

# Conceptron *Associates*

T E C H N I C A L • S E R V I C E S

## • Independent Audio-Visual Design Consultants •

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### Technical Résumé

Our broad audio visual design experience will bring a valuable technical resource to your next project. From a boardroom to a large-scale themed venue, we have the expertise to deliver a tight, practical A/V design and to see it through to completion – using the technology most appropriate to bring your vision to life.

#### Experience of Our Principal



Our principal, **Garry Musgrave**, has over 25 years of audio visual design and consulting experience with video; display and presentation systems; audio reproduction systems; conferencing and interpretation systems; various interactive technologies; multi-image; media and show control systems; videowalls; and various computer platforms, operating systems, and programming languages. He is the holder of a [CTS-D \(Certified Technology Specialist – Design\)](#) certification from the ICIA.

His achievements include:

- headed the design team for a pioneer interactive theatre project – “**The Futures Theatre**” at EXPO ‘86;
- was the principal designer of the **Omni Q® *InterActive***™ audience response system;
- was the principal designer of the **Omni Q® SMART**™ show control automation system, the **OmniSoft**™ show control software, and various video, audio, and control accessories marketed under the **Omni Q®** brand name.

He has:

- published articles on various aspects of audio visual design and technology;
- presented papers and conducted workshops and seminars on show control automation, communications, and sound imaging;
- written end-user documentation for various software and hardware products.

He is a member in good standing of the following professional associations:

- **IEEE** – **Institute of Electrical and Electronics Engineers**
- **AES** – **Audio Engineering Society**
- **SMPTE** – **Society of Motion Picture and Television Engineers**
- **ICIA** – **International Communications Industries Association**  
◦ (Member: ICAT – Council for Independent Consultants in Audiovisual Technologies)
- **TAA** – **Themed Attraction Association**
- **CSC** – **Construction Specifications Canada**
- **IPS** – **International Planetarium Society**

## LIST OF PUBLICATIONS

- “The Role of the A/V Design Consultant”**  
– *The Display & Digital Peripherals Encyclopedia*,  
2002/2003 North American Edition.
- “The Role of the A/V Design Consultant”**  
– *The Display & Digital Peripherals Encyclopedia*,  
2002/2003 European Edition.
- “The Latest Science in Large-Format Video Displays”**  
– *Facility Manager magazine*, March-April 1999.
- “Centre Stage – a useful guide to selecting a jumbo display system”**  
– [\*Panstadia International magazine\*, November 1998.](#)
- “Impact of ADA Requirements on Audio-Visual Design”**  
**“An Overview of DVD Technology”**  
**“Overview of Show and Exhibit Control”**  
**“The Importance of Technical Specifications”**  
**“The Role of the A/V Design Consultant”**  
– *ICIA Directory - Reference Section*, May 1997.
- “Choosing a Video Projector”**  
– *ICIA Directory - Reference Section*, April 1996 –  
revised and re-published in May 1998.
- “Big Video Is In The Stars”**  
– *The Planetarian magazine*, December 1993  
(co-authored with Dave Conley, Alberta Science Centre).
- “Consultants Enhance Audio-Visual Design”**  
– *Intelligent Build & Design Innovations 2002*,  
UK Edition.
- “Choices in Ultraportable Projectors”**  
– *Marcom Magazine*, Fall 2000.
- “Digital Video Sources for Playback”**  
**“Legibility of Projected Information”**  
**“Very Large-Screen Video Displays”**  
– *ICIA Directory - Reference Section*, March 1999.
- “Programming PLC’s For Exhibit Control”**  
**“10 A/V Project Pitfalls and How to Avoid Them”**  
– *ICIA Directory - Reference Section*, May 1998.
- “ISDN – The Communications Link of the Future”**  
**“Projection Lens Formulas”**  
– *ICIA Directory - Reference Section*, April 1996.
- “Star Search: Large-Screen Projector Shootout”**  
– *Presentation Products magazine*, December 1993  
(co-authored with Dave Conley, Alberta Science Centre).
- Monthly technology column:**  
– *Contact – Music, Film, & Entertainment magazine*,  
1981.  
– *West Coast Music magazine*, 1980 and 1981.

## PAPERS AND SEMINARS PRESENTED

- “Specifications for AV Installations”**  
*infoComm 2003 Seminar*,  
June 2003.
- “Creative Uses of Audience Voting Technology”**  
*International Planetarium Society Conference*,  
July 1994, ad hoc.
- “Omni Q SEC in the ‘90s”**  
*Planetarium Association of Canada Conference*,  
June 1989.
- “Selecting a Creative Automation System”**  
*International Planetarium Society Conference*,  
July 1982.
- “Designing for Low Maintenance”**  
*International Planetarium Society Conference*,  
July 2000
- “Interactivity in the Planetarium Environment”**  
*International Planetarium Society Conference*,  
June 1992.
- “Enhancing Audio for Visual Production”**  
*Audio Engineering Society Convention*, October  
1982.

## Selected List of Past Projects

This list of some of our past projects has been selected to give a broad overview of our past experience, capabilities, and clientele. It also reflects the international nature of our work experience. Marked (\*) projects indicate experience of our Principal prior to founding the company.

### CONFERENCE, MEETING, & TRAINING FACILITIES

Project Name	Description
<b>Telus Communications Inc.,</b> Vancouver, BC, Canada	Design, specification, tendering, installation review, and acceptance of audio-visual infrastructure and components for new downtown atrium. Includes a large-format video display on an automated lift mechanism.
<b>Morris J. Wosk Centre for Dialogue,</b> Vancouver, BC, Canada	Design, specification, tendering, installation review, and acceptance of A/V systems for large-scale international conference facility. Features ten meeting rooms, boardrooms, policy rooms, videoconferencing room, and main dialogue hall with seating for 150+ delegates. Involves audio, video, projection, simultaneous translation, conferencing, and control.
<b>CIC World Centre,</b> Haifa, Israel	Design and specification of video distribution and display systems for international conference centre.
<b>Telus Communications Inc.,</b> Vancouver, BC, Canada	Design, specification, tendering, installation review, and acceptance of audio-visual components for new executive floor. Includes a large boardroom, a divisible meeting room, and several common areas. Involves video, projection, audio, conferencing, and control. We also completed the design and specification of a second boardroom for this client.
<b>Royal Canadian Mounted Police,</b> Chilliwack, BC, Canada	Design, specification, tendering, installation review, and acceptance of audio-visual components for eight classrooms, a boardroom, and a lounge for the division training centre. Involves video, projection, audio, conferencing, and control.
<b>Capilano College,</b> North Vancouver, BC, Canada	Designed a campus-wide RF broadband video distribution network for locally originated program material. This is a 45-channel CATV system with video source inputs scattered throughout seven buildings and distribution back out to all seven buildings.
<b>Department of National Defence</b> Ottawa, Ontario, Canada	Designed centralised media centre, multimedia, audio-visual, and presentation systems for multiple classrooms and meeting rooms in their new <b>School of Military Engineering</b> .

### SPORTS VENUES

Project Name	Description
<b>Staples Center Arena,</b> Los Angeles, California, USA	Design and layout, specification, tendering, installation review, and acceptance of audio, video, graphics, and control systems for live video production facility to feed images to large-format video displays and provide content for in-house CATV channels. This is a new hockey/basketball arena. Acceptance of videoboards and scoring systems.
<b>Fox Sports Sky Box,</b> Los Angeles, California, USA	Design, specification, tendering, installation review, and acceptance of A/V systems for themed sports bar and restaurant. Involves audio, video, videowalls, and control.
<b>London Arena</b> London, England	Specification and evaluation of vendor proposals for centre-hung scoreboard and jumbo screen video system. Contract administration and acceptance of installed system. Design, specification, and bidding of in-house video system. Contract administration and acceptance of installed system.
<b>General Motors Place Stadium</b> Vancouver, BC, Canada	Design, specification, tendering, procurement, budget preparation, budget tracking, and acceptance of broadcast control room. Design co-ordination and acceptance of 78-channel in-house CATV system. Acceptance of 24-channel digital satellite system. Acceptance of scoreboard system, including large-screen video displays. Consultant of record for telecommunications systems. Acceptance & deficiency evaluation for various technical aspects of the construction phase.

## SCIENCE CENTRES & PLANETARIUMS

Project Name	Description
<b>Edmonton Space Sciences Centre,</b> Edmonton, Alberta, Canada	Design, specification, tendering, installation review, and acceptance of audio-visual components for floor floors of new interactive exhibit galleries. Involves video, projection, audio, multimedia, and show control.
<b>Mauna Kea Astronomy Education Center,</b> Hilo, Hawaii, U.S.A.	Design of A/V systems for interactive displays. Involves audio, video, projection, and control.
<b>H.R. MacMillan Space Centre,</b> Vancouver, BC, Canada	Analysis of available show control automation systems vs. the planetarium's needs.  Design, specification, budgeting, scheduling, tendering, and bid evaluation of automation, sound, and video systems for planetarium. Specification and tendering of new Laser system. Design of electrical distribution and automated routing system – provided as input to the electrical specification process. Installation review and acceptance testing of automation, audio, and video systems for planetarium.
<b>Griffith Observatory,</b> Los Angeles, California, USA	Technical consultant for upgrade of planetarium theatre equipment. Involved in design development. Involves video, projection, Lasers, audio, and show control.
<b>Hatfield Marine Science Centre, Oregon State University,</b> Newport, Oregon, USA	Design, co-ordination, building impact, specification writing, and installation review of audio-visual systems for large-scale museum exhibit.
<b>Dominion Astrophysical Observatory,</b> Victoria, BC, Canada	Design and specification of audio-visual components for interactive exhibitry and a multimedia theatre. Involves video, projection, audio, multimedia, and show control.
<b>Science City,</b> Kansas City, Kansas, USA	Technical concept design and budgeting for approximately 40 interactive exhibits in a large science museum. Incorporated video, audio, multimedia, and control.
<b>Science World British Columbia, HOTSEAT! Theatre</b> Vancouver, BC, Canada	Designed interactive theatre system with videowall, sound system, and custom control system. Programmed videowall and show control. Also programmed 'Trail Blazers' videowall presentation.
<b>*Hansen Planetarium</b> Salt Lake City, Utah, USA	Designed computerised show control system.
<b>*Planetario de Pamplona</b> Pamplona, Spain	Designed computerised show control of slide projection, video, and special effects.
<b>*Planetario de Madrid</b> Madrid, Spain	Designed automated sound imaging system.
<b>*Bowling Green State University</b> Bowling Green, Ohio, USA	Designed real-time multi-image show control automation system for teaching planetarium.
<b>*Planétarium Dow</b> Montréal, PQ, Canada	Designed computerised show control system with manual override capabilities.
<b>*Edmonton Space Sciences Centre</b> Edmonton, Alberta, Canada	Designed automated sound imaging system, real-time sound and multi-image show control, computerised show control, recording studio, and IMAX sound system.
<b>*Alberta Science Centre, Centennial Planetarium</b> Calgary, Alberta, Canada	Designed video matrix system. Designed computerised show control automation of video projection, slide projection, lighting, and special effects.
<b>*Science Museum of Virginia, Universe Planetarium</b> Richmond, Virginia, USA	Designed automated sound imaging system, OmniMax sound system, and recording studio.

## EXHIBITS, INTERPRETIVE CENTRES, EXPOSITIONS & ATTRACTIONS

Project Name	Description
<b>Cape Girardeau Conservation Nature Centre,</b> Missouri, USA	Design, specification, tendering, installation review, and acceptance for interpretive displays for the Department of Conservation. Also includes a mobile outreach vehicle with interactive exhibits. Involves audio, video, computer interactives, and control.
<b>Canada Marine Discovery Centre,</b> Hamilton, Ontario, Canada	Design, specification, tendering, installation review, and acceptance of interpretive displays plus a Hi-Def theatre. Involves audio, video, Hi-Def projection, and control.
<b>Woodland Park Zoo,</b> Seattle, Washington, U.S.A.	Design, specification, and tendering of an interactive museum. Includes design of a facility-wide digital video distribution system. Involves video, audio, and control.
<b>Las Vegas Springs Preserve,</b> Las Vegas, Nevada, USA	Design, specification, tendering, installation review, and acceptance for interpretive displays in the Desert Living Center. Involves audio, video, projection, computer interactives, and control.
<b>Oltremare Marine Theme Park,</b> Riccione, Italy	Conceptual design of audio-visual components for new marine theme park. Design development of random natural soundscape for 160m long processional walkway and a multi-channel synchronised immersive audio experience.
<b>Medicine Hat Arts &amp; Heritage Centre,</b> Medicine Hat, Alberta, Canada	Design, specification, and tendering for interpretive displays. Involves audio, video, projection, and control.
<b>Turtle Bay Museums &amp; Arboretum,</b> Redding, California, USA	Design, specification, and review of audio-visual components for two buildings of interactive exhibitry and a multimedia theatre. Involves video, projection, audio, multimedia, and show control.
<b>Marine Center in Homer,</b> Homer, Alaska, USA	Design and specification of audio-visual components for new marine interpretive centre. Involves video, projection, audio, computer interactives, and show control.
<b>International Terminal Expansion, Vancouver International Airport,</b> Vancouver, BC, Canada	Design, specification, tendering, installation review, and acceptance for the 'Pacific Passages' themed area – an artificial environment simulating a BC coastal forestscape. Involves audio environments and show control.
<b>Camões The Greatest Discovery,</b> Lisbon, Portugal	Design, specification, and equipment procurement of A/V systems for new themed attraction on old Expo '98 site. Involves audio, video, projection, and control.
<b>Lincoln Park Zoo,</b> Chicago, Illinois, USA	Design development of audio-visual components for interactive exhibitry and a multimedia theatre. Involves video, projection, audio, and show control.
<b>Canada Place,</b> Banff, Alberta, Canada	Design, specification, tendering, review, and acceptance for a series of interactive exhibits about Canada and Canadian contributions. Involves video, projection, audio, computer interactives, and show control.
<b>Gulf of Georgia Cannery,</b> Steveston, BC, Canada	Design, specification, tendering, installation review, and acceptance for interpretive displays in national historic site. Involves audio, video, computer interactives, and control.
<b>YHONA Interpretive Complex</b> Yaquina Head, Oregon, USA	Designed, specification, review, and acceptance of AV systems for interpretive exhibits and a multi-purpose meeting room. Involves audio, video, computer interactives, and control.
<b>Capilano Suspension Bridge</b> North Vancouver, BC, Canada	Design, specification, tendering, and acceptance of audio and show control system addition to existing Story Centre. Program design and implementation of PLC show controller.
<b>*Canada Pavilion, B.C. Exhibit,</b> EXPO '92, Seville, Spain	Designed and specified sound, multi-image, video, lighting, and computerised show control automation systems. Programmed Dataton show control system.
<b>*Canada Pavilion, B.C. Theatre</b> EXPO '88, Brisbane, Australia	Designed interactive audience voting system, sound system, video system, and show control system. Co-ordinated control of speech synthesis, multi-image, robotics, and lighting. Programmed Omni Q show control system.
<b>*EXPO '86,</b> Vancouver, BC, Canada	Was responsible for technical design and co-ordination of over 20 separate exhibit areas and pavilions (including a distributed video system for the on-site monorail system). Programmed various show controllers.