2001 IEEE Canadian Conference on Electrical and Computer Engineering
Congrès Canadien IEEE en Génie Électrique et Informatique

May 13 - 16, 2001 • Downtown Delta Chelsea
Toronto, Ontario, Canada

Final Program
Programme Finale

Sponsored by :: Parrainé par

IEEE Canada

Sympatico™

Region 7 of the Institute of Electrical and Electronic Engineers
Central Canada Council of IEEE Canada
London
Kitchener-Waterloo
Hamilton
Toronto
Peterborough
Kingston

General Electric Company
GE Canada Inc.
GE Large Motors
GE Hydro
GE Nuclear Products
GE Power Management
GE Power Systems - Sales & Service

We bring good things to life.
<table>
<thead>
<tr>
<th>TIME</th>
<th>MM1</th>
<th>MM2</th>
<th>MM3</th>
<th>MM4</th>
<th>MM5</th>
<th>MA1</th>
<th>MA2</th>
<th>MA3</th>
<th>MA4</th>
<th>MA5</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:15</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>09:15</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>13:15</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>13:30</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>13:45</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>14:00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>14:15</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>14:30</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>14:45</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>15:00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>15:15</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>15:30</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>15:45</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>16:00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>16:15</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>16:30</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>16:45</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>17:00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>17:15</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>17:30</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>17:45</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>18:00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Sunday, May 13, 2001

- Tutorial 1: MPEG4 for Multimedia Streaming
- Tutorial 2: How to know what to build before you develop your System
- Welcome Reception

Monday, May 14, 2001

- Plenary Session 1 - MPLEN Churchill
  - Adaptive Learning Systems: A key technology for today and ever more
    - Simon Haykin – McMaster University
- Poster Session MP - Mountbatten
- Conference Reception and IEEE Awards Banquet Churchill
<table>
<thead>
<tr>
<th>TIME</th>
<th>Stevenson</th>
<th>Scott</th>
<th>Wren</th>
<th>Rossetti</th>
<th>Carlyle</th>
</tr>
</thead>
</table>

**Tuesday, May 15, 2001**

| 08:15     |           |         | **Plenary Session 2 – TPLEN - Churchill** |           |           |
| 09:15     |           |         | **Multi Media Systems**                   |           |           |
| 09:30     | TM1       | TM2     | TM3           | TM4         | TM5        |
| 11:30     | Motors II | Circuits| Special session | Intelligent Systems | Networks I |
| Student Papers – Awards Luncheon – Churchill | | | | | |

| 13:15 – 15:15 | Poster Session TP - Mountbatten | |
| 15:30 - 17:30 | TA1      | TA2     | TA3           | TA4         | TA5        |
|               | Power    | Systems and Devices | Image and Video Coding | Intelligent Systems II | Networks II |

**Wednesday, May 16, 2001**

| 08:15     |           |         | **Plenary Session 3 – WPLEN – Churchill** |           |           |
| 09:15     |           |         | **Device Technology Convergence**         |           |           |
| 09:30     | WM1       | WM2     | WM3           | WM4         | WM5        |
| 12:30     | Power Systems III | VLSI Design | Image Processing I | Networks III | DSP Architectures |
| 13:00 - 15:00 | WA1      | WA2     | WA3           | WA4         | WA5        |
|           | Applications | Digital Design | Image Processing II | Wireless Communication | Biomedical Applications |
Final Program

1. CCECE 2001 ORGANIZATION

Organizing Committee

General Chair
Haran Karmaker, General Electric Canada

Technical Program
Bob Dony, University of Guelph
Kostas Plataniotis, University of Toronto

Secretariat
Cathie Lowell, IEEE Canada

Treasurer
Kash Husain

Publicity
Slawo Wesolkowski

Exhibits
Robert Hudyma, Ryerson Polytechnic University

Local Arrangements
Robert Hanna, RPM Engineering

Student Activities
Janet Bradley, Gennum

Electronic Services
Christopher Ward, Dalhousie University

Program Chairs
Pelle Westlind
Sean Dunne

Tutorials and Special Sessions
Bruno DiStefano, Nuptek Systems Ltd.

IEEE Canada Representation
Celia Desmond, IEEE Canada President
Mo El-Hawary, IEEE Canada President-elect
Dave Kemp, Past President
Abdel Sebak, CONAC
IEEE Canadian Conference on Electrical and Computer Engineering

Conference Secretariat
CCECE 2001 Secretariat
IEEE Canada
18 Robinhood Drive
Dundas, ON, L9H 4G1,
CANADA
Tel/Fax: (905) 628-9554
Email: c.lowell@ieee.org

Sponsors
IEEE Canada
IEEE Canada Central Canada Council Sections:
   London, Kitchener/Waterloo, Hamilton, Toronto, Peterborough,
   Kingston

General Electric Company
Gennum Corporation
Bell Sympatico
Bell Nexxia

2. REGISTRATION

DELTA CHELSEA HOTEL
THIRD FLOOR, CHURCHILL COURT

SUNDAY, MAY 13, 2001  17:00 – 20:00
MONDAY, MAY 14, 2000  08:00 – 17:00
TUESDAY, MAY 15, 2000  08:00 – 17:00
WEDNESDAY, MAY 16, 2000  08:00 – 11:00
3. TUTORIALS

TUTORIAL I  
ROOM: Wren 
SUNDAY, May 13, 2001, 13:00 – 17:00.

“MPEG-4 for Multimedia Streaming”:
Wael Badawy

Department of Electrical and Computer Engineering
University of Calgary, Calgary, Alberta, Canada

Abstract: MPEG-4 is a new ISO/IEC standard that targets streaming multimedia. The MPEG-4 provides tools to deliver multimedia content over different communication channels and targets a wide range of interactive multimedia applications. MPEG-4 provides new features such as object-based media representation, scalability, and error-resilience.

MPEG-4 Video offers technology that covers a large range of existing applications as well as new ones. The low-bit rate and error resilient coding allows for robust communication over limited rate wireless channels, mobile videophones and space communication. At high bit-rates, MPEG-4 tools are available to allow the transmission and storage of high-quality video suitable for the studio and other very demanding content creation applications. It is likely that the standard will eventually support data-rates well beyond those of MPEG-2.

Objectives: The lecture will introduce the MPEG-4 Version 1 and Version 2 visual coding tools and their functionalities. It will focus on the applications of MPEG-4 for multimedia streaming and how wired and wireless multimedia streaming can benefit from MPEG-4 visual coding tools.

Wael Badawy

Wael Badawy’s research interests are in the areas of: video coding for low-bit rate applications, digital video processing, video library, watermarking, spatial database, low power, design methodologies, microelectronics, and VLSI prototyping. His research involves designing new models, techniques, algorithms, architectures, and low power prototype for MPEG-4 consumer products. Dr. Badawy is honored with the “1998 Upsilon Pi Epsilon Honor Society and IEEE Computer Society Award for Academic Excellence in Computer Disciplines”
TUTORIAL II                               ROOM: Carlyle
SUNDAY, May 13, 2001, 13:00 – 17:00.

“How to Know What to Build Before You Develop Your System”

Armin Eberlein

Dipl.-Ing. (FH), MSc, PhD.
Associate Professor, Director of the Software Engineering Program,
Department of Electrical and Computing Engineering, University of
Calgary, Alberta, Canada

Abstract: This tutorial addresses the early life cycle of system development and its effect on later stages in the life cycle. It will show the crucial importance of requirements engineering to project success. The requirements engineering process will be introduced together with activities involved, such as requirements elicitation, analysis, documentation, validation and management. The tutorial will focus on techniques that can be used to improve each one of these stages. The techniques include stakeholder identification and profiling, interviewing, traceability techniques, reviews, requirements testing, requirements management, requirements change, tools, prototyping, etc. Emphasis will also be placed on how to handle non-functional quality requirements.

Armin Eberlein

Armin Eberlein teaches courses in requirements engineering, software engineering, project management, and software reliability and testing. He is also a Co-Director of the Alberta Software Engineering Research Consortium (ASERC). His research focuses on the application of artificial intelligence to requirements engineering, and the development of well-defined software engineering processes. Dr. Eberlein has authored his own development methodology to support all phases of the software development life cycle based on a three-dimensional framework for requirements engineering. Dr. Eberlein has previously been employed by Siemens and has consulted for several companies in the UK and Canada.
4. PLENARY SESSIONS

There will be three plenary sessions during the conference. One each on Monday, Tuesday, and Wednesday.

Plenary Session 1 - MPLEN   ROOM: Churchill
Monday, May 14, 08:15 - 09:15

Adaptive and Learning Systems: A key technology for today and ever more,
S. Haykin, McMaster University.

Abstract: Many of the physical phenomena encountered in practice exhibit the following stochastic characteristic:

- Real-life data are non-stationary in that their statistics vary with time, and the
- statistics may be unknown.

Adaptive and learning algorithms provide the only tool for dealing with such phenomena.

Recent developments in the study of adaptive and learning systems, which have established themselves as an indispensable tool in communications, signal processing, and control, will be addressed in this lecture. Indeed, their importance will grow in years to come as we continually endeavor to improve the many facets of system performance.

Simon Haykin
Simon Haykin, is a Professor in the Department of Electrical and Computer Engineering at McMaster University. He is a fellow of the IEEE, a fellow of the Royal Society of Canada, and a recipient of the honorary degree of Doctor of Technical Sciences from ETH, Zurich, Switzerland. He is the founding Technical Editor of the Wiley series of books on Adaptive and Learning Systems. His research interests include space-time communications for wireless systems, nonlinear dynamical systems for signal processing, and intelligent hearing instruments.
A.N. Venetsanopoulos, University of Toronto

Title: Multimedia Signal Processing and Applications

Abstract:

An overview of the research activities in the area of multimedia signal processing will be presented with particular emphasis on multimedia applications and services which have emerged in numerous areas including entertainment, e-commerce, medicine and education. The address will also explore the multimedia signal processing framework, the societal, economic and technical impact of multimedia systems and technologies, and their application to image and video retrieval.

See biography next page
Anastasios N. Venetsanopoulos

Anastasios N. Venetsanopoulos received the Diploma in Engineering degree from the National Technical University of Athens (NTU), Greece, in 1965, and the M.S., M.Phil., and Ph.D. degrees in Electrical Engineering from Yale University in 1966, 1968 and 1969 respectively. He joined the Department of Electrical and Computer Engineering of the University of Toronto in September 1968 as a Lecturer and he was promoted to Assistant Professor in 1970, Associate Professor in 1973, and Professor in 1981.

Since July 1997, he has been Associate Chair: Graduate Studies of the Department of Electrical and Computer Engineering and was Acting Chair during the spring term of 1998-99. In 1999 a Chair in Multimedia was established in the ECE Department, made possible by a donation of 1.25M$ from Bell Canada, matched by an equal amount of university funds. Prof. A.N. Venetsanopoulos assumed the position as Inaugural Chairholder in July 1999 and two additional Assistant Professor positions became available in the same area.

Prof. A.N. Venetsanopoulos has served as Chair of the Communications Group and Associate Chair of the Department of Electrical Engineering and Associate Chair: Graduate Studies for the Department of Electrical and Computer Engineering. He was on research leave at Imperial College of Science and Technology, the National Technical University of Athens, the Swiss Federal Institute of Technology, the University of Florence and the Federal University of Rio de Janeiro, and has also served as Adjunct Professor at Concordia University. He has served as lecturer in 138 short courses to industry and continuing education programs and as Consultant to numerous organizations; he is a contributor to twenty nine (29) books, a co-author of Nonlinear Filters in Image Processing: Principles Applications (ISBN-0-7923-9049-0), and Artificial Neural Networks: Learning Algorithms, Performance Evaluation and Applications (ISBN-0-7923-9297-3), Fuzzy Reasoning in Information Decision and Control systems (ISBN-0-7293-2643-1) and Color Image Processing and Applications (ISBN-3-540-66953-1), and has published over 680 papers in refereed journals and conference proceedings on digital signal and image processing and digital communications.

Prof. Venetsanopoulos has served as Chair on numerous boards, councils and technical conference committees of the Institute of Electrical and Electronic Engineers (IEEE), such as the Toronto Section (1977-1979) and the IEEE Central Canada Council (1980-1982); he was President of the Canadian Society for Electrical Engineering and Vice President of the Engineering Institute of Canada (EIC) (1983-1986). He was a Guest Editor or Associate Editor for several IEEE journals and the Editor of the Canadian Electrical Engineering Journal (1981-1983). He is a member of the IEEE Communications, Circuits and Systems, Computer, and Signal Processing Societies of IEEE, as well as a member of Sigma Xi, the Technical Chamber of Greece, the European Association of Signal Processing, the Association of Professional Engineers of Ontario (APEO) and Greece.

He was elected as a Fellow of the IEEE "for contributions to digital signal and image processing", he is also a Fellow of the EIC, and was awarded an Honorary Doctorate from the National Technical University of Athens, in October 1994. In October 1996 he was awarded the "Excellence in Innovation Award" of the Information Technology Research Centre of Ontario and Royal Bank of Canada, "for innovative work in color image processing and its industrial applications", in November 2000 he became Recipient of the "Millennium Medal of IEEE", in April 2001 he became a Fellow of the Canadian Academy of Engineering. Between July 2001 and June 2006 he will be the Dean of Faculty of Applied Science and Engineering of the University of Toronto.
Device Technology Convergence and the All Optical Cloud in Photonics

R. Normandin,
National Research Council,
Institute for Microstructural Sciences

Abstract: The emphasis, up to now, for WDM (Wavelength Division Multiplexing) applications in fiber telecommunication has been to augment the effective bandwidth by providing as many parallel channels as there were wavelengths. However, the advent of optical networks with exponential traffic growth of mixed analog and digital nature has increased interest in wavelength reuse, routing and switching in an all-optical domain. This is proving to be an interesting challenge from the point of view of the new needed optoelectronic materials, novel devices, as well as the architectural implications for the network. However, many of the required functional devices such as tuneable filters, switched amplifiers, routers, logic gates, wavelength agile lasers and low power displays are not readily available at this time. Signal regeneration, translation and display will require new device concepts to be explored and tested. All-optical or optically transparent networks are particularly challenging as few demonstrations have been done to date. Our recent efforts in novel devices and integration techniques will be described for these applications.

See biography on next page
Final Program

R. Normandin

Richard Normandin is Director General of the Institute for Microstructural Sciences with the National Research Council of Canada.

He received his B.Sc., in solid state physics, from the Université de Montréal. Subsequently he obtained his M.Sc. degree for work involving optical high-speed signal processing by surface acoustic wave interactions and his Ph.D. in the field of nonlinear integrated optics in dielectrics and semiconductors.

Dr. Normandin then joined the Division of Physics at NRC following a postdoctoral stay in Applied Physics and Engineering at Stanford University with the support of the National Sciences and Engineering Research Council and the Rutherford Memorial Scholarship of the Royal Society of Canada for work on X-ray lasers.

His current research interests are in the area of semiconductor nonlinear optoelectronic signal processing for fibre optic systems, both in all-optical and electro-optical regime, in an integrated monolithic context. In addition, several projects dealing with novel applied semiconductor geometries are being investigated for integrated electronic and optical systems. The principal semiconductors under investigation are the GaAs/AlGaAs, InGaAsP/InP systems and SiGe. Experimental and theoretical aspects are included. He is the author or co-author of approximately 175 papers and refereed conference papers in those fields, including over 25 patents awarded or pending.

Dr. Normandin is also and active member of the Optical Society of America and was elected “Fellow” for distinguished service and contributions to optoelectronics, nonlinear guided optics and its technological development. He also received the “Commemorative Medal for the 125th Anniversary of Confederation” from the Governor General of Canada in recognition of significant contribution to compatriots, community and to Canada. In 2000, the Canadian Association of Physicists (CAP) and the National Optics Institute (INO) awarded Medal for Outstanding Achievement in Applied Photonics to Dr. Normandin for his outstanding contributions and he also received the “Outstanding Achievement Award” from the National Research Council.
5. EXHIBITS – MOUNTBATTEN A

MONDAY  May 14, 10:00 – 18:00
TUESDAY  May 15, 08:00 – 18:00
WEDNESDAY May 16, 08:00 – 15:00

Exhibitor List:
- McGraw-Hill Ryerson
- IEEE Membership Development
- IEEE GOLD Program
- Niagara College

6. RECEPTIONS AND BANQUETS

Conference Opening Reception
SUNDAY, May 13, 2001 19:00 – 21:00
Churchill Room

All delegates are welcomed to Toronto and CCECE 2001 by IEEE Canada and the Conference Organizing Committee. This is your opportunity to “network” with colleagues, renew old friendships, and forge new ones over light refreshments and cocktails.
Final Program

**Student Paper Award**  
**ROOM: Churchill**  
**TUESDAY, May 15, 2001, 11:45 - 13:15**

**OPEN TO ALL DELEGATES**

There will be a buffet-style lunch on Tuesday

The winner of the **Student Paper Contest** will be announced.

**Guest speaker: Doug Barber**

B.Sc., M.Sc., DIC., Ph.D., D.Eng.(Hon), D.Sc.(Hon)  
P.Eng., FCAE

---

**Doug Barber**

H. Douglas Barber was born in Saskatchewan into a farming family. He obtained his B.Sc. degree with Great Distinction winning the Governor General's Gold Medal and his M.Sc. degree in Electrical Engineering at the University of Saskatchewan in 1959 and 1960 respectively. As an Athlone Fellow and a NATO Scholar, he received his DIC and Ph.D. from Imperial College, University of London in 1965.

From 1965 to 1973 he worked in the Solid State Devices Department of Canadian Westinghouse in Hamilton, Ontario, Canada, on the basic properties of silicon, the characterization of silicon and GaAs devices, device fabrication technology and integrated circuit design.

In 1973, he was one of the founders of Linear Technology Inc., a company designing, manufacturing and marketing bipolar monolithic integrated circuits. In December 1987, the company was renamed Gennum Corporation. Dr. Barber was the President and Chief Executive Officer of Gennum Corporation until April 20, 2000.
IEEE Awards Reception and Banquet

MONDAY, May 14, 2001 Time 18:00 – Churchill

TICKET REQUIRED (included with full registration)

Reception with Cash Bar Churchill Court

OPEN TO ALL DELEGATES

IEEE Canada Awards Banquet
The Conference Awards Banquet will honour recipients of IEEE Canada awards. It begins with a cocktail reception at 18:00 and dinner at 19:00.

Registrations include a ticket to the Awards Banquet, however others (Students, Life Members, and Day Registrants) can purchase a ticket at the Registration booth for $60. The pre-banquet reception is open to all delegates (cash bar).

Speaker – Wallace S. Read:
— “Engineers Don’t Grow on Trees”

The 21st century will see a vastly changed environment for the engineer. As responsible players in the struggle to ensure the survival and well being of this planet's population, engineers will be asked to play greater leadership roles than anytime in the past. Are the universities who train us, the industries that employ us and the governments who regulate us up to the task? Are we, ourselves, ready for the challenge?

The author will look at some of the challenges facing the professional engineer as we turn the corner into the 21st century. He will describe the changing environment in which the new wave of graduating engineers will find themselves, pointing out the necessity for all of us in academia, industry, governments and professional societies to accommodate changes in the way we train, use and protect this valuable human resource.

See biography next page
Wallace S. Read

Wallace S. Read was born in Newfoundland, Canada and received his Bachelor of Engineering from Nova Scotia Technical College in 1951 before entering the pulp and paper and hydro-electric power industries in his native province. Between 1964 and 1984, he held senior positions with Newfoundland and Labrador Hydro including President of Churchill Falls (Labrador) Corporation, and President and Chief Executive Officer of the Lower Churchill Development Corporation.

Upon retirement from CEA in 1995, Dr. Read was appointed to the Board of Commissioners of Public Utilities in Newfoundland and Labrador for a three year term. From 1998 to 2000 he was a member of the Board of Directors of SaskPower, the Crown Corporation responsible for the generation, transmission and distribution of electricity in the Province of Saskatchewan. Currently he is President of REMAS Inc., which provides consulting services to electric power utilities and governments.

Dr. Read also chaired the Board of Directors of the Canadian Center for Marine Communications from 1990 to 2000 and was elected 1996 President of the Institute of Electrical and Electronics Engineers (IEEE), the world's largest engineering professional society with 365,000 members in 150 countries.

His professional affiliations include being a Life Member of the Association of Professional Engineers and Geoscientists of Newfoundland, a Fellow of the Engineering Institute of Canada and a Life Fellow of the IEEE.

Over the years, he has received numerous awards including IEEE's General A.G.L. McNaughton Gold Medal, the Engineering Institute of Canada's Julian C. Smith Medal, the CEA's Distinguished Service Award, the Canadian Standards Association's John Jenkins Award, the IEEE Power Engineering Society's Power Life Award and the IEEE Centennial and Millennium Medals.

In addition to these honours, Doctor of Engineering Degrees (Honoris Causa) were conferred upon him by the Technical University of Nova Scotia in 1992 and by Memorial University of Newfoundland in 1996.
7. Information

High-speed Internet Access, courtesy of Bell Sympatico and Bell Nexxia will be provided for the convenience of all delegates in the Exhibit Area (Mountbatten ‘A’) on Monday, Tuesday and Wednesday. Note that internet access will not be provided in the presentation rooms.

8. Breakfast and Coffee Breaks

Continental Breakfast is served to all authors and fully registered participants in the Churchill Room from 07:00 - 08:15. Session Chairs will have a chance to meet with Authors at the tables provided.

Coffee (Networking) breaks are scheduled for 15 minutes at 9:15 and 15:15. All breaks are held in the Mountbatten Room.

Note that the Wednesday Afternoon Sessions begin at 13:00 (1 hour 15 minute lunch break)