

RegiOne



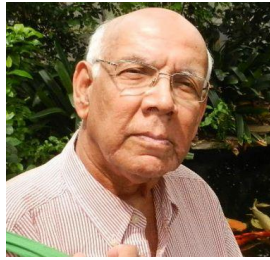
RegiOne, the newsletter of the IEEE Region 1

July 2014, vo. 1, No. 2



THE EDITOR WRITES

THE summer is here and many of us are planning to either stay cool at home or indulge in outside activities. This is fortunate for those of us who live in Region 1. We have four distinct seasons. It is such pleasure to see the white winter turn into green spring and then into a sizzling summer! Then the fall rolls in before we are aware that the summer is over. Then comes the rigors of the winter and fun for who love winter sports. I wouldn't move to anywhere else where they don't have four seasons. Viva Vivaldi, the Red Priest.



This is the last issue of the RegiOne before September. The current issue was to have been posted in June. But I waited for a decent number of items to drop on my tray for posting in the newsletter. Lamentably, I did not get the desired number in time. I thank those who heeded to my appeals and submitted items for posting. I could not wait anymore and decided to post this issue anyhow. Please don't hold me responsible for this tardiness.

In this issue, you will find some comments and articles written by our own members. The rest is taken from other IEEE and IEEE-USA publications and reproduced here, the those you might have overlooked. The RegiOne is your

newsletter and the current director of Region 1 thought that it could serve as a forum of communications among the members of the governing board and the twenty-two sections we have in the Region 1. My earnest request to you is that you take the newsletter a bit more seriously. Otherwise, it would be a futile exercise that merely wastes time and efforts of the people who want to contribute or read.

In spite of the tardy posting, I hope that you will enjoy reading our current issue. Pleased do send in your comments, (genuine) criticisms, articles and messages. We sincerely encourage you to write about your experience at your workplace, (industry, government, NGOs, academia, IEEE or consulting), and with reading a book, a product, a paper or a book you have written, any conference you have attended recently, any interview you have given, in fact, anything that you may want to share with your colleagues at the IEEE. You may also want to help a colleague providing information on job or other opportunities. Please send your contributions to a.dutta-roy@ieee.org by 1 September. Thank you!

The editor
Amitava Dutta-Roy, PhD, Life Fellow

Have a successful BoG meeting!





Principal Region 1 officers for 2014 –'15

Chairman of BoG and Director: Vincent Socci, SM

Vice chair and director-elect: Ronald A. Tabroff, SM

Secretary: Charles P. Rubenstein, LSM

Treasurer: Bala S. Prasanna, SM

Past Director: Peter A. Eckstein, LSM



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Louis . Luceri, LSM, LMAG Coordinator, Region 1

(Note from the editor: Please send reports on your activities during the 2nd quarter 2014 with photographs, if possible, to Louis Luceri, so that they reach the RegiOne by 1 September).

We have received the reports from the following LMAGs in Region 1.

BOSTON SECTION:

The annual session of presentation at LMAG meetings starts in September of each year and ends in May. The following

two charts show the meetings held in 2013- 2014 session and the program for 2014 – 2015 session

2013-2014 Season		
Date	Speaker	Subject
18 September, '13	Dennis Treece	MASSPORT
30 October, '13	Robert Curbeam (Astronaut)	Space Travel
2 December, '13	John Horrigan (sportscaster & Proj. Mger)	1938 Hurricane
11 December, '13	Deborah Douglas	Whirlwind
22 January, '14	Scott Smith	USDOT technical projects
19 February, '14	Gregg Fleming	Carbon Neutral Growth in the Aviation Sector
19, March, '14	Greg Charvat	Short Range Radar Systems
9 April, '14	Dr. Pail Carr and Dr. Thaddeus Kochanski	Global Warming
16 May, '14	Dan O'Brien	Deer Island Sewage Facility

2014-2015 Season		
Date	Speaker	Subject
3 September, '14	Nancy Catalina Chew	Elderlaw
15 –October, '14	Eli Brookner	Latest Breakthroughs in Radar and Phased Arrays
26 November, '14	Lori J eromin	Satellite Communications
10 December, '14	John Horrigan	Christmas Holiday World War I
January, '15	Open	
11 Februar, '15	Gregg Fleming	Carbon Neutral Growth in the Aviation Sector
25 March, '15	Gregory Charvat	Radar
April, '15	Open	
6 May, '15	Tim Johnson	Is the Internet safe?

LONG ISLAND SECTION:

The Long Island Section is presently regrouping since the passing of the Affinity Group Chair, Robert Blosser. Vic Zourides has agreed to take over the Chairmanship, and Bill Wilkes has agreed to act as Vice-Chair. A brief schedule of events has been announced for visits to the Cradle of Aviation, Vanderbilt Planetarium, and the Air Power Museum,

but no definitive dates have been set.

Additional information will be available at the next LI Excom meeting.

NEW JERSEY COAST SECTION

Early in 2013, we organized a LMAG event in the NJC Section. Our first activity was to convene a kickoff lunch on August 8, 2013. We invited all 300+ Life Members in the NJC Section, and we had 69 attendees. A talk on Green Engineering was presented at the luncheon by Dr. Thierry Klein, Head of Green Research, Bell Labs/Alcatel-Lucent. It turned out to be a great kickoff event with many old acquaintances being rekindled.

We also plan to have a separate emailing scheme for our LMAG to notify them about the Section's technical talk schedule for each month. Similarly, our Communications Society Chapter is planning a special invite for our LMAG for the chapter's IEEE Milestone Event this summer.

We sent a survey by email to a sample of about 180 NJC Life Members and found the following to be the top activities/topics desired by the group:

Since we are close to the Princeton, North Jersey, New York, and Long Island Sections, we may consider some joint ventures. We are also looking at the possibility of arranging a trip to the Bayonne Energy Center and are looking for a member of the Section's PES chapter for a contact there. Our chair has also queried other section's LMAGs to find out what topics are popular with their LMs.

1. Talks on wind driven generators on the NJ coast
2. Talks on Retirement Planning in retirement
3. Life member breakfast meeting
4. Invites to monthly technical talks

The only problem we have experienced, beside normal startup inexperience, has been that many of our LMs live in Florida in the winter months so our activities will should be scheduled for the spring, summer and early fall months.

In addition, topics such as green engineering, carbon free power generation, and advances in semiconductor technology were suggested by some LMs. Furthermore, we have requested Charles Schwab to host a lunch meeting on Mid-Retirement Financial Planning. This lunchtime talk will take place on 15 May at Buena Sera in Red Bank, NJ. A second such talk by Fidelity is possible later in the year.

NEW YORK SECTION

We have just finished another successful year in which we organized 11 monthly presentations jointly with PES/IAS chapters of the NY Section and thus superseding our minimum required quota of two presentations per year almost by 600 percent. One of our presentations was

cosponsored by the American Institute of Astronautics and Aeronautics. Co-sponsoring of events is surely good for equitable sharing and distribution of our meager resources to extract the maximum benefit, i.e., informing our constituencies about new technology-related issues. One of our constraints is that we can only invite speakers who live

within the NYC metropolitan area, since we cannot reimburse speakers' traveling expenses. Usually, obtaining a venue for hosting presentations such as ours poses problems in New York City. However, thanks to the efforts of our PES/IES partners, we have been fortunate to have the use of an excellent conference room that can accommodate some 90 individuals with AV installed equipment at the headquarters of ConEd, the local utility company. We are grateful to ConEd for its public-mindedness and generosity.

In organizing our events we made our best efforts to balance the topics that broadly fell into four categories:

- Power and Energy Engineering related: 5
- Electronics and IT-related: 4
- Management-related: 1
- General science-related: 1

The following chart shows the titles, the speakers, and dates of their presentations.

PRESENTATIONS		Attendance/ Total/IEEE*
Sharing our Values, Kimberley Kimberly .Strong, Esquire, VP Ethics and Compliance, Con Edison	22 Jan, 2013	60/34
Data Center Power, M Glinkowski & D Sterlace, ABB (Thursday)	21 Feb, 2013	59/41
Public Address/Paging & Background Music, Thomas Flannery, Bogen	26 Mar, 2013	62/43
VFT Linden Cogen Project, John Marczewski, EIG	23 Apr, 2013	91/48
Current Limitation and Component Protection, John Kival, Cooper Bussman	28 May, 2013	88/47
TIA Compliant Data Center Designs, ValeryMcGuire, Siemon	25 Jun, 2013	64/39
The Big Bang: Latest Results from the Planck Mission, Int AIEE meeting**	7 Aug, 2013	81/42
RGB-D Landmarks for Robotic, Damian Lyons, Fordham University	27 Aug, 2013	63/48
Storm Damage Assessments – New Technologies, Joseph Carbonara, ConEd	17 Sep, 2013	81/62
Impact of Geomagnetic Disturbances on Power Systems, Hibourahima Camara, Sergio Sagareli and Zahid Qayyum, ConEd	26 Nov, 2013	76/41
Storm Hardening & Solar Voltaic Project, Kevin Davis, Margaret Jolly, Neil Weisenfeld, ConEd	17 Dec, 2013	78/46

*Denotes total attendance and the second indicates the number of IEEE members among the attendees

**Jointly organized by the American Institute of Aeronautics and Astronautics and the IEEE PES/IAS/LMAG- NY Chapters

While organizing our presentations we carefully considered the fact that our attendees come from diverse backgrounds—, e.g., power engineers, distribution engineers, computer scientists, college professors of technology, communications engineers and the general public from our neighborhoods. We feel that as a part of a tax-exempt not-for-profit organization it is our duty to inform the communities

surrounding us about what we do at the IEEE and why our work is important for humanity. At the NY Section LMAG we have done the best we could do in this respect and we strongly feel that we could have done better had there been some coordination from Region 1 and the IEEE LM Committee in general. We feel it is our duty to keep all Life Members engaged in various IEEE projects, some of them could be for

mentoring younger generation or others could be for helping in community projects such as EPICS. That would be good both for the IEEE and for the physical and intellectual welfare of the Life Members. In this, timely and frequent interaction between the LM Groups and the coordination, instead of, submitting one and only annual report would go a long way to highlight what the other Groups are doing so that we could

use the similar approaches to engage our members. Through this report we would like to send a strong signal to the mainstream of the IEEE that the “higher-ups” in the organization take this matter seriously. We have no time to lose! Any coordination has to be for real and not only in concept

NORTH JERSEY SECTION

For 2014, we are planning to hold our annual luncheon/lecture, cosponsor a symposium with the IAS/PES chapters, and schedule a tour of a site of technical interest

such as Edison Museum, aircraft carrier Intrepid or some such facility.

WORCESTER COUNTY SECTION

Among our salient activities of LMAG of our Section, we sponsor a Senior Member Elevation Clinic at two dinner meetings. in February and March of each year. In such meetings we invite Section members interested in elevating their membership to that of Senior Members. We provide them with information and support they may need to prepare their SM applications. The applicants are encouraged to submit their papers by early April so that they can be considered during at the Elevation Committee’s meeting also held in April. In May of each year the new Senior Members together with the graduating ECE seniors at WPI, and IEEE award recipients, are invited to the Section's Engineers Week Dinner where we celebrate their achievements. The SMs are presented with IEEE SM lapel pins.

Worcester Regional Science & Engineering Fair (WRSEF) is

held in March. The objective of WRSEF is to encourage the development of students’ inquiry-based science skills by supporting the local education community, and by providing a forum where high school and middle school students can dialogue with professionals. The students’ achievements are formally acknowledged and honored (<http://www.wrsef.org/>). The Worcester County Section and especially its LMAG have been long-time sponsors of the event.

The annual picnic of Worcester County Section is held in June. This popular event provides a networking and socializing opportunity and all Section members are encouraged to bring their families, particularly their children, so that they can broaden their perspective and understanding of engineering and the IEEE



Click for next section in the pdf for: Reports from R1 Sections

BINGHAMTON SECTION

Vincent Socci, Director IEEE Region1

The IEEE Binghamton Section co-sponsored an amateur radio course from March 1, 2014 through April 5, 2014. The



Saturday program was held at the George F. Johnson Library in Endicott, NY. The class focused on training, preparation, and examination for the ham radio technician license. Experienced instructors guided participants

from an introduction to Ham Radio all the way through actual licensing exams. Many of the participants also worked on upgrade licenses to general and/or extra class.

Other sponsors of the Ham Radio license class were:

- Kopernik Observatory & Science Center
- Binghamton Amateur Radio Association
- Tioga County Carousel Radio Club

Fifty-two people attended the course. Each person was very excited to be working toward joining the over 700,000 licensed Amateur Radio Operators in the US. The course included workbooks for the class, pre-study materials, course

lectures, hardware demonstrations, radio practice, and open discussions. The course finished with an exam day where many of the participants earned their FCC amateur radio licenses in all three class levels.



Many great relationships were formed throughout the course. First, the IEEE section built strong relationships with the Kopernik Observatory, local radio clubs, and many members and non-members. The participants and instructors became friends throughout the course, helping each other with technical content, materials, and exam preparation. Since the class completed, many of the participants have worked with each other to build home radio rigs, swap gear, and participate together on the local ham radio networks.

This was truly a successful IEEE community outreach. We are making plans for another course in the fall that will be focus on the General Class License

NEW JERSEY COAST SECTION

Dr. Ralph Wyndrum Jr., LF, Chair

The New Jersey Coast Section is preparing to celebrate its 50th Anniversary next year with a flurry of activity. During the past 18 months, the section has expanded its organization by starting up a Life Member Affinity Group, initiating an Education Society Chapter and requesting approval of a

Power and Energy Society chapter. The section, chaired this year by Dr. Ralph Wyndrum, has a population of approximately 1300 members and contains 14 chapters and affinity groups. The NJ Coast section is one of the top sections in Region 1 for member retention.

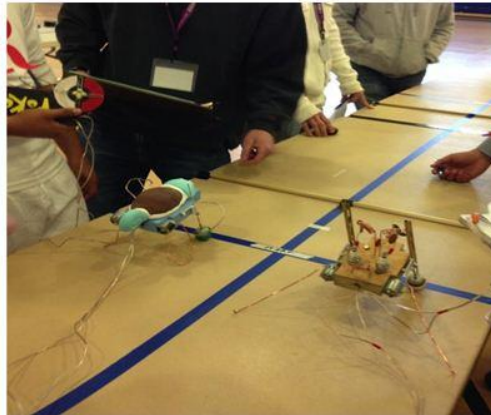
The new LMAG, also chaired by Dr. Wyndrum, has a membership of over 300 Life Members. It has sponsored presentations on Green Research at Bell Labs/Alcatel Lucent and on Mid-Retirement Financial Planning. The group is planning a talk on wind driven generators on the NJ coast, a visit to a local power plant, and talks on carbon free energy generation and advances in semiconductor technology.

The section's Women in Engineering Affinity Group, chaired by Dr. Fatimah Shehadeh, has just completed its 1st Annual Robot Challenge for local high school students. The event, held at Brookdale Community College, was co-chaired by Lisa Van Orden and Dru Reynolds of the NJ Coast section. Fifty-two students on thirteen teams, representing four schools registered to compete. The group is planning to expand student participation in this STEM project next year and to have the new Education Society chapter as a co-sponsor. With the addition of the Education Society chapter to the section, next year's event should be an even bigger success!

The new Power and Energy Society chapter, to be chaired by Dr. Mihaela Dinu, is awaiting approval for its formation. The section has over 50 PE Society members and should be a very active chapter in the section.

The NJ Coast Section has 2 historic milestone events approved for this year: TAT-8 Fiber Optic Cable; and ASCII. TAT-8 was the first Trans-Atlantic Telephone Fiber-optic Submarine Cable (1988). The American Standard Code for Information Interchange (ASCII) standard encodes characters into 7 bit binary integers, originally for Teletype machines and later adopted by the computer industry. The first edition of the standard was published in 1963. Both dedication plaques will be placed at the current AT&T buildings in Middletown, NJ.

Coinciding with the NJ Coast Section's 50th Anniversary next year is the 50th anniversary of the paper presenting the discovery of cosmic microwave background (CMB) radiation that was predicted by some cosmological theories to be the



Race to finish! Two high school Students compete in the NJ Coast 1st Annual Robot Challenge. The team Pokébot (left) of Manalapan High School was the winner. Photo by Donna Laslo

confirmation of the "Big Bang" theory. In 1964, Dr. Arno Penzias and Dr. Robert Wilson of Bell Labs in Holmdel, NJ, discovered unexpected cosmic background radiation while using the Bell Labs "horn" antenna in Holmdel for radio astronomy research search. After consulting with Dr. Robert H. Dicke of Princeton University, Penzias and Wilson sent their findings to the Astrophysical Journal Letters and were published in the July 1965 issue as "A Measurement of Excess Antenna Temperature at 4080 Megacycles per Second". In their letter they attributed a possible explanation of the background radiation to Dr. Dicke's companion letter to the same issue of the



Dr. Ralph Wyndrum, right, giving Dr. Krishnamurthy Raghunandan, past NJ Coast Section chair, the award plaque for the 2013 MGA Leadership Award at the NJ Coast Annual Awards Banquet, May 2014

Journal. In that letter, Dr. Dicke and his colleagues at Princeton outlined the importance of cosmic background radiation as substantiation of the Big Bang Theory. Officials and researchers at Alcatel-Lucent Bell Labs marked the anniversary of the CMB radiation discovery on May 20, this year, with a Big Bang Celebration. Bell Labs in Holmdel has long been an anchor in the NJ Coast Section since the Section's founding in 1965. Today, only the Bell Labs Crawford Hill facility remains in Holmdel, where the National

Historical Landmark of the microwave horn antenna is located.

The section is planning this "Golden Jubilee" in 2015 and is inviting all past NJ Coast section chairs to attend!

SCHENECTADY SECTION

Chandra Reis– IEEE Schenectady Section (creis@ieee.org)

I am the chair for Schenectady Section. Geographically and by population we are a small Section, but ours is one of the oldest in the IEEE. Our small size and lack of suitable conference facilities have put us out of the market for hosting any significant conferences, so we are struggling to find a way to survive financially. Dues and meeting reimbursements don't cover all our expenses.

Because of our past history we have a very high percentage of retired but highly active Members. Perhaps unique to us, almost all of our population lives and works relatively centrally located in the north-western part of the New York State Capital District. centrally located in the north-western part of the New York State Capital District. This enables us to offer up the majority of our technical meetings as lunch meetings. We offer one to two meetings per month, sometimes with a lull over summer. Lunch talks are free to members, and \$10 to non-members to cover the pizza. We try to offer one or two technical/historical tours every year. The oldest continuously operating hydroelectric generating plant in the world happens to be in the area covered by our Section. We can also boast of a brand-new state of the art chip fab and nanoscale technology programs at our local university. These tours are typically scheduled for evenings or weekends.



Because we have a high percentage of PES members who are also Professional Engineers, we have recently instituted a program to offer PDH (Professional Development Hours) at all relevant talks. PDHs are available for a small fee. To manage this, we have a volunteer position on our Section Exec Com as the PDH Coordinator. The moderate increase in income by doing this has enabled us to switch from slowly bleeding to death financially to being self-sufficient.

As an additional attempt to gain both relevance and revenue, this year we are trying something new (to us at least). We are holding a one day Colloquium in September for the Power Engineering community with several highly rated speakers. The Colloquium will offer a large number of the required annual PDH for PEs. We are hoping that the admission for that event will generate a slight profit after all the expenses are paid. We would also like to make the Colloquium available to anyone who wants to travel to Schenectady, so if you think membership in your Section would be interested, please contact me for the flyer. For the reader's information; our preliminary list of colloquium speakers and their topics are:

Speaker	Company	Topic
Steve Dean	National Grid	Interconnection Process and Requirements - Load Customers
Chris Vance	National Grid	Interconnection Process and Requirements - DG Customers
Jamie Barrett	NYISO	Interconnection Process and Requirements
Reigh Walling	Walling Energy Systems Consulting	DG system grounding and over-voltages
John Golde	Golde Engineering	Substation Ground Grid Analysis and Design
Tom Short	EPRI	Open-Source Tools for Power System Modeling

Finances aside, the biggest challenge that we face as a Section is the continuity of leadership. We are heavily dominated by the PES, with a handful of other Chapters at

various levels of activity. When I first joined (back in the time of stone wheels and keys on kite-strings), the leadership

succession in the Section was strongly defined. Anyone aspiring for Section Chair spent a year each in the four positions for the PES Exec Com, then a year each in the four positions for the Section Exec Com, then a final year as Past Chair. A 9 year commitment was not considered un-doable Now, we are lucky to even fill two or three of the Executive positions for the Chapters, and we have a hard time getting a commitment for anyone to spend four years on the Exec Com. First to fall out of the succession was the position of Treasurer. As the requirements changed from balancing a local banking account and filling out the occasional reimbursement check to the modern system of actual accountability, reports and electronic banking, we decided to

“What is your Section doing? Submit a report for the next newsletter!”

make the Treasurer a position that could be held for multiple years and it is outside the succession stream. With Past Chairs often not being even present in the country , we have started creating continuity binders (an idea borrowed from the Air Force) that detail out what each person’s responsibilities are. These are instructions localized to our Section; contact numbers for our favorite pizza place, how far in advance we have to book the meeting hall, what information will be needed for the vTools meeting report, etc. While these are not yet complete, we are hoping that we will be able to add to them each year so that we develop an electronic brain that can fill in where human brains are absent.

WORCESTER COUNTY SECTION (COMSOC CHAPTER)

Iilir Progri, SM

One of the most active chapters of the IEEE Communication Society (ComSoc) in Region 1 belongs to Worcester County Section (WCS). It was created only three years ago, on 25 February 2010, to be exact, as a result of the dedicated efforts of its members, especially that of Dr. Iilir Progri who was elected as its first chair.

A year later, the WCS ComSoc Chapter, together with the Southern and Northern New England Chapters of the Society for Industrial Archeology, organized the 24th Annual Symposium on the Archeology of Industry in New England at Clark University at which Gil Cooke (of Boston Section) and Iilir Progri gave a presentation on the “FM Radio in New England – The Yankee Network.”

One of the important events of the ComSoc Chapter at WCS was the MATLAB Virtual Conference 2012 in March of that year that included four related but distinct presentations by the keynote speaker Jim Tung, a MathWorks Fellow on (1) *Getting Smart*; (2) *Discovering MATLAB and Simulink for new participants or users*; (3) *What’s new in MATLAB release and* (4) *an update on what industry experts are doing.*

In 2013 the ComSoc Chapter of the IEEE WCS hosted another MATLAB Virtual Conference 2013 whose agenda included: (1) keynote Speaker Jim Tung on *Embracing Complexity*, and (2) what’s new in MATLAB release 2013a. The rest of the agenda was similar to MATLAB Virtual Conference 2012.

In April, 2013, the ComSoc Chapter of the IEEE WCS co-sponsored the *A+ Seminar Series-TestEquity*, at the Best Western Royal Plaza Hotel and Trade Center, Marlborough, MA that included: (1) *Advanced troubleshooting with oscilloscopes*; (2) *Conquering today’s power challenges with power products*; (3) *Understanding RF and microwave measurements*. At this event lunch was provided and all the hands on labs were conducted with the latest products manufactured by Agilent Technologies. In April 2013, the ComSoc Chapter of the IEEE WCS co-sponsored a one day *Design Conference 2013* at the Westford Regency, Westford, MA. Jointly with Analog Devices, Xilinx, and MathWorks, the Chapter organized an one-day conference where leading industry experts presented complete signal chain and system-ready solutions for most complex design challenges. Free lunch was provided to all participants.

In May 2013, the ComSoc Chapter of the IEEE WCS co-sponsored the *third New England workshop on Software-Defined Radio NEWSDR’13*, the third of a series of annual workshops organized by the Boston SDR, a software defined radio users’ group. Held at the Worcester Polytechnic Institute, the workshop featured : the keynote speech by Dr. Joseph B. Evans, Deane E. Ackers Distinguished Professor, University of Kansas; and presentations by invited speakers Dr. Kapil Dandekar, Associate Professor and Associate Dean of Research Drexel University and Dr. Alexander M. Wyglinski,

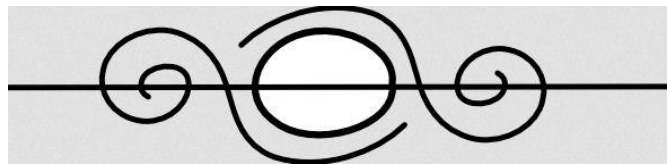
Associate Professor, Electrical and Computer Engineering
Director, Wireless Innovation Laboratory at WPI.
Cosponsored by MathWorks, National Instruments, and
Xilinx, the workshop offered six technical presentations, two
tutorials, as well as numerous demonstrations, some of them
hands-on, all focusing on the latest advances in software-
defined radio and/or cognitive radio technology. Free lunch
was provided.

In August 2013, the Executive Committee (ExCom) of the
ComSoc chapter of the IEEE WCS held its first administrative
meeting at Tweeds, Worcester, MA. The purpose of that first
ComSoc chapter meeting was to: (1) Provide advice,
guidelines, and training materials to the officers of the
ComSoc Chapter for their use both before and after the
Chapter's election; (2) Discuss the short- and long-term
agendas of officers for enhanced activities on social media

including Facebook, Twitter, and LinkedIn; (3) discuss the
involvement of the ComSoc chapter in future technical co-
sponsorship in ComSoc conferences. Free dinner was
provided.

Diverging from the traditional way of conducting activities the
IEEE ComSoc chapter is making efforts to reach out to
volunteers, authors, scholars, researchers, academics, and
professionals in the field. The initial data collected from six
hundred prospective participants indicate that the virtual
reality will be an important factor to attract them because of
its ability of interaction, significance, and recognition by and
among participants.

The author of the above report Dr. Ilir Porgri, SM IEEE is the
CEO and President of Giftet, Inc, Worcester, Mass. He is also
the chapter coordinator at Region 1



[Click to move to the next section: News from IEEE and IEEE-USA](#)

RECOMMENDATIONS FOR 2014 SECTIONS CONGRESS,
22 – 24 AUGUST, AMSTERDAM, NETHERLANDS

The Region 1 has received recommendations from its 22 Sections and this document shows those that

will be presented to Congress for future action. For details: go to: <http://goo.gl/Y1Pjn9>

DRAFT OF THE AMENDMENTS OF REGION 1 BYLAWS

For details: go to: <http://goo.gl/xH8YwW>

IEEE SOCIETY CHANGES ITS NAME

Technical Management Council IEEE HQ has decided to eliminate this functional title and include its functions under an “Engineering Management” banner.

and Engineering Management Society, probably effective 2015 with all current subscribers becoming members of the 'new' society.

Technology Management Council will be changing to a Society structure and will be renamed as TEMS: Technology

*Information provided by Dr. Charles Rubenstein, LSM Secretary, IEEE Region 1 and a former director of the Region

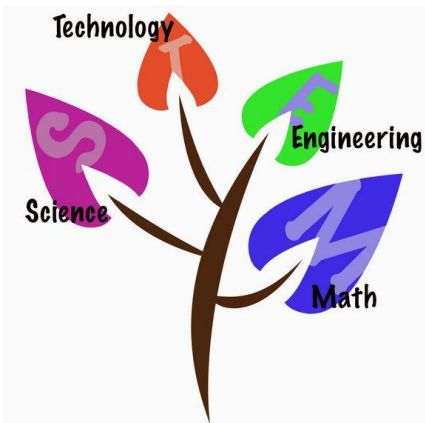
IEEE-USA COMMENDS HOUSE OF REPRESENTATIVES FOR INCLUDING COMPUTER SCIENCE IN PASSING THE STEM EDUCATION ACT

WASHINGTON (14 July 2014) -- IEEE-USA commends the House of Representatives for including computer science in the STEM Education Act of 2014 (H.R. 5031) it passed by voice vote today.

include formal academic instruction in computer science and other subjects that build on more conventional STEM disciplines

“IEEE-USA strongly supports federal, state and local efforts to improve K-12 science, technology, engineering and math education, particularly programs that increase student interest and engagement in engineering and computer science,” IEEE-USA President Gary Blank said. “A quality STEM education is critical to American innovation and creativity.”

* Authorizing NSF support for informal out-of-school learning activities to enhance and improve STEM education



Highlights of the STEM Education Act of 2014 include:

* Broadening the definition of STEM education at NASA, NSF, NOAA, NIST, the EPA and the Department of Energy to

* Making classroom teachers with bachelor’s degrees in STEM fields who are pursuing master’s degrees eligible for NSF-administered Master Teaching Fellowships in exchange for a four-year commitment to teach in high-need school districts

The bill was sponsored by House Science, Space, and Technology Committee Chairman Rep. Lamar Smith (R-Texas) and fellow House members Elizabeth Esty (D-Conn.), Larry Bucshon, M.D. (R-Indiana), Randy Hultgren (R-Ill.), Daniel Lipinski (D-Ill.), Eddie

Bernice Johnson (D-Texas), Frederica Wilson (D-Fla.), Dr. Robin Kelly (D-Ill.), Christopher Collins (R-N.Y.) and Joseph Kennedy III (D-Mass.)

For more on the STEM Education Act of 2014, see <https://beta.congress.gov/bill/113th-congress/house-bill/5031>.

“IEEE-USA is pleased with the bipartisan support the bill received and is hopeful that cooperation continues in the Senate,” Blank said.

NOMINATIONS FOR IEEE-USA AWARDS

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Awards & Recognition

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About IEEE-USA Awards and Recognition

IEEE-USA has authorized the presentation of Awards and Recognition for the purpose of recognizing excellence, outstanding service and contributions in furtherance of its objectives. The awards are administered by IEEE-USA's [Awards and Recognition Committee](#) and have been approved by the IEEE Awards Board and the IEEE Board of Directors. IEEE-USA Awards are given to recognize [professionalism](#), technical achievement, and literary contributions to public awareness and understanding of the engineering profession in the United States. In addition to IEEE-USA awards, other forms of recognition are also available, including awards from other entities within [IEEE](#) and also [outside the organization](#).

IEEE-USA award recipients are announced each year at a special Awards Ceremony held in conjunction with the IEEE-USA Annual Meeting. A list of past awardees is included in the [IEEE-USA Awards Manual](#).

The following listing of IEEE-USA awards includes links to information on each award, its purpose, form, frequency, eligibility, nomination and selection process, and presentation. [Nomination forms](#) for each award are available online from its descriptive page or can be obtained by contacting David Iams, d.iams@ieee.org.

Nomination Deadline for 2014 Awards has been extended to August 29th

[See a listing of 2013 Awards Recipients](#)

Please note that the deadline for submission of nominations has been extended to 29 August 2014

IEEE★USA Awards



Nominate a Colleague

Remember how great it felt to be recognized for an achievement or to witness someone you admire receive recognition for their effort?



Now is the time to nominate deserving individuals for one of the prestigious IEEE-USA Awards.

Nominations are being accepted until **31 July 2014**.

Nominations for:

- Professionalism Awards
- Technical Awards
- Literary Awards



For more information, visit:

www.ieeeusa.org/volunteers/awards/

Contact: Pamela Jones, pam.jones@ieee.org



Scan to find out more about the awards and to see how easy it is to nominate someone.

IEEE-USA | 2001 L St, NW Suite 700 | Washington, D.C. 20036 | +1 202 785 0017



THE HISTORY CENTER MOVE TO STEVENS INSTITUTE OF TECHNOLOGY

Michael Geselowitz, Ph.D.

By the time you receive this issue the summer season must be in full swing in the northern hemisphere. July and August are the slower times in many circles but it looks an action-packed time at the IEEE History Center.

The most important activity, as first announced in the last issue is our move to Stevens Institute of Technology. As I sit here writing in early June I am on the Rutgers Campus surrounded by half-packed boxes. By the time you receive this issue in mid-July, we hope to be fully settled on the Stevens campus. You can read more about Stevens on page 4 [of this newsletter, No. 95 <<http://goo.gl/smukM6>>].

Despite the obvious disruptions caused by the move, however we will not be letting up on our historical endeavors. A quick glance at the center activities section (page 5) shows

that United Engineering Foundation funded project is going full steam ahead, and has been joined by projects the IEEE Robotics & Automation Society and IEEE Life Members Committee. Our social media effort continues to bear fruit. The milestone program is also going gangbusters. None of these activities will let up over the summer.

And also mentioned in the last issue, we are working with the IEEE Foundation to rethink IEEE’s historical activities as a signature program that could undertake even greater philanthropic development. Look for more details in the November issue.

Finally as always, I want to express my gratitude to you, our stalwart donors for your continued generosity that has enabled all the program featured throughout this issue. I hope we continue to earn your support. Have a great summer (or winter for our southern friends)!

Note: The above message from the director of the IEEE History Center and the image below have been taken from the History Network’s newsletter No. 95 <<http://goo.gl/smukM6>> and reproduced here. Many of you may recognize the figures in the image on the next page . Eric Herz is Director Emeritus of the IEEE and Don Christensen is a former editor of the Spectrum magazine

ARCHIVES UPDATE: ERIC HERZ

By Sheldon Hochheiser

Eric Herz is one of the central figures in IEEE history, having served as an officer in Region 6 and several societies; a member of the IEEE Board from 1976 to 1978 first as Division III director, and then as Vice President for Technical Activities; Executive Director and General Manager of IEEE from 1979 to 1992; and since then as an active director emeritus. Recently, he contacted IEEE History Center Director Mike Geselowitz. Herz was moving from his longtime home, and had a variety of materials that he was sure would be of interest to the History Center for preservation in the IEEE Archives. Would History Center staff be willing to come to his home to review and collect the material? Geselowitz, of course quickly said yes, and on 13 May, he and Center Archivist and Institutional Historian Sheldon Hochheiser drove to Herz’s home in Westchester County, New York. There, Herz offered them a variety of things—books he thought would be of inter-



IEEE WESCON (Western Electronic Show and Convention), San Francisco, November 1983. (L-R: Eric Herz, C. A. "Bud" Eldon, Don Christensen, D. L. Berereton, Henry Basillo, F. X. Timmons.)

est, a variety of plaques and awards Herz received on behalf of IEEE, a small stack of documents, and most amusingly a collection of ties with IEEE logos.

But the most important part of what Herz had saved was a substantial collection of IEEE photographs, most of which documented trips around the world that Herz had participated in with other IEEE leaders from 1974 into the 1990s. There was an apparent problem—most of the pictures bore no identification. But that proved only an apparent problem. Herz went through the photos and from memory identified them—where and when they were taken, and who the people in the photos were. Hochheiser recorded Herz’s comments, and as the photos are processed into the Archives collection they will be cataloged with this information, thereby making them valuable visual documentation of the activities and relationships of IEEE leadership. One of these photos accompanies this article.

efox/central/

Next page: Improving the cohesion between sections

Chandra Reis – IEEE Schenectady Section <creis@ieee.org>

One of our earliest American electrical engineers, coincidentally born in Region 1, said “If we don’t hang together, we shall assuredly hang separately.” Things have changed a bit since Ben Franklin’s day, and we are discouraged from both sending keys on wires up into thunderstorms and from hanging engineers (and politicians) from the local trees. However, the principle remains; stick together and we will be strong or, go our own ways and we will easily succumb one by one. Here in Schenectady, we have a long history of engineering collaboration, starting with Edison and Steinmetz and the founding of General Electric. The titans of the early 1900s realized that engineers needed to work with each other and so they founded the two organizations that later merged to become the IEEE. Like all organizations, as the IEEE grew and became more international, the local branches started to be less and less an integral part of the day to day communication. In these days of instant communication, it is surprising how rarely we actually do that.



We have an opportunity here to re-claim that heritage of collaboration and cooperation. If we want to remain relevant compared to Facebook, Google, and other internet outlets, we have to find a way to bring value to our local members. Most young engineers don’t need to find an expert in their field to gain access to a dusty file cabinet of old papers; they can search on-line. They don’t need to meet face to face; they can join a chat group on LinkedIn. What then is the value of an IEEE Section? What can we offer to continue to entice people away from their computers and their increasingly hectic, overscheduled lives? I certainly don’t have a lot of answers. The big problem that I see is that each Section in the IEEE is fundamentally set to sink or swim on their own. In today’s employment climate where engineers are an international commodity, maintaining succession long enough for people to be able to



learn their responsibilities and then teach the “next generation” is not feasible. One Section officer moves before their term is up, and the Section can spend years recovering that lost knowledge. And travel is often restricted, and

vacation time is precious. What we need is a way for the Section Chairs to be able to support each other (or even just be able to contact each other...). What I do know, is that the volunteer leadership of Region 1 is significantly more than just me, and that by joining our experiences and our ideas, we can make this work better for all of us.

In our Section, we believe that we have some really good programs that

we have been able to implement, and we would like to have the opportunity to both share our successes and discuss with other Sections what their successes are so we can learn from each other and support each other. I propose a quarterly conference call or web meeting with the Section Chairs and past Chairs mid-quarter. I also propose that a list of contact information by Section Name is provided to all Chairs in the beginning of the year.

Note that the beauty of these ideas is that the cost is minimal. We can implement these ourselves and support ourselves internally as soon as we want to start. These little things will make the biggest difference. People stay involved when they feel supported. But right now, even if the rest of the IEEE disappeared, we wouldn’t notice it until the next annual reimbursement check didn’t arrive. That is a tragedy in a

volunteer organization.

Chandra Reis is the IEEE Schenectady Section chair (2013 & 2014). She has been a Member of the IEEE since 2000, and a Section volunteer for most of the time during this period. She is a graduate of Rensselaer Polytechnic Institute



with a degree in Power Engineering. She worked for SuperPower for 8 years designing superconducting power devices. Then she joined Philips Healthcare (formerly Intermagnetics General) and has worked there for 14 years as a designer for the superconducting magnets that are the

backbone of the MRI systems, and is now involved with the design service and support procedures for maintaining cryogenic superconducting systems operating in all possible environments worldwide



Image: Juan Jones/Stockphoto

IEEE PRESIDENTIAL ELECTION

MEMBERS: REMEMBER TO VOTE

THE ANNUAL IEEE ELECTION IS RIGHT AROUND THE CORNER

Carrie Loh (Published in June 2014 issue of The Institute)

Look for your annual election ballot package to arrive in August via first-class mail. The envelope will contain a paper ballot and a postage-paid reply envelope. Members will also receive an e-mail with instructions on how they can access the ballot [electronically](#), instead of by mail. Those eligible to vote include new members as of 30 June and those elevated to member or graduate student member grades on or before that date. Associate members are not eligible.

The member grade requires that you be regularly employed in IEEE-designated fields and have a combination of education and work experience of at least six years. You can

[apply online](#) for transfer to member grade.

To be eligible to vote, student members graduating between 1 January and 30 June must update their education information online to be elevated to member or graduate student member grade.

[Log in to your IEEE account](#) to help guarantee you receive the ballot package by confirming your contact information, member preferences, and education information. – Carrie Loh is with the election office at IEEE, Piscataway



Image: Jiri Kabala/Stockphoto

AMONG 17 IEEE MEMBERS

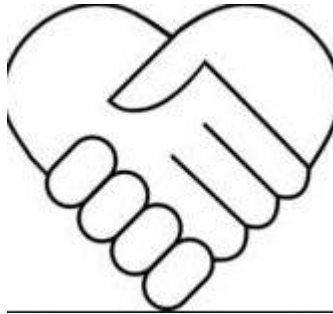
Washington, 11 July, 2014: Lennart E. Long, a cofounder and a former chair of the IEEE Conference on Homeland Security technologies is the latest winner , among 17 members, of the IEEE-USA's highest honor the Robert S. Walleigh Distinguished Contributions to Engineering Professionalism

Award. Long was recognized "for engaging government and industry leaders, and IEEE members to respond to national security issues and long-term advocacy

Congratulations

From all members in R1

*IEEE ADVANCES TECHNOLOGY FOR
THE BETTERMENT OF HUMANITY*



C

Click to next page: Congratulations to three other R1 members for their remarkable work and dedication to the IEEE
First: Dr. Ali Abedi

DR. ALI ABEDI

We have just heard that Dr. Ali Abedi and his colleague Dr. Vincent Cacesse, both of University of Maine have won a massive grant from NASA. It is a rare honor indeed. Abedi, SM

is the coordinator of Professional Activities Program at Region 1. Please join us in congratulating Dr. Abedi



UMAINE PROFESSORS AWARDED A NASA EPSCOR FUNDED OPPORTUNITY TO BE PART OF AN INTERNATIONAL SPACE STATION MISSION

JUNE 20, 2014

Dr. Ali Abedi, Associate Professor of Electrical and Computer Engineering and Dr. Vincent Cacesse, Professor of Mechanical Engineering at the University of Maine were awarded a three-year, \$100,000 grant by NASA EPSCoR through the Maine Space Grant Consortium to design and test ultrasonic leak sensors arrays on the International Space Station. A successful testing and validation will have enormous potential on the safety of the ISS and other manned or unmanned space activities as well as commercial potential. [Click here](#) to read the abstract.

[Click to the next page to read about Dr. Ashutosh Dutta](#)

DR. ASHUTOSH DUTTA

Congratulations to Dr. Ashutosh Dutta, SM, and Marketing and Industry Relations Director of ComSoc , and the coordinator of Employment and Career Activities of Region 1. In the last edition of RegiOne we reported the publication of a book authored by Ashutosh. Last month he attended the IEEE International Conference on Communications (ICC) held at Sydney, Australia.

There he was interviewed by **Ting Qian of ComSoc** at a book launching ceremony (see the photographs below). The entire interview may be watched by clicking on

<https://www.youtube.com/watch?v=uvvZ9...> or <https://www.facebook.com/photo.php?v=..>



Ashutosh Dutta with Mark Hammond of John Wiley & Sons at IEEE ICC 2014, Sydney, Australia

Ashutosh with IEEE Colleagues at ICC 2014



More colleagues at Sydney

Ashutosh with IEEE President Roberto de Marca at ICC 2014



Ting Qun of ComSoc interviews Ashutosh

Click to next page to read about : Dr. Subramainam Naganathan

CONGRATULATIONS TO DR. SUBRAMANIAM NAGANATHAN, SM,

The letter below tells it all. Congratulations, Nagi!

Congratulations to Dr. Subramaniam Naganathan, SM,

The letter below tells it all. Congratulations, Nagi!

5 February 20, 2014

Mr. Subramanian Naganathan
33 Baker Circle
Hillsborough, NJ 08844

Dear Mr. Naganathan,

Congratulations! It is our sincere pleasure to inform you that the IEEE-USA Board of Directors has selected you as a 2013 recipient of the IEEE-USA Professional Achievement for Individuals "for service to IEEE, METSAC and Princeton/Central Jersey Section"

Each year, the IEEE-USA Awards Ceremony is held to honor all the achievements and accomplishments of IEEE-USA Award recipients. The presentation of this year's awards will take place at the Crowne Plaza Providence-Warwick Airport in Warwick, Providence on *Saturday, 17 May 2014* in conjunction with the IEEE-USA Annual Meeting.

You are cordially invited to be our special guest at the IEEE-USA Awards Banquet scheduled for 7:00pm that evening. A rehearsal and reception will also be held for all of the award recipients at 6:00pm prior to the Banquet. IEEE-USA will cover the cost of admission for you and a guest to attend both the rehearsal and the banquet dinner.

If you are unable to attend, we will be pleased to present you with the award on a date and location that will be convenient for you. Please complete and return the enclosed form by 17 February 2014 to let us know whether or not you will attend the Awards Banquet.

Please send Linda Stanley an electronic copy of a color photograph of yourself via email at l.stanley@ieee.org. If you do not have an electronic copy, please send a hard copy to Linda at IEEE-USA, 2001 L Street, NW, Washington, DC 20036-4928.

Also, please let us know if you would like us to send a letter regarding the receipt of your award to your employer, media outlets, or some other entity of your choice.

You have honored IEEE with your contributions and services in the area of professional activities, and the IEEE-USA Board of Directors is very pleased to recognize your efforts by the presentation of this award to you. Again, congratulations to you on behalf of IEEE-USA.

Sincerely,



Marc T. Apter
2013 IEEE-USA President



Pamela J. Jones
2013 Awards and Recognition Committee Chair

cc: Rebecca T. Mercuri

Click
next section for: Calendar of Important R1 and other IEEE events

to

AUGUST 2014

2—3 Region 1 Board of Governors' Meeting @ Hyatt Regency Hotel, Rochester, NY.

20—24 The IEEE Membership and Geographic Activities Board (MGA) will partner with Region 8 in hosting the 2014 Sections Congress at RAI Convention Center, Amsterdam, Netherland.



SEPTEMBER 2014

17 Conference on Security/Cyber Security and Privacy at IEEE HQ, Piscataway, NJ 08854
Organized by NJ Coast Section - (Contact Dr. Amruthur Narasimhan <anarasimhan@ieee.org> for details)

20-21



Call for Volunteers/

IEEE Booth

Sponsored by Region 1, EAB and IEEE-USA at the Fifth Annual

**World Maker Faire New York
2014**

September 20 & 21, 2014

**New York Hall of Science
<http://www.nysci.org>**

You provide: a four-hour booth shift

*You get: Day admission to the Faire
(Two shifts give you Two Day passes to the Faire!)*

***Volunteer! - contact Charles Rubenstein
<c.rubenstein@ieee.org>***

Coming up next: Tech Talks

FORENSIC ENGINEERING - A BRIEF INTRODUCTION

James Cohen, PE

Editor's note: This article was first published in IEEE NY Monitor June 2014. It is always wise to read about engineering analyses of crashes that may involve bridges, buildings, aircrafts, trains, control systems or even computer drives. These analyses done by experts in the respective fields make us aware about the causes and effects of such disasters that we, as engineers, should try to avoid. I always read about the reports of the National Transport Safety Board (NTSB) after its engineers scrutinize the minutest of details of any crash involving any mode of transportation. However, the term Forensic Engineering never stuck in my brain until I heard Jim Cohen gave a presentation on the subject at the Imperial College alumni association in New York in 2012. Immediately, I thought that it would be a great to hear him again at one of the IEEE

NY Section's PES/IAS/LMAG meetings. Jim was gracious enough to accept our invitation and delivered his lecture on May 28 last. In the following article you can read more about Forensic Engineering straight from Jim's own computer. Jim is a civil engineer and analyzed New York City's horrifying crane crash of 16 March, 2008 at 51st and Third Avenue that killed 4. He was the lead investigator on behalf of the NY DOB and an expert witness for NYCDA's office at the court hearings that followed the crash



SOMETHING goes wrong and there is a perceived failure. First question. What? Second question. What is wrong?

When the "something" or the "wrong" involves technical issues, a forensic engineer may be engaged to answer the question. This brief introduction addresses forensic engineering as it relates to building issues.

What may be defined as a failure?

There are four definitions which I typically consider. The first is the inability to perform as "required". This typically relates to a failure to conform to prevailing law, as may be embodied in building codes and regulations.



Material sampling and testing. Image shows concrete core removed from an existing building. Testing included compressive strength, chlorides, carbonation and petrographic examination.

The second definition is the inability to perform as intended. For new buildings, intent is embodied in the building design, contracts, specifications and later modifications. For existing

buildings, the intent may be contained in public offering statements, disclosure statements, appraisals, condition assessments, and similar documents. Under this definition, the failure may include cost overruns, delay claims, poor construction quality, errors in design, and other criteria which can be directly linked to the claims made in the documents supporting the complaint.

The third definition of failure is the inability to perform as anticipated. This may be restated as issues of serviceability, usability, constructability and maintainability. These are issues surrounding what would expected to be provided from the product, as opposed to compliance with prevailing law, contractual agreements, and design documents.

Lastly is the inability to perform as desired and is typically the most difficult failure type to prove. It may relate to the space, profitability, aesthetics, expectations or other anticipated or imagined benefits which were desired by the plaintiff to be provided and have now failed to materialize.

It is important to note that, what may be perceived as a failure under one of these definitions may not be a failure

for all. For example, a column claimed to have been located inappropriately may be redundant and unnecessary.

The forensic engineer is first faced with the problem of determining the actual issues, as the initial perception of the problem may be a consequence of the actual failure(s), rather than the proximate cause, or may even be a contributory cause further exacerbated by other failures. Once the issues are correctly identified, there is the question of the validity of the allegations. As alluded to above, a failure to perform may not be a failure to perform as agreed. Should a failure be validated, the cause, the remediation, the cost, and often the “who” of the failure may be asked of the forensic engineer.

Buildings may “fail” for many reasons. Among these may include any combination of design faults, construction faults, usage, poor maintenance, outside events (such as floods and hurricanes) and simply the unknown. The failure of the Tacoma Narrows Bridge on November 7, 1930, was a result of the properties of wind flow over bluff bodies of the type and shape of the bridge, which were largely unknown at the time of the design and construction of the bridge. The failure of the Hyatt Regency walkway Kansas on July 17, 1981 was a result of the engineer failing to recognize the implications of what appeared to be a minor design change, itself triggered by a constructability issue with the original design.

When permitted by the client’s scope and available fees and time, an investigation should thoroughly delve into the multitude of issues surrounding the perceived failure.

- Who are the potentially involved parties? This can include the municipality, the owner(s), the members of the design team, other consultants, subconsultants, contractors, subcontractors, testing agencies, material suppliers and others.
- What are the potentially involved components and systems? This depends upon the failures and issues which have been identified. For the John Hancock building in Boston completed in 1976, several



Advanced deterioration of structural components. The overhead slab is almost fully deteriorated with little remaining strength.

problems arose. Original completion was scheduled for 1971 which lead to contractual issues. During construction, temporary retaining walls failed which was a means and methods issue by the contractor. Building sway affected occupant comfort, which was a largely unknown issue of the time. Windows affected by thermal movement and wind forces fell out, largely

attributed to design error. In these various failures, differing components were involved. For the individual glass panels, the entire building behavior contributed to the failure.

- What was the history of the failed component(s), including all non-failed items related to or potentially affecting the failed component(s)? For new construction, acceptance of prior work by ensuing trades often results in failures of later materials due to underlying problems which were not corrected. Historical changes in building layout, loads, materials and building codes and regulations over the history of a structure become important when considering current issues. For example, a precious metals plant in Nutley, NJ, repeated acid spills and floor repairs led to the presence of a completely unreinforced concrete floor with multiple epoxy and other toppings (the acid had, over time, completely dissolved the reinforcement).

When conducting an investigation, the issue of patterns is very important. This may include patterns of any kind related to the failure. Where there are many, perhaps thousands, of similar items, such as windows, statistical analysis may be justified. A pattern to the failure may be related to physical characteristics such as location, type, or age. A pattern may emerge with regard to the individual or company responsible for the installations. There may also be environmental patterns, such as weather exposure. The existence as well as the lack of existence of a pattern is very valuable information to the forensic investigator.

Valuable information may be obtained from written documentation. In addition to the basic design documents, maintenance records, correspondence, diaries, inspection records and other writ documentation can provide insight into the intent, means, methods, changes, etc., of any particular project.

Tools of the investigator may include visual observation, nondestructive testing, destructive testing, sampling, component testing (both in situ and laboratory), full-scale testing, parametric testing, analysis of many different complexities, document review, historical research and other basic research. The actual scope of work will almost always be limited, as both funds and available time are limited. There is therefore always an element of uncertainty in the final opinion, however slight. Hence, most forensic



Building component failure. Image shows failing brick masonry arch, an imminent danger to the general public. Life safety is of paramount importance.

engineering report conclusions commence with the phrase “The following represents my opinion to a reasonable degree of engineering certainty based upon the foregoing activities”. At the end of the report, a phrase such as. “I reserve the right to amend my report based upon further investigation or information, from whatever source” will also typically be included.

Forensic engineering work often includes delegating responsibility for faults and costs once allegations of fault have been validated. This raises the issue of ethics as, at least in the United States, the client most often is or represents an interested party responsible for payment of the forensic engineer’s fees. Maintaining integrity and independence of opinion can be difficult but is essential to credibility, both written and in sworn testimony, and to professional standards of conduct.

his does not mean that all experts will agree if given the same set of facts.

Example 1: All may agree there is an 8 ounce glass with 4 ounces liquid. But, the glass may be half-full, the glass may be half-empty. The glass may have also been poorly designed, leading to wastage of glass. Or, there may be no fault at all, as the requirement was to provide 4 ounces of liquid into the glass provided.

Example 2: Water penetration through a building facade may require sealants to have failed, but, for the water to cause damage, it may also have had to pass through the façade, water resistant barrier, building wrap, drainage layer and internal finishes and the actual reason water resulted in damage was that the landscaping unrelated to all issues concerning the building façade



Material degradation. Image shows advanced mold growth on timber. At issue was the structural integrity of a listed building.

design and construction, had blocked the exit path for water at the base of the building envelope.

Whatever opinion is developed based upon the available evidence, it must be upon solid technical and scientific grounds. To this end, expert testimony in federal court must be in accordance with the Federal Rules of Evidence Rule 702, Testimony by Expert Witnesses:

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:

- a) the expert’s scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
- b) the testimony is based on sufficient facts or data;
- c) the testimony is the product of reliable principles and methods; and
- d) the expert has reliably applied the principles and methods to the facts of the case..

Similar rules apply in other countries.

Lastly, forensic engineers may need to testify as to their opinions under oath. An additional skill, unrelated to the ability of the forensic engineer to investigate and scientifically and impartially determine cause, fault and damages, is the ability to present that opinion in an intelligible and credible manner to an unskilled and largely non-technical audience. Complex concepts need to be discussed in a manner which can be understood by the public. Challenges to the opinion must be successfully answered. Credibility must be preserved. For these reasons, skills in presentation and public speaking are needed, for, without these, the most highly qualified individual with a technically correct conclusion may not be believed.

Author James Cohen is an Associate Principal in the New York office of ARUP where he is the Global Contact and responsible for coordinating Arup’s North American activities in expert services, concentrating in engineering investigations and solutions to problems in the built environment. Mr. Cohen is a graduate of Cornell University and Imperial College of Science and Technology and a licensed engineer in New York and other states. With over 35 years’ experience, Jim’s experience has been diverse, including failure analysis, natural hazard mitigation and response, dynamics, advanced analysis techniques, and instrumentation. He has been involved with leak mitigation, demolition, preparation of codes and standards on wind and seismic loads; vibration and fatigue testing of major structures; cable design; blast analysis, design, analysis and inspection of existing



Note: The author James Cohen reserves the copyright of article above and of the five images in it

Ming Lai. SM

In this article, we overview the M2M DNA, its mapping to M2M architecture, evolving M2M Gateway capabilities, automation by Composite Device, key M2M business and technical challenges, emerging M2M application store types, and main M2M trends.

While the number of mobile phones used for human-to-human communication exceeds 6 billion today, the number of connected M2M devices that have 2-way communication but limited human interface capabilities is projected to reach 50 billion by 2020. M2M can not only provide convenience, energy savings, improved life quality to end users, but also enables vendors, developers, and service providers high potential of new business and revenues.

We discuss the three logical pillars of the M2M framework, devices, networks, and applications (DNA), in this article.

A M2M device contains data attributes, receives commands from an application via a network to perform capabilities (e.g., switch on/off, start collecting data), and generates events to the application via the network when the values of some attributes change or responses to commands. The example M2M devices include telematics on-board unit, digital signage in the transportation industry, surveillance camera, building access device in the

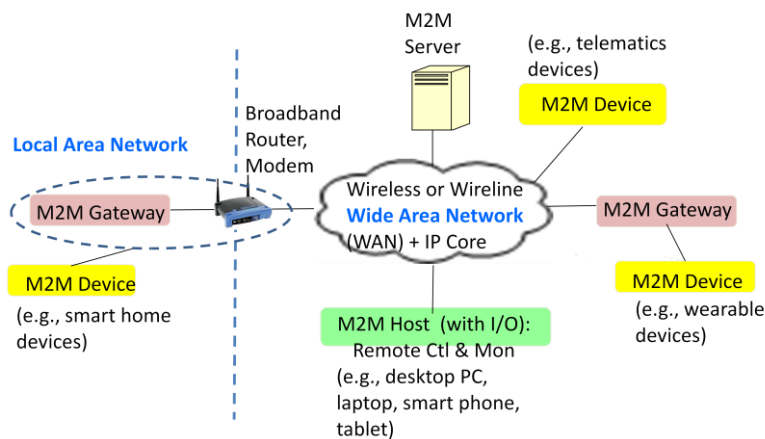
security industry, smart meter, energy management device in the smart energy industry, vending machine, point of sales device in the payment industry, blood pressure monitor, activity monitor wristband in the health industry, appliance, HVAC control in smart home industry, and TV, HiFi audio in the consumer electronics industry.

A network provides wireless, wireline, or mixed connections in a wide, local, or personal network area. The example wireless networks include 3G/4G cellular and satellite for wide area, WiFi, Z-Wave, Zigbee for local area, Bluetooth, ANT+ for personal area. The example wireline networks include fiber, cable, Digital Subscriber Line (DSL) for wide area and Ethernet, phone line, power line, cable wire for local area.

An application is software that issues commands, handles the events, makes sense of received data, and interwork with other software. The software can be located in each of the M2M architecture components described below.

From a system perspective, the M2M architecture consists of M2M Device, M2M Gateway, M2M Server, and M2M Host. A M2M Device is an end device that can be controlled by or interact with an application. A M2M Gateway is a special type of device that interface with a wide area network and the M2M Devices in a local or personal network area. A M2M Server is a server that connects to wide area network (WAN) and hosts M2M applications for services and management. A M2M host is a smart phone, tablet, or PC that can control or monitor the M2M Devices remotely across the network.



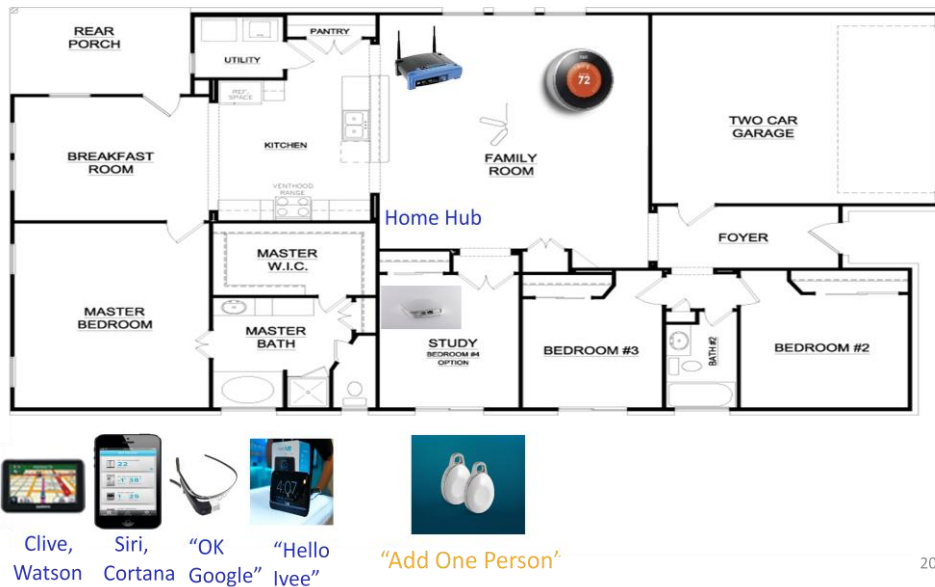


Compared with the architecture for connecting computer and communication devices, M2M Gateway is the distinct element in the M2M architecture. A M2M Gateway can be a fixed device connected to or built with a broadband router or a portable device like a smart phone or tablet. Besides the initial capability of connecting M2M Devices without WAN interface for services or management, new and emerging M2M Gateway provide the following advanced capabilities: (a) convert and adapt independently developed or evolving protocols among M2M Devices in a local or personal network, (b) expose and consume Web or M2M Devices in a cloud, (c) automate integrated functions of multiple M2M Devices in a local or personal network, (d) manage homogeneous or heterogeneous M2M Devices in a local or personal network. In (c) and (d), a set of homogeneous M2M Devices is called a Device Group while a set of heterogeneous M2M Devices is treated as a Composite Device.

An example of automating the service and management of a composite device is illustrated below. A smart thermostat with embedded motion detector can automatically turn off the air conditioner when no motion

(person or pet) is detected around the thermostat for a period of time. However, if only one such smart thermostat is installed in the living room, the resident staying most of the time around other places in the house may experience unexpected hot condition in the house. A Composite Device solution from one vendor is to use the smoke detectors with embedded motion detector in other rooms that can interwork with the smart thermostat directly without involving a M2M Gateway. Another Composite Device solution involving a M2M Gateway and presence sensors from a different vendor from that of smart thermostat, where the M2M Gateway is programmed to send a message to the smart thermostat to turn off the air conditioner when it detects all the house residents carrying the presence sensor has left the house (with no radio signal present). The M2M Gateway can also be used to configure the Composite Device (smart thermostat and presence sensors) easily with a voice recognition device (e.g., Ijee) that recognizes a user's command "Add one person" and sends a message to the M2M Gateway to add one to the count-down number for turning off the air conditioner via smart thermostat.

“Auto Turn-Off” Using “No One Home” Alert Message



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The key M2M business and technical challenges include:

1. M2M services take a long time and involve multiple stakeholders to develop and deploy.
2. The business models for M2M services vary and are still changing.
3. A large variety and number of types of M2M Devices come to market quickly.
4. M2M Devices have a long life span, which requires extensible and robust system design to support evolution and enhancements.
5. Some desirable autonomous services require composition of multiple types of M2M Devices from one or more vendors.
6. There are multiple M2M DNA related standards in each vertical market and across markets.
7. Initial provisioning methods for M2M Devices and M2M Gateways vary, and some require networking knowledge.
8. A M2M Device is often “locked in” with a specific application and cannot be used by other applications.

9. There are no standard object/resource models even for the same type of M2M Devices; hard to multi-source a M2M Device type for an existing service.
10. A M2M service may need to manage a large number or group of M2M Devices in sunny and rainy day conditions.
11. M2M Devices may require low power operation, auto charging, smart start/stop, and energy harvesting.

There are an ever increasing number of M2M applications in the market, but no agreed-upon killer M2M applications yet. Instead of searching for killer applications, the success of mobile apps is built on application stores containing the apps developed by 3rd party developers. Just as App store happening to mobile applications for smart phones and tablets, it is worth paying attention to the multiple emerging types of application store for M2M applications. Below are the five types of M2M application store.

M2M Application Store Type	Application Store Owner	Applications in Application Store
1	Smart Phone OS Vendor (e.g., Google Android, Apple iOS, Windows Mobile/8, QNX, Tizen, Firefox OS)	Apps for Configuring and Controlling M2M Devices and Gateways
2	M2M System-on-a-Chip (SOC) Vendor (e.g., MediaTek)	Device Apps Using the Application Programming Interface (API) for SOC
3	M2M Device Vendor (e.g., Jawbone)	Device Centric Connected Apps
4	M2M Gateway Vendor (e.g., SmartThings)	Gateway Based Composite Device Apps
5	Web Service Connect Platform Vendor (e.g., IFTTT)	Web Based Connected Device Apps
6	M2M Service Provider (e.g., Wireless Operators, Telematics Service Provider)	Non-Subscribed Supplemental Apps (e.g., App for the infotainment, remote home control, usage based insurance, or car-to-car connection feature of a telematics service)

There are four main trends in the M2M field. We illustrate these trends using the telematics vertical as an example.

1. Service Internationalization: When a car vendor sells its cars with telematics on-board units (OBU, before market) to multiple countries, the trend is to have the same OBU that can download the service characteristics of the telematics and wireless network service provider the car owner selects using the same over-the-air provisioning method in different countries the car vendor sells. For a portable after-market telematics unit (e.g., OBD-II device with 3G radio) that provides navigation capabilities, the trend is to support the language the driver is familiar with when he/she drives in a foreign country via the cloud that provides voice recognition and language translation.

2. Mobile-M2M Collaboration: Several years ago, there were two major distinct approaches to provide wireless WAN connection in a car: using cell phone brought in by a

rider, using the OBU in the car. The trend is to use both in collaboration ways, especially the OBU becomes very powerful computationally that can support tasks such as natural language recognition and speech generation. An example of collaboration is to use the phone to receive calls and messages and pass it over to the OBU to process the calls/messages and support hands-free driving with voice interaction with the driver to reduce distraction.

3. Cross-Vertical Integration: Common service layer software and API enables application integration across multiple verticals, and thus generates many new service features for M2M users and revenue potentials for M2M service providers. As an example, a least-cost charging application for electric cars can be developed to utilize the remaining battery data transmitted over the telematics network and the charging time constraints in the smart meter at home sent over the smart grid network.

4. Standards Harmonization: With many existing M2M related standards, besides natural shakeup and evolution, many major standards bodies and consortia are getting together to harmonize the existing and emerging M2M standards. One example is the standards partnership program for M2M common service layer, OneM2M, which

is driven by all the major telecom standards bodies in the world: ETSI (Europe), ATIS, TIA (North America), CCSA (China), ARIB, TTC (Japan), TTA (Korea) and other key alliances, such as Open Mobile Alliance (OMA). For the slide show accompanying this article please go to >>><http://goo.gl/kvzHY6>

Author Ming-Yee (Ming) Lai received the M.S. and Ph.D. degrees in computer science from Harvard University and B.S. degree from National Taiwan University. He is a co-founder of Connectilife, which focuses on management, integration, and interoperability of M2M devices, networks, applications, and data. Ming was the head for M2M and Broadband Wireless Program, Applied Communication Sciences (ACS), responsible for developing new technologies and business with focus on M2M, broadband wireless services, and mobile data analytics. Ming is also the ACS representative to OneM2M, ATIS M2M Committee, Open Mobile Alliance, NPSTC 700MHz Broad-band Group, and WiMAX Forum. Ming has over 30 year experience in information and telecom technologies through his work in ACS, Telcordia, Bellcore, Bell Labs, and Rand Corporation.

Ming initiated, directed, and contributed to a wide spectrum of projects and products in M2M, broadband wireless, network management, architecture design, software tools, database systems, system reliability and performance and has worked with key telecom service providers, equipment vendors, government agencies, and research organizations. In recent years, his R&D focus centers on M2M service platform, device management, portable gateway, and vertical application integration. Ming has over 50 paper publications, book, and patents. Connectilife for IEEE NYC, contact info: mlai@connectilife.com

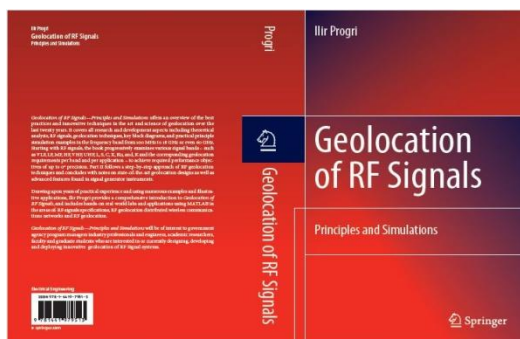


ANOTHER BOOK AUTHORED BY A REGION 1 MEMBER

Remember that in the last issue of the RegiOne we wrote about two books authored by Ms. Nita Patel and Dr. Ashutosh Dutta both SM of the IEEE. Since then we have come to know of another work authored by Dr. Ilir Proгри of the Westchester Country Section. The book titled **Geolocation of RF Signals**, Springer 2011, 330 pages, ISBN-10: 1441979514 and ISBN-13: 978-1441979513, Amazon price: \$158.73. Belated congratulations Dr. Proгри!

The book covers all research and development aspects including theoretical analysis, RF signals, geolocation techniques, and practical principle simulation examples in the frequency band from 100 MHz to 18 GHz or even 66 GHz. Proгри reveals

recommendations for the future final products of geolocation of RF signals. Starting with RF signals, the book progressively examines various signal bands – such as VLF, LF, MF, HF, VHF, UHF, L, S, C, X, Ku, and, K and the corresponding geolocation requirements per band and per application – to achieve required performance objectives of up to 0^o precision. Next follows a step-by-step approach of RF geolocation techniques and concludes with notes on state-of-the-art geolocation designs as well as advanced features found in signal generator instruments.; and a brief description of the best mathematical techniques employed for geolocation of RF signals at 100 MHz to 18 GHz or even 66 GHz.



the research and development process by demonstrating how to understand and explain geolocation of RF signals from the basics to the final principle of simulation and make

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The End

