SIGGRAPH '82

Program

JULY 26-30, 1982 BOSTON

acm

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SIGGRAPH '82

Introduction

Welcome to SIGGRAPH '82. The SIGGRAPH '82 Committee has tried to provide you with the biggest and best SIGGRAPH conference yet. I would like to thank each of the Committee members for all their work to make this conference a success and each of their employers for their support of SIGGRAPH '82. Please take a few minutes to read each of the names and affiliations on the following pages.

Subsequent sections of this Program describe the SIGGRAPH '82 Special Events, Courses, Technical Programs, Vendor Forum, and Exhibition in detail. If you have any questions, please feel free to contact any Committee member for assistance.

I hope you enjoy SIGGRAPH '82 and your stay in Boston.

Elaine L. Sonderegger
General Chairman

SIGGRAPH: The Organization

SIGGRAPH is the Special Interest Group on Computer Graphics of the Association for Computing Machinery (ACM). The 9000 members share an interest in the theory, design, implementation, and application of computer-generated graphics and interactive techniques to facilitate man/machine communication and understanding. There are local SIGGRAPH chapters in Boston, Los Angeles, Philadelphia, Princeton, and Washington, D.C. Annual membership dues include a subscription to "Computer Graphics," the group's newsletter, and are $10.00 for ACM members and associate members, $5.00 for ACM student members, $25.00 for non-ACM members, and $30.00 for subscriptions. Requests for membership applications should be addressed to:
Association for Computing Machinery
11 West 42nd Street
New York, New York 10036
212 869-7440.

The present SIGGRAPH officers are:
Thomas DeFanti, Chairman
Norman I. Badler, Vice Chairman
Maxine D. Brown, Secretary
Sara A. Bly, Treasurer
James E. George, Past-Chairman
Pat Cole, Director
Robert A. Ellis, Director
Stephen R. Levine, Director
Bary W. Pollack, Editor-in-Chief

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Machover Associates Corp.

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Real Time Design, Inc.

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FINAL PROGRAM
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Bell Laboratories

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Louise Etra
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Darcy Gerbarg
New York University

Aaron Marcus
Lawrence Berkeley Laboratory

FILM AND VIDEO COMMITTEE
Larry Cuba
Independent Artist

Ken Knowlton
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Rodney Stock
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California Institute of the Arts

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PR AND ADVERTISING MANAGEMENT
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VISUAL PRESENTATIONS MANAGEMENT
Jane Veeder
Electronic Visualization Center

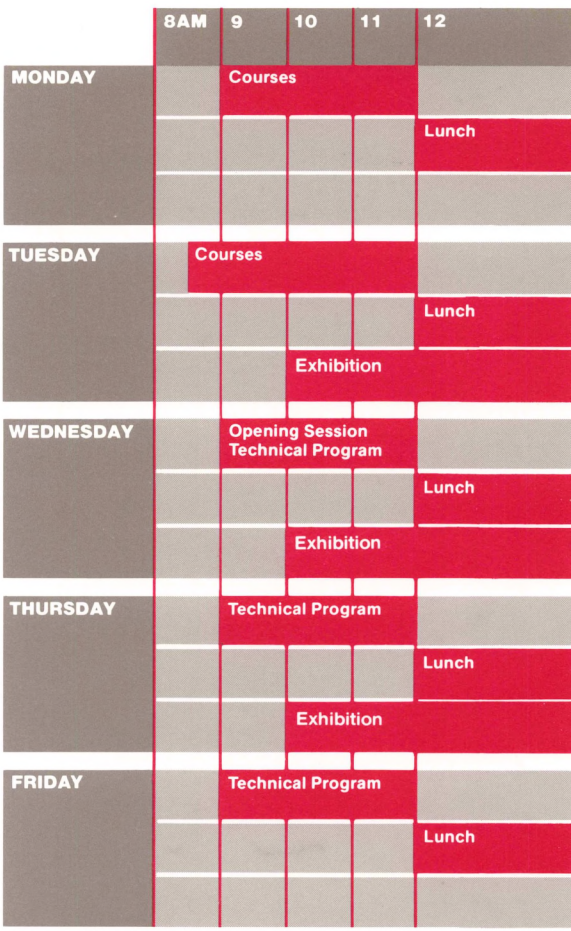
Philip Morton
Electronic Visualization Center

AUDIO/VISUAL CONSULTANT
Jack Coffman
Coffman, Coffman, Coffman, Inc.

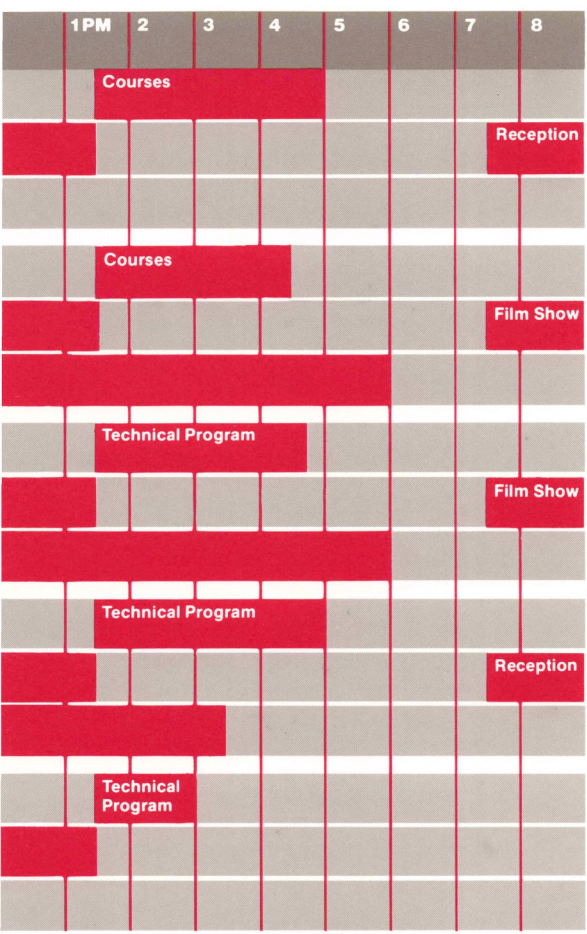
ADMINISTRATIVE SUPPORT
Summagraphics Corporation

Conference at a Glance

- 24 concurrent one- or two-day courses. Monday and Tuesday.
- State-of-the-art technical sessions. Wednesday through Friday.
- Exhibition of graphics hardware and software by industry vendors. Tuesday through Thursday.



- In-depth product presentations by vendors. Wednesday through Thursday.
- Major shows of reviewed films. Tuesday and Wednesday evenings.
- Art show of computer-generated works. Monday through Thursday.



Special Events

ART SHOW

The SIGGRAPH '82 Art Show is located in the Liberty Suite of the Sheraton-Boston Hotel. This year's exhibition highlights the recent achievements of artists working with computers. Selections include photo enlargements, prints, sculpture, drawings, film, video, and installations. A catalog of the Art Show is available at the exhibition and at the Merchandise Sales desk.

The Art Show is open Monday, July 26, from 10 a.m. to 10 p.m. and Tuesday through Thursday, July 27-29, from 8 a.m. to 8 p.m. Admission is free.

ATTENDEE SCREENINGS

The Audio/Visual staff will project attendee films and videotapes in the Hynes Auditorium during lunch hour on Wednesday, Thursday, and Friday. The shortest works have priority, so bring your shortest and best to the Audio-Visual staff in the Hynes Auditorium after the morning Technical Sessions.

BIRDS-OF-A-FEATHER

The Beacon E and Beacon G rooms of the Sheraton-Boston Hotel are available for "birds of a feather" meetings Wednesday, Thursday, and Friday. A sign-up board is provided in the conference registration area at Hynes Auditorium.

EXHIBITION OPENING CEREMONY

A short ceremony will mark the opening of the seventh annual SIGGRAPH exhibition on Tuesday, July 27 at 10:00 a.m. The ceremony will take place at the first level entrance to the exhibit hall in Hynes Auditorium. Come join the crowd and see it happen - everyone is invited.

FILM AND VIDEOTAPE SHOWS

Films and videotapes selected by the Film and Video Committee are being shown on

Tuesday and Wednesday evenings. Both showings are at 8:00 p.m. in the Hynes Auditorium, and will utilize the latest in high-intensity video projection, plus 16mm and 35mm film projection.

Tuesday's showing, "Oldies but Goodies," consists of computer graphics from the recent and distant past, and includes material of historical interest, as well as recent material previously seen at SIGGRAPH conferences.

Wednesday's showing, "Latest and Greatest," consists of material produced in the past year. Examples of computer graphics from motion pictures, commercials, computer art and technically-oriented visuals will be shown.

■ SIGGRAPH EXECUTIVE COMMITTEE MEETING

The SIGGRAPH Executive Committee meets Thursday from 2:45 p.m. to 6:00 p.m. in the Board Room of the Sheraton-Boston Hotel. All attendees are invited to observe and participate in this meeting of the SIGGRAPH organization.

■ SOCIAL ACTIVITIES

A course reception is scheduled on Monday evening, July 26, beginning at 7:30 p.m. at the Sheraton-Boston Hotel. One complimentary ticket is included in the course registration fee. Additional tickets may be purchased at the conference registration area for $35 each. The course registration fee also includes a luncheon for each course day registered.

A technical program reception will be held on Thursday evening, July 29, beginning at 7:00 p.m. at the Museum of Science. One complimentary ticket is included in the technical program registration fee. Additional tickets may be purchased at the conference registration area for $40 each.

Special Events

USER GROUP MEETINGS

THURSDAY (July 22)

SDRC GRAPHICS SOFTWARE USER GROUP
(GENERAL ELECTRIC CAE INTERNATIONAL)
9:00 a.m. - 5:00 p.m.
Lafite Room, Hotel Meridien
Michelle Ritz, (513) 576-3800

FRIDAY (July 23)

SDRC GRAPHICS SOFTWARE USER GROUP
(GENERAL ELECTRIC CAE INTERNATIONAL)
9:00 a.m. - 5:00 p.m.
Lafite Room, Hotel Meridien
Michelle Ritz, (513) 576-3800

MONDAY (July 26)

APPLICON USER GROUP
5:30 p.m. - 1:00 a.m.
Beacon B, Sheraton-Boston
Beverly A. DiChiara, (617) 272-7070

EVANS & SUTHERLAND USER GROUP
1:00 p.m. - 4:00 p.m.
Beacon C, Sheraton-Boston
Ted Naanes, (801) 582-5847

TUESDAY (July 27)

AGE (ADAGE GRAPHICS EXCHANGE)
9:00 a.m. - 5:00 p.m.
Adage, Inc., One Fortune Drive,
Billerica, MA
Jerry Ornstein, (617) 667-7070

APPLICON USER GROUP
8:00 a.m. - 12:00 p.m.
Beacon B, Sheraton-Boston
Beverly DiChiara, (617) 272-7070

VEGUS (VECTOR GENERAL USER GROUP)
6:00 p.m. - 9:00 p.m.
Embassy Suite, Colonnade Hotel
Sherry Keowen, (213) 346-3410

WEDNESDAY (July 28)

AED USER GROUP (ADVANCED ELECTRONICS DESIGN, INC.)
9:00 a.m. - 11:00 a.m.
Republic Ballroom, Sheraton-Boston
Robin Ratajczak, (408) 733-3555

TERAK USER GROUP
1:00 p.m. - 3:00 p.m.
Commonwealth Room, Sheraton-Boston
Jerry Grady, (602) 998-4800

UGCS (GRAPHIC COMPATABILITY SYSTEM USER GROUP)
6:00 p.m. - 9:00 p.m.
Republic Ballroom, Sheraton-Boston
Joseph H. Bristow, (303) 635-5753

VIM APPLICATIONS AND GRAPHICS PRODUCTS COMMITTEE (CONTROL DATA CORPORATION)
3:00 p.m. - 5:00 p.m.
Fairfax B, Sheraton-Boston
Peggy Brehm, (602) 231-1502

THURSDAY (July 29)

IKONAS USER GROUP
9:00 a.m. - 12:00 p.m.
Embassy Suite, Colonnade Hotel
Mary C. Whitton, (801) 848-8701

MOVIE BYU (BRIGHAM YOUNG UNIVERSITY)
5:00 p.m. - 7:00 p.m.
Republic Ballroom, Sheraton-Boston
Hank Christiansen, (801) 378-6325

Courses

Course Information

The courses are held at several different locations on Monday, July 26, and Tuesday, July 27. The location of each course is given in the program. Shuttle buses will run between the conference hotels and the course locations.

Courses start at 9:00 a.m. on Monday, July 26, and at 8:30 a.m. on Tuesday, July 27. The courses end at 4:30 p.m. on Tuesday to allow a visit to the Exhibition.

Refreshments are served during morning and afternoon breaks in areas adjacent to the course locations.

Luncheons are served each course day in areas near the course locations. Luncheon ticket(s) are included in your registration packet.

Registration to one or more courses admits you to the Exhibition, Vendor Forum, Film and Videotape Shows, and Art Show free of charge.

One set of notes is included in your course registration. Additional sets of course notes can be purchased at the conference registration area in Hynes Auditorium.

Courses at a Glance

The courses are divided into two categories: tutorials and seminars. A **tutorial (T)** is an introductory level course where a great deal of emphasis is given to the teaching of fundamental principles. A **seminar (S)** is a special topic course, often presented at a more advanced level.

Please refer to the key for course site locations.

COURSES	MON. JULY 26	TUES. JULY 27	SITE
GENERAL COURSES			
1. Introduction to Computer Graphics (T)	■	■	1
2. Low-Cost Graphics (T)	■	■	4
3. Computer Graphics Hardware (T)	■	■	1
4. The Application of Computer Graphics to Engineering, Scientific, & Design Problems (T)	■	■	6
5. Introduction to Raster Graphics (T)	■		1
6. Psychology for User-Computer Interfaces (T)	■		1
7. How to Design User-Computer Interfaces (T)		■	1
8. Device-Independent Graphics Software (T)		■	1
ANIMATION/VISUAL SYNTHESIS			
9. Two-Dimensional Computer Animation (T)	■		★
10. Advanced Image Synthesis (S)	■		6
11. Introduction to TV, Film, Video, Printing (S)	■		1
12. Three-Dimensional Computer Animation (S)		■	★
13. State-of-the-Art in Image Synthesis (S)		■	6

KEY

- ★ Hynes Auditorium
- 1 Sheraton-Boston
- 4 Colonnade
- 6 Copley Plaza
- 7 Boston Park Plaza
- 10 Meridien
- 11 Marriott Long Wharf

COURSES	MON. JULY 26	TUES. JULY 27	SITE
BUSINESS GRAPHICS			
14. Graphic Design and Information Graphics (S)			10
15. Presentation/Publication Quality Graphics (T)			7
16. Graphical and Data Bases (T)			7
17. Distributed Graphics and Communications (T)			7
18. Business Graphics for Managers (S)			7
19. Introduction to the SIGGRAPH '82 Exhibition (S)			1
20. Computer Graphics in Office Automation and Electronic Publication (T)			7
21. Demographics: Mapping, Marketing, and Computer Graphics (T)			7
CAD/CAM			
22. Introduction to CAD (S)			11
23. Solid Modelling (S)			11
24. Freeform Surfaces (S)			11

Courses

MONDAY TOPICS

■ **INTRODUCTION TO COMPUTER GRAPHICS (1)**
Sheraton - Grand Ballroom

CHAIRMAN: Marceli Wein
National Research Council of Canada

SPEAKERS:
Ron Baecker, Human Computing Resources
Peter Tanner, National Research Council of Canada
Marceli Wein, National Research Council of Canada
Alain Fournier, University of Toronto

TOPICS: Part I of a two-day course
Introduction & Tutorial Outline/ Baecker
Basic Software/ Tanner
Basic Hardware I/ Wein
Basic Hardware II/ Wein
Raster Hardware/ Tanner
Advanced Software I/ Fournier

■ **LOW-COST GRAPHICS (2)**
Colonnade - Huntington

CHAIRMAN: Richard L. Phillips
University of Michigan

SPEAKERS:
Richard L. Phillips, University of Michigan
H. L. Loats, Jr., ECO Systems International, Inc.
James George, Los Alamos National Laboratory and Mesa Graphics
Thomas DeFanti, University of Illinois at Chicago Circle

TOPICS: Part I of a two-day course
Computer Graphics Overview/ Phillips
Applications of the Apple II and Apple III/ Loats
Low-Cost Hardcopy/ George
ZGRASS Graphics on the UV1/ DeFanti

■ **COMPUTER GRAPHICS HARDWARE (3)**
Sheraton - Constitution

CHAIRMAN: John Staudhammer
University of Florida

SPEAKERS:
John Staudhammer, University of Florida
John Tartar, University of Alberta

TOPICS: Part I of a two-day course
Light, Vision, Colorimetry and CRT Devices/ Staudhammer
Architecture, Video Buffering, Image Storage/ Tartar
Raster Systems/ Staudhammer
Input/ Output Devices/ Tartar

■ **THE APPLICATION OF COMPUTER GRAPHICS TO ENGINEERING, SCIENTIFIC, AND DESIGN PROBLEMS (4)**
Copley - Oval

CO-CHAIRMEN:
Robert Ellis, Boeing Computer Services
David Kasik, Boeing Computer Services

SPEAKERS:
Robert Ellis, Boeing Computer Services
David Kasik, Boeing Computer Services
Del Coates, Del Coates Associates
Richard J. Littlefield, Battelle Pacific Northwest Laboratory

TOPICS: Part I of a two-day course
Introduction/ Ellis, Kasik
Overview of Computer Graphics/ Ellis
Computer Graphics and Engineering (Analysis, Information Presentation, and General Support)/ Ellis
Computer Graphics and Engineering (CAD/CAM)/ Kasik
Computer Graphics and Industrial Design/ Coates

Courses

■ **INTRODUCTION TO RASTER GRAPHICS (5)**
Sheraton - Independence

CHAIRMAN: Donald Greenberg
Cornell University

SPEAKERS:
Donald Greenberg, Cornell University
Ted Crane, Cornell University
Roy A. Hall, Cornell University
Gary W. Meyer, Cornell University
John C. Dill, Cornell University

TOPICS:
Introduction/ Greenberg
Raster Concepts/ Crane, Hall
Frame Buffer Architecture/ Crane, Hall
Raster Performance Issues/ Meyer
Low Level Graphics/ Dill
Raster Algorithms/ Greenberg
Color and Color Spaces/ Greenberg
Illumination Models and Reflections/ Greenberg
Anti-aliasing/ Hall, Meyer
Applications/ Dill

■ **PSYCHOLOGY FOR USER-COMPUTER INTERFACES (6)**
Sheraton - Republic

CHAIRMAN: Jack Grimes
ITT

SPEAKERS:
Jack Grimes, ITT
H. Rudy Ramsey, ITT

TOPICS:
Introduction/ Grimes
Brief History of Human Factors/ Ramsey
Requirements Analysis, Part I/ Grimes
Requirements Analysis, Part II/ Ramsey
Functional Design/ Ramsey
Dialogue Design, Part I/ Grimes
Dialogue Design, Part II/ Ramsey
Workstation Design/ Grimes
Questions and Answers/ Grimes, Ramsey

■ **TWO-DIMENSIONAL COMPUTER ANIMATION (9)**
Hynes - Room 200

CHAIRMAN: Marc Levoy
Cornell University and Hanna-Barbera Productions

SPEAKERS:
Marc Levoy, Cornell University and Hanna-Barbera Productions
Alvy R. Smith, Lucasfilm Ltd.
Chris Odgers, Cornell University and Hanna-Barbera Productions
Edwin Catmull, Lucasfilm Ltd.
Duane Palyka, New York Institute of Technology
Bruce Wallace, Cornell University and Hanna-Barbera Productions
Rodney Stock, Lucasfilm Ltd.

TOPICS:
General Introduction/ Levoy
Painting Programs/ Smith
Color Palette Generation/ Smith
Introduction to Video/ Odgers
Video Scanning Hardware/ Odgers
Scan and Paint Systems/ Levoy
Automatic Inbetweening/ Catmull
Artist/User Considerations/ Palyka
Image Transformation and Merging/ Wallace
Image Transformation Hardware/ Stock
Video Recording Hardware/ Odgers
Film Recording Hardware/ Catmull
Panel Discussion/ Staff

■ **ADVANCED IMAGE SYNTHESIS (10)**
Copley - Ballroom

CHAIRMAN: J. Turner Whitted
Bell Laboratories

SPEAKERS:
J. Turner Whitted, Bell Laboratories
Henry Fuchs, University of North Carolina
Frank Crow, Ohio State University
Nelson Max, Lawrence Livermore National Laboratory

TOPICS:
Overview/ Whitted
Rendering Part I/ Fuchs
Rendering Part II/ Whitted
Anti-aliasing/ Crow
Image Synthesis on Supercomputers/ Max

■ **INTRODUCTION TO TV, FILM, VIDEO, PRINTING (11)**
Sheraton - Commonwealth

CHAIRMAN: Stephen R. Levine
Electronic Graphics Associates

SPEAKERS:
Stephen R. Levine, Electronic Graphics Associates
Faber Birren, Author, Color Consultant, and Lecturer
Robert Kushner, K Graphics
John Blunden, Lawrence Livermore National Laboratory
Bruce E. Brown, Software Development Computer Assisted Engineering

TOPICS:
Human Vision/ Levine
A Videotape, "Graphic Harmony"/ Polaroid Corporation
Color and Human Response/ Birren
Ink on Paper—The Printing Process/ Kushner
The Technology of Film/ Blunden
The Technology of Video/ Brown
Special Visual Effects/ Demonstration/ Levine

■ **GRAPHIC DESIGN AND INFORMATION GRAPHICS (14)**
Meridien - Salon Margaux

CHAIRMAN: Aaron Marcus
Lawrence Berkeley Laboratory

SPEAKER:
Aaron Marcus, Lawrence Berkeley Laboratory

TOPICS: Part I of a two-day course
Introduction/ Marcus
Elementary Principles/ Marcus
Proportion and Composition/ Marcus
Letterforms and Symbols/ Marcus

■ **PRESENTATION/PUBLICATION QUALITY GRAPHICS** (15)
Park Plaza - Plaza Room

CHAIRMAN: Joel Orr
Orr Associates, Inc.

SPEAKERS:
Joel Orr, Orr Associates, Inc.
Anders Vinberg, ISSCO
Steven King, Scitex America Corporation
Diane Julian, Xerox Corporation
Larry Martin, Dicomed

TOPICS:
Integrating Visual Information with Textual Information/ Orr
Layout Intelligence/ Vinberg
Producing Publication-Quality Color Graphics from your Data Base/ King
Electronic Publishing/ Julian
Film Systems/ Martin

■ **DISTRIBUTED GRAPHICS AND COMMUNICATIONS** (17)
Park Plaza - Imperial Room

CHAIRMAN: Griffith Hamlin
Los Alamos National Laboratory

SPEAKERS:
Griffith Hamlin, Los Alamos National Laboratory
Andries van Dam, Brown University
Robert M. Dunn, R. M. Dunn Associates
David Nelson, Apollo Computer Inc.
David Cheriton, Stanford University
William Pferd, Bell Laboratories

TOPICS:
Overview/ Hamlin
Dynamic Distribution of Programs for Satellite Graphics Systems/ van Dam
Partitioning Graphics Functions/ Dunn
Communications for Local Networks and the Architecture of the Apollo Domain Network/ Nelson
High Level Graphics Protocols in the Stanford Network Graphics Project/ Cheriton
Distributed Graphics for the Bell System/ Pferd
Summary/ Hamlin

■ **DEMOGRAPHICS: MAPPING, MARKETING, AND COMPUTER GRAPHICS (21)**
Park Plaza - Georgian

CHAIRMAN: Robert T. Aangeenbrug
University of Kansas

SPEAKERS:
Robert T. Aangeenbrug, University of Kansas
George F. McCleary, University of Kansas
Waldo R. Tobler, University of California-Santa Barbara

TOPICS:
Introduction and Review of Computer Mapping/ Aangeenbrug
Benefits and Justification/ Aangeenbrug
Case Study/ Staff
The Practice of Mapping and Cartography - Map Design/ McCleary
Case Study/ Staff
The Practice of Mapping and Cartography - Hardware/Software/ Tobler
Geometry and Mapping/ Tobler
Case Study/ Staff
Geographic Information Systems/ Aangeenbrug
Problem Areas, Review and Questions/ Aangeenbrug, McCleary, Tobler

■ **INTRODUCTION TO COMPUTER-AIDED DESIGN (22)**
Marriott - Ballroom, Salon E

CHAIRMAN: Bertram Herzog
Herzog Associates, Inc.

SPEAKERS:
Bertram Herzog, Herzog Associates, Inc.
Robert Heilman, Ramtek, Inc.
David Weisberg, Auto-trol Corporation
S. H. Chasen, Lockheed Georgia Company
Patrick Hanratty, MCS
R. Lee Whitney, CADAM, Inc.
Stephen Weiner, Computervision Corporation
Howard W. Fisher, Intergraph Corporation
Charles F. Raber, Gerber Systems Technology, Inc.
Jerry W. Adams, McAuto Corporation
R. M. McElhaney, GRAFTEK
Charlotte Hudgin, A. M. Bruning
John Trefz, Sigma Design Incorporated
Brian Woolsey, Phoenix Automation, Inc.
J. Farkas, Bodine Corporation
Howard Shrobe, MIT
Michael H. Liewald, Boeing Commercial Airplane Company
Richard M. Mueller, Control Data Corporation
Herbert B. Voelcker, University of Rochester
Richard F. Riesenfeld, University of Utah
R. M. Dunn, R. M. Dunn Associates, Inc.

TOPICS: Part I of a two-day course
Introduction/ Herzog
The Functional Elements of a CAD System/ Heilman
Developments in Display Technology for CAD/ Weisberg
How to Justify a CAD System/ Chasen
Vendor Talks I
MCS/ Hanratty, CADAM/ Whitney
Computervision/ Young, Auto-trol/ Weisberg
Vendor Talks II
Intergraph/ Fisher
Panel Discussion/ Staff

Courses

■ **SOLID MODELLING** (23)
Marriott - Ballroom, Salon H

CO-CHAIRMEN:
Herbert Voelcker, University of Rochester
Aristides A. G. Requicha, University of Rochester

SPEAKERS:
Aristides Requicha, University of Rochester
Herbert Voelcker, University of Rochester
Robert Tilove, General Motors Research Laboratories
Malcolm Sabin, CAD Centre, UK
George Allen, McDonnell Douglas Automation
Michael Wesley, IBM T. J. Watson Research Center

TOPICS:
Fundamentals I: Representations and Systems/ Requicha
Fundamentals II: Algorithms and Applications/ Voelcker
Representations and Algorithms for Unsculptured Objects/ Tilove, Sabin
User Interfaces/ Allen
New Construction Techniques and Applications for Solid Models/ Wesley
Discussion/ Staff

TUESDAY TOPICS

■ **INTRODUCTION TO COMPUTER GRAPHICS (1)**
Sheraton - Grand Ballroom

CHAIRMAN: Marceli Wein
National Research Council of Canada

SPEAKERS:
Ron Baecker, Human Computing Resources
Peter Tanner, National Research Council of Canada
Marceli Wein, National Research Council of Canada
Alain Fournier, University of Toronto

TOPICS: Part II of a two-day course
Advanced Software II/ Fournier
Graphics Input and Interaction Techniques I/ Baecker
Graphics Input and Interaction Techniques II/ Baecker
Software Packages and Graphic Standards/ Wein
Dynamics/ Tanner
Color and Color Perception/ Fournier
SIGGRAPH '82 Preview/ Tanner

■ **LOW-COST GRAPHICS (2)**
Colonnade - Huntington

CHAIRMAN: Richard L. Phillips
University of Michigan

SPEAKERS:
Richard L. Phillips, University of Michigan
H. L. Loats, Jr., ECO Systems International, Inc.
James George, Los Alamos National Laboratory and Mesa Graphics
Thomas DeFanti, University of Illinois at Chicago Circle

TOPICS: Part II of a two-day course
Graphical Input/ Phillips
Interactive Graphics/ Phillips
Low-Cost Workstations/ Phillips
Graphics on the IBM Personal Computer

Courses

■ **COMPUTER GRAPHICS HARDWARE (3)**
Sheraton - Constitution

CHAIRMAN: John Staudhammer
University of Florida

SPEAKERS:
John Staudhammer, University of Florida
John Tartar, University of Alberta

TOPICS: Part II of a two-day course
Graphics Systems I/ Tartar
Graphics Systems II/ Tartar
High Resolution Displays/ Staudhammer
Recording and Photography/ Staudhammer

■ **THE APPLICATION OF COMPUTER GRAPHICS TO ENGINEERING, SCIENTIFIC, AND DESIGN PROBLEMS (4)**
Copley - Oval

CO-CHAIRMEN:
Robert Ellis, Boeing Computer Services
David Kasik, Boeing Computer Services

SPEAKERS:
Robert Ellis, Boeing Computer Services
David Kasik, Boeing Computer Services
Del Coates, Del Coates Associates
Richard J. Littlefield, Battelle Pacific Northwest Laboratory

TOPICS: Part II of a two-day course
Computer Graphics in Scientific Research/ Littlefield
Guide to SIGGRAPH '82 Conference and Exhibition/ Ellis, Kasik
Tour Exhibition

■ **HOW TO DESIGN USER-COMPUTER INTERFACES (7)**
Sheraton - Republic

CHAIRMAN: James Foley
The George Washington University

SPEAKERS:
James Foley, The George Washington University

TOPICS:
Introduction, Design Methodology/ Foley
Guidelines for Designers/ Foley
Software Implementation Tools/ Foley

■ **DEVICE-INDEPENDENT GRAPHICS SOFTWARE (8)**
Sheraton - Independence

CHAIRMAN: Theodore N. Reed
Los Alamos National Laboratory

SPEAKERS:
Theodore N. Reed, Los Alamos National Laboratory
James R. Warner, Precision Visuals, Incorporated
Peter R. Bono, Athena Systems, Incorporated

TOPICS:
Introduction to Morning Session/ Reed
Principles of Device-Independent Graphics Software/ Warner
Architecture of Device-Independent Graphics Systems/ Reed
Introduction to Afternoon Session/ Reed
Taxonomy of Graphics Software with Extensive Examples of Typical Output/ Bono
Evaluation Criteria for Software Selection/ Bono
Evaluation Criteria Applied to Commercially Available Software Packages/ Bono
Evaluation Criteria Applied to Public Domain Software Packages/ Reed
Methodology and Recommended Approach/ Bono

Courses

■ **THREE-DIMENSIONAL COMPUTER ANIMATION (12)**
Hynes - Room 200

CHAIRMAN: Bill Kovacs
Robert Abel and Associates

SPEAKERS:
Bill Kovacs, Robert Abel and Associates
Norman Badler, The University of Pennsylvania
David Zeltzer, Ohio State University
Lance Williams, New York Institute of Technology
Craig Reynolds, Information International, Inc.

TOPICS:
Introduction/ Kovacs
Model Driven Animation/ Badler
3-D Movement Simulation/ Zeltzer
Interactive Motion Design/ Kovacs
3-D Animation at New York Institute of Technology/ Williams
Animation Scripting at Information International, Inc./ Reynolds

■ **STATE-OF-THE-ART IN IMAGE SYNTHESIS (13)**
Copley - Ballroom

CHAIRMAN: Edwin Catmull
Lucasfilm Ltd.

SPEAKERS:
Edwin Catmull, Lucasfilm Ltd.
James Blinn, Jet Propulsion Laboratory
Robert Cook, Lucasfilm Ltd.
Loren Carpenter, Lucasfilm Ltd.

TOPICS:
Introduction/ Catmull
3-D Transformation of Raster Image—
Standards for Image Quality/ Catmull
Advanced Simulation for Science and Space
Computer Animation/ Blinn
Shading Model in Realistic Image Synthesis/
Cook
Stochastic Modelling in a Case Study and
Image Synthesis/ Carpenter
Film

■ **GRAPHIC DESIGN AND INFORMATION GRAPHICS (14)**
Meridien - Salon Margaux

CHAIRMAN: Aaron Marcus
Lawrence Berkeley Laboratory

SPEAKER:
Aaron Marcus, Lawrence Berkeley Laboratory

TOPICS: Part II of a two-day course
Color/ Marcus
Charts and Graphs/ Marcus
Maps/ Marcus
Diagrams/ Marcus

■ **GRAPHICAL DATA BASES (16)**
Park Plaza - Imperial Room

CHAIRMAN: Doug Neal
Decision Resources

SPEAKERS:
Douglas B. Neal, Decision Resources
Terence Kuch, Decision Resources

Courses

TOPICS:
Integration of Computer Graphics and Information Management/ Neal, Kuch
Historically, Separate Development of Computer Graphics and Data Bases/ Neal, Kuch
Graphics Presentation of Information to Top Management/ Neal, Kuch
Graphics-Assisted Interrogation of Information by Analysts/ Neal, Kuch
Information Resource Management and Graphics/ Neal, Kuch
Expeditious Retrieval of Information/ Neal, Kuch
Benefits of Graphics-Data Base Linkage/ Neal, Kuch
Trade-offs and Information Strategies/ Neal, Kuch
Case Studies/ Neal, Kuch
Recently Introduced DBMS-Graphic Linkage Systems/ Neal, Kuch

■ **BUSINESS GRAPHICS FOR MANAGERS** (18)
Park Plaza - Georgian

CHAIRMAN: James E. George
Los Alamos National Laboratory and Mesa Graphics

SPEAKERS:
James E. George, Los Alamos National Laboratory and Mesa Graphics
Alan Paller, AUI Data Graphics
Norma Frye, Digital Equipment Corporation
Jack Gottlieb, Business and Professional Software
Bary Pollack, Vulcan Systems

TOPICS:
Organization and Introduction to Business Graphics/ George
Justifying Computer Graphics/ Paller
Artists and Computer Graphics: How to Manage Both!/ Frye
Business Graphics on Personal Computers/ Gottlieb, George
Local Networks and Computer Graphics/ Pollack
Business Graphics Technology Update/ Paller

■ **INTRODUCTION TO THE SIGGRAPH '82 EXHIBITION (19)**
Sheraton - Commonwealth

CHAIRMAN: Stephen R. Levine
Electronic Graphics Associates

SPEAKERS:
Stephen R. Levine, Electronic Graphics Associates
Bruce E. Brown, Software Development Computer Assisted Engineering

TOPICS:
Introduction/ Levine
Application Stories/ Levine
Introducton and Overview of Graphics Hardware/ Brown
Introduction and Survey of Software Packages/ Brown
Software, Systems and Standards/ Brown
High Performance Graphics Hardware/ Levine

■ **COMPUTER GRAPHICS IN OFFICE AUTOMATION AND ELECTRONIC PUBLICATION (20)**
Park Plaza - Plaza Room

CHAIRMAN: Michael P. Barnett
Brooklyn College

SPEAKERS:
Michael P. Barnett, Brooklyn College
Robert Thunelius, Resource Dynamic, Inc.
Robert S. Varga, Xybion Corp.
Roger S. Tobie, ICC GraphCom System, Inc.

TOPICS:
Workshop Overview/ Barnett
Computer Graphics as an Office Design Tool/ Thunelius
Graphic Displays in an Integrated Office/ Varga
Interactive System to Typeset Pictures and Text/ Tobie

Courses

■ **INTRODUCTION TO COMPUTER-AIDED DESIGN (22)**
Marriott - Ballroom, Salon E

CHAIRMAN: Bertram Herzog
Herzog Associates, Inc.

SPEAKERS:
Bertram Herzog, Herzog Associates, Inc.
Robert Heilman, Ramtek, Inc.
David Weisberg, Auto-trol Corporation
S. H. Chasen, Lockheed Georgia Company
Patrick Hanratty, MCS
R. Lee Whitney, CADAM, Inc.
Stephen Weiner, Computervision Corporation
Howard W. Fisher, Intergraph Corporation
Charles F. Raber, Gerber Systems Technology, Inc.
Jerry W. Adams, McAuto Corporation
R. M. McElhaney, GRAFTEK
Charlotte Hudgin, A. M. Bruning
John Trefz, Sigma Design Incorporated
Brian Woolsey, Phoenix Automation, Inc.
J. Farkas, Bodine Corporation
Howard Shrobe, MIT
Michael H. Liewald, Boeing Commercial Airplane Company
Richard M. Mueller, Control Data Corporation
Herbert B. Voelcker, University of Rochester
Richard F. Riesenfeld, University of Utah
R. M. Dunn, R. M. Dunn Associates, Inc.

TOPICS: Part II of a two-day course
Vendor Talks III
  Gerber/ Raber, McAuto/Adams, GRAFTEK/ McElhaney
Vendor Talks IV
  Bruning/ Hudgin, Sigma Design/ Trefz
  Phoenix/ Woolsey, Bodine/ Farkas
VLSI: How to Make a Big Chip in a Week/ Shrobe
Interconnections and IGES/ Liewald
Integrated CAD/CAM Approach/ Mueller
Developments in Solid Modelling/ Voelcker
Developments in Sculptured Surface Representations/ Riesenfeld
A Look Into the Future/ Dunn
Panel Discussion/ Staff

■ **FREEFORM SURFACES (24)**
Marriott - Ballroom, Salon H

CHAIRMAN: Richard F. Riesenfeld,
University of Utah

SPEAKERS:
Richard F. Riesenfeld, University of Utah
William J. Gordon, Drexel University
Elaine Cohen, University of Utah
Jeffrey M. Lane, Calma/ GE
A. Robin Forrest, University of East Anglia, UK

TOPICS:
Introduction/ Riesenfeld
Introduction to Computer-Aided Geometric Design/ Riesenfeld
Using Projectors To Construct Surfaces/ Gordon
Subdivision Methods for Curves and Surfaces/ Cohen
Display Techniques for Curves and Surfaces/ Lane
User Aspects for Freeform Surface Design/ Forrest
Comments/ Riesenfeld

Technical Program

The SIGGRAPH '82 technical program is held on Wednesday, July 28, through Friday, July 30.

The technical program is composed of 37 presentations in eleven paper sessions plus eleven panels including the Presidents' Forum. Each time slot in the program is allocated to two concurrent sessions — a panel and a paper session.

All eleven paper sessions are held in the Hynes Auditorium and all eleven panel sessions are held in the Sheraton-Boston Grand Ballroom.

Refreshments are served during morning and afternoon breaks in areas adjacent to the sessions.

Each technical program attendee receives one copy of the SIGGRAPH '82 proceedings plus a supplement containing papers selected for publication in the ACM Transactions on Graphics. Each technical program attendee also is admitted to the Exhibition, Vendor Forum, Film and Videotape Shows, and Art Show free of charge.

WEDNESDAY TOPICS

9:00-10:00 **OPENING SESSION**
Hynes Auditorium

SIGGRAPH '82 WELCOME
Elaine Sonderegger

SIGGRAPH REPORT
Thomas DeFanti

COURSES SUMMARY
Robert H. Ewald

TECHNICAL PROGRAM PREVIEW
R. Daniel Bergeron, Carl Machover

SIGGRAPH AWARDS PROGRAM
Pat Cole

Technical Program

10:15-12:00 **IMAGE GENERATION**
Hynes Auditorium

CHAIRMAN:
James H. Clark, Stanford University

Clamping: A Method of Anti-Aliasing Textured Surfaces by Bandwidth Limiting in Object Space
Alan Norton, IBM Thomas J. Watson Research Center, Alyn P. Rockwood and Philip T. Skolmoski, Evans and Sutherland Computer Corporation

A More Flexible Image Generation Environment
F.C. Crow, Ohio State University

Anti-Aliasing Through the Use of Coordinate Transformations
Kenneth Turkowski, CADLINC, Inc.

Light Reflection Functions for Simulation of Clouds and Dusty Surfaces
James F. Blinn, Jet Propulsion Laboratory

10:15-12:00 **PANEL:**
The Impact of Graphic Standards
Sheraton-Boston Grand Ballroom

CHAIRMAN:
David Straayer, Tektronix, Inc.

This panel will discuss the recent progress towards ANSI standards for functional graphics and CAD data transfer. Primary emphasis will be placed on the impact of these standards upon the user.

PANELISTS:
Tom Wright, ISSCO Graphics
David Shuey, McAuto Corporation
Bruce Cohen, Intel Corporation
Bradford M. Smith, National Bureau of Standards
Theodore N. Reed, Los Alamos National Laboratory

1:30-3:00 **EUROGRAPHICS SESSION:**
Graphic Standards
Hynes Auditorium

CHAIRMAN:
Robert Hopgood, Rutherford Appleton Laboratory

The Detailed Semantics of Graphics Input Devices
David S. H. Rosenthal, Edinburgh University
James C. Michener, Intermetrics, Inc.
Gunther Pfaff, Technische Hogeschool Darmstadt
Rens Kessener, Technische Hogeschool Eindhoven
and Malcolm Sabin, FEG, Limited

A Metafile for Efficient Sequential and Random Display of Graphics
Theodore N. Reed, Los Alamos National Laboratory

Graphics Standardization
Paul ten Hagen, Mathematisch Centrum, Amsterdam

Graphic Standards for Three-Dimensional Modelling
Malcom Sabin, FEG, Limited

1:30-3:00 **PANEL:**
Professional Workstations
Sheraton-Boston Grand Ballroom

CHAIRMAN:
Andries van Dam, Brown University

The panel will examine the evolution of the professional workstation from a time-shared terminal to a powerful graphics-based personal computer connected to a resource-sharing local network. The panelists will speculate on the future evolution of both the hardware/software architecture and end-user environment.

PANELISTS:
James H. Clark, Stanford University
Robert M. Dunn, R.M. Dunn Associates
Harvey Kriloff, Boeing Computer Services
David Nelson, Apollo Computer, Inc.

3:15-4:45 **MODELLING**
Hynes Auditorium

CHAIRMAN:
Donald Greenberg, Cornell University

An Inversion Algorithm for Geometric Models
Martti Mantyla, Helsinki University of Technology

Generation and Display of Geometric Fractals in 3-D
Alan Norton, IBM Thomas J. Watson Research Center

A New Triangulation Method for Planar Contours
S. Ganapathy and T. G. Dennehy, University of Michigan

Creating Volume Models from Edge-Vertex Graphs
Patrick M. Hanrahan, University of Wisconsin

3:15-4:45 **PRESIDENTS' FORUM**
Sheraton-Boston Grand Ballroom

CHAIRMAN:
Carl Machover, Machover Associates

Presidents of four leading computer graphics companies, representing hardware, software and systems products, will discuss problems and opportunities which confront the rapidly growing computer industry.

PANELISTS:
Donald Feddersen, Applicon Corporation
Ralph T. Linsalata, Lexidata Corporation
Peter Preuss, ISSCO Graphics
Richard N. Spann, Adage, Inc.

THURSDAY TOPICS

9:00-10:30 **USER INTERFACE**
Hynes Auditorium

CHAIRMAN:
James J. Thomas, Battelle Pacific Northwest Laboratory

Flair-User Interface Dialog Design Tool
Peter C.S. Wong and Eric R. Reid, TRW Defense Systems Group

A User Interface Management System
David Kasik, Boeing Computer Services

The Device Model of Interaction
Ed Anson, Northeastern University

Star Graphics: An Object-Oriented Implementation
Daniel E. Lipkie, Steven R. Evans, John K. Newlin, and Robert L. Weissman, Xerox Corporation

9:00-10:30 **PANEL:**
The Graphics CAD/CAM Industry: Financial Perspectives
Sheraton-Boston Grand Ballroom

CHAIRMAN:
Richard N. Spann, Adage, Inc.

Companies supplying graphics CAD/CAM components and systems form an important high technology business segment. Panelists representing four financial perspectives will discuss market entry, financing, segment performance and shareholder expectations. Development of the graphics CAD/CAM industry in the 80's will be a unifying theme.

PANELISTS:
Frederick R. Adler, Adler & Co.
Thomas P. Kurlak, Merrill Lynch
Joseph C. McNay, Essex Investment Management Co.
Margaret A. Reichenbach, L. F. Rothschild, Unterberg, Towbin

Technical Program

10:45-12:00 **HARDWARE ARCHITECTURE**
Hynes Auditorium

CHAIRMAN:
Turner Whitted, Bell Laboratories

The Geometry Engine: A VLSI Geometry System for Graphics
James H. Clark, Stanford University

A Contour Display Generation Algorithm for VLSI Implementation
Michael J. Zyda, Washington University

A Rectangular Area Filling Display System Architecture
Daniel S. Whelan, California Institute of Technology

10:45-12:00 **PANEL:**
Approaches to Solid Modelling
Sheraton-Boston Grand Ballroom

CHAIRMAN:
Leon Malin, MAGI

Solid modelling systems in current use are based on approaches that are fundamentally different. The panelists will discuss the advantages and disadvantages of the different approaches, especially from the user's point of view.

PANELISTS:
Frank Bliss, Ford Motor Company
William Carmody, IBM Corporation
Robert Johnson, Consultant
Martin Schloessel, Applicon, Inc.
John Swarbrick, General Electric Company

1:30-2:30 **VISIBLE SURFACE ALGORITHMS**
Hynes Auditorium

CHAIRMAN:
Kellogg Booth, University of Waterloo

Path Specification and Path Coherence,
Kim L. Shelley and Donald Greenberg,
Cornell University

Special Purpose Automatic Programming for
Hidden Surface Elimination
Chris Goad, Stanford University

1:30-2:30 **PANEL:**
Voice Recognition as an Input Technique
Sheraton-Boston Grand Ballroom

CHAIRMAN:
Richard Rabin, Verbex Div., Exxon

Voice input offers a major potential for improving the productivity of users of computer graphics systems. Panelists will discuss applications in CAD/CAM and other interactive graphics systems. Experiences in developing, installing and operating such systems will be described.

PANELISTS:
Matthew Peterson, Computervision
Sue Schedler, G.E./Calma
Mark Robillard, Sanders Associates
Alan R. Strass, General Electric Company

Technical Program

2:45-3:45 **DATA BASE APPLICATIONS**
Hynes Auditorium

CHAIRMAN:
Bary Pollack, Vulcan Systems

Context-Sensitive, Graphic Presentation of Information
Mark Friedell, Jane Barnett and David Kramlich, Computer Corporation of America

Graphical Tools for Interactive Image Interpretation
David M. McKeown, Jr. and Jerry L. Denlinger, Carnegie-Mellon University

MAPQUERY: Data Base Query Language for Retrieval of Geometric Data and its Graphical Representation
Andre Frank, Swiss Federal Institute of Technology

2:45-3:45 **PANEL:**
The Challenge of CAD/CAM Education
Sheraton-Boston Grand Ballroom

CHAIRMAN:
Michel A. Melkanoff, UCLA

Since few universities have experience teaching CAD/CAM, they have difficulty meeting industry needs for graduates trained in the use or implementation of CAD/CAM systems. This panel attempts to outline the problems in developing more extensive CAD/CAM emphasis in education and the role the university can or should play in addressing industry needs in this area.

PANELISTS:
Donald Greenberg, Cornell University
Victor Langer, Milwaukee Area Technical College
Frank Puhl, CADAM, Inc.
Mark S. Shepard, RPI
Herbert Voelcker, University of Rochester

4:00-5:00 **APPLICATIONS**
Hynes Auditorium

CHAIRMAN:
Ingrid Carlbom, Schlumberger-Doll Research

3D Galatea: Entry of Three-Dimensional Moving Points from Multiple Perspective Views
Steven A. MacKay, Richard E. Sayre, and Michael J. Potel, University of Chicago

A Morphological Study of the Form of Nature
Yoichiro Kawaguchi, Nippon Electronics College

An Interactive Graphics Environment for Architectural Energy Simulation
Jon H. Pittman and Donald P. Greenberg, Cornell University

4:00-5:00 **PANEL:**
Graphic Input Interaction Techniques
Sheraton-Boston Grand Ballroom

CHAIRMAN:
James J. Thomas, Battelle Pacific Northwest Laboratory

The techniques for communicating with graphics systems including interaction and effective presentation techniques are becoming active research subjects. The SIGGRAPH sponsored workshop on graphic input interaction techniques (June 1982) will be summarized and reviewed.

PANELISTS:
To be selected after the Graphic Input Interaction Techniques Workshop.

Technical Program

FRIDAY TOPICS

9:00-10:30 **CURVED SURFACE DISPLAY**
Hynes Auditorium

CHAIRMAN:
Richard Riesenfeld, University of Utah

Ray Tracing Parametric Patches
James T. Kajiya, California Institute of Technology

An Algorithm and Data Structure for 3D Object Synthesis Using Surface Patch Intersections
Wayne E. Carlson, The Ohio State University

Scanline Rendering of Parametric Surfaces
Dino Schweitzer and Elizabeth S. Cobb, University of Utah

A Generalization of Algebraic Surface Drawing
James F. Blinn, Jet Propulsion Laboratory

9:00-10:30 **PANEL:**
Business Graphics: What is it?
Sheraton-Boston Grand Ballroom

CHAIRMAN:
David Luther, Lexidata Corporation

What really is business graphics? Is it narrowly confined to making slides or does it encompass the full range of information transfer? The panel will present the views of hardware and software vendors and users.

PANELISTS:
Irwin Jarett, Irwin Jarett, CPA, Ltd.
Howard Johnson, Digital Equipment Corporation
Jack Russell, General Motors Corporation
John Thompson, Precision Visuals, Inc.

10:45-12:00 **PAINT AND ANIMATION**
Hynes Auditorium

CHAIRMAN:
Peter Tanner, National Research Council of Canada

The Message is the Medium: Multiprocess Structuring of an Interactive Paint Program
Richard J. Beach, John C. Beatty, Kellogg S. Booth, and Darlene A. Plebon, University of Waterloo, Eugene L. Fiume, University of Toronto

Computer Animation with Scripts and Actors
Craig W. Reynolds, Information International Inc.

Color Image Quantization for Frame Buffer Display
Paul S. Heckbert, New York Institute of Technology

10:45-12:00 **PANEL:**
The Role of Videotex
Sheraton-Boston Grand Ballroom

CHAIRMAN:
Frank Tompa, University of Waterloo

Interactive Videotex systems may soon emerge as a principal information, entertainment, and communications medium relying heavily on computer graphics. The purpose of this session is to introduce Videotex literature and research to mainstream graphics audiences. Topics include a brief outline of Videotex developments, current architecture, business experiences, alternatives to Videotex and future expectations for Videotex.

PANELISTS:
Brian Botten, Extel Computing, Ltd.
David Godfrey, University of Victoria
John Norton, Norpak, Ltd.
Lois Schneider, CBS
Andries van Dam, Brown University

Technical Program

1:30-2:45 **RASTER SYSTEMS**
Hynes Auditorium

CHAIRMAN:
James C. Michener, Intermetrics, Inc.

A Language for Bitmap Manipulation
Leo J. Guibas, Xerox PARC, and Jorge Stolfi, Stanford University

A Device Independent Graphics Imaging Model for Use with Raster Devices
John Warnock and Douglas K. Wyatt, Xerox PARC

A Conceptual Model of Raster Graphics Systems
James Acquah, James Foley, John Sibert, and Patricia Wenner, The George Washington University

1:30-2:45 **PANEL:**
Health & Safety Issues in Computer Graphics
Sheraton-Boston Grand Ballroom

CHAIRMAN:
Wordie Parr, NIOSH

The increasing use of computer graphics as a production tool requires increased investigation into the possible health and safety effects of prolonged use of CRT devices and other related equipment. This panel will address some of the recent results that have been obtained in this area and will attempt to identify areas that require more study.

PANELISTS:
William H. Cushman, Eastman Kodak Co.
David Sliney, US Army Environmental Hygiene Agency
W. M. Zuk, Health and Welfare Canada
R. C. Peterson, Bell Laboratories

Vendor Forum

Vendor Forum

WEDNESDAY TOPICS

■ BUSINESS GRAPHICS
Beacon A, Sheraton-Boston

9:00-9:30 **John Thompson**
Precision Visuals, Inc.

9:30-10:00 **John Theys**
Data-Type, Inc.

10:30-11:30 **Ian Hirschsohn**
Superset, Inc.

1:30-2:00 **Dick Godfrey**
IBM

2:00-2:30 **Mickael Jern**
European Software Contractors

2:30-3:00 **Randall Wise**
Graphic Communications, Inc.

3:00-4:00 **Go Sugiura**
Amdek Corporation

■ HARDWARE TRENDS
Beacon D, Sheraton-Boston

9:00-9:30 **Dave Nims**
MacDonald Dettwiler & Associates

9:30-10:00 **Jim Callan**
Evans & Sutherland

10:00-10:30 **Don Wedding**
Photonics Technology, Inc.

10:30-11:00 **John Lugsdin**
Orcatech, Inc.

11:00-12:00 **Michael Kaplan**
Grinnell Systems Corporation

1:30-2:00 **James L. Lawrence**
Analog Technology Corporation

2:00-2:30 **George G. Elsaesser**
Precision/Echo

2:30-3:00 **Jerrold Gundersen**
General Electric Co.

3:00-3:30 **Dick Immekus**
Digital Engineering, Inc.

3:30-4:30 **George Dahlke**
Log Etronics Inc.

■ **FUTURE APPLICATIONS**
Beacon F, Sheraton-Boston

9:30-10:00 **Michael H. Rehmus**
Datacopy Corporation

10:00-10:30 **John E. Trombly**
Octek, Inc.

10:30-11:00 **Zsuza Molnar, Frank Dietrich**
Data Max

11:00-11:30 **Charles Nordby**
Gould - DeAnza Imaging & Graphics

11:30-12:00 **John Moreland**
Megatek Corporation

1:00-1:30 **Gil Russell**
Advanced Electronics Design, Inc.

1:30-2:00 **Michael H. Rehmus**
Datacopy Corporation

2:00-3:00 **Jim Dunn, Rick Pendergrass**
LogEtronics Inc.

3:00-3:30 **Dan Fern**
Photonics Technology, Inc.

3:30-4:30 **Andy Rubel**
Rubel Software

Vendor Forum

■ **CAD/CAM**
Beacon H, Sheraton-Boston

10:00-10:30 **Phil Marshall**
Imlac Corporation

10:30-11:00 **Ernie Blood**
Polhemus Navigation Sciences, Inc.

11:00-11:30 **Geoffrey Scott**
Precision Visuals, Inc.

12:30-1:00 **Stanley Klein**
Technology & Business Communications

1:00-1:30 **Lee Ambrosini**
Selanar Corporation

1:30-2:00 **Jerry Kennedy**
Advanced Electronics Design, Inc.

2:00-2:30 **Overview of CAD/CAM Industry**
The Anderson Report

2:30-3:00 **Craig Rasmussen**
Evans & Sutherland

THURSDAY TOPICS

■ **BUSINESS GRAPHICS**
Beacon A, Sheraton-Boston

9:00-9:30 **John Thompson**
Precision Visuals, Inc.

9:30-10:00 **John Theys**
Data-Type, Inc.

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10:30-11:30 **Ian Hirschsohn**
Superset, Inc.

12:30-1:00 **Stanley Klein**
Technology & Business Communications

1:00-1:30 **Lee Ambrosini**
Selanar Corporation

1:30-2:00 **Elliott Bouillion**
Phoenix Computer Graphics

2:00-2:30 **Randall Wise**
Graphic Communications, Inc.

2:30-3:00 **David Robinson**
ISSCO Graphics

3:00-4:00 **John Farina**
LogEtronics Inc..

4:00-4:30 **Dick Godfrey**
IBM

■ **HARDWARE TRENDS**
Beacon D, Sheraton-Boston

9:30-10:00 **Jim Callan**
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10:00-11:00 **Thomas Moxon**
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11:00-11:30 **Charles Nordby**
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2:00-3:00 **Ned Thanhouser**
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Photonics

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General Electric Co.

Vendor Forum

■ **FUTURE APPLICATIONS**
Beacon F, Sheraton-Boston

9:30-10:00 **Michael H. Rehmus**
Datacopy Corporation

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Photonics Technology, Inc.

10:30-11:00 **Zsuza Molnar, Frank Dietrich**
Data Max

11:00-11:30 **Gregory R. Hirshan**
Optronics International, Inc.

1:30-2:00 **Michael H. Rehmus**
Datacopy Corporation

2:00-2:30 **John E. Trombly**
Octek Inc.

2:30-3:00 **Gil Russell**
Advanced Electronics Design, Inc.

■ **CAD/CAM**
Beacon H, Sheraton-Boston

9:30-10:00 **John Lugsdin**
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Imlac Corporation

10:30-11:00 **Craig Rasmussen**
Evans & Sutherland

11:00-12:00 **David Ver Hoeven**
Tektronix, Inc.

1:00-2:00 **Andy Rubel**
Rubel Software

2:00-2:30 **John Moreland**
Megatek Corporation

2:30-3:00 **Jerry Kennedy**
Advanced Electronics Design, Inc.

Exhibition

Exhibitor Listing

Booth 1108 **ADAGE, INC.**

One Fortune Drive
Billerica, MA 01821
(617) 667-7070
M. CLARE MOULTON
Director of Marketing Communications

User Group Contact:
JERRY ORNSTEIN
Software Training Specialist

Adage will be exhibiting two minicomputer-compatible Adage 4100 Graphics Workstations reacting with two- and three-dimensional data bases. Various Adage interactive console devices, such as lighted function switches, variable control dials, data tablets, joysticks and light pens, will be shown. An Adage local hard copy unit also will be featured. Demonstrations will include dynamic three-dimensional rotation with depth cueing, zoom, two and three-dimensional hardware windowing, circle arcs, and Z axis clippings. These interactive demonstrations will cover several application areas, including Computer Aided Design, Finite Element Modeling, and Computer Aided Engineering.

Booth 2437 **ADVANCED COLOR TECHNOLOGY, INC.**

21 Alpha Road
Chelmsford, MA 01824
(617) 256-1222
ROBERT G. MANNING
Vice President-Sales

The ACT 1 Color Copier makes low cost color copies of color images displayed on computer graphic terminals. The dot-addressable ACT 1 is about the size of an office typewriter and uses an ink-jet printing technology to produce multicolor images on paper in less than two minutes for an 8½" x11" print. Using the basic colors of cyan, magenta and yellow, the ACT 1 can produce up to 125 color shades while printing up to a width of 12½" on roll or fanfold paper. The ACT 1 allows up to 250 continuous copies per roll of paper.

*Serves as User Group Contact as well as Marketing or Technical Contact

Booth 1316 **ADVANCED ELECTRONICS DESIGN, INC. (AED)**

440 Potrero Avenue
Sunnyvale, CA 94086
(408) 733-3555
JERRY KENNEDY
Vice President-Operations/Marketing

User Group Contact:
ROBIN RATAJCZAK
Promotions Coordinator

AED, manufacturers of DEC compatible disk controllers and intelligent color graphics terminals, will display their AED512 color system along with the new AED767 color terminal. The new 767 features anti-aliasing built into the firmware and has additional features such as 1K x 1K x 8 virtual address space with a 768 x 575 viewing window, ellipse and arc generators, stipple-filled rectangles, blue-lined cross reference grid, 16.8 million colors and much more. Also featured is the new AED Design Console, which is a packaged system that turns the AED512 or 767 into an integrated workstation minus applications software. Included is ergonomically designed furniture, CPU of your choice, a variety of disk storage options, integrated alphanumeric display, keyboard, joystick and data tablet.

Booth 2416 **ALTEK CORP.**

2150 Industrial Parkway
Silver Spring, MD 20904
(301) 622-3906
***LOWELL NERENBERG**
Director of Sales & Marketing

Altek began manufacturing digitizers in 1970. Their products are used widely in cartographic mapping applications — where accuracy and dependability are most critical. The Datatab® free curso digitizer is well known for its long term reliability and accuracy. Available in sizes from 12″x12″ to 42″x60″, Altek will exhibit a 36″x48″ model with resolution of .001″, accuracy of ±.003″, and variable intensity backlighting.

Exhibitor Listing

Altek will demonstrate its simple, low-cost digitizer controller alongside the SUPER-DISK® intelligent controller for graphic and photogrammetric digitizing applications.

Booth 2718 **AMDEK CORP.**

2420 E. Oakton Street/Suite E
Arlington Heights, IL 60005
(312) 364-1180
DAN RIMES
Sales Manager
TED McCRACKEN
Technical Advisor

Products to be displayed: Video 300, 12″ green screen monitor. Color-I, composite 13″ color monitor. Color-II, RGB TTL input, resolution 560(H) x 260(V). Color-III, RGB TTL input, resolution 260(H) x 300(V). Color-IV, RGB Analog input, resolution 720(H) x 400(V). 3″ Micro Disk, 500K bytes/per drive; 2 drives and power supply. X-Y Digital Plotter, 4-color pen select. 16 bit IBM-PC compatible computer.

Booth 1736 **AMF LOGIC SCIENCES, INC.**

10535 Rockley Road/Suite 103
Houston, TX 77099
(713) 879-0536
ROGER FULLER
Vice President

User Group Contact:
JOHN BARUGH
Vice President

AMF Logic Sciences is a manufacturer specializing in State-of-the-Art, cost effective systems configured for high speed seismic (vector and raster) plotting, or CAD/CAM applications.

Booth 2412 **ANALOG TECHNOLOGY CORP.**

15859 E. Edna Place
Irwindale, CA 91706

(213) 960-4004
JAMES L. LAWRENCE, JR.
President

ATC's Graphics 810 plug-in conversion boards make the highly reliable Texas Instruments 810 RO printer the fastest low-cost matrix impact graphics printer available and provide a variety of hardware and software fonts. Plug-in hard copy for a growing number of graphic terminals is also provided. The new Model 200 vector to raster converter board allows the TI 710 to accept plot vectors directly from the host computer, map them in a 1024 x 1024 memory and plot the resultant image on 14.75 x 11.5 paper.

Booth 3005 **THE ANDERSON REPORT**

4505 E. Industrial Street 2-J
Simi Valley, CA 93063
(805) 581-1184
KEN ANDERSON
Publisher

The Anderson Report is a monthly newsletter edited exclusively for the computer graphics industry. Each issue features current news of the industry, information about new products, orders and installations, people and places, and a calendar section. Every issue also includes a special Inside Report on a major computer graphics vendor. This report is a comprehensive analysis of the company, its products and market position. The Anderson Report also provides in-plant seminars and special consulting services for computer graphics users.

Booth 2621 **APOLLO COMPUTER INC.**

19 Alpha Road
Chelmsford, MA 01824
(617) 256-6600
***JOHN BOWNE, JR.**
Product Marketing Manager

Exhibitor Listing

Apollo Computer designs, manufactures, sells and services the DOMAIN, a distributed computing environment based on a high-speed local area network of user dedicated, 32-bit computational nodes. Each computation node has transparent access to system resources via DOMAIN's network-wide virtual memory demand paging operating system. Computational nodes include a high resolution raster scan gráphics display, up to 3.5 megabytes of main memory, plus disk, mag tape and line printer options.

Booth 2732 **APPLE COMPUTER**

20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010
JERRY BOWER

Demonstrations will be with Apple II and Apple III computers, graphics tablet, business graphics, and other peripherals and related software.

Booth 1104 **APPLICON/A SCHLUMBERGER CO.**

32 Second Avenue
Burlington, MA 01803
(617) 272-7070
DANIEL BOWMAN
Trade Show Coordinator

User Group Contact:
BEVERLY DiCHARA
User Group Coordinator

Applicon's new Series 4000 CAD/CAM systems will be displayed for the second time on a national trade show level at SIGGRAPH. Series 4000 systems address every phase of the product development cycle, from a designer's first sketches to final changes, to the preparation of programs for numerically controlled machine tools. Applicon will utilize the Series 4000 to demonstrate capabilities such as piping, space planning, PCB design, Hybrid design and solids modeling, just to name a few.

Booth 2828 **ASEA INDUSTRIAL SYSTEMS**

120 Bishops Way
Milwaukee, WI 53005
(414) 784-2900
ULF HANSSON
Marketing Services

User Group Contact:
HANS SIGVARDSSON
Product Manager

The Tesselator® is a color display controller from ASEA Industrial Systems that gives optimum readability. It offers a choice of 896 characters and 64 colors. Its patented character generator lets you define your own symbols, and only Tesselator® combines this feature with a symbol-oriented, multi-color display contour that is ideal for process control applications. Additional features include interfaces for two to four computers, an editing function that includes tabulating and window functions, and presentation capabilities for up to 16 trends with a resolution better than 0.5 percent.

Booth 3010 **ASSOCIATION FOR COMPUTING MACHINERY**

11 W. 42nd Street
New York, NY 10036
(212) 869-7440
LOU FIORA
Conference Coordinator

As *the* educational and scientific society of the information processing community, ACM attracts and serves the finest theoreticians and practitioners throughout the world, the leading edge of computer technology — gathering at conferences and chapter meetings, publishing and reading the most probing technical literature, sharing ideas and information, promoting the common good of computing professionals. It is a volunteer organization whose composition and activities have always reflected the changing nature and needs of people engaged in computing arts and sciences.

Exhibitor Listing

Booth 1522 **AYDIN CONTROLS**

414 Commerce Drive
Fort Washington, PA 19034
(215) 542-7800
***CARL TAUS**
Product Support Engineer

Aydin Controls will be exhibiting a full line of Color Graphics Display Systems. Products at the exhibit will include: the AYCON 16/ Series, an enhanced version of the Aydin model 5216 Display System, the multi-channel model 5215 Display Generator, the 5217CT character graphic display terminal, and the PATRIOT™, the high resolution in-line gun series monitors. Also featured at the show will be demonstrations of the latest in long-distance video drive capability through fiber optics by Artel Communications.

Booth 1720 **AZTEK, INC.**

23265 S. Pointe Drive
Laguna Hills, CA 92653
(714) 770-8406
GINNY BURNAM
Marketing
PHIL LIPPINCOTT
President

Aztek has unbundled its software from its turn-key Graphic Systems and SLIDESYSTEMS™ offerings. The SLIDEGRAPHIC™ (interactive business and graphic arts program) and AZCORE™ (device independent graphic support library) software packages are now independently offered. Aztek will be at Booth 1720 to tell you about its interactive Model 1030 color SLIDESYSTEM™ and unveil options for new NTSC video, low cost 1024 x 1280 film recorders and WORD CHART™ software. WORD CHART™ allows any RS-232 compatible terminal to prepare high resolution slides (up to 4000 x 4000) using standard text entry techniques.

Booth 2110 **BENSON INC.**

385 Ravendale Drive
Mountain View, CA 94043
(415) 965-9900
AL SALOTTOLO
Vice President-Marketing/Sales

Benson will exhibit its expanding line of electrostatic plotters, pen plotters, supplies, controllers, vector to raster converters, and recently announced low cost laser plotter. Products to be demonstrated: the Laserwriter™ 100 is a tabletop plotter with resolution of 200 dots per inch. The high contrast dry toned plots are produced by the plotter using a holographic disk to generate raster scans. Interfaces are available for video copy and popular computer systems. A Q Series electrostatic plotter with transparent film feature for generating plots on polyester based transparent film, and the Model 5343 pen plotter utilizing the most sophisticated microprocessor in the marketplace will be highlighted.

Booth 2703 **BUSINESS COMPUTER SYSTEMS**

221 Columbus Avenue
Boston, MA 02116
(617) 536-7780
SUSAN RAPAPORT
Promotion Director

User Group Contact:
JIM DIFILIPPO
National Sales Manager

Business Computer Systems is a new computer publication devoted entirely to users of business computer systems in business applications. *Business Computer Systems'* controlled circulation is identified by make and model number in current use at their business location. Editorial coverage emphasizes peripherals, software and other related products for the expansion of business computer systems.

Exhibitor Listing

Booth 2723 **BUSINESS SCREEN MAGAZINE**

330 W. 42nd Street
New York, NY 10036
(212) 947-0020
DEAN EAKER
Publisher
TOM TOLNAY
Editor

Business Screen is a 40-plus year old trade communications magazine serving the business, broadcast and advertising community under the banner, *New Technologies For New Times*. Those technologies include *Computer Images & Graphics, Video, Mulit-Image,* as well as the various formats of *Film.* In special issues devoted to *Computer Pictures*, the magazine pays special attention to the needs and interests of the SIGGRAPH membership.

Booth 2921 **BYTE PUBLICATIONS, INC.**

70 Main Street
Peterborough, NH 03458
(603) 924-9281
BILL WATSON
Marketing Coordinator

Publishers of computer magazines: *Byte* edited for the high tech user, and *Popular Computing,* for the intelligent newcomer to computers. Byte Books carries a full line of comptuer related books.

Booth 1814 **CADLINC INC.**

8600 W. Bryn Mawr
Chicago, IL 60631
(312) 693-6700
CLEM MEAS
Marketing Manager

User Group Contact:
TOM ALWICKER
Product Manager

CADLINC develops, manufactures and markets graphic computers and CAD/CAM related software. Headquarters are in Chicago, with Advanced Research and Development in Palo Alto, Calif., and product engineering in Troy, Mich. The company's products include a series of Graphic computers that form building blocks for sophisticated networked graphics systems. The series has been specifically designed for interactive graphic application environments such as text processing, CAD/CAM, process control and software design. Target markets include both OEM and end-user engineering workstations. Key system features are: 1024 x 800 bit-mapped graphics display, UNIX, C and FORTRAN software support, M68000 CPU, multibus, parallel bus and ETHERNET communications. Additionally, the company markets GNC (Graphics Numerical Control), a software package for Numerical Control and CAD/CAM applications.

Booth 1208 **CALCOMP**

2411 W. LaPalma
Anaheim, CA 92801
(714) 821-2281
M. SCHOENHERZ
Trade Show Coordinator

CalComp has the broadest array of computer graphics hardware available in the industry: turnkey systems, graphics displays, vector and raster plotters, and digitizers. Support is provided through technicians and systems analysts worldwide. CalComp will be introducing two new beltbed plotters as well as showing its recently announced Vistagraphic™ 4000 family of raster displays. Also being demonstrated will be the Model 953 controller which is capable of driving both vector and raster plotters, a 9000 and 2000 Series digitizer, a 26″ and 22″ raster plotter, a Vistagraphic 1300 stroke refresh display, and a Model 1012 table top drum plotter.

Exhibitor Listing

Booth 1128 **CELCO**

70 Constantine Drive
Mahwah, NJ 07430
(201) 327-1123
***PAUL CONSTANTINE**
Vice President

High resolution color film recording system manufactured by Celco sets new industry standards in the production of extremely high quality imagery. "THE CELCO MACHINE" with its high recording speed, 4000 x 4000 pixel resolution and variable format (16mm to 8" x 10") features is widely accepted in computer generated business graphics, animation and special effects, satellite imagery and scientific R&D precision color film recording applications.

Booth 2225 **CHARLES RIVER DATA SYSTEMS, INC.**

4 Tech Circle
Natick, MA 01760
(617) 655-1800
DAN DeLEA
Vice President-Marketing

Charles River Data Systems will introduce a very-high-performance integrated color graphic workstation based upon its Universe 68 series microcomputer system and the Graphic Strategies, Inc. VERSAgraphics Module. The workstation features an MC68000 based microcomputer with 256K byte main memory, memory management unit, 20M byte Winchester disk, 1M byte 8" floppy disk, rev. 7 UNIX compatible real-time operating systems and 16-color, 512 x 512 or 1024 x 1024 element, raster scan display.

Booth 2810 **CHROMATICS, INC.**

2558 Mountain Industrial Blvd.
Tucker, GA 30084
(404) 493-7000
KEN BROWN
Director of Sales

Chromatics is a manufacturer of computers specializing in color graphic applications. The CGC 7900 color graphic computer features a 16-bit MC68000 microprocessor, 19″ CRT, dual flexible disk drives, 10 MB and 40 MB hard disks, Idris Multi-Tasking Operating System with C, PASCAL and FORTRAN Compilers and supports up to 8 MB of user RAM. It offers full color graphics capabilities in 1024 x 768 viewable dot resolution with up to 16 million colors from which to choose. Also on display is our standard CG series of stand-alone color graphic computers in 512 x 512 resolution with 8 foreground and 8 background colors and a wide range of memory and I/O options.

Booth 2518 **COLORGRAPHIC COMMUNICATIONS CORP.**

2379 John Glenn Drive/Suite 105
Atlanta, GA 30341
(404) 455-3921
EZRA MINTZ
President

User Group Contact:
WOODY PRITCHETT
Senior Engineer

Colorgraphic Communications manufactures color graphic CRT terminals. The MVI-7 has three selectable screen sizes (80 x 56, 140 x 32, 160 x 28), character graphics of 720 x 288, and 1280 user programmable symbols. The MVI-100 has two selectable screen sizes (80 x 192, 160 x 96), character graphics of 160 x 120 or 160 x 240. Both terminals have 13″ high resolution display tubes, vertical and horizontal scroll, six monochrome emulators, four addressable cursors and screens, RS-232 and selectable band rates of 110 to 19,200.

Exhibitor Listing

Booth 2332 **COMARC SYSTEMS**

150 Executive Park Blvd.
San Francisco, CA 94134
(415) 467-1300
PAT SCHULTZ
Director of Product Support

Comarc Systems offers a geographic information system: a mapping system which understands the data. This is a stand-alone system with complete hardware and software capability to support map encoding, color interactive graphics, plotting, integrated management of graphic and tabular data, map overlaying, data interpretation and modeling. The Comarc organization is capable of providing a complete range of services, including system maintenance, data encoding and applications consulting. Comarc customers include forest companies, cities, counties, states, developing countries, consulting firms and utilities.

Booth 2324 **COMBINED LOGIC RESEARCH CORP.**

760 N. Cahuenga Blvd.
Los Angeles, CA 90038
(213) 463-5625
GEORGE GREENBERG
President

System design and integration relating to visual information systems specifically engineered to solve individual application requirements. End user systems integrate disk based operating systems (with application software developed in high level languages to insure ease of programmability and transportability) with either commercially available hardware architectures and/or Combined Logic Research custom hardware.

Booth 3018 **COMPUTER AIDED DESIGN & DRAFTING SERVICES, INC.**

Waltham, MA 02154
(617) 449-4578
RAYMOND PRESBREY
Executive Vice President

User Group Contact:
R. DAMON OLLERHEAD
President

Computer Aided Design & Drafting Services is a computer graphics service bureau that provides an opportunity to increase productivity while improving quality and profits. If getting to the market on time or if a contract is at stake, this company is an intelligent, economical solution in the area of computerized drafting.

Booth 2722 **COMPUTER-AIDED ENGINEERING & MACHINE DESIGN**

1111 Chester Avenue
Cleveland, OH 44114
(216) 696-7000
WILLIAM TUCKER
Publishing Director

These two technical journals editorially cover the complete field of computer-aided design, testing, manufacturing and factory control, and management. Through their advertising pages, they serve as marketing forums for those companies who supply hardware and/or software for data-base applications in design and manufacturing.

Booth 1716 **COMPUTER DECISIONS/ HAYDEN PUBLISHING COMPANY, INC.**

50 Essex Street
Rochelle Park, NJ 07662
(201) 843-0550
DON HUBER
Vice President & Publisher

User Group Contact:
KELLEY CODNER
Administrative Sales Supervisor

Computer Decisions is a user publication that is application oriented and aims at the needs of MIS/DP and Company Management making decisions to expand their information resources to improve productivity.

Exhibitor Listing

Booth 2325 **COMPUTER DESIGN AND APPLICATIONS, INC.**

377 Elliot Street
Newton, MA 02164
(617) 964-3770
LOIS VAN DALINDA
Manager, Marketing Communications

Computer Design and Applications will be demonstrating image processing systems used for enhancing and evaluating images. Systems are built around the popular LSI-11 series computers and high performance array and display processing equipment. The systems have high resolution graphics, high performance processors, monitors, stand-alone image processors, and Core standard software.

Booth 2126 **COMPUTER DESIGN PUBLISHING COMPANY**

11 Goldsmith Street
Littleton, MA 01460
(617) 486-8944
GENE PRITCHARD
Director of Marketing

The magazine of computer based systems, primarily concerned with the design and application of computer based systems. *Computer Design* offers direct action postal mailers and list rental as part of their services. Current issues of the magazine will be available for distribution.

Booth 1518 **COMPUTER GRAPHICS WORLD**

1714 Stockton Street
San Francisco, CA 94133
(415) 398-7151
RANDALL L. STICKROD
Publisher

Computer Graphics World is the only monthly trade magazine devoted exclusively to computer graphics. Editorial content features extensive coverage of computer graphics

applications and comprehensive news coverage of new developments throughout the industry. Additional regular features include interviews with key newsmakers, hardware and software reviews and evaluations, and surveys of computer graphics users. Special issues focus on topics such as international developments, rapidly developing areas of application such as management information systems and CAD/CAM, and highlights from the major trade shows and conferences.

Booth 2326 **COMPUTER PICTURES CORP.**

20 Broad Street
Boston, MA 02109
(617) 720-1700
THOMAS P. McAULIFFE
Executive Vice President

User Group Contact:
JOHN T. KARCANES
Vice President-Sales & Corp. Development

Computer Pictures has introduced the first comprehensive "executive information system" utilizing graphic formats. The system is a turnkey hardware and software product that draws automatically from a corporate database, can perform almost unlimited computational and statistical functions, automatically graph all resulting summaries and store results as pictures for instant management review through a touch screen device employing random logic access. High speed output devices are also offered to provide 8½x11 color hard copies on plain paper, overhead transparencies, and 35mm slides.

Booth 2604 **COMPUTERWORLD**

375 Cochituate Road/Box 880
Framingham, MA 01701
(617) 879-0700
ROY J. EINREINHOFER
Vice President-Marketing

Computerworld, the newsweekly for the computer community, is read by more than 500,000 people each week. Featuring news, product release information, application stories and in-depth tutorials, *Computerworld* is able to present information for all levels of interest within the corporate environment.

Booth 3019 **CONFERENCE BOOK SERVICE**

80 S. Early Street
Alexandria, VA 22304
(703) 823-6966
DODIE WILLIS
Exhibit Coordinator
MARK TROCCHI
Scheduling Manager

Browsing collection of technical books in the field of computer graphics.

Booth 1620 **CONRAC DIV./CONRAC CORP.**

600 N. Rimsdale
Covina, CA 91722
(213) 966-3511/Ext. 347
BOB HOFER
Advertising Manager

User Group Contact:
WILLIAM EMS
Western Regional Sales Manager

Model 7211 high resolution color RGB display in 19″ and 13″ precision in-line (PIL) CRT. Major features include selectable scan frequencies (15 KHz to 36 KHz in the same unit); 40 MHz video bandwidth; 0.3mm shadow mask delta pitch; EIA RS 170 or RS 343 composite video formats; 1080H x 809V pixel resolution with 19″ CRT, 921H x 739V pixel resolution with 13″ CRT. Model 2400 high resolution monochrome display. 1280H x 960V pixel resolution with 19″ CRT; 40 MHz bandwidth, selectable scan frequency option (15 KHz to 36 KHz in one unit). These, and other Conrac Models, will be operating from medium to ultra-high resolution graphic systems, displaying applications pro-

grams using color and monochrome, standard and long-persistence phosphors, non-glare screen treatment, and other features.

Booth 2721 **CRAY RESEARCH, INC.**

1440 Northland Drive
Mendota Heights, MN 55120
(612) 681-3229
W. DEREK ROBB
Manager, Applications Department

User Group Contact:
JOHN ALDAG
Senior Applications Analyst

Cray Research, manufacturers of the world's fastest supercomputers, and Digital Productions, Inc., digital image producers, will discuss and demonstrate the power of CRAY-IS and CRAY X-MP computers in state-of-the-art graphics.

Booth 2218 **CROMEMCO, INC.**

280 Bernardo Avenue
Mountain View, CA 94043
(415) 964-7400
DR. ALICE E. AHLGREN
Director of Communications

Cromemco manufactures a complete line of powerful microcomputer based graphics systems which can be used to display color or black-and-white images with up to 754 x 484 point resolution. The company also provides a number of sophisticated software packages for use with the graphics system, including Slidemaster, a powerful tool for creating graphics and text displays, and Fontmaster, which allows the user to interactively design his own fonts; and a software development package which is ideal for the development of graphics applications such as process control, business statistics and charts, medical imaging, and computer-aided instruction.

Exhibitor Listing

Booth 2824 **CUBIC SYSTEMS**

2215 Spaulding Avenue
Berkeley, CA 94703
(415) 841-8072
ED BERLIN
Director of Engineering

Cubic Systems, a company specializing in three-dimensional graphics, introduces the CS-3 color terminal. This versatile tool for design and analysis implements a full range of two-dimensional and three-dimensional functions, including hidden surface removal, smooth shading, and anti-aliasing. The multibus based system uses an 8086 and 8087, and becomes a stand-alone computer with optional floppy or hard disk. This model generates a 512 x 512 pixel image, displaying 4096 colors from a palette of 16 million. The CS-3 comes with two image planes, a 20″ RGB monitor, and a 90-day warranty.

Booth 2511 **DATACOPY CORP.**

1070 E. Meadow Circle
Palo Alto, CA 94303
(415) 493-3420
MICHAEL H. REHMUS
Director of Marketing
ALAN HOLMBERG
Marketing Engineer

Datacopy is demonstrating its line of CCD array digitizing cameras. The high resolution C322 offers 1720 x 2592 picture elements. The economical C312 provides 512 x 640 resolution. The C324 "multiple resolution" digitizing camera can be configured in any resolution to 1280 picture elements in X and Y dimensions and in any aspect ratio (1:1, 4:5, 3:4, 1:1.29). The cameras provide higher resolution than video, usually require less illumination, and do not have the blooming, burning, gain and offset problems of vidicon tubes. Applications include high resolution image recognition, storage or reproduction for teleconferencing, photocopying, facsimile, electronic mail, micrographics, OCR, CAD/CAM, and computer graphics.

Booth 1732 **DATACUBE, INC.**

4 Dearborn Road
Peabody, MA 01960
(617) 535-6644
DANIEL P. HOSKIN
Sales Manager

Datacube boards digitize and display information in real time from standard video cameras for MULTIBUS and Q-BUS systems — without host computer intervention. These boards provide reliable, low cost vision for robotics, inspection, medical imaging, teleconferencing, animation, etc. Available for both monochrome and color monitors.

Booth 1535 **DATA DESIGN LOGIC SYSTEMS, INC.**

4800 Patrick Henry Drive
Santa Clara, CA 95054
(408) 988-7722
CONRAD B. VANCE
Sales Manager

User Group Contact:
JAMES E. NEWLAND
Vice President

Data Design Logic Systems manufactures a complete line of high quality intelligent digital pen plotters. The 4-pen drum plotters are available in 15″, 26″, 37″ and 48″ widths; flatbed sizes are "D" and "A1". The integral, intelligent controller, common among all units, requires no special host software. These sophisticated units can work as easily with microcomputers as with mainframes in any language with any operating system under any revision level.

Booth 1616 **DATAMATION**

666 Fifth Avenue
New York, NY 10103
(212) 489-2579
JOHN M. GLEASON
Sales Manager

Datamation, serving the information processing professional for 25 years, will distribute complimentary copies of the current issue to SIGGRAPH attendees. Information on related products and services also will be available at the *Datamation* booth.

Booth 2832 **DATAMAX/TDS**

2256-B Landmeier Road
Elk Grove Village, IL 60007
(312) 981-8205
RON CHAN
Technical Manager

Datamax will display the UV-1 Graphics System featuring ZGRASS, a non-programmer oriented language for generation of real time animated graphics.

Booth 2738 **DATA-TYPE, INC.**

2615 Miller Avenue
Mountain View, CA 94040
(415) 949-1053
AVERY BLAKE
President

User Group Contact:
DORON GOLDE
Manager Product Supplies

The AutoGraph Graphics Display Terminals, both color and monochrome, are low cost Teletronix-compatible units for both large and small computer systems. Users of large system graphics packages like Tell-A-Graf, PLOT-10 etc. can expand the use of their systems with low cost "preview" terminals and fast, localized "scratch pad" printing. High and low resolution displays, various input and output options available.

Booth 1741 **DESIGN AIDS, INC.**

27822 El Lazo Road
Laguna Niguel, CA 92677
(714) 831-5611
***NANCY SAVINELLI**
Vice President-Marketing & Sales

DS1 is an Electronic Schematic Input System and Data Base Capture System for interfacing to PCBoard Routing Systems (REDAC, SCICARDS™, AUTOMATE and ASI Prance, etc.). Interfaces available for interfacing to Wire Wrap and Simulation, DS1 is the only system which allows for data capture in a Non-Gridded Mode via digitizer. Vocal Output Unit talks to operator and data is captured on an IBM personal computer. Data is then transmitted to host computer for processing. Computer straightens out crooked lines and inputs real size symbols. Edits are performed in minutes due to Non-Gridded Mode.

Booth 3000 **DESIGN NEWS/A CAHNERS PUBLICATION**

221 Columbus Avenue
Boston, MA 02116
(617) 536-7780
NICOLE BORDEN
Marketing & Promotion Director

Design News is a publication serving design engineers in the OEM.

Booth 2010 **DICOMED CORP.**

9700 Newton Avenue, S.
Minneapolis, MN 55431
(612) 887-7100
LAWRENCE M. MARTIN
Director of Sales & Marketing

User Group Contact:
JAMES C. CONNOLLY
Manager of Customer Support

THE DICOMED D38+ DESIGN STATION: Based on earlier Dicomed design stations which set new standards in the industry, the D38+ incorporates several advanced features. Increased memory, quicker drawing time, an automatic curve smoothing feature and a new patented figure type called Flexigon make it the most advanced system of its type available. THE DICOMED SOLUTION: The MICROMEDIA Slide Composition System enables you to produce high quality Pie Charts, Bar Charts, Column Charts, Line Graphs and Text Slides, using any of 64 different colors. The System is composed of easy-to-use software, an overlay sheet to be placed on your Apple Graphics Tablet, a 16K byte memory expansion board to handle the additional requirements of the software, and a manual that clearly describes the operation of the System.

Booth 1638 **DIGITAL DESIGN/MORGAN-GRAMPIAN PUBLISHING COMPANY**

1050 Commonwealth Avenue
Boston, MA 02215
(617) 232-5470
JOHN MOON
Sales Representative

User Group Contact:
BOB HIRSHON
Managing Editor

Morgan-Grampian Publishing Company will distribute these three publications: *Circuits Manufacturing,* the magazine of processing, production, assembly, test and inspection; *Digital Design,* the magazine of systems electronics, serving engineers and engineering managers who design computer based systems and specify the appropriate computers and peripherals for them; *Electronics Test,* the first and only magazine devoted entirely to electronics test for designers, applications and systems maintenance engineers.

Booth 2408 **DIGITAL ENGINEERING, INC.**

630 Bercut Drive
Sacramento, CA 95814
(916) 447-7600
NADARA A. CRAUN
Marketing Support Specialist

Digital Engineering manufactures Retro-Graphics™ and Color Retro-Graphics™ terminal enhancements for some of the most popular terminals on the market today — the TeleVideo, Lear Siegler ADM Series, the DEC™ VT100™, VT101™, VT131™ and VT132™, ADDS Viewpoint, TI OPTI 900 Model 940 and Datamedia Colorscan. These upgraded alphanumeric terminals are capable of complicated graphics without affecting the alphanumeric capabilities of the terminals. These products are on exhibit at our booth.

Booth 1228 **DIGITAL EQUIPMENT CORP.**

200 Forrest Street
Marlboro, MA 01752
(617) 467-6900
GAIL JACOBS
Marketing Communications Manager

Featured in the Engineering Systems Section of Digital Equipment's booth will be engineering graphics optimized for VAX/VMS systems, the recently announced Professional 350 personal computer for engineers, and the 11C03 high speed asynchronous interface for RS-232 graphics devices.

Booth 1228 **DIGITAL EQUIPMENT CORP.**

5 Flagstone Drive
Hudson, NH 03051
(603) 884-6488
ANIL PORBUNDERWALA
Marketing Product Manager

Digital Equipment will feature its family of VSV/VS11 high performance raster scan graphics systems. These systems interface

directly to Digital's own PDP-11 and VAX series computers. The VSV/VS11 offer superior technology, features and flexibility which makes them attractive in a wide range of applications from CAD/CAM and process control to imaging.

Booth 2516 **DUBNER COMPUTER SYSTEMS**

158 Linwood Plaza
Fort Lee, N.J. 07024
(201) 592-6500 or (212) 594-5831
IVAN MALTZ
Project Manager

The Dubner CBG-2 produces broadcast quality color images and animation sequences. It incorporates a character generator, digital painting system, and three-dimensional curve generation features.

Booth 2237 **EIGEN VIDEO**

Box 848
Nevada City, CA 95959
(916) 272-3461
JOHN L. ROMANKO
Sales Manager

Eigen manufactures color and monochrome video disc recorders in a variety of bandwidths. These recorders may be used for dynamic or static display of images in the field or frame modes. Eigen also manufactures a video frame grabber that has multibus DMA capabilities.

Booth 2924 **EIKONIX CORP.**

23 Crosby Drive
Bedford, MA 01730
(617) 275-5070
ALAN S. BARRETT
Director of Marketing Industrial Products

User Group Contact:
LEW BROWN
Sales Engineer

Exhibiting the EC78/99, a high resolution digital camera with full color sensitivity. The camera generates up to 2048 x 2048 pixels with 1 to 12 bits of intensity level per color in under 50 seconds. Eikonix manufactures high resolution flatbed image digitizers, and integrates complete image processing systems using Eikonix Picture Processing Language (EPPL™), a user friendly image processing software package.

Booth 1641 **ELECTOR**

5128 Calle Del Sol
Santa Clara, CA 95050
(408) 727-1506
GUIDO GOVAERT
Sales Manager

User Group Contact:
JOHN THOMAS
Service Manager

Elector is the exclusive North American distributor for Barco color data displays and Videpro Hi-Beam projectors. We will be showing a full line of Barco color displays from OEM chassis to delta-gun delta-dot shadow mask and in-line delta-dot shadow mask monitors, with video bandwidth up to 50 MHz and horizontal scan rate up to 36 KHz. On the Videpro Hi-Beam projector we will be showing graphics capability with 80 characters, 26 lines of alphanumerics.

Booth 2822 **ENVISION**

631 River Oaks Pkwy.
San Jose, CA 95134
(408) 946-9755
CORLEY PHILLIPS
Product Manager

Envision is exhibiting an intelligent color graphics terminal and a high resolution color printer for OEM applications.

Exhibitor Listing

Booth 2628 **EUROPEAN SOFTWARE CONTRACTORS ApS**

385A Lyngbyvej
DK-2820 Gentofte, Denmark
+45 1 65 74 12
***JAN G. KNUDSEN**
President

ESC markets the UNIRAS raster-device independent color graphics software package. In addition to basic plotting in full color or monochrome (RASPAK), UNIRAS contains several high-level application packages for mapping and contouring (GEOPAK), image processing (GIMAGE), seismic data display (SEISPAK) and business graphics (BIZPAK). Also advanced geostatistical programs (KRIGPAK) are available. (In North America: American Software Contractors, 48 Cummings Park, Woburn, MA 01801.)

Booth 1136 **EVANS & SUTHERLAND COMPUTER CORP.**

580 Arapeen Drive
Salt Lake City, UT 84108
(801) 582-5847
JAMES F. CALLAN
General Sales Manager

User Group Contact:
TED NAANES
Marketing Services Manager

Evans & Sutherland will present its full range of leading-edge computer graphics technology at SIGGRAPH '82. The spectrum of computer graphics tools ranges from PS 300, the most advanced distributed processing 3-D line drawing system on the market, to CT-5, the world's most sophisticated real-time raster system simulator. Also presented will be ROMULUS, a solid geometric modeling software package, and DIGISTAR, the world's only digital planetarium projection system.

Booth 2823 **FLORIDA COMPUTER GRAPHICS**

1000 Sand Pond Road
Lake Mary, FL 32746
(305) 321-3000
JO HUNNICUTT
Manager, Marketing Communications

Florida Computer Graphics will display its line of computer graphics systems. The Beacon™ System offers true bit mapped graphics, 640 x 480 resolution, 32 of 256 colors, and up to 896 KB RAM. A bit slice processor and resident firmware allow high speed graphics generation. The Multiple Processor Architecture (MPA) allows the Beacon™ System to accommodate graphics, word processing and data processing. The ergonomically designed display incorporates height, tilt and swivel adjustments, anti-glare screen, detached keyboard and smooth horizontal and vertical scroll. The System's CP/M compatible operating system provides for a wide choice of application packages. The Beacon™ System accepts a wide range of programming languages, including Basic, Fortran and Assembler.

Booth 2618 **FORWARD TECHNOLOGY**

2595 Martin Avenue
Santa Clara, CA 95050
(408) 988-2378
***PAUL RAY**
Director of Sales

Manufacturer of Graphics Workstations and support systems: 'GATEWAY' Personal Graphics Workstation running UNIX with implementation of SIGGRAPH CORE Standards.

Booth 2000 **GENERAL ELECTRIC COMPANY/VIDEO DISPLAY EQUIPMENT OPERATION**

Electronics Park 6-205
Syracuse, NY 13211
(315) 456-2152
JERROLD P. GUNDERSEN
Manager of Marketing

General Electric, Video Display Equipment Operation, will be demonstrating high line large screen television projectors at SIGGRAPH '82. GE will demonstrate large screen applications for teaching and simulation. In addition, these systems may be used for computer aided design or computer aided manufacturing.

Booth 2308 **GENISCO COMPUTERS CORP.**

3545 Cadillac Avenue
Costa Mesa, CA 92626
(714) 556-4916
JOHN GALLAUDET
National Sales Manager

Genisco Computers will demonstrate its broad line of graphics and imaging computer products. Being presented is the G6100 Color Interactive Graphics Display Terminal series. These consoles incorporate a powerful bit-slice microprocessor into a raster display terminal with many standard features, including resolutions of 768 x 512 non-interlaced and 1392 x 1024 interlaced. The popular G1000 Interactive Graphics Terminal will also be demonstrated along with its many options and peripherals. The presentation is rounded out with the incredible SpaceGraph workstation. This is a true 3-dimensional projection display with local data base interactivity.

Booth 1536 **GEOGRAPHIC SYSTEMS, INC.**

100 Main Street
Reading, MA 01867
(617) 942-0051
BARBARA HAWKINS
Director of Marketing

Geographic Systems (GSI) is exhibiting business mapping products and services, providing an analytical tool to support decisions regarding where to invest critical resources. GEOMAP™ is a comprehensive business mapping software package for in-house use. Continuous demonstrations of GEOMAP™ will show the ease of use and broad range of capabilities of the

software. The ability to map existing data by 5-digit ZIP Codes, 1980 Census tracts, ADI's, DMA's, SAMI's, SMSA's, BEA's, and International Boundaries will be demonstrated in addition to state and county mapping. This capability is made available through GSI GEOFILES™, cartographic boundary files totally integrated with GEOMAP™. GSI also provides custom mapping services.

Booth 1021 **GOULD INC./DEANZA IMAGING & GRAPHICS DIV.**

1170 Lundy Avenue
San Jose, CA 95131
(408) 263-7155
PHIL CLEVELAND
National Sales Manager

The IP8500, our most powerful image processor, has five new options: 1) An extended memory, quadrupling previous storage capacity to 20 individual 1024 x 1024 x 8-bit image tiles. 2) An expanded resolution with video output controllers offering 1024 x 1024 pixel imagery in monochrome or full color. 3) Additional software: the Library of Image Processing Software (LIPS), a general purpose package for image processing, including a "command processor" and "help" instruction program. 4) A fast histogram facility, increasing histogram computation 50 times. 5) An IP8400 model with all standard and extended features operating on 12 memory tiles at a substantial savings.

Booth 3015 **GOVERNMENT DATA SYSTEMS MAGAZINE**

475 Park Avenue S.
New York, NY 10016
(212) 683-8430
GEORGE JOEL FINE
Publisher

Government Data Systems is edited for federal, state and local information managers and public administrators involved in systems-based solutions to government problems. It is the one

magazine that brings together important new studies of government oriented systems applications and operations as well as current reports on management programs, training techniques and public policy.

Booth 2422 **GRAPHIC COMMUNICATIONS, INC.**

200 Fifth Avenue
Waltham, MA 02254
(617) 890-8778
DAVID P. TARRANT
Vice President-Marketing

GRAPHWRITER™ is a complete stand-alone desk top computer graphics system which costs no more than a quality word processor. It produces the highest quality hard copy computer graphic output and is easy to use, requiring no special operator training or computer personnel. The key to the GRAPHWRITER™ system is a catalog of over 40 business graphic formats, including pie, bar and line charts, Gantt charts, organization charts and more. Each format has an unique input form which allows an author to specify his graphic requirement without leaving his office or having to go near the computer itself.

Booth 2724 **GRAPHIC CONTROLS CORP.**

189 Van Rensselaer Street
Buffalo, NY 14240
(716) 847-7500
MICHAEL LIPUMA
Telemarketing Manager

The Coated Products Div. of Graphic Controls offers a single source of fast image papers and related chemicals for use in Electrostatic Printer/Plotters, including Versatec, Benson Varian, CalComp/Gould, Houston Instrument. Thermal papers for use in printer terminals and calculators, including Texas Instrument, Hewlett-Packard, Computer Devices, NCR, 3M, Apple, etc. and Electrostatic/Thermal papers for facsimile devices including Xerox, Qwip, 3M, Panafax, NEC, Southern Pacific and Teleauto-

graph. (Toll-free telephone: 800-828-7978 or 800-462-7332 in New York.)

Booth 2717 **GRAPHIC SOFTWARE SYSTEMS, INC.**

25117 S.W. Parkway/Box 673
Wilsonville, OR 97070
(503) 682-1606
DAVID SHARON
Vice President-Marketing
JOHN GORDON
Vice President-Sales

Manufacturer of mini-microcomputer graphic software products which include GSS-CORE Graphics Subroutine Library, a full implementation of the 1979 SIGGRAPH 2-D Level 1 Core Standard, and GSS-PLOT Plotting Utility for creating presentation and report quality graphs.

Booth 2227 **GRAPHIC STRATEGIES, INC.**

3500 Granada Avenue/Suite 187
Santa Clara, CA 95051
(408) 554-6377
STEPHEN R. JOHNSON
Vice President-Marketing

Graphic Strategies will exhibit its new VERSAgraphic Module, a very high performance, color-graphic interface to Motorola's advanced 16/32 bit MC68000 microcomputer. It also will demonstrate its EASYcolor 4000 series industrial display system and a line of computer graphic peripherals, including its recently announced intelligent trackball. The VERSAgraphic Module produces 16-color, 512 x 512 or 1024 x 1024 element, raster scan display. Other advanced features include high-speed vector, circle and arc generation; line and area texture; high quality fonts; arbitrary cursor shapes with selectable grid-lock and 2-D transformations; flicker-free refresh, and zoom. Its support software includes a high level graphic language interpreter; keyboard, digital tablet and trackball interfaces; and a powerful graphic editor that allows an unskilled operator to create, edit, store and recall skeleton and finished images.

Exhibitor Listing

Booth 2719 **GRAPHICA COMPANY, LDT.**

505 Kaitori, Tama City
Tokyo, Japan 206
0423-73-6111
DR. KANSEI IWATA
President

Graphica, a computer graphics pioneer from Japan, will introduce two new products at SIGGRAPH '82. The M-508 has a hardware smooth line generator and resolution of 512 x 512 x 24. The MB-8000 has an addressable display of 8K x 8K with viewable resolution of 1024 x 1024 and writing speed of 17,000 ½ screen vectors per second. All Graphica equipment interfaces to most common mini-computers.

Booth 2226 **GRINNELL SYSTEMS CORP.**

2159 Bering Drive
San Jose, CA 95131
(408) 263-9920
ROBERT S. ANDERSON
Director of Marketing

User Group Contact:
JIM HIXSON
Marketing Manager

Grinnell Systems will display the GRIDS standalone Image Processing Computer System, and other products for computer graphics, image buffering and image processing.

Booth 1341 **GTCO CORP.**

1055 First Street
Rockville, MD 20850
(301) 279-9550
GEORGE HELSER
OEM Sales Manager

User Group Contact:
D.E. CARRUTH
President

GTCO offers graphic digitizers with tablets that are opaque, translucent or rear-projected. Sizes range from 6″x6″ to 42″x60″. Three sizes that emulate the Bit Pad™ (a registered trademark of Summagraphics Corp.) are available with 30 day delivery. New products will be introduced at SIGGRAPH '82.

Booth 2836 **GTI CORP.**

10060 Willow Creek Road
San Diego, CA 92131
(714) 578-3111
STANLEY BURG
Vice President-Marketing

User Group Contact:
JIM HOLLY

GTI announces a breakthrough in high performance graphics technology — a polygon based real time display with capabilities rivaling a multi-million dollar flight simulator. Based on a multiple bit-slice architecture, the GTI Advanced Graphics System implements a proprietary scan-line hidden surface algorithm, allowing realistic pictures of complex 3-D objects to be displayed on a standard RGB monitor. The real-time display (30 frames per second, interlaced) allows the user to interact with the displayed database. Other features include: 16-bit homogeneous coordinate representation; full perspective transformations using concatenated 4 x 4 matrices; X, Y, and Z plane clippings; display of over 512 edge intersects per scan line; 640 x 640 pixel display with over 16 million colors; automatic intensity shading of polygons based on a "moveable" light source; and software routines to support a hierarchical graphic data structure.

Exhibitor Listing

Booth 1408 **HEWLETT-PACKARD**

3000 Hanover Street
Palo Alto, CA 94303
(415) 857-7246
JO ANNE CORTESI
Marketing Engineer

Hewlett-Packard will demonstrate its broad range of graphics capabilities used to increase productivity among technical and commercial users. Both Hewlett-Packard hardware and software solutions will be on display, including business graphics, graphics workstations. graphics tools, and CAE solutions.

Booth 2118 **HITACHI AMERICA, LTD.**

449 Alaska Avenue
Torrance, CA 90503
(213) 533-0888
JACK MacDONALD
Sales Manager

Hitachi America, Machine Tools Div., markets several types of digitizers and graphic tablets manufactured by Hitachi Seiko, Ltd. in Japan. Our new tiger tablets (11″ x 11″) are ideal for OEM applications. Other models, up to 36″ x 48″ digitizers, are ideal for CAD/CAM, mapping systems and universities. Prime benefits are gleaned by our resolution, accuracy, stability, versatility and competitive pricing.

Booth 1129 **HOUSTON INSTRUMENT/BAUSCH & LOMB INSTRUMENTS & SYSTEMS DIV.**

8500 Cameron Road
Austin, TX 78753
(512) 835-0900
RANDY ARNOLD
Eastern Regional Sales Manager

User Group Contact:
GABRIELLE RYAN
Product Manager

Computer peripherals including the HIPLOT DMP Series of flatbed, digital plotters, COM-PLOT incremental drum plotters and the 7000 Series of digitizers. New products include: CPS-20 multi-pen drum plotter offering eight different pens selectable under program control. Continuous feed HIPLOT DMP plotters with a paper advance allowing unattended plotting regardless of plot size. HIPLOT Regis plotters designed to communicate exclusively with Digital Equipment Corp. graphics language Regis.

Booth 1116 **IBM CORP.**

1133 Westchester Avenue
White Plains, NY 10604
(914) 463-8557
CAL BALSDON
Business Shows
KEN JACKSON
Graphics Marketing Representative

IBM will provide concurrent demonstration of its business and presentation graphics producers currently available.

Booth 2431 **ID SYSTEMS CORP.**

4093 Leap Road
Hilliard, OH 43026
(614) 876-1595
MIKE CHANEY
Sales Manager

ID Systems will be featuring its array of high performance, low cost color and monochrome graphic terminals, the ID-100V family. These terminals are based upon the popular VT100™ terminal and provide the user with a full featured color alphanumeric terminal plus a high performance color graphics terminal for business, scientific and engineering graphic applications. The ID-100V family of graphic terminals is available with different levels of resolution and as retrofits to your existing VT100™. Hardcopy output capabilities for these terminals include color camera systems and color printers/plotters.

Exhibitor Listing

Booth 2401 **IEEE COMPUTER SOCIETY**

10662 Los Vaqueros Circle
Los Alamitos, CA 90720
(714) 821-8380
DAWN PECK
Advertising Director

The IEEE Computer Society will display books, magazines and other technical journals, and will offer information on conferences, seminars and other membership benefits.

Booth 2417 **IKEGAMI ELECTRONICS (U.S.A.), INC.**

37 Brook Avenue
Maywood, NJ 07607
(201) 368-9171 or (213) 534-0050
***Y. SATO**
Chief Engineer

Ikegami Electronics manufactures a complete line of raster scan CRT display units for the computer industry. HDM SERIES: Ultra fine resolution analog display units (color). CD SERIES: High performance analog (CDA) and digital (CDB) models. UD SERIES: Quality color display units for office graphics at economical cost. BDM SERIES: Low cost monochrome units for data entry and on-line applications.

Booth 2217 **IKONAS GRAPHICS SYSTEMS**

531 Pylon Drive
Raleigh, NC 27606
(919) 848-8701
***MARY C. WHITTON**
Vice President-Marketing

Ikonas RDS-3000 Raster Display System for high performance graphics and image processing applications. Fast programmable bit-slice graphics generator providing real-time 2D and 3D transformation, vector, and surface generation. Multi-format display capability including 512 x 1280 pixel resolution. Expandable image memory from 2 bits (4 colors) to 24 bits

(16 million colors) with 512 x 512 to 2048 x 2048 storage. Auxiliary 68000 microprocessor for workstations and stand-alone capability.

Booth 2739 **IMAGE DYNAMICS INC.**

150 Riser Road
Teterboro, NJ 07608
(201) 288-7670
RON ARONOWITZ
Engineering Group

User Group Contact:
CHING-YUAN TUNG
Engineering Group

Our new IRIS-1 is a high performance real-time 3D to 2D, smooth shaded, full color, visible surface graphics hardware system. For each frame update (30/sec.) 3D transformation and perspective work, along with hidden surface solution, is performed on the objects in the scene, at a resolution of 640 x 480 pixels. Image complexities of between 10,000 and 15,000 edges can be solved for in real-time, including fog, shiny surfaces, and intersections. The system will also operate out of real-time for images of unlimited edge complexity. An image with ¼ million edges can be solved for in one second.

Booth 2929 **IMAGING TECHNOLOGY, INC.**

61 N. Broadway
Salem, NH 03079
(603) 893-6415
ROBERT WANG
Director

Imaging Technology manufactures high performance image processing and computer graphic sub-systems for the OEM vision market. All modules accept and display either computer generated graphic commands or video image input from a standard camera. Optional high-speed ALU processor facilitates real-time image summation, subtraction, animation and con-

volution. The resolutions of the imaging modules vary from 256 x 256 x 4 for the low end, and up to 4K x 4K addressable memory space with 32 bits per pixel. Screen manipulations include pixel pan, scroll, zoom, write mask and pixel area write protect function. The modules are plug compatible with Intel Multi-bus or Dec Q-bus based mini-computers.

Booth 2210 **IMLAC CORP.**

150 A Street
Needham, MA 02194
(617) 449-4600
JOHN A. DESJARDINS
Director of Sales

Imlac manufactures the Series II Model 8000 refresh stroke vector computer terminal. The Series II, an 8086-based smart terminal, provides the user with up to 192K bytes of memory for the storage of graphics data. Graphics input/output services include a Light Pen, a Data Tablet and an Interface to the Versatec line of dot Matrix Printer Plotters. Host communication is via an RS-232 line, with speeds up to 19.2K baud. The host load is minimized with terminal control program. The Series II is supported on many host computers and by several CAD/CAM software packages.

Booth 2338 **INDUSTRIAL DATA TERMINALS**

173 Heatherdown Drive
Westerville, OH 43081
(614) 882-3282
FRANK MAGALSKI
Vice President-Marketing

User Group Contact:
TERRY BOWEN
Marketing Support Specialist

Industrial Data Terminals manufactures the first and only color graphics terminal with bubble memory. The IDT-2200 with bubble memory storage in the terminal, establishes a new standard in color graphics capability and reliability. Non-volatile bubble memory allows you to retain permanent displays in the terminal, and ensures data integrity even in the harshest environment. The IDT-2200 uses a subpicture architecture which permits rapid display and change of total pictures and/or segments with a single command.

Booth 3009 **INFOGRAPHICS, INC.**

Lido Peninsula, 201 Shipyard Way
Newport Beach, CA 92663
(714) 675-4385
DR. STEPHEN SLINGSBY
President

InfoGraphics will display its new turnkey business color graphics system. This new system will provide a total graphics capability for corporations as well as a data base capability for the chief executive officer and other policy decision makers in a company.

Booth 1740 **INTEGRATED TERMINALS/ DIVISION OF TELPAR, INC.**

4132 Billy Mitchell Road/Box 1184
Addison, TX 75001
(214) 233-6631
GLEN E. ALCORN
Products Marketing Director

Integrated Terminals will exhibit its line of Color Graphic Terminals which utilizes a 12" high resolution in-line gun color CRT to display 24 80-character lines. Eight colors are selectable on a foreground/background combination. In addition to the standard 96 ASCII character set, there are 128 user defined symbols available. The terminal interfaces via RS-232 or current loop at up to 9600 baud to a host computer. Editing features include line insert/delete,

character insert/delete, erase page, scroll/page mode, and block transmit/receive. Display attributes include double high/double wide characters, blink, underline, and blank. All editing and attributes are implemented using control/escape sequences from the host computer.

Booth 2103 **INTELLIGENT SYSTEMS CORP.**

225 Technology Park/Atlanta
Norcross, GA 30092
(404) 449-5961
TULLY JOHNSTONE
Marketing Operations Manager

Founded in 1973, Intelligent Systems is the world's leading producer of low-cost color graphics desk top computers, terminals and software, including: (1) Intelligent Graphic Systems™ (IGS™), the most powerful color graphics language available on microcomputers; IGS can be purchased in terminals, desk tops or graphics stations. (2) Color graphics desk tops with up to 128K RAM, CP/M™ or FCS OS. (3) 8-color intelligent graphics terminals, plus emulators for VT100, 3270, 4014, ANSI. (4) 8-color monitors. (5) I/O: keyboard, digitizer, light pen, ink-jet printers (paper, foils), plotters (paper, foils), color cameras (35mm slides, Polaroids, film transparencies).

Booth 1142 **INTERACTIVE MACHINES, INC.**

2500 B Townsgate Road
Westlake Village, CA 91361
(213) 707-1880
GEORGE SEMERAU
President

User Group Contact:
JOE EDWARDS
Chief Executive Officer

Manufacturer of high performance graphics workstations, 4096 x 4096 calligraphic monitors, both 21″ black and white, and 19″ shadow mask color. High speed graphics processor, using

multiple bi-polar bit slice microprocessors, with 3D rotate, scale, displace, perspective, clip, and user defined transformations. Local 68000 with 20 meg Winchester 512K RAM, running Unix with C and Fortran '77. Extensive graphics utility software. Interfaces include DMC-11 (VAX), Mil-STD-1553, IBM 3274, RS-232.

Booth 2728 **INTERNATIONAL IMAGING SYSTEMS**

1500 Buckeye Drive
Milpitas, CA 95035
(408) 262-4444
M. MICHAEL STROZZA
Director of Sales

International Imaging Systems (I^2S) is engaged in the field of image analysis and enhancement, with primary applications in earth resource studies, aircraft reconnaissance, medical, non-destructive testing, radio astronomy, graphic arts and process control. I^2S offers a wide range of digital image processing displays and systems, including CPU interfaces and applications programs. I^2S is featuring the System 500 which is a turnkey image processing system with a library of more than 125 applications programs for various image processing functions. The company is unique in being able to offer both hardware and an applications software library that is manufactured and supported by a single vendor.

Booth 1022 **ISSCO GRAPHICS**

4186 Sorrento Valley Blvd.
San Diego, CA 92121
(714) 452-0170
ELLEN GORE
National Marketing Coordinator

User Group Contact:
MAXINE BROWN
Manager, Marketing Communications

DISSPLA™ and TELL-A-GRAF™ are today's leading graphic software packages for the creation of publication and presentation quality

charts. TELL-A-GRAF™ is an English-language application program that pro-produces general purpose line, bar and pie graphs and text pages. DISSPLA™ is a library of high-level graphic subroutines that produce general purpose charts and graphs, 3-D surfaces, maps and contours. ISSCO products feature ease-of-use, flexibility, field-proven performance, comprehensive maintenance and support, and machine and device independence. Both systems have broad application in business, science and engineering industries.

Booth 2521 **JAPAN RADIO CO., LTD.**

120 E. 56th Street/Suite 320
New York, NY 10028
(212) 355-1180
(81) 422-44-9111 (Tokyo)
TAD HAYASHI
U.S. Representative

User Group Contact:
S. SAIMI
General Manager, Tokyo

Japan Radio is exhibiting their NWX-235 20″ Color Graphic Display with a host computer (PDP-11 or Prime). This Display Terminal is capable of presenting characters, graphics and images with high brilliance and high resolution in multi-layer, multi-color, split and echo modes on the CRT screen. It features powerful interactive capabilities such as picking, rubber-band and dragging, window-viewport conversion, clipping and 2-dimensional transformations (zooming/scaling, scrolling, rotation). This model can operate as a dedicated processing workstation for CAD/CAM systems using general purpose computers or minicomputers.

Booth 2321 **JOYCE LOEBL/DIVISION OF VICKERS INSTRUMENTS, INC.**

300 Commercial Street/Box 99
Malden, MA 02148
(617) 324-0350

JOHN MORRISSEY
Manager, Marketing & Sales

Joyce Loebl Div. will exhibit its line of image digitizers, image analysis equipment and microdensitometers. The Magiscan 2 signal processor will be introduced, an OEM high speed array processor used in image manipulation and processing of raster data.

Booth 2625 **JUPITER SYSTEMS, INC.**

2126 Sixth Street
Berkeley, CA 94710
(415) 644-1024
PETE HARRIS
Vice President

User Group Contact:
JON PEDDIE
President

Jupiter Systems offers a family of color graphics raster terminals with high resolutions, 256 simultaneously displayable colors and detachable keyboards. A 768 x 575 pixel terminal, "Jupiter 7", priced comparably to 512 x 512 terminals, will be exhibited. "Jupiter 12", a new terminal with 1280 x 1024 pixel resolution, will be introduced. All Jupiter terminals include firmware for anti-aliasing of dejagged vectors. Detachable keyboard has 32 user definable keys, a hexadecimal keypad and twin joysticks for independent pan, scroll and zoom. Much commonly available applications software operates on Jupiter terminals.

Booth 2418 **KMW SYSTEMS**

8307 Highway 71 W.
Austin, TX 78735
(512) 288-1453
FRED KLINGENSMITH
Vice President-Marketing

KMW will feature its new VP-30 Vector Processor for Electrostatic Plotters as well as our Protocol Converters for Pen Plotters and CRTs.

Exhibitor Listing

Booth 1129 **J.M. LANCASTER, INC.**

125 Irving Street
Framingham, MA 01701
(617) 875-8893
JOHN LANCASTER
President

Exhibiting with Houston Instrument/Bausch & Lomb Instruments & Systems Div.

Booth 2421 **LANG SYSTEMS, INC.**

1392 Borregas Avenue
Sunnyvale, CA 94086
(408) 734-3332

VIDEOSLIDE 35 offers a quick and low-cost way to generate 35mm slides of images generated on color raster terminals or with personal computers systems such as IBM 5150 and Apple II and III. The product accepts Video input format, including RGB RS-170, NTSC, TTL RGB and others. VIDEOSLIDE 35 is connected to video output or in parallel with the monitor used by the operator. Controls for the table top unit consist of an on-off switch, three thumb-wheel switches for color balance and an exposure time control. Additional software is not required for operation. VIDEOSLIDE 35 accepts conventional 35mm film and developing may be performed by any commercial photographic processor.

Booth 1122 **LEXIDATA CORP.**

755 Middlesex Turnpike
Billerica, MA 01865
(617) 663-8550
***JOYCE M. ANDERSON**
Marketing Communications Specialist

Lexidata manufactures families of medium to high resolution raster display systems used in interactive computer graphics and imaging. The company's display systems operate as intelligent peripheral devices attached to host minicomputers which drastically reduce the host

computer time and memory overhead required to perform picture display and image manipulation functions. Lexidata will exhibit its System 3400 display processors; the System 8000 family of distributed graphics products; and the System 2000 family of intelligent, high performance, low cost graphics display terminals.

Booth 1416 **LOGETRONICS INC.**
7001 Loisdale Road
Springfield, VA 22150
(703) 971-1400
LYN CAMERON
Manager, Market Planning

User Group Contact:
RAY LUCA
Director of Corporate Marketing

The newly-formed Computer Imaging Group of LogEtronics includes four subsidiaries exhibiting at SIGGRAPH '82. LogE/Interpretation Systems Inc. specializes in systems for remote sensing applications, particularly for geophysical exploration and military intelligence operations. LogE/Spatial Data Systems manufactures products for the non-destructive testing, biomedical research and medical radiography fields. LogE/Dunn Instruments Inc. produces cathode ray tube cameras for computer-generated images, specializing in medical radiography, remote sensing and business graphics applications. LogE/CompuSlide Inc. markets computerized systems for graphic presentation and analysis of business data.

Booth 2708 **LUNDY ELECTRONICS & SYSTEMS, INC.**

One Robert Lane
Glen Head, NY 11545
(516) 671-9000
RAY MALONEY
Computer Graphic Marketing Manager

User Group Contact:
KAMIL BAJIN
Product Support Manager

Exhibitor Listing

Lundy Electronics & Systems will be exhibiting the UltraGraf™ Interactive Graphics Design Workstation and the T5684 Color Raster and T5470 Super Resolution Monochrome Raster Graphics Terminals. The UltraGraf™ consists of a vector refresh graphics display containing its own microprocessor and dynamic refresh memory. It offers a 4K x 4K screen resolution and 32K x 32K x 32K virtual map. The T5684 offers 16 colors from a palette of 4096, 768 (X) by 512 (Y) pixel display, 64K bytes of memory, scrolling text store, and a wide variety of drawing styles. The T5471 has a 1536 (X) by 1024 (Y) pixel display and offers the same features as the T5684 except for color.

Booth 2818 **MacDONALD DETTWILER AND ASSOCIATES, LTD.**

3751 Shell Road
Richmond, British Columbia, Canada V6X 2Z9
(604) 278-3411
DAN MURRAY
Marketing Representative

User Group Contact:
DAVE NIMS
Program Manager

MacDonald Dettwiler and Associates (MDA) manufactures a line of high speed, precision digital film recorders for both black and white and color applications. On display will be the Color FIRE 240, using Electroprism technology to produce color images on 240mm (9½") roll film. Also displayed will be samples of imagery produced by the unit.

Booth 1528 **MATRA DATAVISION, INC.**

99 S. Bedford Street
Corporate Place I
Burlington, MA 01803
(617) 229-2630
LUCIEN E. COENEN
National Sales Manager

User Group Contact:
ROBERT H. KREVY
Vice President-Technical Operations

Matra Datavision sells, supports and enhances the EUCLID solid geometry modeling and CAD/CAM software system. This advanced system for mechanical design, manufacturing, and architectural/construction engineering has been in production use in Europe for over two years and is installed in over 50 sites. It is now offered in North America to provide a new generation of CAD/CAM capability, based on the use of true 3-dimensional modeling.

Booth 2426 **MATRIX INSTRUMENTS INC.**

2525 Maricopa Street
Torrance, CA 90503
(213) 320-8334
ART SHUFELT
Vice President-Color Graphics

Quick Color Recorder (QCR): The new Matrix QCR incorporates a digital computer software approach to computer color graphic film recording. MODEL 3000: The Matrix Model 3000 Color Graphic Recorder is a compact, desk top, rack mountable, mobile hard copy device that records information in brilliant, high-resolution, full color from the output of any color raster scan computer terminal. MODEL 4007: The Matrix Color Graphic Recorder Model 4007 is a stand-alone peripheral hard copy device that records information from any color raster scan terminal in brilliant high resolution, full color onto a wide variety of film media.

Booth 2124 **MATROX ELECTRONICS SYSTEMS**

5800 Andover Avenue
T.M.R., Montreal, Quebec, Canada H4T 1H4
(514) 735-1182
ED DWYER
Sales Manager

User Group Contact:
JOSEPH DABBY
Applications Engineering Manager

Matrox manufactures microcomputer and computer graphics boards and systems. Video products are available for Multibus, LSI Q-BUS, STD-BUS, UNIBUS, S-100, and EXORCISOR. At SIGGRAPH '82, Matrox will be displaying its new color video board set, RGB-ALPHA and RGB-GRAPH, and VAF-512, which provide 512 x 512 x 4 graphics, alphanumeric overlay, and video digitizing. The GT-600 graphics upgrade card for DEC VT-100 terminals will also be featured.

Booth 2322 **MATSUSHITA COMMUNICATIONS INDUSTRIAL CO., LTD.**
(Panasonic, Secaucus, NJ)

Tshashima-higashi, Kohuku-ku
Yokohama, Japan 223
(201) 348-5304
FRANK YAMANAKA
Marketing Manager

User Group Contact:
STEVE YUHAS

Matsushita Communications Industrial will exhibit a new type of LOGIC ANALYZER model VP-3620A, which has a microprocessor development function. Unique in this instrument is its error detecting and logic circuits, and the analyzing of the state and timing sequences. This greatly facilitates the microprocessor development function. A new intelligent X-Y PLOTTER will also be exhibited, model VP-6801A. It features a high speed, six color, continuous recording plotter with a versatile interface. The unit's design is certainly innovative, featuring a plotting speed of 200mm/sec; a resolution of 0.1mm; a plotting area of 230mm by 180mm and the availability of six felt pens.

Booth 1303 **MCI/QUANTEL**

2483 E. Bayshore Road/Suite 100
Palo Alto, CA 94303
(415) 856-6226
N. BUD SCHNEIDER
Marketing
GEORGE A. GRASSO
President

MCI/Quantel manufactures and markets a wide range of digital video products for broadcast use and for scientific/industrial applications. Broadcast products on exhibition include: the Paint Box, a digital graphics/paint/character generation/animation system; and the DLS 6000 series digital library system for storage and replay video still pictures. Scientific/industrial products include the Intellect 100 image processing system and the Intellect 100 PDS program development system. Intellect 100 is capable of picture capture, enhancement, analysis, annotation, storage and retrieval. It combines the immediacy of a continuously optimized image with the power of computer analysis and manipulation.

Booth 1643 **MEASUREMENT SYSTEMS INC.**

121 Water Street
Norwalk, CT 06854
(203) 838-5561
DONALD W. FISHER
Sales Engineer

Measurement Systems manufactures a line of positioning and tracking controls. They include joysticks, trackballs and force operated controls which are available with analogue, pulse or coded digital output, either parallel or serial RS-232.

Exhibitor Listing

Booth 1008 **MEGATEK CORP.**

3985 Sorrento Valley Blvd.
San Diego, CA 92121
(714) 455-5590
SUSAN HARTWIG-HOOD
Manager, Marketing Communications

User Group Contact:
GARY WASHAM
Director, Product Marketing

Megatek produces a complete line of high-speed stroke-refresh and raster color graphic systems. Units on display: WHIZZARD® 7210, 21″, full refresh display with 4096^2 resolution. WHIZZARD® 6245, 19″, monochromatic display, 1024^2 resolution. WHIZZARD® 7250, 19″, 16 color display, 512^2 resolution. WHIZZARD® 7255, 19″, 16 color display, 1024^2 resolution. WHIZZARD® 7600, color raster system with local intelligent interface and 3-D surface processor. WAND™ software supports all Megatek systems. TEMPLATE™, device independent, high-level software.

Booth 2024 **METHEUS CORP.**

Box 1049
Hillsboro, OR 97123
(503) 640-8000
SAM BOSCH
Director of Marketing & Sales

User Group Contact:
GARY ROMANS
Marketing Manager, Graphics Systems

The 400™ Display Controller offers a price/performance breakthrough for color raster graphics by providing drawing speeds of 1 million pixels/second. A patented memory architecture allows the use of 64K RAMs to achieve the drawing speed, while allowing single board construction for reliability. Other features include 16 million pixel/second rectangle fill, PIXBLT™ hardware instruction for pixel block moves, 4 or 8 bit planes with a

16.7 million color palette, on-board signature analyzer and self-test microcode, and the AXIA™ Graphics Package, a CORE compatible, FORTRAN graphics utility library.

Booth 2703 **MINI-MICRO SYSTEMS**

221 Columbus Avenue
Boston, MA 02116
(617) 536-7780
RICHARD DALRYMPLE
Director of Marketing

User Group Contact:
SUSAN RAPPAPORT
Promotion Director

Mini-Micro Systems is edited for both OEM systems personnel who design and/or apply minimicrocomputer related equipment in their systems and sophisticated end users configuring their own mini or micro systems. Coverage includes applications for minicomputers, microcomputers, memory systems, peripheral equipment, data communications, distributed data processing and other mini-based systems.

Booth 2017 **MODGRAPH, INC.**

1393 Main Street
Waltham, MA 02154
(617) 890-5764
HENRY R. KUNICKI, JR.
Marketing Manager

G-100 Graphics Terminal. 768 x 585 resolution with independent alphanumerics overlay, 15″ screen, P-39 green phosphor, ANSI x 3.64 compliance, and PLOT-10 compatibility. V-100 Color Graphics Camera provides high resolution color film output from most RGB display systems. Film formats include 35mm, Polaroid 4 x 5, SX-70, and 8 x 10. GVD-02 Graphics Generator is a family of low cost modular graphics boards with resolution from 256 x 256 to 512 x 512 for monochrome or grey scale or color display. Optional look up tables, light pen, frame grabber, and digitizers.

Exhibitor Listing

Booth 3006 **MONITERM CORP.**

7180 Shady Oak Road
Eden Prairie, MN 55344
(612) 941-8383
WARD C. JOHNSON
President

High resolution CRT Monitors. Full page non-interlaced displays for office automation. 1024 x 1024 non-interlaced display for CAD/CAM and Computer Aided Graphics.

Booth 2337 **MOSTEK CORP.**

1215 W. Crosby Road
Carrollton, TX 75006
(214) 466-6000
FRANK HOPE
Graphics Marketing

United Technologies' Mostek Corp. is adding raster graphics to its systems product offerings. The MK8401 (640 x 512) and MK8402 (1280 x 1024) systems offer 256 colors from a palette of 16.8 million colors and high-functionality software based on the SIGGRAPH Core Standard. The two systems also feature a high-performance pipeline multiprocessor display based on the 68000 processor, VMEbus architecture, two additional bit slice processors and double-buffered pixel memory. The VMEbus and board architecture permits customers to easily configure systems to their specific requirements. The MK8401 can be upgraded to an MK8402 simply by adding two more pixel memory boards.

Booth 1236 **NICOLET ZETA CORP.**
Booth 2232

2300 Stanwell Drive
Concord, CA 94520
(415) 671-0600
BEVERLY AQUINO
Marketing Administrator

Nicolet Zeta manufactures a full line of high performance intelligent drum plotters. Featured

among the equipment to be shown will be the new ZETA 8, an 8-pen desk top plotter. Also the latest addition to our larger plotters, the ZETA 3610, 36″ drum plotter. All Zeta plotters feature the most advanced microprocessor based controller in the plotter industry. We also utilize continuous feed paper, keeping operator intervention to a minimum.

Booth 1808 **NISSEI SANGYO AMERICA, LTD.**

40 Washington Street
Wellesley Hills, MA 02181
(617) 237-9643
KEVIN BOWLER
Marketing Manager

User Group Contact:
DOMINIC CUCE

Hitachi medium-high resolution color display monitors. Low cost TTL and analog color monitors for use in color graphic systems and terminals. Nine different models will be shown, ranging from 560 x 240 resolution to 720 x 416 resolution, using 13″ as well as 19″ picture tubes.

Booth 2838 **NORPAK LIMITED**

10 Hearst Way
Kanata, Ontario, Canada K2L 2P4
(613) 592-4164
PETER ENGLER
Marketing Manager

Norpak develops, engineers, manufactures and markets a range of color graphics display terminals and associated digital electronic hardware. Its products include interactive computer graphics and image processing systems, ranging from very high resolution visual data processors to products designed for the general consumer. Norpak is a principal developer and major manufacturer of videotex system hardware. Norpak products implement the North American videotex standard (AT&T/PLP). Norpak designs and manufactures systems for

educational applications, process control and computer-aided design systems for industrial and commercial use, including the Super-VISION workstation for CAD/CAM applications. Norpak also owns Hemton Corp., which offers page creation services and electronic projection systems.

Booth 2705 **NUMONICS CORP.**

418 Pierce Street
Lansdale, PA 19446
(215) 362-2766
***ERIC A. DOERRER**
Sales Manager

Numonics manufactures a complete line of free-cursor and restrained cursor digitizers for the OEM and the end user. MODEL 2300: competitively priced digitizer/tablet for large-volume users and single-unit users with their own graphics software. MODEL 2400: application-oriented digitizer/tablet with area, length and an extensive application program library. MODEL 1224: multi-function graphics analyzer with area, length and digitizing capability for any material on any surface. Also with an extensive program library. MODEL 5400: competitively priced microprocessor-based plotter with ASCII control commands. Embossed roller design for low-inertia paper transport, producing exceptionally high line quality.

Booth 1815 **OCLI/OPTICAL COATING LABORATORY, INC.**

2789 Northpoint Pkwy.
Santa Rosa, CA 95401
(707) 525-7441
BOB CARLSON
Sales Manager, Display Products Div.

OCLI's Display Products Div. will exhibit their visual display products and coatings which improve the viewability of CRT terminals by enhancing contrast and minimizing glare without degrading resolution.

Booth 1821 **OCTEK INC.**

7 Corporate Place, S. Bedford Street
Burlington, MA 01803
(617) 273-0851
SUSAN S. SOLOMON
Manager, Market Development

Octek will exhibit its real time Image Analysis Processor which includes an extensive library of Fortran subroutines to provide complete control over processing functions. The micro-coded instruction set provides versatile programs for numerical and connectivity analysis, vector summation, graphics partitioning and windowing, DMA transfers or whatever your requirements demand. The Machine Vision Module (MVM) can dramatically expand applications for your robot manipulators to analyze object orientation; count holes; measure size, area, perimeter and distance along major and minor axes, in addition to comparing an object feature with a standard object.

Booth 2638 **OPTRONICS INTERNATIONAL, INC.**

7 Stuart Road
Chelmsford, MA 01824
(617) 256-4511
TIM DODKIN
Eastern Regional Manager

User Group Contact:
JIM DEIGAN
Technical Manager

Optronics International, a leading manufacturer of image processing systems, offers a complete line of scanning microdensitometers and film plotters. Not only can Optronics systems digitize, enhance, manipulate and reconstruct imagery at high speeds with high resolution, but they can also accept formats from 10″ x 10″ to 40″ x 40″ in black and white or color. They offer sequential pass color separation capability, data compression, halftone screening and tone panel generation. Applications include remote sensing, cartography, medical and industrial radiography, non-destructive testing, CAD/CAM and P.C. board artwork generation.

Exhibitor Listing

Booth 2817 **ORCATECH INC.**

2680 Queensview Drive
Ottawa, Ontario, Canada K2B 8H6
(613) 820-9602
JOHN E. LUGSDIN
Director of Marketing

Orcatech will be exhibiting for the first time its range of Computer Graphics Systems. The Orcatech series of graphic computer products represents a new solution to many problems faced by users. The products combine the fastest of high resolution raster graphics with the application processing power to handle even the most demanding user program. All this hardware power is made usable through a complete software development and run-time environment specifically designed to reduce the cost of major program development.

Booth 1618 **PANASONIC INDUSTRIAL COMPANY**

One Panasonic Way
Secaucus, NJ 07094
(201) 348-5278
NICK DeGAETANO
Product Specialist

User Group Contact:
MARGE LOPEZ
Sales Correspondent

Panasonic will feature: high performance cathode ray tubes; high resolution color CRTs with in-line and delta guns; high density dot masks and optional ergonomic features; high resolution monochrome CRTs capable of displaying 2000 x 2000 dots.

Booth 2122 **PERITEK CORP.**

5550 Redwood Road
Oakland, CA 94619
(415) 531-6500
PAT MARKOVICH-TREECE
Marketing

User Group Contact:
TOM BIRCHELL
President

Peritek manufactures performance-oriented hardware and software products for adding-in or adding-on to systems which use the popular Q-Bus. Available for viewing is the company's line of color and monochrome raster graphics interfaces and high-speed multi-processor links, Winchester disk storage, color and monchrome monitors, display terminals, accessory keyboards, and other items related to raster graphics applications. Peritek addresses the OEM and quantity end-user with its line of modular, add-in assemblies and also offers custom intelligent display systems for turnkey users configured from standard components.

Booth 1724 **PHOENIX COMPUTER GRAPHICS, INC.**

119 Board Road
Lafayette, LA 70508
(318) 234-0063
STEVE BLANKENSHIP

User Group Contact:
ELLIOTT M. BOUILLION
Vice President

Phoenix Computer Graphics designs and manufactures color graphic display systems for business, industry and engineering applications. In addition to the Raster 640 color graphic computer terminal with peripherals that include floppy disks, digitizers and hard copy devices, Phoenix will announce that "The Legend Lives" at SIGGRAPH '82, with the introduction of the newest color graphic system, the Phoenix 1024.

Booth 2524 **PHOTONICS SPECTRA**
(Formerly OPTICAL SPECTRA)

Berkshire Common
Pittsfield, MA 01201
(413) 499-0514

JOSEPH BURKE
JACK FERGUSON
BILL McCUE
Sales Representatives

The international magazine for the photonics technology, covering optics, electro-optics, lasers, fiber optics and vacuum technology. Circulation of over 37,000 is distributed monthly to scientists, engineers, designers and managers involved in this technology. Includes 21 monthly departments, plus special feature articles.

Booth 2837 **PHOTONICS TECHNOLOGY**

Box 432
Luckey, OH 43443
(419) 666-0033
***DONALD K. WEDDING, SR.**
Vice President-Marketing

Photonics Technology manufactures standard and custom size display terminals, including the world's largest non-projected display — a flat, ½-inch thick, transparent, meter-diagonal, AC gas discharge (plasma) display panel with a viewing area of over 5.3 square feet and a resolution of over 2500 pixels per square inch. Smaller area displays range in size from a few centimeters up to one meter. Larger displays up to three meters are being developed. Display resolutions range up to 10,000 pixels per square inch or more.

Booth 2402 **POLAROID CORP.**

549 Technology Square
Cambridge, MA 02139
(617) 577-2000
JIM HARTNETT

Polaroid is introducing a new line of film recording systems utilizing tri-color video photography to produce high quality instant hard copy from color computer graphics systems. Output media include: Color overhead projection transparencies in 8″ x 10″ format;

reflective color prints in 8x10, 4x5 and SX-70 formats.

Booth 2222 **POLHEMUS NAVIGATION SCIENCES, INC.**

Box A, River Road
Essex Junction, VT 05452
(802) 879-6547
E.B. BLOOD
Director of Special Projects

Polhemus Navigation Sciences introduces a unique three-dimensional digitizer. The digitizer is a true six degree of freedom measurement device which allows the user, with a held stylus, to determine the X, Y, Z coordinates of a point located on a non-conductive, three-dimensional model. This data, along with the orientation of the stylus, is immediately available for computer usage. Initially developed to provide a fast, error-free means of digitizing models for a computer generated imagery data base, the digitizer can be used to digitize engineering models, collect dimensions from piping and plant layout models and provide position and orientation input for animation.

Booth 2423 **PRECISION/ECHO**

485 E. Middlefield Road
Mountain View, CA 94043
(415) 961-7145
PAUL R. INSCO
National Sales Manager

Precision/Echo offers a full line of magnetic video disc recorders. The Image Maker records up to 512 full frames of color video signal with random access, variable speeds, variable endless loops and sequences, bi-directional playback. It is capable of a variety of playback manipulations for image analysis and animated sequence building. Playback speeds vary from real time to freeze frame. Custom computer interfaces available. The Frame Bank records 400 full video frames on an interchangeable flexible discassette allowing archiveable frame

storage. Random access available from remote control. Custom computer interfaces available.

Booth 1135 **PRECISION VISUALS, INC.**

250 Arapahoe Avenue
Boulder, CO 80302
(303) 449-0806
STEVEN J. FREDRICKSON
Director of Sales

User Group Contact:
SCOTT ALLMAN
Director of Customer Services

Precision Visuals develops, markets and supports general purpose, device and machine independent graphics software tools. Products include: DI-3000, a "toolbox" of Fortran-callable graphics subroutines based on the CORE System Graphics Standard; GRAFMAKER, a package of user-callable subroutines for high-level data presentation; Contouring, a 3D-display package for gridding randomly positioned data and generating contour maps; Metafile Translator, a "time independent" picture editor; and a new user friendly, menu driven interface to GRAFMAKER (to be introduced at SIGGRAPH '82).

Booth 2917 **PRINTACOLOR CORP.**

5965 Peachtree Corners E.
Norcross, GA 30091
(404) 448-2675
DAN BYFORD
Public Relations Director

User Group Contact:
RAYMOND A. KEITHLEY
Marketing Manager

PrintaColor manufactures a complete line of ink-jet color hardcopy devices for use with a variety of color graphics computers and terminals. These models — including the GC8000, IS8001, HR8002, GP1024 and a modular system for OEMs — operate either on a

character addressable or dot addressable basis. All models incorporate three basic inks and overlay to get seven colors, plus white (paper). Interfaces are available for graphics computers manufactured by Intelligent Systems, Chromatics, IBM, Apple and others. All models interface via RS-232C or Centronics-compatible I/O ports.

Booth 2526 **QUADRAM CORP.**

4357 Park Drive
Norcross, GA 30093
(404) 923-6664
LELAND STRANGE
Vice President

Manufacturer of: MICRO-COLOR low cost graphics processor with the capability of generating 512 x 512 points and a 64 color palette on medium resolution monitors. OMEGA DATA MX-700 series video terminal display of 66 lines with 160 characters per line. PLOT-10 graphics compatibility. OMNICOLOR ink-jet color printer system for popular microcomputers (IBM, Apple II, Apple III). INTERFAZER intelligent controller/buffer for sharing (up to 8 CPUs) and spooling (up to 128K) printers or plotters. MICROFAZER printer buffers and converters. Parallel-to-parallel, parallel-to-serial, serial-to-parallel and serial-to-serial buffers of 8K to 256K. QUADBOARD and other peripheral boards for the IBM and Apple personal computers.

Booth 2624 **QUALITY MICRO SYSTEMS, INC.**

57 S. Schillinger Road
Mobile, AL 36608
(205) 343-2767
JACK MEYERS
Distribution Sales Manager

Quality Micro Systems (QMS) will exhibit several line printer controllers and will demonstrate the ease of creating business graphics such as bar codes, variable size characters, reverse imaging, shading, lines, boxes, forms, logos,

industrial labels, etc., with QMS products. QMS will also demonstrate the ability to interface with a wide variety of different computer systems, including IBM, Honeywell, Hewlett-Packard, Wang, Prime, NCR, Burroughs, DEC, and many others. Printers to be displayed include the following: an intelligent high speed laser printer, a Printronix printer, and an NEC letter quality printer.

Booth 1612 **RAMTEK CORP.**

2211 Lawson Lane
Santa Clara, CA 95050
(408) 988-2211
CHERYL LANDMAN
Manager, Corporate Communications

Ramtek will display a complete line of raster scan color graphics and imaging displays and color hard copy devices, including: (1) 9400 Series Graphics and Imaging Display Systems, with resolution to 1280 x 1024. (2) 6000 Series Colorgraphic Terminals, featuring the 6211 Colorgraphic Terminal. A low cost desk top terminal with resolution up to 640 x 480. (3) 4100 Colorgraphic Printer. Full color dot matrix printer with separate printheads and re-inking cartridge ribbons for high-quality, inexpensive plain paper hardcopy.

Booth 2508 **RASTER TECHNOLOGIES**

9 Executive Park Drive
North Billerica, MA 01862
(617) 667-8900
STEPHEN E. COIT
Director of Marketing

Raster Technologies will be exhibiting new members of the MODEL ONE family of compatible graphics display systems. All members of the MODEL ONE family feature a powerful multiple-processor architecture and advanced graphics capabilities for excellent picture quality and superior interactive graphics performance. The MODEL ONE line supports a wide variety of applications, including CAD, solid modeling,

presentation graphics, seismic and earth resources imaging and medicine.

Booth 2622 **RECOGNITION CONCEPTS, INC.**

924 Incline Way/Box 8510
Incline Village, NV 89450
(702) 831-0473
RICHARD PIZZA
Vice President

User Group Contact:
HARRY AINE
Senior Systems Analyst

Manufacturer of Real-Time Image Processing Systems featuring single or multi-channel image display resolutions from 256 x 256 to 1024 x 1024 x 16 bits.

Booth 2632 **RUBEL SOFTWARE/A DIVISION OF ANDREW RUBEL & ASSOCIATES, INC.**

One Soldiers Field Park 605
Boston, MA 02163
(617) 876-7993
NANCY ZAWADZKI
Marketing Manager

User Group Contact:
EVE GOLDFARB
Product Manager

Rubel Software provides BLOX (™ applied for) software tools. Demonstrated at SIGGRAPH '82 will be BLOX Graphics Builder (™ applied for) and BLOX documentation tools. BLOX Graphics Builder creates interactive graphics applications. It includes table driven screen, menu, and finite state interaction control; on-line help facility; and commonly needed graphics and data base functions. Tables are created with an interactive table generator or any text editor. Simple specification format combines custom code with presupplied BLOX functions. Application developers need only write application's "action routines". BLOX Documentation Generator automatically creates help files

and formatted documentation. Other BLOX documentation tools are general purpose and available separately.

Booth 2003 **SAS INSTITUTE INC.**

Box 8000
Cary, NC 27511
(919) 467-8000
SAS MARKETING DIVISION
Marketing Representative

User Group Contact:
LAURA M. WHALEN
Advertising

SAS Institute will exhibit SAS/GRAPH, a SAS program product that provides device-intelligent color graphics. SAS/GRAPH is used in business and research for presentation and information graphics applications. Several colors, patterns, and font styles can be used for titles, footnotes, and notes. More than 12 procedures are available for plotting; displaying bar, pie, star, and block maps; making slides; and replaying stored results for management presentations. Major graphics devices are supported. SAS/GRAPH users must have SAS; SAS runs on IBM 360/370/30xx/43xx and compatible machines in batch and interactively under OS, OS/VS, VM/CMS, DOS/VSE, and TSO.

Booth 2922 **SCHERAGO ASSOCIATES, INC.**

1515 Broadway
New York, NY 10036
(212) 730-1050
RICHARD L. CHARLES
Executive Vice President-Sales

User Group Contact:
HERBERT L. BURKLUND
Executive Vice President-Marketing

Scherago Associates publishes *Computer Graphics News*, and is exclusive advertising sales representative for *Science* and *Engineering Times*.

Booth 2504 **SCIENCE ACCESSORIES CORP.**

970 Kings Highway W.
Southport, CT 06490
(203) 255-1526
H.A. CLEVELAND
Vice President-Marketing

User Group Contact:
DAVID BLUMSTEIN
Regional Sales Manager

Science Accessories manufactures a complete line of 2-Dimensional and 3-Dimensional Graf/Pen Sonic Digitizers. 2-Dimensional Sonic Digitizers include the microprocessor based GP-6 with active area up to 60″ x 72″ and offer length, area, scale and axis programs, to name a few. The GP-7 GRAFBAR, with an active area of 18″ x 24″, has the largest digitizing area of any of the low cost digitizers available. The 3-Dimensional digitizer permits digitizing volumes of up to 10′ x 10′ x 10′ and outputs real time XYZ cartesian coordinates. Multiplexer option permits up to 16 different points to be digitized at any one time.

Booth 2117 **SCITEX AMERICA CORP.**

75-D Wiggins Avenue
Bedford, MA 01730
(617) 275-5150
STEVEN KING
Vice President-CAD Systems

User Group Contact:
DANIEL HERZKA
Manager, Applications Engineering

Scitex will be exhibiting a complete Response 250 system consisting of a 36″ x 36″ scanner, a color editing console, a 40″ x 72″ laser photoplotter, and supporting computer facilities. Demonstrations will include scanning of monochrome and color engineering graphics, interactive and batch raster/vector editing, raster-to-vector conversion, vector-to-raster conversion, and high-speed laser photoplotting. Applications of the system in cartography,

statistical graphics, and engineering graphics will be shown.

Booth 2608 **SEIKO INSTRUMENTS U.S.A., INC.**

2620 Augustine Drive/Suite 140
Santa Clara, CA 95051
(408) 727-0768
GRAPHIC DEVICES & SYSTEMS DIV.

Seiko Instruments will introduce the GR-2212 (monochrome) and the GR-2214 (color) graphic terminals. The terminals combine a 1024 x 780 high resolution raster display with an exclusive twin beam hardware anti-aliasing system. A dual processor architecture supports full 2D interactive capabilities and high speed communications with increased performance. Segment buffer memory of up to 768K bytes allows the users to create and access local picture elements without host intervention. Also available will be the GR-10, GR-12 digitizing tablets and a GR-60 142 dots per inch hard copy output device.

Booth 1542 **SELANAR CORP.**

437A Aldo Avenue
Santa Clara, CA 95050
(408) 727-2811
LEE A. AMBROSINI
Vice President-Marketing/Sales

User Group Contact:
BRIAN P. MURPHY
National Sales Manager

Selanar manufactures low cost retrofit graphics enhancements for a variety of alphanumeric terminals, including the VT100 series terminals manufactured by Digital Equipment, C. Itoh's CIT-101, the TeleVideo 925 and 950, and Cobar 3100 and 3132. Selanar's graphics enhancements are field installed and allow the terminal to retain all of its original capabilities while new commands are added to provide graphics capabilities. Selanar's powerful "native" mode which includes a microprocessor-based

vector generator to simplify programming is standard on every board. Tektronix 4010 and 4014 emulation also are available on the graphics boards, as well as friendly, inexpensive software packages to support the native mode. Cross hair cursor and light pen options also are available from Selanar.

Booth 1722 **SKY COMPUTERS, INC.**

Foot of John Street
Lowell, MA 01852
(617) 454-6200
JOHN A. CARBONE
Director of Sales

Sky Computers manufactures a line of floating point array processors for microcomputer systems. These 32-bit high speed processors perform up to 1 million floating point operations per second. Sky offers these systems for the Q-Bus (LSI-11), Multi-Bus (8086) and VersaBus (MC68000). The units plug directly into the host bus and directly access up to 16 megabytes of host memory. Sky supports these "micro number crunchers" with a library of subroutines, callable from a user's application program. SKY MNK ARRAY PROCESSORS are able to perform many graphics functions such as coordinate transformations and 3-D rotations, as well as image processing functions such as differencing, edge detection, and pattern recognition at speeds up to 300 times faster than the microcomputer alone.

Booth 1712 **SUMMAGRAPHICS CORP.**

35 Brentwood Avenue
Fairfield, CT 06430
(203) 384-1344
KATHY DUNN
Marketing Communications Manager

User Group Contact:
RON McCLURE
National OEM Sales Manager

Summagraphics, the world's leading manufacturer of digitizers and data tablets, will be exhibiting its full digitizer product line. On display will be the Bit Pad family of digitizers featuring low-cost, high reliability digitizers for CRT cursor control, data entry and menu and graphics insert applications. The ID series digitizers designed for OEM applications feature a full range of tablet sizes, from 11″ x 11″ to 42″ x 60″, standard resolutions and a variety of interface options affording compatibility to nearly every computer on today's market. High resolution and high accuracy models are available with the Supergrid and Summagrid digitizers which also feature a variety of sizes, optics, interfaces and options.

Booth 2725 **SUN-FLEX COMPANY INC.**

20 Pimentel Court
Novato, CA 94947
(415) 883-1221
DOUGLAS ROSESTONE
Vice President-Marketing

User Group Contact:
WALTER L. GOOD III
Accounts Representative

Sun-Flex, the leading manufacturer of glare reduction filters for video displays, announces the TOUCHPEN SYSTEM. The new product is an on-screen location digitizer, serving as an attractive alternative to light pens and other digitizing devices. Compared to other methods, the TOUCHPEN has greater flexibility and ease of use, while retaining all the benefits of Sun-Flex's optical filter. The TOUCHPEN is a microprocessor based, stylus operated, graphics capable interface which enables a CRT operator to bypass the keyboard and communicate directly with the CPU.

Booth 1243 **SUN MICROSYSTEMS, INC.**

2310 Walsh Avenue
Santa Clara, CA 95051
(408) 748-9900
VINOD KHOSLA
President

The SUN Workstation™ is a high performance graphics workstation. It includes a Motorola 68000/68010 processor providing virtual memory, hardware assist for graphics and an ETHERNET local network. The use of Intel's Multibus™ allows system expansion by adding memory, color frame buffers, and standard peripherals such as SMD disks and tapes. A distributed version of Western Electric's UNIX™ allows workstations to run without disks. A CORE compatible graphics package optimized to the system architecture provides a powerful and flexible development system.

Booth 1628 **SUPERSET, INC.**

11035 Roselle Street
San Diego, CA 92121
(714) 452-8665
JERRY DONALDSON
Director of Marketing

User Group Contact:
GIUSTO FONDA-BONARDI
President, Users Group

Superset manufactures the Portable Graphics Mainframe (PGM), a graphics based distributed processor, controller or stand-alone computer. The PGM's 48-bit precision and Virtual Memory architecture make it a cost effective innovative device which permits the compilation, linking and execution of massive FORTRAN programs beyond the reach of minicomputers (examples: DISSPLA™, INTERACT and MOVIE.BYU). A prototype of Superset's model CD-2 high resolution color monitor, driven by a high speed channel at transmission rates of over one Megahertz, will also be demonstrated. Superset provides drivers for over 40 different peripheral devices.

Exhibitor Listing

Booth 2928 **SYMBOLICS, INC.**

9600 DeSoto Avenue
Chatsworth, CA 91311
(213) 998-3600
ROBERT D. STONE
Manager, Advertising & Marketing Support

Symbolics manufactures powerful Lisp-based computers for Artificial Intelligence, CAD, VLSI design, simulation training, and command and control applications. These computers are 36-bit minicomputer based workstations complete with high resolution B & W and color graphics, local area networks and large hard disk file systems. Symbolics' strengths are very sophisticated interactive display software, full complement of local networking facilities, high performance Lisp-based (Fortran available soon) computing and AI expertise. Symbolics' Laser Graphics Printer features high resolution (480 x 240 DPI) for text, graphics, and typography; embedded MC68000 controller, software, and 1M Byte memory. It interfaces to most minicomputers and can use existing operating systems.

Booth 3016 **TECHNOLOGY & BUSINESS COMMUNICATIONS, INC.**

730 Boston Post Road/Suite 27
Sudbury, MA 01776
(617) 443-4671
STANLEY KLEIN
President/Publisher

User Group Contact:
LISA SENIO
Assistant to President/Publisher

Publications: (1) The S. Klein Newsletter On Computer Graphics. Twice monthly. Includes reports, analyses and interpretation of significant developments in computer graphics for users and vendors. Covers engineering design, cartography, business and statistical graphics, image processing, animation, and related disciplines. (2) The S. Klein Directory of Computer Graphics Suppliers: Hardware,

Software, Systems and Services. 1982-83 edition, 128 pp. Contains information on 300 suppliers: year founded, sales, personnel, products/services, complete address, phone, person to contact, and cross reference index by application and/or technology specialization. Lists market research reports and organizations routinely sponsoring courses on computer graphics.

Booth 1216 **TEKTRONIX, INC.**

Box 500
Beaverton, OR 97077
(203) 877-1494
JIM HATTON
District Sales Manager

Tektronix, a leading manufacturer of computer graphics products for engineering and scientific markets, will exhibit computer graphic terminals, including three members of the recently introduced 4110 Series Computer Display Terminals: the 4112, featuring a monochrome raster display; the 4114, including a high resolution DVST display; and the 4113 computer display terminal with color raster display. The 4114 and 4113 will both be shown in the desk configuration. The 4050A Series Desktop Computers with recently introduced enhancements will be exhibited. A 2-D Drafting workstation will be shown including: 4054A Desktop Computer, 4663 C-size Interactive Digital Plotter, Graphic Tablet and 4909 Multi-User File Management System. Peripheral products at the Tektronix booth will include Electrostatic and Electrophotographic hard copy units and interactive digital plotters.

Booth 1516 **TERAK CORP.**

14151 N. 76th Street
Scottsdale, AR 85260
(602) 998-4800
G. PETER GAGNET III
National Sales Manager

User Group Contact:
WALTER WHITE, JR.
Manager, Marketing Communications

Terak manufactures and distributes desk top graphics computer systems. Used in both stand-alone and distributed processing networks, multiple options and peripherals are available. Products include both black and white and color graphics systems with resolutions of 320 x 240 and 640 x 480. Character fonts are user programmable in both the black and white and color systems. Terak supplies multiple operating systems and languages, graphics support in conformance with the SIGGRAPH Core standards and complete documentation for its systems.

Booth 2617 **THREE RIVERS COMPUTER CORP.**

720 Gross Street
Pittsburgh, PA 15224
(412) 621-6250
DOUG CALAWAY
Director of Marketing

Three Rivers Computer will display the PERQ, a fully micro-programmed minicomputer designed for a single user. The PERQ system includes a 16-bit CPU with a high level, language directed architecture and integrated I/O controllers. It offers 512 KB of memory expandable to 1 million bytes. Its graphic display's 800,000 addressable points are refreshed 60 times per second, providing exceptionally high resolution graphics. PERQ is also compatible with the Ethernet standard, an option that allows the system to be interconnected as a Distributed Interactive Network. Three Rivers will be displaying this Ethernet capacity at SIGGRAPH '82 as well as the LBP-10 Laser Printer, which comes complete with PERQ Interface.

Booth 1636 **TRILOG, INC.**

17391 Murphy Avenue
Irvine, CA 92714
(714) 549-4079

JIM MARSHALL
Eastern Regional Sales Manager

User Group Contact:
TOM SMITH
International Sales Mgr./Applications Engr.

Trilog is a leading manufacturer of line printers. The COLORPLOT™ printer will be shown at SIGGRAPH '82, demonstrating full color graphics output on plain computer paper. A near letter quality line printer as well as a color graphics capable plotter, the COLORPLOT™ family offers the user versatility with reliability that can't be beat. Equally suitable for CAD/CAM, scientific, mapping, process control or business graphics applications. Will also make full color hard copy of color terminal screen on plain paper.

Booth 2302 **VECTOR AUTOMATION, INC.**

Village of Cross Keys
Baltimore, MD 21210
(301) 433-4202
PHILLIP A. ADAMS
Vice President-Marketing

Vector Automation manufactures the following products: (1) CADMAX-I computer aided design drafting system for 2D mechanical, electrical schematic and nesting applications using stroke refresh terminal technology. (2) GRAPHICUS-80 stroke writer refresh display designed for 2D and 3D graphics applications requiring high resolution via a host and capable of displaying 66,000 short vectors flicker free.

Booth 1428 **VERSATEC/A XEROX COMPANY**

2710 Walsh Avenue
Santa Clara, CA 95051
(408) 988-2800
DAVE HATFIELD
Director of Market Development & Support

User Group Contact:
PATRICIA KELLEHER
Manager of Exhibits

A SIGGRAPH '82 "must": watch our V-80 plotters and wide plotters producing continuous high resolution computer graphics on film and paper in widths from 11″ to 36″. Ask our team of trained specialists any question about the Versatec family of printers/plotters. Be sure to ask about our expert field service and the full line of film, paper and toner supplies that have made Versatec the world's leading manufacturer of electrostatic printers/plotters.

Booth 2318 **VIA SYSTEMS, INC.**

11 Concord Street
Nashua, NH 03060
(603) 889-4197
RICHARD JENNINGS
Vice President-Marketing

VIA Systems will demonstrate its new VIA 100, first in a series of high performance, single user, interactive graphics systems offering distributed processing, fast response, high resolution color graphics and superior VLSI design software. The system includes DEC LSI 11/23 minicomputer with 256K bytes of main memory, high speed 8″ 35 megabyte Winchester disk drive and a 17 megabyte tape cartridge; the integrated design station includes a graphics subsystem containing additional computing power and a 19″ high resolution 60Hz flicker free color monitor as well as a user programmable alphanumeric terminal with function keys, and an 11″ x 11″ data tablet for on-line design.

Booth 1634 **VICOM SYSTEMS, INC.**

2307 Bering Drive
San Jose, CA 95131
(408) 946-5660
RICHARD P. LaJEUNESSE
Vice President-Marketing

User Group Contact:
MARK SANTORA
National Sales Manager

Digital Image Processing Systems.

Booth 2631 **VISUAL TECHNOLOGY, INC.**

540 Main Street
Tewksbury, MA 01876
(617) 851 5000
PHIL CHARLAND
Technical Support Manager

User Group Contact:
HOWARD GERSTEIN
Product Marketing Manager

Visual Technology designs, manufactures and markets a broad range of alphanumeric and graphic video display terminals. The company will be featuring the Visual 550 and Visual 500 graphics terminals at SIGGRAPH '82. They have 768 x 585 resolution on a large 14" screen. The auxiliary port supports printer/plotters for alphanumeric and graphics hardcopy and a data tablet. Advanced graphic features include vector draw, point plot, rectangular draw, line styles and patterns with rectangular pattern fill. They are designed with separate display memories for alpha and graphics with 80 x 33 text format.

Booth 1819 **WATANABE INSTRUMENTS CORP.**

3186-D Airway Avenue
Costa Mesa, CA 92626
(714) 546-5344
JACK CAMPBELL
Digital Products Manager

Watanabe manufactures and distributes several intelligent, digital, flat-bed, cost effective plotters. They come in sheet or roll feed and 1, 2, 6 or 10 pen configurations. A full complement of RS-232C, IEEE-488 or parallel interfaces, software and service support is available.

Exhibitor Listing

Booth 1227 **XEROX CORP.**
PRINTING SYSTEMS DIV.

880 Apollo Street
El Segundo, CA 90245
(213) 615-6363
DON BERARD
Product Manager

Xerox will be exhibiting their 6500 Color Graphics Printer which creates full color permanent hardcopy from digital input. The Color Graphics Printer is a laser scanning, raster imaging system which accepts serial computer data (TTL or DTL compatible) and delivers full color images with a uniform resolution of 100 points per inch.

Booth 1734 **3M COMPANY/INDUSTRIAL OPTICS**

3M Center
St. Paul, MN 55101
(612) 736-2240
CHUCK HYP
Product Supervisor

Industrial Optics will be exhibiting a line of visual comfort systems which make viewing a full color CRT more comfortable. The Visual Comfort Systems combine a very high resolution anti-glare treatment on a "microlouvered" film which reduces glare and improves contrast while maintaining high on-axis transmission.

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Lexidata Corporation 1122
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Gould Inc., DeAnza Imaging & Graphics Division 1021
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OCTEK Inc. 1821
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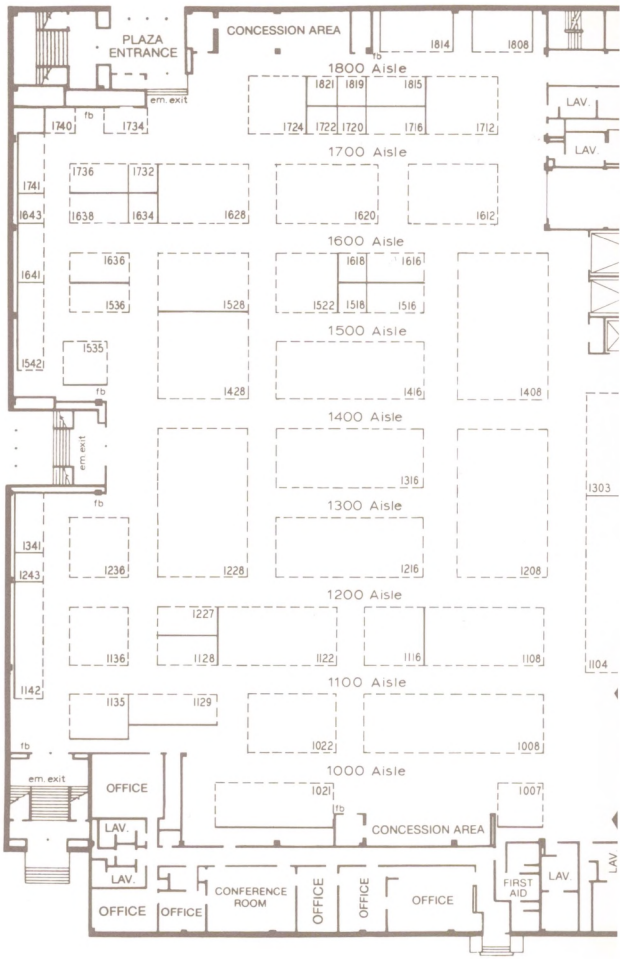
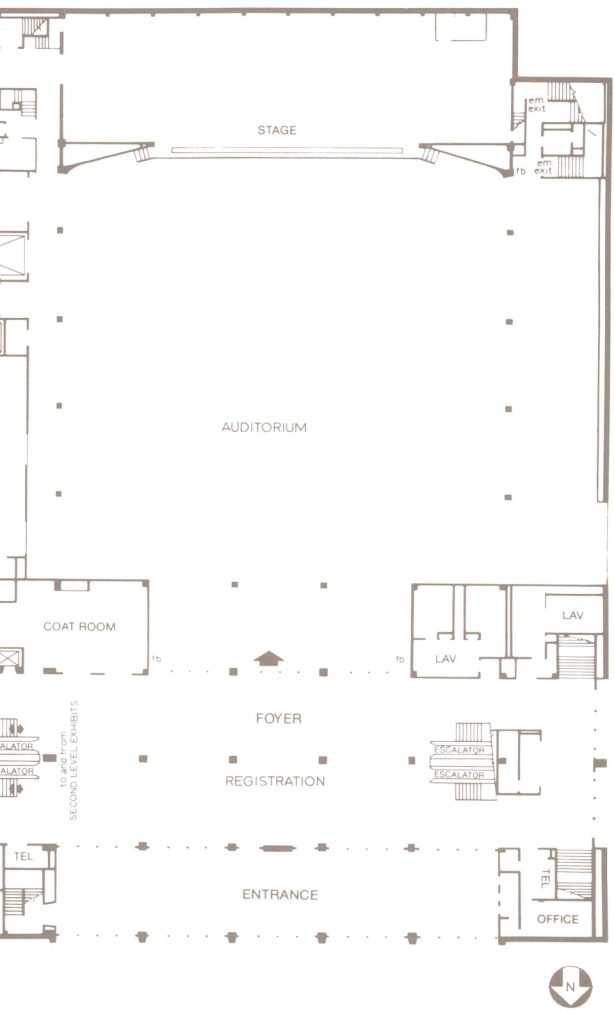
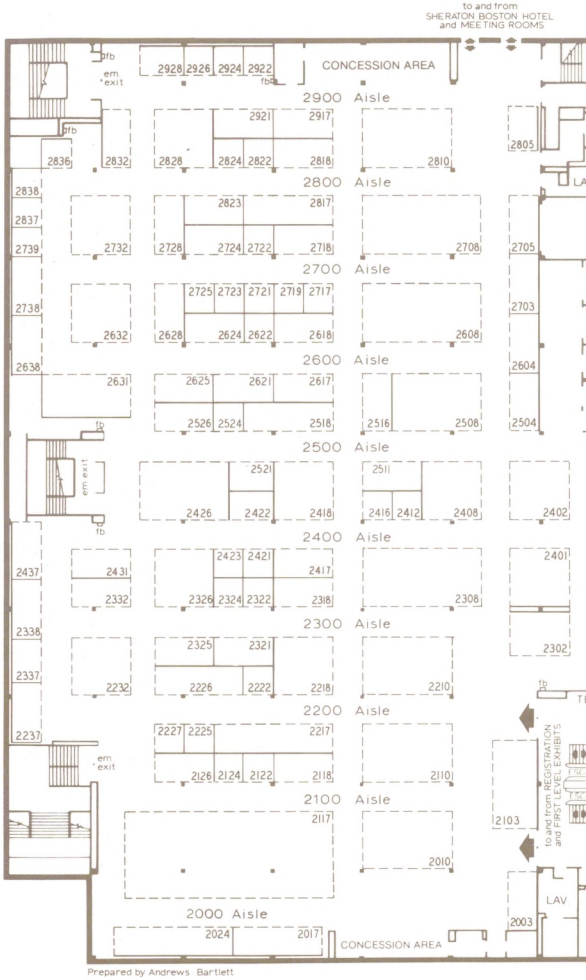
Hynes Auditorium



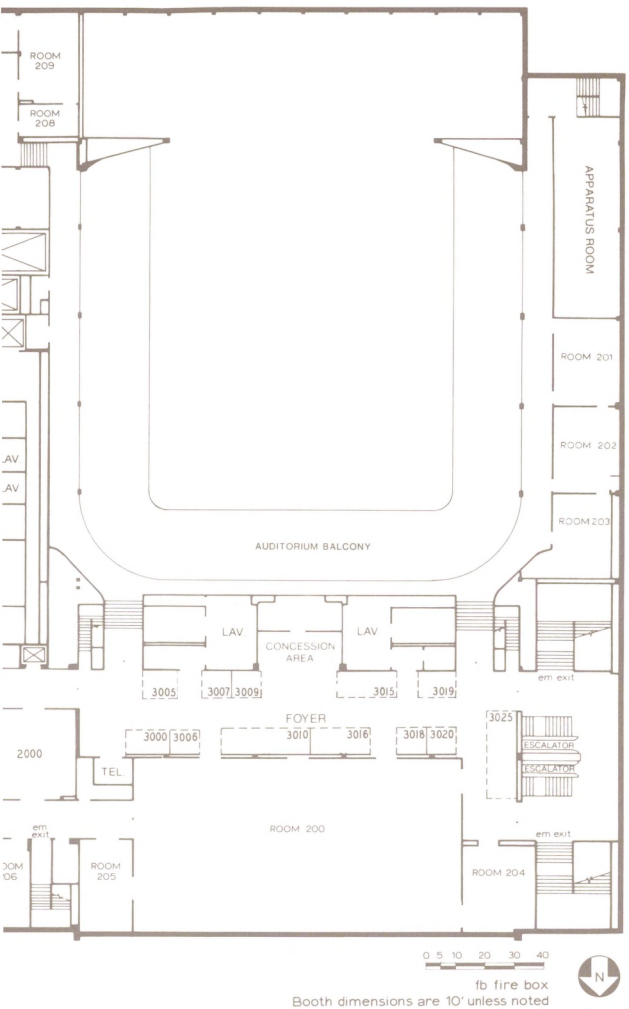
First Floor


STAGE
em exit
em exit
fb
AUDITORIUM
COAT ROOM
fb
fb
LAV
LAV
FOYER
REGISTRATION
to and from SECOND LEVEL EXHIBITS
ESCALATOR
ESCALATOR
TEL
ENTRANCE
TEL
OFFICE
N

Hynes Auditorium

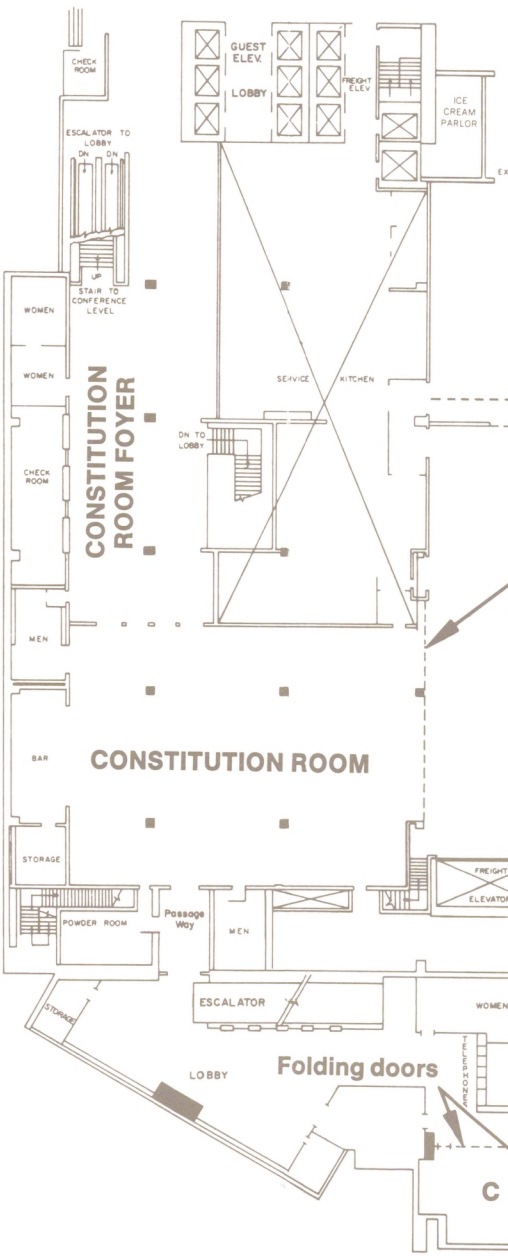


Second Floor

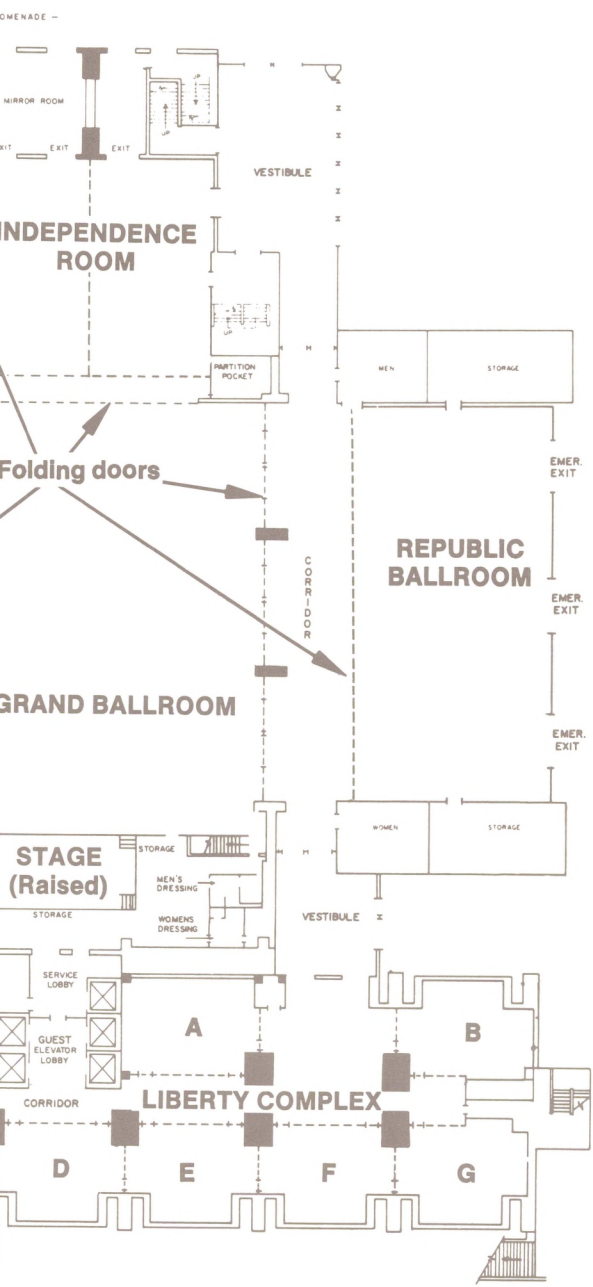


fb fire box
Booth dimensions are 10' unless noted

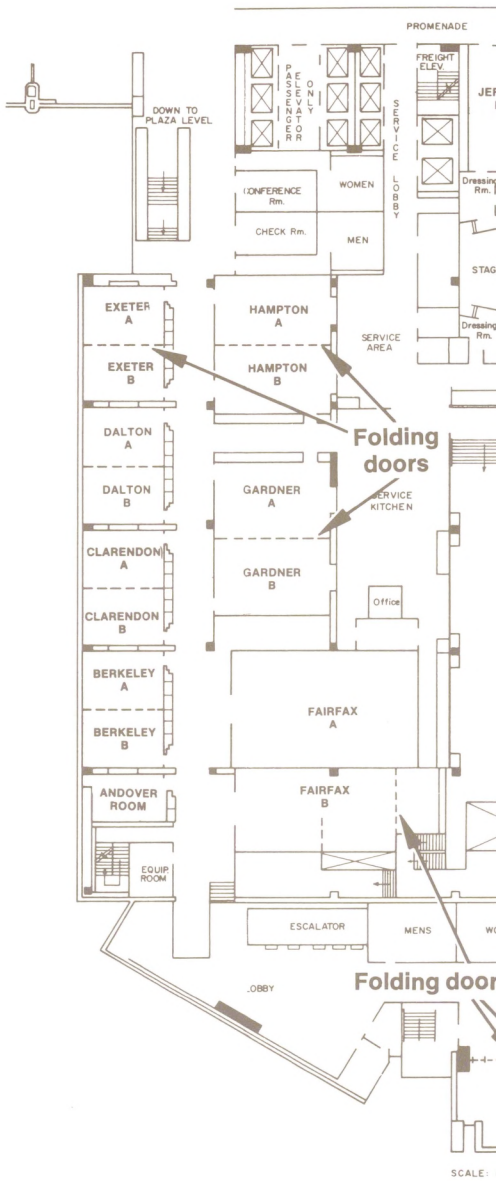
Sheraton - Boston



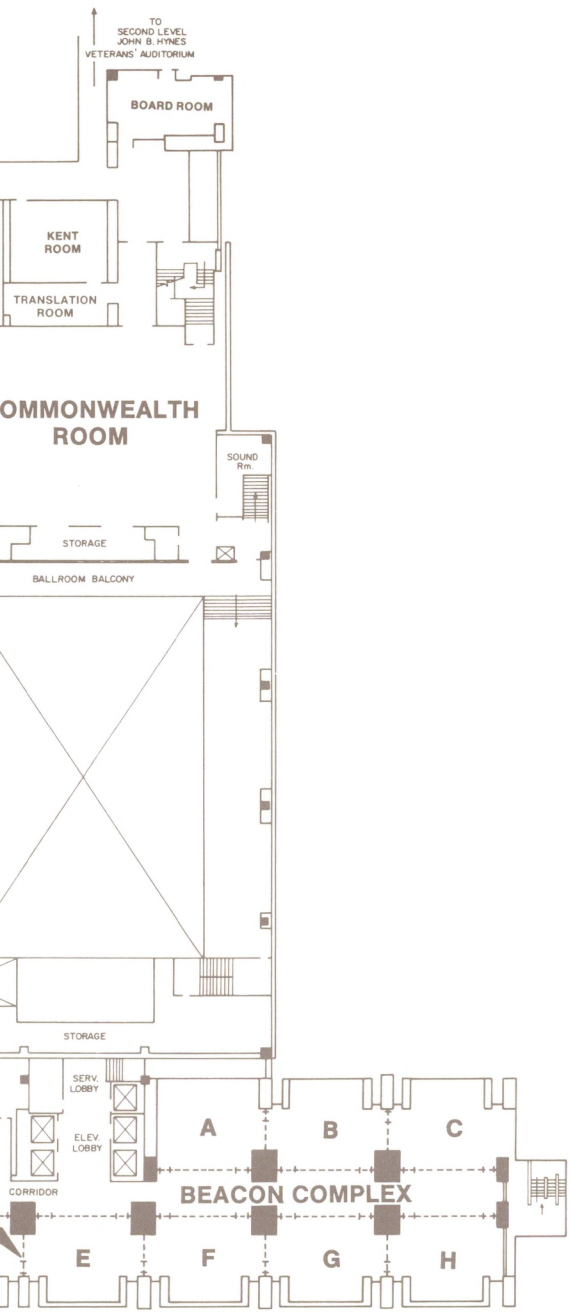
Second Floor



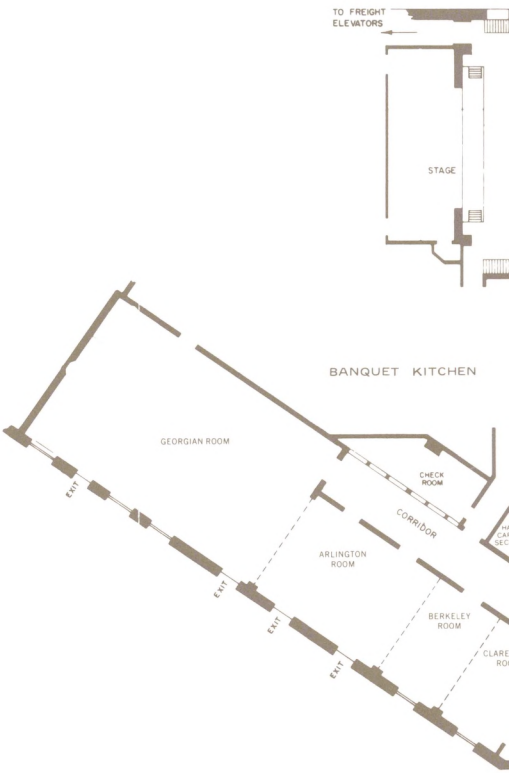
Sheraton - Boston

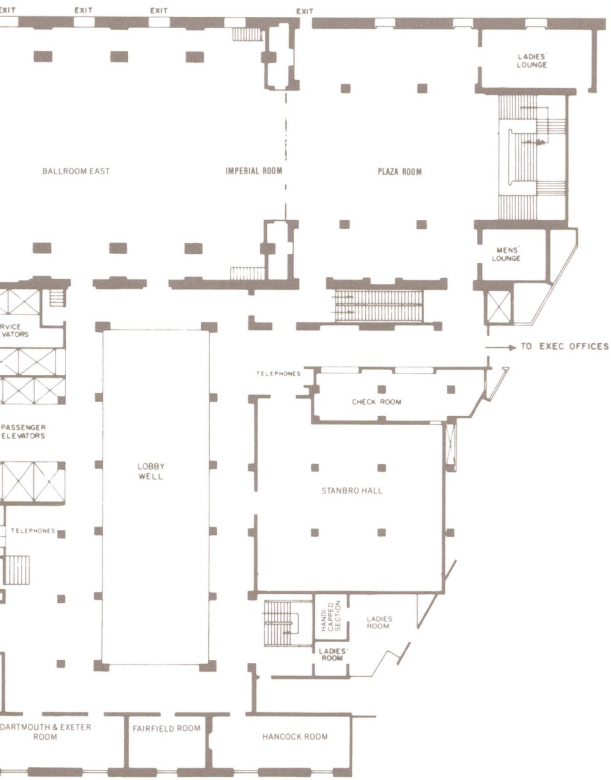


Third Floor


TO
SECOND LEVEL
JOHN B. HYNES
VETERANS' AUDITORIUM
BOARD ROOM
KENT
ROOM
TRANSLATION
ROOM
OMMONWEALTH
ROOM
SOUND
Rm.
STORAGE
BALLROOM BALCONY
STORAGE
SERV.
LOBBY
ELEV.
LOBBY
CORRIDOR
A
B
C
BEACON COMPLEX
E
F
G
H

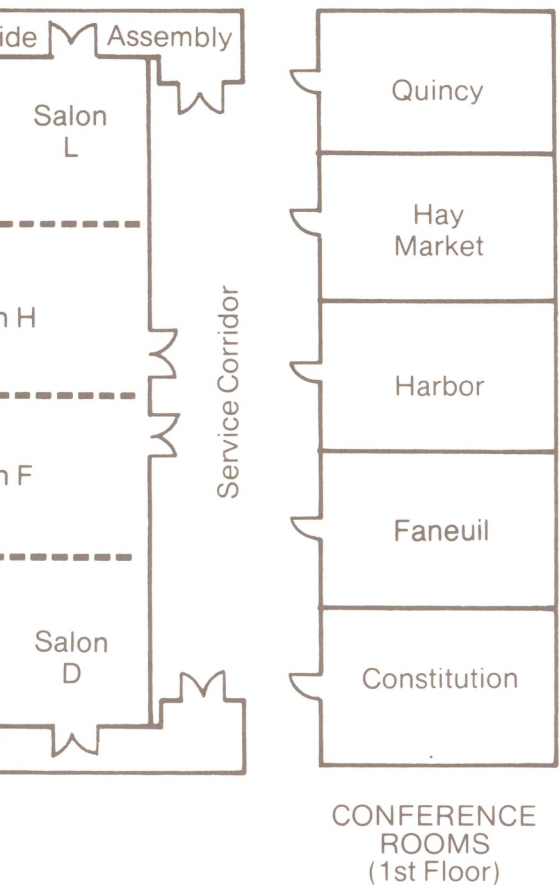
Park Plaza


TO FREIGHT ELEVATORS
STAGE
BANQUET KITCHEN
GEORGIAN ROOM
CHECK ROOM
CORRIDOR
ARLINGTON ROOM
BERKELEY ROOM
EXIT
EXIT
EXIT
EXIT


EXIT
EXIT
EXIT
EXIT
LADIES' LOUNGE
BALLROOM EAST
IMPERIAL ROOM
PLAZA ROOM
MENS' LOUNGE
TO EXEC OFFICES
TELEPHONES
CHECK ROOM
PASSENGER ELEVATORS
LOBBY WELL
STANBRO HALL
TELEPHONES
LADIES ROOM
LADIES' ROOM
DARTMOUTH & EXETER ROOM
FAIRFIELD ROOM
HANCOCK ROOM

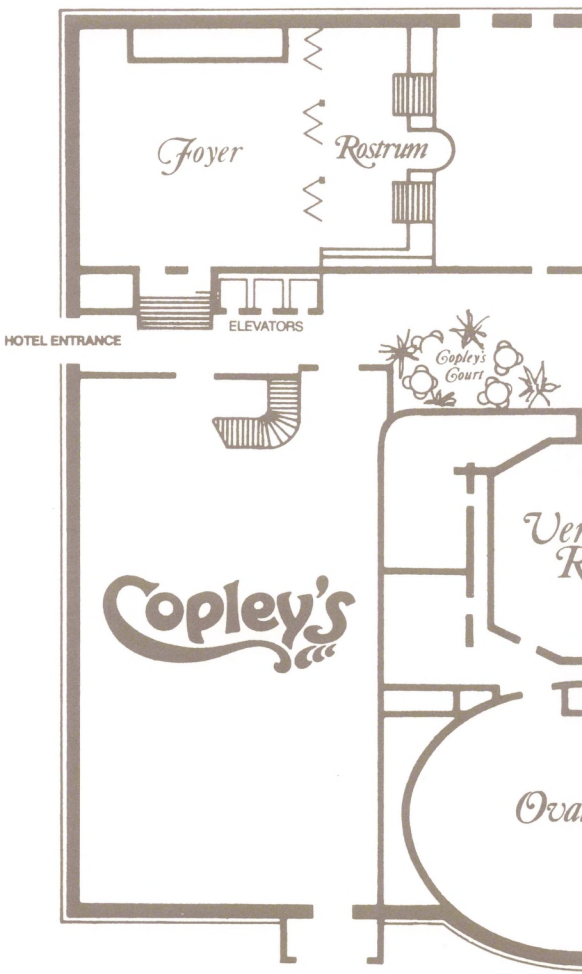
Marriott Long Wharf

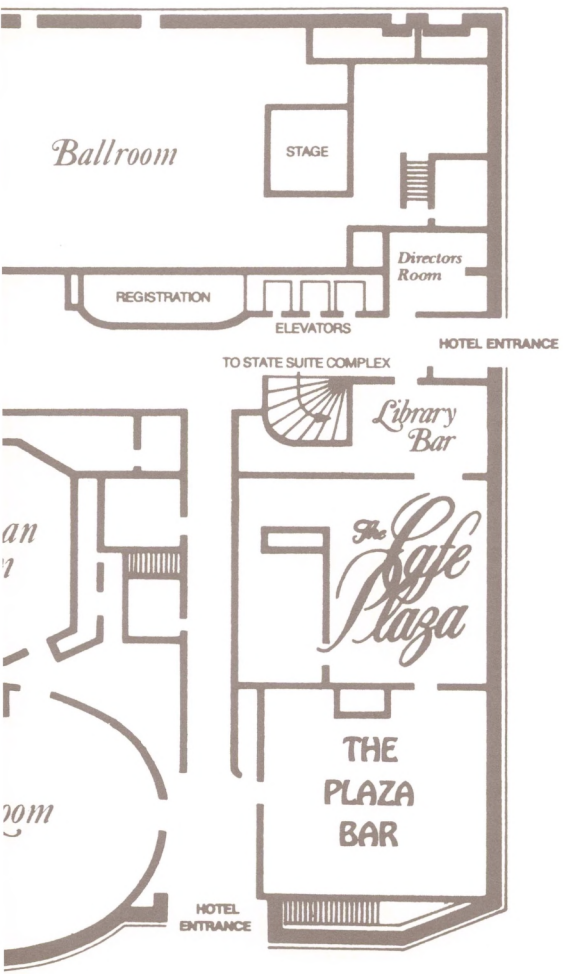
MAIN BALLROOM (Lower Level)



CONFERENCE
ROOMS
(1st Floor)

Copley Plaza




Ballroom
STAGE
Directors Room
REGISTRATION
ELEVATORS
HOTEL ENTRANCE
TO STATE SUITE COMPLEX
Library Bar
The Cafe Plaza
THE PLAZA BAR
HOTEL ENTRANCE

General Information

■ AUDIO/VISUAL FACILITIES

AUDIO/VISUAL HEADQUARTERS

The Audio/Visual Headquarters, located in the Dalton Room of the Sheraton-Boston, provides general audio/visual assistance, including slide carousels, blank slides, and reservations for the Attendee Preview Room. The Headquarters is open 9 a.m. to 10 p.m. on Sunday, 8 a.m. to 7 p.m. on Monday through Thursday, and 8 a.m. to 5 p.m. on Friday.

ATTENDEE PREVIEW ROOM

The Attendee Preview Room is located in the Clarendon Room of Sheraton-Boston and is available to attendees for sharing their work informally with small groups. The Preview Room is equipped for 3/4" U-MATIC video playback and 16 mm sound film projection. The Preview Room may be reserved by contacting the A/V Headquarters.

SPEAKERS' PREP ROOMS

A number of Speakers' Prep Rooms are available. Facilities are provided in each Prep Room for 3/4" U-MATIC video tape cue-up, 35 mm slide organization, and rehearsal. In addition, 3/4" U-MATIC video tape dubbing is available in the Speakers' Prep Room in the Sheraton-Boston.

Please note that a limited number of slide carousels are available at each location. Therefore, if sufficient time is available or if several slide carousels are required, please check them out from the Audio/Visual Headquarters.

SHERATON-BOSTON - Gardner Room
(3rd Floor)

OPEN:
Sunday, 10 a.m. - 10 p.m.
Monday through Thursday, 8 a.m. - 7 p.m.
Friday, 8 a.m. - 2 p.m.

COPLEY PLAZA - Directors Room (Lobby)
OPEN:
Monday and Tuesday, 8 a.m. - 5:30 p.m.

PARK PLAZA - Dartmouth-Exeter Room
(Mezzanine)
OPEN:
Monday and Tuesday, 8 a.m. - 5:30 p.m.

MERIDIEN - Palmer Room (Lobby Level)
OPEN:
Monday and Tuesday, 8 a.m. - 5:30 p.m.

MARRIOTT - Faneuil Room (1st Floor)
OPEN:
Monday and Tuesday, 8 a.m. - 5:30 p.m.

CHILD CARE

Child care information is available at the Information Center in the Hynes Auditorium conference registration area.

DRESS

Casual dress is acceptable at all SIGGRAPH '82 meetings and events. For dining out in Boston, casual dress is accepted in many dining establishments; however, jackets and ties are required in some locations. The conference committee recommends guests check dress code requirements when restaurant reservations are entered.

FIRST AID

A registered nurse is on duty Saturday, Sunday, and Monday from 8 a.m. to 5 p.m., Tuesday and Wednesday from 9 a.m. to 6 p.m., and Thursday and Friday from 9 a.m. to 5 p.m. The first aid room is located on the first floor of Hynes Auditorium, on the left as you enter the exhibition area, immediately after the rest rooms and adjacent to the Auditorium Commission Office.

HOTELS

BOSTON MARRIOTT HOTEL LONG WHARF
296 State Street
617 227-0800

THE BOSTON PARK PLAZA HOTEL & TOWERS
Arlington Street at Park Plaza
617 426-2000

THE COLONNADE HOTEL
120 Huntington Avenue
617 424-7000

THE COPLEY PLAZA
Copley Square
617 267-5300

COPLEY SQUARE HOTEL
47 Huntington Avenue at Exeter
617 536-9000

57 PARK PLAZA HOTEL
Howard Johnson Motor Lodge
200 Stuart Street, "57" Building
617 482-1800

HOTEL MERIDIEN
250 Franklin Street
617 451-1900

JOHN B. HYNES VETERANS AUDITORIUM
900 Boylston Street
617 262-8000

THE LENOX HOTEL
710 Boylston Street
617 536-5300

THE MIDTOWN HOTEL
220 Huntington Avenue
617 262-1000

PARKER HOUSE
Tremont and School Streets
617 227-8600

General Information

SHERATON-BOSTON HOTEL
Prudential Center
617 236-2000

The Sheraton-Boston Hotel connects with the Hynes Auditorium. During hours when exhibits are open, conference attendees may enter the second level of Hynes Auditorium through an entrance on the third level of the Sheraton-Boston Hotel.

■ HOUSING ASSISTANCE

A representative from the Greater Boston Convention and Tourist Bureau will be available at the housing desk in the Hynes Auditorium during registration hours on Monday and Tuesday to advise registrants regarding available accommodations in Boston.

■ INFORMATION CENTER

A conference Information Center located in the conference registration area at Hynes Auditorium is open to assist SIGGRAPH '82 guests beginning 1:00 p.m. on Sunday, July 25, and thereafter during official registration hours.

■ LUGGAGE CHECK AREA

A Check Room area is provided in Hynes Auditorium for the convenience of SIGGRAPH '82 guests departing directly for the airport from the conference.

■ MERCHANDISE SALES

A special desk is provided in the Hynes Auditorium registration area for the sale of SIGGRAPH '82 T-shirts, extra reception tickets, extra copies of the conference proceedings, course notes, and art show catalogs. This desk will be open beginning at 1:00 p.m. on Sunday, July 25, and thereafter during regular registration hours.

MESSAGE CENTER

A Message Center for SIGGRAPH '82 attendees is located in the conference registration area at Hynes Auditorium. The Message Center telephone number is: 617 262-8100

Message Center personnel also will accept personal messages from one conference participant to another. The Message Center is open 8 a.m. to 6 p.m. Monday through Thursday, and 8 a.m. until 3 p.m. on Friday.

PRESS BRIEFING

A press briefing is scheduled on Tuesday beginning with a continental breakfast at 8:30 a.m. in the Fairfax Room. SIGGRAPH '82 officials will provide a conference overview and escort press representatives on an early walk-through of the exhibition.

PRESS ROOM

The Sheraton-Boston's Exeter Room is the base for all SIGGRAPH '82 press operations including press registrations. The Press Room is staffed to serve press representatives 3 p.m. to 8 p.m. on Sunday, 8 a.m. to 6 p.m. on Monday through Thursday and 8 a.m. to noon on Friday.

REGISTRATION

Course participants who registered in advance may pick up registration materials at the conference registration area in the Hynes Auditorium prior to the day of their first scheduled course. Course registration materials not claimed at Hynes Auditorium are available for pickup at the course location beginning 7 a.m. on the course date. Registration materials for courses scheduled at the Sheraton-Boston Hotel will remain available for pickup at the conference registration area in the Hynes Auditorium. This applies to advance registrants only.

General Information

All new registrations for courses, the technical program, and/or the exhibition must be handled at the conference registration area in Hynes Auditorium.

Registration hours are:

SUNDAY,	July 25	1 p.m - 9 p.m.
MONDAY,	July 26	7 a.m. - 5 p.m.
TUESDAY,	July 27	7 a.m. - 8 p.m.
WEDNESDAY,	July 28	8 a.m. - 5 p.m.
THURSDAY,	July 29	8 a.m. - 5 p.m.
FRIDAY,	July 30	8 a.m. - 11 a.m.

All press registrations are handled in the Press Room in the Exeter Room of the Sheraton-Boston Hotel.

SIGHT SEEING

Guidance on things to do and see in historic Boston is available at the Information Center in the Hynes Auditorium conference registration area.

TELEPHONES

A/V HEADQUARTERS
Sheraton-Boston Hotel
Dalton A/B
617 236-2000, ext. 4185 and 4186

CONFERENCE OFFICE
Sheraton-Boston Hotel
Hampton A/B
617 236-2000, ext. 4196 and 4197

EMERGENCIES (AMBULANCE, FIRE, POLICE)
911 or dial 0 for switchboard operator in your hotel.

EXHIBIT OFFICE
Hynes Auditorium
1st Level, Management Offices
617 262-8104

FIRST AID
Hynes Auditorium
617 262-8107

INFORMATION CENTER
Hynes Auditorium
Conference registration area
617 262-8102

JOHN B. HYNES VETERANS AUDITORIUM
Main switchboard
617 262-8000

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
617 722-5000

MESSAGE CENTER
Hynes Auditorium
Conference registration area
617 262-8100

PRESS ROOM
Sheraton-Boston Hotel
Exeter A/B
617 236-2000, ext. 4183 and 4184

REGISTRATION AREA
Hynes Auditorium
Conference registration area
617 262-8106

General Information

TRANSPORTATION

Complimentary shuttle bus service is provided throughout the conference for SIGGRAPH '82 attendees. On Monday and Tuesday evenings and during peak transportation hours on Wednesday, Thursday, and Friday, the buses will run directly between the following hotels and the Hynes Auditorium:

ROUTE 1 - Boston Marriott Hotel Long Wharf
Hotel Meridien

ROUTE 2 - Boston Park Plaza Hotel

ROUTE 3 - Copley Plaza Hotel

At all other times the buses operate on a shuttle route stopping at each of the following locations:

Boston Marriott Hotel Long Wharf
Hotel Meridien
Boston Park Plaza Hotel
Copley Plaza Hotel
Colonnade Hotel
Sheraton-Boston Hotel
Hynes Auditorium

Most of the other hotels are within walking distance of a hotel where the shuttle will stop. For Parker House guests, a special mini bus provides transportation to the Boston Park Plaza, and the shuttle buses can be taken from there.

Bus service is provided during the following hours:

SUNDAY,	July 25	1:00 p.m. - 9:30 p.m.
MONDAY,	July 26	7:00 a.m. - 11:00 p.m.
TUESDAY,	July 27	7:00 a.m. - 11:00 p.m.
WEDNESDAY,	July 28	7:00 a.m. - 11:00 p.m.
THURSDAY,	July 29	7:00 a.m. - 11:00 p.m.
FRIDAY,	July 30	7:00 a.m. - 4:00 p.m.

Full details on pickup locations and schedules are given on signs in each hotel lobby.

SIGGRAPH '83

'83 Call for Participation

Tenth Annual Conference on Computer Graphics and Interactive Techniques
July 25-29, 1983
Detroit, Michigan

Sponsored by the Association for Computing Machinery Special Interest Group on Computer Graphics, in cooperation with the IEEE Technical Committee on Computer Graphics, Eurographics, and the Engineering Society of Detroit.

CONFERENCE INFORMATION

SIGGRAPH '83 Conference Office
111 East Wacker Drive
Chicago Illinois 60601
(312) 644-6610
Telex: 25-4073 SBA

THE CONFERENCE

SIGGRAPH '83 will be the tenth annual conference of ACM's Special Interest Group on Computer Graphics. In these ten years, the conference has grown from a small group of graphics experts meeting in a university residence to one of the largest technical conferences in the country. The conference now boasts an extensive exhibit of computer equipment (200,000 sq. feet have been booked in Cobo Hall for this year's show) and two evenings of outstanding films and videotapes produced with the aid of computer graphics. A comprehensive set of courses precedes the conference.

A consistent feature of the conference has been the technical program. SIGGRAPH conferences have been fortunate to be able to present papers detailing the most recent developments in graphics software, hardware, and interaction techniques. Each year the proceedings become a standard reference.

PAPERS

SIGGRAPH '83 invites the submission of previously unpublished papers in all areas of computer graphics and interactive techniques. Appropriate topics include display techniques, graphics software systems and languages, graphics hardware, interactive techniques, and any applications of graphics. Feel free to call or write the Technical Program Office to discuss the appropriateness of any intended submission. A more detailed "Guide to Authors" is available from the Program Office.

Video or film material that is an integral component of the work must accompany the paper.

Papers accepted will be published in the Conference Proceedings, a special issue of Computer Graphics. The video portion of accepted papers will be published in the SIGGRAPH Video Review.

All submissions should conform to CACM publications standards (published in the Summer of 1982). It is strongly recommended that papers not exceed 5000 words. Five copies of each submitted paper should be sent to the Technical Program Chairman by December 1, 1982. Papers must include a 100 to 300 word abstract. Acceptance notification will be made by March 14, 1983 and final papers are due on May 2, 1983.

PANELS

Panel proposals should include a description of the topic issues (for publication in the proceedings) and the names of at least three suggested panelists.

Send two copies of panel proposals to the Panels Chairman by February 14, 1983. Acceptance notification will be made by March 14, 1983.

'83 Call for Participation

FILM, VIDEO, ART, COVER DESIGN AND INSTALLATIONS

Late in 1982, a separate Call for Participation inviting submissions of films, videotapes, art work, and installations will be available from the Technical Program Office. The submission deadline for film and video is June 24, 1983. There will be an April 1, 1983 deadline for submissions of installation demonstration proposals and for photographs or slides of drawings, graphics art, sculpture or murals for the proceedings cover and the art show.

TECHNICAL SESSION CHAIRMAN

Peter Tanner
SIGGRAPH '83 Technical Program Office
Division of Electrical Engineering
National Research Council
Ottawa, Ontario, Canada
K1A OR8
(613) 741-1007
Telex: 053-4134 (NRC DEE)

PANELS CHAIRMAN

Ron Baecker
Human Computing Resources Corporation
10 St. Mary Street
Toronto, Ontario
M4Y 1P9
(416) 922-1937

TECHNICAL PROGRAM COMMITTEE

Peter Tanner - Technical Sessions Chairman
Ron Baecker - Panels Chairman

Daniel Bergeron
Ingrid Carlbom
Edwin Catmull
Hank Christiansen
James Clark
Sheila Crossey
John Dill
Alain Fournier
Herbert Freeman
Robert Hopgood
James Michener
Bary Pollack
Richard Riesenfield
Maureen Stone
Turner Whitted

SIGGRAPH '82

The Ninth Annual Conference
on Computer Graphics and
Interactive Techniques

Sponsored by The Association for
Computing Machinery Special Interest
Group on Computer Graphics