

SCANNER

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Intellectual Property Rights Receive Increased Attention

By Monica A. Mallini
and Debi Siering

In the United States, where design and invention are major economic activities of technical professionals, the protection of intellectual property—patents, copyrights, and trade secrets—is of paramount importance.

A trio of experts in intellectual property (IP) litigation, legislation and reform shared their knowledge at an October meeting sponsored by the Women in Engineering affinity group with cosponsorship by the Aerospace and Electronic Systems Society, Communications Society, Computer Society, Information Theory Society, Lasers and Electro-optics Society, and Society for Social Implications of Technology.

IP brings engineers, who are accustomed to dealing with inviolate laws such as gravity, into the unfamiliar realm of statutory and common law, which is surrounded by a "zone of

vagueness," because anything written in the law can be argued.

Stuart Huang, an electrical engineer and patent attorney with Steptoe and Johnson in Washington, D.C., discussed IP principles and protective laws, and answered thought-provoking questions from the audience.

Employment agreements are particularly troublesome, for they allocate the results of an employee's thinking to someone else. Some agreements stipulate that the company owns potential IP developed by an employee—even if the work was done at home and has nothing to do with the employer's business! Although key employees may have the power to negotiate more favorable terms, Huang warned that employees who are highly "fungible" must often choose between signing a boilerplate agreement or terminating employment.

Only eight states have inventor's rights laws, which give employees

recourse if an employer claims rights to IP that was created with the employee's own time and resources and is unrelated to the employment. IEEE-USA's government affairs office, staffed by six lobbyists, is targeting the issue in state legislatures this year.

Russell T. Harrison, IEEE-USA's legislative representative for grassroots activities, reviewed a full spectrum of activities undertaken by his office, including patent reform initiatives to increase individual and monetary recognition.

Harrison stressed the importance of technical professionals getting involved in the interactive process of politics. "Engineers don't usually talk to politicians. But when they do, politicians listen, because we know stuff that politicians need to know to do their jobs. And they know it," he said.

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continues on page 6

Engineers Week Activities Planned

By Murty Polavarapu

The annual celebration of Engineers Week, February 19–25, is not only an occasion to recognize the contributions of working engineers, but also an opportunity to encourage young people to pursue engineering careers.

Please take time out during the week to visit a K-12 classroom and discuss the fun and challenge of engineering. If you need resource material for classroom exercises, you can contact me at murtyp@ieee.org. Additional details are also available at www.eweek.org.

IEEE-USA will co-sponsor the Discover Engineering Family Day on Saturday, February 18, at the National Building Museum. This free one-day festival will give young people the opportunity to participate in a variety of hands-on activities that explore the fields of engineering. See Calendar, p. 4, and www.eweekdcfamilyday.org.

The District of Columbia Council of Engineering and Architectural Societies (DCCEAS), of which both the Washington and Northern Virginia sections are members, will celebrate the week with two events.

On Wednesday, February 22, Dr. Jane Alexander, Deputy Director, Homeland Security Advanced Research Projects Agency, will speak at the Engineers Week Proclamation Day Luncheon at Pier 7 Restaurant in Washington. She will discuss the inter-disciplinary nature of new technologies needed for homeland security.

The DCCEAS Awards Banquet will be held at the Four Points Sheraton in Washington on Saturday, February 25. Keynote speaker Marshall Purnell, design principal at Devroux and Purnell Architects, will discuss the design of the new baseball stadium.

The deadline for reservations is February 15 for both DCCEAS events. Please see the Calendar of Events, p. 4, for details and reservation information.

NoVA to Meet at New Site

The Northern Virginia Section is holding its monthly Administrative Committee meetings at a new location in 2006. See Jan. 11 and Feb. 8 listings in Calendar, p. 3.



Powered by the Sun—A solar home designed and built by a team of University of Maryland students won the People's Choice Award at the U.S. Department of Energy's 2005 Solar Decathlon in October. All of the home's power is provided by 51 roof-top solar panels, each capable of generating 175 watts of electricity. Despite its popularity with visitors, the judges ranked the house eighth overall in the competition, which attracted entries from 18 colleges in the U.S., Puerto Rico, Canada and Spain. The student teams erected a "Solar Village" on the National Mall in Washington, and each team lived in their home for 10 days while collecting data on energy efficiency. The University of Maryland team received donations of materials, time and money from a number of sponsors, including the IEEE Washington Section. After the competition, their house was moved to Red Wiggler Community Farm in Germantown, Maryland. For more information, visit www.solarhouse.umd.edu, www.ieee.org/escanner/storyindex.html or www.solardecathlon.org.

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Calendar Items and Announcements

Please submit calendar items in the format used in the Calendar of Events. You can send email to ncac-scanner@ieee.org. If possible, include a synopsis of the event and a biographical sketch of the presenter including academic background, current position, notable achievements, and IEEE and other professional affiliations.

Other contributions, such as reports on chapter events and other member activities, reviews of books by or of interest to members, are most welcome. Please submit them to the managing editor, electronically if possible, at ncac-scanner@ieee.org.

On the Web

eSCANNER Calendar of Events

The calendar is available at www.ieee.org/escanner. Check here for events submitted too late for print publication.

IEEE National Capital Area Virtual Community

Exchange ideas and participate in discussions with local IEEE members at www.ieee-communities.org/ncac.

Advertising

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Deadlines

The editor reserves the right to set policies and procedures necessary to provide members with a newsletter that is informative and timely. Deadlines must be strictly adhered to to keep the publication on schedule. If you are planning an event and have insufficient information by the deadline, please contact the managing editor.

The deadline for the upcoming issue will always be published on this page.

The deadline for the March-April issue is February 1, 2006

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CALENDAR OF *events*

Tuesday, January 3, 2006 Washington Section Administrative Committee Meeting

Time: Dinner at 6:00 pm; meeting at 6:30 pm
Place: Allie's American Grill, Bethesda Marriott, 5151 Pooks Hill Rd., Bethesda, MD
Directions: From the north, take 270 South to Route 355 and exit at Wisconsin Ave. From the south, take 495 exit 34 (which is Wisconsin Ave.) to Pooks Hill Rd.
More Info: All interested IEEE members are welcome to attend.
Contact: Debra Meale at 703-492-0047 or nca-admin@ieee.org. Please include the term IEEE in the subject line of your e-mail.

Tuesday, January 3, 2006

There will be no meeting of the National Capital Area Consultants' Network in January.

Wednesday, January 11, 2006 Northern Virginia Section Administrative Committee Meeting

Time: 6:30 pm
Place: Please note the new location: Wickers Cafe, Tysons Corner Holiday Inn, 1960 Chain Bridge Road, McLean, VA
Directions: From I-495 or I-66, take Route 267 West. Exit at Route 123 West (Chain Bridge Road). Turn right on International Drive, then left on Greensboro Drive. Look for the Holiday Inn entrance on the left.
More Info: All interested IEEE members are invited to attend.
Contact: Debra Meale at 703-492-0047 or nca-admin@ieee.org. Please include the term IEEE in the subject line of your e-mail.

Wednesday, January 18, 2006 Computer Society Technical Meeting

Sponsor: Computer Society, Northern Virginia and Washington Chapter
Speaker: TBA
Time: Networking and food 6:00 pm; technical presentation 7:00 pm
Place: TBA
More Info: Updates will be available online at www.ieee.org/escanner.
Cost: Free for all IEEE members, \$3 for all others.
Contact: Registration details TBA. For more information, contact T.K. Ramesh at tkramesh@ieee.org.

Wednesday, January 18, 2006 ◆ Photon Counting Micro-detectors and Their Applications

Sponsor: Lasers and Electro-Optics Society (W/NV)
Cosponsor: Optical Society of America (National Capital Section)
Speaker: Dr. Sergio Cova, Politecnico di Milano, LEOS Distinguished Lecturer
Time: Reception at 6:00 pm; lecture at 6:30 pm; optional dinner at 7:45 pm with the speaker at a nearby restaurant. Reservation not necessary.

Place: University of Maryland, A.V. Williams Building, Room 2460, College Park, MD
Directions: From the north or I-495, take Route 1 South. Approx. 2 miles south of the Beltway, turn right onto Campus Drive, then immediately take Paint Branch Drive and the A.V. Williams Building will be on the right. From the south on Route 1, turn left onto Campus Drive, and follow above directions. Ample parking is available after 4:00 pm. See <http://www.parking.umd.edu/themap>.
More Info: See http://ewh.ieee.org/r2/wash_nova/leos or Diamond story, p. 4.
Contact: Dominique Dagenais at 301-951-7095 or dominique_dagenais@avanex.com, or Lucy Zheng at 703-578-2721 or lzheng@ida.org.

Wednesday, January 25, 2006 Indian Space Research Organization Overview

Sponsor: Aerospace and Electronic Systems Society, Washington and Northern Virginia Chapter
Speaker: Virender Kumar, Counselor (Space), Embassy of India, Washington, DC
Time: Dinner at 6:00 pm; speaker at 6:45 pm
Place: NASA Goddard Space Flight Center Visitor Center, Greenbelt, MD
Directions: See www.nasa.gov/centers/goddard/visitor/directions/index.html
More Info: Virender Kumar, an experienced technologist in the field of space research, will present an overview of the Indian Space Research Organization, including a 30-minute video followed by questions and answers.
Cost: Free, including dinner (pizza).
Contact: Please RSVP to Darrell Young at 703-560-5000 x4027 or dy@ieee.org.

Friday, January 27, 2006 Signal Processing Society Organizational Meeting

Sponsor: Signal Processing Society, Washington
Time: TBA
Place: 2211 Kim Bldg., UMD, College Park, MD
More Info: Meeting to discuss re-establishment of the Washington Chapter and plan activities.
Contact: Dr. Min Wu at minwu@umd.edu.

Tuesday, January 31, 2006 ◆ An Overview and History of Satellite Constellation Design

Sponsor: Communications Society, Northern Virginia Chapter and Washington Chapter
Speaker: Capt. John E. Draim, USN (Ret.), Aerospace Consultant
Time: Dinner at 6:00 pm; speaker at 6:45 pm
Place: Mitre Corporation, Building 2, 7515 Colshire Drive, McLean, VA
Directions: Off Route 123 in Tysons Corner. See www.mitre.org/about/locations/mitre2_map.html.
More Info: See Diamond story, p. 4.
Cost: Free, including dinner.
Contact: Please RSVP to Fred Seelig at fseelig@mitre.org.

Tuesday, February 7, 2006 Washington Section Administrative Committee Meeting

Time: Dinner at 6:00 pm; meeting at 6:30 pm
Place: Allie's American Grill, Bethesda Marriott, 5151 Pooks Hill Rd., Bethesda, MD
Directions: From the north, take 270 South to Route 355 and exit at Wisconsin Ave. From the south, take 495 exit 34 (which is Wisconsin Ave.) to Pooks Hill Rd.
More Info: All interested IEEE members are welcome to attend.
Contact: Debra Meale at 703-492-0047 or nca-admin@ieee.org. Please include the term IEEE in the subject line of your e-mail.

Tuesday, February 7, 2006

◆ NIST Advanced Technology Program

Sponsor: National Capital Area Consultants' Network
Speaker: Gerald Castellucci
Time: Dinner at 6:00 pm; speaker at 7:00 pm
Place: Location information will be updated online at www.ieee.org/escanner.
More Info: This presentation is subtitled "Federal Government Support for Breakthrough Technologies." The Advanced Technology Program (ATP) partners with companies of all sizes, encouraging them to take on greater technical challenges with potentially large benefits that extend well beyond the innovators. For smaller, start-up firms, early support from the ATP can spell the difference between success and failure, and more than half of the ATP awards have gone to individual small businesses or to joint ventures led by a small business. See Diamond story, p. 5.
Contact: Rick Cunningham at 703-624-6551 or rick@corridor-rd.com.

Wednesday, February 8, 2006 Northern Virginia Section Administrative Committee Meeting

Time: 6:30 pm
Place: Please note the new location: Wickers Cafe, Tysons Corner Holiday Inn, 1960 Chain Bridge Road, McLean, VA
Directions: From I-495 or I-66, take Route 267 West. Exit at Route 123 West (Chain Bridge Road). Turn right on International Drive, then left on Greensboro Drive. Look for the Holiday Inn entrance on the left.
More Info: All interested IEEE members are invited to attend.
Contact: Debra Meale at 703-492-0047 or nca-admin@ieee.org. Please include the term IEEE in the subject line of your e-mail.

Wednesday, February 15, 2006 Computer Society Technical Meeting

Sponsor: Computer Society, Northern Virginia and Washington Chapter
Speaker: TBA

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CALENDAR

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Time: Networking and food 6:00 pm; technical presentation 7:00 pm
Place: TBA
More Info: Updates will be available online at www.ieee.org/escanner.
Cost: Free for all IEEE members, \$3 for all others.
Contact: Registration details TBA. For more information, contact T.K. Ramesh at tkramesh@ieee.org.

Thursday, February 16, 2006◆ **3-D Micro-Electromagnetic RF Systems**

Sponsor: Microwave Theory and Techniques Society, Washington and Northern Virginia Chapter
Speaker: Dr. John Evans, DARPA Microsystems Technology Office
Time: Reception 5:30 pm; dinner 6:00 pm; lecture 7:00 pm
Place: Mitre Corporation, Building 2, 7515 Colshire Drive, McLean, VA
Directions: Off Route 123 in Tysons Corner. See www.mitre.org/about/locations/mitre2_map.html.
More Info: See Diamond story, p. 5.
Cost: Lecture free. Dinner cost TBD.
Contact: RSVP for dinner only by Monday, Feb. 13 to Roger Kaul at 301-394-4775 or r.kaul@ieee.org.

Thursday, February 16, 2006◆ **Breaker Ratings and Time Curves**

Sponsor: Power Engineering Society, Northern Virginia and Washington Chapter; Industry Applications Society, Washington and Northern Virginia Chapter
Speaker: Ray Clark, Siemens
Time: 6:00-8:00 pm
Place: Virginia Tech Advanced Research Institute, 4300 Wilson Blvd., Arlington, VA
Directions: From Ballston Metro Station (Orange line), turn right at top of escalator then left on the street. Proceed two blocks toward Hecht's. Turn right and walk one block to Ballston Point, 4300 Wilson Blvd. ARI is on the 7th floor in suite 750. Ballston Point is located at the intersection of Wilson Blvd. and Glebe Rd. There is a parking garage in the building with a \$1 charge for 3 hours and limited free street parking.
More Info: A light dinner buffet will be served, followed by the program. This presentation will review selective trip coordination principles, highlighting the latest technology in electronic circuit breaker trip units. For more information about the speaker, see Diamond story, p. 5.
Cost: Free for IEEE members; \$10 for non-members.
Contact: RSVP to Monica A. Mallini at 703-387-6021 or m.a.mallini@ieee.org.

Saturday, February 18, 2006**Discover Engineering Family Day**

Sponsor: IEEE-USA
Time: TBA
Place: National Building Museum, 401 F Street NW, Washington, DC

Directions: Use the Judiciary Square Metro station (Red line).

More Info: This free one-day festival offers young people the opportunity to enjoy a day of fun and participate in a variety of hands-on activities that explore the fields of engineering. It will also feature characters from the popular TV show *Cyberchase*. See www.eweekdcfamilyday.org for more details.

Cost: Free

Contact: Murty Polavarapu at murtyp@ieee.org or Saj Durrani at s.durrani@ieee.org.

Wednesday, February 22, 2006**Engineers Week Proclamation Day Luncheon**

Sponsor: District of Columbia Council of Engineering and Architectural Societies
Speaker: Dr. Jane Alexander, Deputy Director, Homeland Security Advanced Research Projects Agency
Time: 11:30 am
Place: Pier 7 Restaurant, 650 Water Street SW, Washington, DC
Directions: Complimentary 3 hours of parking, or walk from the Waterfront Metro station (Green line).
More Info: See Engineers Week story, p. 1.
Cost: \$25 per person, or \$250 for a table of 10.
Contact: Reservations must be made by Wednesday, Feb. 15. Make checks payable to "DCCEAS" and mail to John M. Wall, Treasurer, DCCEAS, P.O. 18842, Washington, DC 20036-8842. Mr. Wall may be contacted at jmwall@pepco.com or 202-388-2246. For additional information, contact Saj Durrani at s.durrani@ieee.org or Murty Polavarapu at murtyp@ieee.org.

Saturday, February 25, 2006**DCCEAS Awards Banquet**

Sponsor: District of Columbia Council of Engineering and Architectural Societies
Speaker: Marshall Purnell, Design Principal, Devroux and Purnell Architects
Time: 6:00 pm
Place: Four Points Sheraton, 1201 K Street NW, Washington, DC
Directions: Short walk from McPherson Square (Blue, Orange lines) or Metro Center (Blue, Orange, Red lines) Metro stations. On-street parking available.
More Info: See Engineers Week story, p. 1.
Cost: \$40 per person, or \$400 for a table of 10.
Contact: Reservations must be made by Wednesday, Feb. 15. Make checks payable to "DCCEAS" and mail to John M. Wall, Treasurer, DCCEAS, P.O. 18842, Washington, DC 20036-8842. Mr. Wall may be contacted at jmwall@pepco.com or 202-388-2246. For additional information, contact Saj Durrani at s.durrani@ieee.org or Murty Polavarapu at murtyp@ieee.org.

Tuesday, February 28, 2006**NoVA Communications Society Meeting**

Sponsor: Communications Society, Northern Virginia Chapter
Speaker: TBA
Time: Dinner at 6:00 pm; speaker at 6:45 pm
Place: Mitre Corporation, Building 2, 7515 Colshire Drive, McLean, VA
Directions: Off Route 123 in Tysons Corner. See www.mitre.org/about/locations/mitre2_map.html.
More Info: Updates will be available online at www.ieee.org/escanner.
Cost: Free, including dinner.
Contact: Please RSVP to Fred Seelig at fseelig@mitre.org.

**DIAMOND STORIES****Wednesday, January 18, 2006****Photon Counting Micro-detectors and Their Applications**

Photon counting is the technique of choice for attaining the ultimate sensitivity in measurements of optical signals. It is completely digital, starting from the photodetector, and therefore completely avoids the limitations set by the noise of electronic circuits in the analog measurements of light. It requires, however, photodetectors with an internal amplification mechanism that generates in response to single optical photons macroscopic electrical signals, with amplitude well above the level of noise in circuits.

Photon counting was introduced and developed with photomultiplier tubes, but it received new impulse from the introduction of microelectronic detectors, called single-photon avalanche diodes (SPAD). This lecture will outline the evolution of the SPAD devices and of the associated electronics and point out the physical phenomena that underlay the detector operation. It will illustrate significant examples of recent applications of SPAD detectors, from the analysis of DNA and proteins to studies of single molecules and to adaptive optics systems in modern telescopes.

Born in Rome, Sergio Cova received a doctorate

degree in nuclear engineering in 1962 from Politecnico di Milano, Italy, where he has been a professor of electronics since 1976. He is a Life Fellow of the IEEE, and the author of more than 170 papers in international refereed journals and conferences, and of 500 international patents. Dr. Cova pioneered SPAD development, inventing the active-quenching circuit (AQC).

Tuesday, January 31, 2006**An Overview and History of Satellite Constellation Design**

Captain Draim will present an overview of the field of satellite constellations, also referred to in the literature as satellite arrays. The first satellites placed into orbit were mostly single, unique, and independent. As satellite earth coverage and performance requirements grew, the need for multiple satellite constellations followed. A number of space scientists and engineers strived to optimize the arrangement and phasing of such constellations to meet requirements with the minimum number of satellites and launch vehicles (primarily to reduce system cost). Captain

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Draim was fortunate in having had contact with many of these early pioneers in constellation design. Lessons learned from them facilitated the invention and optimization of new constellations on which patents have been granted. Captain Draim will discuss the contributions of these early constellation designers, along with some personal recollections regarding these pioneers.

The field of constellation design is still in its infancy, and areas for improvement are almost without limit. The need for innovation and invention is vital, in this as in many other fields. Some thoughts on the process of invention are presented in hopes that they will be found useful in creating a new concept, device or process beneficial to mankind.

John E. Draim received a B.S. degree from the U.S. Naval Academy, a B.S. (aero) degree from the Navy Postgraduate School Monterey, an M.S. (aero) from MIT, and an E.A.A. (aero/astro) from MIT. He holds over 40 patents in the fields of rocket propulsion, floating launch of rockets, EVA space-walk systems and satellite constellations.

Captain Draim was a naval carrier aviator flying jet fighters and attack aircraft, and a test pilot. He served as director of the Space Research Division at Naval Missile Center (NMC) Point Mugu; director of the Naval Armaments Division, U.S. NATO; deputy director of the Navy Space Program; and director of programs for the National Reconnaissance Office (NRO). After retiring from the Navy, he designed the ELLIPSO, VIRGO, and COBRA communications satellite constellations.

Tuesday, February 7, 2006

NIST Advanced Technology Program

Advances in technology account for more than 50 percent of U.S. economic growth. More than ever, U.S. economic well-being depends on rapid development and commercialization of technology. However, global competition has forced a focus on short-term return on investments. Many worthy high-risk projects, unable to avail traditional funding sources, do not survive "the valley of death," the process of pre-commercialization development that follows basic research.

The Advanced Technology Program (ATP) bridges the gap between the research lab and the market place, stimulating prosperity through innovation. Through partnerships with the private sector, ATP's early stage investment is accelerating the development of innovative technologies that promise significant commercial payoffs and widespread benefits for the nation. As part of the highly regarded National Institute of Standards and Technology (NIST), the ATP is changing the way industry approaches R&D, providing a mechanism for industry to extend its technological reach and push the envelope of what can be attempted.

The ATP partners with companies of all sizes, universities and non-profits, encouraging them to take on greater technical challenges with potentially large benefits that extend well beyond the innovators — challenges they could not or would not do alone. For smaller, start-up firms, early support from the ATP can spell the difference between success and failure. To date, more than half of the ATP awards have gone to individual small businesses or to joint ventures led by a small business.

According to independent assessments by the National Research Counsel and the General Accounting Office, a handful of the early ATP projects have returned in tax money to the treasury eight times the

IEEE Members Invited to Join the 'STARS' as Judges for Science Fairs, Competitions

By Paul Hazan

The IEEE is one of the largest of 60 affiliates of the Washington Academy of Sciences (WAS), which is expanding its Science and Technology Aptitude Recognition for Schools (STARS) youth-in-science program this year.

More than 1,400 students participated in the STARS program in 2005, at high school science fairs, science events at elementary schools, middle school robotics competitions, and the Montgomery Blair Magnet Research Convention, where four students became semi-finalists in the National Intel Science Competition.

This year, we are allocating a large number of awards to secondary school students as well as

recognizing outstanding teachers. Award-winning student projects will also be recognized in the WAS Journal and website.

Our biggest asset is your expertise and dedication and that of your fellow professionals. I am writing to offer you the opportunity to participate as a judge in a school Science Fair. No special preparation is required. A typical commitment will involve about four hours of your time at a participating school sometime in January, February or March.

If you are interested, please send a one-line email to pmhazan@comcast.net, as soon as possible, saying, "I would like to be included in the WAS Judges' Roster." Please include your name, email, affiliation, address and telephone number.

total ATP budget for the 15 years of the program.

Gerald Castellucci has been with NIST since July 2002, working as project manager in the Advanced Technology Program, Information Technology and Electronics Technology Office. His recent experience includes leading power electronics work for the U.S. Navy Office of Naval Research. He is active in the IEEE and is also a member of the American Acoustical Society.

Thursday, February 16, 2006

3-D Micro-Electromagnetic RF Systems

Dr. Evans will discuss the status of the 3-D Micro-Electromagnetic RF Systems (MERFS) program and applicability of the technology to military and commercial RF systems.

The 3-D MERFS program is demonstrating a revolutionary micro-electro mechanical systems (MEMS) printed circuit board technology to enable high performance millimeter wave systems. The central focus of the 3-D MERFS program is to enable the monolithic fabrication of complex three-dimensional structures that contain conductors (metal), dielectrics (plastics), and voids (air), thereby enabling complex multi-layer coax and waveguide interconnect structures. BAE Systems and subcontractor Rohm & Haas are heading the effort to develop a 3-D copper-based RF component fabrication process and to use this process to demonstrate high isolation and low insertion loss in RF components. Specific demonstration will include a Ka-band beamformer for a vehicle-mounted, multi-function active electronically scanned array.

John D. Evans is a program manager in both the Microsystems Technology Office and the Virtual Space Office at the Defense Advanced Research Projects Agency (DARPA). Before joining DARPA, he was the Chief Technical Officer at Microfabrica (then MEMGen). He has also served as a consultant and scientist at Becton Dickinson, a Fortune 500 bio-science and medical technology company, and as an energy policy consultant for the U.S. Congress Office of Technology Assessment.

Dr. Evans received a B.A. in physics from Carleton College; an M.S. in civil engineering and a Ph.D. in mechanical engineering from the University of California, Berkeley; and an M.B.A. from Duke University. He is an inventor on 10 issued or pending patents and has published and spoken widely in the area of MEMS technology, with more than a dozen invited speaking engagements in the past two years alone. Among his awards are the 2000 Charles Lofgren Busi-

ness Fellowship, the BD Impact Award in 2000, and the BD Special Achievement Recognition Award in 1999.

Dr. Evans' current interests lie in three areas: (1) demonstrating 3-D fabrication technologies for micro-systems; (2) creating market demand pull for MEMS through development of small satellites, nano air vehicles (NAVs), and small robots; and (3) ensuring the future of MEMS-based technology by changing the fundamental economics behind MEMS product development.

Thursday, February 16, 2006

Breaker Ratings and Time Curves

Ray M. Clark is a Senior Application Engineer with Siemens Energy & Automation in Norcross, Georgia. He received a bachelor's degree in electrical engineering from the Georgia Institute of Technology in 1976.

Mr. Clark began his career in the electrical industry in 1976 with Cutler-Hammer in Atlanta as a motor control application engineer. In 1981, he accepted a position with ITE, Division of Gould, as a product engineer. He has held several positions within ITE and Siemens in engineering, also working with consulting engineers in evaluating short circuit and coordination studies of jobs utilizing Siemens circuit protective equipment.

In 1993, Mr. Clark moved to the industrial marketing department as a product application engineer, and he is now a senior application engineer, with duties including circuit protection device application support, technical training, and developing computer systems to organize, retrieve, and distribute information on Siemens products and their use in electrical power distribution systems.

Mr. Clark is a member of the IEEE Industry Applications Society and the IEEE Power Engineering Society. He served as a contributing member of the Power Systems Protection Blue Book Working Group, which produced the Blue Book (IEEE Std 1015-1997). He currently serves as chapter co-chair of chapter 6, "Special-Purpose Circuit Breakers." In 1994, Mr. Clark joined the PSP Buff Book Working Group as a voting member, completing the update of the Buff Book (IEEE Std 242-1986) Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems, which was last copyrighted in 1986. In 1998, he was asked to join the Gray Book Working Group as co-chair of chapter 9, "System Protection," of the Gray Book (IEEE Std 241-1990), Recommended Practice for Electrical Systems in Commercial Buildings.

2005 Washington Chair's Message

A Year of Accomplishments

By Ron Ticker

2005 was a wonderful and active year, the 102nd year, for the Washington Section. What was accomplished? The year began with the unveiling of the Section's redesigned web site. The web site went live on February 1, 2005, thanks to the efforts and creativity of Tim Weil and Elsie Grant, and the assistance of Rex Klopfenstein from Northern Virginia Section. The Washington Section now employs multiple electronic communications paths to inform and elicit response from the members and the public. The new section home page describes the section, its goals and mission, and its governance structure. The eScanner provides an up-to-date calendar of events as well as news and links to the PDF archive of the printed Scanner. The virtual community allows message interchange and topical discussion, and archiving of Section meeting minutes. Finally, email and eNotices are used to broadcast eScanner availability and reminders of upcoming events. I hope you find these communications beneficial.

In the area of membership development, we joined the Northern Virginia Section in sponsoring a Membership Professional Awareness Conference (MPAC) in September. The MPAC workshop focused on career management in the face of engineering job outsourcing. It was well attended and well received, due in large measure to the hard work of Shyam Bajpai and Amarjeet Basra in organizing the event, and to the excellent speakers from IEEE-USA and the Washington and Northern Virginia Sections. Due to its success, we joined the Baltimore Section in December in duplicating the MPAC.

I hope you had the opportunity in October to visit the Solar Decathlon's solar-powered homes on the National Mall. The Washington Section sponsored the University of Maryland entry in this Department of Energy competition. These homes derived their energy exclusively through solar cells and posed both a functional-technical challenge and an architectural-aesthetic challenge. The UMD team displayed much professionalism, creativity, management and engineering skill. Their real experience and accomplishments will prove invaluable to these students in their emerging careers. My appreciation goes to Harry Sauberman who served as liaison to the UMD solar house team.

The Washington Section is parent to six student branches, including the one at the University of Mary-

land. One of the Section's main goals for this year was to increase ties and support of the student branches. These students represent future leaders of IEEE and the engineering profession. Over the past few months, I visited the student branches at George Washington University and Catholic University. Both these student organizations are being restarted this semester after some hiatus. It was good to see such active and involved student leaders, and to hear their concerns about the future of their chosen field of study.

Initiatives are underway aimed at enhancing engineering education at the pre-college level. The Washington Section, as a member of the District of Columbia Council of Engineering and Architectural Societies (DCCEAS), is working with that organization to promote and increase middle school participation in the Future Cities Competition. Through our affiliation with the Washington Academy of Science (WAS), the section is participating and sponsoring the WAS Science and Technology Aptitude Recognition in Schools (STARS) program. STARS is a multifaceted program seeking to improve science and engineering education in Washington area secondary schools.

There were also some personnel changes of note over the past year. The administrative manager, a paid contract position shared with the Northern Virginia Section, was competitively advertised. A number of qualified applicants responded. After a lengthy selection process, Debra Meale was chosen and assumed the position earlier this fall. Debra brings a great deal of enthusiasm as well as skill to her new position. We thanked her predecessor, Jackie Hunter, for her many years of administrative support to the IEEE National Capital Area sections, and we wish Jackie good fortune in her future endeavors.

Another significant personnel addition is Robb Rourke who assumed the contract position of Scanner advertising manager. Though cost is shared with the Northern Virginia section, Scanner publication represents the single largest expense for the Washington Section. Advertising revenue, which can partially offset Scanner costs, has been virtually non-existent over the last several years. Please note the increased amount of advertisement space that appears in this newsletter. With continued efforts, Scanner expenses can be further contained.

TICKER

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INTELLECTUAL PROPERTY

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IP Panelists—(left to right) Stuart Huang, Russell Harrison and Lee Hollaar.

Engineers who maintain contact with their legislators are a potent political force, because they represent themselves as constituents, not as professional lobbyists. Elected officials do not have the knowledge and experience necessary to understand all the issues that they encounter, so they rely on expert advice, especially from their own constituents.

Dr. Lee Hollaar, a University of Utah computer science professor who serves on IEEE-USA's IP committee, discussed the vital role that engineers can play in the legislative process. As a Fellow with the U.S. Senate Judiciary Committee in 1996-97, he developed a keen appreciation of real-world political constraints and the need for compromise. "Technologists often ignore

the big picture, pushing for something not politically feasible," he said.

Dr. Hollaar's experience demonstrates that IEEE can affect the outcome of IP legislation at the state and national levels. He offered these tips for effective legislative advocacy: (1) understand the problem that's being addressed; (2) understand how the legislative process works; (3) show that your alternative addresses the problem better, and (4) support the compromise.

The excellent presentations by the panelists sparked a desire among audience members to plan and participate in future forums on IP, and to form a network actively supporting patent reform and other legislative initiatives through IEEE-USA (www.ieeeusa.org).

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- Are you the only engineer in your company without an advanced degree?
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2006 Washington Chair's Message

Reach Out to Future Engineers

By Dr. Haik Biglari, P.E.

I am honored and feel privileged to be able to serve as the Washington Section Chair for the year 2006.

My affiliation with IEEE started while I was in college and since then has been enriched continuously. It is essential to introduce our profession to potential future engineers as early as possible. For that reason, we promote IEEE not only at the college level, but also at the high school and even elementary school levels, through science and engineering fairs and other engineering related activities. One thing is certain, if we do not profess about our profession then we can not call ourselves professionals.

The Section officers and directors are volunteers who dedicate their time and effort for this noble cause. I am pleased to have the support and encouragement of an experienced and enthusiastic leadership: Dr. Kiki Ikossi as the Vice Chair, Richard Benjamin, as the Treasurer, and Gerard Christ-

man as the Secretary. Our directors have been instrumental in leading several of our professional activities for the past few years.

Our goals for 2006 are to:

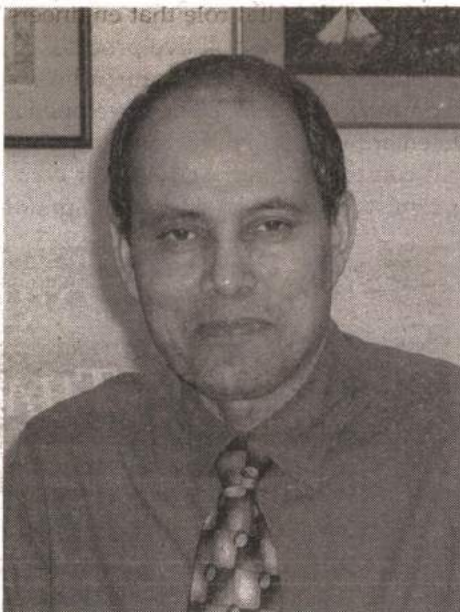
- Provide a series of continuing education courses for practicing engineers
- Promote greater involvement of college students in the professional activities
- Reinvigorate the Graduates of the Last Decade (GOLD) affinity group
- Continue supporting the activities of our technical chapters
- Recognize the technical achievements of our members

We can always use fresh and innovative ideas from our members at large. I look forward to seeing you at one of our IEEE meetings and learning your perspective on how we can make IEEE more relevant to the needs of its members. If you prefer, please send me an email at hbiglari@ieee.org.

Dr. Rahman Elected to IEEE Board

Dr. Saifur Rahman of the Northern Virginia Section was elected to the IEEE Board of Directors by the IEEE Assembly at its November 9 meeting in Orlando, Florida. He also serves as vice president of the IEEE Publication Services and Product Board, and is an IEEE Fellow. His one-year term begins January 1, 2006.

Dr. Rahman is the director of the Virginia Tech Advanced Research Institute in Ballston, Virginia, and is an active supporter of local IEEE activities, particularly for the Power Engineering Society and Industry Applications Society Chapter meetings. From 1999 to 2003, he served as the national IEEE Power Engineering Society's vice president for publications, and industry/education relations.



Dr. Saifur Rahman

TICKER

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The Washington Section continues to face a number of challenges including declining membership, declining volunteerism, keeping graduating student members enrolled and involved, and maintaining active technical chapters and affinity groups. These are long-term challenges and require long-term solutions. I believe the breadth of resources found here in the Washington area provides a good foundation to build on. Earlier this year,

I asked Howard Needham to chair a strategic planning committee to look at ways we can address these challenges. The committee will make their recommendations to the Section Administrative Committee early next year.

We go through life on a quest for personal growth and to leave some things of value as our legacy. Engineers create. Engineers solve problems. Looking back over the past year, the IEEE Washington Section

2006 Northern Virginia Chair's Message

Find Opportunities to Participate

By Mike Cardinale

I am looking forward to serving National Capital Area IEEE members again as chair of the Northern Virginia Section. IEEE sections are at the forefront to provide services to the local membership, and to the community.

The Northern Virginia and Washington Sections provide between five to fifteen technical and professional activities per month for our members. These are arranged by the chapter and affinity group officers and are funded from the Section treasury, fees, and society contributions.

The Northern Virginia Section also helps recognize technical contributions and the community service of engineers by preparing nomination packages for engineer awards to the District of Columbia Council of Engineering and Architectural Societies (DCCEAS), the Washington Academy of Science, the Commonwealth of Virginia, and IEEE entities. We provide assistance for the elevation to Senior Member and Fellow. We host over a dozen local IEEE conferences per year. We provide professional development and education programs for members.

We provide education assistance to advance the knowledge of engineering among high school teachers. We judge high school science fairs and provide monetary awards for winning engineering projects. We provide mentors and funds to Northern Virginia high school engineering projects and contests. We support IEEE high school chapters at Thomas Jefferson and Woodson High Schools, the first of their kind in IEEE. We provide leadership training, membership development and activity funds to local university student chapters at George Mason and DeVry. We participate, through

the Virginia Coordinating Council, in the eMeritbadge program to assist Boy Scouts and Girl Scouts to attain electronics merit badges.

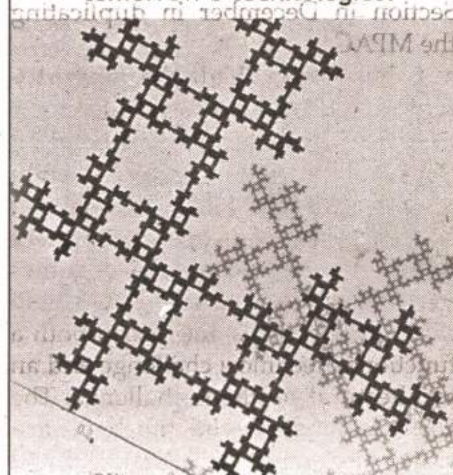
With your help, we can do a lot more. The Section typically has 20 to 30 regular volunteers helping to provide activities for over 6,000 active Northern Virginia IEEE members. I encourage more of you to join us and become involved. For young engineers, IEEE service provides an opportunity to learn to be an engineering leader without the pressure of job failure. Some activities take little time. Judging science fairs takes half a day, once a year. Others, like preparing awards, are more time consuming, but are worthy and necessary efforts.

I am especially looking for IEEE members to judge high school science fairs in Clark and Frederick Counties, and to possibly assist with judging the regional science fair for those counties. Your society chapters can also use more volunteers for officer positions. Some chapters and affinity groups have only a chair and have openings for a vice-chair, program chair or secretary/treasurer. Finally (for now), this year I would like to begin an outreach into the middle schools to minority and Hispanic boys, and to girls in general, to promote careers in engineering.

If you are interested in participating, or have ideas, please contact me at nova-chair@ieee.org.

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accomplished much. I take particular satisfaction from seeing student engineers flourishing and from helping lay the groundwork for keeping the Section and the engineering profession in the Washington area vibrant into its second century. I have met many dedicated and talented individuals, engineers and colleagues from whom I have gained both knowledge and friendship. I wish all of you peace, happiness and prosperity.

Vinton Cerf Receives Medal of Freedom Local Members Named IEEE Fellows

By Murty Polavarapu

Local IEEE Fellow Vinton Cerf was awarded the Presidential Medal of Freedom along with another IEEE Fellow, Robert Kahn, on November 9, 2005 at a White House ceremony for designing the "software code that is used to transmit data over the Internet."

During his tenure with the U.S. Department of Defense's Advanced Research Projects Agency (DARPA) from 1976-1982, Cerf played a key role leading the development of Internet and Internet-related data packet and security technologies:

Widely known as a "Father of the Internet," Cerf is the co-designer with Kahn of TCP/IP protocols and the basic architecture of the Internet.

Speaking at the ceremony, President George W. Bush said that "our economy, our lives, and our world have all been enriched by the imagination and the efforts of Robert Kahn and Vinton Cerf."

The Freedom Medal is the nation's highest civil award, and may be awarded by the president to "any person who has made an especially meritorious contribution to the security or national interests of the United States, or world peace, or cultural or other significant public or private endeavors."

Cerf is currently the Chief Internet Evangelist at Google and works

from his Northern Virginia office. He also chairs the Internet Corporation for Assigned Names and Numbers (ICANN), the oversight agency for Internet domain names, and is a visiting scientist at NASA's Jet Propulsion Laboratory. He holds a Ph.D. in computer science from UCLA.

A member of the Northern Virginia Section, Cerf has received numerous awards in connection with his work on the Internet, including the IEEE Alexander Graham Bell Medal. He was the keynote speaker at the IEEE National Capital Area Awards Banquet on April 16, 2003.

Senior Members

Congratulations to the following new Senior Members from the Northern Virginia (NV) and Washington (W) sections:

Ehab Awad (W)
Rajat Bindlish (W)
Mark Burge (NV)
Alexander Glatfelter (W)
Daniel Menasce (W)
John Viega (NV)

If you are interested in becoming a Senior Member, please consult www.ieee.org/seniormember for qualification requirements and contact the Section Chairs (page 2) if you need assistance with references.

Congratulations to the following members of the Northern Virginia and Washington sections who were recently named as IEEE Fellows, effective January 1, 2006. They are among 271 Senior Members worldwide recognized for excellence in their fields. The total number of new fellows in any one year does not exceed one-tenth percent of the total voting Institute membership.

Dr. Paul Bernhardt (Northern Virginia), Naval Research Laboratory, Washington, DC, for contributions to artificial modification of space plasmas with high power radio waves.

Dr. Charles Holland (Northern Virginia), U.S. Department of Defense, Washington, DC, for leadership in computational science and engineering.

Dr. Luis Kun (Northern Virginia), IRM College, National Defense University, Vienna, VA, for contributions to health care information infrastructure.

Dr. Charles Luther (Northern Virginia), Office of Naval Research, Arlington, VA, for leadership in microwave remote sensing.

Prof. Armand Makowski (Washington), University of Maryland, College Park, MD, for contributions to traffic modeling and performance

evaluation in communication and computer networks.

Dr. James Moore (Northern Virginia), Mitre Corporation, Potomac, MD, for leadership in software engineering standardization and contributions to the codification of software engineering.

Dr. David Seiler (Washington), National Institute of Standards and Technology, Gaithersburg, MD, for leadership in the development of critical metrology and measurement science at the micro and nano levels.

Dr. Usha Varshney (Northern Virginia), National Science Foundation, Arlington, VA, for technical leadership in sensor technologies and systems.

Dr. Gerald Witt (Northern Virginia), Air Force Office of Scientific Research, Arlington, VA, for the promotion of research in compound semiconductor devices.

In addition, Dr. Allen Gorin of Region 1, who is associated with the National Security Agency, Fort Meade, MD, was named a Fellow for contributions to automatic call processing using natural spoken language.

For more information on the Fellows Program and for a full listing of all new IEEE Fellows, please consult www.ieee.org/fellows.

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