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NATIONAL CAPITAL AREA COUNCIL

SCANNER

June/July/August 1995

Volume 10, No.3

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(See "Editor's Corner, page 14)

**Officers Training Workshop Will Help you
to Make Your Job as an IEEE Volunteer
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(See Calendar of Events, Page 6)

COMPASS '95

Tenth Annual Conference On Computer Assurance

(See Diamond Story on page 10, and ad on page 9)

"Connections for Excellence"

a K-12 Science Education Workshop

**A free workshop sponsored by the National Research Council (and others,
including the American Association of Engineering Societies)**

(See Diamond Story on page 6)

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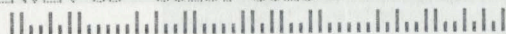
A Joint Publication of the Northern Virginia and Washington Sections

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Editor-in-Chief Tom Doepfner 8323 Orange Court Alexandria, VA 22309 703/780-3983 Fax: 703/799-9084	Associate Editor Jim Strother P.O. Box 3296 Alexandria, VA 22302 703/751-6186 Fax: 703/751-6869	Advertising Manager Charles W. True III HDS. Inc. 12310 Pinecrest Road Reston, VA 22091 Tel/Fax: 703/448-7622	Business Manager Jerry Johnston P.O. Box 1777 Lorton, VA 22199 703/246-0563 Fax: 703/246-0492
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Calendar of Events

Attendance at IEEE Meetings. IEEE meetings are open to members and guests. When meetings are combined with meal functions, it is not mandatory — although desirable — to attend the meal functions. Please make timely reservations for all meetings (cancel early, if necessary). Any IEEE member may attend Council and Section Administrative Committee (ADCOM) meetings.

Announcements. Calendar information should follow the format used in this Calendar of Events. The calendar item listing includes the abbreviation for the managing section after each society chapter listing. In the case of joint chapters, the managing section is listed first. A diamond (◆) preceding the event in a calendar item indicates that further information on that event is provided in the

"Diamond Stories" Department of that issue. Articles for the "Diamond Stories" Department should be limited to 150 words, and include a synopsis of the talk or event, and a biosketch of the speaker which lists, if available, his or her academic background, current position, and IEEE as well as other professional societies memberships, if any.

All announcements, diamond stories, and other material to be printed in an issue of the SCANNER must be sent or faxed to the Editor-in-Chief in time to arrive on or before the 25th of the second month preceding the month of desired publication. The deadline for camera-ready material (e.g., ads) is the first workday of the month preceding the month of desired publication.

MAY 1995

Thu May 25 ◆ Applications of the Hybrid Finite-Element Method to Periodic Array & Generalized Waveguide Problems

Sponsor: Antenna & Propagation Society (W/NV)
Speaker: Dr. Eric Lucas, Westinghouse Electric Company
Place: Atlantic Aerospace, 6404 Ivy Lane, Suite 300, Greenbelt, MD. From Beltway (I-95), take Exit 23, Rt 201 North; turn left on Ivy Lane. Meeting is in CDSC Bldg, 6404 Ivy Lane. If Main Entrance is locked, use after-hours phone and call 982-5266; someone will come to let you in.
Time: 6:30 pm
Contact: D.T. Auckland, 301/982-5285

JUNE 1995

Sat Jun 3 ◆ Officers Training Workshop
Sponsors: National Capital Area Council, Washington Section, Northern Virginia Section
Speakers: (See Diamond Story)
Place: George Washington University, Marvin Center 800 21st Street NW, Washington, DC

Time: 9:00 am to 3:00 pm; (See Diamond Article)
Contact: IEEE NCA Office, 703/803-8701, or Fax 703/222-5971 Reservations Required

Mon Jun 5 ◆ Connections for Excellence, a K-12 Science Education Workshop

Sponsor: National Research Council, and The Engineers Precollege Education Council of the American Association of Engineering Societies (AAES)
Place: National Research Council, Cecil and Ida Green Bldg, 2002 Wisconsin Ave NW, Washington, DC
Time: 10:00 am to 4:00 pm
Contact: This is a free workshop. To register, and for information, call Tish Agos, 202/296-2237, by June 1

Mon Jun 5- Tue Jun 6 ◆ Global Command and Control System (Course 181) SECRET (For further details see AFCEA entry for May 1-5 in Apr/May 1995 SCANNER)

Tue Jun 6 Consultants Networking/Business Meeting
Sponsors: NCAC/PACE Consultants Network, Washington Section, Northern Virginia Section
Place: (Call 301/262-0300 for location and details)
Time: Dinner 5:30 pm; Meeting 7:00
Contact: For dinner reservations call 301/262-0300 by noon, Monday, Jun 5

Tue June 6 Washington Section ADCOM Meeting
Place: Charlie Chiang's Restaurant, 4250 Connecticut Ave, NW, UDC-Van Ness Metro Stop on Red Line.
Time: Dinner: 5:30 pm; Meeting: 7:00
Contact: For dinner reservations: Call Jerry Gibbon, 202/482-2265

Tue Jun 6- Thu Jun 8 TECHNET '95, AFCEA'S International Convention and Exposition (Imaging '95 and TechTransfer '95 held in conjunction with TechNet). Make sure you visit the IEEE NCAC Booth while attending TECHNET!

Sponsor: AFCEA, the Armed Forces Communications and Electronics Association
Place: Washington Convention Center, Washington, DC
Contact: AFCEA Programs Office, 703/631-6128, or 1-800/336-4583, ext 6128. For exhibits information, call 703/631-6200 or 1-800/336-4583, ext 6200. Wed Jun 7 Northern Virginia Section ADCOM Meeting
Place: MITRE Corporation, 7525 Colshire Drive, McLean, VA
Time: 7:00 pm to 9:00
Contact: Lalit Batra, 703/883-785

Mon Jun 12 ◆ Resonant Tunneling for Multi-Valued and Fuzzy Logic Applications

Sponsor: Instrumentation and Measurement Society (W&NV)
Speaker: Dr. Hung C. Lin, Dept of Electrical Engineering, University of Maryland, College Park
Place: Martingale Restaurant, Gaithersburg Hilton Hotel, Gaithersburg, MD
Time: Social 6:15 pm; Dinner 6:45; Meeting 8:00
Contact: Paul Boynton, 301/975-3104; fax 301/926-3534 e-mail boynton@eeel.nist.gov

Thu Jun 15 ◆ Low-Earth Orbit (LEO) Mobile Satellite Communications Systems

Sponsor: Communications Society (W/NV)
Speaker: Mr. Todd Hara, Senior Systems Engineer, Orbital Communications Corporation
Place: George Washington University, Academic Center (22nd & I Streets, NW) Room T-640, EE Dept. One block from GWU/Foggy Bottom Metro Station; Parking across from Academic Center
Time: Brown bag lunch (bring your own) 11:45 am; Registration 12:00 noon; Presentation 12:15-1:00pm
Contact: Everyone is welcome; for information call Bob Hollingshead, 301/464-8900 (W), or 301/794-4035 (H)

Tue Jun 20 ◆ Technology Transfer to Developing Countries
Sponsors: NCAC PACE Consultants Network, (W/NV)
Place: Univ of MD, College Park Campus, A.V. Williams Eng Bldg, Room 2460; from Beltway take Rt 1 south, turn right on Campus Drive, immediate right on Stadium Drive, 1-1/2 blocks to A.V. Williams Bldg on right. Park across street in Lot G. Premeeting dinner

at Seven Seas Restaurant, 8503 Baltimore Blvd (Rt 1), College Park
Time: Dinner 5:30 pm; Meeting 7:00
Contact: For dinner resvns, 301/262-0300 by noon Monday Jun 19

Wed Jun 21 ◆ Education Chairs' Workshop
Sponsor: Liaison Committee of IEEE Educational Activities Board

Speakers: (See Diamond Story)
Place: Sheraton Washington Hotel, 2660 Woodley Road at Connecticut Ave, NW, Washington, DC
Time: 6:00 pm to 10:00 (Dinner will be provided for participants)
Contact: Pat Sammarco, Coordinator, EAB Operations Committee
Tel: 908/562-5492; fax: 908/981-1686; e-mail: p.sammarco@ieee.org

Mon Jun 26 NCAC Steering Committee Meeting
Place: Charlie Chiang Restaurant, 4250 Connecticut Avenue (at UDC-Van Ness Metro Stop)

Time: Dinner: 6:00 pm; Meeting 6:30
Contact: Dan Benigni, 301/975-3279, or NCAC Office, 702/803-8701

Mon Jun 26- Fri Jun 30 ◆ COMPASS '95; Tenth International Conference on Computer Assurance

Sponsors: National Capital Area Council & Aerospace and Electronic Systems Society (W/NV)
Place: National Institute of Standards and Technology (NIST), Gaithersburg, MD; Administration Bldg, Green Auditorium
Time: 9:00 am to 5:00 pm
Contact: General Chair: Bonnie Danner, 703/734-6599

JULY 1995

Mon Jul 3 Continuing Education Program: "Information Technology Systems Seminar"

Sponsors: Washington Section, Capitol College Graduate School, and AFCEA. July through September will be "early registration months" for the seminar which will take place on November 4. Early discounts, including luncheon, will be offered to IEEE members.
Chair: Jerry Gibbon Co-Chair
Time: 8:30 am to 4:00 pm: Technical Lectures, Presentation, and Exhibits
Contacts: Jerry Gibbon, 202/482-2265, or J.Gibbon@DOC.GOV; Capital College Seminar Coordinator, 301/953-0060

Mon Jul 10- Wed Jul 12 ◆ Digital AMPS Cellular Telephone Systems

Sponsor: George Washington University Continuing Education Program (See also ad on back page)
Instructors: (See Diamond Story)
Place: George Washington University Academic Center, Room 308, 801 22nd Street NW, Washington, DC
Time: 8:30 am to 4:15 pm
Contact: Monique Wilson, 202/994-0726; fax 202/872-0645; e-mail ceepinfo@seas.gwu.edu

Jul 11 **Washington Section EXCOM Meeting**
Place: Allee's Pantry Restaurant, Bethesda Marriott Hotel, 5151 Pooks Hill Road, Bethesda, MD. From Beltway take Wisconsin Ave (Rockville Pike) north to Exit 34. Stay in right lane to Route 355 South, Bethesda. Follow the U-turn to go south on Wisconsin Ave for about 1/4 mile to first traffic light: Pooks Hill Road. Bethesda Marriott Hotel is at 5151 Pooks Hill Road.
Time: Dinner 6:00 pm; Meeting 7:00 to 9:00
Contact: Nino Ingegneri, 301/279-4217, or Jackie Hunter, 703/803-8701

Tue Jul 11- Fri Jul 14 ♦ **Digital Cellular and Personal Radio Systems**
 (For further details, see GWU entry for Jul 10-12)

Tue Jul 18 ♦ **Consulting Workshop: How to Write an Effective Consultant's Resume**
Sponsors: NCAC PACE Consultants Network (W/NV)
Place: American Association of Engineering Societies 1111 19th Street N.W., Suite 608, Washington, DC. Call number below for location of pre-meeting dinner
Time: Dinner 5:30 pm; Meeting 7:00
Contact: For dinner reservations, 301/262-0300 by noon, Mon Jul 17

Tue Jul 18- Thu Jul 20 ♦ **Modern Radar Technology: An Introduction**
 (For further details, see GWU entry for Jul 10-12)

Thu Jul 20 ♦ **B-ISDN: Issues and Applications**
Sponsor: Communications Society (W/NV)
Speaker: Richard D. Guba, Senior Systems Engineer, Stanford Telecommunications, Inc.
Place: George Washington University, Academic Center (22nd & I Streets, NW) Room T-640, EE Dept. One block from GWU/Foggy Bottom Metro Station; Parking across from Academic Center
Time: Brown bag lunch (bring your own) 11:45 am; Registration 12:00 noon; Presentation 12:15 pm to 1:00
Contact: Everyone is welcome; for information call Bob Hollingshead, 301/464-8900 (W), or 301/794-4035 (H)

Mon Jul 24 **NCAC Steering Committee Meeting**
Place: MITRE Corporation, 7525 Colshire Drive, McLean, VA
Time: 7:00 pm to 9:00
Contact: Rex Klopfenstein, 703/883-6862, or NCAC Office, 703/803-8701

Mon Jul 24- Wed Jul 26 ♦ **ATM LANS: GIGABIT Networking**
 (For further details, see GWU entry for Jul 10-12)

Mon Jul 24- Fri Jul 28 ♦ **Electromagnetic Interference and Compatibility (EMI/EMC): A Practical Approach to Testing and Problem Solving**
 (For further details, see GWU entry for Jul 10-12)

Mon Jul 24- Fri Jul 28 ♦ **Microwave Tubes, High-Power Transmitters, and Microwave Systems: Basic Principles**
 (For further details, see GWU entry for Jul 10-12)

AUGUST 1995

Tue Aug 1 **Consultants' Network: Networking/Business Meeting**
Sponsors: NCAC PACE Consultants Network (W/NV)
Time: Dinner 5:30 pm, Meeting 7:00
Contact: For further details and dinner reservations, call 301/262-0300 by noon Mon Jul 31

Tue Aug 8 **Washington Section EXCOM Meeting**
Place: Allee's Pantry Restaurant, Bethesda Marriott Hotel, 5151 Pooks Hill Road, Bethesda, MD. From Beltway take Wisconsin Ave (Rockville Pike) north to Exit 34. Stay in right lane to Route 355 South, Bethesda. Follow the U-turn to go south on Wisconsin Ave for about 1/4 mile to first traffic light: Pooks Hill Road. Bethesda Marriott Hotel is at 5151 Pooks Hill Road.
Time: Dinner 6:00 pm; Meeting 7:00 to 9:00
Contact: Nino Ingegneri, 301/279-4217, or Jackie Hunter, 703/803-8701

Tue Aug 8 - Thu Aug 10 ♦ **The Cellular Telephone System**
 (For further details, see GWU entry for Jul 10-12)

Tue Aug 15 ♦ **Consulting Workshop Budgeting for Marketing and Sales**
Sponsors: NCAC PACE Consultants Network (W/NV)
Place: Univ of MD, College Park Campus, A.V. Williams Eng Bldg, Room 2460; from Beltway take Rt 1 south, turn right on Campus Drive, immediate right on Stadium Drive, 1-1/2 blocks to A.V. Williams Bldg on right. Park across street in Lot G. Premeeting dinner at Seven Seas Restaurant, 8503 Baltimore Blvd (Rt 1), College Park
Time: Dinner 5:30 pm; Meeting 7:00
Contact: For dinner resvns, 301/262-0300 by noon Monday, Aug 14

Thu Aug 17 ♦ **Mobile Radio Communications Underground**
Sponsor: Communications Society (W/NV)
Speaker: Mr. Ron Zeberlein, Motorola Corporation
Place: George Washington University, Academic Center (22nd & I Streets, NW) Room T-640, EE Dept. One block from GWU/Foggy Bottom Metro Station; Parking across from Academic Center
Time: Brown bag lunch (bring your own) 11:45 am; Registration 12:00 noon; Presentation 12:15 pm to 1:00
Contact: Everyone is welcome; for information call Bob Hollingshead, 301/464-8900 (W), or 301/794-4035 (H)

Mon Aug 21- Thu Aug 24 ♦ **Analyzing Communications System Performance**
 (For further details, see GWU entry for Jul 10-12)

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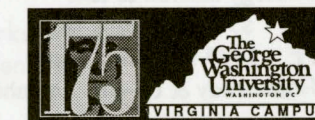
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◆ DIAMOND STORIES ◆

This Department of the SCANNER provides short abstracts and biosketches to accompany those calendar items which show a diamond (◆) before the item's subject or event.

Applications of the Hybrid Finite-Element Method to Periodic Array & Generalized Waveguide Problems

(See Calendar of Events, Thursday, May 25)

The hybrid finite-element method is a very general and versatile technique for the electromagnetic modeling of complicated devices. This presentation will focus on applications of the 3D hybrid FEM to radiation and scattering analyses of a variety of infinite periodic array structures (phased-array antennas, frequency selective surfaces, periodic absorbers, etc.).

The second part of the discussion will focus on the 2D Et-Ht dispersion and eigenmode computation for lossy, possibly non-reciprocal uniform waveguides and transmission lines. Theoretical as well as computational issues will be addressed.

Dr. Eric W. Lucas, an IEEE member since 1987, received his BS and MSEE degrees from George Mason University, and the Ph.D. in EE from the University of Maryland at College Park. He is a fellow engineer at Westinghouse, where he has been since 1986.

Officers Training Workshop

(See Calendar of Events, Saturday, June 3)

This annual workshop is designed to provide section and chapter officers with an overview of information required as an IEEE

volunteer officer, and an orientation on the many professional activities programs and benefits sponsored and provided by IEEE-USA Activities (IEEE-USA). Subjects to be presented include career maintenance and development, pension benefits, salary surveys, intellectual property, government activities, and technology policy issues. Highlights of the 1995 Professional Activities Committee for Engineers (PACE) Conference and Workshop will also be presented.

A knowledge of overall IEEE organization and professional activities programs is required for success as a council, section or chapter officer or director. Also invited (and urged to attend) are all incoming council and section officers and directors, all chapter officers and new student branch officers, as well as other interested IEEE members.

Handouts and slide/vugraph-supported presentations will cover much of the information presented, as will references to publications and other material which is provided to officers and PACE chairpersons.

A buffet lunch will be served to all attendees. Reservations should be made with the NCA Office, 703/803-8701, or preferably by FAX to 703/222-5971, no later than Thursday, June 1st.

Connections for Excellence A K-12 Science Education Workshop

(See Calendar of Events, Monday, June 5)

This learning experience will take you to the heart of the reform movement in science education. You will receive up-to-date

information on national, regional and local initiatives and experience activities at the center of today's curricular reform.

Engineers, scientists and educators will be immersed in hands-on, inquiry-based science experiences and key issues in K-12 education systems. Activities introduce model reform efforts and national initiatives and policies.

Learn how to develop a partnership — what to do and what not to do. You will hear from individuals involved in partnerships between scientists and teachers.

Resonant Tunneling for Multi-Valued and Fuzzy Logic Applications

(See Calendar of Events, Monday, June 12)

Resonant tunneling diodes (RTDs) have unique folding and hysteric V-I characteristics with very high speed. These characteristics offer many possibilities for multi-valued and fuzzy logic applications. Some possibilities for A/D converters, memories, counters, logic gates, and fuzzifiers will be described. The results for an integrated A/D converter will be given.

Dr. Lin received his BSEE degree from Chiao Tung University, his MSE degree from the University of Michigan, and his Doctor of Engineering degree from the Brooklyn Polytechnic Institute. He holds 51 U.S. patents and is the author or co-author of over 150 technical papers. He is a Fellow of the IEEE, and was the recipient of the 1978 J.J. Ebers Award of the IEEE Electron Devices Society.

Low-Earth Orbit (LEO) Mobile Satellite Communications Systems

(See Calendar of Events, Thursday, June 15)

Low-Earth-Orbit communications satellites will be an important part of the world's communications infrastructure in the coming years. Orbital Communications Corporation is currently developing the ORBCOMM System that provides two-way on-the-move data messaging anywhere in the world. The ORBCOMM System uses a constellation of 26 small spacecraft in low earth orbit (LEO) instead of terrestrial fixed-site relays or repeaters to provide worldwide geographic coverage. The ORBCOMM demonstration satellite is currently in orbit and being used for testing. The first two satellites for commercial use were successfully launched in April 1995, and are currently being tested.

The ORBCOMM System provides the user with data messaging capabilities beyond anything available today. The user will be able to compose, transmit and receive messages on very small, low cost, hand-held units integrated into palm-top computers. The unit transmits short data bursts using a small whip antenna from anywhere in the world. Our speaker will discuss the satellite constellation arrangement, ground stations, and network design required for world coverage.

Mr. Todd Hara is a Senior Systems Engineer with Orbital Communications Corporation (ORBCOMM), a subsidiary of Orbital Sciences Corporation. He holds a BS degree in EE/CS from UCLA, and an MS in Engineering from the University of Southern California.



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If it is impossible for you to attend, mail or fax your resumé,
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call the 24-Hour Infoline: 1-800-765-HIRE (4473) x9112 after 7/10/95.

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Monday & Tuesday, September 11 & 12 • 3pm - 7pm
Embassy Suites Hotel • Tysons Corner
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Baltimore/Columbia Technical Career Fair
Wednesday, September 13 • 11am - 6pm
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Technology Transfer to Developing Countries

(See Calendar of Events, Tuesday, June 20)

Tom Lauzon of Innova Communications will describe his work involving technology transfer with the former Soviet Union and Kazakhstan. He will cover conversion of government and military technology to civilian use, commercialization of technologies, problems and solutions encountered.

Education Chairs' Workshop

(See Calendar of Events, Wednesday, June 21)

The Liaison Committee of the IEEE Educational Activities Board (EAB) is organizing its fourth "Education Chairs' Workshop" as part of the IEEE Board of Directors' series of meetings in Washington, D.C.

OBJECTIVES:

1. To provide a forum for the education chairs/delegates from the various constituencies, including sections, regions, and societies, to explore common problems and develop joint solutions where none currently exist.
2. To help develop a mechanism for sections and chapters to operate as local education entities within the framework of society objectives.
3. To assist EAB in its efforts to develop a program relevant to the needs of the various IEEE entities, and to provide input for EAB to help chart a course for future educational activities relative to section and chapter needs.
4. To identify a cadre of interested, enthusiastic volunteers, and provide them with the tools and the network to carry out their respective responsibilities, particularly in educational activities.

PARTICIPANTS:

The Workshop is intended for both new and past workshop participants, or delegates, from the entities outlined in the distribution list shown below.

CALL FOR AGENDA TOPICS:

The workshop will be primarily proactive on the part of the volunteers, and is designed to be interactive. A principal activity will be information-sharing sessions. The agenda will be developed based on the input from participants. Please send your suggestions for agenda topics as soon as possible (the original deadline was May 1) directly to:

Raymond D. Findlay
Director, Engineering & Management
McMaster University, Bldg T-13, Room 124
Hamilton, Ontario, CANADA L8S 4L7
Tel: 905/525-9140; Fax 905/525-1276
e-mail r.findlay@iee.org

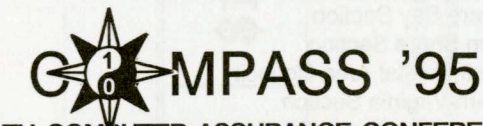
If possible, please send agenda topics via e-mail or fax.

ATTENDANCE:

As indicated in the Calendar of Events, Dinner will be provided for participants. All other expenses will be the responsibility of the entity which sponsors the participants.

DISTRIBUTION LIST:

- Past Workshop participants
- EAB members
- 1995 Society Presidents
- 1995 Region Directors
- 1995 Region Education Chairs
- 1995 Society Education Chairs



10TH COMPUTER ASSURANCE CONFERENCE
NATIONAL INSTITUTE OF
STANDARDS AND TECHNOLOGY
GAITHERSBURG, MD JUNE 26 - 30, 1995
An International Conference Sponsored by
the IEEE National Capital Area Council,
IEEE Aerospace and Electronic Systems Society,
and the British Computer Society

MONDAY, JUNE 26 - TUTORIALS

Practical Application of Formal Methods to Hi-Integrity Systems
by Victoria Stavridou, SRI; et al [FULL DAY]
Security Engineering Capability Maturity Model
by Karen Ferraiolo, ARCA Systems [FULL DAY]

TUESDAY, JUNE 27 - TUTORIALS

Safety Analysis in the MIL-STD-498 Environment [FULL DAY]
by Michael Evans, Computers And Concepts Associates
Metrics for Risk Assessment, Software Quality, and Process
Improvement by Linda Rosenberg, UNISYS [1/2 DAY]
Real-Time Rule-Based Systems: Analysis and Optimization
by Albert M. K. Cheng, University Of Houston [1/2 DAY]

WEDNESDAY, JUNE 28 KEYNOTE ADDRESS:
Robert Veeder, Taxpayer Privacy Advocate, IRS

SESSIONS:

TESTING
FORMAL DEVELOPMENT OF SAFETY-CRITICAL SYSTEMS
SAFETY KERNELS

THURSDAY, JUNE 29 SESSIONS:

TOOLS FOR TABULAR FORMAL SPECIFICATION METHODS
APPLICATIONS OF FORMAL METHODS
ALGORITHMS FOR CRITICAL SYSTEMS
PANEL: INTELLIGENT TRANSPORTATION SYSTEMS

THURSDAY EVENING BANQUET:

FEATURED SPEAKER: Peter Neumann, SRI

FRIDAY, JUNE 30 SESSIONS:

STANDARDS AND PROCESSES FOR CRITICAL SYSTEMS
FORMAL VERIFICATION, DESIGN, AND DOCUMENTATION

TOOLS FAIR:

8:00 A.M. TO 5:00 P.M.: JUNE 28, 29 (WED., THURS.)
8:00 A.M. TO 11:30 A.M.: JUNE 30 (FRIDAY)

TO REGISTER: CONTACT COMPASS '95 REGISTRAR:

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ARCA SYSTEMS, INC.
8229 BOONE BLVD., SUITE 610
VIENNA, VA 22182 USA

PHONE: (703) 734-5611 FAX: (703) 790-0385
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ADVANCE REGISTRATION ENDS 6/9/95

FOR FURTHER DETAILS, CONTACT:

General Chairman Bonnie Danner at (703) 734-6599
E-MAIL: bonnie_danner_at_seta@mail.hq.faa.gov
Program Chairman John Rushby at rushby@csl.sri.com



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 Washington Section
 Section Education Chairs from Philadelphia, Lehigh Valley,
 Princeton

For further information about the objectives of the workshop, feel free to call Dan Benigni, IEEE Director of Region 2, at 301/975-3266, fax 301/948-6213, or e-mail d.benigni@ieee.org

COMPASS '95
Tenth Annual Conference on Computer Assurance

(See Calendar of Events, Monday, June 26 to Friday, June 30)

COMPASS '95 is the tenth of a series of COMPASS conferences that began with COMPASS '86. COMPASS is dedicated to finding ways to assure that computer systems perform correctly under all circumstances within the context of the systems they control. The goal of COMPASS is to publicize ways to prevent unacceptable failures of critical systems, such as aircraft crashes, radiation machines killing patients, hackers vandalizing computers, and inappropriate disclosure of personal information.

COMPASS '95 will have sessions on Testing, Formal Development of Safety-Critical Systems, Safety Kernels, Tools for Tabular Formal Specifications, Applications of Formal Methods, Algorithms for Critical Systems, Standards and Processes for Critical Systems, Formal Verification and Design, and a panel on Intelligent Transportation Systems. Three full-day and two half-day tutorials will also be presented on Monday, June 26, and Tuesday, June 27. The keynote speaker on Wednesday, June 28, will be Robert Veeder, Taxpayer Privacy Advocate for the IRS. The dinner speaker on Thursday, June 29 will be Peter Neumann from SRI.

Digital AMPS Cellular Telephone Systems

(See Calendar of Events, Monday, July 10 to Wed. July 12)

This course begins by reviewing the architecture, features, and operation of the current analog cellular telephone system, commonly called the advanced mobile phone service (AMPS). It then examines the concepts of digital transmission for telecommunications systems. The course presents specific parameters

of the two digital systems standardized by the EIA/TIA for use in the North American cellular system. Those parameters include frequencies and channel assignments; speech encoding, modulation, multiplexing, and error control methods, and signaling and control protocols. Methods for the graceful introduction of digital transmission into the existing analog system are also covered.

Instructor: Douglas Kerr; Fee: \$975; Course # 1740; CEUs: 2.16

Digital Cellular and Personal Radio System

(See Calendar of Events, Tuesday, July 11 to Friday, July 14)

This course reviews the use of digital techniques in public switched telephony networks and outlines the limitations of traditional technologies in portable and/or mobile applications. The course discusses cell arrangements, channel assignments, and hand-offs. Both time and code division multiple access (TDMA and CDMA) are covered. The discussion includes parametric speech

coding for mobile telephony, as well as other significant digital modulation and multiplexing concepts.

Because of the importance of radio-wave propagation in mobile telephony, wave reflection and diffraction, as well as Rayleigh and Rician fading, are covered, as are roaming and paging. The course concludes with a discussion of satellite transmission and its potential role in mobile cellular telephony.

Instructor: Bernhard Keiser, D.Sc.EE; Course # 1836; Fee: \$1,125; CEUs: 2.88.

How to Write an Effective Consultants Resume

(See Calendar of Events, Tuesday, July 18)

We IEEE members are all highly trained in our technical specialties, but are generally unschooled in business. To address this shortcoming, the NCAC Consultants' Network presents this Consulting Workshop Series. (See page 6 of the Feb/Mar 1995 issue of the SCANNER for an overview of this Series.)

Session six in this series focuses on the all-important document: the resume. Our speaker, Jim Cooper, will discuss what types of information should be contained in a good resume, what to leave out, and how best to show your accomplishments.

Modern Radar Technology: An Introduction

(See Calendar of Events, Tuesday, July 18 to Thurs., July 20)

This introductory course in modern radar technology provides working knowledge of relevant basic principles. Fundamental concepts applicable to all modern radars are addressed and explained. Fourier transforms are discussed briefly but in sufficient detail for study and comprehension of current complex waveforms.

Instructor: Patrick Johnson, Ph.D.; Course # 1038; Fee: \$975; CEUs: 2.16.

B-ISDN: Issues and Applications

(See Calendar of Events, Thursday, July 20)

B-ISDN promises to provide integrated multi-media services using ATM over a fiber-optic infrastructure. The implementation of a universal B-ISDN network requires consumer access to the network via fiber, coax, or short runs of twisted-pair cable. Congestion management of the ATM network will be crucial due to the volume and speed of the packet transmission. Our speaker will discuss B-ISDN services, applications, infrastructure requirements, and congestion management techniques.

Mr. Richard D. Guba is a Senior Systems Engineer with Stanford Telecommunications, Inc., where he supports the NASA Tropical Rainfall Measuring Mission. He previously served as a captain in the U.S. Air Force, and is currently a Lieutenant in the Naval Reserve, supporting the AEGIS program office. He holds a BSEE from Rensselaer Polytechnic Institute and an MS in Computer Science from the University of West Florida, and is a licensed professional engineer.

ATM LANs: Gigabit Networking

(See Calendar of Events, Monday, July 24 to Wed., July 26)

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- CM control methodologies

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This course briefly reviews the first and second generations of local area network (LAN) capabilities. Broadband applications and the standards process are then discussed. Synchronous digital hierarchy (SDH) technology is described as the basic building block for the high-speed transmission network. The course describes the broadband integrated services digital network (B-ISDN) framework and its access in terms of the current International Telecommunications Union (ITU) standards.

The course discusses asynchronous transfer mode (ATM) technology as the third-generation approach to integrating voice, data, and image communications; and as a basic component for gigabit networking leading to B-ISDN. It covers LAN-wide area network (WAN) interworking options. This is followed by a case study examining voice, data, and video integration. The course reviews various state-of-the-art ATM LAN products, and concludes with a discussion of future trends in high bandwidth ATM LANs.

Instructor: Satish Chandra, Ph.D. Course # 1891; Fee \$975; CEUs: 2.16.

Electromagnetic Interference and Compatibility (EMI/EMC): A Practical Approach to Testing and Problem Solving

(See Calendar of Events, Monday, July 24 to Friday, July 28)

This course presents a comprehensive review and practical aspects of electromagnetic interference and electromagnetic compatibility (EMI/EMC) testing under Mil Stds 461 and 462, and their application to the design, development, test, and procurement of military electronic systems. Although some mathematical formulas are used, the course emphasizes the practical use of the military standards. Basic principles are briefly reviewed at the beginning of the course.

The course features hands-on demonstration of the following: conducted and radiated emission measurements; proper penetration of a shielded enclosure; printed circuit board (PCB) trace terminations; emission measurements; PCB diagnostics for emission source determination; PCB crosstalk; and power line conducted emission measurements and suppression.

Instructor: J.L. Norman Violette, Ph.D. Course # 1993; Fee: \$1,295; CEUs: 3.60.

Microwave Tubes, High-Power Transmitters, and Microwave Systems: Basic Principles

(See Calendar of Events, Monday, July 24 to Friday, July 28)

This course discusses the basic operation and design principles of microwave tubes, microwave systems, and high-power transmitters. Focusing on the tube and transmitter characteristics necessary to meet individual system requirements, the course discusses the evolution and principles of radar, communications, and electronic warfare (EW) systems, and of industrial and scientific equipment. Microwave tube theory applied to klystron amplifiers, millimeter wave tubes, and gyrotrons is presented.

The course covers basic theory of the generation and focusing of electron beams, the principles of density and velocity modulation of electron beams, and the application of microwave tubes to system hardware design. The theory and design of continuous wave (CW) and pulsed transmitters are presented with emphasis on the various modulator designs and modern components needed to operate advanced microwave tubes. Power conditioning, tube protection circuits, cooling considerations, and modern system

examples are also discussed.

Instructors: Arnold Acker; William North; Course # 1037; Fee: \$1,295; CEUs: 3.60

The Cellular Telephone System

(See Calendar of Events, Tues., August 8 to Thurs. August 10)

This course reviews the objectives of the North American cellular mobile telephone system's advanced mobile phone service (AMPS) and the overall concepts, standards, and functions by which those objectives are achieved. The course describes the operation of a cellular system and its subsystems. Complete information is provided on technical parameters such as frequencies and channel assignment, modulation and encoding methods, and signaling and control protocols. The course also discusses regulatory and institutional aspects of the U.S. cellular industry.

Instructor: Douglas Kerr; Course # 1608; Fee: \$975; CEUs: 2.16
Consulting Workshop:

Budgeting for Marketing and Sales

(See Calendar of Events, Tuesday, August 15)

This is the seventh session of the IEEE NCAC Consultants' Network's "Consulting Workshop Series."

Marketing is the single most important issue in a consulting business, yet the one which we electrical engineers are the least trained to handle. In this installment, speaker Bill Westcott will show us that our consulting practices have to budget a certain percentage of gross sales to getting more sales, just like any other type of company. Bill will explore the true cost of sales and the importance of a sales-oriented attitude in the marketing process.

Mobile Radio Communications Underground

(See Calendar of Events, Thursday, August 17)

Mobile radio systems have given users of wireless communications greater mobility. However, they are still basically line-of-sight communication systems with limited penetration into structures such as buildings, tunnels, underground facilities and ships. This limitation has narrowed the scope of use of these wireless systems to almost exclusively outdoor applications. Motorola has developed a communications system that extends wireless mobile communications into areas previously impenetrable by radio waves, thus enhancing the flexibility of wireless systems, and enabling them to provide service to areas previously impossible to cover. Mr. Zeberlein will discuss the propagation characteristics and some practical applications of this system.

Analyzing Communications System Performance

(See Calendar of Events, Mon., August 21 to Thur. August 24)

This course describes how to analyze communications systems by using performance equations. A wide range of design techniques and components, applicable to both commercial and military systems, is addressed, including modulation, antennas, spread-spectrum, error control coding, and multiple access techniques. Environmental effects such as jamming, interference, interception, and propagation are discussed. The course presents design examples and includes several work sessions to give participants direct experience in system analysis.

Instructor: Barry Driggs; Course # 1640; Fee: \$1,125; CEUs: 2.88

CHAIRMANS' CORNER

National Capital Area Council Chairman's Message

With this issue of the Scanner we come to the end of another year in the life of the local IEEE. On behalf of the current NCAC officers and committee chairs, I would like to take this opportunity to wish the newly elected council officers who will take charge on July 1st success in the coming year.

In assessing the record of this past year, I believe we can point to some solid accomplishments: publication of the Scanner; publication of the Directory; support for local workshops and conferences; and continued support for our out-of-work colleagues with the Lendman Group job fairs. But with continuing and increasing financial pressures, we have been unable to initiate new and exciting programs for our local membership, which continues to decline. I hope that those who follow can reverse these trends.

I have only praise and thanks for all of you who have made my past four years on the Council so rewarding. I have had a great bunch of fellow volunteers working with me, and that includes all those in the NOVA and WASH sections as well. But I must single out publicly two very close and personal friends, who have helped me and guided me along the way — Tom Doeppner and Jim Strother. If I have had any success in council (and section) positions over the past ten years, it is due to their unfailing support for our local IEEE and for me.

Let me end by repeating the message I have been delivering all year long — We need your help if the local sections and the council are to have continued success in the future. Our Conferences Chair, Art Cotts, is stepping down; Tom Doeppner is looking to train someone to succeed him as Scanner Editor; and the list goes on. We need a new cadre of volunteers, with energy and ideas, to lead our local IEEE into the next century. Please consider becoming one of them.

I look forward to continuing to serve you as IEEE Region 2 Director through 1996.

Dan Benigni

Chairman, National Capital Area Council

Washington Section Chairman's Message

Each year the IEEE sets aside time to recognize members who have contributed to its many activities and programs during the program year. The Washington Section calendar runs from July through June, as does the National Capital Area Council, the Northern Virginia Section, and all our local chapters. IEEE Hq, however, reviews its activities on the basis of a calendar year (January to December). The reason I bring this to your attention is that we set our clock to that of IEEE HQ when the time comes to recognize the accomplishments of our section and chapter officers.

This year, the NCAC Awards Banquet was held in April.

Awards were presented to members of the Council, as well as both Sections. Four Washington Section members and ten Society Chapter members were so honored, as were members of the Council Steering Committee and the Northern Virginia Section, and prestigious "Pinnacle Awards" were bestowed upon three former IEEE Presidents who reside in the Council area. Again, I extend my congratulations to all our awardees and thank them for making this one of the most memorable years in the Washington Section in terms of achievements toward accomplishing our mission. We had members from academia, industry, and government among the winners. (A list of the awardees will be published in the September issue of the SCANNER.)

In passing the Section on to the upcoming officers, I think it fair to say that the Section is in good shape operationally, and has a fine group of IEEE members on whom to rely in the future. I wish them well, and I plan to continue my IEEE service at the Council level.

Jerry Gibbon

Chairman, Washington Section

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[The following items are excerpted from IEEE and National Institute of Standards and Technology (NIST) news sources and — starting with this issue — from the Aerospace Technology Committee of the National Air and Space Museum, Smithsonian Institution]

Radio Astronomers Seek Protection

If Motorola and other companies follow through on their plans to launch fleets of small communication satellites, the airwaves could get very crowded. Astronomers are not taking this matter lying down. "The signals we listen to are hundreds of billions of times weaker than terrestrial radio signals, so it doesn't take much to completely disrupt our observations," explains Andrew Clegg, a radio astronomer in the Electromagnetic Spectrum Management Unit of the National Science Foundation. "We can't change the frequencies that natural sources emit, but commercial users can adjust the frequencies at which they transmit."

To solve this problem, the FCC has drafted regulations for sharing the radio spectrum among scientists trying to study the cosmos, and companies planning to provide mobile-phone service. These proposals have earned the support of astronomers and the telecommunications industry. The Commission is expected to adopt final rules very shortly.

Portable Satellite Links Propagate Among Users

Technology upgrades are producing new secure ultra-high frequency satellite communications terminals that individual soldiers can use in the field. These small, lightweight units are evolving from existing manpack systems that, in some cases, are reconfigured with replacement boards and software algorithms. The new systems are fulfilling a 1989 Joint Chiefs of Staff mandate to field secure ultra-high frequency (UHF) satellite communications throughout the defense community by September 30, 1996. This mandate calls for 5-kiloHertz and 25-kiloHertz embedded demand-assigned multiple access (DAMA) capability with encryption. The U.S. Army has awarded its first contract for several thousand of these systems, and manpack terminal manufacturers are scrambling to produce units for what they believe is a rapidly expanding market.

The JCS mandate requiring mandatory DAMA in military satellite communications transceivers aims at relieving congestion on UHF communications and satellites. DAMA multiplexes signals on a satellite communications channel, opening up access to

EDITOR'S CORNER

E-Mail for SCANNER Inputs!

Yes, the SCANNER has, finally, entered into cyber space! I got rid of my ancient 286 computer, purchased a 486 and Word Perfect for Windows, and learned how to click and double-click. (Not bad for a vacuum-tube engineer!) Therefore, starting with the September issue, you may send your Calendar of Events Items, Diamond Stories and, hopefully, Letters to the Editor to my e-mail address, which is T.Doeppner@IEEE.ORG. (Give credit to George Hagn, Ron Aasen and Jim Strother, who helped to shame me into this!)

Tom Doeppner
Editor-in-Chief

more users. The increasing portability of satellite communications systems also increases the number of potential users.

Global Trade Law Will Protect Intellectual Property

Considered the most ambitious global trade agreement in 40 years, the General Agreement on Tariffs and Trade (GATT), as approved by the U.S. Congress late last year, will ensure — among other provisions — that the 100 signing nations protect intellectual property. While "GATT" is similar to previous agreements removing tariffs and trade barriers, its provisions for patents, copy rights, trade secrets and trademarks are unprecedented.

The new pact aims to prevent unauthorized use worldwide of computer software, film, compact disks and prescription drugs. Under the approved treaty, patents will extend for 20 years from filing — as previously endorsed by the IEEE United States Activities division — under a "first-to-file" system.

IEEE-USA Endorses "Front-Loaded" IRA

An expanded, tax-deductible Individual Retirement Account (IRA) will generate similar benefits for savers and more tax revenue for the U.S. Treasury than the non-deductible American Dream Savings Account (ADSA), according to IEEE-USA Board Chairman Joel B. Snyder. Snyder testified on savings incentives before the House Ways and Means Committee.

According to Snyder, IEEE-USA agrees with congressional leadership that changes in tax policy are urgently needed to boost personal savings and stimulate private domestic investment. However, he said: "Other than providing for easier access to and greater flexibility in the uses which can be made of account balances, the proposed ADSAs offer few, if any, advantages over other savings incentives that are currently available to taxpayers."

Snyder proposed a dramatic expansion of tax-deductible IRAs. Noting the 63% decline in IRA contributions that followed restrictions enacted in 1987, he concluded that "an expanded 'front-loaded' IRA will stimulate much more in new savings than the proposed 'back-loaded' ADSA."

In addition to making IRA contributions tax-deductible, Snyder recommended the following savings incentives: removing income eligibility ceilings; expanding allowable contribution limits; and substituting loan provisions for penalty-free withdrawals.

An improved IRA will not only benefit savers and taxpayers, it will also benefit the federal Treasury, according to Snyder. "In the long run, an incentive with tax-deductible contributions and fully taxable proceeds will generate considerably more revenue when the accounts are eventually cashed out," he testified.

IEEE Endorses Efforts to Curb Displacement of U.S. High-Technology Workers

IEEE-USA has endorsed new U.S. Department of Labor regulations governing temporary admission of foreign professionals to work in the United States.

The new rules, effective last month, "close loopholes in existing laws and make it more difficult for companies to replace American professionals with lower-paid foreign workers," said IEEE-USA Board Chairman Joel B. Snyder. "These improvements are critical because of high unemployment among U.S. engineers, and

increasing numbers of professionals in developing countries who are especially vulnerable to exploitation," Snyder added.

Under the H-1B program of the Immigration Act of 1990, temporary "specialty workers" such as engineers and other computer professionals could work in the U.S. for up to six years. The new rules limit H-1B visas to three years and beef up enforcement of employer reporting requirements. Employers must now provide specific information on the numbers of foreign nationals they intend to hire. They must also certify that H-1B workers will be paid the prevailing wage, employment of foreign nationals will not hurt working conditions for U.S. citizens, and no strikes or lockouts exist at intended work sites. In addition, the Labor Department will be empowered to investigate suspected abuses without waiting for formal complaints.

In recent years, IEEE-USA has become concerned about potential abuses of the H-1B program as numbers of temporary admissions have skyrocketed — even while engineering unemployment has increased to record levels. Estimated temporary admissions of foreign scientists and engineers more than doubled between 1986 and 1993 — from 28,106 to 59,664 (based on Immigration and Naturalization Service unpublished data). During the same period, according to the Bureau of Labor Statistics, U.S. engineering unemployment ballooned from 2.3% to 4.1%. A 1993 Labor Department crackdown fined eight employers for significant H-1B violations, resulting also in payment of back wages to underpaid foreign workers.

IEEE Offers U.S. Members New Retirement Planning Software

The IEEE has introduced a new software package to help its U.S. members achieve financial security after retirement. The Institute is offering the Retirement Asset Manager software to members at a special discount through the IEEE Financial Advantage Program. The software was developed in consultation with the IEEE-USA Engineering Employment Benefits Committee.

"Retirement Asset Manager for Windows" provides a comprehensive, step-by-step approach to saving and investing for a secure retirement. It helps users focus on their retirement income goals, determine realistic future income needs, and explore income sources and investment strategies to meet those goals.

The software carries a retail price of \$69.95, but IEEE members can purchase it for only \$44.95 through the IEEE Financial Advantage Program, a member service that brings value-added benefits on a variety of financial services. For information or to place an order, call 1-800/ASSTMGR.

Join the Fight to Preserve Federal R&D Funding!

Congress' first 100 days have witnessed significant federal R&D funding cuts in a variety of areas. In response, IEEE's United States Activities Board (USAB) Chair Joel B. Snyder and Marvin H. Hammond, chair of IEEE-USA's Research and Development Policy Committee, recently issued an electronic-mail alert to U.S. IEEE members, urging them to contact their Senators and Representatives about Congressional actions to reduce this funding.

For example, the Advanced Technology Program of the National Institute of Standards and Technology, and the Technology Research Project managed by the Department of Defense's

Technology Reinvestment Project, have been singled out for large reductions. Critics of federal involvement in applied research and federal budget cutters have attacked these programs, along with energy supply R&D, university R&D, the manufacturing extension partnership, and national laboratory technology transfer. The decisions are part of a larger debate raging in Congress on the federal government's role in technology development.

USAB Chair Seeks Reexamination of Current Immigration Policies

Calling for a reexamination of current immigration policies, USAB Chair Joel B. Snyder testified before the U.S. Commission on Immigration Reform on employment-based immigration. He asked the Commission to reassess current policies governing the entry of foreign engineers and other skilled workers into the United States, in light of changing economic, technological and employment conditions in the United States.

Snyder cited statistics showing that admissions of foreign engineers and scientists into the United States have skyrocketed, while engineering unemployment has reached record high levels. He added that labor certification requirements should be extended to all employment-based immigration admissions, both permanent and temporary.

IEEE-USA Lobbies for Continued Fusion Power Development

Urging Congress to continue funding research and development of thermonuclear fusion power, IEEE-USA Energy Policy Committee Chair Ned R. Sauthoff testified before the House Subcommittee on Energy and Water Development on March 28. He emphasized fusion's potential as "an inexhaustible and environmentally attractive energy source."

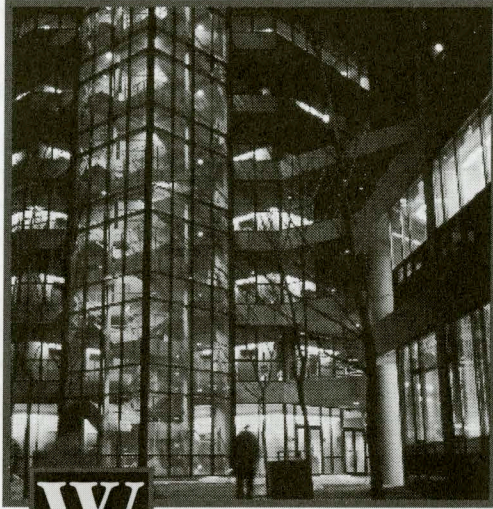
Sauthoff underscored fusion's importance in maintaining reliable and affordable electrical power, which is necessary for the United States to sustain and increase its productivity and economic competitiveness, and support a high quality of life. He added that a stable government commitment to long-term fusion power development is essential for our country to remain a leader in strategically important energy sources.

Canada has New National Society Under IEEE

The Canadian Society of Electrical and Computer Engineering (CSECE) recently merged with IEEE's Region 7, which includes all of Canada, to form IEEE Canada. The new organization now becomes the national society for about 14,000 electrical and computer engineers plus 3,000 student members. They represent some 20 percent of the IEEE's non-U.S. membership.

The goal of the merger, according to IEEE Canada President and Region Director Dr. Ray Findlay, was "to create a single Canadian entity that can effectively represent both the technical and professional interests of the electrical and computer engineering community."

Among other goals are to eliminate duplicated services, support accreditation of engineering programs in Canada, communicate on policy issues affecting members, and provide leadership in Canada in technical and professional affairs.

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