows, DGIS, Microsoft windows as well as many of the popular CAD packages. GENESIS also supports all the Texas Instruments programming tools for the TMS 34010.

NATIONAL SEMICONDUCTOR CORPORATION
Booth 1332

2900 Semiconductor Drive
Santa Clara, California 95052-8090
(408) 721-6528, (408) 749-7410
Roger Reak
Director of Graphics Marketing
Jim Stoner
Marketing Communications Manager

National Semiconductor Corporation will demonstrate its Advanced Graphics Chip Set (AGCS), a multiple-chip, modular approach to high-performance graphics requirements. The AGCS, including a bitBLT processing unit, video clock generator and video shift register will be exhibited by customers. A video overview of the AGCS open architecture will be shown.

NATIONAL TECHNICAL INFORMATION SERVICES
Booth 3636

5285 Port Royal Road
Springfield, Virginia 22161
(703) 487-4807
Lois Grooms
Software Product Manager

NTIS, an agency of the Department of Commerce, and one of the world's leading processors of specialty information, is the central source for the public sale of Federally-developed

machine-readable products. Information regarding software, data files and databases from more than 100 Federal agencies is available upon request.

NEC HOME ELECTRONICS

Booth 1440

1255 Michael Drive
Wood Dale, Illinois 60191-1094

NEC will introduce the MultiSync Color Graphics Board GB-2. The GB-2 is capable of 1024x768 resolution, 16 or 256 simultaneous colors. NEC will also feature the MultiSync Color Graphics Board GB-1—with the MultiSync color monitor; the MultiSync Plus, a 14" CRT color monitor with 960x720 resolution; and the MultiSync XL, a 19" CRT color monitor with 1024x768 resolution.

NEC PROFESSIONAL SYSTEMS DIVISION

Booth 1448

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

Ken Bylsma
Applications Engineer

NEO-VISUALS INC.

Booth 1532

1200 Eglington Avenue, East Suite 404
Don Mills, Ontario, Canada M3C 1H9
(416) 443-9811
Bob Munroe
Marketing Manager

Neo-Visuals, producer of real-time, high-level computer animation and design software and turnkey systems, will introduce B-spline modeling and user interface enhancements. The software package, VISHAD, is a device and operating system independent software package developed for a variety of applications, including industrial design, simulation, and pre-press.

NETWORKED PICTURE SYSTEMS

Booth 1028

3960 Freedom Circle
Santa Clara, California 95054
(408) 748-1677
David Newman
Marketing Communications Manager

Networked Pictures Systems will feature PAGE EXPRESS and IMAGE EXPRESS. PAGE EXPRESS,™ a color pre-press system for designing magazines, books and brochures flows text around photographs and graphics, to produce color-separated Scitex tapes and color hardcopy proofs. IMAGE EXPRESS™ is paint software with IMAGE MASTER™ Output Control software for freeze video and scan images at high-resolution, airbrush with optional color licensed by Pantone, Inc. Vector fonts from Bitstream. Create color paper handouts, posters, and 4000 line slides.

NEW ENGLAND TECHNOLOGY GROUP

Booth 1401

840 Memorial Drive
Cambridge, Massachusetts 02139
(617) 497-4881
Phyllis Nei
Marketing Manager

Genesis Technology Group is exhibiting New England Technology Groups' Tech Graphic II computer graphic system. The Tech Graphic II is a user friendly, turnkey system featuring advanced paint, business graphic and video digitizing software. Available output includes analog or digital film recorders, video tape, and thermal or laser printers.

N.I.S.E., INC.

Booth 2675

20018 State Road
Cerritos, California 90701
(213) 860-6708
Roelof R. Jonker
President/General Manager

User Group Contact: Donna Davis
Secretary

N.I.S.E., Inc. will feature two systems: the "Rembrandt" Model 3500F Analog RGB/TTL Photographic Hardcopy system for slides or print film up to 1024x1024 pixel resolution and the "Renoir" Model 3600F High Resolution Digital Recorder camera for slides or prints up to 8"x10."

NOVA GRAPHICS INTERNATIONAL CORPORATION

Booth 3408

1515 Capital of Texas Highway, South #300
Austin, Texas 78746
(512) 327-9300
Joe D. Sims
Vice President of Marketing

Nova Graphics International, whose software products and services are based upon international standards, provides commercial implementations of GKS, CGI and CGM in Fortran, C and ADA. Computing environments range from the PC to supercomputers. Firmware based implementations of NOVA*CGI are provided in partnership with hardware manufacturers.

NUMBER NINE COMPUTER CORPORATION

Booth 2059

725 Concord Avenue
Cambridge, Massachusetts 02138
(617) 492-0999
Will Frentz
Executive Vice President

User Group Contact: Sandy Fusee
Technical Support

Number Nine will display the PEPPER GRAPHICS SYSTEM family of intelligent PC graphics boards. A large library of software toolkits and applications support the series. All PEPPERs have IBM display compatibility; TI 34010 and/or Intel 82786 32-bit processors; 1-MByte of multiported memory with expansion, and up to 16 million possible on-screen colors.

NUMONICS CORPORATION

Booth 2568

101 Commerce Drive
Montgomeryville, Pennsylvania 18936
(215) 362-2766
Morris B. Bowles
National Sales Manager

User Group Contact: Connie S. Heacock
Exhibits Coordinator

Numonics is an established company which designs and produces state-of-the-art digitizers and plotters. Numonics will be exhibiting its single and multi-pen plotters, various digitizers, and the CAD Command™ System. Numonics will also display its Model 2250 Pressure Sensitive Tablet, designed for paint systems and available in various sizes.

OMNICOMP GRAPHICS CORPORATION

Booth 3222

1734 West Belt North
Houston, Texas 77043
(713) 464-2990
Joe G. Rampy
Director of Marketing

Omnicomp Graphics Corporation manufactures and markets high-performance graphics display controllers with integral GKS display list processing. Omnicomp's graphics controllers are available in various ranges to meet the needs of demanding OEM's and systems integrators.

OPTICAL COMPUTER, INC.

Booth 3448

2860 Wilderness Place
Boulder, Colorado 80301
(303) 442-4426
Steven M. Bruny
Director of Marketing

Optical Computer, Inc. (division of Laser Corporation) manufactures the OCI 928 and 927 pen plotters. The 928 is an eight-pen, A-E size high-performance drafting plotter. The recently introduced 927 is a single-pen, A-E size plotter with the same specs as the 928.

ORCHID TECHNOLOGY

Booth 3534

45365 Northport Loop West
Fremont, California 94538
(415) 683-0300
Michelle Sorensen
Marketing Manager

Orchid Technology manufactures PC add-on boards. TurboPGA puts high-performance PGA, EGA, and CGA graphics in one slot. It features Orchid's PGA Palette paint program. TurboEGA combines EGA graphics with a TinyTurbo. PCturbo 286e/dBus EGA has Turbo speed and EGA graphics. Jet 386 and TinyTurbo accelerators speed up your system.

OXBERRY DIVISION OF RICHMARK CAMERA SERVICE INC.

Booth 2273

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

User Group Contact: Alfred Thumim
Vice President, Research and Development

Oxberry features slide and cinemagraphic computer cameras for off-loading all analog and high-resolution digital film recorders. Cameras feature pin registration, bulk-loading, edge-marking and frame counters. All film formats from 16mm through vista-vision are standard. Film recorders presently interfaced include: Matrix, Dunn, Genigraphic, Celco, Management Graphics and Dicomed.

PANASONIC INDUSTRIAL COMPANY, Display Components Division

Booth 1556

2 Panasonic Way
Secaucus, New Jersey 07094
(201) 392-4077
Margaret A. Favara
Manager, Administrative Services

Panasonic Industrial Company will display their full line of high-resolution color and monchrome CRT displays and selected high-resolution color flat-square Cathode Ray Tubes. With sizes ranging from 15" to 21," the products are well-suited for CAD/CAM and computer-aided publishing applications.

PANSOPHIC SYSTEMS INC.

Booth 2058

709 Enterprise Drive
Oak Brook, Illinois 60521
(416) 492-4105, (800) 323-7335
Phil Girouard
Manager of Product Marketing

User Group Contact: Marian Drazic
Marketing Analyst

Pansophic will demonstrate its modular D-PICT Graphics software line for mainframes and minicomputers, and their PC Based Starburst Graphics workstation. Starburst consists of an integrated art, chart, and text graphics software package, and the necessary hardware to design high-resolution 35mm slides and 4"x5" or 8"x10" hardcopy output.

PARALLAX GRAPHICS, INC.

Booth 1663

2500 Condensa Street
Santa Clara, California 95051
(408) 727-2220
Stu Taylor
Product Support Manager

User Group Contact: Stu Taylor
Product Support Manager

Parallax Graphics features high-performance graphics and videographics controllers for Q-bus, VME bus, PC/AT and PC/RT busses and Multibus I. New products to be shown include the 1280 Series for VME bus, plus VT220 terminal emulation, an extended instruction set and X-window support for 1280 Series products.

PERITEK CORPORATION

Booth 1149

5550 Redwood Road
Oakland, California 94619
(415) 531-6500
Joannie Montagne
Customer Service Administrator

User Group Contact: Thomas Birchell
President

Peritek will display their new VCK/VCX series high-resolution color graphics interfaces for the Q-Bus and Unibus. Compatible with the VAX family from MicroVAX II to mainframe VAX's, the new series complements Peritek's existing line of color and monochrome raster graphics controllers, support software and graphics systems.

PHILIPS ELECTRONICS, LTD, ELECTRONIC DISPLAY DIVISIONS

Booth 3531

601 Milner Avenue
Scarborough, Ontario, Canada M1B 1M8
(416) 292-5161
John Neilson
Director of Sales

Hans Vander Van
Manager
(212) 850-5590

The Electronic Display Divisions of Philips are engaged in the development of very high-resolution CRT monochrome and color monitors, computer graphics applications such as: computer graphics workstations, CAD/CAM/CAE workstations, personal computers, computer integrated manufacturing, expert systems, medical diagnostic systems, automotive displays, banking terminals, word processing and intelligent terminals.

PHOTO RESEARCH SPECTRAMETRICS

Booth 1660

3000 North Hollywood Way
Burbank, California 91505-1094
(818) 843-6100
Mike Klein
Applications Engineer

User Group Contact; Mike Klein
Applications Engineer

Photo Research SpectraMetrics manufactures spectroradiometric, photometric and colorimetric instrumentation for the precise measurement of monochrome and color displays. Calculated parameters include, but are not limited to luminance, CIE X, Y, U, V, and spectral radiance. Systems are available for line width and luminance measurements of monochrome displays.

PHOTRON LIMITED

Booth 3638

6-12-16 Jingumae, Shibuyaku
Tokyo, Japan 150
03-486-3471
Kiyoshi Sano
Special Sales

User Group Contact: Kiyoshi Sano
Special Sales

Photron will feature its Frame Scan Converter FSC-64000 which does real-time conversion of high-resolution computer graphics display signals (1280x1024 pix./64 KHz) into an NTSC composite video signal. The Frame Scan Converter GSC-64000 extends the use of computer graphics by feeding real-time converted NTSC video signals to video tape recorders, video discs, video projectors and standard TV monitors.

PICTUREWARE, INC.

Booth 1127

111 N. Presidential Boulevard
Bala Cynwyd, Pennsylvania 19004
(215) 667-0880

PicturePower, is an integrated database product which allows users to incorporate photo-quality images into a database. Included are capabilities to capture, edit and insert pictures into a database. Software interfacing to dBASE III Plus that permits users to add pictures to existing databases or to develop sophisticated dBASE applications which include pictures.

PIXAR

Booth 3208

P.O. Box 13719
San Rafael, California 94913
(415) 499-3600
Tom Porter
Director of Marketing

User Group Contact: Lisa Mackenzie
Marketing Events Manager

PIXAR will demonstrate the Pixar Image Computer™ which brings together elements of image processing and computer graphics. Featuring a large picture memory integrated with a high-speed, programmable processor, the Pixar Image Computer can provide new techniques for visualizing 2-D and 3-D images for their target markets—remote sensing and mapping, design and animation, scientific visualization, medical imaging, graphic arts and seismic imaging.

PIXELINK

Booth 1021

9 Kane Industrial Drive
Hudson, Massachusetts 01749
(617) 562-4803
Roger Trudeau
Vice president, Sales and Marketing

Pixelink is an importer of Philips high-resolution color and monochrome monitors. Pixelink provides custom calibration of monitors to all graphic card or display controllers for use on minis and micros including MAC 2. Pixelink provides sales support to end-users, government, OEMs and educational markets. Full depot repair facilities are available. Custom electrical and mechanical modifications are a speciality.

POLHEMUS NAVIGATION SCIENCES

Booth 2063

P.O. Box 560
Colchester, Vermont 05446
(802) 655-3159
Thomas Knoflick
Marketing Manager

User Group Contact: James Krieg
Program Manager

Polhemus will display their 3SPACE® Digitizer, Tracker and Isotrak® products. These six-degree-of-freedom measurement systems provide both position and orientation of the sensor (stylus), and are used as an input device and an animation device. Enhanced performance of the new Isotrak will also be demonstrated.

POLAROID CORPORATION

Booth 2350

575 Technology Square
Cambridge, Massachusetts 02139
(617) 577-2000
Jeff Seideman
Industrial Publicity Manager

Polaroid Corporation will be demonstrating the FreezeFrame Video Recorder producing instant prints and slides from video; the PalettePlus Computer Image Recorder, producing instant prints and slides from EGA and CGA graphics boards; the Professional Color Image System for 1,000x1,000 images with 29,000 simultaneous colors from any digital source; and RIO software by AT&T Graphic Software Laboratories for taking full advantage of PCIS.

PRECISION IMAGE CORPORATION

Booth 2074

501 Chesapeake Drive
Redwood City, California 94063
(415) 366-8900
Rak Kumar
Vice President, Sales and Service

Precision Image has made a break through in the performance and reliability of color electrostatic plotters with the use of a proprietary drum based design. Precision Image will feature the C448 color electrostatic plotter which produces E-sized drawings in about four minutes. The C448 automatically delivers cut-sheet plots.

PRIME COMPUTER, INC.

Booth 1122

Prime Park
Natick, Massachusetts 01760
(617) 655-8000
Rob Batchelder
Marketing, Engineering & Scientific Products

Prime will demonstrate the first graphics workstation to provide real-time interaction with very complex 3-D solids. PXCL 5500 combines the CPU power needed for compute-intensive applications with fast graphics technology in a single system. The UNIX-based system includes a 5 mips RISC CPU with floating point accelerator, and a graphics subsystem incorporating more than 35 custom-VLSI processors.

PRIOR DATA SCIENCES LTD.

Booth 3528

240 Michael Cowpland Drive
Kanata, Ontario, Canada K2M 1P6
(613) 591-7235
Sally A. Evans
Marketing Assistant

User Group Contact: Malcolm Cocks
Account Manager

PRIOR Data Sciences will feature InterMAPhics and GKS/C. InterMAPhics is an interactive mapping and graphics presentation system for applications including command and control, air traffic control, vessel traffic management and weather presentation. GKS/C is a full implementation of the ANSI/ISO Graphic Kernel System (GKS) standard. Device drivers for PC-DOS, UNIX and VMS environments are available, plus FORTRAN and ANSI 'C' bindings.

PRODUCTIVITY PRODUCTS INTERNATIONAL, INC.

Booth 3340

Glen Road
Sandy Hook, Connecticut 06482
(203) 426-1875
Stacey Wildenberg
Supervisor of Sales Support

PPI,® developer and marketer of an object-oriented environment for C language developers, will introduce the latest component of its software engineering environment. Objective-C® and Vici™ are a new library of portable, reusable software components for building window and icon-oriented, graphical user interfaces. This new library, Objective-C® and Vici,™ can be seen at PPI's booth. PPI and Objective-C are registered trademarks of Productivity Products International, Inc. Vici is a trademark of Productivity Products International, Inc.

PROFESSIONAL PRESS INC.

Booth 1500

921 Bethlehem Pike
Spring House, Pennsylvania 19477
(215) 542-7008
Jeffrey S. Berman
National Sales Manager

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 a 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 2150

One Magnum Pass
Mobile, Alabama 36618
(205) 633-4300
John V. Gully
Director of Marketing

User Group Contact: Donald L. Parker
Vice President, Corporate Technologies and Marketing

QMS, Inc., will exhibit from its line of non-impact laser printers, representatives for its LASERGRAFIX, QMS-PC, KISS and SMART-WRITER families. QMS designs, manufactures, markets and supports laser printers that provide solutions to users printing needs. QMS' line of LASERGRAFIX and PostScript based printers combine complex graphics with multi-font text, for office presentations, correspondence and electronic publishing.

QUANTEL

Booth 1420

655 Washington Boulevard
Stamford, Connecticut 06901
(203) 348-4104
Susan Silvestri
Marketing Administrator

QUANTEL will exhibit several of its image processing systems, used in graphics arts, television and scientific applications. Capabilities being demonstrated include high- and low-resolution creative electronic painting, 3-D picture manipulation in real-time, product package simulation and scientific image processing.

QUANTUM DATA INC.

Booth 1316

2111 Big Timber Road
Elgin, Illinois 60123
(312) 888-0450
Ann Jorgensen
Advertising Manager

Quantum Data Inc. will feature video signal generators with variable scan and pixel rates to 1.5 GHz, for manufacturers and users of video monitors during design and manufacturing.

RAMTEK CORPORATION

Booth 2114

2211 Lawson Lane
Santa Clara, California 95050
(408) 988-2211
Regina Muccillo
Marketing Communicator

User Group Contact: Mark Sanford
Manager Software Support

Ramtek's entries into the imaging and graphics marketplace are the highly configurable 4660 display peripheral and the 4320 graphics terminals. The 4660 facilitates an array of features: 12-bit video lookup table, independent pan/zoom, windowing, film looping and powerful overlays. The 4320 series provides an optimized on-board instruction set called Ramtek Graphics, an optional 3-D instruction set is available.

RASTER TECHNOLOGIES

Booth 2424

Two Robbins Road
Westford, Massachusetts 01886
(617) 692-7900
Katy Patrick
Marketing Specialist

User Group Contact: Whitney Harris
Product Marketing Manager

Raster Technologies, manufacturer of high-performance color computer graphics systems, will be displaying and demonstrating its Model One family of 2-D and 3-D systems. VISEDGE, a 3-D visualization tool, will also be exhibited. Government, R&S, Geophysical and MCAE markets are among those currently using Raster systems.

RON SCOTT, Inc.

Booth 3445

1000 Jackson Boulevard
Houston, Texas 77006
(713) 529-5868
Ron Scott
President

Ron Scott, Inc., features software supporting Cubicomp's PictureMaker,™ AT&T TARGA boards (including VISTA™) and Matrix cameras. The QUtilities™ let PictureMaker™ images be displayed on TARGA boards and imports TARGA images into PictureMaker.™ The Quick Picture Recorder sends a variety of image formats to Matrix QCR/PCR cameras at high speeds and transmits images directly from TARGA boards at high resolution.

SAMPO CORPORATION OF AMERICA

Booth 3626

5550 Peachtree Industrial Boulevard
Norcross, Georgia 30071
(404) 449-6220
George Korzeniewski
Vice President

Sampo Corporation will display their 13″ and 19″ color monitors with high- and medium-resolution; RGBI and analog input; 12,″ 15,″ 17″ and 19″ high-resolution monochrome display monitor chassis; 15.75 KHz—64 KHz horizontal frequency; 12,″ 14,″ 15″ and 19″ high-resolution monochrome display monitors; CRT terminals; and 9″ Liquid Crystal Shutter color display monitors.

SCIENCE—American Association for the Advancement of Science

Booth 2175

1333 H Street, N.W.
Washington, D.C. 20005
(202) 326-6525
Grayce A. Finger
SCIENCE Exhibits Manager

SCIENCE will feature an exhibit of magazines and books of interest.

SEIKO INSTRUMENTS USA, INC.

Booth 2450

1130 Ringwood Court
San Jose, California 95131
(408) 943-9100
Cheryl Landman
Manager, Marketing Communications

Seiko will exhibit the new GR-4400 Series Advanced Raster Display Systems which perform up to 400,000 3-D vector transformations/second and offer dual-resolution color capability. Seiko will also display the CH-5300 Series Color Hardcopiers which produce A/B size color hardcopy on paper or transparency film in up to 4,912 colors, and the Screenplay series of digitizing tablets/tables.

SHIMA SEIKI U.S.A. INC.

Booth 3154

440 Forsgate Drive
Cranbury, New Jersey 08512
(609) 655-4788
Helen Estakhrian
Marketing

Shima Seiki will exhibit its line of SDS turnkey systems which can be configured to have full paint functions, animation functions, digital video effects and 3-D modeling and rendering. The SDS turnkey systems store on Winchester or optical disk and have input options that include color image scanner and any video source. Output is to a film recorder, thermal printer or NTSC signal.

SIGGRAPH '88

North Lobby, Hall 3

Conference Co-chairs
Andrew C. Goodrich
Adele Newton

Exhibits Chair
Carol Byram

SIGGRAPH '88, the 15th Annual Conference on Computer Graphics and Interactive Techniques, meets August 1-5 in Atlanta, Georgia. SIGGRAPH '88 is sponsored by the Association for Computing Machinery's Special Interest Group on Computer Graphics in cooperation with the IEEE Technical Committee on Computer Graphics. In the call for participation at the end of this program, we invite your contribution in making the 1988 conference another success. Poster calendars, buttons and call for participation flyers will be distributed at the booth. For conference information contact: (312) 644-6610; for exhibition information contact: (212) 752-0911.

SILICON GRAPHICS

Booths 1504, 1520

2011 Stierlin Road
Mountain View, California 94043
(415) 960-1980
Craig Olsen
Director, Product Marketing

User Group Contact: Zsuzsanna Molnar
Manager, Technical Marketing

Silicon Graphics will demonstrate high-performance 3-D interactive graphics applications on the IRIS-4D Series, a RISC architecture-based family of superworkstations, and on IRIS 3100 Superworkstations. Demonstrations will include animation, MCAE, visual simulation, image processing, manufacturing simulation and conceptual design. The "Exploratorium" offers participants a "hands-on" introduction to 3-D visual computing.

SLIDETEK INC.

Booth 3516

900 Larkspur Landing Circle, Suite 100
Larkspur, California 94939
(415) 461-5400
Noemi Bolvary
Vice President, Sales and Marketing

User Group Contact: Noemi Bolvary
Vice President, Sales and Marketing

SlideTek, manufacturers of high-performance computer graphics systems for professional procedures of business, scientific and medical visual support materials, will display the ArtStation.™ It features real-time display, electronic tools, simultaneous multi-slide revisions and page composition, charting and illustration functions. The system offers a PC network program, digital image capture/paint, ASCII import, and output to slide, laser print, color print and video.

SOFTWARE NEWS

Booth 1010

Westborough Office Park
1900 W. Park Drive
Westborough, Massachusetts 01581
(617) 366-2031, (800) 225-9218
William A. Gannon
Publisher

Software News is written exclusively for software decision makers in major corporations interested in mainframe, mini and micro software.

SOGITEC

Booth 1224

32, Boulevard de la Republique
92100 Boulogne, France
(1) 46.08.13.13
X. Nicolas

SPACEWARD MICROSYSTEMS LTD.

Booth 1311

22 High Street, Haddenham
Ely, Cambridge England CB6 3XA
44 353 741222
Nigel Hall
Sales Manager

User Group Contact: Martin Brown
Software Director

Spaceward produces systems for illustration graphics on video and slide. Facilities include an advanced but easy to use paint system, video input, 3-D modeling and texture mapping, and high quality typography. Output to video, live or stop-frame animation or to high-resolution slide.

SPRINGER-VERLAG NEW YORK, INC.

Booth 3346

175 5th Avenue
New York, New York 10010
(212) 460-1579
Sherri Kovar
Assistant Exhibits Coordinator
Garrett Kiely
Promotion Manager

Springer-Verlag New York, Inc. publishes a wide variety of books, magazines and journals on computer graphics including such new titles as *Techniques for Computer Graphics* (Rogers/Earnshaw), *Workstations and Publication Systems* (Earnshaw), and the second edition of *Computer Graphics Programming—GKS Graphics Standard* (Enderle/Kansy/Pfaff). Visit the Springer-Verlag booth for a sample copy of *The Visual Computer* and other graphics related journals and magazines.

STEREOGRAPHICS CORPORATION

Booth 1608

217111 East Francisco Boulevard
P.O. Box 2309
San Rafael, California 94901
(415) 459-4500
Mary McDermott
Manager, Marketing Services

StereoGraphics will feature its 3Display™ stereoscopic imaging system which employs the user's unmodified computer as signal source for applications enhanced by 3-D presentation. A ZScreen™ liquid crystal modulator, mounted on the monitor, makes 3-D stereoscopic viewing possible with complete freedom of movement. The ZScreen can be integrated with the Electrohome projector for viewing on a six-foot diagonal screen.

STORAGE CONCEPTS, INC.

Booth 3148

3198—G Airport Loop Drive
Costa Mesa, California 92626
(714) 557-1862
Martin R. Bock
Director of Marketing

Storage Concepts, Inc. manufactures the Concept Series of ultra-high-speed transfer disk systems for real-time-disk-imaging and supercomputer data storage. The Concept 21 and Concept 31 disk systems offer disk transfer rates capable of storing and retrieving images at 30 frames per second. Storage capability per system is over 2.5 gigabytes.

STUDIO BASE 2

Booth 1224

10, rue du NIL
Paris, France 75002
(33-1) 45.08.18.08
Alain Chenais
Export Manager

Studio Base 2, 3-D video animator for advertising, logos and video clips, consultant for computer graphics applications and developer of software for 3-D computer graphics, will feature two software packages: CAMIL-TRACER and CAMIL-VTR. CAMIL-TRACER is a UNIX-based ray-tracer also available under VMS. CAMIL-VTR is a PC-based VTR controller for SONY, BVU and BETACAM.

STUDIO SYSTEMS JOURNAL

Booth 2173

Railroad Square
1880 Santa Barbara Street
San Luis Obispo, California 93401
(805) 543-7394
Donald A. Kassler
Marketing Director/Associate Editor

User Group Contact: William Hood
Editor-in-Chief

Studio Systems Journal is a full-color, bi-monthly tabloid devoted to creative professionals such as graphic artists, architects, and designers who use or plan to use computer-based graphic systems for the preparation of comps, brochures, ads and desktop publishing. The format is one of an educational forum or "living laboratory," from which these potential end-users can gain access to affordable real world applications.

SUMMAGRAPHICS CORPORATION

Booth 2014

777 Commerce Drive
Fairfield, Connecticut 06430
(203) 384-1344
Tom Davies
Product Manager

User Group Contact: George Hesse
Manager, Sales Support

Summagraphics Corporation presents its full line of graphics tablets and electronic mice in a variety of applications including CAD/CAM, mapping, desktop publishing, and presentation graphics. The MM Series features tablet sizes 6″x9,″ 12″x12″ and 12″x18″ with up to 1000 lines per inch selectable resolution. Microgrid II combines high resolution, accuracy and reliability with ergonomic design in five sizes ranging from 17″x24″ to 42″x60.″

SUN MICROSYSTEMS, INC.

Booth 2050, 3522

2550 Garcia Avenue
Mountain View, California 94043
(415) 960-1300
John LoiACONO
Public Relations Specialist

Sun Microsystems, Inc. supplies distributed computing systems based on standards including technical workstations, servers, UNIX, data communication products and networking software. Sun markets workstations and board-level products to OEMs and technical end-users in a variety of markets.

Trancept Systems, a subsidiary of Sun Microsystems, will feature the Trancept TAAC-1, a plug-in Application Accelerator for SUN workstations providing 20-100 times speed up of imaging, graphics and analysis related applications such as simulation, animation and solids modeling. Libraries and a C compiler make it easy to access the TAAC-1's power. In addition, the TAAC-1 leads the industry in high quality, interactive 3-D graphics performance.

SYMBOLICS, INC.

Booth 2002

1401 Westwood Boulevard, 3rd Floor
Los Angeles, California 90024
(213) 478-0681
Ann Newman
Director of Marketing

User Group Contact: Andy Kopra
Senior Technical Staff

Symbolics brings Artificial Intelligence LISP computers to applications like computer animation, image processing and CAD/CAM/CAE. Symbolics offers turnkey animation systems capable of producing high-quality synthetic images in the most advanced projects. Symbolics also offers an image processing development system that combines image understanding with the Pixar Image Computer.

TDI/THOMSON DIGITAL IMAGE & TDI SYSTEMS

Booth 1220

22 rue Hégésippe Moreau
Paris, France 75018
(33) 1—43875858
Denis Schlumberger
Systems Division Marketing Manager

User Group Contact: Carole Scipion
Graphics Division Marketing Assistant Manager

TDI performs graphics services that include: creation and animation of 2-D and 3-D images with high-end special effects for TV, commercials, corporate/scientific films and for the cinema. TDI's Systems Division will present a new hardware and software package for 3-D animated image production, running on 5 mips PC or Silicon Graphics IRIS workstation.

TECHEXPORT, INC.

Booth 1400

244 Second Avenue
Waltham, Massachusetts 02154
(617) 890-6507
James G. Dadmun
President

Techexport, a subsidiary of the Shawmut 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 Techex Group operates through eight subsidiary offices in Europe and distributors throughout the world.

TECHNOLOGY AND BUSINESS COMMUNICATIONS, INC.

Booth 1304

730 Boston Post Road
Sudbury, Massachusetts 01776
(617) 443-4671
Bonnie Kameny
Exhibit Manager

Two new publications will be featured: *The S. Klein Computer Graphics Review*, a quarterly magazine, and the 1987 5th edition of *The S. Klein Directory of Computer Graphics Suppliers*. Also on display will be *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 business graphics.

TECH-SOURCE INC.

Booth 2653

2955 Xenium Lane
Minneapolis, Minnesota 55441
(612) 559-5716
William K. Simons
Director of Marketing

User Group Contact: William K. Simons
Director of Marketing

Tech-Source introduces its Sun-compatible graphics drawing processor kit and will demonstrate its full line of VMEbus-based graphics controllers and high-resolution monitors. Ranging from the high performance (130,000 random vectors/second) GDS-3800 series to the GDS-3600 series, Tech-Source controllers provide up to 24 planes/pixel of 1280x1024 resolution graphics.

TECON, INC.

Booth 3632

14613 N.E. 87th
Redmond, Washington 98052
(206) 881-7551
Gary Brown
Vice President of Marketing

TEST AND MEASUREMENT SYSTEMS, INC.

Booth 1674

2934 Corvin Drive
Santa Clara, California 95051
(408) 720-8877
George Stoeppel
Marketing Manager

User Group Contact: Bryan Rickard
Customer Service Manager

TEAM Systems distributes and markets a complete line of fully "Programmable Video Generators" from the ASTRO VG811 with 120 MHz Dot Clock to the ASTRO VG-850 with a 400 MHz Dot Clock. Also featured will be the Black/White and Gray Scale Hard Copy Video Printers offering 64 levels of grayscales and extremely high-pixel dpi-resolution.

TEXAS INSTRUMENTS

Booth 1352

P.O. Box 1443
Houston, Texas 77251-1443
(713) 274-3568
Ahmed Nawaz
Graphics Marketing Manager

Texas Instruments will exhibit semiconductor components for computer graphics systems including the TMS34010 Graphics System Processor, AS88XX, 32-bit Processing Family, TMS4461 256K Video RAM, TMS34061 Video System Controller and the TMS34070 Color Palette. Demonstrations featuring the 34010 Microsoft Windows driver, DGIS and development tools will be given.

TEXAS MEMORY SYSTEMS, INC.

Booth 1312

9888 Bissonnet, Suite 470
Houston, Texas 77036
(713) 771-8200
Hope Marcotte
Exhibition Coordinator

Texas Memory Systems features the new SAM-800 mass memory system, designed to facilitate cost-effective real-time image processing. The SAM provides 100 MB/sec bandwidth with 0.5 GB chassis capacity and a 16 GB system capacity. Complete turnkey mass memory systems are offered for these computer users: FPS 264, Gould, Concurrent and DEC.

TEXNAI INC.

Booth 1012

#620, 2-1, Udagawa-cho
Shibuya-Ku, Tokyo, Japan 150
(03) 464-6927
Takeo Fukazawa
President

Texnai will demonstrate their high-resolution CCD Scanner, laser memory, intelligent printer buffer, color printer and newly developed FBX24V, a 1024x1024x24-bit frame buffer with NTSC Genlock and Encoder and their PC based fully integrated graphic system with application software including full color paint GIOTTO, ray tracing EMA, and image filling programs. Multi-processing Module MPX68020 which was designed for PC users as a fully optimize ray tracing engine will also be exhibited.

3M, BROADCASTING AND RELATED PRODUCTS DIVISION

Booth 2007

3M Center, 225-4S-10
St. Paul, Minnesota 55144
(612) 733-7914
Dave Bixler
Video Products Manager

3M will be demonstrating the 3-D animation system for the professional video markets. The 3M animation system is based on the Silicon Graphics IRIS 3130 workstation and is available as a total video compatible in/out system. The 3M SILVER video production workstation provides real-time video: digitizing, manipulation, digital effects, colorizing and mirroring. Additional software also provides animation, text and video paint.

TIME ARTS, INC.

Booth 3234

3436 Mendocino Avenue
Santa Rosa, California 95401
(707) 576-7722
Richard Luttrell
Vice President, Sales and Marketing
Scott Gross
Vice President, Research and Design

Time Arts features professional graphics software that runs on Number Nine and TARGA boards, plus 8-, 16- and 32-bit LUMENA systems. Time Arts will show 3-D solids modeling and animation packages; high-resolution output; video and scanned input.

TOSHIBA AMERICA, INC.

Booth 3064

1101A Lake Cook Road
Deerfield, Illinois 60015
(312) 945-1500

Toshiba will exhibit color and monochrome high-resolution monitors and display tubes. The Flat and Square (FS) displays, will be featured. The FS Invar Mask and flatter faceplate achieve superior ergonomics. The new 21" FS 64 KHz color monitor and 21" 80 KHz monochrome monitor will be on display. New Flat and Square CRTs include the 21" .31mm color, 21" monochrome and 15" color with .26mm dot pitch.

TRANCEPT SYSTEMS INC.

See Sun Microsystems, Inc.

Booth 3522

500 Uwharrie Court
Raleigh, North Carolina 27606
(919) 828-7406
Mary C. Whitton
Vice President/Marketing

User Group Contact: Phyllis F. Flynn
Marketing Administrator

TRIUMPH

Booth 1050

1201 San Luis Obispo Avenue
Hayward, California 94544
(415) 487-8300
Terri Williams
Marketing Services

User Group Contact: Bill Menser
Consulting Director of Technical Support

Triumph: Integrated design, analysis, drafting and manufacturing software structured around a full 3-D database. Conceptual design and layout work for applications are enhanced through the use of wireframe models created on AT compatible hardware. Multiple views can be edited simultaneously with 3-D cross hatching in any view or plane.

UNIC SYSTEMES

Booth 1319

108, Boulevard Richard Lenoir
Paris, France 75011
(33-1) 48.05.63.80
Monsieur Sangare
Export Manager

UNIC SYSTEMES will feature SUPER KALI, an ergonomic electrically adjustable stand to support micro CAD systems; digitizers; tablets, A3, A4 format; screens and graphic boards. Also featured, AUTOBAT, civil engineering software specializing in building design. AUTOBAT as composed with AUTOCAD and PROGEFI; database management system; UNITAB, a menu on tablet for AUTOCAD; synthesis, a parametical design software for AUTOCAD.

UNIRAS, INC.

Booth 2360

5429 LBJ Freeway
Suite 650, LB 144
Dallas, Texas 75240
(214) 980-1600
Jan McDaniel
Marketing Services Director

User Group Contact: Jan McDaniel
Marketing Services Director

UNIRAS graphics software features both interactive and subroutine products for mainframe, departmental and workstation environments, UNIRAS products are used to analyze and display complex data for both scientific/engineering and business applications. UNIRAS provides high-quality and high-performance solutions across a wide variety of graphics environments.

UNIVERSITY OF LOWELL

Booth 1300

Computer Science Department
Lowell, Massachusetts 01854
(617) 452-5000, Ext. 2681
Georges Grinstein
Director, Graphics Research Lab and Associate Professor

The University of Lowell will demonstrate its portable software (GKS, IKS), their experimental high-performance Image Processing hardware, their CGI Benchmark Software and their work in Windows.

UNIXSYS INTERNATIONAL

Booth 3433

4340 Almaden Expressway
San Jose, California 95118
(408) 978-1144
Richard L. Davison
President

UNIX professionals will be exhibiting high-performance 32-bit workstations and multi-user systems with extended graphics functionality in a number of engineering, scientific and office automation application environments. Hands on demonstration of three products will be shown with assistance from marketing and technical personnel.

UNIX/WORLD MAGAZINE

Booth 3017

444 Castro Street
Mountain View, California 94041
Ardith Lowell
Marketing Manager
(415) 940-1500

UNIX/WORLD is directed to the multi-user computer systems market. Editorial focuses on multi-user computer systems (i.e., based on UNIX, Xenix, 4.xBSD, Ultrix, etc.) associated peripherals, software and their effects on the use and design of systems. *UNIX/WORLD* features stories on industry, hardware, software and product updates, as well as product reviews and tutorials.

VECTRIX CORPORATION

Booth 2368

2606 Branchwood Drive
Greensboro, North Carolina 27408
(919) 288-0520
J. Michael James
Vice President, Marketing and Sales

Vectrix, manufacturer of high-resolution graphics controllers for the PC computer family, will announce and demonstrate PRESTO. PRESTO is a single board 34010-based controller which retains the 10 million pixel/second line drawing speed of Vectrix's PEPE product.

VERMONT MICROSYSTEMS, INC.

Booth 1232

11 Tigan Street
Winooski, Vermont 05404
(802) 655-2860
Brian C. St. Amour
Technical
Anita Charboneau
Marketing Coordinator

User Group Contact: Sandra E. Layden
Customer Support Representative

Vermont Microsystems will exhibit color graphics processors with resolution from 640x480 to 1280x1000 and running the most popular software application packages including Computervision, AutoCAD and Ventura Publisher. The Page Manager 100 Graphics System for desktop publishing and the newly announced Image Manager-1280 color graphics processor will be highlighted.

VERSACAD CORPORATION

Booth 1628

7372 Prince Drive
Huntington Beach, California 92647
(714) 847-9960
Jennifer Aurand
Product Manager

User Group Contact: Jennifer Aurand
Product Manager

Versacad Corporation, one of the leaders in personal computer CAD, will demonstrate VersaCAD Design, the first and only PC-CAD system to integrate 2-D drafting, 3-D modeling (surface and solids), Bill of Materials, and more. Versacad will also announce and demonstrate a new VersaCAD product (description unavailable at time of printing).

VERSATEC, A XEROX COMPANY

Booth 2214

2710 Walsh Avenue
Santa Clara, California 95051
(408) 988-2800
Annette Stransky
Advertising & Promotion Manager

Versatec will feature the latest in plotting solutions. Versatec has added HPGL, Targa and a new video controller—to expand plotting capabilities. Versatec offers connections to the RT, MicroVAX, Sun, Apollo and a long list of third party software vendors. Ask about how we can provide a wide range of electrostatic or thermal plotting solutions.

VERTIGO SYSTEMS INTERNATIONAL INC.

Booth 2036
b119 West Pender Street
Vancouver, British Columbia, Canada V6B 1S5
(604) 682-0966
Sheila H. Ross
Director—North American Sales

User Group Contact: Siamak Farah
Software Services

The V-2000 family of computer animation products has been designed for animators working in video production, advertising and the film industry. Sophisticated software and hardware and state-of-the-art graphics workstations are integrated to support a quality animation system that meets production demands.

VIDEO MONITORS INCORPORATED

Booth 2666

3833 N. White Avenue
Eau Claire, Wisconsin 54703
(715) 834-7785
J. E. Carpentier
Vice President Sales and Marketing

User Group Contact: Len Stewart
Sales Manager

Video Monitors Incorporated is a pioneer in high-speed raster scan and CRT monitor technology. The company designs and builds product to customer specification and has developed families of products to meet the exacting needs of AI, CAD, CAM, CAE, the Military, Medical and other applications.

VISION 3 D

Booth 1326

34, rue de la Bourdette
Balma, France 31130
(33-1) 61.78.75.75
Monsieur Brunet
Export Manager

VISION 3 D will feature the 3 D VIDEOLASER SYSTEM, a 3-D digitizer with three applications areas: CAD/CAM—digitization of models or objects to link with a CAD system (i.e., bottles, cars); Image Synthesis—objects to digitize (simulation, publicity); and dimensional checking of complex shaped objects (i.e., auto and aeronautical industry).

WASATCH COMPUTER TECHNOLOGY, INC.

Booth 3021

123 E. 2nd South
Salt Lake City, Utah 84111
(801) 575-8043
Mary Ware
Marketing Director

User Group Contact: Lisa Hurst
Service Representative

Wasatch Computer Technology provides a PC based high-resolution graphic workstation. The products being exhibited are the PC-1024 Illustration System, and a number of sub-systems including PC-4096 Presentation Graphics System, for text slides, business charts and the new Wasatch 3-D System. Also being shown are examples from the Full Color Frame Grab software, Wasatch High Resolution Scanner and the interface to Ventura Desktop publishing system.

WAVEFRONT TECHNOLOGIES

Booth 2250

530 East Montecito Street
Santa Barbara, California 93103
(805) 962-8117
Larry Schnur
Director of Marketing

User Group Contact: Kelly Eckberg
National Coordinator

Wavefront Technologies will demonstrate their 3-D Dynamic Imaging System, a system designed for high complexity animation, simulation and rendering. The system is a custom integration of state-of-the-art hardware and proprietary software which includes advanced features such as production speed ray tracing with real shadows and interactive lighting, materials and atmosphere editing.

WEST END FILM, INC.

Booth 3328

1825 Q Street N.W.
Washington, D.C. 20009
(202) 232-7733
Karen D. Miller
Director of Marketing

User Group Contact: Karen D. Miller
Director of Marketing

West End Film, Inc., will exhibit their ARTWORK Environment of software products, tools for a complete graphics studio, for print, slide and video. Exhibits include ARTWORK: a 3-D design package complete with anti-aliasing, texture and reflectance mapping; BRUSHWORK: "paint" package; CHARTWORK: business graphics; PAGEWORK: desktop publishing; and VIDEOWORK: video animation.

THE WINSTED CORPORATION

Booth 3348

9801 James Circle
Minneapolis, Minnesota 55431
(800) 447-2257
Gerald R. Hoska
Vice-President

The Winsted Corporation will feature ergonomically engineered consoles and workstations perfectly suited for computer graphic and animation applications. These compact, space-saving units with adjustable keyboards and digitizer pad shelves conveniently position all components for operator efficiency and comfort. Winsted's tables adjust from 26" to 30" for proper working height to minimize fatigue.

XTAR CORPORATION

Booth 3440

9915 Business Park Avenue, Suite C
San Diego, California 92131
(619) 271-4440
A. J. Miller
President

XTAR will display its line of real-time visualization systems and two new products: the PG1000AT High Speed Graphics Board, designed specifically for the -AT bus and 3DView2I, an interactive real-time visualization system.

ZENITH ELECTRONICS CORPORATION
Booth 3547

1000 Milwaukee Avenue
Glenview, Illinois 60025
(312) 391-7000
Russ Dahl
Product Manager

Zenith will exhibit its Flat Tension Mask Color Monitors and CRTs. The Flat Tension Mask Display is a perfectly flat faced CRT which provides high brightness, resolution and contrast, with a virtually reflection free viewing surface.

ZENOGRAPHICS
Booth 1548

19752 MacArthur Boulevard #250
Irvine, California 92715
(714) 851-6352
Robert E. Romney
President

User Group Contact: Lisa Stella
Marketing Assistant

Zenographics Mirage features software for producing presentation-quality business graphics and graphics arts on an IBM PC. The software supports the full range of business needs from automated chart generation to freehand drawing. Zenographics Metafile connects virtually any other graphics product to Mirage.

ZIFF-DAVIS PUBLISHING COMPANY
Booth 3132

One Park Avenue
New York, New York 10016
(212) 503-5449
Linda Bunis
Trade Show Manager

Ziff-Davis Publishing Company will display: *DIGITAL REVIEW*, a leading DEC-specific newspaper published every other week 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 IBM standard microcomputing providing product reviews and features on implementation of PCs.

BOOTH	ARTIFICIAL INTELLIGENCE
2045	Addison-Wesley Publishing Company
2024	Apollo Computer, Inc.
2442	Chromatics, Inc.
2224	Digital Equipment Corporation
2514 & 2616	Gould Inc., Imaging & Graphics Division
1240	Hughes Aircraft Company
3053	LAZERUS
2166	MASSCOMP
1016	Moniterm
2674	Morgan Kaufmann Publishers, Inc.
1122	Prime Computer, Inc.
2424	Raster Technologies
2050	Sun Microsystems, Inc.
2002	Symbolics, Inc.
2666	Video Monitors Inc.

BOOTH	BUSINESS GRAPHICS SOFTWARE
1112	Advanced Technology Center
1240	American Video Communications, Inc.
2024	Apollo Computer, Inc.
2236	AT&T
3028	AZTEK Incorporated
3630	Circuit Studios, Inc.
3434	ColorGraphics Systems, Inc.
3254	CompuGraphic Corporation
3001	Computer Friends, Inc.
1020	Computer Graphics Laboratories Inc.
2158	Cubicomp Corporation
1321	Dalim
2402	DICOMED Corporation
2224	Digital Equipment Corporation
2027	Dubner Computer Systems, Inc.
2374	FTG Data Systems
1464	General Parametrics Corporation
3016 & 3128	Genigraphics Corporation
2276	Grafpoint
3102	Image Innovation Limited
3428	Imagraph Corporation
3301	Imapro (1986) Corporation
1572	Intel Corporation
2031	Island Graphics
1116	Koh-I-Noor Rapidograph, Inc.
3422	Media Cybernetics, Inc.
1246	Mitsubishi International Corporation
1108	Mitsui & Company (USA) Inc.
1332	National Semiconductor Corporation

BOOTH	BUSINESS GRAPHICS SOFTWARE
3636	National Technical Information Services
3246	Neo-Visuals Inc.
2058	Pansophic Systems Inc.
1122	Prime Computer, Inc.
3516	SlideTek Inc.
1311	Spaceward Microsystems Ltd.
1400	Techexport, Inc.
2360	Uniras, Inc.
3021	Wasatch Computer Technology
3328	West End Film, Inc.
1548	Zenographics

BOOTH	CAD/CAM/CAE
2045	Addison-Wesley Publishing Company
3539	ADEX Corporation
3002	Alias Research Inc.
2024	Apollo Computer, Inc.
2236	AT&T
2524	Benson, A Schlumberger Company
2436	Bruning Computer Graphics
1328	Caption
2442	Chromatics, Inc.
3630	Circuit Studios, Inc.
3254	Compugraphic Corporation
3216	Control Data
1403	Convex Computer Corporation
3642	Definicon Systems Inc.
2224	Digital Equipment Corporation
2649	Dunn Instruments
2260	EIKONIX Corporation (A Kodak Company)
1023	Enter Computer, Inc.
2136	Evans & Sutherland Computer Corporation
2374	FTG Data Systems
3622	General Electric, DVI Technology
2542	General Electric-Silicon Systems Technology Department
1322	Gimeor
2276	Grafpoint
2202	Hewlett-Packard
2142	Hitachi America, Ltd.
2414	Houston Instrument Division of Ametek
3048	HTM (hi-tech Marketing Corporation)
1240	Hughes Aircraft Company
3428	Imagraph Corporation
1626	Integra America Inc.
1572	Intel Corporation

BOOTH	CAD/CAM/CAE
3302	Intelligent Light, Inc.
2560	Interactive Machines, Inc.
2460	KMW Systems Corporation
1116	Koh-I-Noor Rapidograph, Inc.
3316	Kurta Corporation
1476	Lasergraphics, Inc.
1456	LogiGraphics, Inc.
2536	LSI Logic Sciences, Inc.
3443	Maximum Strategy Inc.
1346	MegaScan Technology, Inc.
3040	Meiko Incorporated
1233	Mercury Computer Systems, Inc.
2475	Meret, Inc.
3005	Microfield Graphics, Inc.
1204	Microillusions
2174	Micro Magic
1246	Mitsubishi International Corporation
3231	Mitsui Comtek Corporation
1016	Moniterm
1564	Monitronix Corporation
3202	National Design, Inc.
1332	National Semiconductor Corporation
3246	Neo-Visuals Inc.
2568	Numonics Corporation
3448	Optical Computer, Inc.
1556	Panasonic Industrial Company/Display Components Division
2074	Precision Image Corporation
1122	Prime Computer, Inc.
2150	QMS, Inc.
2114	Ramtek Corporation
2424	Raster Technologies
2450	Seiko Instruments USA, Inc.
1504 & 1520	Silicon Graphics
1608	StereoGraphics Corporation
2014	Summagraphics Corporation
2050	Sun Microsystems, Inc.
2002	Symbolics, Inc.
3522	Trancept Systems Inc.
1319	Unic Systems
2368	Vectrix Corporation
1232	Vermont Microsystems, Inc.
1628	VersaCAD Corporation
2214	Versatec, A Xerox Company
2666	Video Monitors Inc.
1326	Vision 3D
2250	Wavefront Technologies

BOOTH	CARTOGRAPHY
1112	Advanced Technology Center
2524	Benson, A Schlumberger Company
2436	Bruning Computer Graphics
2442	Chromatics, Inc.
2260	EIKONIX Corporation (A Kodak Company)
3416	Floating Point Systems, Inc.
1604	GEMS of Cambridge Ltd.
2542	General Electric-Silicon Systems Technology Department
2514 & 2616	Gould Inc., Imaging & Graphics Division
2276	Grafpoint
1240	Hughes Aircraft Company
2560	Interactive Machines, Inc.
1116	Koh-I-Noor Rapidograph, Inc.
2166	MASSCOMP
3422	Media Cybernetics, Inc.
1346	MegaScan Technology, Inc.
3636	National Technical Information Services
2048	Pansophic Systems Inc.
2150	QMS, Inc.
1608	StereoGraphics Corporation
2014	Summagraphics Corporation
2002	Symbolics, Inc.
2360	Uniras, Inc.
2368	Vectrix Corporation
2214	Versatec, A Xerox Company

BOOTH	COM DEVICES/FILM RECORDERS
3028	AZTEK, Incorporated
2436	Bruning Computer Graphics
3332	CELCO
2224	Digital Equipment Corporation
2649	Dunn Instruments
3049	Dunn Instruments
1464	General Parametrics Corporation
3016 & 3128	Genigraphics Corporation
3302	Intelligent Light, Inc.
1412	Kontron Electronics
2350	Polaroid Corporation

BOOTH	COMMUNICATIONS
2024	Apollo Computer, Inc.
3028	AZTEK, Incorporated
3254	Compugraphic Corporation
3216	Control Data
2224	Digital Equipment Corporation
2268	Eastman Kodak Company
2374	FTG Data Systems
2514 & 2616	Gould Inc., Imaging & Graphics Division
2276	Grafpoint
2460	KMW Systems Corporation
2475	Meret, Inc.
1246	Mitsubishi International Corporation
1332	National Semiconductor Corporation
1122	Prime Computer, Inc.
2050	Sun Microsystems, Inc.

BOOTH	COMPUTER ANIMATION SYSTEMS
3002	Alias Research Inc.
1301	Ampex Corporation
3532	AVAX Graphics, Inc.
3028	AZTEK, Incorporated
1432	BTS (Broadcast Television Systems)
1328	Caption
1325	CFE Compagnie Francaise d'Equipment
2442	Chromatics, Inc.
3630	Circuit Studios, Inc.
3434	ColorGraphics Systems, Inc.
3001	Computer Friends, Inc.
1020	Computer Graphics Laboratories Inc.
1403	Convex Computer Corporation
2158	Cubicomp Corporation
1542	Digital Arts
2027	Dubner Computer Systems, Inc.
2649	Dunn Instruments
1600	Fairlight Instruments Inc.
3622	General Electric, DVI Technology
2542	General Electric-Silicon Systems Technology Department
3016 & 3128	Genigraphics Corporation
2514 & 2616	Gould Inc., Imaging & Graphics Division
3048	HTM (hi-tech Marketing Corporation)
3102	Image Innovation Limited
1626	Integra America Inc.
3302	Intelligent Light, Inc.

BOOTH	COMPUTER ANIMATION SYSTEMS
2560	Interactive Machines, Inc.
2031	Island Graphics
2057	Jupiter
3316	Kurta Corporation
3053	LAZERUS
1456	LogiGraphics, Inc.
1216	Lyon Lamb Video Animation Systems, Inc.
3443	Maximum Strategy Inc.
3040	Meiko Incorporated
2174	Micro Magic
3246	Neo-Visuals, Inc.
2059	Number Nine Computer Corporation
1122	Prime Computer, Inc.
1420	Quantel
2424	Raster Technologies
3445	Ron Scott, Inc.
3154	Shima Seiki U.S.A. Inc.
1504 & 1520	Silicon Graphics
3516	SlideTek Inc.
1311	Spaceward Microsystems Ltd.
1608	StereoGraphics Corporation
3148	Storage Concepts, Inc.
2002	Symbolics, Inc.
1220	TDI (Thomson Digital Image)
1400	Techexport, Inc.
1312	Texas Memory Systems, Inc.
3234	Time Arts, Inc.
2036	Vertigo Systems International Inc.
3328	West End Film, Inc.
3440	Xtar Corporation

BOOTH	CONSULTANTS
1240	American Video Communications, Inc.
2051	Flying Moose Systems & Graphics
3048	HTM (hi-tech Marketing Corporation)
1346	MegaScan Technology, Inc.
1246	Mitsubishi International Corporation
1127	PictureWare, Inc.
3528	PRIOR Data Sciences Ltd.
1304	Technology & Business Communications
3433	Unixsys International
3440	Xtar Corporation

BOOTH	CORE STANDARD SOFTWARE
1112	Advanced Technology Center
2116	MASSCOMP
1122	Prime Computer, Inc.

BOOTH	DESKTOP COMPUTERS
3539	ADEX Corporation
2024	Apollo Computer, Inc.
3548	AST Research Inc.
3254	Compugraphic Corporation
2224	Digital Equipment Corporation
2202	Hewlett-Packard
1572	Intel Corporation
3302	Intelligent Light, Inc.
1412	Kontron Electronics
2116	MASSCOMP
3422	Media Cybernetics, Inc.
3231	Mitsui Comtek Corporation
1016	Moniterm
2568	Numonics Corporation
1127	PictureWare, Inc.
1122	Prime Computer, Inc.
2173	Studio Systems Journal
2050	Sun Microsystems, Inc.
3433	Unixsys International
1232	Vermont Microsystems, Inc.

BOOTH	DISPLAY GENERATORS
3001	Computer Friends, Inc.
2136	Evans & Sutherland Computer Corporation
1604	GEMS of Cambridge Ltd.
3622	General Electric, DVI Technology
2542	General Electric-Silicon Systems Technology Department
1240	Hughes Aircraft Company
1626	Integra America Inc.
1572	Intel Corporation
2560	Interactive Machines, Inc.
2057	Jupiter
1412	Kontron Electronics
3053	LAZERUS
1456	LogiGraphics, Inc.
1346	MegaScan Technology, Inc.
3040	Meiko Incorporated
2475	Meret, Inc.
2124	Metheus Corporation
1332	National Semiconductor Corporation
2059	Number Nine Computer Corporation

BOOTH	DISPLAY GENERATORS
1663	Parallax Graphics, Inc.
1127	PictureWare, Inc.
2114	Ramtek Corporation
2424	Raster Technologies
2450	Seiko Instruments USA, Inc.
1504 & 1520	Silicon Graphics
1311	Spaceward Microsystems Ltd.
1674	Test & Measurement Systems, Inc.
1012	Texnai Inc.
3522	Trancept Systems Inc.
3433	Unixsys International
3440	Xtar Corporation

BOOTH	DRAFTING SYSTEMS
3002	Alias Research Inc.
3630	Circuit Studios, Inc.
3216	Control Data
2224	Digital Equipment Corporation
1023	Enter Computer, Inc.
2276	Grafpoint
2142	Hitachi America, Ltd.
2414	Houston Instrument Division of Ametek
1572	Intel Corporation
1116	Koh-I-Noor Rapidograph, Inc.
3316	Kurta Corporation
1456	LogiGraphics, Inc.
1016	Moniterm
2059	Number Nine Computer Corporation
2074	Precision Image Corporation
1122	Prime Computer, Inc.
2050	Sun Microsystems, Inc.
1628	VersaCAD Corporation

BOOTH	ELECTRICAL/ELECTRONIC SYSTEMS
2224	Digital Equipment Corporation
2648	DYNAIR Electronics, Inc.
2202	Hewlett-Packard
3402	Inmos Corporation
3443	Maximum Strategy Inc.
3618	Measurement Systems, Inc.
2074	Precision Image Corporation
2050	Sun Microsystems, Inc.

BOOTH	ENGINEERING WORKSTATIONS
3539	ADEX Corporation
1112	Advanced Technology Center
3002	Alias Research Inc.
2524	Benson, A Schlumberger Company
2436	Bruning Computer Graphics
1328	Caption
3630	Circuit Studios, Inc.
3216	Control Data
3642	Definicon Systems Inc.
2224	Digital Equipment Corporation
2136	Evans & Sutherland Computer Corporation
3416	Floating Point Systems, Inc.
2276	Grafpoint
2202	Hewlett-Packard
2142	Hitachi America, Ltd.
1240	Hughes Aircraft Company
1013	ICEX, Inc.
1626	Integra America, Inc.
1572	Intel Corporation
2560	Interactive Machines, Inc.
3316	Kurta Corporation
3053	LAZERUS
1456	LogiGraphics, Inc.
2116	MASSCOMP
1346	MegaScan Technology, Inc.
1246	Mitsubishi International Corporation
3231	Mitsui Comtek Corporation
1016	Moniterm
2059	Number Nine Computer Corporation
1122	Prime Computer, Inc.
2114	Ramtek Corporation
2450	Seiko Instruments USA, Inc.
1504 & 1520	Silicon Graphics
1608	StereoGraphics Corporation
2050	Sun Microsystems, Inc.
3433	Unixsys International
2666	Video Monitors Inc.

BOOTH	ERGONOMICS
1240	American Video Communications, Inc.
3028	AZTEK, Incorporated
3540	Karl Gutmann Incorporated
3108	Ikegami Electronics (USA), Inc.
3618	Measurement Systems, Inc.
1246	Mitsubishi International Corporation
1016	Moniterm
3348	The Winsted Corporation

BOOTH	ERGONOMICS–FURNITURE
3540	Karl Gutmann Incorporated
3348	The Winsted Corporation

BOOTH	ERGONOMICS–HARDWARE
3108	Ikegami Electronics (USA), Inc.
3618	Measurement Systems, Inc.
1016	Moniterm

BOOTH	ERGONOMICS–WORKSTATIONS
3028	AZTEK, Incorporated
2224	Digital Equipment Corporation
3540	Karl Gutmann Incorporated
3053	LAZERUS
1246	Mitsubishi International Corporation
3348	The Winsted Corporation

BOOTH	GKS SOFTWARE
1153	Advanced Micro Devices
1112	Advanced Technology Center
2442	Chromatics, Inc.
2224	Digital Equipment Corporation
2514 & 2616	Gould Inc., Imaging & Graphics Division
1013	ICEX, Inc.
2473	I.S.G. Technologies Inc.
2116	MASSCOMP
3202	National Design, Inc.
1332	National Semiconductor Corporation
3408	Nova Graphics International Corporation
2058	Pansophic Systems Inc.
2074	Precision Image Corporation
1122	Prime Computer, Inc.
3528	PRIOR Data Sciences Ltd.
2114	Ramtek Corporation
1504 & 1520	Silicon Graphics
2360	Uniras, Inc.

BOOTH	GRAPHIC DIGITIZERS
2236	AT&T
2502	CalComp
3354	Data Translation, Inc.
2224	Digital Equipment Corporation
2027	Dubner Computer Systems, Inc.
2260	EIKONIX Corporation (A Kodak Company)
2600	GTCO Corporation

BOOTH	GRAPHIC DIGITIZERS
2142	Hitachi America, Ltd.
2414	Houston Instrument Division of Ametek
3302	Intelligent Light, Inc.
2560	Interactive Machines, Inc.
1412	Kontron Electronics
3316	Kurta Corporation
1246	Mitsubishi International Corporation
2059	Number Nine Computer Corporation
2568	Numonics Corporation
1127	PictureWare, Inc.
2063	Polhemus Navigation Sciences
2450	Seiko Instruments USA, Inc.
2014	Summagraphics Corporation
1400	Techexport, Inc.
1012	Texnai Inc.

BOOTH	GRAPHIC DISPLAYS
3539	ADEX Corporation
2024	Apollo Computer, Inc.
2236	AT&T
2502	CalComp
1328	Caption
2442	Chromatics, Inc.
3001	Computer Friends, Inc.
3116	Conrac Corporation, Display Products Group
3354	Data Translation, Inc.
2224	Digital Equipment Corporation
2649	Dunn Instruments
2268	Eastman Kodak Company
1040	Electrohome Limited
2136	Evans & Sutherland Computer Corporation
2542	General Electric-Silicon Systems Technology Department
2276	Grafpoint
1340	GraphOn Corporation
2202	Hewlett-Packard
2142	Hitachi America, Ltd.
3048	HTM (hi-tech Marketing Corporation)
1240	Hughes Aircraft Company
3140	Human Designed Systems, Inc.
1013	ICEX, Inc.
3108	Ikegami Electronics (USA), Inc.
1572	Intel Corporation
3302	Intelligent Light, Inc.
2560	Interactive Machines, Inc.

BOOTH	GRAPHIC DISPLAYS
2473	I.S.G. Technologies Inc.
2057	Jupiter
1412	Kontron Electronics
3053	LAZERUS
2536	LSI Logic Sciences, Inc.
2116	MASSCOMP
1346	MegaScan Technology, Inc.
3040	Meiko Incorporated
2475	Meret, Inc.
2124	Metheus Corporation
1246	Mitsubishi International Corporation
1564	Monitronix Corporation
2059	Number Nine Computer Corporation
3222	Omnicomp Graphics Corporation
1556	Panasonic Industrial Company/Display Components Division
1149	Peritek Corporation
3531	Philips Electronics Ltd, Electronic Display Division
1127	PictureWare, Inc.
1122	Prime Computer, Inc.
2114	Ramtek Corporation
2424	Raster Technologies
3626	Sampo Corporation of America
2450	Seiko Instruments USA, Inc.
1504 & 1520	Silicon Graphics
1608	StereoGraphics Corporation
2050	Sun Microsystems, Inc.
1012	Texnai Inc.
3064	Toshiba America, Inc.
3522	Trancept Systems Inc.
3433	Unixsys International
1232	Vermont Microsystems, Inc.
2666	Video Monitors Inc.

BOOTH	GRAPHICS AIDED DRAFTING
2024	Apollo Computer, Inc.
2524	Benson, A Schlumberger Company
3630	Circuit Studios, Inc.
2224	Digital Equipment Corporation
2142	Hitachi America, Ltd.
2414	Houston Instrument Division of Ametek
1240	Hughes Aircraft Company
3316	Kurta Corporation
1456	LogiGraphics, Inc.
1246	Mitsubishi International Corporation

BOOTH	GRAPHICS AIDED DRAFTING
2059	Number Nine Computer Corporation
1122	Prime Computer, Inc.
2050	Sun Microsystems, Inc.
1628	VersaCAD Corporation
1548	Zenographics

BOOTH	GRAPHICS ARTS SYSTEMS
1470	Aesthedes, Inc.
3002	Alias Research Inc.
1301	Ampex Corporation
2236	AT&T
3532	AVAX Graphics, Inc.
3028	AZTEK, Incorporated
1432	BTS (Broadcast Television Systems)
3630	Circuit Studios, Inc.
3434	ColorGraphics Systems, Inc.
3001	Computer Friends, Inc.
1020	Computer Graphics Laboratories Inc.
2158	Cubicomp Corporation
3642	Definicon Systems Inc.
2402	DICOMED Corporation
1542	Digital Arts
2027	Dubner Computer Systems, Inc.
2649	Dunn Instruments
3622	General Electric, DVI Technology
2542	General Electric-Silicon Systems Technology Department
3016 & 3128	Genigraphics Corporation
3102	Image Innovation Limited
1626	Integra America Inc.
1134	Integra/Mitsubishi International Corporation
1572	Intel Corporation
3316	Kurta Corporation
3053	LAZERUS
1456	LogiGraphics, Inc.
3422	Media Cybernetics, Inc.
2174	Micro Magic
1246	Mitsubishi International Corporation
1028	Networked Picture Systems
2059	Number Nine Computer Corporation
1127	PictureWare, Inc.
1420	Quantel
3154	Shima Seiki U.S.A., Inc.
1504 & 1520	Silicon Graphics
3516	SlideTek Inc.

BOOTH	GRAPHICS ARTS SYSTEMS
1311	Spaceward Microsystems Ltd.
2173	Studio Systems Journal
2002	Symbolics, Inc.
1220	TDI (Thomson Digital Image)
1012	Texnai Inc.
3234	Time Arts, Inc.
3433	Unixsys International
2036	Vertigo Systems International Inc.
3021	Wasatch Computer Technology
2250	Wavefront Technologies
3328	West End Film, Inc.
1548	Zenographics

BOOTH	GRAPHICS STANDARDS PACKAGES
1112	Advanced Technology Center
3216	Control Data
2224	Digital Equipment Corporation
2542	General Electric-Silicon Systems Technology Department
1464	General Parametrics Corporation
1013	ICEX, Inc.
3422	Media Cybernetics, Inc.
1246	Mitsubishi International Corporation
1332	National Semiconductor Corporation
3528	PRIOR Data Sciences Ltd.
2114	Ramtek Corporation
1504 & 1520	Silicon Graphics
3516	SlideTek Inc.
1352	Texas Instruments
2360	Uniras, Inc.

BOOTH	HARDCOPY; PHOTOGRAPHS
1240	American Video Communications, Inc.
2236	AT&T
2158	Cubicomp Corporation
2649	Dunn Instruments
3049	Dunn Instruments
1600	Fairlight Instruments Inc.
1476	Lasergraphics, Inc.
2536	LSI Logic Sciences, Inc.
2675	N.I.S.E., Inc.
2273	Oxberry Division of Richmark Camera Service Inc.
2350	Polaroid Corporation
3445	Ron Scott, Inc.

BOOTH	HARDCOPY; SLIDES
1240	American Video Communications, Inc.
2236	AT&T
2436	Bruning Computer Graphics
3332	CELCO
3001	Computer Friends, Inc.
2158	Cubicomp Corporation
2402	DICOMED Corporation
2649	Dunn Instruments
3049	Dunn Instruments
1600	Fairlight Instruments Inc.
1464	General Parametrics Corporation
3016 & 3128	Genigraphics Corporation
3301	Imapro (1986) Corporation
3302	Intelligent Light, Inc.
1476	Lasergraphics, Inc.
2536	LSI Logic Sciences, Inc.
2675	N.I.S.E., Inc.
2273	Oxberry Division of Richmark Camera Service Inc.
2350	Polaroid Corporation
3445	Ron Scott, Inc.
3516	SlideTek Inc.
1311	Spaceward Microsystems Ltd.
1400	Techexport, Inc.

BOOTH	HARDCOPY; VIDEO PAPER
2236	AT&T
2402	DICOMED Corporation
2575	Gammadata Computer GmbH
1464	General Parametrics Corporation
3016 & 3128	Genigraphics Corporation
2202	Hewlett-Packard
1240	Hughes Aircraft Company
1476	Lasergraphics, Inc.
1216	Lyon Lamb Video Animation Systems, Inc.
2450	Seiko Instruments USA, Inc.
1311	Spaceward Microsystems Ltd.
1012	Texnai Inc.
1674	Test & Measurement Systems, Inc.
2214	Versatec, A Xerox Company

BOOTH	HIGH-PERFORMANCE GRAPHICS PROCESSORS
2530	Advanced Electronics Design, Inc.
1153	Advanced Micro Devices
1470	Aesthedes, Inc.
2024	Apollo Computer, Inc.
2236	AT&T
1432	BTS (Broadcast Television Systems)
1328	Caption
2442	Chromatics, Inc.
3630	Circuit Studios, Inc.
1212	Conographic Corporation
3216	Control Data
1403	Convex Computer Corporation
3308	Cray Research, Inc.
2158	Cubicomp Corporation
3354	Data Translation, Inc.
2224	Digital Equipment Corporation
2136	Evans & Sutherland Computer Corporation
3416	Floating Point Systems, Inc.
3622	General Electric, DVI Technology
2542	General Electric-Silicon Systems Technology
2514 & 2616	Gould Inc., Imaging & Graphics Division
2202	Hewlett-Packard
3048	HTM (hi-tech Marketing Corporation)
3402	Inmos Corporation
1626	Integra America Inc.
1572	Intel Corporation
2560	Interactive Machines, Inc.
2473	I.S.G. Technologies Inc.
2057	Jupiter
2460	KMW Systems Corporation
1412	Kontron Electronics
1476	Lasergraphics, Inc.
3053	LAZERUS
1456	LogiGraphics, Inc.
2536	LSI Logic Sciences, Inc.
2116	MASSCOMP
3228	Matrox Electronic Systems Ltd.
1346	MegaScan Technology, Inc.
3040	Meiko Incorporated
1233	Mercury Computer Systems, Inc.
2475	Meret, Inc.

BOOTH	HIGH-PERFORMANCE GRAPHICS PROCESSORS
2124	Metheus Corporation
3005	Microfield Graphics, Inc.
1246	Mitsubishi International Corporation
3202	National Design, Inc.
1332	National Semiconductor Corporation
2059	Number Nine Computer Corporation
3222	Omnicomp Graphics Corporation
1663	Parallax Graphics, Inc.
1149	Peritek Corporation
1122	Prime Computer, Inc.
2114	Ramtek Corporation
2424	Raster Technologies
2450	Seiko Instruments USA, Inc.
1504 & 1520	Silicon Graphics
3516	SlideTek Inc.
2050	Sun Microsystems, Inc.
2002	Symbolics, Inc.
1400	Techexport, Inc.
2653	Tech-Source Inc.
1352	Texas Instruments
3522	Trancept Systems Inc.
3433	Unixsys International
2368	Vectrix Corporation
1232	Vermont Microsystems, Inc.
3440	Xtar Corporation

BOOTH	HIGH-RESOLUTION GRAPHIC DISPLAY SYSTEMS
3539	ADEX Corporation
2530	Advanced Electronics Design, Inc.
1240	American Video Communications, Inc.
2024	Apollo Computer, Inc.
2236	AT&T
3034	Barco-Industries, Inc.
2442	Chromatics, Inc.
3630	Circuit Studios, Inc.
1212	Conographic Corporation
3216	Control Data
1321	Dalim
3354	Data Translation, Inc.
3642	Definicon Systems Inc.
2224	Digital Equipment Corporation
1040	Electrohome Limited
1426	Electronic Systems Products
2136	Evans & Sutherland Computer Corporation

BOOTH	HIGH-RESOLUTION GRAPHIC DISPLAY SYSTEMS
2542	General Electric-Silicon Systems Technology Department
1464	General Parametrics Corporation
2514 & 2616	Gould Inc., Imaging & Graphics Division
2276	Grafpoint
1340	GraphOn Corporation
2600	GTCO Corporation
2202	Hewlett-Packard
2142	Hitachi America, Ltd.
1240	Hughes Aircraft Company
3108	Ikegami Electronics (USA), Inc.
3428	Imagraph Corporation
1626	Integra America Inc.
1572	Intel Corporation
3302	Intelligent Light, Inc.
2560	Interactive Machines, Inc.
2473	I.S.G. Technologies Inc.
2057	Jupiter
1412	Kontron Electronics
3053	LAZERUS
1456	LogiGraphics, Inc.
2536	LSI Logic Sciences, Inc.
2116	MASSCOMP
3422	Media Cybernetics, Inc.
1346	MegaScan Technology, Inc.
3040	Meiko Incorporated
2475	Meret, Inc.
2124	Metheus Corporation
3508	Mitsubishi Electronics America, Inc.
3231	Mitsui Comtek Corporation
1016	Moniterm
1564	Monitronix Corporation
3202	National Design, Inc.
2059	Number Nine Computer Corporation
3222	Omnicomp Graphics Corporation
1663	Parallax Graphics, Inc.
1149	Peritek Corporation
3531	Philips Electronics Ltd, Electronic Display Division
1122	Prime Computer, Inc.
1316	Quantum Data Inc.
2114	Ramtek Corporation
2424	Raster Technologies
3626	Sampo Corporation of America
2450	Seiko Instruments USA, Inc.

BOOTH	HIGH-RESOLUTION GRAPHIC DISPLAY SYSTEMS
1504 & 1520	Silicon Graphics
3516	SlideTek Inc.
1608	StereoGraphics Corporation
2050	Sun Microsystems, Inc.
2002	Symbolics, Inc.
1400	Techexport, Inc.
2653	Tech-Source Inc.
1012	Texnai Inc.
3522	Trancept Systems Inc.
3433	Unixsys International
2368	Vectrix Corporation
1232	Vermont Microsystems, Inc.
2666	Video Monitors
3021	Wasatch Computer Technology
2250	Wavefront Technologies

BOOTH	IMAGE PROCESSING
1112	Advanced Technology Center
3002	Alias Research Inc.
2236	AT&T
3532	AVAX Graphics, Inc.
3034	BARCO-Industries, Inc.
3254	Compugraphic Corporation
1403	Convex Computer Corporation
3308	Cray Research, Inc.
3354	Data Translation, Inc.
1542	Digital Arts
3049	Dunn Instruments
1324	Evroz Electronique
3344	Flamingo Graphics
3416	Floating Point Systems, Inc.
1604	GEMS of Cambridge Ltd.
3622	General Electric, DVI Technology
3016 & 3128	Genigraphics Corporation
2514 & 2616	Gould Inc., Imaging & Graphics Division
3102	Image Innovation Limited
3428	Imagraph Corporation
3301	Imapro (1986) Corporation
3402	Inmos Corporation
1626	Integra America Inc.
1134	Integra/Mitsubishi International Corporation
1572	Intel Corporation
2473	I.S.G. Technologies Inc.

BOOTH	IMAGE PROCESSING
2057	Jupiter
1412	Kontron Electronics
3053	LAZERUS
1456	LogiGraphics, Inc.
1015	Management Graphics, Inc.
2116	MASSCOMP
3228	Matrox Electronic Systems Ltd.
3443	Maximum Strategy Inc.
3422	Media Cybernetics, Inc.
1346	MegaScan Technology, Inc.
3040	Meiko Incorporated
1233	Mercury Computer Systems, Inc.
2124	Metheus Corporation
1246	Mitsubishi International Corporation
1108	Mitsui & Company (USA) Inc.
1332	National Semiconductor Corporation
2059	Number Nine Computer Corporation
3222	Omnicomp Graphics Corporation
1663	Parallax Graphics, Inc.
1127	PictureWare, Inc.
3208	PIXAR
1420	Quantel
2114	Ramtek Corporation
3445	Ron Scott, Inc.
2050	Sun Microsystems, Inc.
2002	Symbolics, Inc.
1220	TDI (Thomson Digital Image)
1352	Texas Instruments
1012	Texnai Inc.
1312	Texas Memory Systems, Inc.
3522	Trancept Systems Inc.
2360	Uniras, Inc.
2368	Vectrix Corporation

BOOTH	INPUT DEVICES
2670	CH Products
2442	Chromatics, Inc.
3254	Compugraphic Corporation
3354	Data Translation, Inc.
2374	FTG Data Systems
2600	GTCO Corporation
2142	Hitachi America, Ltd.
2414	Houston Instrument Division of Ametek
1104	Howtek Inc.
3048	HTM (hi-tech Marketing Corporation)
3301	Imapro (1986) Corporation

BOOTH	INPUT DEVICES
3302	Intelligent Light, Inc.
2560	Interactive Machines, Inc.
1412	Kontron Electronics
3316	Kurta Corporation
3618	Measurement Systems, Inc.
2568	Numonics Corporation
2063	Polhemus Navigation Sciences
2424	Raster Technologies
2450	Seiko Instruments USA, Inc.
2014	Summagraphics Corporation
1400	Techexport, Inc.
1012	Texnai Inc.

BOOTH	INTERACTIVE GRAPHICS TERMINALS
2024	Apollo Computer, Inc.
3028	AZTEK, Incorporated
3630	Circuit Studios, Inc.
3254	Compugraphic Corporation
3001	Computer Friends, Inc.
3216	Control Data
2224	Digital Equipment Corporation
2136	Evans & Sutherland Computer Corporation
3416	Floating Point Systems, Inc.
2542	General Electric-Silicon Systems Technology Department
2276	Grafpoint
1340	GraphOn Corporation
3048	HTM (hi-tech Marketing Corporation)
1572	Intel Corporation
2560	Interactive Machines, Inc.
2473	I.S.G. Technologies Inc.
1412	Kontron Electronics
2116	MASSCOMP
3422	Media Cybernetics, Inc.
1346	MegaScan Technology, Inc.
2124	Metheus Corporation
2059	Number Nine Computer Corporation
1149	Peritek Corporation
1122	Prime Computer, Inc.
2114	Ramtek Corporation
2424	Raster Technologies
2450	Seiko Instruments USA, Inc.
3154	Shima Seiki U.S.A. Inc.
1504 & 1520	Silicon Graphics

BOOTH	INTERACTIVE GRAPHICS TERMINALS
3516	SlideTek Inc.
2050	Sun Microsystems, Inc.
3522	Trancept Systems Inc.
2666	Video Monitors Inc.

BOOTH	LOW-COST GRAPHICS SYSTEMS
3002	Alias Research Inc.
1240	American Video Communications, Inc.
2024	Apollo Computer, Inc.
2236	AT&T
3630	Circuit Studios, Inc.
3254	Compugraphic Corporation
3001	Computer Friends, Inc.
1020	Computer Graphics Laboratories Inc.
2158	Cubicomp Corporation
3642	Definicon Systems Inc.
2402	DICOMED Corporation
2224	Digital Equipment Corporation
2027	Dubner Computer Systems, Inc.
2649	Dunn Instruments
1600	Fairlight Instruments Inc.
3622	General Electric, DVI Technology
1464	General Parametrics Corporation
3016 & 3128	Genigraphics Corporation
2202	Hewlett-Packard
2142	Hitachi America, Ltd.
3048	HTM (hi-tech Marketing Corporation)
3102	Image Innovation Limited
1626	Integra America Inc.
1572	Intel Corporation
3302	Intelligent Light, Inc.
2473	I.S.G. Technologies Inc.
2031	Island Graphics
2460	KMW Systems Corporation
1412	Kontron Electronics
1476	Lasergraphics, Inc.
3053	LAZERUS
1456	LogiGraphics, Inc.
2536	LSI Logic Sciences, Inc.
3422	Media Cybernetics, Inc.
2124	Metheus Corporation
1204	Microillusions
3202	National Design, Inc.
1028	Networked Picture Systems
2059	Number Nine Computer Corporation
3222	Omnicomp Graphics Corporation

BOOTH	LOW-COST GRAPHICS SYSTEMS
1663	Parallax Graphics, Inc.
1149	Peritek Corporation
1127	PictureWare, Inc.
1122	Prime Computer, Inc.
2114	Ramtek Corporation
2424	Raster Technologies
3516	SlideTek Inc.
1311	Spaceward Microsystems Ltd.
2173	Studio Systems Journal
2050	Sun Microsystems, Inc.
1012	Texnai Inc.
3433	Unixsys International
2368	Vectrix Corporation
1232	Vermont Microsystems, Inc.
2666	Video Monitors Inc.
3328	West End Film, Inc.
3440	Xtar Corporation
1548	Zenographics

BOOTH	MANUFACTURING SYSTEMS
3630	Circuit Studios, Inc.
3216	Control Data
2224	Digital Equipment Corporation
1122	Prime Computer, Inc.

BOOTH	MECHANICAL DESIGN SYSTEMS
2024	Apollo Computer, Inc.
3630	Circuit Studios, Inc.
3216	Control Data
1403	Convex Computer Corporation
2224	Digital Equipment Corporation
3416	Floating Point Systems, Inc.
2202	Hewlett-Packard
2142	Hitachi America, Ltd.
3048	HTM (hi-tech Marketing Corporation)
1626	Integra America Inc.
2059	Number Nine Computer Corporation
1122	Prime Computer, Inc.
1504 & 1520	Silicon Graphics
1608	StereoGraphics Corporation
1628	VersaCAD Corporation

BOOTH	MONITORS
3539	ADEX Corporation
1240	American Video Communications, Inc.
3548	AST Research Inc.
3054	Barco Electronics, Inc.
3034	BARCO-Industries, Inc.
1212	Conographic Corporation
3116	Conrac Corporation, Display Products Group
1040	Electrohome Limited
2202	Hewlett-Packard
2142	Hitachi America, Ltd.
3108	Ikegami Electronics (USA), Inc.
2560	Interactive Machines, Inc.
1346	MegaScan Technology, Inc.
2475	Meret, Inc.
3508	Mitsubishi Electronics America, Inc.
3231	Mitsui Comtek Corporation
1016	Moniterm
1564	Monitronix Corporation
2039	Motorola Inc., Display Systems
1440	NEC Home Electronics
1556	Panasonic Industrial Company/Display Components Division
1149	Peritek Corporation
3531	Philips Electronics Ltd, Electronic Display Division
1122	Prime Computer, Inc.
2424	Raster Technologies
3626	Sampo Corporation of America
1400	Techexport, Inc.
2653	Tech-Source, Inc.
3064	Toshiba America, Inc.
2666	Video Monitors Inc.
3547	Zenith Electronics Corporation

BOOTH	NUMERICAL CONTROL (NC, CNC, DNC)
3630	Circuit Studios, Inc.
3216	Control Data
1122	Prime Computer, Inc.

BOOTH	PIPING SYSTEMS
2542	General Electric-Silicon Systems Technology Department
1204	Microillusions

BOOTH	PLOTTERS
2524	Benson, A Schlumberger Company
2436	Bruning Computer Graphics
1210	Bruning Computer Graphics
2502	CalComp
1023	Enter Computer, Inc.
1348	Equitable Life Leasing
2600	GTCO Corporation
2202	Hewlett-Packard
2142	Hitachi America, Ltd.
2414	Houston Instrument Division of Ametek
1307	Ioline Corporation
1116	Koh-I-Noor Rapidograph, Inc.
3508	Mitsubishi Electronics America, Inc.
2568	Numonics Corporation
3448	Optical Computer, Inc.
2074	Precision Image Corporation
1400	Techexport, Inc.
2214	Versatec, A Xerox Company

BOOTH	PRINTERS
3548	AST Research Inc.
3028	AZTEK, Incorporated
3254	Compugraphic Corporation
3216	Control Data
2224	Digital Equipment Corporation
1348	Equitable Life Leasing
2575	Gammadata Computer GmbH
1104	Howtek Inc.
1476	Lasergraphics, Inc.
1015	Management Graphics, Inc.
3508	Mitsubishi Electronics America, Inc.
1246	Mitsubishi International Corporation
2150	QMS, Inc.
2424	Raster Technologies
2450	Seiko Instruments USA, Inc.
1400	Techexport, Inc.
1674	Test & Measurement Systems, Inc.
1012	Texnai Inc.
2214	Versatec, A Xerox Company

BOOTH	PROJECTORS
1240	American Video Communications, Inc.
1040	Electrohome Limited
1426	Electronic Systems Products
1240	Hughes Aircraft Company
3053	LAZERUS

BOOTH	PROJECTORS
2475	Meret, Inc.
2675	N.I.S.E., Inc.
1608	StereoGraphics Corporation

BOOTH	PUBLICATIONS
1129	Academic Press
2045	Addison-Wesley Publishing Company
2654	AV Video/Montage Publishing, Inc.
2550	Cahners Publishing Company
1622	Computer-Aided Engineering
1208	Computer Graphics Today
2013	Computer Graphics World
2043	Computer Pictures Magazine
2554	The Computer Society of the IEEE
2574	Computer Systems News
2622	Computerworld/Digital News
3431	Information Display
2674	Morgan Kaufmann Publishers, Inc.
1500	Professional Press Inc.
3346	Springer-Verlag New York, Inc.
2173	Studio Systems Journal
1304	Technology & Business Communications, Inc.
3017	UNIX/World Magazine
3132	Ziff-Davis Publishing Company

BOOTH	RESEARCH SYSTEMS
3630	Circuit Studios, Inc.
1403	Convex Computer Corporation
3308	Cray Research, Inc.
2224	Digital Equipment Corporation
2136	Evans & Sutherland Computer Corporation
3416	Floating Point Systems, Inc.
2514 & 2616	Gould Inc., Imaging & Graphics Division
1626	Integra America Inc.
1412	Kontron Electronics
3053	LAZERUS
2116	MASSCOMP
3246	Neo-Visuals Inc.
1127	PictureWare, Inc.
1122	Prime Computer, Inc.
2424	Raster Technologies
2002	Symbolics, Inc.
3522	Trancept Systems Inc.
3440	Xtar Corporation

BOOTH	ROBOTICS
3630	Circuit Studios, Inc.
3354	Data Translation, Inc.
2542	General Electric-Silicon Systems Technology Department
2514 & 2616	Gould Inc., Imaging & Graphics Division
2202	Hewlett-Packard
2560	Interactive Machines, Inc.
1456	LogiGraphics, Inc.
2116	MASSCOMP
1608	StereoGraphics Corporation

BOOTH	SOFTWARE
1112	Advanced Technology Center
3002	Alias Research Inc.
2024	Apollo Computer, Inc.
2236	AT&T
3028	AZTEK, Incorporated
2442	Chromatics, Inc.
3630	Circuit Studios, Inc.
3254	Compugraphic Corporation
3001	Computer Friends, Inc.
1020	Computer Graphics Laboratories Inc.
1212	Conographic Corporation
3216	Control Data
3354	Data Translation, Inc.
2224	Digital Equipment Corporation
3243	Elographics, Inc.
1023	Enter Computer, Inc.
2136	Evans & Sutherland Computer Corporation
3344	Flamingo Graphics
2051	Flying Moose Systems & Graphics
2374	FTG Data Systems
2276	Grafpoint
2142	Hitachi America, Ltd.
1013	ICEX, Inc.
3302	Intelligent Light, Inc.
2560	Interactive Machines, Inc.
2473	I.S.G. Technologies Inc.
2031	Island Graphics
3316	Kurta Corporation
3053	LAZERUS
1456	LogiGraphics, Inc.
3422	Media Cybernetics, Inc.
1204	Microillusions
2174	Micro Magic
1246	Mitsubishi International Corporation

BOOTH	SOFTWARE
1108	Mitsui & Company (USA) Inc.
1332	National Semiconductor Corporation
3636	National Technical Information Services
3246	Neo-Visuals Inc.
1028	Networked Picture Systems
2059	Number Nine Computer Corporation
2058	Pansophic Systems, Inc.
1149	Peritek Corporation
1127	PictureWare, Inc.
1122	Prime Computer, Inc.
3340	Productivity Products International, Inc.
2424	Raster Technologies
3445	Ron Scott, Inc.
3516	SlideTek Inc.
2050	Sun Microsystems, Inc.
1220	TDI (Thomson Digital Image)
1012	Texnai Inc.
3234	Time Arts, Inc.
2360	Uniras, Inc.
1628	VersaCAD Corporation
2250	Wavefront Technologies
3328	West End Film, Inc.
1548	Zenographics

BOOTH	STANDALONE IMAGE PROCESSORS
1301	Ampex Corporation
2524	Benson, A Schlumberger Company
3254	Compugraphic Corporation
3354	Data Translation, Inc.
1604	GEMS of Cambridge Ltd.
2514 & 2616	Gould Inc., Imaging & Graphics Division
1572	Intel Corporation
2473	I.S.G. Technologies Inc.
1412	Kontron Electronics
3053	LAZERUS
1015	Management Graphics, Inc.
3422	Media Cybernetics, Inc.
3040	Meiko Incorporated
1127	PictureWare, Inc.
1420	Quantel
2114	Ramtek Corporation
2002	Symbolics, Inc.
1352	Texas Instruments

BOOTH	TABLETS
2600	GTCO Corporation
2142	Hitachi America, Ltd.
3302	Intelligent Light, Inc.
1412	Kontron Electronics
3316	Kurta Corporation
2568	Numonics Corporation
2424	Raster Technologies
2450	Seiko Instruments USA, Inc.
2014	Summagraphics Corporation
1400	Techexport, Inc.

BOOTH	TURNKEY SYSTEMS
1470	Aesthedes, Inc.
3002	Alias Research Inc.
1240	American Video Communications, Inc.
2236	AT&T
3028	AZTEK, Incorporated
1432	BTS (Broadcast Television Systems)
3434	Colorgraphics Systems, Inc.
3254	CompuGraphic Corporation
3001	Computer Friends, Inc.
1020	Computer Graphics Laboratories Inc.
3216	Control Data
2158	Cubicomp Corporation
3642	Definicon Systems Inc.
2402	DICOMED Corporation
1542	Digital Arts
1604	GEMS of Cambridge Ltd.
2542	General Electric-Silicon Systems Technology Department
3016 & 3128	Genigraphics Corporation
2514 & 2616	Gould Inc., Imaging & Graphics Division
3048	HTM (hi-tech Marketing Corporation)
1013	ICEX, Inc.
3102	Image Innovation Limited
3301	Imapro (1986) Corporation
1626	Integra America Inc.
3302	Intelligent Light, Inc.
1412	Kontron Electronics
3053	LAZERUS
1015	Management Graphics, Inc.
3422	Media Cybernetics, Inc.
1346	MegaScan Technology, Inc.
3246	Neo-Visuals Inc.
1028	Networked Picture Systems
1149	Peritek Corporation

BOOTH	TURNKEY SYSTEMS
1127	PictureWare, Inc.
3528	PRIOR Data Sciences Ltd.
1420	Quantel
3154	Shima Seiki U.S.A. Inc.
3516	SlideTek Inc.
1311	Spaceward Microsystems Ltd.
3021	Wasatch Computer Technology
2250	Wavefront Technologies
3328	West End Film, Inc.
3440	Xtar Corporation

BOOTH	TURNKEY SYSTEMS—HARDWARE
1470	Aesthedes, Inc.
1240	American Video Communications, Inc.
2236	AT&T
3028	AZTEK, Incorporated
1432	BTS (Broadcast Television Systems)
3434	ColorGraphics Systems, Inc.
3254	Compugraphic Corporation
3001	Computer Friends, Inc.
1020	Computer Graphics Laboratories Inc.
3216	Control Data
2158	Cubicomp Corporation
2402	DICOMED Corporation
2542	General Electric-Silicon Systems Technology Department
3016 & 3128	Genigraphics Corporation
2514 & 2616	Gould Inc., Imaging & Graphics Division
1013	ICEX, Inc.
3102	Image Innovation Limited
3301	Imapro (1986) Corporation
1626	Integra America Inc.
3302	Intelligent Light, Inc.
1412	Kontron Electronics
3053	LAZERUS
1015	Management Graphics, Inc.
3422	Media Cybernetics, Inc.
1346	MegaScan Technology, Inc.
3246	Neo-Visuals Inc.
1028	Networked Picture Systems
3516	SlideTek Inc.
1311	Spaceward Microsystems Ltd.
3021	Wasatch Computer Technology
2250	Wavefront Technologies
3440	Xtar Corporation

BOOTH	TURNKEY SYSTEMS—SOFTWARE
1470	Aesthedes, Inc.
2236	AT&T
3028	AZTEK, Incorporated
1432	BTS (Broadcast Television Systems)
3434	ColorGraphics Systems, Inc.
3254	CompuGraphic Corporation
1020	Computer Graphics Laboratories Inc.
3216	Control Data
2402	DICOMED Corporation
1542	Digital Arts
3016 & 3128	Genigraphics Corporation
2514 & 2616	Gould Inc., Imaging & Graphics Division
1013	ICEX, Inc.
3102	Image Innovation Limited
3301	Imapro (1986) Corporation
1626	Integra America Inc.
3302	Intelligent Light, Inc.
1412	Kontron Electronics
3053	LAZERUS
1015	Management Graphics, Inc.
3422	Media Cybernetics, Inc.
1346	MegaScan Technology, Inc.
3246	Neo-Visuals Inc.
1028	Networked Picture Systems
1127	PictureWare, Inc.
3528	PRIOR Data Sciences Ltd.
3154	Shima Seiki U.S.A. Inc.
3516	SlideTek Inc.
1311	Spaceward Microsystems Ltd.
3021	Wasatch Computer Technology
2250	Wavefront Technologies
3440	Xtar Corporation

BOOTH	VIDEO DIGITIZERS & DISPLAYS
1240	American Video Communications, Inc.
2236	AT&T
3001	Computer Friends, Inc.
3216	Control Data
3354	Data Translation, Inc.
1600	Fairlight Instruments Inc.
2575	Gammadata Computer GmbH
2514 & 2616	Gould Inc., Imaging & Graphics Division
1626	Integra America Inc.
3302	Intelligent Light, Inc.
3228	Matrox Electronic Systems Ltd.

BOOTH	VIDEO DIGITIZERS & DISPLAYS
3422	Media Cybernetics, Inc.
2475	Meret, Inc.
1246	Mitsubishi International Corporation
2059	Number Nine Computer Corporation
1663	Parallax Graphics, Inc.
1127	PictureWare, Inc.
1311	Spaceward Microsystems Ltd.
1400	Techexport, Inc.

BOOTH	VIDEO DISCS
1301	Ampex Corporation
3216	Control Data
3148	Storage Concepts, Inc.

BOOTH	VIDEO PROJECTORS
1240	American Video Communications, Inc.
3054	Barco Electronics, Inc.
1040	Electrohome Limited
1426	Electronic Systems Products
2102	General Electric-PDPO
1240	Hughes Aircraft Company
3053	LAZERUS
2475	Meret, Inc.
1608	StereoGraphics Corporation

BOOTH	VIDEO TAPE RECORDERS
1301	Ampex Corporation
3302	Intelligent Light, Inc.

BOOTH	MISCELLANEOUS
	ADD-ON GRAPHIC BOARDS
3534	Orchid Technology
	ANNUAL COMPUTER GRAPHICS TRADESHOW & CONFERENCE
3546	Computer Graphics New York '88
	APPLICATION ACCELERATORS
1233	Mercury Computer Systems, Inc.
3522	Trancept Systems Inc.
	BIOMEDICAL SIMULATION EDUCATION PRE-PRESS
3246	Neo-Visuals Inc.
	BOOKS & MAGAZINES
2045	Addison-Wesley Publishing Company
2175	Science-American Association for Advancement of Science

BOOTH	MISCELLANEOUS
	CAMERAS; HDTV
3108	Ikegami Electronics (USA), Inc.
	CCIR 601 ENCODERS & DECODERS
1432	BTS (Broadcast Television Systems)
	COLORGRAPHICS PROCESSORS; GRAPHICS SYSTEMS FOR DESKTOP PUBLISHING
1232	Vermont Microsystems, Inc.
	COMPUTER ANIMATION SOFTWARE
1224	Studio Base 2
	COMPUTER/VIDEO INTERFACE
3638	Photron Limited
	CONFERENCES; ASSOCIATIONS
1662	National Computer Graphics Association
	DATA ACQUISITION SYSTEMS
2116	MASSCOMP
	DATA FILES; DATA BASES
3636	National Technical Information Services
	DATA GRAPHICS PROJECTORS; PORTABLE REAR PROJECTION SYSTEMS
1240	American Video Communications, Inc.
	DESKTOP PUBLISHING
2031	Island Graphics
3328	West End Film, Inc.
	DIGITAL DISK RECORDER–A60, A64
3144	Abekas Video Systems, Inc.
	DISPLAY MEASUREMENT INSTRUMENTATION
1660	Photo Research SpectraMetrics
	ELECTRONIC IMAGE DISPLAY
2268	Eastman Kodak Company
	ELECTRONIC PUBLISHING
3254	Compugraphic Corporation

BOOTH	MISCELLANEOUS
	ELECTROSTATIC PLOTTERS; COLOR AND MONOCHROME
2074	Precision Image Corporation
	ENCODERS; DECODERS; SYNC GENERATORS
2652	Lenco, Inc., Electronics Division
	FIBER OPTIC VIDEO SYSTEMS
2475	Meret, Inc.
	FILM RECORDERS
1476	Lasergraphics, Inc.
2273	Oxberry Division of Richmark Camera Service Inc.
	FONTS (OUTLINES & BITMAPS)
3344	Flamingo Graphics
	GRAPHICS BOARDS
3548	AST Research Inc.
	GRAPHICS COMPONENTS
3402	Inmos Corporation
	GRAPHICS INTEGRATED CIRCUITS
1572	Intel Corporation
	GRAPHICS TERMINAL EMULATOR
1112	Advanced Technology Center
	HARDCOPY–CINEMAGRAPHIC
2273	Oxberry Division of Richmark Camera Service, Inc.
	HIGH-PERFORMANCE MASS MEMORY
1312	Texas Memory Systems, Inc.
	HIGH-RESOLUTION DIGITAL FILM RECORDER
3049	Dunn Instruments
	HIGH-RESOLUTION GRAPHIC CONTROLLER BOARDS
3428	Imagraph Corporation
	HIGH-SPEED CO-PROCESSORS
1233	Mercury Computer Systems, Inc.
	IMAGE FORMAT CONVERSION
3445	Ron Scott, Inc.

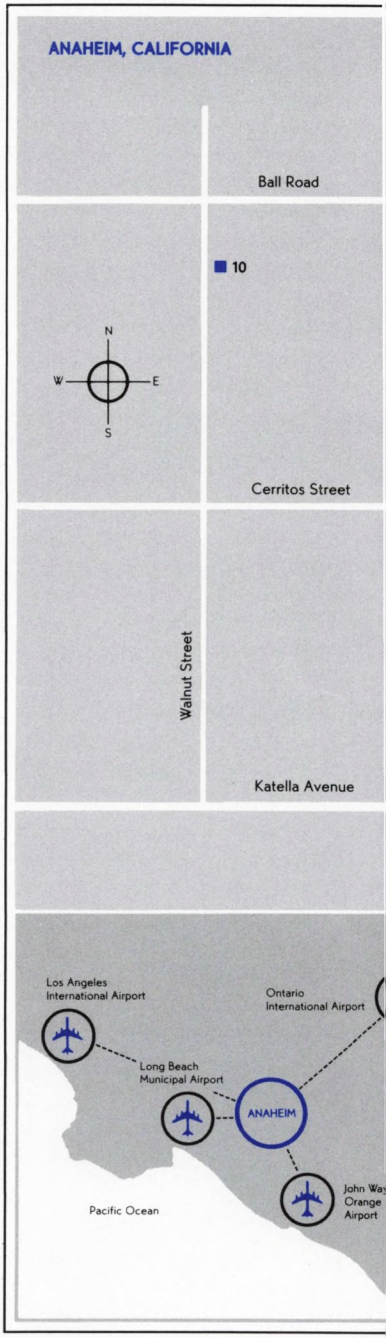
BOOTH	MISCELLANEOUS
	INSTANT FILMS
2350	Polaroid Corporation
	INTELLIGENT HIGH-SPEED DISK SUBSYSTEM
3443	Maximum Strategy Inc.
	INTERACTIVE VIDEO, AUDIO & GRAPHICS
3622	General Electric, DVI Technology
	INTERMAPHICS
3528	PRIOR Data Sciences Ltd.
	LASER PRINTERS
2150	QMS, Inc.
	LEASING/FINANCING
1348	Equitable Life Leasing
	LIGHT AND COLOR TEST INSTRUMENTATION
2053	Minolta Corporation
	MEDICAL IMAGING SYSTEMS; REAL-TIME 3-D GRAPHICS SYSTEMS
2473	I.S.G. Technologies Inc.
	MEDICAL IMAGE PROCESSING
1412	Kontron Electronics
	MULTI-USER SYSTEMS
3028	AZTEK, Incorporated
	OEM DISPLAY COMPONENTS
1556	Panasonic Industrial Company/Display Components Division
	OUTPUT DEVICES—PLOTTERS
2436	Bruning Computer Graphics
	PAINT SYSTEMS
3434	ColorGraphics Systems, Inc.
2031	Island Graphics
	PARALLEL PROCESSING
3040	Meiko Incorporated
	PHOTOGRAPHIC COLOR SCANNERS
3301	Imapro (1986) Corporation

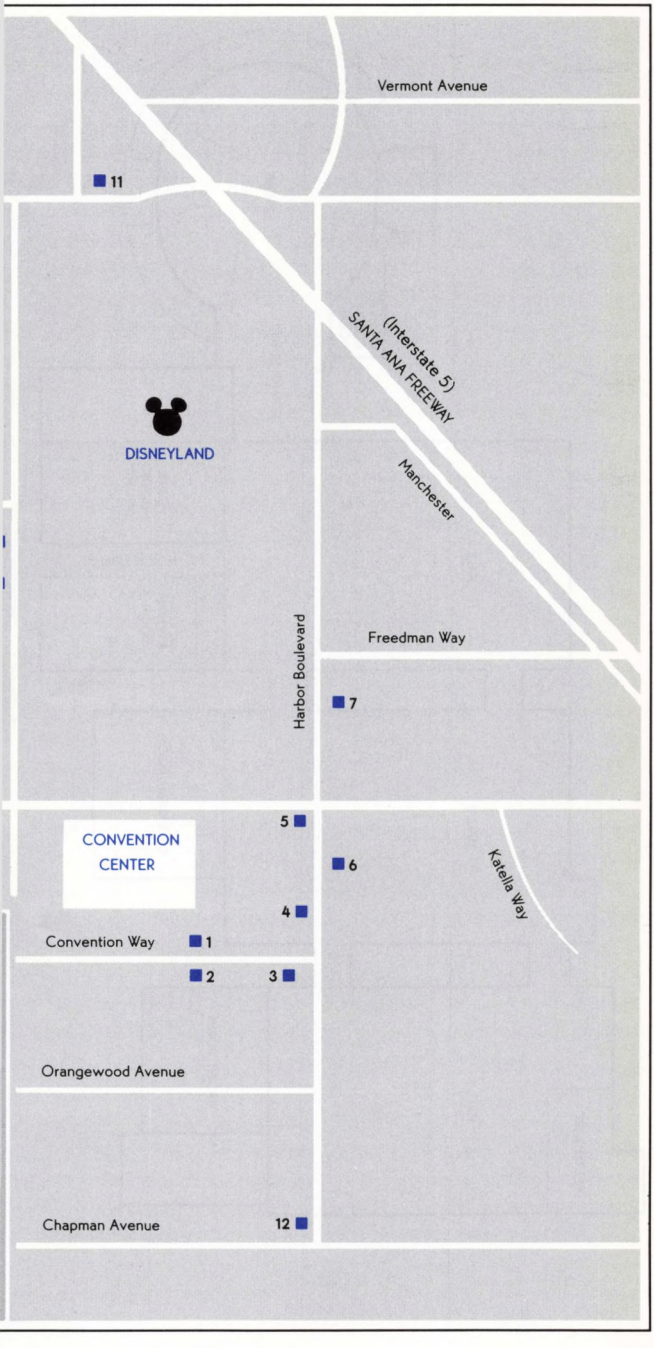
BOOTH	MISCELLANEOUS
	PLOTTER SUPPLIES
1210	Bruning Computer Graphics
3247	Graphic Controls Corporation
1116	Koh-I-Noor Rapidograph, Inc.
	PROFESSIONAL ASSOCIATION
2554	The Computer Society of the IEEE
	RASTER/VECTOR MIXERS
2560	Interactive Machines, Inc.
	REALTIME VISUALIZATION SYSTEMS
3440	Xtar Corporation
	RESISTIVE MEMBRANE TOUCH SCREENS; CONTROLLERS; INSTALLATION
3243	Elographics, Inc.
	SCANNERS
2414	Houston Instrument Division of Ametek
	STEREOSCOPIC 3-D VIEWING SYSTEMS
1608	StereoGraphics Corporation
	SUPERCOMPUTERS
3308	Cray Research, Inc.
	SYSTEMS/HARDWARE, PRINTED CIRCUIT BOARDS
2468	Multiwire Division/Kollmorgen Corporation
	TEKTRONIX EMULATION SOFTWARE
2276	Grafpoint
	TELEVISION GRAPHICS; SPECIAL EFFECTS
1420	Quantel
	TERMINAL EMULATION SOFTWARE
2374	FTG Data Systems
	TEST EQUIPMENT; VIDEO SIGNAL GENERATORS
1316	Quantum Data Inc.

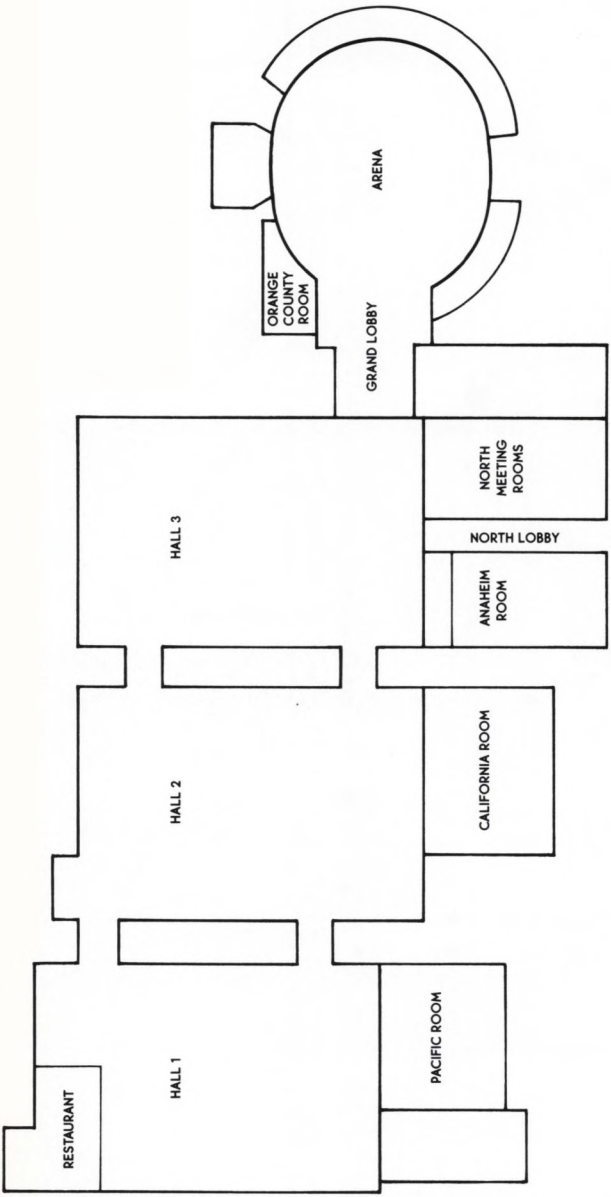
BOOTH	MISCELLANEOUS
	THIRTY-TWO BIT COMPUTERS; PC ADD-ON SYSTEMS
3642	Definicon Systems Inc.
	3-D SUPERWORKSTATION; 3-D GRAPHICS WORKSTATION
1504 & 1520	Silicon Graphics
	3-D VISUAL SIMULATION SYSTEM
1020	Computer Graphics Laboratories Inc.
	VIDEO GENERATORS
1674	Test & Measurement Systems, Inc.
	VIDEO INTERFACES
1656	Graftel Systems, Inc.
	VIDEO MULTIPLEXERS; RUGGEDIZED MICROCOMPUTERS
2047	KMS Advanced Products, Inc.
	VIDEO PROJECTOR STANDS AND ACCESSORIES
3432	Chief Manufacturing Inc.
	VIDEO RBG PROCESSORS WITH MULTIPLEXING
1246	Mitsubishi International Corporation
	VIDEO TAPE CONTROLLER
2002	Symbolics, Inc.
	VISUAL DATABASE
1127	PictureWare, Inc.

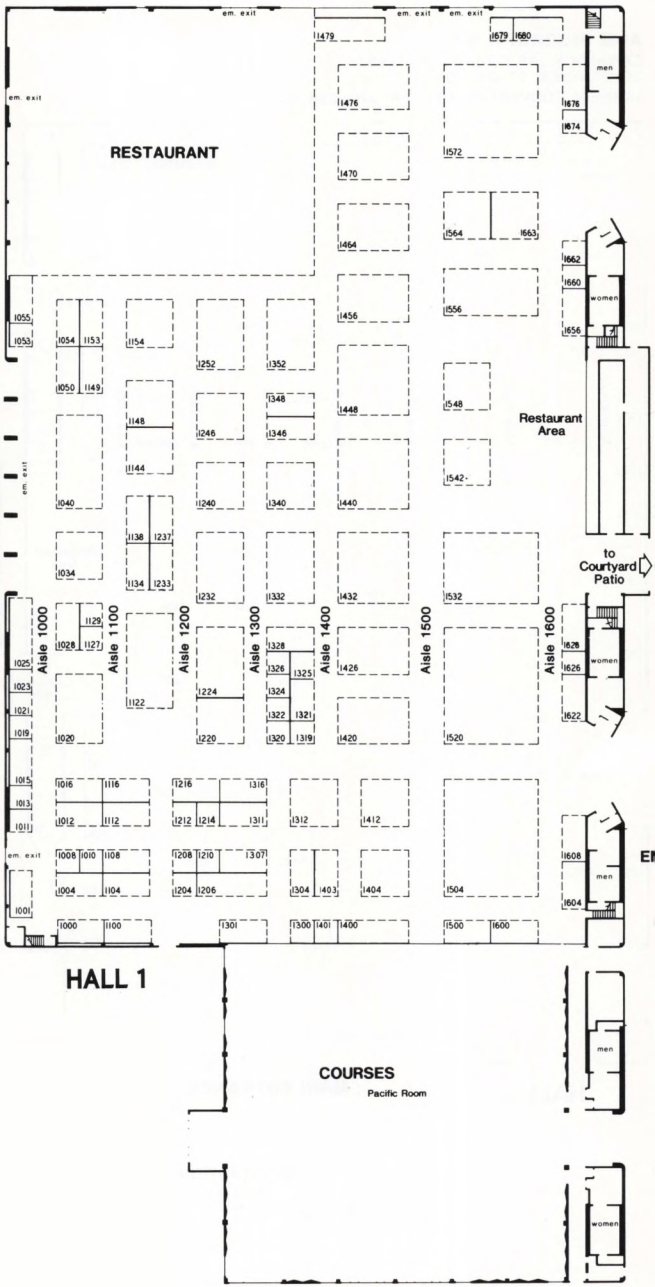
HOTEL MAP
FLOOR PLANS

MAP CODE	HOTEL
1	Anaheim Hilton & Towers
2	Anaheim Marriott
3	Quality Inn
4	Inn at the Park
5	Jolly Roger Inn
6	Holiday Inn Anaheim
7	Hyatt Anaheim
8	Emerald of Anaheim
9	Disneyland Hotel
10	Conestoga Hotel
11	Sheraton Anaheim
12	Alicante Princess




Vermont Avenue
11
(Interstate 5)
SANTA ANA FREEWAY
DISNEYLAND
Manchester
Freedman Way
Harbor Boulevard
7
CONVENTION CENTER
5
6
Katella Way
4
Convention Way
1
2
3
Orangewood Avenue
Chapman Avenue
12


ARENA
ORANGE COUNTY ROOM
GRAND LOBBY
NORTH MEETING ROOMS
HALL 3
NORTH LOBBY
ANAHEIM ROOM
CALIFORNIA ROOM
HALL 2
PACIFIC ROOM
HALL 1
RESTAURANT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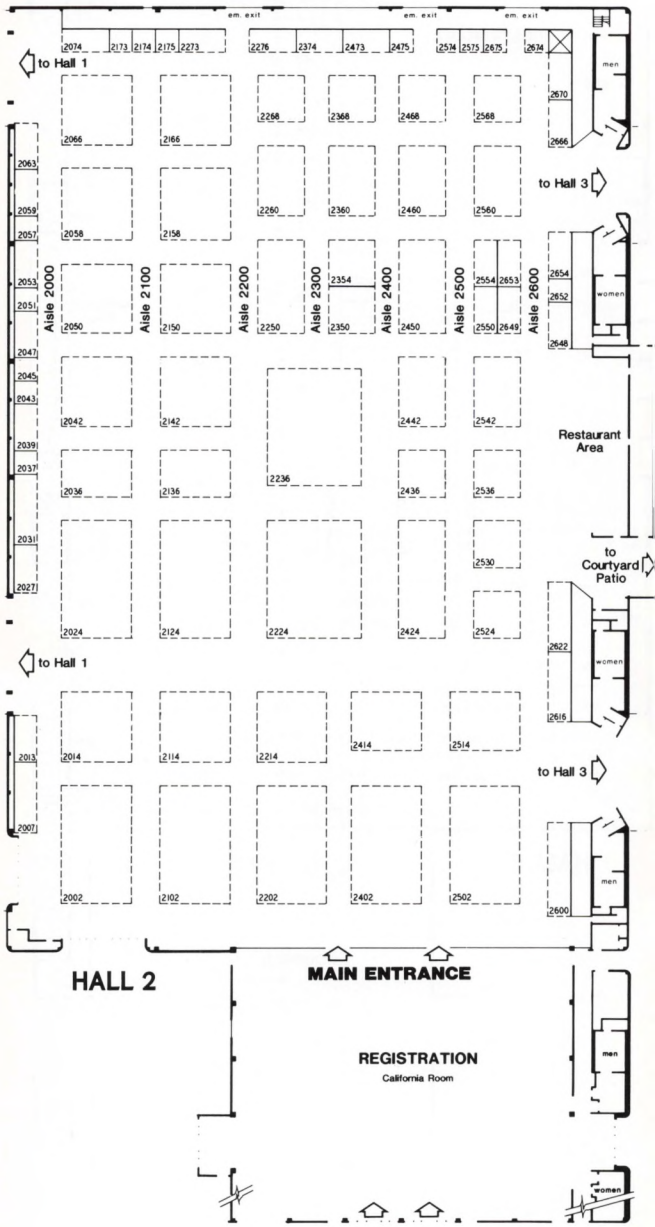
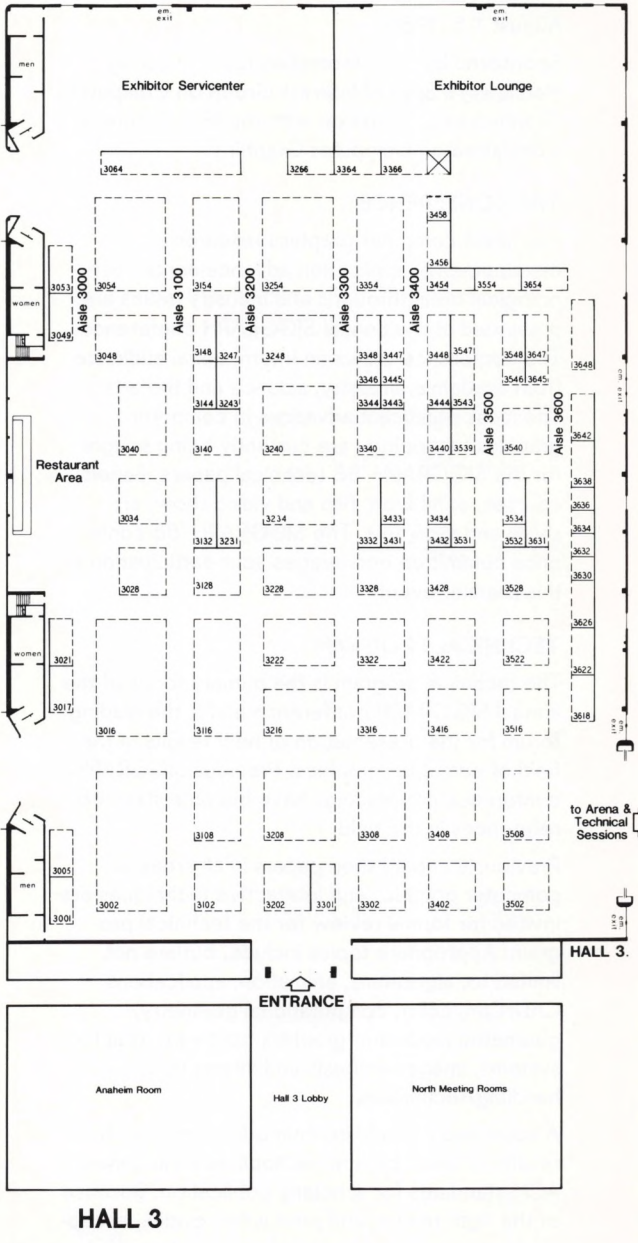
RESTAURANT
men
women
Restaurant Area
to Courtyard Patio
Aisle 1000
Aisle 1100
Aisle 1200
Aisle 1300
Aisle 1400
Aisle 1500
Aisle 1600
HALL 1
COURSES
Pacific Room
men
women

ACM SIGGRAPH '87
EXHIBITION: JULY 28, 29, 30, 1987
CONFERENCE: 27-31, 1987
ANAHEIM CONVENTION CENTER ANAHEIM, CA

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men
Exhibitor Servicenter
Exhibitor Lounge
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Aisle 3000
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Aisle 3100
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Aisle 3200
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Aisle 3300
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Restaurant Area
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3132
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3128
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3328
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women
3021
3017
3016
3116
3222
3216
3322
3316
3422
3416
3522
3516
men
3005
3001
3002
3108
3102
3208
3202
3301
3308
3302
3408
3402
3508
3502
to Arena & Technical Sessions
HALL 3
ENTRANCE
Anaheim Room
Hall 3 Lobby
North Meeting Rooms
HALL 3

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.

THE CONFERENCE

The latest computer graphics research developments, application advancements, technological breakthroughs and industry issues are presented at the annual SIGGRAPH conference. The conference draws an international audience from academia, industry, science and the arts. The most significant advances in computer graphics technology are currently being sought for the SIGGRAPH '88 technical papers, panels, courses, exhibition, film and video show, art show and slide sets. The SIGGRAPH '88 conference committee encourages your participation in this premier event.

TECHNICAL PROGRAM

The technical program is the primary focus of the annual SIGGRAPH conference and is the leading forum for the presentation of new results in the field of computer graphics. Previous SIGGRAPH conference proceedings have become standard references in the field.

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

A submission should contain original research results or describe a novel application and meet ACM standards for 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.

Papers should include a 100 to 300 word abstract, explain how the reported results relate to other 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 presented are correct 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 unformatted, double-spaced, typed pages.

Five copies of each paper must be received by Tuesday, January 12, 1988. Papers not in the technical program office at that time will not be reviewed. Papers which clearly do not meet SIGGRAPH's standards for applicability, originality, completeness or page length may be rejected without review. Acceptance notification will be by late March 1988 and final, camera-ready papers will be due in mid-May 1988.

One copy of video or film material integral to the paper should accompany the paper. All such material will be returned. It is suggested that video material be restricted to VHS or ¾" format, with the former as a first choice.

Since the technical program office is in Canada, all material submitted from outside Canada must have the statement "Scientific Technical Matter —No Commercial Value" on the outside of the envelope or courier's package (otherwise customs delays may occur). Be sure to allow sufficient time for material to reach the technical program office, especially if using regular mail.

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.

Send technical program submissions to:

John C. Dill
SIGGRAPH '88 Technical Program Chair
Microtel Pacific Research
8999 Nelson Way
Burnaby, B.C., Canada V5A 4B5
(604) 293-5737
jdill@mprvaxa

Contact: Ann Merchant
(604) 732-5086

TECHNICAL PROGRAM COMMITTEE

Alan H. Barr
California Institute of Technology

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Jeffrey Lane
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University of Utah

Rob Pike
AT&T Bell Laboratories

Turner Whitted
Numerical Design, Ltd.

*Coordinator of an effort regarding a small number of invited papers to be presented at SIGGRAPH '88. The papers will be published in the proceedings.

PANELS

Proposals are invited for panel sessions at SIGGRAPH '88. Accepted panels will be presented in parallel with the technical papers. Panels will be selected according to their originality, timeliness, general interest to the graphics community, the proposed membership and the likelihood of a spirited presentation and discussion. Successful proposals will involve no more than five panelists, including the chair.

Some appropriate themes for a panel are current controversies in computer graphics, emerging concepts in hardware and software, applications overviews, novel techniques for display and interactions, and speculation on the future of computer graphics.

All panel sessions will be recorded and transcribed for subsequent distribution to technical program attendees. Panel members will be asked to agree to publication of their remarks and visual materials.

A panel proposal should be no more than two pages in length. It should describe the topic and the contribution that each panelist is expected to make. All panel members should be completely identified with name, affiliation, address and phone number. Five copies of each panel proposal must be received by Friday, November 13, 1987. No late submissions will be considered. Acceptance notification will be made in mid-March 1988.

Send panel proposals to:

Richard L. Phillips
SIGGRAPH '88 Panels Chair
Los Alamos National Laboratory
P.O. Box 1663, MS B-272
Los Alamos, NM 87545
(505) 665-1343
rlp@lanl.gov

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.

COURSES

Proposals are invited for courses to be presented at the SIGGRAPH '88 conference. The courses will each be one day (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.

Courses will be divided into beginning, intermediate and advanced levels, and will cover a wide variety of topics associated with computer graphics and interactive techniques. Courses complement the other SIGGRAPH conference activities by providing more depth in particular topic areas.

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 and proposed speakers. Selections will be based on the outline and the quality of the offering. The number of courses that can be accepted is limited by the number of available rooms in the Georgia World Congress Center.

Five copies of the proposal must be received by the courses committee by Friday, November 13, 1987. Course chairs will be notified of the decision of the reviewers during the first week of January 1988.

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. Send course submissions to:

Michael J. Bailey
SIGGRAPH '88 Courses Chair
Megatek Corporation
9645 Scranton Road
San Diego, CA 92121
(619) 455-5590
sdcsvax!sdcc6!megatek!mjb

EXHIBITION

Leading designers and manufacturers of the most advanced computer graphics products will display the state of the art in hardware, software, applications and systems at the SIGGRAPH '88 exhibition. The exhibition has gained an international reputation as the place to view today's most sophisticated graphics systems. SIGGRAPH attendees will 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. The site of this year's exhibition, the newly expanded Georgia World Congress Center, is one of the most impressive convention centers in the world.

For more information about the exhibition, contact:

SIGGRAPH '88 Exhibition Management
Robert T. Kenworthy, Inc.
866 United Nations Plaza
New York, NY 10017
(212) 752-0911

FILM AND VIDEO SHOW

The best efforts in computer animation from the previous year culminate in the rich excitement of the film and video show. To facilitate those efforts, and to allow the jury to screen the highest quality work possible, the deadline for entries in 1988 will be Friday, May 27. Acceptance will be based on technical innovation, creativity, production quality and pure viewability.

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

A guide for contributors will be available in early 1988. You are cordially invited to participate.

For further information please contact:

Amie Slate
SIGGRAPH '88 Film and Video Show Chair
Cubicomp
21325 Cabot Boulevard
Hayward, CA 94545
(415) 887-1300

Telex: 294295
pyramid!cubi!amie

ART SHOW

The SIGGRAPH '88 art show will focus on real-time, interactive computer environments. Computer-generated fine art and video animations emphasizing new directions will also be on display.

The proposal deadline date for interactive computer environments is Tuesday, December 1, 1987. Fine art and video animation entries are due Tuesday, March 1, 1988.

The art show slide set will document the fine art component of the art show. The deadline for submissions is Tuesday, March 1, 1988.

For further information, please contact:

Lisa Fremont
SIGGRAPH '88 Art Show Administrator
9325 N. Oak Park
Morton Grove, IL 60653
(312) 470-8905

TECHNICAL SLIDE SETS

The state of the art in computer graphics is represented by the technical slide set. The collection of 35mm slides will reflect the technological advances of the past year in hardware and software. Slides are solicited which demonstrate new or improved techniques, algorithms and procedures. Slides representing research and work in progress may also be submitted. Selection will be based upon technical as well as visual merit. The deadline for submissions is Friday, March 25, 1988. Early submissions will be considered for conference promotional pieces and advertising by the conference committee. Slide submission forms can be found in *Computer Graphics*, Vol. 21, No. 5, or may be obtained by contacting the slides chair.

For further information concerning slides, please contact:

Bruce Eric Brown
SIGGRAPH '88 Slides Chair
WANG Laboratories, Inc.
One Industrial Avenue
Lowell, MA 01851
(617) 967-4297

SIGGRAPH '88 CONFERENCE COMMITTEE

CONFERENCE CO-CHAIRS

Andrew C. Goodrich
University of Michigan

Adele Newton
University of Waterloo

CONFERENCE COORDINATOR

Linda Norton
University of Waterloo

TECHNICAL PROGRAM—PAPERS

John C. Dill
Microtel Pacific Research

PANELS

Richard L. Phillips
Los Alamos National Laboratory

COURSES

Michael J. Bailey
Megatek Corporation

EXHIBITS

Carol Byram
Cubicomp

FILM AND VIDEO SHOW

Amie Slate
Cubicomp

ART SHOW

Lucy Petrovich

AUDIO/VISUAL

Michelle L. Amato
Northeastern University

Maria Palazzi
Rutgers University

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MERCHANDISE

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AT&T Conversant Systems

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The Anderson Report

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National Film Board of Canada

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TRW

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GeoQuest Systems Inc.

STUDENT VOLUNTEERS

Eric Bosch
University of Waterloo

TECHNICAL SLIDE SETS

Bruce Eric Brown
WANG Laboratories, Inc.

TREASURER

Steve Van Frank
Lynxys

SIGGRAPH VICE CHAIR FOR CONFERENCE PLANNING

James J. Thomas

ACM SIGGRAPH CONFERENCE COORDINATOR

Betsy Johnsmiller

CONFERENCE MANAGEMENT/ PUBLIC RELATIONS

Smith, Bucklin & Associates, Inc.

EXHIBITION MANAGEMENT

Robert T. Kenworthy, Inc.

GRAPHIC DESIGN

The Watt Group

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.

TECHNICAL PAPERS:

January 12, 1988

John C. Dill
SIGGRAPH '88 Technical Program Chair
Microtel Pacific Research
8999 Nelson Way
Burnaby, B.C. Canada V5A 4B5
(604) 293-5737
jdill@mprvaxa

Contact: Ann Merchant
(604) 732-5086

PANEL PROPOSALS:

November 13, 1987

Richard L. Phillips
SIGGRAPH '88 Panels Chair
Los Alamos National Laboratory
P.O. Box 1663, MS B-272
Los Alamos, NM 87545
(505) 665-1343
rlp@lanl.gov

COURSE PROPOSALS:

November 13, 1987

Michael J. Bailey
SIGGRAPH '88 Courses Chair
Megatek Corporation
9645 Scranton Road
San Diego, CA 92121
(619) 455-5590
sdcsvax!sdcc6!megatek!mjb

FILM AND VIDEO SHOW SUBMISSIONS:

May 27, 1988

Amie Slate
SIGGRAPH '88 Film and Video Show Chair
Cubicomp
21325 Cabot Boulevard
Hayward, CA 94545
(415) 887-1300
Telex: 294295
pyramid!cubi!amie

ART SHOW SUBMISSIONS:

Interactive Computer Environments
December 1, 1987

Fine Art, Video Animation, Slide Sets
March 1, 1988

For art show information contact:
Lisa Fremont
SIGGRAPH '88 Art Show Administrator
9325 N. Oak Park
Morton Grove, IL 60653
(312) 470-8905

SLIDE SUBMISSIONS:

March 25, 1988

Bruce Eric Brown
SIGGRAPH '88 Slides Chair
WANG Laboratories, Inc.
One Industrial Avenue
Lowell, MA 01851
(617) 967-4297

VOLUNTEER INFORMATION:

Eric Bosch
SIGGRAPH '88 Volunteer Coordinator
Computer Graphics Laboratory
Department of Computer Science
University of Waterloo
Waterloo, Ontario, Canada N2L 3G1

EARLY REGISTRATION DEADLINE:

June 24, 1988

For information about the conference, contact:
SIGGRAPH '88 Conference Management
Smith, Bucklin & Associates, Inc.
111 E. Wacker Drive, #600
Chicago, IL 60601 USA
(312) 644-6610

For information about the exhibition, contact:
SIGGRAPH '88 Exhibition Management
Robert T. Kenworthy, Inc.
866 United Nations Plaza
New York, NY 10017 USA
(212) 752-0911

FUTURE CONFERENCES

SIGGRAPH '88

August 1-5, 1988
Atlanta, Georgia USA

Co-chairs:
Andrew C. Goodrich
(313) 763-4888
Adele Newton
(519) 888-4534

SIGGRAPH '89

July 31-August 4, 1989
Boston, Massachusetts USA

Co-chairs:
Branko J. Gerovac
(617) 480-6647
Christopher F. Herot
(617) 494-1400

Technical Program Chair:
Jeffrey Lane
(415) 853-6700

SIGGRAPH '90

August 6-10, 1990
Dallas, Texas USA

ACKNOWLEDGEMENTS

CONFERENCE SUPPORT

SIGGRAPH '87 A/V and panels wish to thank General Electric for the use of their MLV video projectors.

SLIDES

SIGGRAPH '87 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:

California State University-Chico, Chico, CA
The following authorized DICOMED Service Bureaus:
Corporate Computer Graphics, Phoenix, AZ
Graphics One-Fifty Corporation, Morris Plains, NJ
Strade Industries Inc., Lakewood, CO
The Graphic Solution, Tustin, CA
Subia Inc., Hawthorne, CA
Crystal Image Productions, San Diego, CA
SLIDECRAFTERS, Inc., New York, NY
The Color Place, Dallas, TX
The Color Place, Houston, TX
Pacific Color Inc., Seattle, WA
Ampersand (&) Imaging Inc., Fairfax, VA
Lyons Inc., Wilmington, DE
The Image Source, Toledo, OH
Dolphin Multi-Media, Palo Alto, CA

On-site:

Matrix Instruments, Inc., Orangeburg, NY
King Concept Corporation, Minneapolis, MN

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BACK COVER CREDITS:

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"Tropical Leaves," Beppe Spadaccini, Caterina DeVita, RGB Computer Graphic Services, Video Technology Research, ©1987.

14th Annual Conference on Computer Graphics and Interactive Techniques

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