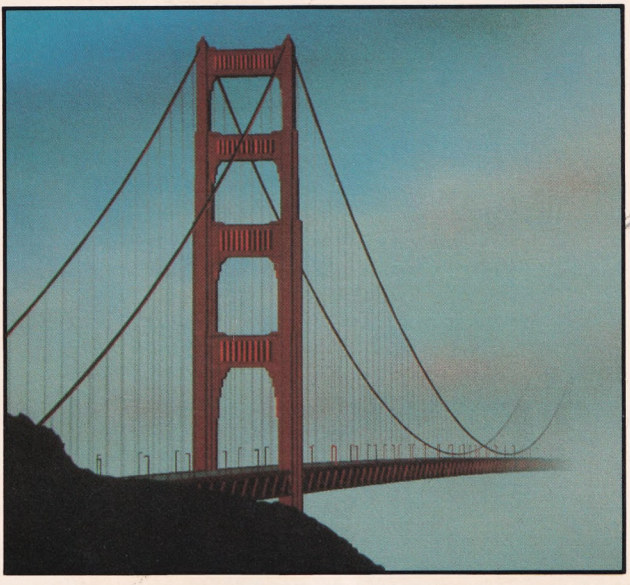
SIGGRAPH

acm

FINAL PROGRAM



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SAN FRANCISCO JULY 22-26

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Lucasfilm Ltd.

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Light FX
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Lorraine Schweizer

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Lindy Foster
University of California, Berkeley

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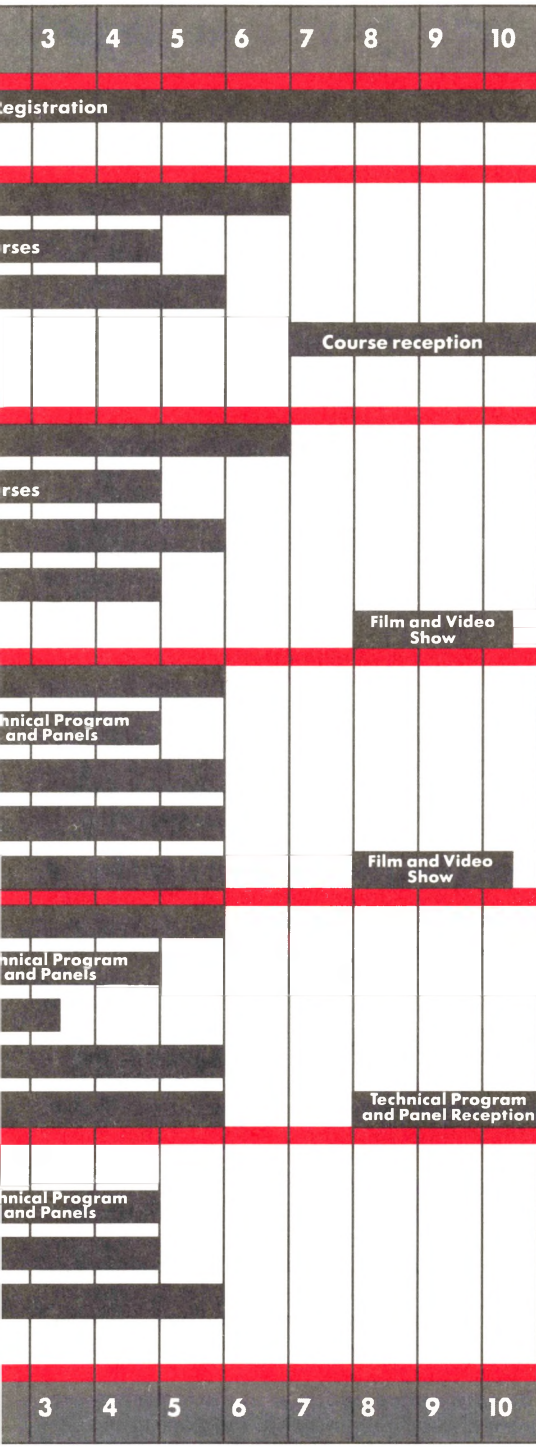
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CONFERENCE EVENTS

TECHNICAL PROGRAM AND PANELS

The technical program and panels are held concurrently Wednesday through Friday. Thirty-five formally refereed papers are presented during 11 technical program sessions. Eleven panel sessions explore current topics and issues in the computer graphics field.

This year, the emphasis for papers is on original research results. The SIGGRAPH '85 technical program committee received 175 submissions, representing an approximate 50 percent increase over previous years. After a thorough review process, the best papers have been chosen for presentation in the technical program and for publication in the conference proceedings (*COMPUTER GRAPHICS*, Vol. 19, No. 3). Additional copies of the proceedings are available for sale.

Panels complement the formal technical papers and course offerings by providing opportunities for lively exchange about trends and emerging developments in the field of computer graphics. Panels facilitate the discussion of material not yet in publishable form, ongoing research and controversial topics.

The technical program and panels are held at the Moscone Convention Center. Papers are presented in Hall A. The panels are held in combined Halls F, G and H.

Each technical program and panels registrant is entitled to one copy of the SIGGRAPH '85 proceedings, the art show catalog and the film and video show catalog, in addition to admission to all technical paper sessions and panels, the exhibition and the art show.

Technical program and panels attendees also receive a ticket to one night of the film and video show. Please note that the Tuesday and Wednesday evening film and video shows are identical this year. Tickets for the Tuesday or Wednesday evening show may be exchanged in the registration area, based on availability.

The conference badge with the technical program and panels insert admits an attendee

to the Thursday night dinner reception held at the California Academy of Science. The Academy of Science is a natural history museum which houses the Steinhart Aquarium and is located in Golden Gate Park. Transportation between this reception and all conference hotels listed in this program will be provided.

COURSES

The SIGGRAPH '85 courses offer themes never before addressed at a SIGGRAPH conference, as well as many of the most popular topics from other years. The courses committee studied evaluations from previous years and for the first time formally solicited and reviewed proposals; out of 44 proposals, 27 were chosen.

SIGGRAPH '85 courses are held Monday and Tuesday at several conference hotels and at the Moscone Convention Center. For more information about the location of a particular course, consult the fast reference sheet provided in the registration packet and posted at other conference locations. Courses begin at 8:30 a.m. on Monday and Tuesday and conclude at 5 p.m. on both days. Shuttle buses running at regular intervals connect conference hotels listed in this program to all course locations and the Moscone Convention Center.

Luncheon for the appropriate day(s) are included in the course registration. The conference badge with a course insert admits course attendees to the luncheon.

Course registrants receive notes for the course(s) for which they are registered, a copy of the film and video show catalog and a copy of the art show catalog, in addition to admission to their confirmed course(s), the exhibition and the art show.

Course attendees also receive a ticket to one night of the film and video show. Please note that the Tuesday and Wednesday evening film and video shows are identical this year. Tickets for the Tuesday or Wednesday evening show may be exchanged in the registration area, based on availability.

The conference badge with a course insert admits an attendee to the Monday night course reception held at the Exploratorium, a unique hands-on science museum. During this dinner reception the Exploratorium's many interactive exhibits will be open. Transportation between this reception and all conference hotels listed in this program will be provided.

EXHIBITION

Exhibition hours:
Tuesday, July 23 10 a.m.-6 p.m.
Wednesday, July 24 10 a.m.-6 p.m.
Thursday, July 25 10 a.m.-3:30 p.m.

This internationally attended exhibition is the industry standard for new product introductions as well as a comprehensive showplace for the tools of the computer graphics trade. The SIGGRAPH exhibition has grown from a handful of exhibits at the first equipment show in 1975 to more than 220 internationally recognized exhibitors filling 80,000 net square feet at the Moscone Convention Center this year. More product and service categories than ever before are represented, demonstrating not only the state of the art in computer graphics hardware and software, but also prototypes for the future.

ART SHOW

The SIGGRAPH '85 art show features the latest achievements of artists and designers using computer graphics and interactive techniques in all media. The on-site exhibition, juried by artists, curators and art educators, is located at the Moscone Convention Center east wing in rooms 200 through 212 and rooms 220 through 226, Monday through Friday.

The art show includes prints, large scale sculptures, interactive installations, a display of computer graphics on frame buffers and an intimate viewing environment for videotapes of experimental computer graphics pieces. This year, the art show also provides visual documentation of the creative process.

A student poster competition and exhibition is being held in conjunction with the School of Visual Arts in New York and the Academy of Art College in San Francisco. Posters de-

signed by students using computer graphics are on display July 15 to 29 at the Academy of Art College Gallery, located at 688 Sutter Street.

"Input/Output: Computer Graphics Festival" is an interactive installation, mounted at the San Francisco Museum of Modern Art located at Van Ness at McAllister, in conjunction with the SIGGRAPH '85 art show. This hands-on exhibit enables people to explore the tools and processes used by artists and designers in computer graphics. It is open to SIGGRAPH '85 attendees and their guests on Sunday and Monday, July 21 and 22, from 10 a.m. to 5 p.m. Look for signs in the upper lobby of the Moscone Convention Center.

Two installations are offered by the Exploratorium in conjunction with the SIGGRAPH '85 art show. These installations are open during the Monday evening course reception at the Exploratorium and to the general public. "Frontiers of Chaos" features the work of mathematician Heinz-Otto Peitgen and physicist Peter Richter in experimental dynamic systems. This exhibit is made possible by the Goethe Institute. It is open July 16 to September 2. "Invisible Cities," an interactive computer graphics work based on the Italo Calvino novel of the same name, will have its American premiere. This exhibit was conceived and created by Jeffrey Shaw. It is open July 20 to 28.

SIGGRAPH '85 art show events and a copy of the catalog are included in conference registration fees unless registration is for the general exhibition only. Admission fees for exhibition only registrants will be $3 for adults and $1 for students and seniors. Additional copies of the art show catalog are available for sale.

FILM AND VIDEO SHOW

The annual SIGGRAPH film and video show has achieved an international reputation for creative and technical excellence. The SIGGRAPH '85 film and video show will consist of two identical showings on Tuesday and Wednesday evenings at 8 p.m. in Hall A of the Moscone Convention Center.

This year a jury of well-known artists and computer graphics professionals selected 36 pieces out of 185 entries. Due to the high number of submissions and the reduction of the show time, the presentation has become considerably more selective and tightly edited. For the first time, the film and video show catalog contains a representative frame from each piece in the show.

Admission to one evening of the film and video show and a copy of the catalog is included in an attendee's technical program and panel registration and/or course registration. Tickets for the Tuesday or Wednesday night show may be exchanged in the registration area, based on availability. Additional copies of the film and video show catalog are available for sale.

Presented in an excellent aural/visual environment, the SIGGRAPH '85 film and video show is an educational and memorable viewing experience.

ONGOING ANIMATION SCREENING

In addition to the evening film and video show there is an ongoing, juried animation screening Wednesday through Friday, throughout the day, in order to present high quality, longer pieces and demo reels. This screening is located in Hall K of the Moscone Convention Center adjacent to the technical program and exhibition so that attendees may drop in at their convenience.

EXHIBITION OPENING CEREMONY

All SIGGRAPH '85 attendees are invited to attend the brief opening ceremony for the equipment exhibition at 10 a.m. Tuesday, outside of the exhibition hall.

ACM SIGGRAPH EXECUTIVE COMMITTEE MEETING

The ACM SIGGRAPH executive committee holds an open meeting on Thursday, July 25 from 5:15 p.m. to 7:15 p.m. in the Sauternes I room at the Hotel Meridien.

SOCIAL FUNCTIONS

Traditionally, SIGGRAPH '85 receptions are reunions for old friends as well as places to meet new colleagues. These catered dinner receptions feature local San Francisco cuisine and California wines. Two complimentary drinks (soft drinks, beer or wine) are included with admission. A cash bar is also available. Shuttle bus service between receptions and all conference hotels listed in this program is provided.

The conference badge with a course insert admits an attendee to the Monday night course reception beginning at 7 p.m. at the Exploratorium, a unique hands-on science museum. During this reception the Exploratorium's many interactive exhibits will be open.

The conference badge with a technical program and panels insert admits an attendee to the Thursday night technical program and panels reception beginning at 8 p.m. at the California Academy of Science. The Academy of Science is a natural history museum which houses the Steinhart Aquarium, located in Golden Gate Park.

BIRDS-OF-A-FEATHER SESSIONS

Birds-of-a-feather sessions are held Monday through Friday in rooms 216 and 218 of the Moscone Convention Center. SIGGRAPH '85 attendees are welcome to use these rooms for informal small group discussions.
A sign-up board is located in upper lobby of the Moscone Convention Center.

USER GROUPS AND SPECIAL INTEREST GROUPS

The following user groups and special interest groups are planning to meet during SIGGRAPH '85. For details about the groups, contact the people indicated below. Check the upper lobby of the Moscone Convention Center for updated group information and announcements of additional group meetings.

Saturday, July 20
Lumena SIG
11 a.m.-2 p.m.
Ramada Renaissance Hotel
DaVinci Room
David Krauss (415) 328-7176

Monday, July 22
International DICOMED Users Group (IDUG)
8 a.m.-9 p.m.
Hotel Meridien
Sauternes II/III
Kat Gilchrist-Roberts (612) 885-3000

Sun User Group
6 p.m.-8 p.m.
Hotel Meridien
Cabernet III
Laura Tong (415) 960-1300

Tuesday, July 23
SIGGRAPH Education Committee
2 p.m.-5 p.m.
Ramada Renaissance Hotel
Barcelona I
Steve Cunningham (209) 667-3176

Wednesday, July 24
Autocad User Forum
10 a.m.-1 p.m.
Hyatt on Union Square
Delores Room
Peggy Steffens (415) 332-2344

Molecular Graphics
11 a.m.-12:30 p.m.
Ramada Renaissance Hotel
Renaissance I
Michael E. Pique (919) 966-5053

YLEM: Artists Using Science and Technology
1 p.m.-5 p.m.
Hotel Meridien
Sauternes II
Josepha Haveman (415) 848-3776

Evans & Sutherland Users Group
1:30 p.m.-5 p.m.
Hotel Meridien
Colombard Room
Neil Harrington (801) 582-5847

SIGGRAPH Education Committee
2 p.m.-5 p.m.
Ramada Renaissance Hotel
Barcelona I
Steve Cunningham (209) 667-3176

User Interface Management Systems
3 p.m.-5:30 p.m.
Hotel Meridien
Sauternes I
Eve M. Goldfarb (617) 876-7993

Adage Graphic User Society (AGUS)
4:30 p.m.-8 p.m.
Ramada Renaissance Hotel
DaVinci Room
Elaine Cheever (617) 667-7070

GCS Users Group
6 p.m.-8 p.m.
Ramada Renaissance Hotel
Aragon Room
Judy Brown (319) 353-3170

Gould Image Processing Users Group
6 p.m.-9 p.m.
Hotel Meridien
Semillon Room
Pam Cornelison (408) 263-7155

Thursday, July 25
Whole Brain Network
10 a.m.-11 a.m.
Hotel Meridien
Colombard Room
Paul Petro (416) 787-6014

SIGGRAPH Education Committee
10 a.m.-Noon
Ramada Renaissance Hotel
Barcelona I
Steve Cunningham (209) 667-3176

MOVIE.BYU
5:30 p.m.-7 p.m.
Ramada Renaissance Hotel
Renaissance I
Hank Christiansen (801) 378-6325

Friday, July 26
Nicolet Users Group
9 a.m.-5 p.m.
Hotel Meridien
Sauternes II/III
Susan Keeley (415) 372-3427

GENERAL INFORMATION

AIRLINE INFORMATION

An American Airlines office is located adjacent to the Westin St. Francis hotel. American Airlines can issue tickets and reconfirm or change reservations for conference attendees at this office.

A/V SERVICE

A/V headquarters
A/V headquarters is in room 270 of the Moscone Convention Center and provides speakers with general A/V assistance, including 35mm slide trays and blank slides. A/V headquarters is open Sunday, 9 a.m.-9 p.m., and Monday-Friday, 7:30 a.m.-6 p.m. The telephone number is (415) 896-2119.

Speaker film/video prep room
A film/video prep room is available in Moscone Convention Center rooms 258 and 260 for speakers to review 16mm films and ¾-inch U-Matic NTSC videotapes. The room is open Sunday, 9 a.m.-9 p.m., and Monday-Friday, 7:30 a.m.-6 p.m.

Speaker slide prep room
A slide prep room is available in Moscone Convention Center room 256 for speakers to review 35mm slides. Slide viewer/sorters and projectors are available Sunday, 9 a.m.-9 p.m., and Monday-Friday, 7:30 a.m.-6 p.m.

Film and video show office
The film and video show office is located in the lounge area between rooms 218 and 238 of the Moscone Convention Center. It is open Sunday from 1 p.m.-11 p.m. for delivery of final show materials as per previous arrangements with the film and video show committee. The office is open for contributors to pick up their films and videotapes during registration hours.

CHILD CARE

Child care services are provided by most SIGGRAPH '85 hotels. Contact the concierge desk or the guest services department of your hotel for information on types of child care services offered.

CONFERENCE MATERIALS DESK

SIGGRAPH '85 course notes, proceedings, slide sets, t-shirts, posters, mugs, art show catalogs and film show catalogs are available for pick-up in rooms 232 and 234 of the Moscone Convention Center. Attendees may also buy SIGGRAPH video reviews, 1983 Japanese computer graphics art show catalogs and merchandise from previous SIGGRAPH conferences.

A shipping desk is located in rooms 232 and 234, near the conference materials desk. Conference materials may be shipped to domestic and international locations.

Both rooms are open during registration hours plus Friday afternoon until 5 p.m.

CONFERENCE OFFICE

To assist registrants with any special needs or questions throughout the conference, SIGGRAPH '85 staff members are available in rooms 274 and 276 of the Moscone Convention Center.

CONFERENCE SPONSORSHIP

SIGGRAPH '85 is sponsored by the Association for Computing Machinery's Special Interest Group on Computer Graphics in cooperation with Eurographics and the IEEE Technical Committee on Computer Graphics.

CURRENCY EXCHANGE

International visitors may exchange their currency for United States dollars at Deak-Perera, a local money broker located near the Moscone Convention Center at 100 Grant Ave. Deak-Perera is open Monday-Friday, 9 a.m.-5 p.m., and Saturday, 9:30 a.m.-2:30 p.m. The telephone number is (415) 362-3452. An exchange facility also is located at Citicorp in the San Francisco International Airport on the second floor in the central terminal. The hours are 7-11 p.m. daily. In addition, several local banks handle international money exchanges.

DRESS

Casual dress is acceptable at all SIGGRAPH '85 conference functions. Casual dress is also acceptable at many San Francisco dining establishments. However, jackets and ties may be required in some locations. The SIGGRAPH '85 conference committee recommends that guests check dress code requirements when restaurant reservations are made.

FIRST AID

Paramedics are on duty Sunday-Friday during the following hours: Sunday, 8 a.m.-11 p.m.; Monday, 8 a.m.-8 p.m.; Tuesday, 8 a.m.-10 p.m.; Wednesday, 8 a.m.-10:30 p.m.; Thursday, 8 a.m.-9 p.m.; and Friday, 8 a.m.-5 p.m.

The first aid room is located across the corridor from Hall C of the Moscone Convention Center. The telephone number is (415) 974-4280.

FOODSERVICE

Two concession stands are located at the rear of the exhibits hall in the Moscone Convention Center. The stands are open Monday-Friday from 8 a.m.-5 p.m.

HOTELS

FAIRMONT HOTEL
Atop Nob Hill
San Francisco, CA
94106
(415) 772-5000

FOUR SEASON
CLIFT HOTEL
495 Geary Street
San Francisco, CA
94102
(415) 775-4700

HOLIDAY INN
CIVIC CENTER
50 Eighth Street
San Francisco, CA
94103
(415) 626-6103

HOLIDAY INN
UNION SQUARE
480 Sutter Street
San Francisco, CA
94108
(415) 398-8900

HYATT REGENCY
SAN FRANCISCO
5 Embarcadero
Center
San Francisco, CA
94111
(415) 788-1234

HYATT ON UNION
SQUARE
345 Stockton Street
San Francisco, CA
94108
(415) 398-1234

MARK HOPKINS
Number One Nob Hill
San Francisco, CA
94108
(415) 392-3434

HOTEL MERIDIEN
50 Third Street
San Francisco, CA
94103
(415) 974-6400

RAMADA
RENAISSANCE
55 Cyril Magnin St
San Francisco, CA
94102
(415) 392-8000

SAN FRANCISCAN
HOTEL
1231 Market @ Civic
Center
San Francisco, CA
94103
(415) 626-8000

SAN FRANCISCO
HILTON AND TOWER
333 O'Farrell Street
San Francisco, CA
94102
(415) 771-1400

SHERATON PALACE
HOTEL
639 Market Street
San Francisco, CA
94105
(415) 392-8600

SIR FRANCIS DRAKE
450 Powell Street
San Francisco, CA
94101
(415) 392-7755

WESTIN ST. FRANCIS
335 Powell Street
San Francisco, CA
94102
(415) 397-7000

HOUSING ASSISTANCE

A representative from the San Francisco Convention and Visitors Bureau is available at the housing desk in the upper lobby of the Moscone Convention Center on Sunday from 1 p.m.-11 p.m. and Monday and Tuesday from 7 a.m.-7 p.m. to assist SIGGRAPH '85 registrants in making hotel accommodations in San Francisco.

SIGGRAPH '85 registrants needing housing assistance Wednesday, Thursday and Friday can contact the San Francisco Convention and Visitors Bureau between 8:30 a.m. and 5 p.m. at (415) 974-6900.

INFORMATION AND ASSISTANCE CENTER

The conference information and assistance center is located in the upper lobby of the Moscone Convention Center. Personnel are available to handle questions beginning at 1 p.m. on Sunday and thereafter during registration hours.

MESSAGE CENTER

A message center for SIGGRAPH '85 attendees is located in the upper lobby of the Moscone Convention Center. The message center telephone number is (415) 896-2100.

Message center personnel also accept personal messages from one conference participant to another. The message center is open beginning at 1 p.m. on Sunday and thereafter during registration hours.

PRESS BRIEFING

The highlights of SIGGRAPH '85 are presented during the press briefing on Tuesday, July 23, at 8:30 a.m. in rooms 236 and 238 of the Moscone Convention Center. Following a short question and answer session, early admission to the exhibition floor is granted to members of the press.

PRESS ROOM

Rooms 236 and 238 in the Moscone Convention Center are the center for press activities during SIGGRAPH '85. Members of the press should come directly to the press room to register and pick up press badges. Press kits, telephones, typewriters, conference course notes and proceedings are available in this room. Individual interviews with SIGGRAPH '85 spokespersons, exhibitors and others may be scheduled here. The press room is open Sunday, 3 p.m.-6 p.m.; Monday-Thursday 8 a.m.-6 p.m.; and Friday 8 a.m.-Noon.

REGISTRATION

Attendees who have pre-registered for courses or the technical program and panels may pick up their conference materials at the Moscone Convention Center beginning on Sunday, July 21, at 1 p.m. Please note that there are no remote registration or materials distribution at the course sites.

Registration is open from 1 p.m. until 11 p.m. on Sunday in order to allow Monday course registrants ample time to pick up their materials.

All on-site registrations are handled in the registration area of the Moscone Convention Center during the registration hours:

Sunday, July 21	1 p.m.-11 p.m.
Monday, July 22	7 a.m.-7 p.m.
Tuesday, July 23	7 a.m.-7 p.m.
Wednesday, July 24	8 a.m.-6 p.m.
Thursday, July 25	8 a.m.-6 p.m.
Friday, July 26	9 a.m.-1 p.m.

Members of the press should proceed directly to the press room for registration. Press badges are distributed in press room 236 in the Moscone Convention Center.

RESTAURANT INFORMATION

Menus of local restaurants are available at the restaurant information desk in the lower level lobby of the Moscone Convention Center. Personnel will assist conference attendees in making reservations at area restaurants. This desk will be open during registration hours.

SHIPPING DESK

A shipping desk is located near the conference materials desk in rooms 232 and 234 of the Moscone Convention Center. Conference materials may be shipped to domestic and international locations.

SLIDE SETS

Three slide sets have been created for SIGGRAPH '85 that demonstrate advanced technology, substantial artistic merit and innovative application. The *technical set* depicts new research and applications of computer graphics from many disciplines. The *industry set* is representative of the companies participating in the SIGGRAPH '85 exhibition. Computer graphics hardware, software, applications and services are featured in this set. The *art show set* features examples of prints, sculptures, installations and design.

All slide sets can be purchased at the registration desk and picked up at the conference materials desk in rooms 232 and 234 of the Moscone Convention Center.

SMOKING POLICY

There is no smoking allowed in conference locations.

TELEPHONE NUMBERS

A/V headquarters
(415) 896-2119

Conference management office
(415) 896-2102

Emergencies (ambulance, fire, police)
911

Exhibition management office
(415) 896-2095

First aid
(415) 974-4280

Housing assistance
(415) 896-2115

Information and assistance center
(415) 896-2113

Message center
(415) 896-2100

Press room
(415) 892-2105

Registration area
(415) 896-2109

San Francisco Convention
and Visitors Bureau
(415) 974-6900

TOURS

Tours of the San Francisco area can be arranged at the local activities desk in the lower lobby of the Moscone Convention Center. Information describing local sites in San Francisco is provided at this desk.

TRANSPORTATION

Public transportation, including historic cable cars, is abundant in the San Francisco area. There are airport limousines and buses available to and from conference hotels. Complimentary shuttle bus service is provided between all SIGGRAPH '85 hotels listed in this program and the Moscone Convention Center.

1
INTRODUCTION TO COMPUTER GRAPHICS
MONDAY AND TUESDAY

CHAIR
Stephen R. Levine

LECTURERS
Michael J. Bailey, Purdue University CADLAB, W. Lafayette, IN/Megatek Corporation, San Diego, CA
John Blunden, Lawrence Livermore National Laboratory, Livermore, CA
Maxine Brown, Maxine Brown Associates, Los Angeles, CA
Stephen R. Levine, Computervision Corporation, Bedford, MA
Stephanie Moore, Compugraphics Corporation, Wilmington, MA
Bernice Rogowitz, IBM Research, Yorktown Heights, NY
Susan Stearman, Computervision Corporation, Bedford, MA

TOPICS
Introduction, key concepts and terminology/Levine
Color and vision/Rogowitz
Hardware, math and algorithms/Levine
Film/Blunden
Engineering applications/Bailey
Business-graphics/Brown
How to buy a computer graphics system/Moore
A live demo/Stearman

2
INTRODUCTION TO COLOR RASTER GRAPHICS
MONDAY

CHAIR
Donald P. Greenberg

LECTURERS
Ted Crane, Cornell University, Ithaca, NY
Donald P. Greenberg, Cornell University, Ithaca, NY
Peter Kochevar, Cornell University, Ithaca, NY
Gary Meyer, Cornell University, Ithaca, NY
Channing Verbeck, Cornell University, Ithaca, NY

TOPICS
Introduction/Greenberg
Raster concepts/Meyer
Frame buffer architecture/Crane
Raster algorithms/Verbeck, Kochevar
Color and color spaces/Meyer
Illumination models and reflection/Greenberg
Applications/Verbeck, Kochevar

3
COLOR PERCEPTION
TUESDAY

CHAIR
William B. Cowan

LECTURERS
William B. Cowan, National Research Council of Canada, Ottawa, Ontario, Canada
Colin Ware, University of Waterloo, Waterloo, Ontario, Canada

TOPICS
Introduction/Cowan
Color in the environment
- The physics of color generation/Cowan
- The colored environment/Ware

Classical colorimetry
- Physiology of the eye/Cowan
- Color matching/Cowan
- Measurement of light and color/Ware

Elementary color coding
- Physiology of the retina/Cowan
- Psychophysics of color coding/Cowan
- Color difference/Cowan
- Color order systems—color naming/Cowan

Higher visual function
- Physiology of the visual cortex/Cowan
- Color appearance/Ware
- Color for data display/Ware
- Color and attention/Cowan

4

HOW TO DESIGN COMPUTER-USER INTERFACES

MONDAY

CHAIR
James D. Foley

LECTURERS
James D. Foley, George Washington University, Washington, D.C.
Jack D. Grimes, Intel Corporation, Santa Clara, CA
John Sibert, George Washington University, Washington, D.C.

TOPICS
Course overview/Foley
Introduction/Grimes
Design principles/Grimes
Design process
- User requirements/Grimes
- Conceptual, dialogue, semantic, syntactic, lexical design/Foley
- Design review and interface debugging/Foley

Design issues
- Documentation/Foley
- Design guidelines/Foley
- Design style guide/Foley

Interaction devices and techniques/Sibert
Questions and answers/Foley, Grimes, Sibert

5

ADVANCED TOPICS—HUMAN FACTORS IN COMPUTER GRAPHICS SYSTEMS

TUESDAY

CHAIRS
Jack D. Grimes
Michael E. Atwood

LECTURERS
Michael E. Atwood, ITT-Advanced Technology Center, Shelton, CT
James Foley, George Washington University, Washington, D.C.
Jack D. Grimes, Intel Corporation, Santa Clara, CA

TOPICS
Introduction/Grimes
Advanced topics
- Experimental methods/Foley
- User models/Grimes
- Visual perception/Grimes
- User interface tools/Foley
- Mixed media/Grimes

Guide to literature/Atwood
Future directions of human factors research/Atwood
Questions and answers

6

IMPLEMENTING GKS—ARCHITECTURE AND ALGORITHMS

MONDAY

CHAIR
Peter R. Bono

LECTURERS
Peter R. Bono, Graphic Software Systems, Inc., Wilsonville, OR
Chris Osland, Rutherford Appleton Laboratory, Chilton, Didcot, Oxon., UK
Gunther Pfaff, GTS-GRAL, Darmstadt, West Germany

TOPICS
Introduction and overview/Bono
Architecture and the viewing pipeline/Osland
Data structures, inquiry and error handling/Osland
GKS workstation interface: control and data structures/Pfaff
GKS attributes and input/Pfaff
WISS and pick input/Osland
Text and metafiles/Bono
Microcomputer considerations/Bono

7

AN INTRODUCTION TO PHIGS: THE PROGRAMMER'S HIERARCHICAL INTERACTIVE GRAPHICS STANDARD

TUESDAY

CHAIR
Richard Ehlers

LECTURERS
Albert Bunshaft, IBM, Kingston, NY
Richard Ehlers, Evans and Sutherland Computer Corporation, Salt Lake City, UT
Richard Puk, Puk Consulting Services, Carlsbad, CA
David Shuey, McDonnell Douglas, St. Louis, MO

TOPICS
Introduction/Ehlers
PHIGS constituency/Shuey
PHIGS structures and structure editing/Bunshaft
PHIGS display traversal/Bunshaft
Name sets and classes/Puk
PHIGS pipeline/Ehlers
Deferral modes/Ehlers
Input models/Puk
Relation to GKS-3D/Puk
PHIGS trial implementation/Bunshaft
Summary/Shuey

8

HOW TO EVALUATE AND SHOP FOR COMPUTER GRAPHICS HARDWARE

TUESDAY

CHAIR
James R. Warner

LECTURERS
James R. Warner, Precision Visuals, Inc., Boulder, CO
Randall Wise, Graphics Communications, Inc., Waltham, MA

TOPICS
Introduction/Warner
Review of hardware technology—display terminals and workstations/Warner
Review of hardware technology—hardcopy devices and personal computers/Wise
General criteria when shopping for graphics hardware—minis and mainframes/Warner
Specific buying criteria—display terminals and workstations/Warner
General criteria when shopping for graphics hardware—personal computers/Wise
Specific buying criteria—hardcopy devices and personal computers/Wise
Tips and pitfalls when evaluating hardware vendors/Warner, Wise

9
INTRODUCTION TO COMPUTER ANIMATION
MONDAY

CHAIR
Frederic I. Parke

LECTURERS
J. J. Larrea, New York Institute of Technology, Old Westbury, NY
Frederic I. Parke, New York Institute of Technology, Old Westbury, NY
David Sturman, New York Institute of Technology, Old Westbury, NY
David Zeltzer, Massachusetts Institute of Technology, Cambridge, MA

TOPICS
Introduction/Parke
Relationship of computer animation to conventional animation/Larrea
Modeling/Parke
Shape parameterization/Parke
Articulated models/Sturman
Explicit control/Sturman
Keyframing/Sturman
Interpolation/Sturman
Scripted systems/Sturman
Goal directed animation/Zeltzer
Robotics & animation/Zeltzer
Rendering issues/Parke
Animation environments I/Zeltzer
Animation environments II/Larrea

10
ADVANCED COMPUTER ANIMATION
TUESDAY

CHAIR
Judson Rosebush

LECTURERS
Philippe Bergeron, Montreal, Quebec
David Fox, Lucasfilm Ltd., San Rafael, CA
Craig Reynolds, Symbolics, Los Angeles, CA
Judson Rosebush, Judson Rosebush Company, New York, NY

TOPICS
Introduction/Rosebush
The control of time in computer animation/Reynolds
The control of character in computer animation/Bergeron
Small system strategies—do it yourself/Fox
Facilities considerations and wrap/Rosebush

11
STATE OF THE ART IN IMAGE SYNTHESIS
MONDAY

CHAIR
Rodney Stock

LECTURERS
Thad Beier, Pacific Data Images, Sunnyvale, CA
Edwin Berlin, Jr., Cubicomp Corporation, Berkeley, CA
Robert L. Cook, Lucasfilm Ltd., San Rafael, CA
Stephen Gabriel, Gabriel Electronic Consulting, Orlando, FL
Michael Kaplan, Kobra Graphics, Beaverton, OR
Kenneth Perlin, The Courant Institute for Mathematics and Sciences, New York, NY
Rodney Stock, Arstock Services, San Anselmo, CA

TOPICS
Spline interpolation of rotations/Gabriel
Modeling techniques for boolean operations on polygonal objects/Beier
Efficiency issues in image synthesis/Berlin
New uses of spatial coherence in ray tracing/Kaplan
The application of Monte Carlo integration to image synthesis algorithms/Cook
Designing graphic algorithm design languages/Perlin

12
IMAGE RENDERING TRICKS
TUESDAY

CHAIR
Robert L. Cook

LECTURERS
Jim Blinn, Jet Propulsion Laboratory, Pasadena, CA
Loren Carpenter, Lucasfilm Ltd., San Rafael, CA
Richard Chuang, Pacific Data Images, Sunnyvale, CA
Robert L. Cook, Lucasfilm Ltd., San Rafael, CA
Turner Whitted, University of North Carolina/ Numerical Design Ltd., Chapel Hill, NC

TOPICS
The philosophy of sophisticated hackery/Cook
Lookup table alchemy/Cook
Cutting corners where it counts/Cook
Doing more with less/Whitted
Ray tracing with PCs/Whitted
Shading tricks/Whitted
How to scrounge cycles/Whitted
Rendering for television/Chuang
What you can and cannot get away with/Chuang
Don't solve problems you can avoid/Chuang
Avoid rendering whenever possible/Chuang
The ancient Chinese art of CHI-Ting/Blinn
Real-time hidden-line fractals on an Atari 400/Carpenter
Lightening atmospheres/Carpenter
Painless patches/Carpenter

13

TRUE THREE-DIMENSIONAL DISPLAY TECHNOLOGY AND TECHNIQUES FOR COMPUTER GENERATED IMAGES

MONDAY

CHAIR
David F. McAllister

LECTURERS
Larry F. Hodges, North Carolina State University, Raleigh, NC
David F. McAllister, North Carolina State University, Raleigh, NC
Woodrow E. Robbins, North Carolina State University, Raleigh, NC

TOPICS
Introduction/McAllister
Role of color and perception in 3D/Robbins
Introduction to 3D technologies/Robbins
Stereo pairs/Hodges
Alternating pairs/Hodges
Holography/McAllister
Vari-focal mirrors/McAllister
Laser scan techniques/McAllister

14

HIGH PERFORMANCE IMAGE GENERATION SYSTEMS

MONDAY

CHAIR
Roy Latham

LECTURERS
Glenn Davis, Link Flight Simulation Division, Sunnyvale, CA
Peter Doenges, Evans and Sutherland Computer Corporation, Salt Lake City, UT
Roy Latham, Link Flight Simulation Division, Binghamton, NY
David Peters, Link Flight Simulation Division, Binghamton, NY
Johnson Yan, Link Flight Simulation Division, Sunnyvale, CA

TOPICS
What is high performance?/Latham
Introduction to system requirements and system organization/Doenges
Scene management and prioritization/Davis
Hardware implementation
- Geometric and video processing
- Architecture/Latham
- Texture/Yan

Display system/Peters

15
FRACTALS: BASIC CONCEPTS, COMPUTATION AND RENDERING
TUESDAY

CHAIR
Benoit B. Mandelbrot

LECTURERS
Loren Carpenter, Lucasfilm Ltd., San Rafael, CA
Benoit B. Mandelbrot, IBM Research Center, Yorktown Heights, NY and Harvard University, Cambridge, MA
Heinz-Otto Peitgen, University of Bremen, Bremen, West Germany
Alvy Ray Smith, Lucasfilm Ltd., San Rafael, CA
Richard F. Voss, IBM Research Center, Yorktown Heights, NY

TOPICS
Introduction to fractals, recursive rules, midpoint displacement/Mandelbrot
Approximations to Mandelbrot fractal reliefs/Voss
Fractal clouds/Mandelbrot
Formal languages and fractals/Smith
Adaptive fractal subdivision/Carpenter
Panel on realistic fractals and Julia Mandelbrot sets/Peitgen

16

GEOMETRY FOR COMPUTER GRAPHICS AND COMPUTER AIDED DESIGN

MONDAY

CHAIR
Ronald N. Goldman

LECTURERS
Bob Barnhill, University of Utah, Salt Lake City, UT
Ronald N. Goldman, Control Data Corporation, Minneapolis, MN
Tom Sederberg, Brigham Young University, Provo, UT
Tony Woo, University of Michigan, Ann Arbor, MI

TOPICS
Vector geometry/Goldman
Computational geometry/Woo
Algebraic geometry/Sederberg
Differential geometry/Barnhill

17

THE USE OF B-SPLINES AND BETA-SPLINES TO MODEL FREEFORM CURVES AND SURFACES

TUESDAY

CHAIR
John C. Beatty

LECTURERS
Brian A. Barsky, University of California, Berkeley, CA
Richard H. Bartels, University of Waterloo, Waterloo, Ontario
John C. Beatty, University of Waterloo, Waterloo, Ontario

TOPICS
Introduction and terminology/Beatty
B-splines/Beatty
The B-spline recurrence and the Oslo algorithm/Bartels
Geometric continuity and Beta-splines/Barsky
Divided difference Beta-splines/Bartels
Rendering and selected applications/Barsky, Bartels

18
INTRODUCTION TO SOLID MODELING
MONDAY

CHAIR
Jim Miller

LECTURERS
George Allen, McAuto, Cypress, CA
Graham Jared, University of Cambridge, Cambridge, UK
Jim Miller, Control Data Corporation, Arden Hills, MN
Herb Steinberg, MAGI, Elmsford, NY

TOPICS
Background rationale and representations/Miller
CSG methods and applications/Steinberg
Boundary representation methods and applications/Jared
User interfaces in solid modelers/Allen

19
ADVANCED TOPICS IN SOLID MODELING
TUESDAY

CHAIR
Tony C. Woo

LECTURERS
Alan Grayer, Shape Data Ltd., Cambridge, UK
Robert Johnson, Johnson & Associates, Ann Arbor, MI
Richard Volz, University of Michigan, Ann Arbor, MI
Peter Wilson, General Electric, Schenectady, NY
Tony Woo, University of Michigan, Ann Arbor, MI

TOPICS
Introduction/Woo
Data base for solid modeling/Johnson
Procedural interface to a modeler/Grayer
Feature extraction for process planning/Wilson
Spatial properties for robot assembly/Volz

20
VLSI FOR COMPUTER GRAPHICS
TUESDAY

CHAIR
Henry Fuchs

LECTURERS
James Clark, Silicon Graphics, Inc., Mountain View, CA and Stanford University, Stanford, CA
Henry Fuchs, University of North Carolina at Chapel Hill
Karl Guttag, Texas Instruments, Houston, TX
Gershon Kedem, Duke University and Microelectronics Center of North Carolina (MCNC)
Robert Schumacker, Evans and Sutherland Computer Corporation, Salt Lake City, UT

TOPICS
Introduction: VLSI for beginners/Fuchs
Evolution of IC technology in flight simulators/Schumacker
The present and future of commercial market graphics IC's/Guttag
VLSI for high performance graphics workstations/Clark
VLSI for solid modeling/Kedem
VLSI for graphic input devices, "smart" displays and logic-enhanced raster memories/Fuchs

21

COMPUTER GRAPHICS FOR DESIGNERS AND ARTISTS

MONDAY AND TUESDAY

CHAIR
Isaac V. Kerlow

LECTURERS
Susan Bickford, Computer Arts Forum, New York, NY
Charles Bigelow, Bigelow and Holmes, San Francisco, CA
Steve Feiner, Brown University, Providence, RI
Isaac Victor Kerlow, School of Visual Arts, New York, NY
Andy Kopra, Digital Effects, Inc., New York, NY
Mark Lindquist, Digital Effects, Inc., New York, NY
Barry Milliken, Skidmore, Owings & Merrill, New York, NY
Hilary Mills, Activision, San Francisco, CA
Michael O'Rourke, New York Institute of Technology, Old Westbury, NY
Judson Rosebush, Judson Rosebush Company, New York, NY
Susan VanBaerle, Cranston-Csuri Productions, Columbus, OH
James Ver Hague, Rochester Institute of Technology, Rochester, NY

TOPICS
The visual language of computers/Kerlow
Computer graphics in art and design education/Ver Hague
Principles of font design for the personal workstation/Bigelow
Two-dimensional computer animation and live action production/Lindquist
Computer-aided architecture at SOM/Milliken
How to produce and direct computer graphics/Rosebush
A classification methodology for computer-generated images/Kerlow
Educational and entertainment software/Mills
Three-dimensional computer animation/Kopra
Three-dimensional character computer animation/VanBaerle
Purchasing the best computer graphics system/Bickford
Computers, sculpture and three-dimensionality/O'Rourke
First steps towards intelligent design systems/Feiner

22

TODAY'S PROBLEMSOLVERS: GRAPHICS WORKSTATIONS

MONDAY

CHAIR
Bruce Eric Brown

LECTURERS
Bruce Eric Brown, The Quail Group, Orem, UT
Robert L. Judd, University of California, Lawrence Livermore National Laboratory, Livermore, CA
Steven G. Kensinger, Kensinger Associates, Minnetonka, MN

TOPICS
Introduction/Brown
Engineering workstations/Kensinger
Art and animation workstations/Brown
Scientific workstations/Judd
Benchmarking workstations
- Calculations/Kensinger
- Networking/Judd
- Graphics/Brown

Making them work/Kensinger, Brown, Judd

23
AESTHETIC ISSUES IN COMPUTER GRAPHIC ART FOR MASS MEDIA
MONDAY

CHAIR
Scott J. Jacobs

LECTURERS
Marcy Brafman, MTV: Music Television, New York, NY
Bill Feigenbaum, Feigenbaum Production, New York, NY
Scott J. Jacobs, Massachusetts College of Art, Boston, MA
John Ridgeway, GRFX, Inc. and *Entertainment Tonight,* Hollywood, CA
Drew Takahashi, Colossal Pictures, San Francisco, CA

TOPICS
Introduction/Jacobs
Practical design considerations for mass media
- Effective characteristics of frame composition/Jacobs
- Design considerations in computer generated imagery/Feigenbaum

Developing your aesthetic sensibilities
- Beyond print: the tube dimension/Ridgeway
- Opening yourself to more creative choices/Takahashi
- The romance of drawing on-screen/Brafman

24

COMPUTER ANIMATION USING VIDEO TECHNIQUES

TUESDAY

CHAIR
Ed Kramer

LECTURERS
Mike Jackson, Image West, Ltd.,
Studio City, CA
Ed Kramer, EDITEL, New York, NY
Jerry Pojawa, Action Video, Hollywood, CA
Maury Rosenfeld, The Post Group,
Hollywood, CA

TOPICS
Video production techniques/Kramer
Quantel paint box/Pojawa
ADO techniques (Ampex Digital Optics)/
Jackson
Quantel Mirage and Bosch FGS-4000/
Rosenfeld
Animator/client interface and
storyboarding/Group

25
QUADTREES, OCTREES AND RELATED HIERARCHICAL DATA STRUCTURES
TUESDAY

CHAIRS
Hanan Samet
Donald J. Meagher

LECTURERS
Donald J. Meagher, Phoenix Data Systems, Albany, NY
Hanan Samet, University of Maryland, College Park, MD
Clifford A. Shaffer, University of Maryland, College Park, MD
Mark A. Yerry, Rensselaer Polytechnic Institute, Troy, NY

TOPICS
Quadtrees and related hierarchical data structures for points, lines and areas/Samet
Quadtree methods for geographical data/ Shaffer
Octree methods for solid modeling/Meagher
Quadtree and octree methods for finite element mesh generation/Yerry

26

INTRODUCTION TO IMAGE PROCESSING

MONDAY

CHAIR
Cliff Stoll

LECTURERS
Brad Castalia, Idaeim Studios, Tucson, AZ
Kenneth Castleman, Perceptive Systems, Inc., Houston, TX
Cliff Stoll, University of California, Berkeley, CA

TOPICS
Introduction/Stoll
- Image processing vs. image analysis vs. image synthesis
- What's easy; what's difficult; what's impossible to do

The nature of a digital image/Castalia, Stoll
- Pixel concepts
- Detector characteristics
- Display characteristics
- Representation of an image within a computer

Image processing/Castleman
- Overview
- Geometric manipulation
- Intensity manipulation
- Filtering
- Edge enhancement
- Image arithmetic

Image analysis/Castleman
- Overview
- Histograms
- Area classification
- Separation methods
- Quantitative image analysis
- Pattern recognition
- Other topics

27
BUILDING SCIENTIFIC AND ENGINEERING GRAPHICS APPLICATIONS
MONDAY

CHAIR
David J. Kasik

LECTURERS
David J. Kasik, Boeing Computer Services, Seattle, WA
Rik Littlefield, Battelle Northwest Laboratories, Richland, WA
Jim Thomas, Battelle Northwest Laboratories, Richland, WA
Kevin Weiler, General Electric, Schenectady, NY

TOPICS
Introduction/Kasik
An architecture for graphics applications development/Kasik
- Derivation of logical components in the architecture
- Description of functionality for each component
- Description of resulting applications built within architecture

Graphics technology and directions in an application context/Weiler
- Graphics display pipeline
- Graphics input processing techniques
- Structure of graphics display systems software and hardware
- Future directions of graphics systems architecture

Specialized, limited audience applications/ Littlefield
- Analysis of a complete graphics application
- Derivation of software engineering principles within application

Iconic communication principles/Thomas
- Methods of graphics communication in an interactive application
- Analysis of techniques in an interactive genetic engineering application

An application-oriented guide to the exhibits/ Kasik

OPENING SESSION
9-10:30

SIGGRAPH '85 WELCOME
Pat Cole, Robert L. Heilman

SIGGRAPH REPORT

A CONFERENCE OVERVIEW

Panel

PERSPECTIVE—COMPUTER GRAPHICS IN EUROPE AND JAPAN
10:45-12:15

CHAIRS
Jose Encarnacao, Technische Hochschule Darmstadt
Tosiyasu L. Kunii, University of Tokyo

This panel will present noteworthy activities from Europe and Japan. The panelists will emphasize important and recent work from their respective regions. The topics will include general computer graphics, CAD/CAM and art.

MODERATOR
Bertram Herzog, Computer Graphics Consultants, Inc.

PANELISTS
X. Nicolas, Sogitec
Malcolm Sabin, FEGS Ltd.
Yukari Shirota, University of Tokyo
W. Strasser, Technische Hochschule Darmstadt
Shunichiro Tsurumi, Hitachi Ltd.
Takao Wachi, Osaka City University

1985 SIGGRAPH AWARDS
Jon Meads

STEVEN A. COONS AWARD
Pierre E. Bézier

COMPUTER GRAPHICS ACHIEVEMENT AWARD
Loren Carpenter

Paper
REFLECTANCE MODELS
10:45-12:15

CHAIR
Norman I. Badler, University of Pennsylvania

Anisotropic Reflection Models
James T. Kajiya, California Institute of Technology

Continuous Tone Representation of Three-Dimensional Objects Taking Account of Shadows and Interreflection
Tomoyuki Nishita, Fukuyama University
Eihachiro Nakamae, Hiroshima University

The Hemi-Cube: A Radiosity Solution for Complex Environments
Michael F. Cohen, Cornell University
Donald P. Greenberg, Cornell University

Panel

ISSUES AT THE INTERFACE: AN HISTORICAL TRACE OF PROMPTING, CONCURRENCY, SIGNIFICATION AND EASE OF USE

1:45-3:15

CHAIR
Robert M. Dunn, The Cadware Group, Ltd.

Beginning with Sketchpad and continuing to Macintosh and beyond, designers and users of interactive graphics systems and applications have refined the nature of the working graphical interface between a person and a computer. The panel will trace the changing uses of graphical symbols and icons; address the evolution of concurrency in windows, menus and task activation; examine mechanisms for gaining attention and prompting for reactions; and focus on reducing visual, physical and psychological stress via improved screen design and applied principles of graphical presentation.

PANELISTS
Sara Bly, Xerox Office Systems
Richard Guedj, SiGRID
William Laaser, Metaphor Computer Systems
William J. Poduska, Apollo Computer Inc.

Paper

RENDERING TECHNIQUES

1:45-3:15

CHAIR
Henry Fuchs, University of North Carolina at Chapel Hill

Compositing 3-D Rendered Images

Tom Duff, AT&T Bell Laboratories

Bounding Ellipsoids for Ray-Fractal Intersection

Christian Bouville, CCETT

Efficient Alias-Free Rendering Using Bit-Masks and Look-Up Tables

Greg Abram, University of North Carolina at Chapel Hill
Lee Westover, University of North Carolina at Chapel Hill
Turner Whitted, Numerical Design Ltd.

Panel

SIZING THE MARKET: WHERE DO ALL THOSE NUMBERS COME FROM?

3:30-5:00

CHAIR
Carl Machover, Machover Associates Corporation

Forecasters say that 6.2 billion dollars worth of industrial computer graphics hardware, software and services will be sold in 1985, that 2.6 billion dollars worth of CAD/CAM equipment was delivered in 1984 and that "hardcopy" will grow an average of 25 percent per year over the next five years. How do they know?

The panel includes market forecasters from industry and leading market research companies. They will discuss how such forecasts are made, how accurate they are, how good past forecasts have been and what the problems are in developing these forecasts.

PANELISTS
Charles Foundyller, Daratech, Inc.
Robert H. Katzive, Gnostic Concepts, Inc.
Neil Kleinman, International Data Corporation
Christopher M. Saleh, Data General Corporation
Beth Tucker, Dataquest, Inc.

Paper
SAMPLING AND FILTERING
3:30-5:00

CHAIR
Franklin C. Crow, Xerox PARC

Statistically Optimized Sampling for Distributed Ray Tracing
Mark E. Lee, Amoco Production Center
Richard A. Redner, University of Tulsa
Samuel P. Uselton, University of Tulsa

Antialiasing Through Stochastic Sampling
Mark A.Z. Dippé, University of California, Berkeley
Erling Henry Wold, University of California, Berkeley

Integrated Analytic Spatial and Temporal Antialiasing for Polyhedra in 4-Space
Charles W. Grant, Lawrence Livermore National Laboratory

A Two-and-a-Half-D Motion-Blur Algorithm
Nelson L. Max, Lawrence Livermore National Laboratory
Douglas M. Lerner, Ota Ku, Tokyo

Panel

ANIMATED COMPUTER GRAPHICS IN TELEVISION BROADCASTING

9:00-10:30

CHAIRS
Christine Barton, National Broadcasting Company, Inc.
Carl Rosendahl, Pacific Data Images

Issues involved in computer generated video animation will be addressed by the producers of the video and the clients who use the product. The producers of computer generated video include independent production houses and production departments within the television networks. The clients include advertising agencies and the news, sports and entertainment departments of the television networks themselves. Topics to be discussed include design control, equipment used and cost. Issues such as in-house production vs. contracted production and daily production schedules vs. longer term promotional projects will also be discussed.

PANELISTS
Robert Brandel, National Broadcasting Company, Inc.
Larry Elin, MAGI
Susan Rugtiv, Ketchum Advertising
Douglas Towey, Columbia Broadcasting Systems, Inc.

Paper

HARDWARE

9:00-10:30

CHAIR
J. Nick England, Adage, Inc.

Fast Image Generation of Constructive Solid Geometry Using a Cellular Array Processor

Hiroyuki Sato, Fujitsu Laboratories, Ltd.
Mitsuo Ishii, Fujitsu Laboratories, Ltd.
Keiji Sato, Fujitsu Laboratories, Ltd.
Morio Ikesaka, Fujitsu Laboratories, Ltd.
Hiroaki Ishihata, Fujitsu Laboratories, Ltd.
Masanori Kakimoto, Fujitsu Laboratories, Ltd.
Katsuhiko Hirota, Fujitsu Laboratories, Ltd.
Kouichi Inoue, Fujitsu Laboratories, Ltd.

The Drawing Prism: A Versatile Graphic Input Device

Richard Greene

Fast Spheres, Shadows, Textures, Transparencies and Image Enhancements in Pixel-Planes

Henry Fuchs, University of North Carolina at Chapel Hill
Jack Goldfeather, Carleton College
Jeff P. Hultquist, University of North Carolina at Chapel Hill
Susan Spach, University of North Carolina at Chapel Hill
John D. Austin, University of North Carolina at Chapel Hill
Frederick P. Brooks, Jr., University of North Carolina at Chapel Hill
John G. Eyles, University of North Carolina at Chapel Hill
John Poulton, University of North Carolina at Chapel Hill

Panel
FONT FORMATS
10:45-12:15

CHAIR
Charles Bigelow, Stanford University

Methods of font representation for typography on display screens and printers such as Metafont, PostScript and Ikarus will be presented. Issues to be discussed include: the form of representation, transformation, data compaction, processing speed, software and hardware implementation, device independence, interchange standards, output legibility and aesthetics.

PANELISTS
Philippe Coueignoux, Data Business Vision
John Hobby, Stanford University
Peter Karow, Karow-Rubow-Weber GmbH
Vaughn Pratt, Stanford University and Sun Microsystems, Inc.
Luis Trabb-Pardo, Imagen Corp.
John Warnock, Adobe Systems, Inc.

Paper
GEOMETRIC MODELING
10:45-12:15

CHAIR
A. Robin Forrest, University of East Anglia

Bintrees, CSG Trees and Time
Hanan Samet, University of Maryland
Markku Tamminen, Helsinki University of Technology

Geometric Modeling of Solid Objects by Using a Face Adjacency Graph Representation
Silvia Ansaldi, Politenico di Milano
Leila De Floriani, Instituto per la Matematica Applicata del CNR
Bianca Falcidieno, Instituto per la Matematica Applicata del CNR

A Unified Approach to Interference Problems Using a Triangle Processor
Fujio Yamaguchi, Kyushu Institute of Design

Panel

AESTHETICS OF COMPUTER GRAPHICS

1:45-3:15

CHAIR
Mihai Nadin, Rhode Island School of Design

As graphics technology and software become more mature, it is critical to examine the aesthetics of computer generated images. Effective visual communication and artistic expression are dependent on aesthetic quality. Issues that emerge for artists, designers and computer scientists include: the formal attributes of images, aesthetic evaluation criteria and the desire to detect or implement aesthetic qualities. The panelists, having studied these and other issues, will present and debate their diverse viewpoints.

PANELISTS
Charles Csuri, Cranston-Csuri Productions
Frank Dietrich, Artist
Hiroshi Kawano, Metropolitan (Tokyo) College of Technology
Thomas Linehan, Ohio State University

Paper
CURVES AND SURFACES
1:45-3:15

CHAIR
Jeffrey Lane, Daisy Systems Corporation

Techniques for Conic Splines
Vaughan Pratt, Sun Microsystems, Inc.

Blend Surfaces for Set Theoretic Volume Modeling Systems
Alan E. Middleditch, The Polytechnic of Central London School of Engineering and Science
Kenneth H. Sears, The Polytechnic of Central London School of Engineering and Science

On Ray Tracing Parametric Surfaces
Daniel L. Toth, Ford Motor Company

Panel

THE CREATION OF NEW KINDS OF INTERACTIVE ENVIRONMENTS IN ART, EDUCATION AND ENTERTAINMENT

3:30-5:00

CHAIR
Stephen Wilson, San Francisco State University

Artists and researchers are using the computer's interactive capabilities to develop innovative kinds of responsive settings. The gestures, sounds and other participant activities are used to control the flow of computer-mediated graphic, sound and kinetic events. Illustrated descriptions of several responsive settings will be presented. Panelists will discuss implications for changing traditionally passive art, education and museum settings.

PANELISTS
David Backer, Mirror Systems
Myron Krueger, University of Connecticut
Peter Richards, Exploratorium
Sonia Sheridan, School of the Art Institute (Emeritus)
David Ucko, Chicago Museum of Science and Industry

Paper

USER INTERFACE MANAGEMENT SYSTEMS

3:30-5:00

CHAIR
R. Daniel Bergeron, University of New Hampshire

There's More to Menu Systems Than Meets the Screen

Henry Lieberman, Massachusetts Institute of Technology

Input/Output Linkage in a User Interface Management System

Dan R. Olsen, Jr., Brigham Young University
Elizabeth P. Dempsey, Arizona State University
Roy Rogge, Arizona State University

Squeak: A Language for Communicating with Mice

Luca Cardelli, AT&T Bell Laboratories
Rob Pike, AT&T Bell Laboratories

The University of Alberta User Interface Management System

Mark Green, University of Alberta

Panel

REAL-TIME SIMULATION IN THE REAL WORLD

9:00-10:30

CHAIR
Zsuzsanna Molnar, Silicon Graphics, Inc.

Flight simulation was the first well-known real-time simulation application using computer graphics. New computer architectures, combined with fast interactive graphics, extend the scope of simulation to encompass ever more realistic visual simulation as well as the modeling of objects and processes: computer prototyping. Panelists will discuss evolutionary trends, costs and effectiveness of real-time simulation citing examples from flight simulation, drug design, wind tunnel simulation, the testing of on-the-road car behavior and robotics.

PANELISTS
Pieter Buning, NASA Ames Research Center
Peter Doenges, Evans and Sutherland Computer Corporation
Robert Langridge, University of California, San Francisco
Tom Lasinski, NASA Ames Research Center
Randy Smith, SRI International

Paper

INPUT AND DRAWING TECHNIQUES

9:00-10:30

CHAIR
Marceli Wein, National Research Council of Canada

Issues and Techniques in Touch-Sensitive Tablet Input

William Buxton, University of Toronto
Ralph Hill, University of Toronto
Peter Rowley, University of Toronto

An Automatic Beautifier for Drawings and Illustrations

Theo Pavlidis, AT&T Bell Laboratories
Christopher J. Van Wyk, AT&T Bell Laboratories

Juno: A Constraint-Based Graphics System

Greg Nelson, DEC Systems Research Center

Panel

FUNDAMENTAL ALGORITHMS: RETROSPECT AND PROSPECT

10:45-12:15

CHAIR
Rae A. Earnshaw, University of Leeds

Many advances and innovations have been made since the earliest line generation algorithm formulated by Bresenham in 1963. Extensions have been devised to allow the generation of arcs, conics and curves, and the exploitation of gray scale and color. Solutions to the aliasing problem have been devised; good quality pictures can now be produced on inexpensive displays. More recently, a study of program transformations has suggested new ways for the automatic generation of algorithms. Current progress will be reviewed and possible new developments and advances will be discussed.

PANELISTS
James H. Clark, Stanford University and Silicon Graphics, Inc.
Robert D. Parslow, Brunel University and Unicon
David F. Rogers, U.S. Naval Academy

Paper
ANIMATION
10:45-12:15

CHAIR
Edwin E. Catmull, Lucasfilm Ltd.

Animating Rotation with Quaternion Curves
Ken Shoemake, Pacific Data Images

Parametric Keyframe Interpolation Incorporating Kinetic Adjustment and Phrasing Control
Scott N. Steketee, University of Pennsylvania
Norman I. Badler, University of Pennsylvania

Computational Modeling for the Computer Animation of Legged Figures
Michael Girard, OSU CGRG/Cranston Center
Anthony A. Maciejewski, OSU CGRG/ Cranston Center

Panel

COMPUTER GRAPHICS TECHNOLOGY

1:45-3:15

CHAIR
John Staudhammer, University of Florida

The extremely rapid growth of computer graphics is due, in large measure, to the application of leading-edge technology devices. Initially, these devices were not inspired by graphics applications. However, the market has become so large that display oriented semiconductor devices are becoming specialty product lines. In turn these devices are leading to different display hardware architectures which will profoundly influence emerging capabilities in computer graphics. The future will be shaped as much by these technical innovations as by the economic trends they engender. The panel will examine the forces behind these technological changes and estimate their influence on directions for the computer graphics industry.

PANELISTS
Dean Bailey, Intel Corporation
Steven Dines, Advanced Micro Devices
Louis J. Doctor, Raster Technologies, Inc.
Karl Guttag, Texas Instruments
Jack L. Hancock, Wells Fargo Bank
Klaus W. Lindenberg, Martin-Marietta Aerospace
Edmund Y. Sun, Weitek Corporation

Paper
TEXTURES AND PATTERNS
1:45-3:15

CHAIR
James T. Kajiya, California Institute of Technology

Construction of Fractal Objects with Iterated Function Systems
Stephen Demko, Georgia Institute of Technology
Laurie Hodges, Georgia Institute of Technology
Bruce Naylor, Georgia Institute of Technology

Solid Texturing of Complex Surfaces
Darwyn R. Peachey, University of Saskatchewan

An Image Synthesizer
Ken Perlin, MAGI

Panel

SOLID MODELING WITH HARDWARE

3:30-5:00

CHAIR
Pierre J. Malraison, GE-Calma

This panel's focus is on special purpose hardware for solid modeling. Solid modeling concerns the definition, display, manipulation and analysis of objects stored as the complete, unambiguous representation of a bounded region of three-dimensional space. The three primary representation methods, constructive solid geometry, boundary representations and spatial enumeration, will be discussed. Recent developments in these representation methods and their hardware implementations will be described. The panel will conclude with a dialog with the audience to predict future developments.

PANELISTS
Gershon Kedem, Duke University
William Kelly, General Electric Company
Greg Lee, Weitek Corporation
Donald Meagher, Phoenix Data Systems

Paper
NATURAL PHENOMENA
3:30-5:00

CHAIR
Alain Fournier, University of Toronto

Visual Simulation of Clouds
Geoffrey Y. Gardner, Grumman Aerospace Corporation

Modeling the Mighty Maple
Jules Bloomenthal, New York Institute of Technology

Approximate and Probabilistic Algorithms for Shading and Rendering Structured Particle Systems
William T. Reeves, Lucasfilm Ltd.
Ricki Blau, University of California, Berkeley

ABEKAS VIDEO SYSTEMS, INC.
Booth 1731

353A Vintage Park Drive
Foster City, California 94404
(415) 571-1711
Martha Lash
Marketing Support Manager

ABEL GRAPHICS (SUBSIDIARY OF ROBERT ABEL & ASSOCIATES)
Booth 1061

953 N. Highland Ave.
Hollywood, California 90038
(213) 462-8100
Bobby Darroll
President

User Group Contact: Steven Sidley
Vice President, Products

Abel Graphics is a subsidiary of Robert Abel & Associates, an internationally-acclaimed computer graphics production company. The product line includes hardware and software for high-end industrial design and broadcast graphics applications: 3-D modeling and data base creation; real-time, interactive motion editing and previewing; rendering with smooth shading, multiple light sources, antialiasing, texture and reflection mapping, etc.; digital compositing.

ADAGE, INC.
Booth 846

One Fortune Drive
Billerica, Massachusetts 01821
(617) 667-7070
Mary Whitton
Director of Graphics Terminals Marketing

User Group Contact: Phyllis Flynn
Marketing Administrator

Adage 3000 family of high-performance raster display systems offers flexibility and advanced features, including local

transformation, hidden surface removal, smooth shading, multiple light sources, transparency, antialiasing and full color rendering. Software packages displayed include SOLID 3000, SEISMIC 3000, IDL2 simulation package and the new FLIGHT 3000.

ADDISON-WESLEY PUBLISHING COMPANY INC.

Booth 154

Jacob Way
Reading, Massachusetts 01867
(617) 944-3700
Carolyn Berry
Marketing Manager

Exhibit will include a broad variety of computer and graphics-related books and references, including the best selling FUNDAMENTALS OF INTERACTIVE COMPUTER GRAPHICS by Foley and Van Dam, and the new INTERACTIVE COMPUTER GRAPHICS by Chan Park. In addition, up-to-the-minute books on artificial intelligence, Smalltalk-80, the UNIX System and other operating systems, database, Ada, Pascal, algorithms, LOGO, assembly language and VLSI will be exhibited.

ADVANCED COLOR TECHNOLOGY, INC.

Booth 542

21 Alpha Road
Chelmsford, Massachusetts 01824
(617) 256-1222
Jose Carreiro
Director of Marketing

ACT will demonstrate the ACT II™ Ink Jet, desk top color printer that provides brilliant hard copy images on paper, transparencies and reflective paper in 125 colors in 90 seconds. A new High Speed Video Interface that captures and buffers a 1024 x 1024 screen image in 2.7 seconds is to be shown.

AED, INC.
Booth 516

440 Potrero Ave.
Sunnyvale, California 94086
(408) 733-3555
(800) 538-1730 (outside California)
Robert Deisher
Manager, Graphics Products

AED introduces the Colorware Model 1280 high performance graphics terminal. Resolution equals 1280 x 1024, 60Hz non-interlaced. Pixel write and vector draw speeds equal 327 nanoseconds/pixel, Multiple write rates equal 36 nanoseconds/pixel. Command DMA operates in excess of 50K vectors/second. Compatible with AED Models 512, 767, 1024, TEK 4014, VT-100.

ADVANCED TECHNOLOGY CENTER
Booth 452

5179 Overland Ave.
Culver City, California 90230
(213) 836-5852
Frank J. Braunlich
Marketing Manager

ATC specializes in machine and device independent graphics & Image Processing Software. GRAFPAK-GKS—ANSI/ISO GKS Standard implementation. C & FORTRAN language bindings up to 2b/2c levels. GRAFPAK-CORE—A complete 3D implementation of the ACM SIGGRAPH Specifications. DIP-10 PLUS—Enhanced PLOT-10 TCS library emulator. P-CUBED—Interactive Image Processing Software. GRAFIT & GOLD—Business and Scientific Presentation Software Packages. CONTOUR-80—Generation and display of 3D surfaces. PC-PRODUCTS—Terminal Emulators for VT-100 and Tektronix 4010/4105 and the 1st three libraries mentioned above.

ALIAS RESEARCH INC.
Booth 1300

111 Queen St. East, Suite 500
Toronto, Ontario, Canada M5C 1S2
(416) 362-9181
Stephen Bingham
Vice President, Marketing

Alias Research will unveil a revolutionary new 3D presentation graphics system. The product will be officially announced on Tuesday, July 23, 1985. Details on the product announcement will be available in Booth 1300.

AMERICAN SMALL BUSINESS COMPUTERS
Booth 143

118 S. Mill St.
Pryor, Oklahoma 74361
(918) 825-4844
Robert Webster
Vice President

American Small Business Computers is exhibiting ProDesign II, a personal CAD system. ProDesign II, "the easy-to-use CAD system," is a comprehensive CAD system for IBM PC compatibles. It supports most printers and plotters available for the PC, as well as a wide variety of input devices.

AMF LOGIC SCIENCES, INC.
Booth 1116

10808 Fallstone Road
Houston, Texas 77099
(713) 879-0536
Peter Ferrer
Director of Marketing

AMF Logic Sciences will be displaying its complete line of vector-to-raster processors. These range from the inexpensive PC compatible TURBOGRAPH series, specifically designed for OEM's and System Integrator's to the mini- and mainframe compatible HSR-11B capable of driving the Versatec ECP42 and other high performance plotters at full speed.

AMPEX CORPORATION
Booth 1153

401 Broadway
Redwood City, California 94063
(415) 367-2011
Bob Natwick
National Sales Manager

AMTRON CORPORATION
Booth 1120

2260 De La Cruz Blvd.
Santa Clara, California 95050
(408) 748-8500
Donna Linerud
Office Manager

Amtron exhibits high-performance color video monitors for a wide variety of applications in CAD/CAM, Industrial Process Control, Government and Medicine. These displays feature a wide range of horizontal and vertical scan frequencies.

ANALOG TECHNOLOGY CORPORATION
Booth 1446

15859 E. Edna Place
Irwindale, California 91706
(818) 960-4004
Jim Lawrence
President

ANN ARBOR TERMINALS, INC.
Booth 1141

6175 Jackson Road
Ann Arbor, Michigan 48103
(313) 663-8000
Gary DeLuca
Vice President of Sales

Ann Arbor Terminals will exhibit the XL Series of ANSI standard alphanumeric and graphics terminals, ranging from the low cost Genie XL to the powerful high-resolution vector graphics Ann Arbor Ambassador GXL terminal, with an ergonomic design and fully programmable low-profile keyboard.

ANTICS ENTERPRISES INC.
Booth 1261

175 Fifth Ave.
New York, New York 10010
(212) 260-8505
Michael Werner
Vice President, Systems Development

User Group Contact: Claudio Castillo
Vice President, Customer Support and Training

ANTICS is a uniquely versatile, turnkey computer animation/special effects system. By following simple instructions, users can perform a great variety of functions, including skeleton animation, in-betweening and painting. Designed by an animator for maximum friendliness, ANTICS brings a quantum leap in productivity to broadcast, industrial and educational video.

APOLLO COMPUTER INC.
Booth 228

330 Billerica Road
Chelmsford, Massachusetts 01824
(617) 256-6600
Bill Warner
Senior Product Marketing Manager, High End Systems

Apollo Computer Inc. will feature new graphics and communications products as well as a network of its DOMAIN workstations at SIGGRAPH. Apollo's concept of dedicated computers with extensive data sharing capabilities has set the standard in the technical marketplace. The family of DOMAIN workstations—distinguished by their dedicated power, high-resolution graphics and network integration, include the low-cost DN300 and DN320; the DN550, Apollo's lowest-cost, color model; the high-end DN460, and the top-of-the-line DN660 system. More than 300 third-party application packages operate on DOMAIN systems.

ARTRONICS/3M
Booth 1506

300 Corporate Court, P.O. Box 408
South Plainfield, New Jersey 07080
(201) 756-6868
Hugh Smyser
Vice President, Marketing and Planning

Artronics/3M Studio Computers are powerful, turn-key systems for graphic designers, slide and video producers. Artronics/3M offers systems and software for every level of application. We have three ways to create images—painting, vector drawing, and camera digitizing, with the ability to merge all three into a single composition; and also an outstanding high-resolution business graphics package.

ASSOCIATION FOR COMPUTING MACHINERY
Registration Lobby

11 W. 42nd St.
New York, New York 10036
(212) 869-7440
Roberta Bukar
Conference Coordinator

ACM members are organizers of conferences, authors of the most relevant technical literature and developers of the latest technology. ACM attracts and serves computing practitioners and theoreticians throughout the world. It is an organization that has always reflected the changing nature and needs of people engaged in computing arts and sciences.

AT&T
Booth 1200

4513 Western Ave.
Lisle, Illinois 60532
(312) 810-6917
Denise Ward
Sales Planning Manager

AT&T's exhibit will highlight state-of-the-art technology. In addition, a full range of technical staff will be on hand to discuss the products. Stop by booth #1200 for an opportunity to see and try our latest innovations.

AUSCOM (A KMW SYSTEMS COMPANY)

Booth 1430

2007 Kramer Lane
Austin, Texas 78758
(512) 836-8080
Linda Lewis
Vice President, Sales

Auscom provides proven and reliable direct mainframe channel attachment for a wide variety of graphics systems and peripherals. These high-speed host connections are available using parallel interfaces or LANs. Auscom is exhibiting 3 varieties of channel interfaces: The 8300 Single Board, the Q-bus-based 8900A and the Multibus-based 8600.

AUTODESK INC.

Booth 1541

2320 Mainship Way
Sausalito, California 94965
(415) 332-2344
Stephanie Ford
Exhibit Manager

CAD/camera™ combined with AutoCAD allows you to take a picture of a drawing and automatically turn it into a CAD database. CAD/camera identifies, extracts, connects and rectifies lines from an original image. The resulting CAD database can be edited, viewed and plotted with AutoCAD software. CAD/camera runs on the IBM PC with the Datacopy™ scanner or on the Wang PIC system™. AutoCAD software will be demonstrated. Come see the newest features.

AUTOGRAPHIX, INC.
Booth 1553

100 Fifth Ave.
Waltham, Massachusetts 02154
(617) 890-8558
William Schultz
Marketing Manager

Autographix is a leading manufacturer of computer-generated presentation graphics systems—the top-of-the-line Autographix 200A, the highly-affordable Autographix 150, and the presentation software package Autographix 35. A nationwide network of Autographix Imaging Centers provides high-quality 35mm slides, transparencies, color prints, and black-and-white stats.

AVL
Booth 448

56 Park Road
Tinton Falls, New Jersey 07724
(201) 544-8700
Marla Suttenberg
Manager, Market Development

User Group Contact: Michael Gilson
Technical Sales Specialist

AVL is the price/performance leader in turnkey computer graphics presentation systems. The AVL Starburst with high resolution film recorder produces presentation-quality 35mm slides and 4 x 5 and 8 x 10 prints and transparencies. Easy-to-use standard software includes freeform art, text and business charts.

AV VIDEO MAGAZINE
Booth 1636

25550 Hawthorne Blvd. Suite 314
Torrance, California 90505
(213) 373-9993
Joy McGrath
Publisher

User Group Contact: Sam Stalos
Editor

AV Video Magazine, published by Montage Publishing, Inc., features stories on computer graphics, slide/multi-image, video, audio and microcomputers.

AZTEK
Booth 1447

17 Thomas
Irvine, California 92718
(714) 770-8406
Phill Lippincott
President

User Group Contact: Phill Lippincott

AZTEK is displaying three products at SIGGRAPH '85: The ARTCENTER—the industries most comprehensive computer graphics presentation system, a multi-user multi-tasking system; STUDIO-SYSTEM—cost effective, single user, computerized slide, print and video presentation system; and PCchart—computer graphics software package which produces professional speaker support slides.

BARCO INDUSTRIES, INC.
Booth 1326

2211-B Executive St.
Charlotte, North Carolina 28208
(704) 392-9371
Emmy Verheecke
Marketing Manager

Barco Industries will show the full line of high-resolution, high-performance color raster scan graphic displays (14", 20", 26"). CDCT 6551: 1280 x 1024 pixels/60Hz non interlaced, horizontal frequency ranging from 45 to 75 kHz, a bandwidth of 120 MHz. CDCT 5000-series: up to 45 kHz hor. freq., up to 50 MHz bandwidth. CD-range: up to 25 kHz hor. freq., up to 20 MHz bandwidth.

BENSON, INC.
Booth 216

2690 Orchard Park Way, P.O. Box 32059
San Jose, California 95152-2059
(408) 945-1000
Robert L. Hines
Manager, Marketing Communications

Featured products being demonstrated in the expanding line of high-quality plotters from Benson are: single-pass color electrostatic, monochromatic electrostatic, color-thermal-transfer, and ink-jet with the Color Image Processor. The CIP provides capability for pixel-for-pixel plotting of the computer screen image.

ROBERT BOSCH CORPORATION
Booth 857

2300 South 2300 West
Salt Lake City, Utah 84131
(801) 972-8000
Al Jensen
Manager of Marketing Communications

The Bosch FGS-4000 is a graphics computer capable of generating 2D and 3D objects in a 3D universe. The FGS-4000 has both real time and Frame to Frame animation capabilities. Software capabilities include Object creation and animation programs along with special effects including glows streaks, smooth shading and fractals.

CADMUS COMPUTER SYSTEMS
Booth 1440

600 Suffolk St.
Lowell, Massachusetts 01854
(617) 453-2899
Sarah Hoover Boyd
Marketing Communications Specialist

Cadmus manufactures the CadMac workstation which combines the power of a UNIX workstation with the graphics software of Apple's Macintosh. This software facilitates the development of graphics applications and

user interfaces. CadMac is designed to support a network of Macintoshes over AppleTalk. CadMac offers the fastest high-resolution monochrome graphics on the market.

CAHNERS COMPUTER PUBLICATIONS
Booth 1627

275 Washington St.
Newton, Massachusetts 02158
(617) 964-3030
Corie Rand
Promotion Coordinator, EDN

Cahners Computer Publications—Publishers of 32 specialized business magazines in Building & Construction, Electronics & Computers, Foodservice, Manufacturing, Medical/Health Care.

EDN—is written for engineering managers and design engineers working in the electronics OEM. EDN covers new advances in electronic technology and provides articles and product reviews that help readers utilize those advances in their design.

Electronic Business—For the management team in electronics, computer and system companies.

CAHNERS COMPUTER PUBLICATIONS
Booth 1627

275 Washington St.
Newton, Massachusetts 02158
(617) 964-3030
Wendy Whittemore
Promotion Manager

Business Computer Systems: Written for the buyers of business computers and related products—the business computer management team. Mini-Micro Systems: The magazine for value-added OEMs, value-added resellers and value-added users. PC Products: Product review and evaluation magazine for business users and buyers of IBM PC and PC compatible computers.

CALCOMP
Booth 906

2411 W. LaPalma Ave.
Anaheim, California 92801
(714) 821-2000
Rich Peters
Vice President, Business Development

CalComp will feature a full line of computer graphics peripherals; vector and raster plotters, controllers, digitizers, graphic displays and film recorders.

CALOS INC.
Booth 1716

3419 Edison Way
Fremont, California 94538
(415) 657-4430
Ronald C. Crew
Product Marketing Manager

The CALOS 6000 is a high performance electronic engineering workstation. It features the industry's most comprehensive data base and operates in both M68000 and IBM-PC/AT environments.
The full color, high resolution, mouse controlled system is simple to use and highly productive. The system is fully interfaced to major CAD and simulation systems.

CASE TECHNOLOGY, INC.
Booth 1650

633 Menlo Ave., Suite 250
Menlo Park, California 94025
(415) 322-4057
Juli Spicer
Marketing Assistant

The Case CAE Design System provides schematic capture, timing verification, logic simulation and printed circuit board layout capabilities for the electronic design engineer. The Case Systems are the only CAE packages that execute on standard system configurations, including IBM PC/XT/AT in monochrome and enhanced color, DEC VAX and Micro VAX.

CEEGEN CORPORATION
Booth 353

20 S. Santa Cruz Ave.
Suite 102
Los Gatos, California 95030
(408) 354-8841
Gary D. Oates
President

Ceegen-GKS: A full level 2B implementation of the ISO & ANSI standards written in "C" for UNIX systems. Ceegen-GKS is an efficient, portable graphics subroutine library for developing machine-independent applications.
Ceegen-GMS: An interactive, object-oriented graphical modeling system which sits on top of Ceegen-GKS, providing the richest development environment available.

CELCO (CONSTANTINE ENGINEERING LABORATORIES COMPANY)
Booth 1030

1150 E. 8th St.
Upland, California 91786
(714) 985-9868
Pete Constantine
Engineering/Sales

70 Constantine Drive
Mahwah, New Jersey 07430
(201) 327-1123
Paul Constantine
Vice President

CELCO designs and manufactures state-of-the-art electron-beam control devices including CRT deflection yokes, focus coils, deflection amplifiers, function generators, hi-speed and resolution CRT display systems, and Color Film Recording systems.
CELCO is the designer and manufacturer of The CELCO MACHINE: an advanced ultra-high resolution CRT Color Film Recording System (16mm-105mm to 8x10").

The CELCO MACHINE high-speed, high-resolution CRT Color Film Recorder (& business graphics, animation, LANDSAT output) will be in operation and on display at the CELCO exhibit booth at SIGGRAPH '85.

CHARTPAK
Booth 1631

19700 Fairchild, Suite 230
Irvine, California 92715
(714) 752-4999
Jean E. Falco
Marketing Manager

On display will be the Chartpak System 640 with Picture This... paint software CHART for automatic business graphics, ARTWORK 3-D/High resolution software and video-in. The System 640 runs on an IBM PC.

CHORUS DATA SYSTEMS, INC.
Booth 1453

6 Continental Blvd.
P.O. Box 370
Merrimack, New Hampshire 03054
(603) 424-2900
Richard Harrison
Product Marketing Manager

Chorus will feature the IMiGIT PLUS low cost/high resolution image creator and graphic editing system. Images are captured with PC-EYE™ and an ordinary color video camera in their original color at a resolution of 512^2 by 256 colors. Captured images can then be enhanced via graphic editing tools such as: 1000 x 2000 virtual page resolution, annotation, coloring, scaling, word processor integration, line drawing and many others.

CHROMATICS, INC.
Booth 442

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

Chromatics features the CX 1280 and CX 1536 Colorgraphic Display Systems, and the CAECO VLSI Designer III Workstation. The CX systems fully support GKS, and provide drawing speeds up to 500,000 fully transformed vectors/sec. Resolution ranges from 1280 x 1024 (CX 1280) to 1536 x 1152 (CX 1536). The CX 19-inch 60Hz non-interlaced monitor can display 16,000,000 colors. CAECO's Designer III Workstation, combining Chromatics' CX 1400 and Sun Microsystem's Model 2/120, features schematic capture, layout and DRC.

CHYRON CORPORATION
Booth 1729

265 Spagnoli Road
Melville, New York 11747
(415) 332-7070
Larry Minzer
National Sales Manager for
Video Products

User Group Contact: Michael S. Piper
Manager, Engineering Services

Chyron Corporation will exhibit two products at SIGGRAPH '85:

(1) New Chameleon Paint System featuring: NTSC Resolution of 768 x 482; 256 colors simultaneously displayable; Digitizing tablet and pen; Removable 10 Megabyte hard disc; NTSC or PAL and RGB output; Internal genlock and keyer; 256 level-of-gray camera capture (option); Graphic drawing tools; Cut and paste with resizing, etc.; and User definable brushes.

(2) VP-2 Character Generator featuring: 1510 x 482 Resolution; 16 colors displayable out of 512; Unlimited character overlap; Unlimited edge types; and 6 font capacity selectable from 160.

CMP PUBLICATIONS, INC.
Booth 1654

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

Electronic Engineering Manager: Provides management directions for technical leaders. VLSI Design: The magazine for leading-edge technology.

COHU, INC., ELECTRONICS DIVISION
Booth 254

5755 Kearny Villa Road
San Diego, California 92123
(619) 277-6700
Loren Whitley
O.E.M. Products Manager

User Group Contact: Loren Whitley

Cohu manufactures high performance quality closed circuit television cameras and systems. Products include high resolution, digitizable and other specialized video cameras. Cameras are available in single self-contained versions or two-piece systems for machine vision, microscopy and other measurement applications. We build to suit your needs. COHU for CCTV.

COMMODORE BUSINESS MACHINES
Booth 1452

1200 Wilson Drive
West Chester, Pennsylvania 19380
(215) 431-9100
Frank Leonardi
Vice President

Commodore Business Machines will introduce the new Amiga-PC to the computer graphics field. The Amiga-PC combines outstanding graphics, animation and sound capabilities in one totally integrated package that's designed for use by the novice as well as the expert.

COMPUTER-AIDED ENGINEERING
Booth 1441

Penton Plaza, 1111 Chester Avenue
Cleveland, Ohio 44114
(216) 696-7000
Ed Hypaver
District Manager

Computer-Aided Engineering is a technical journal which features editorial and advertising directed to the professionals who specify and buy computer-based equipment for design and manufacturing applications.

COMPUTER GRAPHICS LABORATORIES, INC.

Booth 1330

405 Lexington Ave.
New York, New York 10174
(212) 557-5130
Mark Miller
Promotion Director

CGL, Inc. introduces IMAGES II +, an enhanced performance computer-based artist workstation. A full-color graphics system, IMAGES II +, offers many new features: *Full-color Scanning* from video camera, or freeze frame video. *Real-time Grab* will grab a single frame of video from a VTR. *Single Frame Record* supports remote operation of the VTR. High Resolution *Business Graphics* and *Text*. High Resolution Rendering. *Interpolation* produces animated effects with business graphics and text. Output at resolutions of 512 to 4096.

COMPUTER GRAPHICS TODAY / MEDIA HORIZONS

Booth 1050

50 W. 23rd St.
New York, New York 10010
(212) 645-1000
Michael Boyajian
Marketing; Sales

Media Horizons displays sample copies and subscription information for Computer Graphics Today, the authoritative voice of the industry. Media Horizons also displays sample copies and subscription information for Audio-Visual Communications, Videography, Government Data Systems, Law Enforcement Technology and Industrial Photography.

COMPUTER GRAPHICS WORLD
Booth 142

1714 Stockton St.
San Francisco, California 94133
(415) 398-7151
Diane H. Fuller
Marketing Communications Manager

COMPUTER GRAPHICS WORLD is the only monthly publication providing comprehensive editorial coverage of the overall computer graphics marketplace worldwide. Editorial includes application stories, identification of new technologies and applications, interviews with computer graphics innovators, extensive convention coverage, PC graphics and international markets.

CONRAC DIVISION, CONRAC CORPORATION
Booth 926

600 N. Rimsdale Ave.
Covina, California 91722
(818) 966-3511
Bill Ems
Western Regional Sales Manager

Conrac Division features a variety of color and monochrome video displays for low, medium and high resolution applications to operate in the graphics, CAD/CAM, business and medical markets.

CRAY RESEARCH, INC.
Booth 522

1440 Northland Drive
Mendota Heights, Minnesota 55120
(612) 452-6650
William Samayoa
Senior Graphics Analyst

Cray Research, Inc. designs, manufactures, markets and supports large-scale, high-performance computers used by industry and government for engineering research and technological processing. Over 100

CRAY super computers installed worldwide are used for such diverse applications as weather forecasting, structural analysis, nuclear safety, basic research, oil reservoir modeling and computer graphics.

CROWN ZELLERBACH ELECTROGRAPHIC PAPERS DIVISION

Booth 1649

3400 N. Marine Drive
Portland, Oregon 97217
(503) 286-1621
Tom Main
Product Manager

Crown Zellerbach has been the major supplier of Electrographic Supplies since this writing technology first developed. See us for a complete line of media and toners for use in your Electrostatic Benson and Versatec Plotters.

CSP INC.

Booth 1354

40 Linnell Circle
Billerica, Massachusetts 01821
(617) 272-6020
L. S. Corbit
National Sales Manager

User Group Contact: Deborah Sahrbeck

CSPI is a manufacturer of floating-point array processors which enhance a minicomputer's ability to do high-speed arithmetic. Their 32-bit product line is directed at signal processing problems. Their Mini-MAP product line is specifically configured for OEMs of seismic, imaging and CAD/CAM systems. Their 64-bit products are directed at scientific and engineering computation.

CUBICOMP CORPORATION

Booth 654

3165 Adeline St.
Berkeley, California 94703
(415) 540-5733
Peter McBride
Director of Sales and Marketing

Cubicomp will demonstrate the PictureMaker 3D Video animation system, a comprehensive computer graphics system designed for video production. Titles, logos and 3D objects of any sort can be generated quickly and inexpensively using PictureMaker, then realistically displayed as shaded surface images and animated. Story boards can be printed out, 2D backgrounds painted and complex multi-object sequences composed and shot automatically.

C.V.F. COMPUTER VIDEO FILM
Booth 900

7, rue Biscornet
Paris, France 75012
(1) 432.21.22
Cesare Massarenti
Managing Director

Fully integrated system for the production of high quality computer generated and video image.

DAIKIN INDUSTRIES LTD.
Booth 122

c/o Daikin U.S. Corporation
910 Bern Court, Suite 100
San Jose, California 95112
(408) 280-6004
Katsutomo Kishimoto
Deputy General Manager

Daikin Industries designs, manufactures and markets ultra-high performance, intelligent color graphic display terminals. COMTEC DS301B is a powerful tool for productivity enhancement in a number of sophisticated CAD/CAM/CAE and image processing applications. Very high speed display processing is accomplished by using internal functionally separate micro processor architectures. For example, hidden surface removal, smooth color shading 3D Cursor, depth cueing and translucency are done locally to enable fast, realistic displays using solid models and surface models.

DALIM
Booth 900

5, rue Jean Mentelin
Strasbourg, France 67200
(88) 29.34.81
Mr. Burgstahler
Managing Director

Imaging assisted by interactive software multimedia. High resolution computer graphic system with Tektronix hardware (4115-6200) offers all the features of existing systems and many new automatic design patterns.

DATACUBE, INC.
Booth 161

4 Dearborn Road
Peabody, Massachusetts 01960
(617) 535-6644
Susan Snell Solomon
Marketing Manager

User Group Contact: David Simmons
Applications Manager

MAXVideo, a Modular Architecture for expandable VIDEO, brings an order of magnitude improvement to single board image processing power for the VME environment. VG-150 is an ultra high (1408x1100-8ns) bit mapped graphics display controller. The 128 family for multi-iLBXbus, VME-bus, IBM PC/XT/AT and Q-Bus offers real time acquisition storage and display capability.

DATAGRAPH GmbH
Booth 1606

Giessener Strasse 27
Lich, West Germany 6302
(064) 2071
Norbert Brown
Export Manager

DATAPLOTTING SERVICES INC.
Booth 1221

225 Duncan Mill Road
Don Mills, Ontario Canada M3B 3K9
(416) 441-4163
Litsa K. Parker
Director of Marketing

For communicating ideas and information, quickly and effectively, the D-PICT family of graphics software offers a comprehensive and easy-to-use system for producing presentation quality graphics for business, science and application development. In addition, D-PICT software supports a complete range of graphics devices and runs in a variety of computer environments.

dB TIMES
Booth 145

P.O. Box 3491
Fort Saskatchewan, Alberta
Canada T8L 2T4
(403) 998-7683
Isabel Summers
General Manager

Zypryx, designed and manufactured by Hartman Technica, is a 6-axis isometric 'force operated' joystick input device, using an RS232 feed-through interface. Direct output proportional to force or a positioning mode in which force controls velocity is available for each axis; scale and off-set may be programmed by the user. A prototype will be on display.

DE GRAFE
Booth 1550

25-27 rue Bargue
Paris, France 75015
(1) 734.97.55
Pierre A. Cotte
Managing Director

DE GRAFE Graphic Computer is fully interactive. This graphic pad was designed for creative people without a computer background and allows 256 colors among 16 million, digitalization in real time and the mixing of two video sources.

DESIGN TECHNOLOGY
Booth 1351

7760 Vickers St.
San Diego, California 92111
(619) 268-8194
Sherry Kuzara
Vice President, Marketing

Design Technology, the leading manufacturer of high-resolution light pens, will be introducing two new models. The DT2000 is designed for applications up to 2000x2000 resolution. The DT184 is a low-cost, high-performance pen with a touch surface switch. Both pens feature state-of-the-art surface mount technology.

DICOMED CORPORATION
Booth 836

12000 Portland Ave. S., P.O. Box 246
Minneapolis, Minnesota 55440-0246
(612) 885-3000
Laura Winter
Manager, Marketing Communications

User Group Contact: Kat Gilchrist-Roberts
Manager, Education

DICOMED manufactures computer systems for sophisticated design and imaging of graphics for visual communications. Range of products includes Presenter™ PC business graphics software, the D38 Design Systems, IMAGINATOR™ Design Console, FLEXSCAN™ Scanner and D148 series of Image Recorders. The primary use is the production of slides and overheads for audio-visual purposes.

DIGITAL ENGINEERING, INC.
Booth 436

630 Bercut Drive
Sacramento, California 95814
(916) 447-7600
Patrick Struhs
Sales Manager

User Group Contact: Terri Gardner
Sales

World's first high-speed, integrated bit mapped architecture in a low-cost graphics terminal. Featuring high resolution and drawing speeds of one million pixels per second. Available in monochrone (four levels of gray) and color (16 displayable colors) with non-interlaced monitors. Terminal emulations include DEC VT220, VT240 and VT241, Tektronix 4010, 4014, 4027 and 4105.

DIGITAL EQUIPMENT CORPORATION
Booth 1206

146 Main St.
Maynard, Massachusetts 01754
(617) 493-7440
Kevin W. Hughes
Marketing Communications

Products displayed in the Digital Equipment Corporation booth will include the Professional 380 Series Graphics Workstation, the new VAXstation II (MicroVAX II—Based) Workstation, the new VAXstation 520 Color Workstation and Digital Equipment Corporation's line of graphics terminals and hard copy products featuring the LCPO1 Ink Jet Color Printing System.

DUBNER COMPUTER SYSTEMS
Booth 123

158 Linwood Plaza
Fort Lee, New Jersey 07024
(201) 592-6500
Alan Schoenberg
Director of Marketing

User Group Contact: Keith Thomson
Software Engineer

Dubner Computer Systems manufactures a complete line of Video Graphics Systems for professional and broadcast television. At SIGGRAPH '85, Dubner will be exhibiting the CBG-2, a graphics and animation system including a character generator, a paint system, a 3-D modeling program and real-time digital animation playback from disk; and the VPS-1, a full-color video paint system based on a 4-field frame store.

DUNN INSTRUMENTS
Booth 728

544 Second St.
San Francisco, California 94107
(415) 957-1600
Lyn Cameron
Director of Marketing

DUNN Instruments will demonstrate the full line of color graphic cameras which output crisp high resolution color film from most RGB graphic terminal systems. Film formats include 35mm, SX-70, 4 x 5, 8 x 10, Kodak Instagraphics, 16mm and 35mm Cine, and Kodamatic. Dunn Instruments will exhibit the model 635, ProColor and Microcolor cameras.

DYNAIR ELECTRONICS, INC.
Booth 121

5275 Market St.
San Diego, California 92114
(619) 263-7711
Thomas R. Meyer
Product Manager

DYNAIR Electronics, Inc., a San Diego-based manufacturer of high resolution RGB graphics switching and distribution equipment will present a modular 1000 line RGB graphics switching system. Modular units which switch five (5) RGB signals to a single display and up to 1000 RGB signals to 1000 displays will be shown.

EAG GROUP
Booth 900

87 rue Du Mans
Courbevote, France 92400
(33) 1-334-31-10
Jean-Pierre Bourgeret
General Manager, EAG Video
Francois Helt
Research & Development Manager,
EAG Image Integral

The EAG Group offers in its Paris—LA Defense 7500 M2 Premises, the state of the art in PAL broadcast video and computer pictures facilities (Ikegami, Sony, Ampex, GVE, Jupiter, Dubner, Genigraphics, McDonnell Douglas).

EASTMAN KODAK COMPANY
Booth 1624

343 State St.
Rochester, New York 14650
(716) 724-4689
F. X. Millor
Coordinator, Sales Development

Features products for creating and delivering visual presentations including: Film, copy stand and CRT-to-film equipment for making instant color slides and prints. Kodak Ektagraphic III slide projectors and AudioViewer/projectors for professional display of instant or conventional slides.

EIKONIX CORPORATION
Booth 428

23 Crosby Drive
Bedford, Massachusetts 01730
(617) 275-5070
Stephen J. Emery
Marketing Manager

EIKONIX Corp. introduces the E-Z SCAN Model 4434, the FIRST scanner to digitize up to 46" x 36" drawings, blueprints, mylars and maps, without electronic seaming, with the ease of

a copying machine. Other high resolution cameras/systems being featured include the Series 850 CCD (linear 4096 array) camera, used extensively in the cartography, government, research and development, and university markets.

ELECTOR USA INC.
Booth 136

5128 Calle Del Sol
Santa Clara, California 95050
(408) 727-1506
Donald Power

ELECTROHOME LIMITED
Booth 1140

809 Wellington St.
Kitchener, Ontario
Canada N2G 4J6
(519) 744-7111
David Lowater
Manager, Projection Products

Electrohome will be exhibiting a third generation projection system, the ECP2000, with variable optional focus from 5' to 15' diagonal and 1000 lines optical resolution. In addition, a CAD/CAM 2000 model will be on display, operating on terminals from 30-65 KHz horizontal scan rates. Our fourth generation monochrome projector, the EDP58, will also be shown.

ELECTRONIC COTTAGE, INC.
Booth 1722

1842 Union St.
San Francisco, California 94123
(415) 931-1867
Charles C. Gallie
President
Miriam Woodruff
Customer Support Manager

Image Management System (IMAGE) is the most sophisticated presentation graphics program on the market today. IMAGE is limited only by the imagination of the user.

With IMAGE, you can create graphs, charts and drawings that are impossible to produce with any other personal computer graphics product.

ELECTRONIC DATA SYSTEMS CORPORATION, ENGINEERING AND MANUFACTURING SYSTEMS GROUP

Booth 1608

Manufacturing 'B' Building
30300 Mound Road
Warren, Michigan 48090-9040
(313) 492-3483
Roy Riedlinger
Marketing Manager

ELOGRAPHICS, INC.

Booth 1358

105 Randolph Road
Oak Ridge, Tennessee 37830
(615) 482-4100
Michael C. Higginbotham
Sales Engineer

E270 and TOUCH SCREEN—Allows operator to easily interact with computer system by simply touching the display screen.
E232 CURSOR CONTROL PAD—Operator moves cursor on display by simply touching pad's surface and moving finger.
E233 GRAPHICS TABLET—Low cost digitizing tablet is activated by ball point pen or stylus.

EQUITABLE LIFE LEASING CORPORATION

Booth 1556

10251 Vista Sorrento Parkway, Suite 300
San Diego, California 92121
(619) 458-4400
Roderic L. Eaton
Senior Vice President, Marketing

Company Description: Leasing/financing services for a wide variety of technological and service related equipment, including CAD/CAM equipment, computers and computer peripherals. Operating leases, tax-priced leases and national vendor programs available.

EVANS AND SUTHERLAND COMPUTER CORPORATION
Booth 324

580 Arapeen Drive, P.O. Box 8700
Salt Lake City, Utah 84108
(801) 582-5847
Edward C. Cheadle, Jr.
Product Marketing Specialist

User Group Contact: Neil Harrington
Product Support Specialist

Featured will be the Evans and Sutherland PS 340 and PS 350 high-performance 3D computer graphics systems displaying a variety of application software solutions including mechnical, computer aided design and analysis, and molecular modeling.

FACIT, INC.
Booth 954

9 Executive Park Drive
P.O. Box 334
Merrimack New Hampshire 03054
(603) 424-8000
George Bausewein
Director of Advertising

Facit, Inc. will display a line of plotters and color graphics printers. Plotters include the new popular Facit 4550 six-pen unit. It incorporates IBM compatibility, HPGL software emulation and both serial and parallel interfaces. All six pens, available in ballpoint, fiber tip and ceramic, ride on a moving head and are continually on line for added convenience.

FERRANTI INTERNATIONAL CONTROLS
Booth 1741

P.O. Box 36556
Houston, Texas 77036
(713) 274-5000
R. G. Hope

Ferranti International Controls Corporation, a 25-year old Houston, Texas, subsidiary of UK based Ferranti plc, which dates back to 1882, has introduced the VARS family of high resolution, high performance, raster scan computer graphics controllers. VARS is implemented as a high level, retained 2D segmented display list processor which provides outstanding performance in highly dynamic vector drawing applications.

FLOATING POINT SYSTEMS, INC.
Booth 1530

3601 S.W. Murray Blvd.
Beaverton, Oregon 97005
(503) 641-3151 ext. 1737
Gayle Furlow
Promotion Program Manager

User Group Contact:
Array (FPS Users Group) Coordinator

Floating Point Systems will be demonstrating real-time graphics algorithms implementation on the FPS-5000 Series Array Processor, and displayed on a Bear Systems Koala framestore. The FPS exhibit will also feature an interactive image processing software package, Vista IPS, written by Logica, to run on the FPS-5000 Array Processor and Koala framestore.

FOCUS GRAPHICS
Booth 1526

10 Twin Dolphin Drive, R303
Redwood City, California 94065
(415) 595-6920
Lowell Stacy
Vice President, Marketing and Sales

User Group Contact: Judy Nash
Customer Support

Focus will feature its VIDEOSLIDE35 series of film recorders offering quick and low cost 35mm slide generation from personal computers. The products accept RS-170, NTSC, TTL and RS-243 video input. New

products include: IBM enhanced monitor interface; IBM professional series monitor interface; and high performance graphics controller for 1280 x 800 resolution from IBM PC and AT.

FRONTIER TECHNOLOGIES CORPORATION

Booth 1734

3510 N. Oakland Ave.
Milwaukee, Wisconsin 53211
(414) 964-8689
Gary E. Zaffke
Director of Marketing

User Group Contact:
Dr. Prakash Ambegaonkar
President

Frontier will debut its new Intelligent High Resolution Graphics Controller, the IHR 2, the most advanced state-of-the-art controller manufactured by Frontier for the IBM PC, XT and AT marketplace. Also exhibited will be the CADgraph 2 Graphics Controller (7220 Based) and the AdCom 2 Series of Advanced Communications Controllers (Micro-To-Mainframe).

FTG DATA SYSTEMS

Booth 1657

10801 Dale St., Suite M-2
Stanton, California 90680
(714) 995-3900
Douglas Lippincott
President

User Group Contact: David Boulanger

Two exciting new products are being shown:
1) Full TEKTRONIX 4105 and 4107 graphic terminal emulation on a PC. Many extensions are provided and numerous display boards are supported.
2) The HI-RES LIGHT PEN BOARD, and interface software. The DR. HALO program is being used to demonstrate this software with personal characters.

GENERAL ELECTRIC COMPANY PROJECTION DISPLAY PRODUCTS OPERATION

Booth 116

Electronics Park, Bldg. #6-Room 205
Syracuse, New York 13221
(315) 456-2152
Charles P. Venus
Manager, Domestic Sales

User Group Contact: Vince Foken
Sales Representative, Western Region

General Electric's series of Talaria Video Projectors will be demonstrated. The PJ5055, NTSC 1000 lumen light output, projector will be demonstrated with camera input, VCR, computer and laser disk. The PJ5155, hi resolution projector, will be demonstrated with a Tektronix 4125 color graphics terminal.

GENERAL PARAMETRICS CORPORATION

Booth 1357

1505 Solano Ave.
Berkeley, California 94707
(415) 524-3950
Sanne Carroll
Corporate Communications Manager

VideoShow, the complete presentation system. VideoShow, the hardware which displays the images using MacroVision, a proprietary technology which produces high resolution graphics in 1000 colors. PictureIt, the software used to create the graphics. PhotoMaker, which produces high-resolution 35mm slides and PrintMaker, which produces color or black and white handouts or overheads on color ink-jet or dot matrix printers and the VideoShow Library of Independent Software.

GENIGRAPHICS CORPORATION
Booth 1226

4806 W. Taft Road
Liverpool, New York 13088
(315) 451-6600
David Ristau
Manager, Marketing Communications

Genigraphics Corporation designs, manufactures, markets and maintains a complete line of computer graphic systems for the business and presentation graphics marketplace. The company offers a variety of graphic workstations as well as high resolution imaging systems. Genigraphics also operates the world's largest company-owned graphics service network.

GIXI INC.
Booth 856

7808 Glenroy Road, Suite 100
Minneapolis, Minnesota 55435
(612) 893-1350
George Williams
Director, Marketing and Sales

User Group Contact: Steven Johnson
Manager, Marketing Support

GIXI Inc. will introduce the Radiance 2010, a 2K x 2K bit map terminal, with state-of-the-art VME-based enhancements including segmentation, 256 colors, GKS interface, 3-D, wireframe and solid modeling, shading lighting and more. The Radiance 320 terminal, high resolution color monitors and GKS/GRAL software will also be featured.

GOULD INC., IMAGING & GRAPHICS DIVISION
Booth 236

1870 Lundy Ave.
San Jose, California 95131
(408) 263-7155
Tom Seitzler
Product Manager

IGD User Group Coordinator: Tom Seitzler

On display: high speed image processing equipment including: IP8500 multiuser system with Graphics Processor, Hardware Warper, Real Time Digital Disk, Digital Video Processor, Hardware Histogrammer and High Resolution Display. Also, FD5000 stand-alone image processing system with software which includes: Image Processing Software, ERDAS classification software and driver for DI3000 Graphics.

GRAFPOINT
Booth 1254

4340 Stevens Creek Blvd.
San Jose, California 95129
(408) 249-7951
Corley Phillips
Vice President, Marketing

Grafpoint will display a family of graphics terminal emulation packages for MS-DOS personal computer systems, supporting resolutions up to 1024 x 1024. TGRAF-05 allows PCs to replace the Tektronix 4105 terminal, and TGRAF-07 emulates the Tektronix 4107, offering display list functionality. Both products also emulate the Tektronix 4010/4014 and DEC VT52/VT100.

GRAPHIC CONTROLS CORPORATION
Booth 243

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

Graphic Controls offers the computer graphics industry the most complete line of plotter supplies products. Available are: Dielectric media and toners for electrostatic plotters and printers, ink-writing media, plotter pens, points, inks, adapters and accessories used in a variety of plotter applications including CAD/CAM and Work Station Graphics.

GRAPHIC DEVICES, INC.
Booth 758

51 Digital Drive, Suite 100
Novato, California 94947
(415) 382-8800
Jim Smith
National Sales Manager

User Group Contact: Anthony Martin
General Manager

Pericom will display the Monterey family of high-resolution graphics terminals for the end-user and OEM. The MG200, MG600 and MG420 feature 1024x780 resolutions.

GRAPHON CORPORATION
Booth 461

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

Graphon will exhibit dual emulation terminals. These monochromatic units emulate the DEC VT-100/VT-220 and Tektronix 4010/4014 terminals. Graphon terminals support exact emulations, fast communications (without handshaking) and high resolution, non-interlaced displays. The new GO-160 will be featured.

GTCO CORPORATION
Booth 131

1055 First St.
Rockville, Maryland 20850
(301) 279-9550
George Helser
Vice President, Marketing and Sales

GTCO is exhibiting three product lines:
1) The new Macintizer™ (Macintosh integrated digitizer) which plugs into the Macintosh mouseport allowing for absolute input without software modification.

2) Digitizers ranging from 6" x 6" to 42" x 60" for graphic input. The new Type 5 "A" series is introduced.
3) Photoplotters to create one to one precision artwork on photographic film for circuit boards.

GULTON INDUSTRIES INC.
Booth 1527

Gulton Industrial Park
East Greenwich, Rhode Island 02818
(401) 884-6800
Peter Okero and Don Cornell
Product Managers
Sandra Ahlburn
Communications Manager

The Graphic Instruments Division of Gulton Industries will display the Gulton Color Graphic Printer, the Superplot-80T monochromatic video copier, the Supertrak-200 digitized recorder, the Superplot-80 high speed printer/plotter and various thermal printing mechanisms and printheads.

HEWLETT-PACKARD COMPANY
Booth 1016

16399 W. Bernardo Drive
San Diego, California 92127
(619) 487-4100
Danielle Provencio/Sharon Hamma
Trade Show Specialist

User Group Contact: Jan Craven
Product Information/Merchandising Specialist

PRODUCTS: Five drafting plotter models; reduced HP 7580-family prices. Business graphics solutions with small format plotters. Independent software vendor solutions for business, technical and CAD applications. NEW: Disposable drafting pens; refillable drafting pens for the HP 7475A plotters. INTRODUCING: HP 2393A Graphics Terminal, dual mode 512 x 390 or 640 x 400 resolution, with Tektronix 4010/4014 compatibility. Other new products.

HITACHI AMERICA, LTD.
Booth 1126

50 Prospect Ave.
Tarrytown, New York 10591-4698
(914) 332-5800
Kenzo Isomoto
Assistant Manager

A full range of high resolution RGB color monitors including 14", 19" and 26" displays and 400 lines per inch color thermal printer will be featured. The HDH-111B digitizer that allows interactive graphics, data entry and menu selection to be performed will also be displayed.

HOUSTON INSTRUMENT
Booth 528

8500 Cameron Rd.
Austin, Texas 75783
(512) 835-0900
Kevin Higginbotham
Supervisor, Promotions

Houston Instrument is a 26-year Texas-based veteran of the computer graphics peripherals industry. We manufacture a complete line of digital plotters and graphic digitizers used in business graphics as well as architectural and engineering applications. Houston Instrument will exhibit the new 14-pen DMP-51/52 MP Series precision drafting plotters at SIGGRAPH.

HUMAN DESIGNED SYSTEMS, INC.
Booth 655

3440 Market St.
Philadelphia, Pennsylvania 19104
(215) 382-5000
Roger S. Pincus
Executive Vice-President for Marketing

The HDS200 Family of display terminals, designed to meet the needs of engineering,

scientific and business computer users includes ANSI, graphics and APL models. The HDS200G ANSI/graphics terminal combines Tektronix 4010/4014, Visual and Retrographics compatibility with a 15" quality monitor (720 x 350 resolution) and an appealing and extremely compact housing.

IBIS SYSTEMS, INC.

Booth 1457

5775 Lindero Canyon Road
Westlake Village, California 91362
(818) 706-2505
Richard W. Krueger
Manager, Applications Engineering

IBIS manufactures the Model 1400 Disk Drive, with a storage capacity of 1.4 gigabytes and a data transfer rate of 12 megabytes per second. This high performance product is utilized in scientific computing and signal processing applications. IBIS products are based on proprietary 14-inch thin-film media and thin-film heads.

ID SYSTEMS

Booth 936

6175-W Shamrock Court
Dublin, Ohio 43017
(614) 766-0440
Diane Arthur
Marketing Support Specialist

User Group Contact: Diane Arthur

ID Systems will demonstrate the ID200 color graphic terminal with 1280 x 480 resolution and the new ID1024, offering 1024 x 1024 resolution both designed for CAD/CAM and CAE; a color graphics board for the IBM PC family and compatibles with a palette of 4,096 colors; and TESSy, a terminal emulation software system that provides simultaneous local processing and data buffering from the host.

IEEE COMPUTER SOCIETY
Booth 1531

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

The IEEE Computer Society will be displaying technical books and magazines and will also be selling memberships.

IKEGAMI ELECTRONICS (U.S.A.), INC.
Booth 1046

37 Brook Ave.
Maywood, New Jersey 07607
(201) 368-9171
Dave Beckman
Advertising/Communications Manager

User Group Contact: Donald Mason
Sales Manager/Graphic Display Division

Ikegami, manufacturer of high quality raster scan graphic display monitors, exhibits their complete line of color and monochrome display monitors and standard switching power supplies. The exhibit includes our new, unique and futuristic enclosure, offering an opportunity to combine quality monitors with quality ergonomic design; a compact, lightweight system with small footprint. Discuss your future with Ikegami for a high resolution monitor package.

IMAGEN CORPORATION
Booth 1256

2650 San Tomas Expressway
Santa Clara, California 95052
(408) 986-9400
Mary Basile
Marketing Communications Manager

IMAGING TECHNOLOGY INCORPORATED
Booth 139

600 W. Cummings Park
Woburn, Massachusetts 01801
(617) 938-8444
Robert Rudolph
Marketing Communications

Imaging Technology Incorporated represents innovation in board level image processing products for OEM systems integrators. The company has developed a series of image processing modules that are plug-compatible with the most popular bus architectures in use today. These compatible boards team up to integrate a complete real-time video processing or high resolution graphics system.

IMATIQUE VIDEO PRODUCTIONS
Booth 900

36 Rue des Alouttes
Paris, France 75019
(1) 2039904; Telex: 240888SFPTV
Philippe Rousseau
General Manager

Production of computer generated special effects for television credits and advertising spots. Production of short fiction series using video techniques and digital image synthesis.

IMTEC EQUIPMENT INC.
Booth 1162

20 West Stow Road
Marlton, New Jersey 08053
(800) 257-7460
In New Jersey: (609) 596-7700
Ron Chucola
Marketing Support Manager

The Imtec Microplotter produces ready-for-use microfilm aperture cards, writing in vector mode directly onto ultra-high resolution film with a safe, low-powered laser beam using a precision two-stage beam deflection system. It can be operated on-line or off-line.

I.N.A.
Booth 900

4, avenue de l'Europe
Bry-Sur-Marne, France 94360
(1) 875.82.74
Henry False
Department Head

Reviewing modes of production for Audiovisual Communication:
Implementing specially conceived prototype for creators: the computerized animation system. PSYCHE 3 is marketed by INEA and X COM Company.
Creation of facited 3 dimensional image animation software and a synthetic generator: MOSAIC
Combining various techniques (Film video-computer) to review audiovisual types and formulae.

INFLIGHT SERVICES INC.
Booth 1100

485 Madison Ave.
New York, New York 10024
(212) 751-1800
Frank J. Genovese
Director of Sales

User Group Contact: Launa Romoff
Assistant to Director of Sales

Inflight Services Inc. will be demonstrating new products for large screen graphics display. The new Barcodata 3 RGB features enhanced high resolution graphics capabilities and can accommodate a screen width up to 15 feet. The new Retro G7 is the first "truly" portable projection system designed to support high resolution graphics.

INFORMATION NOW, INC.
Booth 554

5198 Pinemont Drive
Salt Lake City, Utah 84123
(801) 263-2300
Mark Jenkins
Sales Manager

"UHRG 1280"
Single-board high-performance bit-mapped graphics controller for IBM AT, XT, PC and compatibles.
Resolution: 1280 by 1024 pixels @ 60Hz., non-interlaced. 64 KHz horizontal scan rate.
On-board video ram: 1.3 megabyte.
Color range: 256 colors displayable from 16.8 million color palette. 8 bits per pixel.
Mega-pixel/second update rate.

INMOS CORPORATION
Booth 657

P.O. Box 16000
Colorado Springs, Colorado 80918
(303) 630-4453
Douglas Mitchell
Product Marketing Manager, Video Products

16K and 64K Static RAMS, NMOS and CMOS; 64K NMOS and 256K CMOS Dynamic RAMS; IMSG170 Color Palette Chip; and 32-bit Microprocessor.

INOVION CORPORATION
Booth 1628

195 E. Gentile St., Suite 7-C
Layton, Utah 84041
(801) 546-2850
"Skip" Bullough
Marketing Manager

The Inovion Personal Graphics System is a powerful multipurpose graphics work station. The system incorporates the power of a flexible paint brush system with a FULL COLOR frame grabber. The PGS can create 2.1 million colors and display up to 250,000 different colors on the screen at one time.

INTECOLOR, AN INTELLIGENT SYSTEMS COMPANY
Booth 224

225 Technology Park
Norcross, Georgia 30092
(404) 449-5961
Tully Johnstone
Manager of Telemarketing

Exhibiting the new 6120 color graphics terminal. It provides fast image transfers via its DMA channel and 64 colors on one screen that is 1024 x 768 resolution on a 19" CRT. Also the ColorVue digitizing system captures any color image from VCR, camera or live television broadcast.

INTEGRATED COMPUTER TECHNOLOGIES
Booth 1451

1650 S. Amphlett Blvd., Suite 224
San Mateo, California 94402
(415) 341-2946
Lee LeFleur
Sales

Integrated Computer Technologies offers the answer in the form of a full-featured CAD system that is suitable for a wide range of applications. I.C.T. has defined a new price/performance standard for CAD Systems. The IC-1200A is a 2-dimensional turnkey system which outperforms competitive systems.

INTERACTIVE MACHINES, INC.
Booth 117

733 Lakefield Road
Westlake Village, California 91361-2694
(818) 707-1880
Kenneth E. Dozier
President/CEO

IMI manufactures, markets and supports powerful computing systems designed for applications that require realtime 3D graphics. The IMI 400 and 500 products integrate the IMI graphics processor with a powerful general-purpose computer, UNIX operating system and Ethernet to provide the ideal solution for complex engineering, scientific and animation applications.

INTERNATIONAL IMAGING SYSTEMS (I^2S)
Booth 356

1500 Buckeye Drive
Milpitas, California 95035-7484
(408) 262-4444
David B. Racionzer
Business Manager, Earth Resources

User Group Contact: Frank Croft
Manager, Applications Engineering

I2S products range from add-on image array processors to turnkey workstations and custom systems. In addition, I2S is a primary supplier of OEM Digital Image Processors to the medical and industrial imaging markets. This year, I2S, will introduce high speed networking to interconnect workstations and mainframes within the System 600 Distributed Processing Environment together with a real-time disk option on the recently introduced M6700 Image Processor.

IRIS GRAPHICS
Booth 1618

41 Elm St.
Stoneham, Massachusetts 01280
(617) 438-1500
Tad Thompson
Communications Manager

IRIS Graphics will introduce its new 2044 Color Ink Jet Printer. It produces high resolution, full-color hardcopy images in sizes up to 34 by 44-inches when linked to virtually any turnkey digital computer-aided design system. Images are at 240 by 240 dots per inch and applications include IC check plots, 3D modeling, complex process and instrumentation diagrams, remotely-sensed data and geographic and demographic mapping data.

ISLAND GRAPHICS CORPORATION
Booth 1738

One Harbor Drive, Suite 300
Sausalito, California 94965
(415) 332-5400
Diane Ascher
Show Coordinator

Island Graphics Corporation supplies powerful paint programs, business graphics packages and animation software to OEMs. Island's software is written in C and is available under both MS-DOS and Unix. Island is unique in that it tailors each program to the OEM's requirements and does not compete with its own customers.

ISSCO
Booth 716

10505 Sorrento Valley Road
San Diego, California 92121
(619) 452-0170
John Otti
Director, Sales Programs

User Group Contact: Louise Courtier
Vice President, Contracts

ISSCO develops, markets and supports a broad line of visual information system software used on mainframe and mini-computers to access and manipulate data and convert it into high quality graphics: bar, line, and pie charts, maps and diagrams and word charts in two and three dimensions. ISSCO celebrates its 15th anniversary in 1985.

C. ITOH ELECTRONICS, INC.
Booth 1710

5301 Beethoven St.
Los Angeles, California 90066
(213) 306-6700
Ken Sandell
Marketing Specialist

The new C. Itoh 24 and 36 inch electrostatic plotters are unique in the world of CAD/CAM output devices. The CI-2400 and CI-3600 both combine high resolution of 400 DPI and integrated vector-to-raster conversion for the first time in an electrostatic plotter.

JUPITER SYSTEMS, INC.
Booth 136A

1100 Marina Village Parkway
Alameda, California 94501
(415) 523-9000
Fred Dunn
Product Manager

The Jupiter 12 Graphics System is a high performance color graphics terminal/ workstation. The 1280 x 1024 screen resolution at a 60 Hz non-interlaced refresh rate offers up to 28 bits per pixel. The system is available as a terminal, Unix 4.2 BSD workstation, or board set for OEM's.

KING CONCEPT CORPORATION
Booth 255

5190 W. 76th St.
Minneapolis, Minnesota 55435
(612) 831-4466
Dan Lucariello
Director of Sales and Marketing

Enterprise processes all standard photographic film and formats from 35mm up to 16 x 20 sheets including long rolls and disc. The machine features a one-piece molded outer shell with a microcomputer control system and membrane touch switches on the control panel. A built-in battery back-up system is standard equipment in each processor.

KLOSS VIDEO CORPORATION
Booth 553

640 Memorial Drive
Cambridge, Massachusetts 02139
(617) 577-1000
George Hand
Professional Sales

VideoBeam® Model 2000 Professional Projection Monitor. 6.5-foot or 10-foot diagonal flat or curved screen images from floor or ceiling mount. NTSC, RGB/TTL (IBM-PC and 3279 compatible), Analog RGB inputs standard. Wideband circuitry for classroom 132-character or industrial and scientific hi-res graphics displays, high definition TV development, or full-resolution NTSC monitoring.

KMS ADVANCED PRODUCTS, INC.

Booth 1246

3850 Research Park Drive, P.O. Box 1778
Ann Arbor, Michigan 48106
(313) 769-1100
Arnold Proehl
Product Manager

Video Multiplexers from KMS permit multiple workstations to access a single hard copy device. These cost-effective devices are expandable in the number of connected workstations. Remote operation of the copier is performed at the workstation, through the multiplexer. KMS Video Multiplexers are already compatible with most popular video hard copy devices.

KMW SYSTEMS CORPORATION

Booth 424

8307 Highway 71 W.
Austin, Texas 78735
(512) 288-1453
Jean Richards
Director Marketing Administration

KMW will announce its new Series of Vector to Raster Converters and will display said series driving an electrostatic plotter. Also on display will be KMW's low cost VP10 graphic element processor that accepts graphic elements from a mainframe, rasterizes it and outputs to most raster hard copy devices.

KONTRON ELECTRONICS, INC.
Booth 1051

630 Price Ave.
Redwood City, California 94063
(415) 361-1012
Kenneth A. Charles
Product Manager,
Image Processing Systems

Manufacturers of image processing systems. Stand-alone systems; add-on systems for an existing DEC-VAX host computer; and development systems using a 68000-based host computer, are available. Programming capability is provided for FORTRAN, PASCAL or C. Personal Computer CAD.

KURTA CORPORATION
Booth 456

4610 S. 35th St.
Phoenix, Arizona 85040
(602) 276-5533
Joanne Rush
Manager, Marketing Programs

Kurta Corporation, a pioneer in the computer graphics industry, designs and manufactures a full line of graphics tablets and digitizers for the CAD/CAM/CAE and microcomputer workstation marketplace. Kurta recently introduced the revolutionary Penmouse +™ Input Device system which has only two components: a cordless pen and a ¼" tablet.

LAZERUS PRODUCTIONS
Booth 1456

2821 Ninth St.
Berkeley, California 94710
(415) 845-1237
Joanne P. Culver
Graphics Divison

THE MEGA MACHINE. . .the high-performance computer for generating/animating 3-D Solids in Real-Time. MEGA has 1 Mbyte Local Memory expandable to 16 Mbyte; 4K Writable Control Store; Displays hi-res (1024 x 768 x

16/32) and NTSC (512 x 486 x 16/32) with sync generator/integral genlock. Ultimate graphics for IBM PC, AT, XT compatibles.

LEAR SIEGLER INC., DATA PRODUCTS DIVISION
Booth 1614

901 E. Ball Road
Anaheim, California 92805
(714) 778-3500
Chuck Kewish
Product Manager

Lear Siegler's Data Product Division, a pioneer in the display terminals market, will introduce its new 7105 and 7107 color graphics terminals. Designed for use in demanding CAD/CAM, scientific, process control and business applications, these terminals feature 640 x 480 resolution, 16 displayable colors from a palette of 4096 and numerous additional features, as well as independent color alphanumerals. In addition, the model 7107 features the display list capability which permits local manipulation and modification of graphics objects.

LEXIDATA CORPORATION
Booth 736

755 Middlesex Turnpike
Billerica, Massachusetts 01865
(617) 663-8550
Joyce M. Anderson
Marketing Communications Specialist

Lexidata designs, manufactures, sells and services high performance, ergonomically-designed graphics display systems used in defense, CAD/CAM, oil, medical and graphic arts applications. Products to be demonstrated include the LEX 90™ family, featuring a display list language and a virtual window manager; SOLIDVIEW™, Lexidata's patented solid modeling display technology; and the System 2000™ intelligent graphics terminal, featuring VT100™ and Tektronix Plot-10™ compatibility.

LUCASFILM LTD. (PIXAR)
Booth 148

P.O. Box 2009
San Rafael, California 94912
(415) 499-0239
Lynn DeKeyser

The Pixar Image Computer™ is the first general-purpose machine able to store, manipulate and display images with the spatial and color resolution of film. The system has the high resolution picture memory, fast picture processing speed, and programmability to excel in several applications, such as medical imaging seismic analysis, prepress and remote sensing.

LUNDY ELECTRONICS & SYSTEMS, INC.
Booth 940

One Robert Lane
Glen Head, New York 11545
(516) 671-9000
Barbara Brehm
Marketing Support Manager

Lundy will display its new line of graphics display products. This includes the UltraGraf III color raster 3-D workstation, Lundy 2000 and 3000 stand-alone workstations and the GTC-327 terminal which operates with 4027-based software. All Lundy products are supported by the company's large and experienced service organization.

LYON LAMB VAS INC.
Booth 556

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

User Group Contact: Sheldon Liebman
Director of Marketing

Lyon Lamb introduces ENC VI Color Encoder/Sync Generator for RGB to NTSC conversion. Also showing VAS family of videotape animation controllers for precise frame by frame recording, editing and frame grabbing on a variety of Broadcast ½", ¾" and 1" VTRs, including the Sony BVH-2500.

MACHINE DESIGN

Booth 1441

Penton Plaza, 1111 Chester Avenue
Cleveland, Ohio 44114
(216) 696-7000
Ed Nypaver
District Manager

Machine Design is a technical journal which features editorial and advertising directed to the professionals who specify and buy computer-based equipment for design and manufacturing applications.

MASSCOMP

Booth 257

One Technology Park
Westford, Massachussets 01886
(617) 692-6200
Rattan Dhar
CAE Marketing Manager

MASSCOMP will display a family of systems for scientific and technical markets using MASSCOMP's Virtual Memory RTU. Systems on display include an 8-slot deskside, a 15-slot deskside dual processor system and a large cabinet configuration system each supporting high resolution monochrome and color graphics, Ethernet LAN, integrated array, and floating point processors. Each of the systems will be running engineering design application in mechanical or electronics.

MATRIX INSTRUMENTS, INC.
Booth 1216

1 Ramland Road
Orangeburg, New York 10962
(914) 365-0190
Kate Bochonko
Marketing Communications Manager

User Group Contact: John Patberg
Director, Marketing

Matrix Instruments provides digital and video high resolution color film recorders for making 35mm slides, and 8 x 10 prints and transparencies for business presentation graphics using a wide variety of micro, mini and mainframe computers and compatible graphics software. Of key interest to attendees will be a) PCR-Personal Color Recorder which creates professional quality low-cost 35mm slides of business graphics and computer art in an office environment and b) QVP (Quick Vector Processor), a vector-to-raster co-processing system which drives the Matrix family of digital film recorders, as well as other color hard-copy output devices.

MATROX ELECTRONIC SYSTEMS LTD.
Booth 1336

1055 St. Regis Blvd.
Dorval, Quebec Canada H9P 2T4
(514) 685-2630
Stephen Davies
Marketing Representative

MATROX is a world leader in the design and manufacture of board level graphics display controllers. MATROX's exhibit will feature demonstrations on the latest state-of-the-art graphic and image processors including IBM PC compatible controllers. Also on display will be MATROX's 1024 x 768 interactive graphics terminal: GXT-1000.

MCI/QUANTEL
Booth 1236

3290 West Bayshore Road
Palo Alto, California 94303
(415) 856-6226
George Grasso
President
Hugh Boyd
Executive Vice President

User Group Contact: Tony Redhead
Design Consultant

MCI/QUANTEL is exhibiting the most powerful TV graphics creation system available—the combination of Quantel paint box and digital library system. Artists use paint box to create original art, modify frozen live video, add captions and animate segments. The library system captures, stores and presents stills and also has production effects. Paint boxes and library systems can be interfaced via QUANTEL's digital link.

MEASUREMENT SYSTEMS INC.
Booth 147

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

Measurement Systems offers a broad line of position entry devices including joysticks, stiff sticks, track balls and mouse controls. They are available in multi-axis configurations and with a variety of output interfaces including analog, pulse, coded digital either parallel binary or serial RS 232C or RS 422.

MEDIA CYBERNETICS, INC.
Booth 1651

7050 Carroll Ave.
Takoma Park, Maryland 20912
(301) 270-0240
Para M. Wodiska
Marketing Manager

Media Cybernetics, Inc. has developed and licensed fundamental device independent graphics and imaging tools for the PC environment. Products to be displayed include: The HALO graphics tools; Dr. HALO II; Nimbus; and Image Pro.

MEGATEK CORPORATION
Booth 636

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

Megatek will exhibit the company's complete line of high resolution, high performance computer graphics systems including the MEGAstation 3300.

MEGAVISION
Booth 1736

P.O. Box 60158
Santa Barbara, California 93160
(805) 964-1400
Ken Boydston
Applications/Systems

User Group Contact: Richard Colvin
Director of Engineering

MegaVision offers the 1024XM, a 44MIPS interactive time thousand line image acquisition, processing and display system. To augment the performance of the 1024XM neighborhood processor, MegaVision announces the Pixel Data Flow Board. The PDF will perform a variety of recursive and global operations at interactive speeds on million pixel images.

MERCURY COMPUTER SYSTEMS, INC.
Booth 756

600 Suffolk St.
Lowell, Massachusetts 01854
(617) 458-3100
John Montelione
Vice President, Marketing

The ZIP 3200 programmable array processors include the 3216 (block floating point) optimized for signal & image processing, and the 3232 (floating point) optimized for scientific and graphic processing. They easily interface to popular micros, can acquire data either through a framegrabber on the host or directly from A/Ds, cameras, or Mercury's ZIP Video I/O Converter.

METHEUS CORPORATION
Booth 1416

5510 NE Elam Young Parkway
Hillsboro, Oregon 97123
(503) 640-8000
John Hughes
Vice President of Sales and Marketing

Metheus Corporation designs and manufactures high-performance color graphics subsystems, supplying many of the world's most-demanding OEM's in CAD, imaging, simulation and graphic arts. Metheus will introduce its Ω200/PC series of IBM-PC and AT&T-compatible color display controllers, featuring resolution of 1024 x 768, state-of-the art drawing speed and PIXBLT pixel-block moves. Metheus will also demonstrate its new Ω2530 controller, including front-end processor and display-list memory and two Ω530 display controllers in imaging applications.

MICROTOUCH SYSTEMS, INC.
Booth 1724

400 W. Cummings Park
Woburn, Massachusetts 01801
(617) 935-0080
James D. Logan
President

The MicroTouch Screen, a new touch technology, employs a glass sensor and offers a unique combination of durability, optical clarity, high resolution and low cost. Kits and monochrome or color touch monitors are available. A complete set of software tools is also available for developing touch screen applications.

MINDSET CORPORATION
Booth 956

965 Maude Ave.
Sunnyvale, California 94086
(408) 737-8555
Mary Michelli
Marketing Services Coordinator

MINDSET CORPORATION will be demonstrating its line of cost effective computer graphics systems: the Professional Graphics System and the Professional Video/Graphics System. MINDSET will feature its advanced paint, titling and real-time animation software, as well as its newly introduced Image Capture System that instantly digitizes any NTSC source image.

MINOLTA CORPORATION
Booth 1352

101 Williams Drive
Ramsey, New Jersey 07446
(201) 825-4000
John T. McCasland
Sales Manager

Minolta TV Color Analyzer II—To objectively set white balance of a color monitor. Meters to measure Luminance, Illuminance and Color Temperature of a light source.

MITSUBISHI INTERNATIONAL CORPORATION
Booth 1253

520 Madison Ave.
New York, New York 10022
(212) 605-2344
Wayne G. Dengel
Sales/Marketing Manager

A graphics workstation and family of color printers will be exhibited and demonstrated. GRAPHICA COMPUTER CORPORATION high resolution systems are state-of-the-art hardware and software solutions designed to meet the needs of performance minded users. SHINKO ELECTRIC color printers, featuring thermal transfer technology and low consumables cost, offer high resolution B-size archival quality documents.

MITSUI & COMPANY (U.S.A.), INC.
FUJI PHOTO FILM CO., LTD.
Booth 1630

611 W. Sixth St., Suite 2000,
Machinery Dept.
Los Angeles, California 90017
(213) 972-2687 (213) 824-7442
Koichi Suzuki
General Manager, Machinery Department

User Group Contact: Prof. Mits Kataoka
Business Consultant

Mitsui & Co. (U.S.A.), Inc./Los Angeles will demonstrate "Jetgraphy 3000" ink jet printer, developed by Fuji Photo Film/Japan. This printer produces high resolution full color prints on 24 x 30 inch paper and can be used for hard copy print-out of various computer images, computer-graphics, CAD/CAM and image processing systems.

MODGRAPH, INC.
Booth 1540

56 Winthrop St.
Concord, Massachusetts 01742
(617) 371-2000
William C. Curry
Senior Vice President
Henry R. Kunicki Jr.
Vice President, Sales and Marketing

GX —1000 CAD/CAM Graphics Terminal
—1024 x 780 resolution
—TEK 4010/14: DEC VT-100 emulations
—Multiple graphic pages
—TEK 4631 video hardcopy
GX —1100 High Resolution Graphics Terminal
—1024 x 780 resolution
—TEK 4105 emulation
IBM—PC/XT/AT High Resolution Graphics
—1024 x 1024 resolution
—monochrome and color
—TEK 4010/14: DEC VT/100 emulations
—HALO; VDI; IBM Campatible

MONITERM
Booth 1342

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

User Group Contact: Nancy Cornish
Sales Coordinator

Moniterm will exhibit the VR-Series high resolution CRT monitors, full page interlaced or noninterlaced displays for word processing and office automation. Also available from Moniterm are 64-88 KHz monitors which generate a 1024 x 1024 non-interlaced display for CAD/CAM and computer-aided graphics. All monitors are available with 15", 17", 19" screens in either the "portrait" or "landscape" configuration. A variety of phosphors are available.

MONITRONIX CORPORATION
Booth 1355

2971 Silver Drive
Columbus, Ohio 43224
(614) 262-0334
James R. Crossley
National Sales Manager
Marlene A. Woo-Lun
Director, Marketing Communications

Monitronix Corporation is a manufacturer of ultra-high resolution color monitors for interactive computer graphic applications. Monitronix is pleased to announce a new product at SIGGRAPH '85: The MX-2195. This trinitron-based color monitor offers all the features of the trinitron technology combined with the advantages of the Monitronix modular circuitry.

MULTISOFT
Booth 1550

27 Rue Bargue
Paris, France 75015
(1) 7838837
P. Cotle
General Manager

MULTIWIRE DIVISION
Booth 957

10 Andrews Road
Hicksville, New York 11801
(516) 938-2000 (516) 933-8300
Anne Kesselman
Marketing Services Manager

User Group Contact: Jim Anderson
Director Sales and Marketing

High density Discrete Wired Circuit Boards for prototype and production. Meets ANSI/IPC-DW-425. Advanced manufacturing services available for surface mountable devices and projects requiring engineering intervention.

NATIONAL COMPUTER GRAPHICS ASSOCIATION
Booth 1655

2722 Merrilee Drive, Suite 200
Fairfax, Virginia 22031
(703) 698-9600
Pamela Wellman
Exhibits Manager

National Computer Graphics Association will have information on its conferences and expositions. Available will be *Computer Graphics Today*, NCGA's official publication, published by Media Horizons Inc. Membership services also are provided.

NEC ELECTRONICS INC.
Booth 443

401 Ellis St.
Mountain View, California 94039
(415) 960-6000
Mark Lapin
Public Relations Manager

NEC imaging/graphics semiconductors include: the uPD7220A, a high-performance graphic display controller; the uPD41264, a 256K Dual Port Video RAM which teams with

7220A to eliminate CPU-graphics-memory bottlenecks; the uPD41221, a 256K Serial Access Memory; and the uPD7281, the first non-von Neumann Image Pipelined Processor.

NEO-VISUALS, INC.
Booth 1557

201 Consumers Road, Suite 202
Willowdale, Ontario
Canada M2J 4G8
(416) 491-8485
Steve White
Vice President, Technology

Neo-Visuals will present high quality, device independent, 2D/3D modeling, simulation and animation systems.

NEW ENGLAND TECHNOLOGY GROUP
Booth 1732

400 W. Cummings Park, Suite 6000
Woburn, Massachusetts 01801
(617) 938-8833
Harry St. Onge
Vice President, Marketing

Tech Graphics II: Computer graphic design station. Includes freehand illustration, business graphics software, video scanning and special effects. Output to 35mm, 4" x 5", 8" x 10", video, etc.

NEW GEA CORPORATION
Booth 328

335 Oser Ave.
Hauppauge, New York 11788
(516) 434-8400
Nick Hughes
Director of Marketing

NEW GEA is exhibiting its full line of distributed processing high performance intelligent graphic displays. The newest in the product line is the NWX-237 3D graphic display that supports 4096 simultaneous colors, 8 MB local display list and ultra fast writing speeds.

NICOLET'S COMPUTER GRAPHICS DIVISION
Booth 416

777 Arnold Drive
Martinez, California 94553
(415) 372-7568
Susan J. Keeley
Marketing Communications Supervisor

User Group Contact: Andrew Sorensen
Senior Applications Engineer

Nicolet's Computer Graphics Division will exhibit its comprehensive line of ZETA digital pen plotters. The ZETA 8 and ZETA 887 (with a built-in, direct interface to IBM cluster controllers) are ideal for business graphics applications. A choice of four ZETA plotters meet CAD/CAM plotting needs—the ZETA 824 and ZETA 824CS (24" plotters) and the ZETA 836 and ZETA 836Cs (36" plotters). The new Deluxe Stand with automatic paper feed and take-up will also be demonstrated.

N.I.S.E., INC.
Booth 1151

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

"REMBRANDT" 3500-C. The Low Cost Color Graphics Film Recorder from N.I.S.E., Inc. is available for both RS-170 or RS-343 with RGB or TTL Video Input. No knobs, no dials, simple keyboard entry powered by microprocessor. Camera options from 35mm to full 8 x 10. Many now in use and still growing. Customer and dealer inquiries invited.

NOVA GRAPHICS INTERNATIONAL
Booth 1146

1015 Bee Cave Woods
Austin, Texas 78746
(512) 327-9300
Harold Blair
President

User Group Contact: Clinton N. Waggoner
Senior Vice President

Nova Graphics International is a single source vendor for standard graphics software, supporting processors ranging from the IBM PC to the Cray. NOVA*GKS, tightly coupled to NOVA*CGI, is a distributed, level 2B implementation of GKS with both Fortran and C bindings, and is now available for the IBM 3270 PC/G/GX.

NUMBER NINE COMPUTER CORPORATION

Booth 1426

691 Concord Ave.
Cambridge, Massachusetts 02138
(617) 492-0999
Will Frentz
Executive Vice President

User Group Contact: Stan Bialek
President

Number Nine introduces the new single-board REVOLUTION 1280 x 4 PC graphics controller board, the industry's first PC graphic board capable of running at 100 MHz pixel rate. The board has a 2K x 2K pixel addressable window and a non-interlaced 1280 x 1024 viewable window, 4-bit planes deep. The entire REVOLUTION board family will be exhibited including the 512 x 512 x 8 bit plane, the 512 x 512 x 32 bit plane and the 1024 x 1024 x 8 bit plane board configurations.

NUMONICS CORPORATION

Booth 156

418 Pierce St.
Lansdale, Pennsylvania 19446
(215) 362-2766
Morris B. Bowles
National Sales Manager

NUMONICS manufacturers a complete line of restrained and free-cursor digitizers for the OEM and the end-user. The MODEL 2200 is a

low-cost, compact electromagnetic tablet with user-specification of output data in absolute measurement or number of user-defined minimum increments. The 5400 SERIES are microprocessor-based plotters with ASCII control commands, embossed roller design for low-inertia paper transport and produces exceptionally high-line quality. The 5600 SERIES Multi-Pen Plotters automatically exchanges its magazine mounted pens, has grit-rollers and has syncho-belt drive for pen position control.

OCLI
Booth 223

2789 Northpoint Parkway
Santa Rosa, California 95407-7397
(707) 545-6440
Mary Noordhoff
Product Manager

User Group Contact: Brenda Wall
Corporate Communications Coordinator

Anti-glare glass panels and filters that virtually eliminate glare from the face of visual displays while maintaining high character resolution.

OMNICOMP GRAPHICS CORPORATION
Booth 1436

1734 West Belt North
Houston, Texas 77043
(713) 464-2990
Tony Masraff
President

Omnicomp Graphics Corporation manufactures and markets high performance, high resolution color graphics display subsystems used in CAD/CAM, process control, geo-seismic, biomedical, artificial intelligence and simulation. Omnicomp will be introducing the OMNI 2000 GDS, a modular family of high end graphics display subsystems. Additionally, Omnicomp will exhibit the OMNI 1000 GDC, a GKS compatible, 1024 x 1024 x 8 resolution

graphics display controller and complimentary software libraries and specialized hardware interface products. Omnicomp markets its products to OEM's, systems integrators and sophisticated end users.

OXBERRY DIV. OF RICHMARK CAMERA SERVICE, INC.
Booth 1646

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

Oxberry will be exhibiting the MX-Cine camera for off-loading computer graphic systems which use the Matrix Q.C.R. Film Recorder. Also to be shown is the MX-4 Slide Camera for business graphics and the Pro 3 Animation Stand for conventional business graphics production.

PANASONIC INDUSTRIAL COMPANY COMPUTER COMPONENTS DIVISION
Booth 348

One Panasonic Way
Secaucus, New Jersey 07094
(201) 392-4077
Margaret Lopez
Marketing Assistant

A 200 and a 400 DPI Color Thermal Transfer Printer, 19" High Speed Graphic Terminals, Ultra High Resolution Color CRTs and Data Displays, and two 2 PC Workstations will be on display.

PANASONIC INDUSTRIAL COMPANY
Booth 355

One Panasonic Way
Secaucus, New Jersey 07094
(201) 392-4603
Marty Frange
Product Manager

Panasonic will display its Optical Memory Disc Recorder line including the TQ-2025; a black and white read/write system; the TQ-2024; a playback only system in color; the TQ-2023; a color read/write system capable of storing up to 13.3 minutes of video.

PARALLAX GRAPHICS INC.
Booth 248

1095 E. Duane Ave.
Sunnyvale, California 94086
(408) 720-1600
M. Michael Strozza
Vice President, Marketing

Parallax Graphics offers OEMs and system integrators three series of high-speed color graphics and video/graphics controllers: the 600, 1000 and 1200 Series. These intelligent controllers draw complex images at 88 million pixels/second, offer real-time video digitization and overlay and are available for PC/AT, VMEbus, Multibus and Q-bus.

PARIS 8 UNIVERSITY OF ARTS AND TECHNOLOGIES OF IMAGE
Booth 900

2 Rue de 12 Liberte
Saint-Denis Cedex 02, France 93526
(1) 821-6364
Edmond Chouchot
Director de la Formation

A.T.I. (ARTS & TECHNOLOGIES OF IMAGE) is a special educational university programme leading up to a master's degree. It trains the art students in computer graphics and computer animation. The studies last two years. The courses are the following:
Introduction to computer graphics. Vax 11/780, PDP 11, SM 90.
Programmation 2D, 3D. Vax 11/780, SM 90.
Digital video. Apple 2.
Aesthetics of digital image, arts and technologies.
Others activities: artistic research and computer graphic software.

PERCEPTICS CORPORATION
Booth 1055

Pellissippi Corporate Center,
Pellissippi Parkway
Knoxville, Tennessee 37932
(615) 966-9200
B. James George
Director of Marketing

Perceptics Corporation is a Knoxville, Tennessee, high technology company specializing in the field of image processing, computer vision and machine intelligence.

PERITEK CORPORATION
Booth 1040

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

Available for viewing at Peritek's Booth #1040 is the new Perigraf™ series of small, desk-side systems for graphics development and custom graphics, OEM application. The Perigraf™ systems series complements Peritek's existing line of performance-oriented hardware for the Q-Bus and unibus. Peritek board and accessory products include a full line of color and monochrome raster graphics display interfaces.

PERSPECTIVE TECHNOLOGIES
Booth 1536

8930 Route 108
Columbia, Maryland 21045
(301) 964-0431
Greg Gustin
Vice President and General Manager

Perspective Technologies SM-2 Real-time 3-D full-shaded graphics processor...host independent...operates at 62 MFlops, performing 640,000 floating point 3-D coordinate transformations/sec, resulting in 50,000 polygons/sec (1600 at 30 Hz) with

hidden surface removal...2 full 24 bit frame buffers (48 bit planes)...uses in Animation, CAD/CAM and Simulation.

POLAROID CORPORATION
Booth 746

575 Technology Square, 2S
Cambridge, Massachusetts 02139
(617) 577-2377
Charles L. Sharp
Marketing Manager

Polaroid's several significant roles in visual communications are exemplified in an exhibit incorporating an inexpensive color film recorder and direct screen camera system for instant photography hardcopy, contrast enhancement filters for VDT screens, flexible magnetic diskettes and a diskette duplication service. Centerpiece is Polaroid's Palette computer image recorder for instant 35mm slides, overhead transparencies or full-color prints of personal computer images.

POLHEMUS NAVIGATION SCIENCES DIVISION
McDONNELL DOUGLAS ELECTRONICS COMPANY
Booth 1157

1 Hercules Drive
P.O. Box 560
Colchester, Vermont 05446
(802) 655-3159
Jack Scully
Marketing Manager

Polhemus' line of six dimensional (6D) input devices will be demonstrated. Products are the 3SPACE Digitizer, Tracker and our new low cost Isotrak. All return position (X, Y, Z) and orientation (azimuth, elevation, roll) data via RS-232 to host computer. 3SPACE is ideally suited for incorporation as a 6D peripheral to graphic workstations employing 2D and 3D software and high resolution, real time manipulation of solid models.

PRECISION VISUALS, INC.
Booth 916

6260 Lookout Road
Boulder, Colorado 80301
(303) 530-9000
Brenda G. Honeyman
Marketing Services Coordinator

User Group Contact: Carol Webster
Customer Service Coordinator

Precision Visuals produces versatile, standards-based graphics software tools packages, featuring device and machine independence. They include DI-3000, based on the Core standard, and GK-2000, a GKS implementation. Others are the Metafile System and Contouring System. GRAFMAKER and PicSure are special business graphics packages, and DI-TEXTPRO offers publication-quality text.

PRINTACOLOR CORPORATION
Booth 1041

2830 Peterson Place
Norcross, Georgia 30071
(404) 448-2675
Thomas Hebert
Applications Manager

User Group Contact: Philip Frick
General Manager

PrintaColor's family of TC1040 color ink jet printers combines both graphics and text printing capabilities with silent printing ideal for today's office or workstation environments. The TC1040 system design was conceived with the ideal printer in mind: reliable, easy to use, flexible in application, and inexpensive.

PRINTRONIX, INC.
Booth 1131

17500 Cartwright
Irvine, California 92713
(714) 863-1900
Connie Twiggs
Exhibits Coordinator

Printronix will demonstrate the 4160 graphics printer, a high resolution matrix line printer designed for CAD/CAM/CAE output. Based on patented Printronix hammerbank technology, the 4160 offers an alternative to electrostatic plotters. The 4160 features outstanding reliability, ease of operation and low cost of ownership.

PRIOR DATA SCIENCES LTD.

Booth 1152

Bell Mews Plaza
39 Highway 7, Suite 232
Ottawa, Ontario, Canada K2H 8R2
(613) 820-7235
Don Waterman
Director of Marketing, New Products

PRIOR employs 75 real-time graphics/ software people and offers GKS/C, a "C" version of GKS for all UNIX and UNIX-like systems as well as VAX/VMS at level 2C. A level 2B Version is available for the PC under DOS.

QMS, INC.

Booth 1516

1 Magnum Pass
Mobile, Alabama 36618
(205) 633-4300
James M. Carter, III
Marketing Development Manager

User Group Contact: Dr. Donald L. Parker
Senior Vice President, Research and Development

LASERGRAFIX™ Family of non-impact laser printers all capable of bit-mapping an 8½" x 14" page. The QMS SmartWriter™ laser printer with 128K user-accessible memory. CONCEPT 100™ personal publishing system for IBM PC. FormMaker™, WYSIWYG forms composition software. POSTSCRIPT™ graphics and page composition controller.

QUINTAR CORPORATION
Booth 1036

2525 Maricopa St.
Torrance, California 90503
(213) 320-5700
Molly S. Morgan
Director of Marketing and Sales

Quintar demonstrates its color graphics controllers: (1) the stand-alone Q1080 interfaces to any computer via RS-232, displays 832 x 630 resolution, 16 colors simultaneously out of 4096, and has hardware font cartridges for fast preview and top-quality slides; (2) the GraphPort, a color graphics board for the IBM PC, XT, AT, or IBM bus-compatibles. The GraphPort displays 640 x 480 non-interlaced or 832 x 630 interlaced with up to 120 shades of color simultaneously.

QUME CORPORATION
Booth 1450

2350 Qume Drive
San Jose, California 95131
(408) 942-4036
Han Park
Graphics Marketing Manager

Qume Corporation will demonstrate its full line of graphics terminals designed for business, engineering, scientific and CAD/CAM applications. Qume will feature the QVT 511 GX™, its full-color graphics terminal, with graphics emulation of the Tektronix 4105 and 4010/4014. Also displayed will be Qume's monochrome QVT 311GX™ terminal with the graphics emulation of the Tektronix 4010/4014 and DEC VT 125. The Qume QVT 211GX™ graphics terminal emulates the Tektronics 4010/4014 and comes in green or amber.

RAMTEK CORPORATION
Booth 816

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

Ramtek is a manufacturer of high performance graphics and imaging display systems, processors, terminals, workstations and peripherals. Ramtek products range from low priced color bit mapped desktop terminals to high performance 3-D shaded surface generators for complex 3-D design and animation.

RASTER TECHNOLOGIES, INC.
Booth 336

9 Executive Park Drive
North Billerica, Massachusetts 01862
(617) 667-8900
Richard M. Fichera
Director of Marketing

User Group Contact: Eric Zweigel
Product Marketing Manager

Manufactures high performance graphics terminals, ranging from the desktop Model One/10 to the Model One/380 with local 3-D transformations, shading and advanced local light modeling. The entire Model One product family features a compatible instruction set, integral debugger and support by a wide variety of third party software.

RECOGNITION CONCEPTS, INC.
Booth 1500

P.O. Box 8510
Incline Village, Nevada 89450
(702) 831-0473
John E. Sample
National Sales Manager

RCI will introduce a new Real Time Disk (RTD) and an interface (LFI) to 3M's Laser Image film recorder for its Trapix 5500 Image Processors. Both are digital devices. Based on Fujitsu's Eagle technology, the RTD can store and replay nearly 2 minutes of live or processed images while the film recorder can produce hard copy with up to 4K x 4K x 8-Bit resolution.

RIDGE COMPUTERS
Booth 548

2451 Mission College Blvd.
Santa Clara, California 95054
(408) 986-8500
Carol Byram
Manager, Marketing Communications

User Group Contact: Tod Snook
Graphics Project Manager

Ridge Computers manufactures a full line of 32-bit supermini-computers. All have a Reduced Instruction Set Computer (RISC) architecture and a UNIX * System V/Berkeley 4.2-based Ridge Operating System (ROS). ROS is designed for scientific, engineering and graphics applications.
*UNIX is a trademark of Bell Labs.

SABER TECHNOLOGY CORPORATION
Booth 1156

2381 Bering Drive
San Jose, California 95131
(408) 945-9600
Barbara Davidson
Manager, Marketing Services

The SaberStation is a UNIX based, office-oriented graphics system with the power and versatility of a super minicomputer. The 19" ultra-high resolution display produces a picture quality (1664 x 1248) offering higher resolution and greater brightness (35 foot Lamberts) than any other system on the market. System performance can be further enhanced by the use of hardware accelerators for shading, tiling, scaling, clipping, etc. The stand-alone workstation, capable of interfacing over local area network, can be used in any CAD, CAM, CAE and image processing environment.

SAS INSTITUTE INC.
Booth 1346

Box 8000, SAS Circle
Cary, North Carolina 27511-8000
(919) 467-8000
Software Sales Department

SAS/GRAPH® software includes ready-to-use procedures for vertical and horizontal bar charts, pie, star and block charts; a variety of plots; choropleth, surface, prism and block maps; text for slides; and three-dimensional displays. Recent enhancements to SAS/GRAPH include multiple graphs on the same screen and customized graphics.

SCHOELLER TECHNICAL PAPERS, INC.
Booth 1647

Centerville Road, P.O. Box 250
Pulaski, New York 13142
(315) 298-5133
Richard W. Hess
Marketing Research Analyst

User Group Contact: Arlon F. King
Color Hard Copy Task Force Manager

Schoeller will display its family of CompuColor™ high intensity ink jet papers. Designed exclusively for ink jet printing, these papers are available in a variety of coating formulations, each providing a specific amount of dot spread. Schoeller's new Color Thermal Ribbon paper will also be shown, designed for thermal ribbon transfer printers.

SCRIPTEL CORPORATION
Booth 858

4145 Arlingate Plaza
Columbus, Ohio 43228
(614) 276-8402
Nicholas G. Venetis
Vice-President/Marketing

User Group Contact: Nicholas G. Venetis

Scriptel Corporation is the only company to bring truly transparent graphics tablets to the market place. Our patented Resistive Decoding Technology (RDT™) offers improved performance and reliability when compared to conventional wire-grid electronmagnetic digitizers. Our transparent tablet enhances backlighting, film, x-ray and multi layer digitizing without the inconvenience of wire-grid shadows.

SEIKO INSTRUMENTS USA, INC.
GRAPHIC DEVICES & SYSTEMS DIVISION
Booth 1026

1623 Buckeye Drive
Milpitas, California 95035
(408) 943-9100
Cheryl Landman
Manager, Marketing Communications

Seiko demonstrates the GR-Series Graphic Terminals with 2-D transformations, display list, advanced monitor design and high speed processing; the CH-Series Color Hard Copier with video and Centronics interfacing; the DT-Series Digitizing Tablets.

SELANAR CORPORATION
Booth 1641

840 Del Rey Ave.
Sunnyvale, California 94086
(408) 735-8770
Jeffrey Hodgson
Vice President Marketing

High resolution graphics terminals for scientific and engineering applications sold through distributors and OEMs.

SELDIN PUBLISHING
(Hardcopy Magazine)
Booth 1551

1601 S. Melrose, Suite D
Placentia, California 92670
(714) 632-6924
Nina J. Foster
Marketing Coordinator

HARDCOPY Magazine is dedicated to the Digital Equipment Corporation market, including OEMs, System Houses, Software Developers, Engineers, MIS Management and End Users of DEC and DEC-compatible equipment.

SIGGRAPH '86

Registration Lobby

Conference Co-chairs
Ellen Gore
Ray Elliott

Exhibits Co-chairs
Beverly Aquino
Sue Keeley

SIGGRAPH '86, the Thirteenth Annual Conference on Computer Graphics and Interactive Techniques, meets August 18-22 in Dallas, Texas. SIGGRAPH '86 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 to making the 1986 conference another success. Posters, 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

Booth 826

630 Clyde Court
Mountain View, California 94043
(415) 960-1980
Alice E. Ahlgren
Marketing Communications Manager

Silicon Graphics will be demonstrating the IRIS 2400 engineering workstation which functions as either a personal workstation or as a node in a distributed environment. Application programs which will be demonstrated on the IRIS 2400 include: solids

modeling, finite element modeling and analysis, molecular modeling, and graphic arts and animation.

SINGER COMPANY, LINK FLIGHT SIMULATION DIVISION

Booth 1612

1077 East Arques Avenue
Sunnyvale, California 94088
(408) 720-5500
Fred Mulholland
Director, New Business Development

The Link Flight Simulation Division of the Singer Company is the world's largest producer of simulation equipment. The company's line of real-time computer image generation equipment covers commercial, military, and space training and research applications. Research and product areas include state-of-the-art real-time computer graphics software and custom high performance hardware.

SKAN GROUP INTERNATIONAL, A CLAL Company

Booth 1608

5198 E. Weaver Place
Littleton, Colorado 80121
(303) 771-0017
Robert Bornhofen
General Manager, North American Operations

Manufacturers of large format optical scanners featuring high resolution, thruput and accuracy at modest cost. Applications include mapping, image capture, digital libraries, etc. The digitized output can be stored on a variety of electronic media.

SKY COMPUTERS, INC.

Booth 1737

Foot of John Street
Lowell, Massachusetts 01852
(617) 454-6200
Mike Drumm
Director of Marketing

SKY Computers designs and manufactures arithmetic peripherals for microcomputers. Products offered and displayed include floating point array processors, floating point scalar accelerators, and fixed point signal and image processors. Applications for these products include graphics, CAD/CAE, seismic processing, medical imaging, bio-technics, robotics and many others. SKY offers contract hardware maintenance and software up-date services, telephone hotline support and volume discounts to OEM's.

SLIDETEK, INC.
Booth 1546

3304 Geary Blvd., Suite 500
San Francisco, California 94118
(415) 221-4164
Nokemi Bolvkary
Vice President, Sales and Marketing

User Group Contact: Megan Kelly
Marketing Support

The SlideTek interactive computer graphics system is used by artists and illustrators to produce high resolution presentation slides for technical, scientific and medical applications.
The innovative real-time display, extensive image capacity, multi-window access and smooth curve drawing features provide a uniquely exciting and productive graphic environment.

SOGITEC AUDIOVISUAL
Booth 900

32 Bd de la République
Boulogne, France 92100
(1) 608.13.13
Xavier Nicolas
Head of Computer Graphics Department

User Group Contact: Véronique Damien
Production Executive

SOGITEC is the European leader in three-dimensional computer-generated images. In Paris, this production center offers a state-of-the-art computer structure linked to cinematography and computer-graphics for commercials, industrial and scientific films, opening sequences for TV programs . . . From design to shooting, SOGITEC looks after everything involved in film production.

SPRINGER-VERLAG NEW YORK, INC.

Booth 1658

175 Fifth Avenue
New York, New York 10010
(212) 460-1500
David Dwek
Product Manger

User Group Contact: Lynn Montz
Editor

Computer-Aided Design, Graphics Programming, Computer Animation, Robotics, and Computational Geometry are just a few of the new books on display for SIGGRAPH '85. You'll also find such journals as The Visual Computer, New Generation Computing and Engineering with Computers. So make sure you stop by booth 1658 for the latest research results in computer graphics and related fields.

SPSS INC.

Booth 1341

444 North Michigan Ave., Suite 3000
Chicago, Illinois 60611
(312) 329-2400
SPSS Europe, B.V., P.O.B. 115, Gorinchem, The Netherlands
Marketing Department
Sales Representative

User Group Contact: Gail Newman
Executive, ISSUE INC.

SPSS Inc. provides information analysis, data management and business graphics software systems for more than 40 machine

environments in more than 80 countries worldwide. Special SIGGRAPH PREVIEW: the new SPSS Graphics for the DEC VAX/VMS System, a menu and form-driven package for high-quality maps, charts, graphs, plots and other data displays.

STEREOGRAPHICS CORPORATION
Booth 561

P.O. Box 2309
San Rafael, California 94912
(415) 459-4500
Jim Schreiber
Director of Marketing Services

3Display™ stereoscopic 3D computer graphics hardware provides true depth perception for users of display terminals. 3Display hardware acts as a plug-compatible peripheral to the user's own computer. The high-res, full-color stereoscopic image provided by 3Display technology offers valuable visual information impossible to duplicate in monoscopic "3D" systems.

STORAGE CONCEPTS, INC.
Booth 1719

3198-G Airport Loop Drive
Costa Mesa, California 92626
(714) 557-1862
Martin Bock
Marketing Manager

Storage Concepts, Inc. offers real-time-disk subsystems for imaging storage and retrieval. On display will be the Concept 21 and Concept 15 real-time-disk subsystems.

SUMMAGRAPHICS CORPORATION
Booth 316

777 State Street Extension
Fairfield, Connecticut 06430
(203) 384-1344
Susan Burns
Sales Communications Administrator

User Group Contact: John Makuch
Director, Product Management

Summagraphics will be exhibiting a variety of products: TXHE MM Series/Bit Pad Two digitizing tablets are high performance with the flexibility of a built-in mouse; the Microgrid Series high resolution tablets feature an array of host programmable functions; the SummaMouse is a low-cost, high resolution optical, digital mouse. The two new personal computer products include the MacTablet that turns the Apple Macintosh into a graphics workstation and the SummaSketch which is IBM PC compatible.

SUN MICROSYSTEMS, INC.

Booth 648

2550 Garcia Ave.
Moutain View, California 94043
(415) 960-1300
Nancy Perroton
Promotions Manager

User Group Contact: Stephanie Skieczius
User Group Coordinator

Sun Microsystems, Inc. is exhibiting its line of general-purpose workstations for technical professionals. Sun workstations integrate Motorola 68000-family processors, high-resolution graphics and Ethernet local area networking with Sun's operating system, based on the Berkeley 4.2 version of UNIX.

SYMBOLICS GRAPHICS DIVISION

Booth 1316

1401 Westwood Blvd.
Los Angeles, California 90024
(213) 478-0681
Larry Schnur
Manager, Graphics Division Marketing

The Symbolics Graphics Division develops and supplies high performance, integrated

graphic hardware and software for the Symbolics 3600 family of symbolic processors. Software products include S-Paint, S-Geometry, S-Render and S-Dynamics. Hardware products include frame buffers, broadcast resolution frame grabber and the genlock interface.

SYSTEMS RESEARCH LABORATORIES, INC.
Booth 1137

2800 Indian Ripple Road
Dayton, Ohio 45440
(513) 426-6000
Jacqueline Townsend
Marketing Representative

User Group Contact: Bill Stephen
Project Engineer

SRL exhibits an entire family of high performance raster CRT displays. All units demonstrate 100 MHz video bandwidth, user selectable scan frequencies (vertical range is 15.75 to 66.2 kHz between two units) and the best possible convergence. Also available, SRL Model 2142 (ruggedized display), custom engineering and specialized displays.

TALARIS SYSTEMS INC.
Booth 1347

5160 Carroll Canyon Road
San Diego, California 92121
(619) 587-0787
Linda E. O'Sullivan
Marketing Coordinator

Talaris Systems, a laser printer software and hardware supplier, will display its line of high-resolution laser printers—the T800 (8 ppm), T1200 (12 ppm) and T2400 (24 ppm)—and applications software. Talaris will present the recently released Talaris 810 (8 ppm) which has text processing and business graphics capabilities.

TANDBERG DATA, INC., TERMINAL DIVISION
Booth 1720

1590 S. Sinclair
Anaheim, California 92806
(714) 978-6771
Richard McGowan
Vice President, Terminal Group

User Group Contact: Per Otto Dyb
Technical Support Manager

Tandberg Data will be demonstrating its ergonomically designed, interactive TDV 2200S graphics display terminal with extended typographical capabilities such as proportional spacing. Also to be shown is an interactive optomechanical mouse and the TDP 8800 ink jet graphics printer. The TDV 2200 emulates the Tektronix 4010 and 4014 protocol with a 720 x 336 resolution.

TASVIR CORPORATION
Booth 140

2490 Charleston Road
Mountain View, California 94043
(415) 969-5602
Karen D. Thorton
Marketing Communications Manager

SUPERCADS™ 3-D mechanical design system features on-screen dynamic menus structured in the popular verb noun modifier syntax, on-line help, 360° rotation, unlimited pan and zoom, model and drawing mode, automatic associative dimensioning and relational design database. Systems are available on IBM PC/AT, Silicon Graphics Iris, ELXSI System 6400, Apollo Domain and DEC VAX.

TAT GRAPHICS GROUP, INC.
Booth 1552

1270 Lawrence Station Road
Building E
Sunnyvale, California 94089
(408) 734-2202
Avery Blake
President

CAD/Engineering Graphics Display Systems for P.C. and P.C. compatible microcomputers. T.A.T.'s SEXTANT subsystems and GALAXY controllers provide high resolution (1024 x 1024), high performance (noninterlaced) displays for users of AutoCAD, VersaCAD and other CAD systems. Also introducing Tektronix 4107/4109 and 4105 terminal compatibility. National sales representatives for QUME Graphics Terminals.

TECHEXPORT, INC.
Booth 1057

244 Second Ave.
Waltham, Massachusetts 02154
(617) 890-6507
Donald F. Berman
President

Techexport specializes in the export distribution of computer graphics products. A subsidiary of the Shawmut Bank of Boston, Techexport has offices in England, France, Germany, Switzerland, Italy, and Israel, and distributors in all other significant markets.

TECHNICAL MARKETING LTD.
Booth 1300

9418 Annapolis Road, Suite 106
Lanham, Maryland 20706
(301) 459-3600
David L. Wilson
President

Technical Marketing Ltd. is a marketing consulting firm specializing in the computer graphics industry. The company offers market research, market development and promotional expertise and assistance to companies involved in new product or new market introductions.

TEKTRONIX, INC.
Booth 616

P.O. Box 500
Beaverton, Oregon 97077
(503) 627-7111
Ralph Show
Senior Exhibits Manager

Tektronix Information Display Group will exhibit its new 6000 Series of 32-bit Intelligent Graphics Workstations. Also: 4120 Series workstations demonstrating 2D to 3D migration; 4100 Series Color Graphics Terminals compatible with DEC and IBM; 4692 Color Graphics Copier and PLOT 10 TekniCad (drafting) and TekniCap (presentation) software.

TELEVISION EQUIPMENT ASSOCIATES
Booth 1660

Box 393
South Salem, New York 10590
(914) 763-8893
Bill Pegler
President

Electronic Design Engineers and equipment manufacturers working in the field of electronic imaging will want to see a wide range of Matthey low pass video filters. These are passive 75 ohm units, only half inch high and ideal for removing aliasing components from electronic pictures. Digital Engineers will be pleased to see factory tested analog filters which solve problems.

TELEX COMMUNICATIONS, INC.
Booth 1340

9600 Aldrich Ave. S.
Minneapolis, Minnesota 55420
(800) 828-6107—In MN: (612) 887-5531
Daniel M. Paulnock
Director of Marketing

User Group Contact: Daniel M. Paulnock
Director of Marketing

Caramate front and rear screen combination slide projectors and high performance wall screen slide projectors, full line of Sestar fixed focal length and variable zoom slide projector lenses.

TELMAT SA
Booth 961

10 Rue Des Charrons, BP 12
Soultz, France 68360
(89) 48 25 72
Claude Wagner
Systems Engineer

CUBI 7 is a color graphics system for 3-D image synthesis with animation of modular and evolutionary design. Its target is low-cost production. Therefore, it is particularly well adapted to meet the needs of the following sectors: Audio/Visual facilities: credits, games, films, advertising spots. Service facilities: CAD (mechanics, architecture), TV games, TV education, videotex. Simulation: medical, mechanical, military.

TEMPLATE, THE SOFTWARE DIVISION OF MEGATEK CORPORATION
Booth 536

9645 Scranton Road
San Diego, California 92121
(619) 455-5590
Rick Kreysar
Manager, TEMPLATE Product Marketing

TEMPLATE® displays six software packages: TEMPLATE®, FORTRAN subroutine library for 3D engineering and scientific graphics; 2D TEMPLATE®, FORTRAN subroutine library for 2D graphics; DIMENSION-GKS™, level 2b implementation of the ANSI GKS standard; MICROTEMPLATE®, graphics subroutine library for the IBM PC/XT; CONTEMPLATE™, a charting and graphing package; and their implementation of the draft standard PHIGS.

TEXAS INSTRUMENTS SEMICONDUCTOR GROUP
Booth 1052

P.O. Box 809066
Dallas, Texas 75380-9066
(713) 274-2297
Barbara Appel
MOS MEM Merchandising

Semiconductors for Graphics Applications: including Video RAMs, Video System Controllers, 32-bit Microprocessors, Very High Speed 8-bit bit slices and 32-bit Digital Signal Processors.

TEXAS MEMORY SYSTEMS, INC.
Booth 950

9888 Bissonnet #470
Houston, Texas 77036
(713) 771-8200
Holly Frost
President

The SAM-600 mass memory system will be displayed. The SAM system has a single chassis capacity of 128 Mega-Bytes, supports an 80MB/sec transfer rate, and up to 12 I/O ports. SAM high speed interfaces are available to Floating Point Systems AP's and Gould-SEL, Perkin-Elmer, Digital Equipment Corp. computers. Also, high speed disk drives (9MB/sec) and graphics displays (32MB/sec) may be attached to the SAM system.

THOMSON DIGITAL IMAGE
Booth 900

173 Boulevard Haussmann
Paris, France 75008
(1) 561.96.00
Gerard Alain
Technical Manager
Hubert de Maximy
Marketing Manager

Thomson Digital Image was formed in September 1984. TDI works in the field of computer generated images for TV shows and

broadcast, advertising and long range movies. TDI, issued from the Flying Simulators Division of Thomson, has developed its own software in computer graphics. TDI uses the most powerful computer in its field in Europe.

TIME ARTS, INCORPORATED
Booth 1547

3436 Mendocino Ave.
Santa Rosa, California 95401
(415) 328-7176
Richard Luttrell
Director of Marketing

User Group Contact: David Krauss
Coordinator

Lumena is available in several configurations to meet specific application requirements—Print, Graphics or Video. All options interface easily within Lumena—Animation & Special Effects, Video digitizing and NTSC, Fonts, Business Graphs, Enhanced Resolution, Print & Color Separation. Highlighting the exhibit is a true-color system, described as the "total design environment."

ULTRATEK
Booth 241

23520 Telo Ave., Suite # 12
Torrance, California 90503
(213) 618-0141
Joseph Lai
President

User Group Contact: I-Teh Hsieh
Engineer

ULTRATEK, a graphics terminal manufacturing company will display its new Model 6448, the first low-cost color graphics terminal. The 6448 features Tektronix 4105 compatibilities, has a non-interlaced resolution of 640 by 480 with 8 colors selected from a pallette of 16, supports ISSCO, Precision Visual, SAS and many other graphics software. Also, supports Tektronix 4695 color copier, and works with IBM-PC keyboard and monitor.

UNIRAS, INC.
Booth 128

50 Mall Road, Suite 212
Burlington, Massachusetts 01803
(617) 272-7260
Alice B. Taylor
Technical Marketing Specialist

UNIRAS, Inc. will present its mainframe and mini computer graphics applications software for business and presentation, mapping interpolation, seismic, GKS and solids modeling. We will be announcing new versions of interactive mapping, decision support software and versions for the IBM PC/AT.

UNIVERSAL DATA SYSTEMS, INC.
Booth 1458

5000 Bradford Drive
Huntsville, Alabama 35805-1953
(205) 837-8100
Terri McClellan
Marketing Specialist

Universal Data Systems, of the Information Systems Group of Motorola, Inc., will show a full line of low, medium and high speed modems. As a complement to this line, UDS will display the EC100 Error Controller and the 9600A/B, the industry's first 9600 bps dial-up modems.

UNIVERSAL TECHNICAL GRAPHICS/GRAPHIC RESOURCES
Booth 127

5462 Research Drive
Huntington Beach, California 92649
(714) 895-4811
Ronald Ball
Marketing Coordinator

Universal Technical Graphics demonstrates an array of Pen & Electrostatic Plotters, with an emphasis on cost effective, refurbished equipment. UTG gives the plotter users a second choice in purchasing first quality equipment. Drafting media and supplies for this type equipment are displayed by Graphic Resources Corporation.

VECTRIX CORPORATION
Booth 256

2606 Branchwood Drive
Greensboro, North Carolina 27408
(919) 288-0520
Ned E. Lowder
Director of Sales

Vectrix manufactures sophisticated, high resolution plug-in graphics cards for IBM personal computers and standalone graphics processors for any host computer. Turnkey CADAM Display and graphics arts systems are also available. Extremely fast (60 nanoseconds per pixel), 1024 x 1024, 60 Hz non-interlaced plug-in card being announced at SIGGRAPH.

VERMONT MICROSYSTEMS, INC.
Booth 342

11 Tigan Street, P.O. Box 236
Winooski, Vermont 05404
(802) 655-2860
John M. Cushman
Marketing Manager

User Group Contact: Brian C. St. Armour
Applications Engineering

Color graphics processors and an intelligent monitor will be exhibited by VMI. Each of these raster-scan graphics product families offers unique cost/performance factors to the OEM, system integrator and end user. Featured is the VM-8820 Graphics Processor for the IBM PC AT.

VERSA CAD
Booth 157

7372 Prince Drive, Suite 106
Huntington Beach, California 92647
(714) 847-9960
Jennifer Aurand
Marketing Assistant

VersaCAD is a general-purpose CAD system for IBM PC and related computers. Drawings up to 15,000 objects are accommodated, and the program includes more than 100 single-keystroke commands selected from on-screen menus. Coordinate entry may be from digitizer or keyboard, including polar, relative and absolute coordinates. Program automatically calculates area, moment of inertia, center of gravity, etc. Unlimited symbol library storage and high resolution color aid productivity.

VERSATEC, A XEROX COMPANY
Booth 628

2710 Walsh Ave.
Santa Clara, California 95051
(408) 988-2800
Annette Stransky
Advertising Manager

Versatec is announcing at this show a second generation of electrostatic color plotters. Two new plotting widths, 24 and 36 inches, extend the previous color plotter line of 42 inches. Stop by the booth and see the widest range of electrostatic plotters in monochrome and color in the world in operation.

VERSICOLOR CORPORATION
Booth 1640

2560 Mission College Blvd.
Suite 106
Santa Clara, California 95050
(408) 727-6626
Richard A. Flores
President

VersiColor Corporation is manufacturer and distributor of high resolution graphics terminals and workstations, plus input and output devices associated with engineering workstations.

VERTICOM, INC.
Booth 252

545 Weddell Drive
Sunnyvale, California 94089
(408) 747-1222
Gerald A. Moneypenny
Vice President, Marketing

Verticom, Inc. designs and manufactures high performance graphics controllers and displays for IBM Personal Computers. Verticom's latest products, two plug-in, high speed controllers, draw images at 1,000,000 pixels per second, three to ten times faster than competitive products. The M-16 and M-256 controllers provide 16 and 256 colors respectively, from a palette of 4,096. The high speed drawing capability is generated by Verticom's proprietary, two-micron CMOS graphic controller chip set with an on-board Motorola 68000 CPU.

VIA VIDEO INC.
Booth 1136

5155 Old Ironsides Drive
Santa Clara, California 95054
(408) 980-8009
Curt G. Thiem
Product Marketing Manager

THE DESIGN CENTER from Via Video. A state-of-the-art picture processing system for the most demanding of professional artists. The Design Center integrates computer graphics, photography and video technologies. You control it all: millions of colors, flash scanning, and high resolution painting with multi media flexibility for corporate presentation graphics, design and illustration needs.

VIDEO MONITORS INC.
Booth 1662

3833 No. White Ave.
Eau Claire, Wisconsin 54703
(715) 834-7785
J. E. Carpentier
Vice President, Sales and Marketing

Video Monitors Inc. designs and builds monochrome and RGB color high speed raster scan video monitors for the OEM marketplace. Video Monitors Inc. pioneered the development of the high speed raster scan monitor. Tens of thousands are now used throughout the free world in CAD/CAM, AI and Medical Imaging Applications.

VISUAL ENGINEERING
Booth 1250

2680 N. First St., Suite 200
San Jose, California 95134
(408) 945-9055
Amy E. Christen
Product Marketing Manager

User Group Contact: Dave McMurdie
Customer Engineering Manager

UNIX Graphics Software for 2D or 3D solids, offering both development tools and end-user applications. Introducing Visual: GensiSys, a state-of-the-art 3D scene modeling package. Four levels of realism provide a smooth tradeoff between compute time and image realism, including a proprietary highspeed ray-tracer. Also offering GKS and scientific/business presentation graphics.

VISUAL INTELLIGENCE CORPORATION
Booth 151

33 Boston Post Road West
Marlboro, Massachusetts 01752
(617) 485-6092
Cheryl McDermott
Director of Corporate Communications

Visual Intelligence exhibits the DataViews family of graphics software products.
DataViews: Menu-driven graphing package for displaying dynamic or static data. Wide range of graphic types (35 +) and display options allow users to build customized displays without programming.
DV-Draw: DataViews' 2D drawing module for creating drawings which may incorporate dynamic elements and/or graphs.
DV-Routines: Subroutine library for programming access to DataViews' graphics functionality.

WEST END FILM INC.
Booth 1637

2121 Newport Place NW
Washington, District of Columbia 20037
(202) 331-8078
Bill Ferster
President

West End produces artist interactive software and turnkey systems for video animation, presentation graphics and graphic design applications. West End currently markets Artwork, a 3-D, high resolution drawing package. Brushwork, a powerful video painting package with scanning capabilities. Chartwork, for business graphics and the Animate Series II, a complete video-animation system.

WESTERN GRAPHTEC, INC.
Booth 1240

12 Chrysler St.
Irvine, California 92718
(714) 770-6010
Annette Comeau-Bowman
Manager, Advertising and Promotion

Western Graphtec will display its complete line of intelligent multipen digital plotters as well as drum plotters.

WESTWARD TECHNOLOGY INC.
Booth 946

90 Montvale Ave.
Stoneham, Massachusetts 02180
(617) 438-6623
Steven Feierstein
Technical Marketing Manager

User Group Contact: Ellen Radigan
Trade Show Coordinator

Westward Technology markets a full range of raster graphics displays perfectly suited to the CAD/CAM CAE user. The 3219W

monochrome display features a non-interlaced screen with a resolution of 2048 x 1568. The color 3220W offers up to 256 colors from a palette of 16 million hues. Westward Technology is committed to excellence in product design and ergonomics which meet the needs of the CAD/CAM/CAE professional.

THE WINSTED CORPORATION
Booth 1730

9801 James Circle
Minneapolis, Minnesota 55431
(800) 328-2962
Gerald R. Hoska
Vice President

Ergonomically engineered consoles and workstations. Perfectly suited for computer graphic and animation applications. Compact, space-saving units that conveniently position all the components for operator efficiency and comfort. Adjustable keyboard and digitizer pad shelves. Table also adjusts from 26"-30" high for proper working height to minimize fatigue.

XTAR ELECTRONICS, INC.
Booth 1742

2262 Landmeier Road
Elk Grove, Illinois 60007
(312) 364-4111
Emmett Powers
Chief Executive Officer

XTAR will be announcing its "POLYGONE" two-board set based on its proprietary custom VLSI Graphics MicroProcessor and Video Shift Register chip sets. The board is designed to occupy one slot of an IBM PC, PC/XT of PC/AT. Also shown will be an evaluation module based on the chips.

YAMAHA (NIPPON GAKKI COMPANY LIMITED OF JAPAN)

Booth 1726

10-1 Nakazawa-cho
Hamamatsu, Shizuoka, Japan 430
(0534) 65-1111
Kazukiyo Ishimura
General Manager

Products to be displayed include 2D Intelligent Graphic Displays for micro to mainframe environments. Features include medium to high resolution 16.7 million color palette and high price performance value.

BOOTH	BUSINESS GRAPHICS SOFTWARE
452	Advanced Technology Center
1506	Artronics/3M
1553	Autographix, Inc.
1447	AZTEK
1631	Chartpak
1452	Commodore Business Machines
1221	Dataplotting Services, Inc.
836	DICOMED Corporation
1722	Electronic Cottage, Inc.
1734	Frontier Technologies Corporation
1657	FTG Data Systems
1357	General Parametrics Corporation
1226	Genigraphics Corporation
1254	Grafpoint
936	ID Systems
1738	Island Graphics Corporation
716	ISSCO
1216	Matrix Instruments, Inc.
1732	New England Technology Group
1426	Number Nine Computer Corporation
916	Precision Visuals, Inc.
1036	Quintar Corporation
1516	QMS, Inc.
1346	SAS Institute Inc.
1546	SliteTek, Inc.
1341	SPSS Inc.
1347	Talaris Systems Inc.
536	TEMPLATE, The Software Division of Megatek Corporation
1547	Time Arts, Incorporated
128	UNIRAS, Inc.
256	Vectrix Corporation
1250	Visual Engineering, Inc.
151	Visual Intelligence Corporation
1637	West End Film Inc.
1240	Western Graphtec, Inc.

BOOTH	CAD/CAM SYSTEMS
1061	Abel Graphics (Subsidiary of Robert Abel & Associates)
846	Adage, Inc.
542	Advanced Color Technology, Inc.
228	Apollo Computer Inc.
1200	AT&T
1541	Autodesk Inc.
1440	Cadmus Computer Systems
906	CalComp
1716	Calos, Inc.
1650	Case Technology, Inc.
654	Cubicomp Corporation

428	EIKONIX Corporation
1556	Equitable Life Leasing Corporation
324	Evans and Sutherland Computer Corporation
1734	Frontier Technologies Corporation
1254	Grafpoint
758	Graphic Devices, Inc.
1016	Hewlett Packard Company
1126	Hitachi America, Ltd.
136A	Jupiter Systems
1051	Kontron Electronics, Inc.
736	Lexidata Corporation
940	Lundy Electronics & Systems, Inc.
257	MASSCOMP
1216	Matrix Instruments, Inc.
636	Megatek Corporation
443	NEC Electronics Inc.
1557	Neo-Visuals Inc.
328	New GEA Corporation
1426	Number Nine Computer Corporation
348	Panasonic Industrial Company
1536	Perspective Technologies
1041	PrintaColor Corporation
1030	Quintar Corporation
1516	QMS, Inc.
816	Ramtek Corporation
548	Ridge Computers
1156	Saber Technology Corporation
858	Scriptel Corporation
1026	Seiko Instruments USA, Inc., Graphic Devices & Systems Division
826	Silicon Graphics
561	Stereographics Corporation
648	Sun Microsystems, Inc.
1552	TAT Graphics Group, Inc.
157	VersaCAD
628	Versatec, a Xerox Company
252	Verticom, Inc.
1250	Visual Engineering, Inc.
1637	West End Film Inc.
1240	Western Graphtec, Inc.

CARTOGRAPHY

BOOTH	
452	Advanced Technology Center
1221	Dataplotting Services Inc.
428	EIKONIX Corporation
236	Gould Inc., Imaging & Graphics Division
1254	Grafpoint
1618	Iris Graphics

136A	Jupiter Systems
736	Lexidata Corporation
148	Lucasfilm, Ltd. (PIXAR)
443	NEC Electronics Inc.
1426	Number Nine Computer Corporation
1500	Recognition Concepts, Inc.
1156	Saber Technology Corporation
858	Scriptel Corporation
561	Stereographics Corporation
128	UNIRAS, Inc.

BOOTH	COM DEVICES/FILM RECORDERS
448	AVL
836	DICOMED Corporation
1526	Focus Graphics
1016	Hewlett Packard Company
1162	Imtec Equipment Inc.
1246	KMS Advanced Products, Inc.
556	Lyon Lamb VAS, Inc.
1216	Matrix Instruments, Inc.
1151	N.I.S.E., Inc.
746	Polaroid Corporation

BOOTH	COMMUNICATIONS
228	Apollo Computer Inc.
1430	Auscom (a KMW Systems Company)
1452	Commodore Business Machines
1734	Frontier Technologies Corporation
1657	FTG Data Systems
1254	Grafpoint
1126	Hitachi America, Ltd.
139	Imaging Technology Incorporated
1100	Inflight Services Inc.
424	KMW Systems Corporation
1040	Peritek Corporation
826	Silicon Graphics
648	Sun Microsystems, Inc.

BOOTH	COMPUTER ANIMATION SYSTEMS
1061	Abel Graphics (Subsidiary of Robert Abel & Associates)
542	Advanced Color Technology, Inc.
1300	Alias Research Inc.
1261	Antics Enterprises Inc.
1506	Artronics/3M
1447	AZTEK
857	Robert Bosch Corporation
1452	Commodore Business Machines
1330	Computer Graphics Laboratories, Inc.

654	Cubicomp Corporation
123	Dubner Computer Systems
428	EIKONIX Corporation
1226	Genigraphics Corporation
1126	Hitachi America, Ltd.
117	Interactive Machines, Inc.
1738	Island Graphics Corporation
136A	Jupiter Systems
148	Lucasfilm, Ltd. (PIXAR)
556	Lyon Lamb VAS, Inc.
1557	Neo-Visuals Inc.
1426	Number Nine Computer Corporation
1536	Perspective Technologies
816	Ramtek Corporation
1156	Saber Technology Corporation
858	Scriptel Corporation
1316	Symbolics Graphics Division
1250	Visual Engineering, Inc.
1637	West End Film Inc.

BOOTH	CONSULTANTS
1734	Frontier Technologies Corporation
1146	Nova Graphics International
1300	Technical Marketing Ltd.

BOOTH	CORE STANDARD SOFTWARE
452	Advanced Technology Center
228	Apollo Computer Inc.
122	Daikin Industries Ltd.
1221	Dataplotting Services Inc.
257	MASSCOMP
328	New GEA Corporation
536	TEMPLATE, The Software Division of Megatek Corporation

BOOTH	DESKTOP COMPUTERS
542	Advanced Color Technology, Inc.
228	Apollo Computer Inc.
1200	AT&T
1631	Chartpak
1452	Commodore Business Machines
1254	Grafpoint
257	MASSCOMP
1426	Number Nine Computer Corporation
1546	SlideTek, Inc.
648	Sun Microsystems, Inc.

BOOTH	DRAFTING SYSTEMS
542	Advanced Color Technology, Inc.
228	Apollo Computer Inc.
1200	AT&T
1541	Autodesk Inc.
1716	Calos, Inc.

428 EIKONIX Corporation
1254 Grafpoint
136A Jupiter Systems
1426 Number Nine Computer Corporation
1436 Omnicomp Graphics Corporation
858 Scriptel Corporation

BOOTH ELECTRICAL/ELECTRONIC SYSTEMS

228 Apollo Computer Inc.
1541 Autodesk Inc.
1716 Calos, Inc.
1650 Case Technology, Inc.
121 DYNAIR Electronics, Inc.
136A Jupiter Systems
736 Lexidata Corporation
257 MASSCOMP
548 Ridge Computers
1156 Saber Technology Corporation
826 Silicon Graphics
128 UNIRAS, Inc.
1742 Xtar Electronics, Inc.

BOOTH ENGINEERING WORKSTATIONS

228 Apollo Computer Inc.
1200 AT&T
1541 Autodesk Inc.
1440 Cadmus Computer Systems
1716 Calos, Inc.
1650 Case Technology, Inc.
428 EIKONIX Corporation
1657 FTG Data Systems
1254 Grafpoint
136 Hitachi America, Ltd.
940 Lundy Electronics & Systems, Inc.
257 MASSCOMP
1253 Mitsubishi International Corporation
443 NEC Electronics Inc.
1436 Omnicomp Graphics Corporation
348 Panasonic Industrial Company
1040 Peritek Corporation
816 Ramtek Corporation
548 Ridge Computers
1156 Saber Technology Corporation
858 Scriptel Corporation
648 Sun Microsystems, Inc.
128 UNIRAS, Inc.
256 Vectrix Corporation
1662 Video Monitors, Inc.

BOOTH	ERGONOMICS
1226	Genigraphics Corporation
1046	Ikegami Electronics (U.S.A.), Inc.
736	Lexidata Corporation
257	MASSCOMP
1724	MicroTouch Systems, Inc.
223	OCLI
1720	Tandberg Data, Inc., Terminal Division
946	Westward Technology Inc.
1730	The Winsted Corporation

BOOTH	ERGONOMICS—FURNITURE
1730	The Winsted Corporation

BOOTH	ERGONOMICS—HARDWARE
736	Lexidata Corporation
257	MASSCOMP
1724	MicroTouch Systems, Inc.
223	OCLI
1720	Tandberg Data, Inc., Terminal Division
946	Westward Technology Inc.

BOOTH	ERGONOMICS—WORKSTATIONS
1226	Genigraphics Corporation
257	MASSCOMP
1730	The Winsted Corporation

BOOTH	GKS SOFTWARE
452	Advanced Technology Center
228	Apollo Computer Inc.
353	Ceegen Corporation
1221	Dataplotting Services Inc.
856	GIXI Inc.
236	Gould Inc., Imaging & Graphics Division
1126	Hitachi America, Ltd.
456	Kurta Corporation
1336	Matrox Electronic Systems Ltd.
1146	Nova Graphics International
1436	Omnicomp Graphics Corporation
1040	Peritek Corporation
916	Precision Visuals, Inc.
1152	PRIOR Data Sciences Ltd.
1516	QMS, Inc.
816	Ramtek Corporation
1156	Saber Technology Corporation
536	TEMPLATE, The Software Division of Megatek Corporation
1250	Visual Engineering, Inc.

BOOTH	GRAPHIC DIGITIZERS
906	CalComp
1453	Chorus Data Systems, Inc.
1452	Commodore Business Machines
161	Datacube, Inc.
1358	Elographics, Inc.
236	Gould Inc., Imaging & Graphics Division
758	Graphic Devices, Inc.
131	GTCO Corporation
528	Houston Instrument
1628	Inovion Systems
456	Kurta Corporation
1724	MicroTouch Systems, Inc.
1253	Mitsubishi International Corporation
156	Numonics Corporation
1157	Polhemus Navigation Sciences Division, McDonnell Douglas Electronics Company
816	Ramtek Corporation
858	Scriptel Corporation
1026	Seiko Instruments USA, Inc., Graphic Devices & Systems Division
1546	SlideTek, Inc.
316	Summagraphics Corporation
127	Universal Technical Graphics/ Graphic Resources Corporation

BOOTH	GRAPHIC DISPLAYS
846	Adage, Inc.
542	Advanced Color Technology, Inc.
1120	Amtron Corporation
1141	Ann Arbor Terminals, Inc.
228	Apollo Computer Inc.
1326	Barco Industries, Inc.
906	CalComp
1452	Commodore Business Machines
654	Cubicomp Corporation
122	Daikin Industries Ltd.
436	Digital Engineering, Inc.
1530	Floating Point Systems, Inc.
1734	Frontier Technologies Corporation
1657	FTG Data Systems
236	Gould Inc., Imaging & Graphics Division
1254	Grafpoint
758	Graphic Devices, Inc.
1016	Hewlett Packard Company
1126	Hitachi America, Ltd.
936	ID Systems
1046	Ikegami Electronics (U.S.A.), Inc.
117	Interactive Machines, Inc.

136A	Jupiter Systems
553	Kloss Video Corporation
736	Lexidata Corporation
148	Lucasfilm, Ltd. (PIXAR)
940	Lundy Electronics & Systems, Inc.
556	Lyon Lamb VAS, Inc.
1216	Matrix Instruments, Inc.
1336	Matrox Electronic Systems Ltd.
1236	MCI/Quantel
636	Megatek Corporation
1253	Mitsubishi International Corporation
328	New GEA Corporation
1436	Omnicomp Graphics Corporation
348	Panasonic Industrial Company
1040	Peritek Corporation
1536	Perspective Technologies
1450	Qume Corporation
816	Ramtek Corporation
336	Raster Technologies, Inc.
548	Ridge Computers
1026	Seiko Instruments USA, Inc., Graphic Devices & Systems Division
1641	Selanar Corporation
561	Stereographics Corporation
1316	Symbolics Graphics Division
1137	Systems Research Laboratories, Inc.
1720	Tandberg Data, Inc., Terminal Division
256	Vectrix Corporation
342	Vermont Microsystems, Inc.
1662	Video Monitors Inc.
946	Westward Technology Inc.

BOOTH	GRAPHICS AIDED DRAFTING
542	Advanced Color Technology, Inc.
1200	AT&T
1734	Frontier Technologies Corporation
1657	FTG Data Systems
940	Lundy Electronics & Systems, Inc.
1236	MCI/Quantel
1426	Number Nine Computer Corporation
858	Scriptel Corporation
127	Universal Technical Graphics/Graphic Resources Corporation
256	Vectrix Corporation
1240	Western Graphtec, Inc.

BOOTH	GRAPHICS ARTS SYSTEMS
1061	Abel Graphics (Subsidiary of Robert Abel & Associates)
542	Advanced Color Technology, Inc.
1300	Alias Research Inc.
1120	Amtron Corporation
1261	Antics Enterprises Inc.
1506	Artronics/3M
448	AVL
1631	Chartpak
1453	Chorus Data Systems, Inc.
1452	Commodore Business Machines
1330	Computer Graphics Laboratories, Inc.
654	Cubicomp Corporation
836	DICOMED Corporation
1657	FTG Data Systems
1226	Genigraphics Corporation
1016	Hewlett Packard Company
1126	Hitachi America, Ltd.
1628	Inovion Systems
1738	Island Graphics Corporation
148	Lucasfilm, Ltd. (PIXAR)
1236	MCI/Quantel
1630	Mitsui & Company (U.S.A.), Inc., Fuji Photo Film Company, Ltd.
1732	New England Technology Group
1040	Peritek Corporation
1536	Perspective Technologies
1041	PrintaColor Corporation
1500	Recognition Concepts, Inc.
826	Silicon Graphics
1546	SlideTek, Inc.
1316	Symbolics Graphics Division
1347	Talaris Systems Inc.
1547	Time Arts, Incorporated
256	Vectrix Corporation
628	Versatec, a Xerox Company
1250	Visual Engineering, Inc.
1637	West End Film Inc.

BOOTH	HARD COPY; PHOTOGRAPHS
1030	CELCO (Constantine Engineering Laboratories Company)
728	Dunn Instruments
1624	Eastman Kodak Company
1357	General Parametrics Corporation
1016	Hewlett Packard Company
1246	KMS Advanced Products Inc.
1216	Matrix Instruments, Inc.
1236	MCI/Quantel
1151	N.I.S.E., Inc.
746	Polaroid Corporation

BOOTH	HARD COPY; SLIDES
542	Advanced Color Technology, Inc.
448	AVL
1030	CELCO (Constantine Engineering Laboratories Company)
1330	Computer Graphics Laboratories, Inc.
836	DICOMED Corporation
728	Dunn Instruments
1624	Eastman Kodak Company
1526	Focus Graphics
1357	General Parametrics Corporation
1016	Hewlett Packard Company
136A	Jupiter Systems
1246	KMS Advanced Products, Inc.
1216	Matrix Instruments, Inc.
1236	MCI/Quantel
1557	Neo-Visuals Inc.
1151	N.I.S.E., Inc.
746	Polaroid Corporation
1036	Quintar Corporation
858	Scriptel Corporation
1546	SlideTek, Inc.
128	UNIRAS, Inc.

BOOTH	HARD COPY; VIDEO-PAPER
1357	General Parametrics Corporation
1527	Gulton Industries Inc.
1618	Iris Graphics
1246	KMS Advanced Products, Inc.
556	Lyon Lamb VAS, Inc.
1216	Matrix Instruments, Inc.
1253	Mitsubishi International Corporation
1630	Mitsui & Company (U.S.A.), Inc., Fuji Photo Film Company, Ltd.
1647	Schoeller Technical Papers, Inc.
1026	Seiko Instruments USA, Inc., Graphic Devices & Systems Division
1546	SlideTek, Inc.

BOOTH	HIGH PERFORMANCE GRAPHICS PROCESSORS
846	Adage, Inc.
516	AED, Inc.
1116	AMF Logic Sciences, Inc.
1120	Amtron Corporation
228	Apollo Computer Inc.
857	Robert Bosch Corporation
122	Daikin Industries Ltd.
1530	Floating Point Systems, Inc.
1526	Focus Graphics

1734	Frontier Technologies Corporation
236	Gould Inc., Imaging & Graphics Division
1162	Imtec Equipment Inc.
117	Interactive Machines, Inc.
136A	Jupiter Systems
424	KMW Systems Corporation
736	Lexidata Corporation
148	Lucasfilm, Ltd. (PIXAR)
1216	Matrix Instruments, Inc.
1236	MCI/Quantel
1416	Metheus Corporation
1253	Mitsubishi International Corporation
443	NEC Electronics Inc.
1426	Number Nine Computer Corporation
1436	Omnicomp Graphics Corporation
248	Parallax Graphics Inc.
1040	Peritek Corporation
1536	Perspective Technologies
1516	QMS, Inc.
816	Ramtek Corporation
336	Raster Technologies, Inc.
1156	Saber Technology Corporation
1641	Selanar Corporation
826	Silicon Graphics
1546	SlideTek, Inc.
648	Sun Microsystems, Inc.
1660	TV Equipment Associates
1053	Texas Instruments Semiconductor Group
256	Vectrix Corporation
342	Vermont Microsystems
252	Verticom, Inc.
946	Westward Technology Inc.
1742	Xtar Electronics, Inc.

BOOTH — HIGH RESOLUTION GRAPHIC DISPLAY SYSTEMS

846	Adage, Inc.
542	Advanced Color Technology, Inc.
516	AED, Inc.
1116	AMF Logic Sciences, Inc.
1120	Amtron Corporation
228	Apollo Computer Corporation
1200	AT&T
1326	Barco Industries, Inc.
1440	Cadmus Computer Systems
1631	Chartpak
1330	Computer Graphics Laboratories, Inc.

654	Cubicomp Corporation
122	Daikin Industries Ltd.
161	Datacube, Inc.
1130	Electrohome Ltd.
324	Evans and Sutherland Computer Corporation
1530	Floating Point Systems, Inc.
1734	Frontier Technologies Corporation
1357	General Parametrics Corporation
1226	Genigraphics Corporation
856	GIXI Inc.
236	Gould Inc., Imaging & Graphics Division
1254	Grafpoint
1126	Hitachi America, Ltd.
1046	Ikegami Electronics (U.S.A.), Inc.
554	Information Now, Inc.
117	Interactive Machines, Inc.
136A	Jupiter Systems
553	Kloss Video Corporation
736	Lexidata Corporation
148	Lucasfilm, Ltd. (PIXAR)
940	Lundy Electronics & Systems, Inc.
1216	Matrix Instruments, Inc.
1236	MCI/Quantel
636	Megatek Corporation
1416	Metheus Corporation
1253	Mitsubishi International Corporation
443	NEC Electronics Inc.
1436	Omnicomp Graphics Corporation
1040	Peritek Corporation
1041	PrintaColor Corporation
816	Ramtek Corporation
336	Raster Technologies, Inc.
548	Ridge Computers
1156	Saber Technology Corporation
1026	Seiko Instruments USA, Inc., Graphic Devices & Systems Division
1641	Selanar Corporation
1546	SlideTek, Inc.
561	Stereographics Corporation
648	Sun Microsystems, Inc.
1316	Symbolics Graphics Division
256	Vectrix Corporation
1662	Video Monitors Inc.
946	Westward Technology Inc.

BOOTH	IMAGE PROCESSING
846	Adage, Inc.
542	Advanced Color Technology, Inc.
452	Advanced Technology Center
1120	Amtron Corporation
1200	AT&T
1453	Chorus Data Systems, Inc.
1354	CSPI Inc.
161	Datacube, Inc.
428	EIKONIX Corporation
1556	Equitable Life Leasing Corporation
1530	Floating Point Systems, Inc.
236	Gould Inc., Imaging & Graphics Division
1126	Hitachi America, Ltd.
1457	IBIS Systems, Inc.
139	Imaging Technology Incorporated
1162	Imtec Equipment Inc.
554	Information Now, Inc.
1628	Inovion Systems
117	Interactive Machines, Inc.
1738	Island Graphics Corporation
136A	Jupiter Systems
1051	Kontron Electronics, Inc.
736	Lexidata Corporation
148	Lucasfilm, Ltd. (PIXAR)
257	MASSCOMP
1216	Matrix Instruments, Inc.
1336	Matrox Electronic Systems Ltd.
1236	MCI/Quantel
1736	MegaVision
756	Mercury Computer Systems, Inc.
1416	Metheus Corporation
1253	Mitsubishi International Corporation
443	NEC Electronics Inc.
248	Parallax Graphics Inc.
1055	Perceptics Corporation
1040	Peritek Corporation
1041	PrintaColor Corporation
1516	QMS, Inc.
1500	Recognition Concepts, Inc.
548	Ridge Computers
1156	Saber Technology Corporation
1660	TV Equipment Associates
128	UNIRAS, Inc.
628	Versatec, a Xerox Company
1250	Visual Engineering, Inc.

BOOTH	INTERACTIVE GRAPHICS TERMINALS
846	Adage, Inc.
542	Advanced Color Technology, Inc.
516	AED, Inc.
1141	Ann Arbor Terminals, Inc.
906	CalComp
654	Cubicomp Corporation
122	Daikin Industries Ltd.
324	Evans and Sutherland Computer Corporation
1530	Floating Point Systems, Inc.
1734	Frontier Technologies Corporation
1657	FTG Data Systems
1226	Genigraphics Corporation
1254	Grafpoint
758	Graphic Devices, Inc.
461	GraphOn
1016	Hewlett Packard Company
655	Human Designed Systems
936	ID Systems
117	Interactive Machines, Inc.
136A	Jupiter Systems
148	Lucasfilm, Ltd. (PIXAR)
940	Lundy Electronics & Systems, Inc.
257	MASSCOMP
1336	Matrox Electronic Systems Ltd.
636	Megatek Corporation
1724	MicroTouch Systems, Inc.
443	NEC Electronics Inc.
328	New GEA Corporation
1436	Omnicomp Graphics Corporation
348	Panasonic Industrial Company
1536	Perspective Technologies
816	Ramtek Corporation
336	Raster Technologies, Inc.
548	Ridge Computers
1026	Seiko Instruments USA, Inc., Graphic Devices & Systems Division
1641	Selanar Corporation
1546	SlideTek, Inc.
1316	Symbolics Graphics Division
1720	Tandberg Data, Inc., Terminal Division
241	Ultratek
946	Westward Technology Inc.

BOOTH	LOW COST GRAPHICS SYSTEMS
846	Adage, Inc.
542	Advanced Color Technology, Inc.
516	AED, Inc.
1116	AMF Logic Sciences, Inc.
1261	Antics Enterprises Inc.
228	Apollo Computer Inc.
1506	Artronics/3M
1200	AT&T
1447	AZTEK
1440	Cadmus Computer Systems
1716	Calos, Inc.
1650	Case Technology, Inc.
1631	Chartpak
1453	Chorus Data Systems, Inc.
1452	Commodore Business Machines
1330	Computer Graphics Laboratories, Inc.
654	Cubicomp Corporation
436	Digital Engineering, Inc.
1526	Focus Graphics
1734	Frontier Technologies Corporation
1657	FTG Data Systems
1357	General Parametrics
1226	Genigraphics Corporation
1628	Inovion Systems
1738	Island Graphics Corporation
424	KMW Systems Corporation
456	Kurta Corporation
940	Lundy Electronics & Systems, Inc.
636	Megatek Corporation
1416	Metheus Corporation
443	NEC Electronics Inc.
1426	Number Nine Computer Corporation
248	Parallax Graphics Inc.
1040	Peritek Corporation
1536	Perspective Technologies
1036	Quintar Corporation
816	Ramtek Corporation
336	Raster Technologies, Inc.
1026	Seiko Instruments USA, Inc., Graphic Devices & Systems Division
1641	Selanar Corporation
1546	SlideTek, Inc.
1547	Time Arts, Incorporated
241	Ultratek
151	Visual Intelligence Corporation
1637	West End Film Inc.
1240	Western Graphtec, Inc.
1742	Xtar Electronics, Inc.

BOOTH	MANUFACTURING SYSTEMS
1500	Recognition Concepts, Inc.
151	Visual Intelligence Corporation

BOOTH	MECHANICAL DESIGN SYSTEMS
228	Apollo Computer, Inc.
428	EIKONIX Corporation
736	Lexidata Corporation
257	MASSCOMP
548	Ridge Computers
1156	Saber Technology Corporation
858	Scriptel Corporation
826	Silicon Graphics
561	Stereographics Corporation
1250	Visual Engineering, Inc.

BOOTH	MONITORS
542	Advanced Color Technology, Inc.
1120	Amtron Corporation
1326	Barco Industries, Inc.
1452	Commodore Business Machines
926	Conrac Division, Conrac Corporation
856	GIXI Inc.
236	Gould Inc., Imaging & Graphics Division
1016	Hewlett Packard Company
1126	Hitachi America, Ltd.
1046	Ikegami Electronics (U.S.A.), Inc.
553	Kloss Video Corporation
1336	Matrox Electronic Systems Ltd.
1342	Moniterm
1355	Monitronix Corporation
1151	N.I.S.E., Inc.
1436	Omnicomp Graphics Corporation
348	Panasonic Industrial Company
1040	Peritek Corporation
816	Ramtek Corporation
561	Stereographics Corporation
1137	Systems Research Laboratories, Inc.
256	Vectrix Corporation
1662	Video Monitors Inc.

BOOTH	NON GLARE COATINGS/ MATERIALS
223	OCLI
746	Polaroid Corporation

BOOTH	NUMERICAL CONTROL (NC, CNC, DNC)
1716	Calos, Inc.

BOOTH	PIPING SYSTEMS
452	Advanced Technology Center
1157	Polhemus Navigation Sciences Division, McDonnell Douglas Electronics Company

BOOTH	PLOTTERS
1426	Analog Technology Corporation
1200	AT&T
216	Benson, Inc.
906	CalComp
1556	Equitable Life Leasing Corporation
758	Graphic Devices, Inc.
131	GTCO Corporation
1527	Gulton Industries Inc.
1016	Hewlett Packard Company
528	Houston Instruments
1618	Iris Graphics
1710	C. Itoh Electronics, Inc.
416	Nicolet's Computer Graphics Division
156	Numonics Corporation
1516	QMS, Inc.
127	Universal Technical Graphics/ Graphic Resources Corporation
628	Versatec, a Xerox Company
1240	Western Graphtec, Inc.

BOOTH	PRINTERS
542	Advanced Color Technology, Inc.
1120	Amtron Corporation
1200	AT&T
556	Equitable Life Leasing Corporation
758	Graphic Devices, Inc.
1527	Gulton Industries, Inc.
1618	Iris Graphics
1216	Matrix Instruments, Inc.
1253	Mitsubishi International Corporation
1630	Mitsui & Company (U.S.A.), Inc., Fuji Photo Film Company, Ltd.
348	Panasonic Industrial Company
1041	PrintaColor Corporation
1131	Printronix
1516	QMS, Inc.
816	Ramtek Corporation
1026	Seiko Instruments USA, Inc., Graphic Devices & Systems Division
648	Sun Microsystems, Inc.
1347	Talaris Systems Inc.
1720	Tandberg Data, Inc., Terminal Division
256	Vectrix Corporation

BOOTH	PROJECTORS
1624	Eastman Kodak Company
1140	Electrohome Ltd.
116	General Electric Company, Projection Display Products Operation
1100	Inflight Services Inc.
1151	N.I.S.E., Inc.
561	Stereographics Corporation
1137	Systems Research Laboratories, Inc.
1340	Telex Communications

BOOTH	PUBLICATIONS
154	Addiso -Wesley Publishing Company, Inc.
1636	AV Video Magazine
1627	Business Computing
1654	CMP Publications Inc.
1050	Computer Graphics Today/Media Horizons
142	Computer Graphics World
1627	EDN
1627	Electronic Business
1531	IEEE Computer Society
1627	Mini-Micro Systems
1655	National Computer Graphics Association
1627	PC Products
1551	Seldin Publishing, Inc. (Hardcopy)
1654	Springer-Verlag New York, Inc.

BOOTH	RESEARCH APPLICATIONS
846	Adage, Inc.
452	Advanced Technology Center
1120	Amtron Corporation
428	EIKONIX Corporation
117	Interactive Machines, Inc.
148	Lucasfilm, Ltd. (PIXAR)
556	Lyon Lamb VAS, Inc.
1040	Peritek Corporation
1500	Recognition Concepts, Inc.
1250	Visual Engineering, Inc.

BOOTH	ROBOTICS
452	Advanced Technology Center
1556	Equitable Life Leasing Corporation
117	Interactive Machines, Inc.
1500	Recognition Concepts, Inc.
561	Stereographics Corporation

BOOTH	SOFTWARE
1061	Abel Graphics (Subsidiary of Robert Abel & Associates)
846	Adage, Inc.
452	Advanced Technology Center
1261	Antics Enterprises, Inc.
1200	AT&T
1541	Autodesk Inc.
1650	Case Technology, Inc.
1631	Chartpak
1452	Commodore Business Machines
654	Cubicomp Corporation
1221	Dataplotting Services Inc.
1722	Electronic Cottage, Inc.
1530	Floating Point Systems, Inc.
1657	FTG Data Systems
1357	General Parametrics Corporation
856	GIXI Inc.
236	Gould Inc., Imaging & Graphics Division
1254	Grafpoint
117	Interactive Machines, Inc.
1738	Island Graphics Corporation
257	MASSCOMP
636	Megatek Corporation
1557	Neo-Visuals Inc.
1146	Nova Graphics International
1040	Peritek Corporation
916	Precision Visuals, Inc.
1152	PRIOR Data Sciences Ltd.
1516	QMS, Inc.
1346	SAS Institute Inc.
1341	SPSS Inc.
1316	Symbolics Graphics Division
1347	Talaris Systems Inc.
536	TEMPLATE, The Software Division of Megatek Corporation
1546	Time Arts, Incorporated
128	UNIRAS, Inc.
342	Vermont Microsystems, Inc.
157	VeraCAD
1250	Visual Engineering, Inc.
151	Visual Intelligence Corporation
1637	West End Film Inc.

BOOTH	STAND-ALONE IMAGE PROCESSORS
452	Advanced Technology Center
1116	AMF Logic Sciences, Inc.
1453	Chorus Data Systems, Inc.
236	Gould Inc., Imaging & Graphics Division

1162	Imtec Equipment Inc.
1628	Inovion Systems
1051	Kontron Electronics, Inc.
1216	Matrix Instruments, Inc.
1253	Mitsubishi International Corporation
1500	Recognition Concepts, Inc.
1156	Saber Technology Corporation

BOOTH	TABLETS
1452	Commodore Business Machines
122	Daikin Industries Ltd.
758	Graphic Devices, Inc.
456	Kurta Corporation
1724	MicroTouch Systems, Inc.
156	Numonics Corporation
816	Ramtek Corporation
858	Scriptel Corporation
1026	Seiko Instruments USA, Inc., Graphic Devices & Systems Division
316	Summagraphics Corporation
256	Vectrix Corporation

BOOTH	TURNKEY SYSTEMS
1061	Abel Graphics (Subsidiary of Robert Abel & Associates)
1300	Alias Research Inc.
1261	Antics Enterprises Inc.
1200	AT&T
448	AVL
1447	AZTEK
906	CalComp
1330	Computer Graphics Laboratories, Inc.
836	DICOMED Corporation
1530	Floating Point Systems, Inc.
1226	Genigraphics Corporation
1246	KMS Advanced Products, Inc.
1236	MCI/Quantel
1253	Mitsubishi International Corporation
1732	New England Technology Group
1152	PRIOR Data Sciences Ltd.
1546	SlideTek, Inc.
1316	Symbolics Graphics Division
1340	Telex Communications
1547	Time Arts, Incorporated
128	UNIRAS, Inc.
157	VersaCAD
1637	West End Film Inc.

BOOTH	TURNKEY SYSTEMS—HARDWARE
1261	Antics Enterprises Inc.
448	AVL
1447	AZTEK
1330	Computer Graphics Laboratories, Inc.
836	DICOMED Corporation
1226	Genigraphics Corporation
1246	KMS Advanced Products, Inc.
1236	MCI/Quantel
1736	New England Technology Group
1546	SlideTek, Inc.
1316	Symbolics Graphics Division
1340	Telex Communications
157	VersaCAD
1637	West End Film Inc.

BOOTH	TURNKEY SYSTEMS—SOFTWARE
1061	Abel Graphics (Subsidiary of Robert Abel & Associates)
452	Advanced Technology Center
1261	Antics Enterprises Inc.
448	AVL
1447	AZTEK
1330	Computer Graphics Laboratories, Inc.
836	DICOMED Corporation
1226	Genigraphics Corporation
1246	KMS Advanced Products, Inc.
1236	MCI/Quantel
1557	Neo-Visuals Inc.
1732	New England Technology Group
1152	PRIOR Data Sciences Ltd.
1546	SlideTek, Inc.
1316	Symbolics Graphics Division
1547	Time Arts, Incorporated
128	UNIRAS, Inc.
157	VersaCAD
1250	Visual Engineering, Inc.
1637	West End Film Inc.

BOOTH	VIDEO DIGITIZERS & DISPLAYS
846	Adage, Inc.
1506	Artronics/3M
1453	Chorus Data Systems, Inc.
1452	Commodore Business Machines
161	Datacube, Inc.
1358	Elographics, Inc.
236	Gould Inc., Imaging & Graphics Division
758	Graphic Devices, Inc.
1126	Hitachi America, Ltd.
139	Imaging Technology Incorporated

1628	Inovion Systems
556	Lyon Lamb VAS, Inc.
1216	Matrix Instruments, Inc.
1336	Matrox Electronic Systems Ltd.
1736	MegaVision
756	Mercury Computer Systems, Inc.
1253	Mitsubishi International Corporation
1732	New England Technology Group
348	Panasonic Industrial Company
248	Parallax Graphics Inc.
1040	Peritek Corporation
1500	Recognition Concepts, Inc.
1316	Symbolics Graphics Division
1662	Video Monitors Inc.
1637	West End Film Inc.

BOOTH VIDEO DISCS

1126	Hitachi America, Ltd.
556	Lyon Lamb VAS, Inc.
1500	Recognition Concepts, Inc.

BOOTH VIDEO PROJECTORS

1140	Electrohome Ltd.
116	General Electric Company, Projection Display Products Operation
1100	Inflight Services Inc.
553	Kloss Video Corporation
556	Lyon Lamb VAS, Inc.

BOOTH VIDEO TAPE RECORDERS

1731	Abekas Video Systems Inc.
556	Lyon Lamb VAS, Inc.

BOOTH WORKSTATION FURNITURE

1730	The Winsted Corporation

MISCELLANEOUS

BOOTH ARRAY PROCESSORS

1354	CSPI Inc.
756	Mercury Computer Systems, Inc.

BOOTH BOOKS, MAGAZINES, JOURNALS, NEWSLETTERS

1658	Springer-Veilag New York, Inc.

BOOTH CATHODE RAY TUBES

348	Panasonic Industrial Company

BOOTH COLOR GRAPHICS CONTROLLERS

1036	Quintar Corporation

BOOTH COLOR PALETTE CHIP

657	Inmos Corporation

BOOTH **COMPUTER-GENERATED BUSINESS PRESENTATION SYSTEMS**
1553 Autographix, Inc.

BOOTH **COMPUTER GRAPHICS SYSTEMS**
836 DICOMED Corporation

BOOTH **COMPUTER INPUT DEVICES; COMPUTER MICE**
316 Summagraphics Corporation

BOOTH **DIGITAL DISK RECORDER**
1731 Abekas Video Systems Inc.

BOOTH **ELECTROSTATIC PLOTTER SUPPLIES**
1649 Crown Zellerbach, Electrographic Papers Division

BOOTH **FLOPPY DISKETTES; COLOR FILMS; DUPLICATION SYSTEMS**
746 Polaroid Corporation

BOOTH **GRAPHIC CARDS FOR IBM PC & COMPATIBLES**
936 ID Systems

BOOTH **GRAPHICS CONTROLLERS, MONITORS AND TERMINALS**
1552 TAT Graphics Group, Inc.

BOOTH **GRAPHICS INPUT DEVICES (6 AXIS JOYSTICK)**
145 dB Time

BOOTH **HIGH-END DIGITAL FILM RECORDER**
1226 Genigraphics Corporation

BOOTH **HIGH PERFORMANCE STORAGE SUBSYSTEMS**
1457 IBIS Systems, Inc.

BOOTH **HIGH SPEED, HIGH DENSITY CIRCUIT BOARDS**
957 Multiwire Division

BOOTH **LEASING SERVICES**
1556 Equitable Life Leasing Corporation

BOOTH **LIGHT PENS AND/OR DATA ENTRY DEVICES**
1351 Design Technology
1657 FTG Data Systems

BOOTH **MACINTOSH MOUSE REPLACEMENT**
131 GTCO Corporation

BOOTH	MAINFRAME CHANNEL INTERFACES
1430	Auscom (a KMW Systems Company)
BOOTH	**MEMORY SYSTEMS**
950	Texas Memory Systems, Inc.
BOOTH	**MODEMS/MULTIPLEXES; DATA ANALYZING EQUIPMENT; ERROR CONTROL EQUIPMENT**
1458	Universal Data Systems, Inc.
BOOTH	**NTSC/GENLOCK VIDEO**
1426	Number Nine Computer Corporation
BOOTH	**PAINT PROGRAM**
256	Vectrix Corporation
BOOTH	**PC TERMINAL EMULATORS**
452	Advanced Technology Center
BOOTH	**PHOTOGRAPHIC FILM PROCESSORS**
255	King Concept Corporation
BOOTH	**PLOTTER SUPPLIES/MEDIA AND PENS**
243	Graphic Controls Corporation
BOOTH	**PLOTTER SUPPLIES; SUPPORT SERVICES**
127	Universal Technical Graphics/ Graphic Resources Corporation
BOOTH	**POSITION ENTRY DEVICES**
147	Measurement Systems Inc.
BOOTH	**PROFESSIONAL TRADE ASSOCIATION**
1655	National Computer Graphics Association
BOOTH	**RGB ROUTING SWITCHERS**
121	DYNAIR Electronics, Inc.
BOOTH	**SEMICONDUCTORS**
443	NEC Electronics Inc.
1052	Texas Instruments Semiconductor Group
BOOTH	**6D INPUT DEVICES**
1157	Polhemus Navigation Sciences Division, McDonnell Douglas Electronics Company

BOOTH **SOFTWARE DEVELOPMENT SYSTEMS**
257 MASSCOMP

BOOTH **SOLID MODELING SYSTEM; VIDEO ANIMATION SYSTEM**
654 Cubicomp Corporation

BOOTH **SPSS GRAPHICS SOFTWARE TRAINING; DATA MANAGEMENT SOFTWARE**
1341 SPSS Inc.

BOOTH **STEREOSCOPIC DISPLAY SYSTEMS**
561 Stereographics Corporation

BOOTH **SUPERCOMPUTERS**
522 Cray Research, Inc.

BOOTH **SWITCHING POWER SUPPLIES**
1046 Ikegami Electronics (U.S.A.), Inc.

BOOTH **TERMINAL EMULATION SOFTWARE**
1426 Analog Technology Corporation

BOOTH **3D RENDERING UTILITIES**
1250 Visual Engineering, Inc.

BOOTH **TOUCH PADS AND SCREWS**
1358 Elographics, Inc.

BOOTH **TV COLOR ANALYZER TO OBJECTIVELY SET WHITE BALANCE OR COLOR MONITOR; LIGHT METERS**
1352 Minolta Corporation

BOOTH **VIDEO CAMERAS & CCTV SYSTEMS**
254 Cohu, Inc., Electronics Division

BOOTH **VIDEO CHARACTER GENERATORS; VIDEO PAINT SYSTEMS**
123 Dubner Computer Systems

BOOTH **VIDEO DELAYS; VIDEO FILTERS, ANTI & POST ALIASING APPLICATIONS; COLOR MONITOR BALANCE**
1660 Television Equipment Associates

BOOTH **VIDEO MULTIPLEXERS**
1246 KMS Advanced Products, Inc.

SIGGRAPH: THE ORGANIZATION

SIGGRAPH is the Association for Computing Machinery's Special Interest Group on Computer Graphics. Its 11,500 plus members include engineers, architects and planners, artists, animators and filmmakers, software and hardware developers and manufacturers, scientists, mathematicians and many other professionals leading the fields of computer graphics theory, design, implementation and interactive techniques.

In the United States, local SIGGRAPH groups are active in Austin, Chicago, Cleveland, Denver/Boulder, Los Angeles, Minneapolis/St. Paul, New England, New York, Philadelphia, Princeton, Raleigh, San Francisco, Syracuse and Washington, D.C. In addition, SIGGRAPH chapters also are active in Australia, France and Toronto and Vancouver, Canada. ACM SIGGRAPH membership includes subscriptions to Computer Graphics, SIGGRAPH's quarterly publication. Membership dues are $18 for ACM members and associate members, $10 for ACM student members and $45 for non-ACM members.

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

ACKNOWLEDGEMENTS

CONFERENCE SUPPORT

SIGGRAPH '85 A/V would like to thank Jerrold P. Gundersen, manager, International Sales and Distribution, General Electric, for the use of their beautiful light value projectors.

SLIDES

SIGGRAPH '85 and the speaker slide 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.

We also wish to thank the volunteer artists for their valuable efforts and dedication.

CSU-Chico
DICOMED Corporation
Genigraphics Corporation
IMC Graphics Department
Landor Associates/Cadalyst
Los Alamos National Laboratory
MAGI
School of Visual Arts, Sheridan College, Canada
The Slide Factory
Via Video

ACM SIGGRAPH '86
DALLAS, TEXAS
AUGUST 18-22, 1986

The Thirteenth Annual Conference on Computer Graphics and Interactive Techniques 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.

Continuing the tradition of technical excellence in computer graphics, the conference will offer many opportunities for participation; Technical Program, Panel Sessions, Courses, Exhibition, Art Show and Electronic Theatre. This high-quality conference covers a wide spectrum of computer graphics technology, applications and products.

Co-chairs
Raymond L. Elliott
Los Alamos National Laboratory
Ellen Gore
ISSCO

Technical program
David C. Evans
Evans & Sutherland Computer Corporation
Russell J. Athay
Evans & Sutherland Computer Corporation

Panels
Richard L. Phillips
University of Michigan

Courses
David D. Loendorf
Duke University

Exhibition
Beverly Aquino
Nicolet, Computer Graphics Division
Susan Keeley
Nicolet, Computer Graphics Division

Art show
Patric Prince
Independent

Audio visual
Thomas DeFanti
University of Illinois-Chicago

Conference materials
Michael W. Herman
University of Waterloo

Controller
Michael H. Bigbee
ISSCO

Electronic theatre
Patricia Moore
Cranston/Csuri Productions

Public relations/Local arrangements
Linda Lucas
Mary Kay Cosmetics, Inc.

Registration
Adele Newton
University of Waterloo

Slides
Bruce Eric Brown
The Quail Group

Student coordinator
Andy Goodrich
Ramtek

Treasurer
Sharon Wilhelmy
Los Alamos National Laboratory

Professional Assistance:

Conference coordinator
Connie S. Martiny, Independent

Conference management/National public relations
Smith, Bucklin and Associates, Inc.

Exhibition management
Robert T. Kenworthy, Inc.

Graphic Design
Pirtle Design

Local public relations
The Oakley Company

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 program	January 24, 1986
Panel sessions	December 20, 1985
Course proposals	December 20, 1985
Art and installations	March 7, 1986
Electronic theatre	May 16, 1986
Slides	April 18, 1986

TECHNICAL PROGRAM

The technical program is the primary activity of the annual SIGGRAPH conference and provides an important forum for the presentation of research results. The conference proceedings are a historic and indispensable reference in the field of computer graphics.

Paper submissions for the technical program are invited. Papers should present new and unpublished research results in computer graphics, interactive techniques or the synthesis of established techniques in new applications. Appropriate topics include, but are not limited to, algorithms, applications, modeling techniques, user interfaces, data base integration, geometric modeling, animation, image generation and graphics hardware.

Papers will be formally reviewed by the technical program committee. Accepted papers will be presented during the three days of technical sessions at the conference and published in the conference proceedings, which is a special issue of *Computer Graphics*. Papers will be reviewed on the basis of their contribution to computer graphics, interactive techniques or their application. Papers should include an abstract of 100 to 300 words, outline the problem, explain the relationship of this work to other work and the importance of the results obtained. Authors are encouraged to consult the Communication of the ACM publication standards (published in July 1982). Papers which exceed 20 double-spaced typewritten pages will not be accepted because of publishing restrictions.

Five copies of each submitted paper must be received by the technical program chair by *January 24, 1986*. Papers received after this date will not be accepted for review. Remember to include your return address and telephone number. Papers should be in finished form and support materials should be submitted with the paper. Authors will be notified of their paper's status early in April. Final camera-ready papers will be due late in May. Continued technical excellence is vital to the computer graphics field and SIGGRAPH. Your contribution will make the technical program of SIGGRAPH '86 stimulating, exciting and useful. For further information, please contact:

TECHNICAL PROGRAM CHAIRS
David C. Evans
Russell J. Athay
Evans & Sutherland Computer Corporation
P.O. Box 8700
580 Arapeen Drive
Salt Lake City, Utah 84108
Contact: Janet Athay
(801) 582-5847

TECHNICAL PROGRAM COMMITTEE

Brian A. Barsky, University of California, Berkeley/ENST Paris
John C. Beatty, University of Waterloo
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Tom Jensen, Evans & Sutherland Computer Corporation
Gearold R. Johnson, Colorado State University
James T. Kajiya, California Institute of Technology
Jeffrey M. Lane, Daisy Systems
Dave Rogers, U.S. Naval Academy
Gary Rogers, Superset

PANEL SESSIONS

Proposals are invited for panel sessions at SIGGRAPH '86. The panels will be held in parallel with the technical program, and topics will complement the refereed paper presentations. Appropriate themes for a panel are industry issues, applications overviews, and emerging concepts in hardware and software. Courses or research overviews are not appropriate; these belong in their respective sessions.

A proposal for a panel session should include a brief discussion of the topic and a list of proposed panel members. This year, for the first time, panel proceedings will be transcribed and made available to attendees. Potential panel members should be aware of this and agree to publication of their remarks. Proposals should be received by the panel chair by *December 20, 1985*. For further information, please contact:

PANEL CHAIR
Richard L. Phillips
213 Aerospace Engineering Bldg.
University of Michigan
Ann Arbor, MI 48109
(313) 763-1328

COURSES

Proposals are invited for one- and two-day courses for SIGGRAPH '86. The courses will be given during the first two days of the conference and will complement both the technical program and the industry exhibition.

Courses will include introductory, intermediate and advanced concepts in all areas of computer graphics and interactive techniques. One-day courses on the design and development of user friendly, man/machine interaction are requested. Courses preceding the industry exhibition will feature 'How to' or 'What to Look for' topics to provide conference attendees with methods for comparing and/or selecting the hardware/software systems that best meet their needs.

A proposal should include a brief abstract of the material to be presented, an indication of level (introductory, intermediate, advanced), a detailed outline of major topics and time allotments, and a list of proposed lecturers. If previously presented, indicate when/where and estimated number of attendees.

Five copies of each submitted proposal must be received by the courses chair by *December 20, 1985*. All proposals will be reviewed and selections made based in part on information content vs. level vs. time to present. Course coordinators will be informed of the reviewers decision by February 10, 1986. For further information, please contact:

COURSES CHAIR
David D. Loendorf
Dept of Mechanical Engineering and
Materials Science
Duke University
Durham, NC 27706
Contact: Mary Shingleton
(919) 684-5764

EXHIBITION

More than 250 exhibitors will display and demonstrate their products and services. The exhibits and the entire SIGGRAPH conference should attract more than 25,000 attendees. SIGGRAPH '86 will prove to be the industry's 'showcase' for the latest in computer graphics technology. For further information, contact exhibition management.

ART SHOW

A retrospective exhibition of computer art will be held during SIGGRAPH '86. The computer art show will comprise multiple art forms including two-dimensional art works, three-dimensional works, sculpture, installations and performance which represent the 20 + year development of computer-aided art. Artists using computers may contribute slides of their work to the art show committee for consideration. For further information, please contact:

ART SHOW CHAIR
Patric Prince
160 W. Jaxine Drive
Altadena, CA 91001
(818) 797-7674

ELECTRONIC THEATRE

An outstanding and highly acclaimed event featuring the world's finest computer animation from research, industry, advertising and the arts. Acceptable media includes film, video, laser and realtime performance. All entries will be judged exclusively on creative and technical excellence. One show will be presented on two evenings. For further information, please contact:

ELECTRONIC THEATRE CHAIR
Patricia Moore
Cranston/Csuri Productions
1501 Neil Avenue
Columbus, OH 43201
(614) 421-2000

SLIDES

Three slide sets will be produced for the conference—art, technical and industry. The images submitted will be considered for promotion of the conference as well. Slides should be submitted by *April 18, 1986*. Submit all slides and requests for information to:

SLIDES CHAIR
Bruce Eric Brown
The Quail Group
561 East Quail Road
Orem, UT 84057
(801) 225-4342

CONFERENCE INFORMATION

For further information on the conference, please contact:

SIGGRAPH '86
Conference Management Office
Smith, Bucklin and Associates, Inc.
111 East Wacker Drive
Chicago, IL 60601
(312) 644-6610

For further information on the exhibition, please contact:

SIGGRAPH '86
Exhibition Management Office
Robert T. Kenworthy, Inc.
866 United Nations Plaza
New York, NY 10017
(212) 752-0911

FUTURE CONFERENCES

SIGGRAPH '87
July 27-31, 1987
Anaheim, California USA
Co-chairs
Robert J. Young (714) 830-5680
Jim Thomas (509) 375-2210

SIGGRAPH '88
July 25-29, 1988
Atlanta, Georgia USA

SIGGRAPH '89
August 7-11, 1989
Boston, Massachusetts USA

SIGGRAPH '90
August 6-10, 1990
Dallas, Texas USA

SIGGRAPH '91
August 5-9, 1991
San Francisco, California USA

MAP KEY

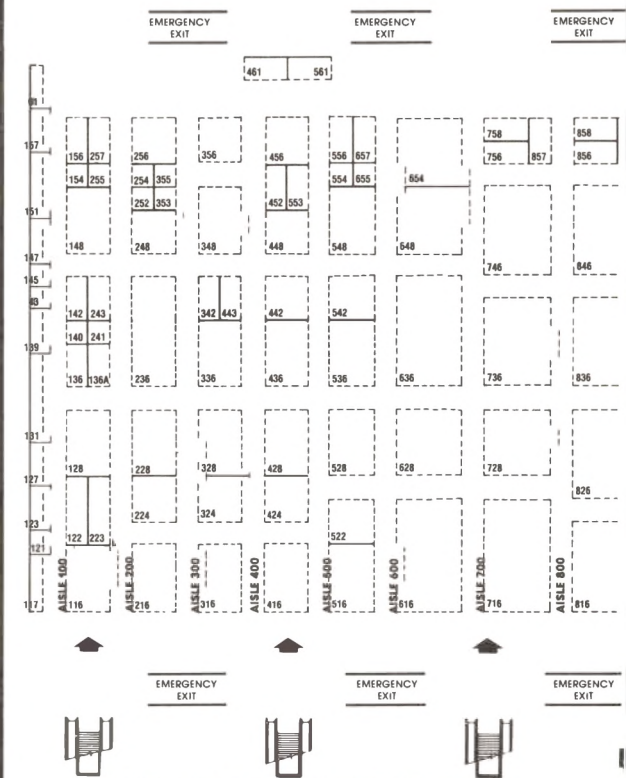
1. Fairmont
2. Four Seasons Clift
3. Holiday Inn — Civic Center
4. Holiday Inn — Union Square
5. Hyatt Regency
6. Hyatt Union Square
7. Mark Hopkins

DOWNTOWN SAN FRANCISCO

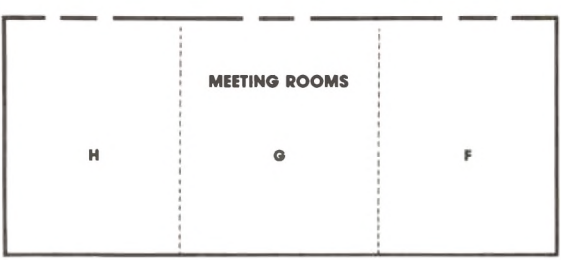
8. Meridien
9. Ramada Renaissance
10. San Franciscan
11. San Francisco Hilton & Towers
12. Sheraton Palace
13. Sir Francis Drake
14. Westin St. Francis

GOLDEN GATE NATIONAL RECREATION AREA
RECEPTION SI
HIGHWAY 101
EXPLORATORIUM
RICHARDSON
MARINA BLVD.
Jefferson
Beach
North Point
Bay
Francisco
Divisadero
Lyon
Baker
Chestnut
LOMBARD

GOLDEN GATE PARK
FULTON
John F. Kennedy Dr
CALIFORNIA ACADEMY OF SCIENCES
Martin
Luther
King
Middle
Drive
East
Ocean
Bowling
LINCOLN
FELL
PANHANDLE
OAK



ESCALATORS TO AND FROM REGISTRATION AREA

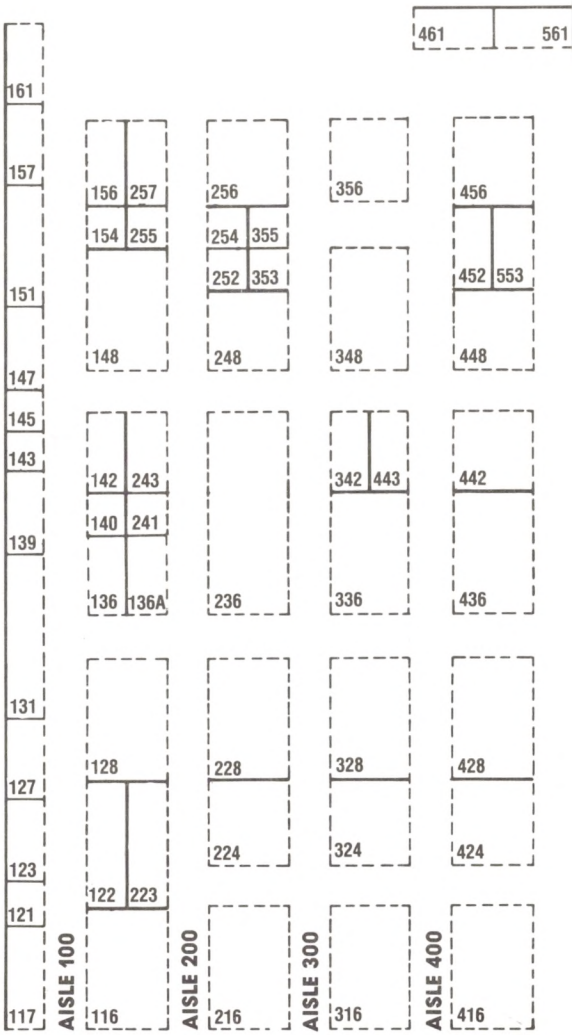


Moscone Center

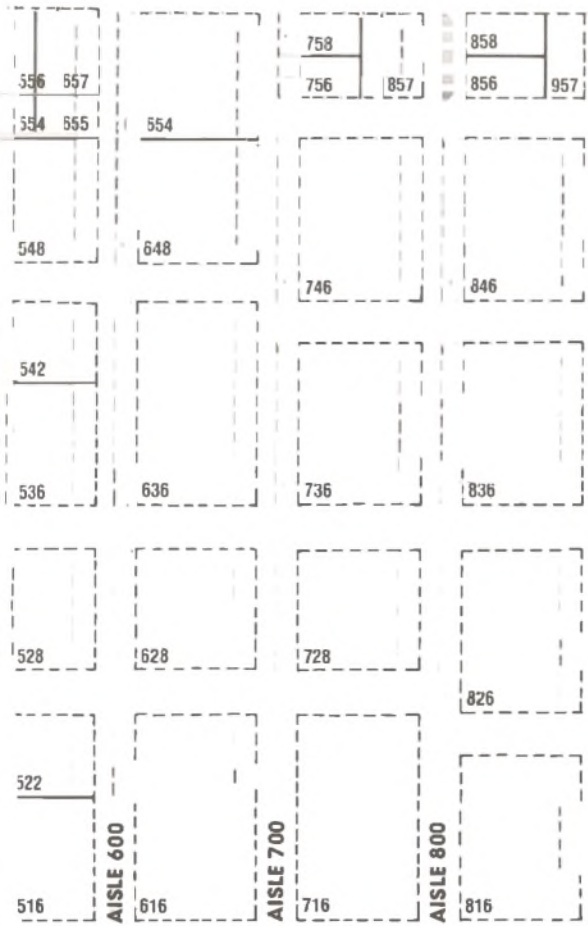
Exhibition Floor Plan

ACM SIGGRAPH '85

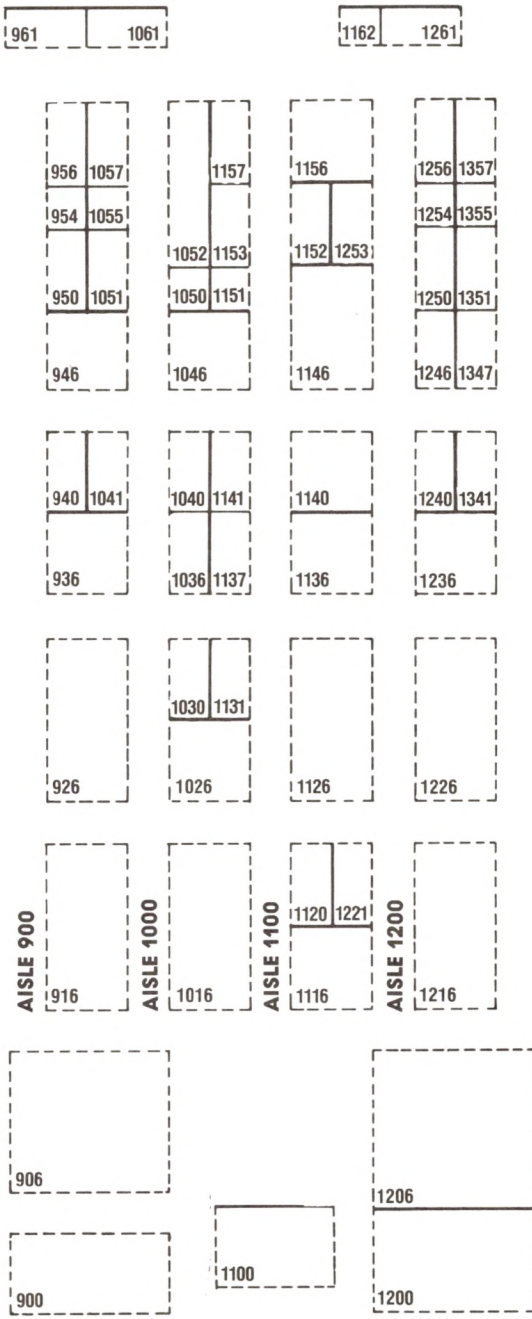
For enlargements of this floor plan, see following four pages



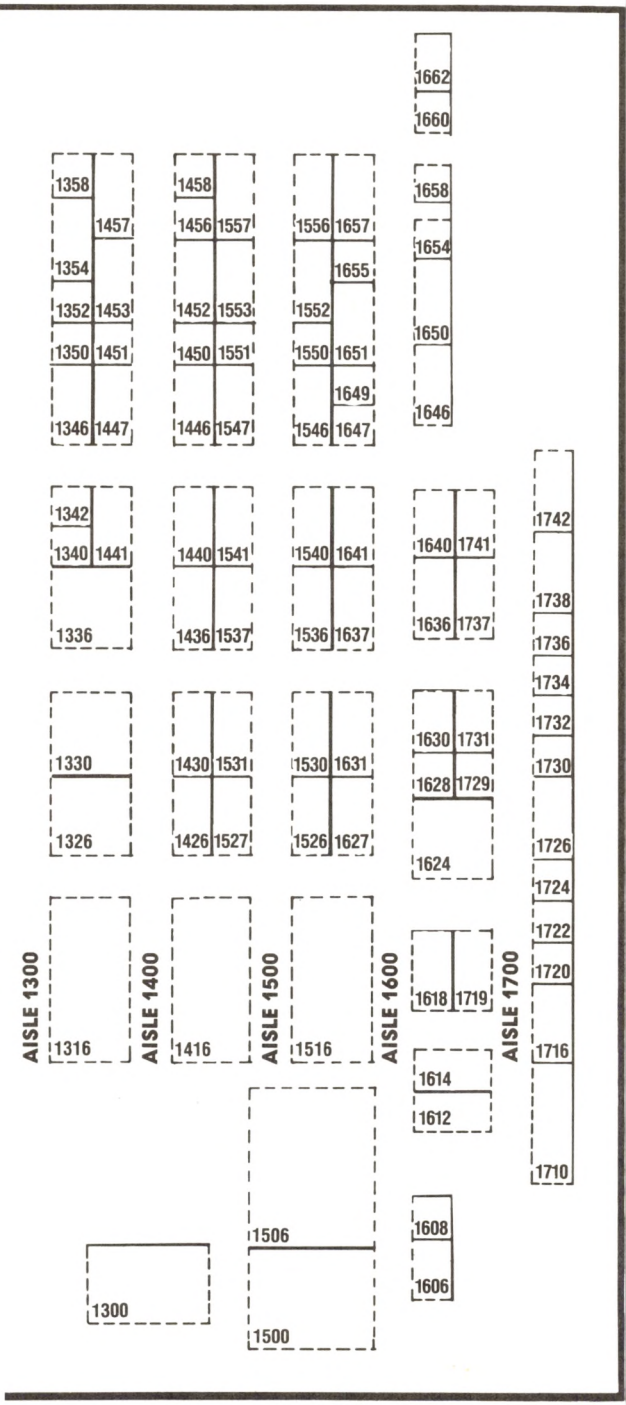
BOOTHS 117 THROUGH 461
(PLUS 553 AND 561)



BOOTHS 516 THROUGH 858
(PLUS 957)



BOOTHS 900 THROUGH 1261
(PLUS 1341, 1347, 1351, 1355 AND 1357)



BOOTHS 1300 THROUGH 1742

NOTES

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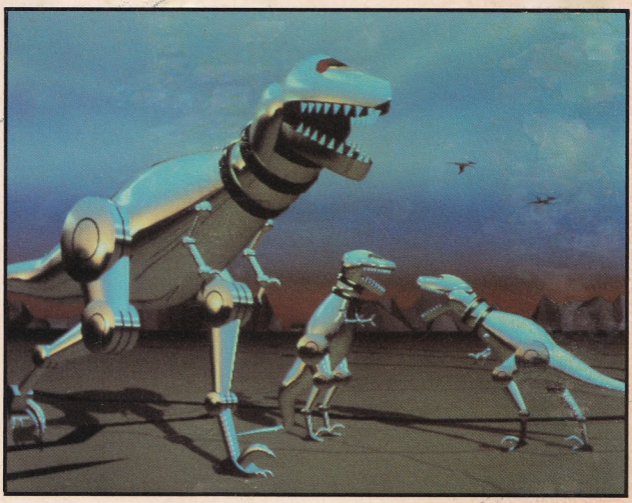

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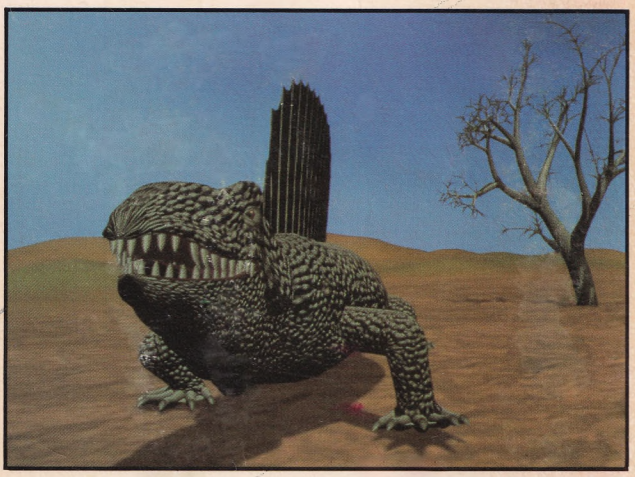

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The Twelfth Annual Conference on Computer Graphics and Interactive Techniques

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