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IEEE Canadian Review

La revue canadienne de l'IEEE

Echoes of McNaughton's Legacy:

- Canada's WWII Radar Engineering Triumph
- 2012 IEEE Canada Achievement & Service Awards

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IEEE Canadian Review
General Information

The *IEEE Canadian Review* is published three times per year: mid March, end of June and mid October. Its principal objective is to project an image of the Canadian electrical, electronics, communications and computer engineering professions and their associated academic and business communities to:

(i) Canadian members of IEEE;

(ii) Canadian members of the profession and community who are non-members of IEEE;

(iii) The associated Canadian academic (i.e., universities, colleges, secondary schools), government and business communities.

To ensure that the *IEEE Canadian Review* has the desired breadth and depth, editors are responsible for screening articles submitted according to the following general themes:

1 - National Affairs
2 - International Affairs
3 - Industry
4 - Education
5 - Power
6 - Communications
7 - Computers
8 - Electronics

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Editorial / *Éditorial*

Wahab Hamou-Lhadj, Rédacteur en chef / Editor-in-Chief

J'aimerais commencer mon premier éditorial en remerciant l'ensemble des membres et bénévoles de l'IEEE Canada pour leur engagement et leur dévouement indéfectibles envers la science et l'ingénierie. À titre de nouveau rédacteur en chef de la *Revue canadienne de l'IEEE*, je vous assure que ce puissant outil de promotion de l'ingénierie continuera d'exercer son rôle vital au cours des prochaines années.

J'aimerais aussi souligner la contribution de mes prédécesseurs, notamment le travail remarquable accompli par Amir Aghdam, Ph.D., à la barre de la *RCI* depuis deux ans, alors qu'il cumulait plusieurs autres engagements au sein de l'IEEE. Ce poste lui a permis d'acquérir une vue d'ensemble de l'organisation qu'il mettra à profit désormais comme président élu de l'IEEE Canada.

Bienvenue à Bruce Van-Lane, notre nouveau directeur de rédaction. Bruce pilote avec brio, depuis 2000, la production de la revue, à laquelle il a ajouté une touche journalistique dans ses nouvelles des membres. Bienvenue à Maike Luiken comme nouvel adjoint à la rédaction. Habile à forger des partenariats avec l'industrie, les gouvernements et les chercheurs universitaires, elle veillera à ce que nos articles leur soient communément pertinents. Je souligne avec émotion le départ de notre directeur de l'évaluation par les pairs, M. Shaahin Filizadeh. La qualité et la diversité des articles techniques de la *RCI* doivent beaucoup à la capacité d'organisation et au dévouement qui l'ont caractérisé depuis son entrée en fonction en 2008. Au nom de l'équipe, je le remercie pour son apport et lui souhaite beaucoup de succès dans ses nouvelles occupations.

Dans ce numéro, Brian Mendes signe un article de fond nous ramenant à l'époque de la Seconde Guerre mondiale, au moment où des scientifiques et ingénieurs canadiens développaient les premiers radars de défense anti-aérienne. Leur conception avait été confiée aux experts en radio du Conseil national de recherches du Canada, une équipe mise sur pied par le major-général Andrew G. L. McNaughton alors qu'il présidait le Conseil avant l'éclatement de la guerre. Comme le décrit Brian, ce dernier était un brillant militaire et un éminent scientifique. Clairvoyant, il a reconnu l'importance des premiers travaux de radiogoniométrie, posant les jalons d'une expertise canadienne largement utilisée de nos jours.

L'IEEE Canada célèbre les nombreux exploits d'Andrew G. L. McNaughton en décernant, depuis 1969, le prix de la Médaille d'or McNaughton. L'institut a créé par après six autres prix d'accomplissement technique et quatre autres récompenses pour états de service, qu'il décerne chaque année à l'occasion de sa CCGÉI. Je vous invite à découvrir les récipiendaires de 2012 en parcourant leur biographie dans l'encart central.

Également dans ce numéro la nouvelle chronique du responsable des relations avec l'industrie, M. Dave Michelson. Bruce Van-Lane brosse le portrait dévoué de certains des nombreux bénévoles du TISP. Jon Rokne commente l'ouvrage *Tubes* sur la structure physique d'Internet. Elmer Bourque propose une nouvelle chronique hilarante sur l'apprentissage expérientiel. Sans compter les petits bijoux habituels de nos adjoints à la rédaction Alexandre Abecassis et Terry Malkinson.

Bonne lecture!

I would like to start my first editorial note by thanking IEEE Canada and all its members and volunteers for their long-lasting tradition of dedication and commitment to science and engineering. As new Editor-In-Chief, I assure you the *ICR* will continue to play a vital role in promoting engineering for years to come.

I take this opportunity to thank all the previous editors-in-chief for their contribution to *ICR*, more particularly, Dr. Amir Aghdam for his remarkable work in the last two years, while being involved in many other IEEE activities. Amir is now IEEE Canada President-Elect, aided by the wonderful overview of our organization gained through piloting the *ICR*.

I would like to welcome Bruce Van-Lane as the new Managing Editor. Bruce has most ably managed the production process of *ICR* since 2000, more recently lending a journalistic touch in editing member news items. A new addition to the team is incoming Associate Editor, Maike Luiken. Maike's experience in forging partnerships with industry, government agencies and academic researchers will bolster content of common interest to all these sectors. We bid a fond farewell to Peer-Review manager Shaahin Filizadeh. The high quality and diverse nature of the *ICR*'s technical articles are testament to his organizational skill and dedication since taking on the position in 2008. On behalf of the *ICR* team, I thank him for all his contributions, and wish him the best of luck with his new endeavors.

In the feature article of this issue, Brian Mendes takes us back to WWII to relate the story of the first anti-aircraft-guiding radars, developed by Canadian scientists and engineers. Design was entrusted to the Radio Branch of NRC, which had been established by Maj. Gen. Andrew G. L. McNaughton during the time he was NRC president, prior to the start of the war. As Brian describes him, McNaughton was both a distinguished soldier and scientist. Presciently, McNaughton had recognized the significance of early work in what was then known as Radio Direction Finding, initiating the Canadian expertise later put to such good use.

IEEE Canada celebrates McNaughton's many remarkable contributions through presentation of the McNaughton Gold Medal Award, created in 1969. Since then, six other technical achievement awards plus four service awards have been established, presented annually at the IEEE Canada Awards Banquet at CCECE/CCGÉI. You'll want to read the biographies of all the outstanding 2012 recipients (see centre insert).

Also in the issue, we inaugurate a column by Industry Relations Chair Dave Michelson. Bruce Van-Lane profiles some of the many dedicated TISP Canada volunteers. Jon Rokne reviews the book *Tubes*, exploring the internet's physical structure. Elmer Bourque gets us chuckling in a new column entitled "Experiential Learning." Plus, the usual fine offerings of associate editors Alexandre Abecassis and Terry Malkinson.

Enjoy!

Cover Pictures / *Photos de couverture*

General Andrew McNaughton addresses the nation during WWII; credit: *Library and Archives Canada/PA-034178*. Top right, positional data radar for controlling anti-aircraft weaponry; credit: *Daily Herald/Science & Society Picture Library/10250842*. Top left, zone position radar for spotting targets; credit: *DND/Library and Archives Canada/PA-204491.*

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As this calendar year comes to a close, I want to highlight some of the excellent work done by our volunteers and staff. Did you know that between March and December, there were 39 IEEE conferences taking place in Canada? For a Region that has slightly less than 4% of the IEEE membership, we are holding closer to 8% of the annual conferences! I think this speaks to the calibre of our Canadian members and volunteers, and to the relative strength of the Canadian technology industry and institutions.

To highlight a few of these events: In Edmonton, in March, there was the Electrical Safety, Technical and Mega Projects Workshop. In May, sponsored by IEEE Canada and mentioned in my previous report, there was the very successful 25th Canadian Conference on Electrical and Computer Engineering in Montreal, concurrent with the annual IEEE Canada awards ceremony. The International Communications Conference, whose theme was Connect-Communicate-Collaborate, was a big hit in Ottawa in mid-June. In August, were the Photonics Society International Conference on Optical MEMS and Nanophotonics held in Banff, and the International Conference on Smart Grid Engineering held in Oshawa. One of many conferences that took place in the fall was the IEEE Canada-sponsored Electrical Power and Energy Conference held in London, Ontario in October. Information on all IEEE conferences, searchable by date and country, is found at www.ieee.org/conferences.

Over the summer, the executive and steering committees met and discussed our progress to date on this year's various committee work and projects, and the implementation of our strategic plan. I am pleased to report that, so far, we are on track. In conjunction with the Engineering Institute of Canada, of which IEEE Canada is a member society, we are continuing our sponsorship of the Climate Change Technology Conference. This conference was first held in 2006, then 2009 and the third edition will be held in May 2013 with the theme "Engineering for Global Sustainability" (www.cctc2013.ca). The committee also discussed the continual need for volunteers. If you are interested in becoming more involved the best place to start is by contacting your local section or chapter executives.

During my many discussions with senior volunteers and business leaders, I make a point of asking them about mentoring. Specifically, I ask them whom are they mentoring and who is mentoring them? No matter your career phase, you should have a mentor to provide you infrequent advice and a big picture perspective. Ideally, your mentor is someone who is not in your direct management line and a couple of steps above your current level. On the other side of the equation, you should be mentoring someone who is in an earlier career phase – providing them any useful advice or lessons learned the hard way. Just to be clear, I am not talking about a formal mentorship program here – just someone with whom you can have informal conversations. I firmly believe we do not do enough of this, and if your organization is looking for more employee engagement this is one way to improve.

One recent change on the IEEE global front is that, starting in 2013, students will receive Spectrum in digital format only. To receive a print version of Spectrum students will have to ask specifically for print upon renewing their membership and pay an additional fee. One advantage of digital Spectrum is the interactive features such as integrated audio, video and embedded web links. For full details, see http://www.ieee.org/ns/mganet/mbb/Factsheet_volunteers.pdf

Do not forget to recognize a distinguished co-worker or volunteer by nominating them for an IEEE Canada award. Nomination forms and information are available at www.ieee.ca/awards. As always, take the time to look at the long list of member benefits that IEEE offers (www.ieee.org/benefits).

Finally, I am always open to your comments or suggestions. Please send them to kbbrown@ieee.org.

En ce tournant de l'année, j'aimerais souligner certaines réalisations issues de l'excellent travail de nos employés et bénévoles. Saviez-vous qu'entre mars et décembre notre institut a tenu 39 conférences au Canada, soit près de 8% des conférences annuelles de l'IEEE, alors que notre région compte un peu moins de 4% de ses membres? Ce dynamisme traduit le calibre de nos membres et bénévoles canadiens, de pair avec la force relative de nos institutions et entreprises de technologie.

Rappelons certaines de ces conférences. Nous avons eu en mars, à Edmonton, un atelier sur la sécurité électrique, les projets techniques et les mégaprojets. Puis en mai, la 25e Conférence canadienne de génie électrique et de génie informatique, organisée à Montréal avec le soutien de l'IEEE Canada, de concert avec sa cérémonie annuelle de remise des prix. À la mi-juin, la Conférence internationale des télécommunications, axée sur la connexion, la communication et la collaboration, connaissait un grand succès à Ottawa. En août, la Société de photonique tenait, à Banff, la Conférence internationale sur les systèmes microélectromécaniques optiques et la nanophotonique, suivie de la Conférence internationale sur l'ingénierie des réseaux de distribution d'électricité intelligents, à Oshawa. Parmi les nombreux rendez-vous de l'automne, mentionnons la Conférence sur l'énergie électrique, tenue à London (Ontario) en octobre, également grâce au soutien de l'IEEE Canada. L'information sur l'ensemble des conférences de l'IEEE est accessible par date et par pays à www.ieee.org/conferences.

Le conseil de direction et le comité directeur se sont réunis cet été pour échanger sur le travail accompli jusqu'à maintenant au sein des comités et projets de l'Institut en regard de son plan stratégique. Jusqu'à maintenant, je suis ravi de vous annoncer que les choses vont rondement. Avec l'Institut canadien des ingénieurs, dont l'IEEE Canada est une société membre, nous poursuivons notre parrainage de la 3e Conférence sur les technologies du changement climatique. Donnant suite à celles de 2006 et 2009, la prochaine aura lieu en mai 2013 sur le thème L'ingénierie pour un monde durable (www.cctc2013.ca). Les organisateurs lancent un appel aux bénévoles, toujours en demande. Si vous souhaitez mettre l'épaule à la roue, communiquez avec le bureau de votre section ou division locale.

Dans mes échanges avec les bénévoles d'expérience et les dirigeants d'entreprise, je me fais l'avocat du mentorat. Je leur demande s'ils sont le mentor de quelqu'un et s'ils ont un mentor. Quel que soit l'avancement de notre carrière, nous devrions tous bénéficier d'un mentor qui nous conseille au besoin et élargit nos horizons. Idéalement, cette personne ne devrait pas avoir de relation d'autorité avec nous et devrait nous précéder professionnellement de quelques échelons. De la même façon, nous devrions tous pouvoir encadrer une personne moins avancée que nous dans sa carrière pour lui donner de précieux conseils ou des leçons durement apprises. Soyons clairs, je ne pense pas ici à un programme officiel de mentorat, mais à une personne avec qui échanger tout simplement. J'ai la ferme conviction qu'on n'en fait pas assez de ce côté et que le mentorat peut aider les organisations à nourrir l'engagement de leur personnel.

Selon une récente annonce de l'IEEE mondial, à compter de 2013, les étudiants recevront Spectrum au format numérique seulement. Pour recevoir la publication papier, ils devront en faire la demande au moment de renouveler leur adhésion et payer un surplus. Un des avantages du format numérique est l'accès à des liens audio, vidéo et Web. Pour plus de renseignements, veuillez consulter le site http://www.ieee.org/ns/mganet/mbb/Factsheet_volunteers.pdf.

N'oubliez pas de soumettre la candidature d'une ou d'un collègue ou bénévole prestigieux à un prix de l'IEEE Canada. Pour vous renseigner sur ce prix et vous procurer le formulaire de candidature, visitez le www.ieee.ca/awards. Comme toujours, prenez le temps de parcourir la longue liste d'avantages dont bénéficient les membres de l'IEEE à www.ieee.org/benefits.

Enfin, je demeure ouvert à vos commentaires et suggestions. N'hésitez pas à me les envoyer à kbbrown@ieee.org.

Dr. Keith B. Brown, Ph.D., P.Eng., SMIEEE
2012-2013 IEEE Canada President and Region 7 Director

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Newslog Editor

Rédacteur des Coupures de presse

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Alexandre Abecassis est agent de brevets associé chez Fasken Martineau DuMoulin S.E.N.C.R.L., s.r.l., Avocats et agent de brevets et de marques de commerce.

Send any news clippings you would like to contribute via e-mail to alexandre.abecassis@ieee.org

Veuillez faire parvenir les coupures de presse proposées par e-mail à alexandre.abecassis@ieee.org

TORONTO, ON. Sept. 5, 2012. According to a study published by Symantec, more than 46 percent of people in Canada fell victim of cybercrime in the past year. The average loss is C$169 according to that report. On the worldwide scale we are talking about 556 million victims per year. New forms of cybercrime include use of social networks and mobile devices platforms.

MONTREAL, QC. Aug. 22, 2012. APEXK has introduced a new Technology focusing on athletic and brain training. Initially developed for hockey, the technology reportedly heightens athletes' concentration and awareness, and reduces reaction time. The APEXK device, controlled from an iPad, is currently available only to professional league teams, though the company intends to ultimately offer it to all athletes.

TORONTO, ON. Aug. 17, 2012. Fontline Technologies, a provider of technology-based equity and option trading services, IT infrastructure and managed network services has announced a strategic partnership with Silexx Financial Systems LLC, the creators of the Obsidian trading platform. Frontline will receive exclusive Canadian reseller rights whereby it will offer this custom platform to the Canadian marketplace.

QUEBEC, QC. Aug. 13, 2012. Le bureau d'Informatique EBR a annoncé avoir remporté un important appel d'offres du Centre de Santé et des Services Sociaux (CSSS) de Chicoutimi. L'octroi de ce contrat touche l'acquisition et le déploiement d'un réseau sans fil de grande envergure.

CALGARY, AB. Aug. 7, 2012. Hemisphere GPS has announced distribution partnerships in Brazil and China for their GNSS survey receiver. The two new distributors have placed initial stocking orders totaling US1.3M$.

QUEBEC, QC. Aug. 6, 2012. La compagnie informatique ProContact a reçu le prix Mérite commercial Desjardins par la Chambre de commerce et d'industrie de Québec. Cette entreprise s'est démarquée par ses performances financières, son service à la clientèle et son innovation en matière de service et de formation.

MONTREAL, QC. Jul. 31, 2012. iPhone application TAG taxi(TM) has been launched in Trois-Riviere. Using this application, a user can order a cab and specify the desired method of payment, or whether room is needed to transport oversized luggage or pets. The application enables the user to rate the ride, i.e. the courtesy of the driver, the cleanliness of the cab, etc.

FREDERICTON, NB. Jul. 25, 2012. Siemens and NB Power have signed a multi-year agreement to develop a comprehensive smart grid program for the province. Siemens is now celebrating more than 100 years in Canada. The plan will include setting up an R&D presence by way of an application development office to be located in Fredericton.

LONGUEUIL, QC. Jul. 20, 2012. Technologies D-Box a annoncé une première entente avec Odeon, une des plus grandes chaines de cinémas en Angleterre. Technologies D-Box développe des systemes de mouvement destines principalement a l'industrie du divertissement et de la simulation.

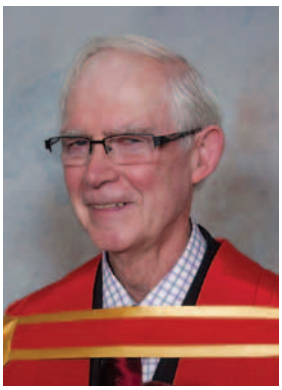
QUEBEC, QC. Jul. 12, 2012. The CEO of MediaMed Technologies has been recognized for his leadership and vision in the Ernst & Young's Entrepreneur of the Year 2012 Award. MediaMed specializes in analyzing clinical and financial performance in the healthcare industry. Over 55 healthcare establishments use its solutions.

MONTREAL, QC. Jun. 8, 2012. A new application has been introduced for allowing remote payment for parking spaces in Montreal. The application includes an alert mechanism for notifying a user about 15 minutes before the parking period expires so that the user may remotely renew it.

MONTREAL, QC. 11 mai 2012. Hydro-Quebec et OPAL-RT Technologies ont annoncé la conclusion d'une entente stratégique de collaboration visant la commercialisation du simulateur de réseaux électriques HYPERSIM. Ce simulateur exploite la puissance d'un super ordinateur parallèle et intègre des modules qui assurent l'interface avec les systèmes de commande à l'essai.

Community News / *Nouvelles de la communauté*

Ray Findlay Receives Honorary Doctorate from Memorial University



Raymond David Findlay received the degree honoris causa from the Memorial University of Newfoundland during convocation at the Arts and Culture Centre in St. John's on Friday, Oct. 19.

Cited for his contribution to the IEEE and engineering education, Dr. Findlay was Region 7 Director and IEEE Canada President 1994-1995. He went on to lead all 10 Regions in 2002, one of only three Canadians to ever hold the presidency of the IEEE.

Dr. Findlay is Professor emeritus at McMaster University, obtaining his B.A.Sc., M.A.Sc. and PhD at the University of Toronto. He is vice-president of JDRF Electromag Research, Inc., a company whose principal mandate is research and development. Prior to joining McMaster, Dr. Findlay taught and researched for 14 years at the University of New Brunswick. During one of those years he was a National Research Council of Canada Senior Industrial Research Fellow at General Electric Company in Peterborough, Ont. He has also been a research fellow at the University of Southampton, (U.K.), at the Commonwealth Scientific and Industrial Research Organization, Sydney, Australia, and the Katholieke Universiteit, Belgium.

A professional engineer (P.Eng., Ontario), Dr. Findlay's technical interests include low frequency electromagnetic fields and losses in electrical power devices in which he has more than 60 refereed journal publications and more than 140 refereed conference publications. He has supervised or co-supervised 12 PhD students to completion, and 29 master's degree students. Dr. Findlay is a fellow of both IEEE and the Engineering Institute of Canada (EIC), was awarded the Canadian Pacific Railway Engineering Medal from the Engineering Institute of Canada, the IEEE Regional Activities Board Innovation Award and the IEEE Millennium Medal, amongst other honours he has received.

During the convocation, University Orator Jennifer Lokash noted that upon obtaining his undergraduate degree in 1963, Dr. Findlay was given a prize by IEEE—an organization that would eventually honour him with the Haraden Pratt service award for sustained leadership. In paying tribute to Dr. Findlay's remarkable range of technical achievements and administrative contributions, Ms. Lokash credited "a potent inner spark, a kind of lightning in a bottle over which he has been a true master." Readers may be interested to know Dr. Findlay is also broadly recognized for mastership of language, serving as IEEE Canada's parliamentarian during its spring and fall Board meetings.

Dr. Findlay's tenure as IEEE Canada President during 1994-1995 is particularly significant, as he was the first to have the distinction of this title in addition to Region 7 Director; it was during his term of office that Region 7 of IEEE and the Canadian Society of Electrical and Computer Engineers (a constituent member of EIC) merged to form what we now call IEEE Canada. In recognition of Dr. Findlay's outstanding service, he was named Director Emeritus of IEEE Canada in 2004. Further information on his distinguished career and his contributions can be found at http://www.ieeeghn.org/wiki/index.php/Oral-History:Ray_Findlay.

A View from the West

By Terrance Malkinson

◆ British Columbia

Rare metals and elements are critical components in most technological devices. Don Whiteley in his article "The Hunt for BC´s Rare-Earth Metals". *BCBusiness online* [June, 2012. www.bcbusinessonline.ca] discusses major players and their efforts to locate and mine rare-earth minerals in the Northern Rockies of BC. In the July issue *BC Business* published its annual ranking of its top 100 companies by revenue, performance, publicly-traded, and sector. Companies leading the ranking by revenue were Telus, Teck Resources, and the Jim Pattison group and leaders by performance included Methanex Corporation, Taiga Building Products, and CIBT Education Group. Improvements in safety for the forestry industry in British Columbia are described in the March/April issue of *Canadian Forest Industries* [pp. 13-16, 2012]. From 1999-2005 there was an average of 25 fatalities per year. This has now dropped to eight fatalities in 2011; still unacceptable but a considerable improvement. The government of Canada unveiled its National Shipbuilding Procurement Strategy in June 2010 [www.pwgsc.gc.ca] and Seaspan won the right to be prime contractor for building seven non-combat vessels. This project will revitalize an important BC manufacturing sector ["Seaspan Whipped into Ship Shape" *BC Business* August 2012.] Seaspan is also profiled in the June 2012 issue of *The Globe and Mail Report on Business* [pp. 32-40]

◆ Alberta

This September; after ten years of dreaming, planning, fundraising, managing and building the 740,000 square feet of SAIT Polytechnic's (Calgary Alberta) Trades and Technologies Complex is set to open. [www.sait.ca]. In July the complex received the honor of being named one of the 100 most innovative urban architecture projects worldwide. Creating up to 8,100 new spaces for students the complex will provide technology training to educate students in skills required by today's labour market. The construction phase began in September 2009 and the project cost of $400M was supported by generous donors and the Alberta Government. The Trades and Technology Complex will house the School of Construction, School of Manufacturing and Automation, and the MacPhail School of Energy as well as Applied Research and Innovation Services.

Canada's Polytechnic institutions offer a range of credentials in diverse program areas that is focused on hands-on, experience-oriented education. Canadian Polytechnics are also committed to working closely with industry and to promoting applied research and innovation.

The Southern Alberta Institute of Technology with a 96-year history is one of Canada's leading polytechnics, offers relevant, skill-oriented education to more than 71,000 registrants annually. Business and industry partners assist in creating curriculum. Graduate employment rate in 2010/11 was 93% and there are more than 180,000 alumni in 60 countries.

◆ Saskatchewan

The cover story of the July/August 2012 issue of *Saskatchewan Business Magazine* features a profile of W. Brett Wilson [33(5):8-15] by David White. This Saskatchewan born businessman, philanthropist and sponsor of the Wilson Center for Entrepreneurial Excellence at the University of Saskatchewan shares some of the lessons that he has learned along the way. The explosive growth of Saskatchewan's mining sector is discussed in a series of articles in the June 2012 issue of *Saskatchewan Mining Journal* [33(4)]. This information provided comprehensively gives an overview of this important natural resource industry and economic contributor to the province. The Brandt Group of Companies is profiled in the June 2012 issue of *Saskatchewan Business Magazine*. [pp.29-33] As the largest privately-held company in Saskatchewan it attributes its success to a business culture of respecting its employees and through philanthropy in the community.

About the Author

Terrance Malkinson is a communications specialist, business analyst and futurist. His career path includes technical supervisor and medical researcher at the University of Calgary, business proposal manager for the General Electric Company, and research administrator with the School of Health and Public Safety at SAIT Polytechnic in Calgary. He is currently an international correspondent for IEEE-USA Today's Engineer, associate editor for IEEE Canadian Review, and a member of the editorial advisory board of IEEE The Institute. He was Vice-Chair of the IEEE-USA Communications Committee (2004-2010), and editor-in-chief of IEEE-USA Today's Engineer Digest (2004-2008). He was an elected Governor of the IEEE Engineering Management Society as well as past editor of IEEE Engineering Management. He is the author of more than 420 publications, and an accomplished triathlete.
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Montreal Communications Chapter receives Global Chapter-of-the-Year (CoY) Award

The Montreal Chapter of the IEEE Communications Society, one of roughly 225 world-wide, ranks "Number One" for 2012 in delivering chapter activities and furthering the objectives of the Society. Joint programming with related local and regional chapters, plus strong academic community support, are credited by Chair Dr. Anader Benyamin-Seeyar.

"Dr. Benyamin-Seeyar's leadership has been outstanding," says Communications Society President Dr. Vijay Bhargava. "All four of the 2012 CoY short-listed Chapters have extraordinarily dedicated executive teams. The additional bridges forged between ComSoc and other IEEE Society chapters are what distinguished Montreal's achievements."

Montreal Chapter receives an honorarium of $2000. Also, Dr. Benyamin-Seeyar traveled with all expenses covered to IEEE GLOBECOM, Dec. 3-7, where the Chapter's achievement was recognized at the Awards Luncheon. Membership in the IEEE Communications Society is slightly more than 50,000, of which roughly 2000 are members living in Canada, served locally through 14 chapters across the country.

LAST ONE

Ahead of British and American counterparts, Canadian engineers developed the first anti-aircraft-guiding radar, deployed in July 1942. Luckily, a single unit remains largely intact.

Canadian Army Radar Association (CARA)

Lieut. Ken Bell / Canada. Dept. of National Defence / Library and Archives Canada / PA-190495

"Gentlemen...this piece of anti-aircraft equipment is the MZPI—Micro Zone Position Indicator—known affectionately to Bird Gunners as, THE ZIPPY."

The source of those words was a Sergeant, Assistant Instructor of Gunnery, who wore a red-topped peaked cap and was referring to the post-war Canadian-built tactical control anti-aircraft radar, as he faced a fresh cadre of Royal Artillery National Service officer cadets about to begin the 10 weeks corp training segment of a 16-week course at MONS Aldershot, in May 1950.

A few months later, I was on a course at the School of Anti Aircraft Artillery, Manorbier, Wales where I received more detailed training on the MZPI radar prior to qualifying as an Operators Fire Control Instructor . By this time I was referring to the ZIPPY as the AA Radar No 4 Mk 6, before later versions morphed into the AN/ MPS/ 501B.

The army probably got poor value for the training invested in me, since following completion of my National Service, less than two years later, I was beginning a new life in Canada. Memories of radar came into my mind some 40 years later, when I found myself taking a lunchtime stroll with a client in the Leaside district of Toronto and it was pointed out to me that we were opposite the site where Research Enterprises Ltd (REL) had been located. I recalled without hesitation, seeing that name stamped on the serial number tags of the MZPI radars deployed in the training area back in my National Service days. This chance encounter with the REL factory site in Leaside prompted me to see what might be available on the internet. At that time, I got only one hit ! And that was on a website "Points of interest along lost streams."

Upon full retirement in 2002, I made a more serious effort to find out more about Research Enterprises Ltd and to see whether any MZPI radar cabins had survived in Canadian museums or in private collections. It quickly became evident from published material that the MZPI radar was developed and manufactured using the experience gained from its predecessor, the gun-laying anti aircraft radar known as the GL III (c),which was the first mobile microwave frequency radar to be put in to mass production anywhere in the world. As I was to discover in further research, the development of the GL III (c) by the Radio Branch of the National Research Council and its manufacture at Research Enterprises Ltd in Leaside, Toronto is arguably one of the most remarkable achievements of Canadian scientists and engineers during WW II.

In September 1939, the Radio Section (as it was called) of the NRC had only a handful of employees familiar with the technical details of the work carried out by Robert Watson Watt on RDF (Radio Direction Finding) – the figures from archival sources vary from two to five individuals knowledgeable in this area. By the time WW II ended, the Radio Branch of NRC had very nearly 300 technical staff who had developed or adapted from existing designs a wide variety of military radars.

The Accurate Position Finder (APF) trailer of the GL III (c) gunlaying radar system on display at the Royal Canadian Artillery Museum at CFB Shilo, Manitoba. Photo Credit: *Cal Gibson.*

Of particular interest to IEEE members, the president of the NRC in the period before WW II was Maj Gen (ret) Andrew G. L. McNaughton, who was both a distinguished soldier and scientist. He recognized, before others did, the significance of Watson Watt's work and it was Gen McNaughton who laid the groundwork that made it possible for the Radio Branch to play such an important role in the development of military radars. It is fitting that IEEE Canada recognized this and his other contributions to the engineering profession by creating the A.G.L. McNaughton Award, given annually to members of the profession deserving of recognition.

Of the military radars the Radio Branch developed/adapted, the most elaborate and unquestionably the most impressive was the GL III (c) microwave radar, which -- by good fortune -- we now know a last unit remains largely intact. The device was conceived following the disclosure of the first practical cavity magnetron by the British Tizard Scientific Mission to Canadian and U.S. scientists in August 1940. This critical technological leap resulted in a compact device capable of gener-

STANDING

by Brian Mendes

ating ultra high freqency radio waves (centimetric) at power levels higher than had been achieved with vacuum tubes. Developed by John Randall and Henry Boot of Birmingham University (see sidebar next page), the magnetron opened possibilities for radar in applications impossible using power transmitters in the metric waveband.

Prior to the disclosure of the cavity magnetron, the Radio Branch had been adapting essentially British designed radars for manufacture by the (yet to be built) Crown Corporation factory, Research Enterprises Ltd in Leaside. The decision taken following the visit of the Tizard Mission to develop a centimetric gunlaying radar based upon the cavity magnetron had an enormous impact on the work underway at the Radio Branch. There was no history for dealing with the problems associated with very high energy centimetric wavelength equipment and techniques had to be invented as development took place. This required very close cooperation with the production staff at Research Enterprises Ltd. In general, development of new products was the responsibility of the Radio Branch and production was the responsibility of REL. This was difficult to follow when such an unfamiliar technology was being developed. The REL production team had to contend with over 300 design changes as the production line was being layed down. This and other accounts are well documented in the publications cited as source material by the author.

The interior of the Zone Position Indicator (ZPI) cabin of the GL III (c) on display at CFB Shilo. Photo Credit: *CARA.*

The Radio Branch did enjoy very close cooperation with the British Radar Experimental Establishments throughout the development and later with the Americans, once they had the Radiation Laboratories underway. This occurred some time after the Radio Branch had produced a prototype centimetric gunlaying radar that met the performance specifications for a GL Type 3 radar.

At the time of the visit of the Tizard Mission in August 1940, the threat of a major air assault on Great Britain was very serious and the need for a GL III type gun-laying radar received a high priority. As a result, the decision was taken to proceed simultaneously with development projects in Canada, the USA and the UK, all working from essentially the same design specifications. It was the Canadian team of scientists and engineers from the Radio Branch of the NRC and Research Enterprises Ltd that put the first mobile centimetric gunlaying radar into mass production. The decision to use the cavity magnetron came on October 23, 1940; full demonstration of the assemblies was June 27, 1941. The July 23, 1941 full demonstration for US visitors gave rise to the statement by the chief engineer of Westinghouse Corporation..."that his company would not have believed that what we (Radio Branch of NRC) had done in nine months, could have been done in two years." It is this achievement that places the GL III(c) project among the finest for Canadian Science and Industry.

The GL III(c) system actually comprised two radars, an acquisition radar for spotting targets, the Zone Position Indicator or ZPI. This was a metric wavelength set utilising many sub units similar to those in existing radars. The other component was a 10 centimeter wavelength precision tracking radar providing continuous positional data for control of the anti aircraft guns. This was the unit that required the most development work and was referred to as the Accurate Position Finder (APF).

The time period for the project to progress from its inception to the placement of production quantity orders is well illustrated by the following listing of key dates

Five preproduction prototypes were built in the NRC shops before the first production models came off the line at the REL Leaside factory in July 1942. By the end of 1942, 314 sets had been delivered , many of which were deployed on UK anti aircraft gunsites. A total of 667 GL III(c) radar convoys were manufactured by REL under the Lend Lease contract.

Most of the design flaws which accompanied such a rapid timeline from the design stage to mass production were remedied in the MZPI (designed in 1944) which was a centimetric wavelength version of the ZPI unit of the GL III (c). It was judged by both the Americans and the British to be the best sweep search surveillance radar available in the immediate post war years, and as a result the British purchased the MZPI for deployment with its mobile and static anti aircraft gunsites.

The author started investigating this story in 2002 with the object of seeing whether an MZPI could be located in Canada, not knowing of its predecessor, the GL III (c) and the remarkable chain of events leading to it being the first mobile centimetric radar to be put into mass production during WW II. As the facts

Early Years of Canada's Foray into Radar

1931–Radio Section NRC established

1935–R.A. Watson Watt demonstrates detection of aircraft for British Air Ministry using the BBC Daventry short wave radio transmitter (birth of RDF)

Maj Gen (ret) Andrew G.L. McNaughton appointed new president of the NRC

1937–First of 20 Chain Home (CH) RDF stations constructed around UK coast

1938–McNaughton consults with DND about detecting aircraft by electrical means

1939–Dr. John Henderson of Radio Section NRC sent to UK to be briefed on radar developments, on advice of McNaughton

Sept 3rd–WW II declared.

The serial plate of a GL III (c) cabin. A total of 667 GL III (c) convoys were manufactured at the Research Enterprises Limited facility in Toronto. Photo Credit: *CARA*

were revealed in published material and contacts made on the internet it was assumed that, since only one or two MZPI gutted cabins were known to exist, it was assumed that none of the GL III (c) units, built during WW II had survived—a fact also assumed to be true by CARA veterans (Canadian Army Radar Association). That was until I received word from a post war serving RCEME warrant officer who recalled seeing (sometime in the 1980s) two cabins parked in the storage yard of the Royal Canadian Artillery Museum, Shilo, Manitoba that he believed were the APF and ZPI cabins of the GL III (c). When the cabin interiors were inspected, it was surprising to see how much of the original pre solid state electronics was still in place. In the post-war period, radio ham enthusiasts and other collectors stripped the interiors of such cabins for parts when military radars were disposed of after being declared surplus. As an aside, cathode ray tubes from units such as this were used by the electronics D.I.Y. crowd of the time to construct televisions during its early days. With the exception of those found in Shilo, WW II radar cabins located around the world have no electronics in place.

This places the GL III (c) cabins in a unique category and it is safe to assume that no other examples exist with so many of the original components still in place. The RCA Museum has indicated its support for preserving the interiors of the cabin – and perhaps even restoration – should funding become available.

Dept. of National Defence / Library and Archives Canada

The Zone Position Indicator (ZPI) unit of the GL III (c) spotted targets. The design was adapted from earlier British systems.

Cavity Magnetron

The cavity magnetron was the first practical device for producing powerful ultra-short radio waves (microwaves). It was developed in late 1939 by John Turton Randall and Harry Boot at Birmingham University.

Like other earlier magnetrons, it was a vacuum tube with a cylindrical anode enclosing a magnetic axial thermionic cathode, having a magnetic field directed along the axis. However, the addition of circular cavitities inside the vacuum allowed radio waves to internally reflect and build amplitude, until being released in powerful bursts into a coupling inside a cavity. In addition, Randal and Boot placed the anode inside the vacuum envelope and not within the vacuum region. The magnet gap could therefore be reduced and the anode more efficiently cooled.

The ability of the device to produce such powerful radiation at such small scale made adaptation for use on aircraft feasible. The same device is also the ancestor of the magnetron that is used to power every microwave oven.

The magnetron brought to Canada in 1940 by the British Technical Mission, led by Henry Tizard. Photo Credit: *Canada Science and Technology Museum; artifact # 1969.0482.*

Acknowledgements

The author acknowledges the use of material from the following sources :

Radar Development in Canada: The Radio Branch of the National Research Council of Canada 1939-1946, by W.E.Knowles Middleton (1981)

No Day Long Enough : Canadian Science in World War II, edited By George. R. Lindsey

The Mackenzie-McNaughton Wartime Letters, edited by Mel Thistle

The Science of War—Canadian and Allied Military Technology during World War II, by Donald H. Avery

Scientists at War, by Wilfred Eggleston (1950)

Top Secret Exchange—The Tizard Mission and The Scientific War, by David Zimmerman

National Research Council of Canada, The War History of The Radio Branch Report; No. ERA 141 (1948)

An Exhibition of Radar and Associated Electronic Developments, prepared by the Radio Branch of the NRC. CA-NR- 4429 (Nov. 1945)

History of the Department of Munitions and Supply: Canada in the Second World, by J. de N. Kennedy (Nov. 1950)

The Development of Research Enterprises Ltd, by W. E. Phillips, RG 28A vol 17, Library and Archives, Ottawa

"Research Enterprises Ltd. And Wartime Emergence of Radar,' by Frank H.R Pounsett, *IEEE Canadian Review*, March 1990

The Invention that Changed the World, by Robert Buderi

"The Invention of the Cavity Magneton and its Introduction into Canada and the USA," by Paul. A. Redmond, *Physics in Canada*, Nov./ Dec. 2001

"Origins of Radar-based Research in Canada, by Don Moorcroft" (Physics: University of Western Ontario—radar history)

Key Dates in Development of GL III (c) Gun-Laying Radar

Oct 23 1940
Decision to use the cavity magnetron

Mar 17 1941
Demonstration of aircraft location at 17,000 yards. (specification acceptable was 14,000 yards)

June 17 1941
Full demonstration to authorities

June 24 1941
Dr. Mackenzie's discussion in Washington with Commonwealth Scientific Office on an order for 400 radars under "Lend Lease"

July 23 1941
Full demonstration with US visitors (Field Station in Ottawa).

July 27 1941
$ 26,000,000 order placed for 400 radars (later increased to 600)

Dec 17 1941
Japan attacks Pearl Harbor.

July 1942
First delivery of production models GL III (c) from REL plant. This being the first centimetric wavelength mobile radar to go into mass production anywhere in the world.

Dec 1942
A total of 314 G L III (c) gunlaying radar sets were delivered before the year end. No models of the British or US designs were in mass production by this time.

Dec 1943
Lend Lease order for 600 sets completed.

A.G.L. McNaughton: engineer, soldier and statesman

Major-General Andrew George Latta McNaughton. Credit: *Vandyk Ltd./Library and Archives Canada/ PA-034110*

Born in 1887, McNaughton studied at McGill University, in 1912 completing his Master's of Science degree with Honours in Electrical Engineering. Working as a consultant before the start of WWI, he published six papers on high voltage electrical phenomenon. In 1914 he enlisted as a militia officer, commanding gun batteries. Employing his engineering mind, he optimized triangulation data from the sound and flash of enemy artillery in accurate survey schemes. His results were extraordinary. Using the techniques he pioneered, Canadian counter-battery destroyed more than 70 percent of the opposing artillery in the week prior to the Battle of Vimy Ridge. By the end of the war, he was in charge of all heavy artillery and counter-battery forces of the Canadian Corp.

Joining the regular army in 1920, McNaughton was rapidly promoted, becoming Chief of the General Staff in 1929, holding that position until 1935 when he was appointed President of the National Research Council. It was during the early to mid-1920s he developed a working model of a cathode ray detection finder—the direct forerunner of radar.

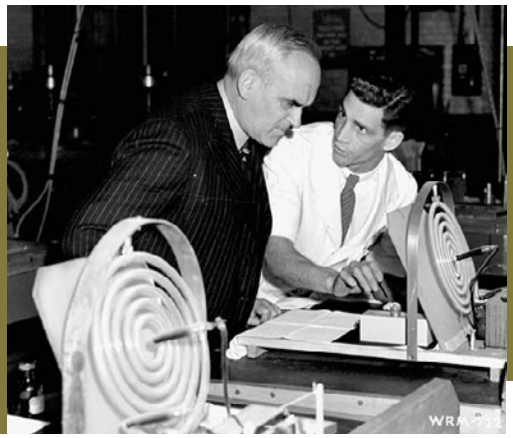
McNaughton had various commands in WWII, then was appointed Minister of Defence in 1944. Following the war, he was appointed Canadian Chairman of the Canada-United States Permanent Joint Board on Defence, and in 1946 became Canadian representative to the United Nations Energy Commission and head of the Atomic Energy Control Board of Canada. In 1948, McNaughton was appointed permanent delegate of Canada to the United Nations and Canada's security council representative. He became a Commissioner of the International Joint Commission in 1950, and shortly after, named its Canadian Chairman, evaluating amongst other projects development of the St. Lawrence River for navigation and power.

A more full account of Andrew McNaughton's remarkable contributions can be found on-line in Issues 9 and 10 of the *IEEE Canadian Review*, in a two-part piece by Ted Glass. Mr. Glass skillfully condensed John Swettenham's three-volume biography *McNaughton*. Still a public figure of interest, McNaughton's latest biography was published in 2010: *The Politics of Command*, by John Rickards.

Research Enterprises Ltd: history-making engineering

Research Enterprises Ltd (REL) was a crown company originally conceived in 1940 to manufacture optical grade glass for use in military binoculars, gun sites and other instruments along with other items being developed or adapted by the NRC. Very soon after construction began on the factory site, the decision was made to expand the plant to include the production of radar sets for the military.

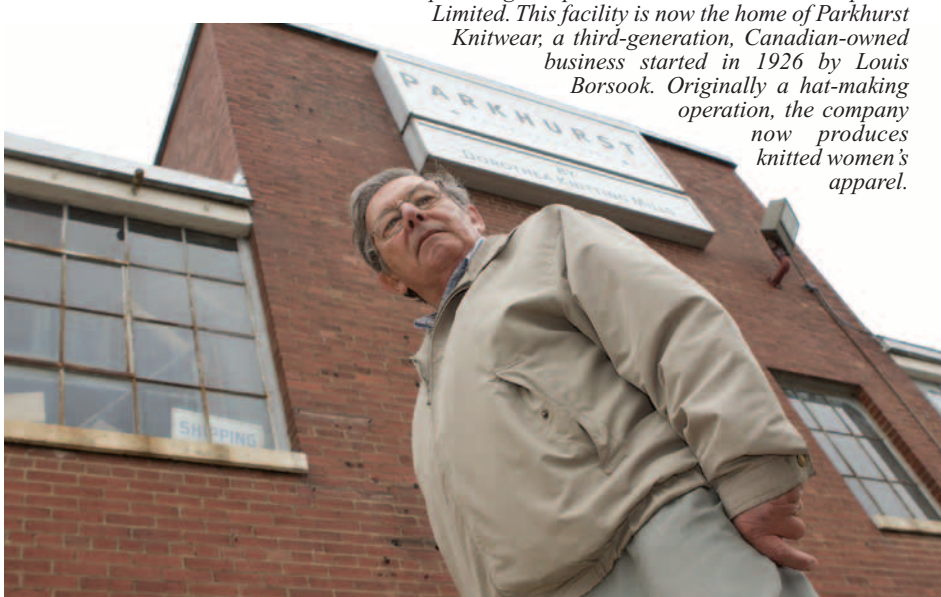
Located on 55 acres of land southeast of Eglington Ave and Laird Ave in what is now the Leaside (Toronto) Industrial Park, at its height, the plant had more than 7,000 employees working in the Instrument and Radio Divisions. In total, more than 9000 radar sets were manufactured at REL before operations ceased in September 1946. Today, little remains of the huge factory that was so important to the Allies war effort; an exception to this being the radar building now occupied by Parkhurst Knitting Mills Ltd, a Canadian-owned women's apparel manufacturer.



Hon. C.D. Howe, then Minister of Munitions and Supply, receives a lesson in lens curvature testing at Research Enterprises Limited. Photo Credit: *National Film Board of Canada / Library and Archives Canada.*

Cathode ray tube interiors are prepared at Research Enterprises Ltd. Photo Credit: *Nicholas Morant/National Film Board of Canada/Library and Archives Canada.*

One of the few original buildings left from the sprawling complex that was Research Entreprises Limited. This facility is now the home of Parkhurst Knitwear, a third-generation, Canadian-owned business started in 1926 by Louis Borsook. Originally a hat-making operation, the company now produces knitted women's apparel.



Thomas Ray

Brian Mendes is a retired industrial chemist who spent most of his working life in synthetic fibres related companies. He was born and educated in England. Before emigrating to Canada in 1954, he served his National (Military) Service years in a heavy anti-aircraft regiment of the Royal Artillery where he first became acquainted with gun-laying radar. Many years later he undertook some recreational research into the history of the Canadian radar equipment that he trained on in the military. This article records the findings of his research.

"TUBES": A Journey to the Center of the Internet

By Jon Rokne

Author: Andrew Blum
Publisher: Ecco
ISBN-13: 978-0061994937
Date: May 29, 2012
No. of pages: 304

A squirrel-triggered Internet failure brought journalist Andrew Blum to the humbling realization that he knew very little about a tool that he and millions of others depend upon for daily communication. A brief informal survey confirmed that he was not alone in his naïve understandings. Amongst elected officials, a quote from U.S. senator Ted Stephens was particularly dismaying: the book's title, "Tubes," refers to an explanation of the internet offered by the Senator in 2006. In light of the fact that Stephens headed the committee that regulates the telecommunications industry that provides the infrastructure for the internet, there is clearly a gap in the public understanding.

"What is the Internet?" Blum wondered. Is it an object? A place? A network? Led by his questions Blum set out on what became an 18-month quest. He traveled around the world stopping off at key Internet infrastructure sites such as New York, Amsterdam, Frankfurt and London to see the massive hubs of communication that support the Internet. He visited the endpoints of the massive undersea cables that carry Internet traffic between the hubs. At all of the sites he interviewed network engineers, operations managers and computer programmers and wherever he went, he found people who could help him appreciate, comprehend and interpret the Internet: what it is and how it works. Blum then employed his considerable talents in organizing this treasury of arduous research to produce a book that is pleasurable and informative for novices and experts alike.

The aforementioned "tubes" become a metaphor for the cables that link Internet nodes. They are in fact physical cables and wireless links built, operated and maintained by telecommunications providers. In turn, Internet providers rent communications capacity on these cables in much the same way one pays for the connection between two telephones when making a phone call.

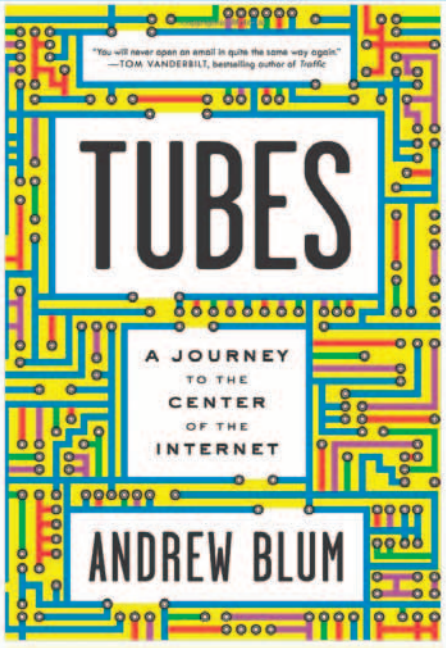
Blum offers concrete knowledge where guesses existed before. As an example, he skillfully relieves readers' fears that "peering" may be covert snooping, helping us to understand that the term refers to a process by which separate networks of similar size and network traffic – peers - may work together, creating direct linkages. He introduces readers to the individuals and the meetings where peering agreements are negotiated and established.

As a minor oversight, since Blum appreciates that not all readers have a developed understanding of the term "network," it may have been useful if he had expanded the explanation to something more formal -- especially as the term is fundamental to the topic of the book.

Towards the end of the book the author describes large data repositories. He expresses concern that while the Internet was designed on the notion of openness (the structure is known in principle), the massive amount of data collected over the Internet and stored in these very large data centers is sometimes kept secret. His visit to the huge data center operated by Google in The Dalles in Oregon is described as a somewhat surrealistic experience with storage areas for the data shrouded by secrecy. The main results of his visit are an excellent lunch and no hard facts about the data center.

After I had read Blum's book, I went on-line and experimented with some of the concepts he so artfully described. Using the command traceroute I found that it took 12 steps to send an email from UCALGARY.CA (University of Calgary, my current place of work) to NTNU.EDU (Norwegian University of Science and Technology, my undergraduate school). I then visited the TeleGeography website where I noted both the large number of cables between North America and Europe, and a most obscure link from Norway to Svalbard. I also noted that the only continent not connected to the Internet with a physical cable connection was Antarctica.

The TeleGeography website has a copy of a report: "Hubs and Spokes" that contains more in-depth information on the global telecommunications infrastructure. The introduction to the report provides the diligent reader with some answers to the question posed by Blum at the beginning of his research.



"What does the Internet look like? Most engineers draw it as a cloud. That shouldn't surprise anyone. For in a sense, there is no Internet, only two networking standards—TCP/IP (Transmission Control Protocol and Internet Protocol) — which allow an ever-increasing number of private data networks across the world to exchange digital information. These networks and the traffic they carry give the Internet its form; that they interconnect gives the Internet its substance." (From the introduction to Hubs and Spokes, Telegeography, 2000).

As one who struggled for months in 1989 to establish an Internet connection to my university department, I found the book enjoyable and interesting. It is a worthwhile read for anyone with even a small interest in how the Internet is put together, how it works and how it might continue to evolve. ◆

Highlights from IEEE Canada Board Meeting Banquet—Oct 13, 2012

Kouros Goodarzi of Vancouver Section is presented with R7 Exemplary Large Section Award by IEEE Canada President Keith Brown (left) and President-Elect, Amir Aghdam (right)

Andrew Kostiuk of North Saskatchewan Section receives R7 Exemplary Small Section Award by IEEE Canada President Keith Brown (left) and President-Elect, Amir Aghdam (right)

IEEE Canadian Foundation Treasurer Luc Matteau (left) presents a cheque for $2000 in support of the annual Student Branch Workshop to IEEE Canada Treasurer Ashfaq (Kash) Husain.

IEEE Canada

Remise des prix

25ième Conférence canadienne de génie électrique et informatique

Awards Presentation

25th Canadian Conference on Electrical and Computer Engineering

April 30/ 30 Avril, 2012; Montréal, QC

http://www.ieee.ca/awards

IEEE Canada 2012

Awards Programme
Programme des Prix

Awards presented in reverse order/ Prix présentés en ordre inverse

IEEE Canada Achievement Awards

A.G.L. McNaughton Gold Medal for exemplary contributions to the engineering profession.
Award established in 1969.

R.A. Fessenden Medal for important contributions to the field of telecommunications engineering.
Award established in 2000.

Power Medal for important contributions to the field of electric power engineering.
Award established in 2007.

C.C. Gotlieb (Computer) Medal for important contributions to the field of computer engineering and science.
Award established in 2007.

J.M. Ham (Outstanding Engineering Educator) Medal for outstanding contributions to engineering education.
Award established in 1994.

IEEE Canada Service Awards

W.S. Read Outstanding Service Medal for outstanding and sustained service to IEEE Canada and the Institute.
Award established in 1995.

J.J. Archambault Eastern Canada Merit Medal for meritorious service in eastern Canada at the local IEEE Section and Area level.
Award established in 1991.

M.B. Broughton Central Canada Merit Medal for meritorious service in central Canada at the local IEEE Section and Area level.
Award established in 1991.

Prix de distinction honorifique de l'IEEE Canada

Médaille d'or A.G.L. McNaughton pour contributions exemplaires à la profession d'ingénieur.
Récompense établie en 1969.

Médaille R.A. Fessenden pour contributions importantes dans le domaine du génie des télécommunications.
Récompense établie en 2000.

Médaille en Puissance pour contributions importantes dans le domaine du génie électrique.
Récompense établie en 2007.

Médaille C.C. Gotlieb (Médaille en Informatique) pour contributions importantes en informatique.
Récompense établie en 2007.

Médaille J.M. Ham (Médaille d'excellence en enseignement du génie) pour contributions exceptionnelles à l'éducation en génie.
Récompense établie en 1994.

Prix pour états de services de l'IEEE Canada

Médaille d'or de service W.S. Read pour service exceptionnel et soutenu à l'IEEE Canada et à l'institut.
Récompense établie en 1995.

Médaille d'excellence J.J. Archambault de l'est du Canada pour service méritoire dans l'est du Canada au niveau des sections et zones locales de l'IEEE.
Récompense établie en 1991.

Médaille d'excellence M.B. Broughton du centre du Canada pour service méritoire dans le centre du Canada au niveau des sections et zones locales de l'IEEE.
Récompense établie en 1991.

Who Will You Nominate?

The accomplishments of our eight Award recipients speak for themselves, as summarized in their following biographies. But it was words on a nomination form that launched each of their journeys to the IEEE Canada podium.

Why nominate? When we celebrate the successes of our colleagues, we can also celebrate our membership in this most special of Regions in IEEE, Region 7, also known as IEEE Canada — special because we are the only Region whose geographic boundaries totally encompass a single country, and only that country.

To find the best and the brightest, IEEE Canada depends upon nominations from across our diverse spectrum of technical interests, in both established fields and those just emerging. We also recognize those who give of their time and energy to help sustain and grow our organization. Without the countless unpaid hours, there would be no IEEE Canada to give out Awards. While experience gained in volunteering is its own reward, a public "thank-you" never hurts. If an IEEE colleague has made a difference, let us know how.

On-line Forms Make it Simple

With our on-line nomination process, it's easy: the nominator completes a web form outlining the importance of the nominee's contribution; two endorsers then confirm/elaborate with a second form. Anyone (including non-members) can nominate but only IEEE members (from any Region) can endorse. Nominees for achievement and service awards must be Canadian IEEE members, but the industry leadership award is open.

See http://www.ieee.ca/awards/nominate.htm

Nominations and endorsements must be received by November 30, 2012

Qui nommerez-vous?

Les accomplissements de nos huit récipiendaires parlent d'eux-mêmes, comme on peut le constater dans les biographies suivantes. Mais ce sont les mots écrits sur les formulaires de mise en candidature qui les ont menés au podium de l'IEEE Canada.

Pourquoi proposer un candidat ou une candidate? Lorsque nous célébrons les succès de nos collègues, nous pouvons également célébrer notre appartenance à la plus spéciale des régions de l'IEEE, la région 7, également connue sous le nom d'IEEE Canada — spéciale parce que nous sommes la seule région dont les frontières géographiques englobent totalement un pays, et seulement ce pays.

Afin de trouver les meilleurs candidat(e)s, l'IEEE Canada dépend des candidatures provenant de secteurs techniques divers, de domaines établis ou émergents. Nous reconnaissons également ceux qui donnent temps et énergie à notre organisation. Sans ces heures innombrables de bénévolat, il n'y aurait pas d'IEEE Canada pour décerner des prix. Même si l'expérience de bénévolat constitue pour chacun sa propre récompense, un « merci » formulé en public ne fait jamais de tort. Si vous connaissez un(e) collègue de l'IEEE qui s'est démarqué(e), prévenez-nous.

Les formulaires en ligne simplifient l'exercice

Avec notre processus en ligne de mise en candidature, c'est facile: le proposeur remplit un formulaire web décrivant l'importance de la personne proposée; deux membres alors confirment/élaborent avec un deuxième formulaire. N'importe qui (y compris des non-membres) peut procéder à la mise en candidature mais seulement des membres de l'IEEE (de toute région) peuvent l'appuyer. Les personnes proposées pour des prix d'accomplissement et de service doivent être des membres canadiens de l'IEEE, mais le prix de leadership industriel est ouvert à tous.

Voir le site http://www.ieee.ca/prix/icanprix.htm

Les mises en candidatures et les appuis doivent être reçus d'ici le 30 novembre 2012

2012 IEEE Canada A.G.L. McNaughton Gold Medal

For pioneering contributions to optimization technology and microwave CAD

John W. Bandler (LFIEEE) is professor emeritus at McMaster University and president of Bandler Corporation. A previous company he founded, Optimization Systems Associates, was acquired by Hewlett-Packard in 1997. John studied at Imperial College of Science and Technology and received his degrees from the University of London.

Based on John's work, advances such as design with tolerances, yield-driven design, and electromagnetic optimization—once academic fantasies—are now taken for granted by microwave engineers. His implementations into major commercial design tools, including those from Compact Software (now Ansoft/Ansys) and Hewlett-Packard (now Agilent Technologies) have impacted high-frequency and microwave design initiatives world-wide. John introduced space mapping in 1994. From automotive crashworthiness to magnetic systems, his concept has been adopted into design portfolios across the entire spectrum of engineering, making possible the high-fidelity design of devices and systems at a cost of only a few high-fidelity simulations. John has published more than 470 technical papers, served on editorial and review committees, and been guest editor of several special issues.

John is a Fellow of several societies including the Canadian Academy of Engineering and the Royal Society of Canada. In 2004, the IEEE MTT Society honored him with its Application Award "For application of optimization technology, design with tolerances and yield-driven design to microwave devices, circuits and systems." This year a special session at the International Microwave Symposium pays tribute to his 45 years of pioneering contributions. Active in artistic endeavors, John has written a novel, a screenplay, and several stage plays, two of which have been performed.

2012 IEEE Canada R.A. Fessenden Medal

For outstanding contributions in error control coding by convolutional codes

David Haccoun (FIEEE) is professor of Electrical Engineering, École Polytechnique de Montréal. He received degrees from École Polytechnique, MIT, and McGill University. Dr. Haccoun was the founding head of the Communication and Computer Section at École Polytechnique, at which he became professor in 1980.

Dr. Haccoun's application of powerful yet practical error control techniques have vastly improved the reliability of modern wireless communications systems. His early contributions were focused on the Sequential Decoding technique for long convolutional codes. Generalizing the principles of tree graph searching, he developed a class of multiple-paths decoding algorithms, paving the way to numerous powerful and practical decoding techniques. He achieved outstanding results in high-rate convolutional codes obtained by puncturing low-rate codes, and determined the best puncturing matrix for a large range of high-rate codes that have been widely used in a great many applications. His patented iterative decoding technique using a new class of convolutional codes led to substantial simplifications for implementing iterative and Turbo decoding and to novel alternatives for the powerful LDPC codes.

He has published more than 80 papers in world class journals and more than 190 through international conferences. He holds a US Patent (2000) and is co-author of two book chapters (2000 and 2001) and the graduate textbook *Digital Communications by Satellite: Modulation, Multiple-Access and Coding* (1982), which was translated to Japanese (1984) and to Mandarin (1989). He is a Fellow of EIC (2005), was a Member of the Board of the CRC Ottawa, and is a Member of the BoG, IEEE VTS.

Médaille d'or A.G.L. McNaughton de l'IEEE Canada 2012

Pour contributions d'avant-garde à la technologie d'optimisation et la CAO micro-ondes

John W. Bandler (LFIEEE) est professeur émérite à l'Université McMaster et président de Bandler Corporation. Une compagnie précédente qu'il avait fondée, Optimization Systems Associates, a été acquise par Hewlett-Packard en 1997. John a étudié au College of Science and Technology et a obtenu ses diplômes de l'Université de Londres.

Basées sur le travail de John, des avancées telles la conception avec tolérances, la conception par rendement, et l'optimisation électromagnétique – qui autrefois faisaient partie de l'imaginaire académique – sont maintenant bien connues des ingénieurs dans le domaine des micro-ondes. Il a contribué à l'élaboration d'outils majeurs de conception commerciale tels ceux de Compact Software (maintenant Ansoft/Ansys) et Hewlett-Packard (maintenant Agilent Technologies) qui ont eu un impact mondial sur les projets de conception à haute fréquence et micro-ondes. John a introduit le « space mapping » en 1994. De la résistance aux chocs des véhicules à moteur aux systèmes magnétiques, son concept a été adopté dans des dossiers de conception à travers le spectre entier du génie, rendant possible la conception à haute-fidélité de dispositifs et systèmes au coût de seulement quelques simulations à haute-fidélité. John a publié plus de 470 articles techniques, servi sur des comités de lecture et éditoriaux, et été directeur scientifique invité pour plusieurs éditions spéciales.

John est Fellow de plusieurs sociétés dont l'Académie canadienne du génie et la Société royale du Canada. En 2004, la Société MTT de l'IEEE l'a honoré de son Prix Application « For application of optimization technology, design with tolerances and yield-driven design to microwave devices, circuits and systems ». Cette année une session spéciale du Colloque international sur les micro-ondes rend hommage à ses 45 ans de contributions d'avant-garde. Actif au niveau artistique, John a écrit un roman, un scénario, et plusieurs pièces de théâtre, dont deux ont été jouées.

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Médaille R.A. Fessenden de l'IEEE Canada 2012

Pour contributions exceptionnelles au contrôle d'erreurs par codage convolutionnel

David Haccoun (FIEEE) est Professeur de génie électrique à l'École Polytechnique de Montréal. Il est gradué de l'École Polytechnique, du MIT, et de l'Université McGill. Dr. Haccoun a été le directeur fondateur de la section communications et informatique de l'École Polytechnique, au sein de laquelle il est devenu Professeur en 1980.

L'application par le Dr. Haccoun de techniques de contrôle d'erreur à la fois puissantes et pratiques a énormément amélioré la fiabilité des systèmes de communications sans fil modernes. Ses premières contributions se concentraient sur la technique de décodage séquentiel pour longs codes convolutionnels. Généralisant les principes de recherche par arborescence, il a développé une classe d'algorithmes de décodage à trajets multiples, préparant le chemin à de nombreuses techniques puissantes et pratiques de décodage. Il a obtenu des résultats exceptionnels pour les codes convolutionnels à haute vitesse obtenus par la perforation de codes à basse vitesse, et a déterminé la meilleure matrice de perforation pour une gamme étendue des codes à haute vitesse qui ont été employés couramment dans maintes applications. Sa technique de décodage itérative brevetée utilisant une nouvelle classe de codes convolutionnels a mené à des simplifications substantielles pour l'implantation de décodages Turbo et itératif et des solutions de rechange originales pour les puissants codes LDPC.

Il a publié plus de 80 articles dans des journaux de classe mondiale et plus de 190 dans des conférences internationales. Il détient un brevet américain (2000) et est co-auteur de deux chapitres de livres (2000 et 2001) et du manuel pour études supérieures *Digital Communications by Satellite: Modulation, Multiple-Access and Coding* (1982), qui a été traduit en japonais (1984) et en mandarin (1989). Il est Fellow de l'ICI (2005), a été membre du conseil du CRC à Ottawa, et est membre du conseil des gouverneurs de l'IEEE VTS.

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2012 IEEE Canada Power Medal

For contributions to education and research in power systems protection

Mohindar S. Sachdev (LFIEEE) received a B.Sc. degree from the Benares Hindu University, a M.Sc. degree from the Panjab University and M.Sc., Ph.D. and D.Sc. degrees from the University of Saskatchewan. He was the head of the department of electrical engineering at the University of Saskatchewan from 1988-93 and previously the director of research and graduate studies from 1976-85.

Dr. Sachdev's contributions to the field of power engineering span more than sixty years. From 1950 to 1969, he worked for the Punjab State Electricity Board in India on the operation of distribution systems, transmission lines and a generating station. A notable assignment was the design of automation, control and protection circuits for the hydro-electric Bhakra Power Plant I and its commissioning. Joining the University of Saskatchewan in 1969, he conducted research and taught power system analysis and protection courses at the graduate level, and electrical engineering and related courses at the undergraduate level. More than seventy-five students supervised by him received Postgraduate Diplomas, Master's and Doctoral degrees.

He has published extensively in journals and proceedings of international conferences for more than 45 years. Dr. Sachdev chaired two subcommittees and several working groups of the IEEE Power System Relaying Committee, including working groups for the revision of four IEEE Guides. He also coordinated and instructed three IEEE tutorial courses on the subject of computer-based (numerical) relays. Mohindar Sachdev is a Life Fellow of the Institution of Engineers (India) and a Fellow of EIC.

2012 IEEE Canada C.C. Gotlieb Medal

For outstanding contributions to the field of computer science and engineering

Calvin Gotlieb received a B.A. in Mathematics, Physics and Chemistry from the University of Toronto in 1942, and a Ph.D. in Physics in 1947. During the war, 1943-44, he served in England as consultant to the British navy in the highly classified proximity fuze project. Experience in electronics and computing led to an interest in the then new field of electronic digital computers.

In 1950 he created the first course on computing in Canada at the University of Toronto, followed by the first graduate course in 1951, and the first graduate department in 1961. In 1958 he co-founded the Canadian Information Processing Society (CIPS) to develop initiatives related to public policy around information technology. He served as Canada's representative when the United Nations set up the International Federation of Information Processing Societies, and also when the UN published its report on the Application of Computer Technology to Development.

He has been the advisor to a long list of graduate and postdoctoral students, and is the author or co-author of more than 100 publications. His list of honours includes Fellow of the Royal Society of Canada, the British Computer Society, ACM, and CIPS, along with four honorary degrees, and being inducted to the Canadian Information Productivity Awards Hall of Fame, and in 1996, to the Order of Canada.

Médaille d'électricité de l'IEEE Canada 2012

Pour contributions à l'éducation et à la recherche sur la protection des systèmes électriques

Mohindar S. Sachdev (LFIEEE) détient un B.Sc de l'Université Benares Hindu, un M.Sc. de l'Université du Punjab et un M.Sc., Ph.D. et D.Sc de l'Université de la Saskatchewan. Il a été chef du département de génie électrique à l'Université de la Saskatchewan de 1988 à 1993 et auparavant directeur des études graduées et de la recherche de 1976 à 1985.

Les contributions du Dr. Sachdev dans le domaine du génie électrique s'étendent sur plus de soixante ans. De 1950 à 1969, il a travaillé pour le Conseil de l'électricité de l'état du Punjab en Inde pour l'opération des systèmes de distribution, des lignes de transmission et d'une centrale de production. Une tâche importante fut la conception des circuits d'automatisation, de commande et de protection de la centrale hydro-électrique Bhakra I et sa mise en service. Joignant l'Université de la Saskatchewan en 1969, il a effectué des recherches et a enseigné aux cycles supérieurs des cours d'analyse et de protection de systèmes, et au premier cycle le génie électrique et autres cours attenants. Plus de soixante-quinze étudiants qu'il a dirigés ont obtenu des diplômes universitaires de cycle supérieur, maîtrises et doctorats.

Il a publié intensivement dans des revues scientifiques et des actes de conférences internationales pendant plus de 45 ans. Dr. Sachdev a présidé deux sous-comités et plusieurs groupes de travail du comité « Power System Relaying » de l'IEEE, incluant des groupes de travail pour la révision de quatre guides de l'IEEE. Il a également coordonné et livré trois tutoriels de l'IEEE sur les relais numériques. Mohindar Sachdev est Fellow à vie de l'Institution of Engineers (Inde) et Fellow de l'ICI.

Médaille C.C. Gotlieb de l'IEEE Canada 2012

Pour contribution exceptionnelle au domaine des sciences et du génie informatiques

Calvin Gotlieb a obtenu un B.A. en mathématiques, physique et chimie de l'Université de Toronto en 1942, et un Ph.D. en physique en 1947. Pendant la guerre, en 1943-44, il a servi en Angleterre comme conseiller à la marine britannique dans le projet secret « proximity fuze ». Son expérience en électronique et informatique l'a dirigé vers le nouveau domaine des ordinateurs numériques électroniques.

En 1950, il a créé le premier cours sur l'informatique au Canada à l'Université de Toronto, suivi par le premier cours de cycle supérieur en 1951 et le premier département de cycle supérieur en 1961. En 1958, il a été co-fondateur de la « Canadian Information Processing Society » (CIPS) pour développer des initiatives liées aux politiques publiques autour des technologies de l'information. Il a représenté le Canada lorsque les Nations Unies ont mis en place la Fédération internationale pour le traitement de l'information, et aussi lorsque l'ONU a publié son rapport sur l'application de l'informatique au développement.

Il a été le conseiller d'une longue liste d'étudiants gradués et post-doctoraux, et est l'auteur ou le co-auteur de plus de 100 publications. La liste de ses distinctions inclut le titre de Fellow de la Société royale du Canada, de la British Computer Society, de l'ACM et la CIPS, ainsi que quatre doctorats honoris causa. Il a été intronisé au Panthéon de la Canadian Information Productivity Awards, et a reçu l'ordre du Canada en 1996.

2012 IEEE Canada J.M. Ham Medal

For outstanding contributions to electrical and electronic engineering education

Safa Kasap (SMIEEE) is currently a professor and Canada Research Chair in Electronic and Optoelectronic Materials and Devices at the University of Saskatchewan. He obtained his BS EE (1976) and PhD (1983) from Imperial College at the University of London, specializing in optoelectronic materials and devices.

His ability to illuminate both basic principles and advances in this field is evidenced by world-wide adoption of his undergraduate- and graduate-level books. His McGraw-Hill *Principles of Electronic Materials and Devices* (originally published in 1996, currently in 3rd Edition) is an undergraduate course staple at numerous major universities, and has translations in Korean, Chinese and Greek. His other undergraduate textbook *Optoelectronics and Photonics: Principles and Practices* (Prentice Hall, 2001) has been translated to Korean and Chinese, and is also widely used around the globe; he has just finished the second edition. At the graduate and professional level, Safa has co-edited *The Springer Handbook of Electronic and Photonic Materials* (2006) and *The Cambridge Illustrated Handbook of Optoelectronics and Photonics* (2009). In 1996 he set-up Web-Materials, one of the first educational websites that still continues today with numerous selected topics in electronic materials and devices for undergraduates and practicing professionals.

Safa's educator skills have been well-recognized by a number of invited workshop lectures to both undergraduate and graduate students; in 2007 he was awarded a prestigious JSPS Fellowship to give a series of lectures in Japan for six weeks. Safa is a Fellow of the Royal Society of Canada, CAE, EIC, SPIE, IET, and the City and Guilds London Institute (FCGI) in the UK.

2012 IEEE Canada W.S. Read Outstanding Service Gold Medal

For sustained, distinguished service to Region 7 (IEEE Canada) at multiple levels

Vijay Bhargava (FIEEE) is currently professor at the University of British Columbia, completing all of his post secondary education at Queen's University in Kingston. Previously he held positions with the Indian Institute of Science, Concordia University, and the University of Victoria.

His many years of service for IEEE Region 7 (Canada) began in Montreal Section. He served as Student Branch counsellor at Concordia, then in various capacities including Section Chair, and later similarly in Victoria Section. In 1987 he founded the IEEE Pacific Rim Conference in Communications, Computers and Signal Processing—now a well-established biennial conference in Victoria. In the same year Vijay was appointed editor-in-chief of the *Canadian Journal of Electrical and Computer Engineering*, which had been struggling financially. To generate funding he founded the Canadian Conference on Electrical and Computer Engineering. It is now a flagship conference of IEEE Canada celebrating its Silver Anniversary. He served as the Director of Region 7 (Canada) during 1992 and 1993. During his tenure he forged new programs, initiated steps for the creation of IEEE Canada, and led the building of a massive reserve for the Region. He was nominated twice for the Office of IEEE President-Elect.

A Fellow of the IEEE, the Royal Society of Canada, the Canadian Academy of Engineering and the EIC, Vijay's teaching, research and service to the profession have been recognized through various awards, including IEEE Canada's Outstanding Engineering Educator Award in 2010. He is married to Yolande Henri of Warwick, Québec. Their son Alexandre is a behavioural neurologist and daughter Maude is a clinical dietitian.

Médaille J.M. Ham de l'IEEE Canada 2012

Pour contributions exceptionnelles à l'enseignement du génie électrique et électrvonique

Safa Kasap (SMIEEE) est professeur et responsable de la Chaire de recherches du Canada en matériaux et dispositifs électroniques et optoélectroniques de l'Université de la Saskatchewan. Il détient un BSEE (1976) et un PhD (1983) de l'Imperial College à l'Université de Londres, se spécialisant dans les matériaux et les dispositifs optoélectroniques.

Sa capacité de bien illustrer à la fois les principes de base et les avancées dans ce domaine est mise en évidence par l'utilisation à l'échelle mondiale de ses livres destinés aux étudiants universitaires. Son livre *Principles of Electronic Materials and Devices* publié chez McGraw-Hill (originellement en 1996, il en est actuellement à la 3ème édition) est utilisé pour des cours de premier cycle dans de nombreuses universités importantes, et a été traduit en coréen, chinois et grec. Son autre manuel pour étudiants de premier cycle *Optoelectronics and Photonics: Principles and Practices* (Prentice Hall, 2001) a été traduit en coréen et en chinois, et est également employé couramment à travers le monde; il vient d'en terminer la deuxième édition. Pour les cycles supérieurs et les professionnels, Safa a co-édité *The Springer Handbook of Electronic and Photonic Materials* (2006) et *Cambridge Illustrated Handbook of Optoelectronics and Photonics* (2009). En 1996 il a produit du matériel sur le web, un des premiers sites Web éducatifs qui présente encore de nos jours de nombreux thèmes choisis dans le domaine des matériaux et des dispositifs électroniques pour les étudiants de premier cycle et les professionnels.

Les habiletés d'éducateur de Safa ont été soulignées par l'invitations à livrer de nombreuses conférences aux étudiants universitaires; en 2007 on lui a été attribué la prestigieuse bourse JSPS afin de donner une série de conférences au Japon pendant six semaines. Safa est Fellow de la Société royale du Canada, de l'ACG, de l'ICI, du SPIE, de l'IET, et de la « City and Guilds London Institute » (FCGI) au R-U.

Médaille d'or de service exceptionnel W.S. Read de l'IEEE Canada 2012

Pour service distingué et soutenu à la Région 7 (IEEE Canada) à de multiples niveaux

Vijay Bhargava (FIEEE) est actuellement professeur à l'Université de la Colombie-Britannique, et a complété toute son éducation post-secondaire à l'Université Queen's de Kingston. Précédemment il a occupé des postes à l'Indian Institute of Science, l'Université Concordia, et l'Université de Victoria.

Ses nombreuses années de service pour la Région 7 (Canada) de l'IEEE ont débuté à la section de Montréal. Il a servi comme conseiller de la branche étudiante à Concordia, puis a occupé divers postes incluant celui de président de section et a plus tard fait de même à la section de Victoria. En 1987 il a fondé l' « IEEE Pacific Rim Conference » pour les communications, l'informatique et le traitement de signal – qui est maintenant une conférence bisannuelle bien établie à Victoria. La même année Vijay a été nommé rédacteur-en-chef du *Journal canadien de génie électrique et informatique*, qui éprouvait alors des difficultés financières. Pour lever des fonds, il a établi la Conférence canadienne de génie électrique et informatique. Cette conférence fait maintenant office de porte-étendard pour l'IEEE Canada et célèbre cette année son vingt-cinquième anniversaire. Il a servi comme directeur de la région 7 (Canada) en 1992 et 1993. Pendant sa mandat il a forgé de nouveaux programmes, a initié les étapes pour la création de l'IEEE Canada, et a mené à l'établissement d'un important fonds de réserve pour la région. Il a été mis en nomination deux fois pour le poste de président élu de l'IEEE.

Il est Fellow de l'IEEE, de la Société royale du Canada, de l'Académie canadienne du génie et de l'ICI. L'enseignement, la recherche et le service à la profession de Vijay ont été soulignés par de nombreux prix, y compris celui d'Excellence en enseignement du génie de l'IEEE Canada en 2010. Il est marié à Yolande Henri de Warwick, Québec. Leur fils Alexandre est neurologue comportemental et sa fille Maude est diététicienne clinique.

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2012 IEEE Canada J.J. Archambault Eastern Canada Service Medal

In recognition of outstanding lifelong contributions to IEEE Eastern Canada

Elmer Bourque (LSMIEEE) is currently associated with Kestrel Power Engineering of Toronto as a senior engineer. He graduated from College Ste Anne, with a BA in 1965 and the University of New Brunswick with a BSc. EE in 1969. Following graduation he developed numerical control software for the New Brunswick Research and Productivity Council on a DEC PDP-8i computer, to drive a digitally controlled machine tool. In 1974, he joined New Brunswick Power as system performance engineer responsible for power system stability and proper control by commissioning and maintaining fault recording equipment, area generation control, generator excitation, stabilizers, and governor systems.

In 1972, Elmer Bourque joined the IEEE New Brunswick section. His enthusiasm as a volunteer saw him elected as Section Secretary in 1981 for four consecutive terms, followed by five terms as Treasurer. Keen to share his passion for the profession with those just entering it, he was a frequent judge for paper competitions at universities and technical schools. He was elected Eastern Canada Council chair in 1997 for a three-year term. In 2003 he was appointed secretary for IEEE Canada. Following that he served as Member Services Chair, Region 7 representative to the Membership Benefits Committee, the Ethics Committee, and is currently a member of the board of the IEEE Canadian Foundation.

Elmer's broader engineering activities include being a life member of APEGNB. His hobbies span tuning and maintenance of three large church pipe organs, playing the piano, and pedalling his canoe—towed behind his bicycle—to the Saint John River to watch the eagles.

2012 IEEE Canada M. B. Broughton Central Canada Service Medal

For exemplary dedication and services to IEEE Toronto Section and Central Canada

Patrick Finnigan (SMIEEE) is the owner of Toronto-based consulting firm Instruments & Information. He is a graduate of York University (B.Sc. Hon. Physics) and the University of Waterloo (M.Math – Computer Science). He is a retired information technology architect from IBM, where he gained 30 years of broad experience in large-scale software application development, and product development and management (compilers and databases). In earlier days, he worked on designing geophysical instrumentation for airplanes and helicopters. He also led several collaborative research projects with universities and industry, sponsored by Industry Canada and NSERC.

An IEEE member for 30 years active in the Toronto Section, Pat led a successful effort by Section volunteers to have an IEEE Milestone plaque installed at Queen's Park, Toronto, honoring the "First External Cardiac Pacemaker," developed at the Banting Institute in 1950. He has been a mentor/referee for the Section's highly productive Senior Member campaigns. Pat has been co-chair of Toronto Life Members, organizing tours and talks, as well as sending out a special newsletter. He is secretary of the IEEE Region 7 Teacher In-Service Program (TISP) committee promoting science and engineering in K-12 schools, and has been instrumental in organizing numerous teacher workshops to demonstrate technology-related lesson plans.

Pat has co-authored a number of software-related research publications and has served as a reviewer for *IEEE Software*. He has taught both IT and Astronomy courses at Seneca College. Pat is a member of PEO and OSPE and is also an active radio amateur, call sign VA3 ZIM.

Médaille de service J.J. Archambault de l'IEEE pour l'est du Canada 2012

En reconnaissance de contributions exceptionnelles à l' IEEE pour l'est du Canada

Elmer Bourque (LSMIEEE) travaille présentement chez Kestrel Power Engineering de Toronto comme ingénieur principal. Il est diplômé de l'Université Saint-Anne en 1965 avec un BA et de l'Université du Nouveau Brunswick en 1969 avec un BSc.EE. Suite à sa graduation il a développé un logiciel de contrôle numérique pour le Conseil de Recherche et Productivité du Nouveau Brunswick sur un ordinateur DEC PDP-8i, pour commander une machine-outil à contrôle numérique. En 1974 il s'est joint à Énergie NB comme ingénieur de performance de système responsable de la stabilité et du bon fonctionnement des systèmes électriques en faisant la mise en service et la maintenance des appareils d'enregistrement des défaillances, du contrôle de production régionale, de l'excitation d'alternateur, des stabilisateurs, et des systèmes de contrôle.

Devenu membre de la Section Nouveau Brunswick de l'IEEE en 1972, son enthousiasme comme bénévole lui a permis d'être élu secrétaire de la Section en 1981 pour quatre années consécutives suivies de cinq années comme trésorier. Enthousiaste dans le partage de sa passion pour la profession avec les nouveaux venus, il était fréquemment juge pour les concours de publications dans les universités et les écoles techniques. Il a été élu président du Conseil de l'est du Canada en 1997 pour un terme de trois ans. En 2003 il fut nommé secrétaire de l'IEEE Canada. Par la suite il a occupé le poste de président du comité de services aux membres, représentant de la Région 7 sur le comité des bénéfices aux membres et sur le comité d'éthique, et est présentement membre de la direction de la Fondation canadienne de l'IEEE.

Les activités d'Elmer en tant qu'ingénieur incluent être membre à vie de l'AIGNB. Ses passe-temps comprennent l'accordage et entretien de trois immenses orgues à tuyaux, jouer du piano, et touer son canot derrière sa bicyclette pour venir sur la rivière St-Jean observer les aigles.

Médaille de service M. B. Broughton de l'IEEE pour le centre du Canada 2012

Pour dévouement exemplaire et services rendus à la Section de Toronto et la zone IEEE Canada Central

Patrick Finnigan (SMIEEE) est propriétaire d'une entreprise de consultation spécialisée en instrumentation et information basée à Toronto. Il est diplômé de l'Université York (B.Sc. Hon. Physique) et de l'Université de Waterloo (M.Math en informatique). Il est architecte en technologie de l'information retraité d'IBM, où il a cumulé 30 ans d'expériences variées en développement d'applications logicielles à grande échelle, en développement de produits et en gestion (de compilateurs et bases de données). Précédemment il a travaillé à la conception d'instrumentation géophysique pour avions et hélicoptères. Il a également mené plusieurs projets de recherche en collaboration avec des universités et l'industrie, commandités par Industrie Canada et le CRSNG.

Membre actif de l'IEEE pendant 30 ans à la section de Toronto, Pat a dirigé avec succès une initiative des bénévoles de la Section pour obtenir qu'une plaque de jalon (« Milestone ») de l'IEEE soit installée à Queen's Park, Toronto, honorant le « Premier stimulateur cardiaque externe » développé à l'institut Banting en 1950. Il a été mentor/juge pour les campagnes très réussies de nomination de membres seniors pour la section. Pat a été co-président des Membres de vie de Toronto, organisant excursions et conférences, et publiant un bulletin de liaison. Il est secrétaire du comité du Programme de développement de professeurs en service de la Région 7 de l'IEEE (TISP) promouvant la science et le génie dans les écoles primaires et secondaires, et a été vital dans l'organisation de nombreux ateliers pour montrer aux professeurs des plans de cours basés sur les technologies.

Pat est co-auteur d'un grand nombre de publications de recherches du domaine du logiciel et a servi comme réviseur pour *IEEE Software*. Il a enseigné des cours d'informatique et d'astronomie au Collège Seneca. Pat est membre de PEO et d'OSPE et est également un radioamateur actif, avec l'indicatif d'appel VA3 ZIM.

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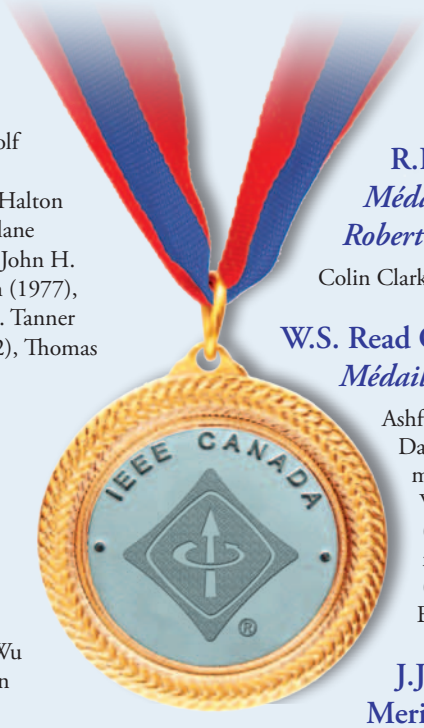

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Monique (née Aubry) Frize (FIEEE)—Ottawa, Ontario
For contributions to clinical engineering and engineering education

Rafik A. Goubran (FIEEE)—Ottawa, Ontario
For contributions to voice quality measurement and its applications to audio improvement

John Albert Kay (FIEEE)—Kitchener, Ontario
For contributions to arc resistant medium voltage control and protection technologies

Adam Krzyzak (FIEEE)—Montreal, Québec,
For contributions to nonparametric algorithms and classification systems for machine learning

Konstantinos N. Plataniotis (FIEEE)—Toronto, Ontario
For contributions to the theory and application of statistical adaptive learning

Farnoosh Rahmatian (FIEEE)—Vancouver, British Columbia
For contributions to optical voltage and current sensors in high-energy electric power systems

Manoj Sachdev (FIEEE)—Waterloo, Ontario
For contributions to test methodology for very large scale integrated circuits

Elvino Silveira Sousa (FIEEE)—Toronto, Ontario
For contributions to wireless systems, including modulation techniques and transmitter diversity

Jianping Yao (FIEEE)—Ottawa, Ontario
For contributions to photonic generation and processing of ultra-wideband signals

Membres de l'IEEE Canada élus Fellows de l'IEEE 2012

Raouf Boutaba (FIEEE)—Waterloo, Ontario
Pour contributions aux réseaux automatisés et aux méthodologies de gestion de service et applications

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Pour contributions à l'ingénierie clinique et à l'enseignement du génie

Rafik A. Goubran (FIEEE)—Ottawa, Ontario
Pour contributions à la mesure de la qualité de la voix et ses applications pour l'amélioration audio

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Pour contributions au contrôle de moyenne tension résistante à l'arc et aux technologies de protection

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Pour contributions aux algorithmes et aux systèmes de classification non paramétriques pour l'apprentissage machine

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Pour contributions à la théorie et à l'application de l'apprentissage adaptatif statistique

Farnoosh Rahmatian (FIEEE)—Vancouver, Colombie Britannique
Pour contributions aux sondes de tension et de courant optiques dans les systèmes énergétiques électriques à haute énergie

Manoj Sachdev (FIEEE)—Waterloo, Ontario
Pour contributions à la méthodologie d'essai de circuits intégrés à très large échelle

Elvino Silveira Sousa (FIEEE)—Toronto, Ontario
Pour contributions aux systèmes sans fil, incluant les techniques de modulation et la diversité d'émetteur

Jianping Yao (FIEEE)—Ottawa, Ontario
Pour contributions à la génération et au traitement photoniques de signaux ultra large bande

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For development and leadership in the condition monitoring of high-voltage power transformers and related equipment.

Prix Transmission et distribution de l'énergie électrique Herman Halperin de l'IEEE

Michel Duval (LFIEEE)—Montréal, Québec
Pour développement et leadership dans la surveillance de la condition des transformateurs de puissance à haute tension et de l'équipement relié.

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For contributions as engineer,manager and director in multiple high technology companies in telecommunications,computer communications and aerospace technologies since 1985

Voicu Zamfir Groza (FIEEE)—Ottawa, Ontario
For distinguished teaching and contributions to floating point analog to digital conversion

Dimitrios Hatzinakos (SMIEEE)—Toronto, Ontario
For contributions to multimedia signal processing security, communications and biometrica

Horacio J. Marquez (SMIEEE)—Edmonton, Alberta
For seminal contributions to robust & multi-rate nonlinear control, and filter and observer design for nonlinear dynamical systems

Robert Schober (FIEEE)—Vancouver, British Columbia
For outstanding contributions to wireless communications

Weihau Zhuang (FIEEE)—Waterloo, Ontario
For distinctive contributions to wireless communications and radio positioning and for dedication to education

Ming Jian Zuo (SMIEEE)—Edmonton, Alberta
For fundamental contributions to reliability engineering systems

Membres de l'IEEE Canada élus Fellows de l'ICI 2012

Anader Benyamin-Seeyar (SMIEEE)—Montréal, Québec
Pour contributions en tant qu'ingénieur, gestionnaire et directeur dans de multiples compagnies de haute technologie en télécommunications, communications informatiques et technologies aérospatiales depuis 1985

Voicu Zamfir Groza (FIEEE)—Ottawa, Ontario
Pour enseignement et contributions distingués à la conversion analogique-numérique à virgule flottante

Dimitrios Hatzinakos (SMIEEE)—Toronto, Ontario
Pour contributions à la sécurité, aux communications et au biometrica du traitement des signaux multimédia

Horacio J. Marquez (SMIEEE)—Edmonton, Alberta
Pour contributions à la commande non linéaire multi-taux & robuste, et la conception de filtre et d'observateur pour les systèmes dynamiques non linéaires

Robert Schober (FIEEE)—Vancouver, British Columbia
Pour contributions exceptionnelles aux communications sans fil

Wehau Zhuang (FIEEE)—Waterloo, Ontario
Pour contributions distinctives aux communications sans fil et au positionnement radio et pour son dévouement pour l'éducation

Ming Jian Zuo (SMIEEE)—Edmonton, Alberta
Pour contributions fondamentales aux systèmes d'ingénierie de fiabilité

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Scope

Spaceflight involves critical sensing and communication in extreme environments such as planetary surfaces, space vehicles, and space habitats. The many challenges faced in space sensing and communication are extremely diverse and overlap significantly with those found in many terrestrial examples of extreme environments such as extreme hot or cold locations, extreme high or low-pressure environments, critical control loops in aircraft and nuclear power plants, high-speed rotating equipment, oil/gas pipelines and platforms, etc. All of these environments pose significant challenges for radio-frequency or optical wireless sensing and communication and will require the application of a broad range of state of the art technologies in order to generate reliable and cost effective solutions. Although the specific challenges vary significantly from environment to environment, many of the solutions offered by sensing, communication, and statistical signal processing technologies can be applied in multiple environments, and researchers focusing on space applications can benefit greatly from understanding the problems encountered and solutions applied in alternative environments.

This IEEE conference will bring together investigators from the National Aeronautics and Space Administration (NASA), the Canadian Space Agency (CSA), the European Space Agency (ESA), and other space agencies, along with aerospace and space defense industries and academic researchers, in an effort to understand and solve the emerging problems facing wireless sensing and communication in space and related extreme environments.

Areas of Particular Interest

Papers and posters are sought that address solutions to problems in all areas of wireless sensing and communication in space and extreme environments related to spaceflight, including but not limited to the following:

- Low-power active wireless sensors, systems, and networks
- Passive wireless sensors, systems, and networks
- RFID devices and systems
- Protocols and architectures for delay and disruption tolerant networking
- Network architectures, middleware integration, and data management
- Cognitive radio networks
- Localization and tracking over wireless links
- Antenna design, smart antennas, beam-forming, and multiple-antenna techniques
- Propagation modeling for planetary surfaces and complex multipath environments
- Wireless and cyber security
- Optical communication systems
- Availability, certification, and spaceflight qualification for wireless devices and systems
- Integrated vehicle systems

All presented papers will be archived at IEEE Xplore Digital library. High quality papers will be invited for a special issue journal.

Important Dates

Paper/poster submission *(Firm Deadline)*: *July 1, 2013*
Acceptance notification: *Sep 1, 2013*
Final Paper submission & Registration: *Oct 1, 2013*

IEEE-USA

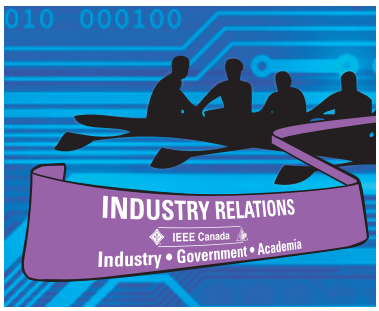
IEEE Canada

Destination Innovation: Exploring Channels to Marketplace Success

by David G. Michelson

Consider the essential infrastructure of a successful modern economy: energy, transportation, telecommunications and ... *innovation*? While steps to ensure the integrity of a country's power grid, civil infrastructure and communications networks are typically given top priority by planners and politicians, it is now widely recognized that support for innovation is just as important for ensuring a country's long-term economic growth.

In a 1988 report, economist and social scientist Chris Freeman coined the term "National System of Innovation," to describe the method by which Japan became an important competitor to western economies by marshalling industry, government and academic resources. In the decade that followed publication of Freeman's work, governments around the world began to develop their own National Innovation Strategies with an aim to return maximum value from investments in R&D and boost national competitiveness in an increasingly global economy.



Canada's National Innovation Strategy was launched in 1997-98. Significant updates to the strategy were released in 2002 and 2007. Earlier this year, the federal government released an "Economic Action Plan" that further defines how it intends to foster the development of new goods, processes and services.

What Help is Available to Canadian Industry?

A wide range of resources is available to support innovation by both large companies and small/medium enterprises (SMEs) in Canada. In this new column of the *IEEE Canadian Review*, I shall introduce many of these resources, beginning with the National Research Council's Industrial Research Assistance Program (NRC-IRAP).

Future columns will explore: 1) assistance in the development of international markets by Foreign Affairs and International Trade Canada; 2) research and commercialization assistance offered through the federal Networks of Centres of Excellence (NCE) and Centres of Excellence for Commercialization and Research (CECR); and 3) assistance available from some of the larger provincially-funded commercialization centres.

NRC Industrial Research Assistance Program (IRAP)

How can SMEs bridge between initial technical innovation and delivery of their product or service to the market? By helping SMEs to scale up their production capacity and strengthen their business processes, NRC-IRAP fills an important gap in the path to marketplace success. It also provides funding for specific technology innovation projects that are linked to helping SMEs improve their market readiness.

To be eligible for IRAP assistance, firms must be incorporated in Canada and have fewer than 500 employees. Potential clients must also demonstrate capacity and willingness to grow and generate profits through the development and commercialization of innovative, technology-driven products and services.

A network of more than 200 Industrial Technology Advisors (ITAs) delivers IRAP assistance by linking SMEs to the most appropriate source of information, expertise and funding—both in Canada and internationally—and develops tailored solutions. ITAs typically combine scientific or engineering background and extensive business experience. When assessing a client's situation and determining how best to provide assistance, ITAs evaluate numerous aspects of the company including its leadership and management, structure and operations, innovation capability and readiness for change.

IRAP works closely with Foreign Affairs and International Trade Canada (DFAIT) to develop and implement international activities and programs that help Canadian firms to enter and compete in the global marketplace. IRAP has a number of formal and informal relationships with countries including Spain, France, the United States, Ireland, India, China, the Scandinavian countries, the Netherlands and the European Union. Through these relationships, IRAP collaborates with its international counterparts on a reciprocal basis to support SME growth through technology development, technology transfer and commercialization.

Other IRAP initiatives include its Digital Technology Adoption Pilot Program—a three-year initiative to accelerate the adoption or customization of digital technologies to increase the productivity and competitiveness of SMEs, and its Youth Employment Program that works in collaboration with the Department of Human Resources and Skills Development Canada to provide financial assistance to innovative SMEs to hire post-secondary science, engineering, technology, business and liberal arts graduates.

To learn more, visit www.nrc-cnrc.gc.ca or contact NRC-IRAP at 1-877-994-4727 or publicinquiries.irap-pari@nrc-cnrc.gc.ca .

Double Shift: IRAP advisor helps load-shifting innovator adjust marketing strategy

Founded in 2004, Energate provides solutions for managing home energy consumption. Sold exclusively to electrical power utilities, the firm's Consumer Connected Demand Response (CCDR) platform gives consumers access to their smart meter data and helps them monitor and control their home energy use via the Internet. Using information provided by the meter, consumers can turn off appliances when power rates peak.

The resulting energy savings are great for consumers but are even more important for the major utilities who are Energate's primary customers.

"Major utilities are looking for ways to shift their energy loads from peak to off-peak because there are significant economic rewards for doing so," says Niraj Bhargava, Energate's chief executive officer.

The firm benefited from a few angel investors in its early days, but the National Research Council of Canada's Industrial Research Assistance Program (NRC-IRAP) contributed significantly in 2007 by supporting both development of the algorithms in Energate's smart thermostat and commercialization of the product, says Bhargava. Known as the Pioneer, Energate's first smart thermostat is still shipping in the tens of thousands to major utilities.

Several years after that first project, NRC-IRAP Industrial Technology Advisor (ITA) Jeff Linton helped the firm secure a second funded project that would transform it from a hardware company to a solutions company.

"What we learned was that utilities don't buy thermostats, they buy a solution that helps reduce the overall demand," says Bhargava. "That second NRC-IRAP project let us develop the communications technology needed to do that."

Linton was instrumental in helping the firm understand how government programs could be helpful, adds Bhargava. "We had lots of ideas, but he made sure we didn't waste time going down blind alleys. He also pushed us to make sure we did enough research not only to prove our technology, but to make it suitable for government support."

Since Energate engaged NRC-IRAP in 2006, the firm has:
- grown to more than 35 employees.
- established offices in Toronto, Chicago, Houston and Los Angeles.
- become one of the top five in its industry in North America in terms of market share.

Building on the success of past IRAP projects, Energate tripled its revenues in 2010-2011. The company currently counts some 30 major utilities as customers.

Energate's growth potential seems tremendous: There are about 3,000 electrical power utilities in North America, and as Bhargava points out, "eventually all of them will have a peak power problem."

This case history was contributed by Gary Graham, Marketing and Communications Officer, NRC Industrial Research Assistance Program

IEEE Canada's Industry Relations—A Few Innovations of Our Own

by David G. Michelson

This issue of the *IEEE Canadian Review* is the first with a regular column that focuses on issues of particular interest to industry (and government). It also marks a slight change in direction for IEEE Canada's Industry Relations Committee.

The Industry Relations Committee's traditional mandate has been to devise and implement a communications strategy that makes managers aware they can accrue direct technical and business benefits as well as strengthen their corporate recruitment and retention strategies by supporting or approving: 1) employee membership and participation in IEEE technical activities; 2) company participation in IEEE Standards Association activities related to its products/services; and 3) company sponsorship of IEEE conferences, awards and technical activities.

Starting this year, the Committee has taken on additional roles. These include: 1) leading the development and promotion of best practices for industry relations across IEEE Canada organizational units (OUs); and 2) aligning IEEE Canada's industry relations strategy with that of IEEE Member and Geographic Activities (MGA).

In response, the Industry Relations Committee will undergo important changes in the next few months. First, the Committee will be expanded to include members who serve as their home Section's Industry Liaison Officers. Second, six members-at-large will be appointed based upon their demonstrated interest in industry engagement, and the skills and expertise they can bring to the task. Because our Committee is now directly connected to the IEEE MGA Industry Relations team, we have a unique opportunity to influence IEEE's strategy in this area.

Benefits of Best Practices

Development of best practices for industry (and government) relations is important because IEEE Canada volunteers at all levels frequently ask industry (and government) to supply presentations and tours to technical chapters, or perhaps provide sponsorship for a major conference or activity. Many companies will receive several such requests during the course of a year from IEEE Canada OUs.

The Committee's goal is to provide reference material that will help volunteers: 1) appreciate the manager's perspective when requesting support; 2) learn from the experience of IEEE volunteers who have gone before them; and 3) present a consistent face to industry managers. This will help to ensure that managers will respond positively to our ongoing requests for participation, support and sponsorship.

If you are interested in participating in IEEE Canada's Industry Relations Committee either as Section representative or as a member-at-large, please contact me at dmichelson@ieee.org; I'd be happy to discuss how you might be able to contribute in this or any other way.

In my next report, I will describe some new initiatives at IEEE MGA that will provide greater support to IEEE volunteers and OUs that seek to engage supporters and sponsors from industry and government.

About the Author

David G. Michelson is with the University of British Columbia, Department of Electrical and Computer Engineering in Vancouver. In addition to his role as Chair of IEEE Canada's Industry Relations Committee, he also serves as a member of the Board of Governors of the IEEE Vehicular Technology Society (and Editor of the IEEE Press Series on Vehicular Technology), Member of the Board of Governors of the IEEE Communications Society (and Director of Education), Member of the IEEE History Committee and Member of the IEEE Canadian Foundation. He can be reached at dmichelson@ieee.org

The Quarter Inch Drill: The True Meaning of Experience

by Elmer Bourque

This is a true story about a Terry Fox I have known well and a young machinist I did not know.

A young machinist approaches Terry Fox, tool-maker at the New Brunswick Research and Productivity Council, with a quarter inch drill. "Can you sharpen this drill?" the young machinist asked.

Terry Fox was at RPC long before the famous Terry Fox walked across Canada on one leg. This Terry was an Englishman who had a reputation for fine-tuning formula race cars for a win, back home in England. He was approaching retirement and had a lifetime of experience in his work. Terry also had a pronounced shake in his hands and his head was unsteady as he spoke. Like a tremor I suppose.

The young machinist on the other hand was still learning the ropes and as we will see, learned a lot from this experienced toolmaker.

"What sized hole do you want," Terry replied.

"It's a quarter inch drill" the machinist said: "I want a quarter inch hole."

Terry continued: "Oh yes, but what exactly are you doing? Do you need a push fit, a slip fit a friction fit or an interference fit? Exactly what are you doing?"

The machinist told Terry what he was doing and after some deliberation, Terry suggested he needed a hole that was two thousandths of an inch oversize to smoothly accomplish the task at hand. After establishing the metal to be drilled, Terry went to the grinding wheel and by hand, sharpened the drill with the steadiest hand, and it was done very quickly. One close look at the result and a minute re-adjustment finished the job.

Terry told the machinist to use a certain feed speed on the drill, a certain spindle RPM and also told the young machinist how to cool the tool during the drilling.

After all this, the young machinist thought he better follow the instructions. But to finish the job, he also wanted to see just how good Terry really was. He measured the hole. Sure enough it was not a quarter inch. It was within a tenth of a thousandth of an inch of two thousandths over a quarter of an inch. (0.252±0.0001")

Elmer Bourque (LSMIEEE) is currently associated with Kestrel Power Engineering of Toronto as a senior engineer. Following graduation he developed numerical control software for the New Brunswick Research and Productivity Council. In 1974, he joined New Brunswick Power where he worked for 31 years as a system performance engineer responsible for power system stability and proper control by commissioning and maintaining fault recording equipment, area generation control, generator excitation, stabilizers, and governor systems. He is recipient of the 2012 IEEE Canada J.J. Archambault Eastern Canada Service Medal.

N.Ed.

In this new Department, we will be sharing the real-life lessons of our readers that only experience can teach. If you have a tale to tell, then target it to our member news editor, Bruce Van-Lane, vanlane@ieee.org. It can be about your "schooling," or that of a colleague's – all we ask is that it be true!

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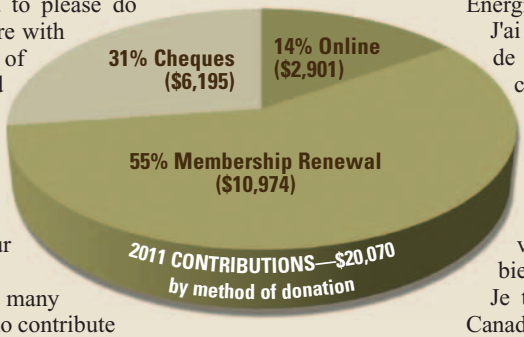
From the President - I would like to acknowledge and thank those of you who have generously given to the IEEE Canadian Foundation in 2011. Your gifts allowed us to enhance the learning experience for engineering students with our programs of McNaughton Centres and Scholarships.

Students and other recipients have also benefited through the co-funding of special projects that develop engineering or science skills at all levels. Our Special Grant recipients are required to submit project reports which are saved and often highlighted as "Success Stories" both on our website and in this magazine. Increasingly, these projects use technology for the benefit of humanity.

Our General Fund is crucial to our ability to operate each and every year, and your undirected donations allow us to keep our base strong.

Our Endowed Funds support a wide range of awards, prizes and scholarships. Please consider a directed donation to endow an IEEE Canada award or create a new award of your choosing. The IEEE Canada awards for Outstanding Engineer, Computer, and Electric Power awards are available for medal endowment.

I appreciate your past support and urge you to continue to do so and increase your contributions where possible. If you have not yet made a donation, I urge you to please do so—we could do so much more with your financial support. All of the different ways to give and donor recognition programs are fully described on our website.



If there are ways you feel we can improve, please contact me – I welcome your suggestions.

I close by thanking the many IEEE volunteers in Canada who contribute to the all-volunteer effort that is the IEEE Canadian Foundation. I acknowledge the invaluable assistance of Luc Matteau, John Mowbray and Christian Pepin in the preparation of this document.

Yours sincerely,

Robert T.H. (Bob) Alden
President
IEEE Canadian Foundation

2011 Year in Review –Donations from individuals increased to $20,070 from $19,927 in 2010.

The foundation received $1,485 as donations to support the Vancouver Section Scholarship Fund via our website, and the Canadian Life Members Fund (CLMF) received donations of $950.

The chart shows the distribution between the IEEE membership renewal process, our own Canadian online donation service (with receipts by return email), and cheques made payable to the "IEEE Canadian Foundation Inc." mailed to our treasurer.

Every gift makes a difference. The honour roll formally recognizes all donors contributing $25 or more. The foundation extends its thanks also to those donors who are not listed

Message du Président - je voudrais reconnaître et remercier ceux de vous qui avez généreusement donné à la Fondation canadienne de l'IEEE en 2011. Vos cadeaux nous ont permis de procurer une meilleure expérience pédagogique aux étudiants en génie par l'entremise de nos programmes de Centres McNaughton et de Bourses.

Les étudiants et autres récipiendaires en ont aussi bénéficié via le co-financement de projets spéciaux qui servent à développer des compétences au niveau de l'ingénierie et de la science à tous les niveaux. Nos récipiendaires d'allocations spéciales doivent soumettre des rapports de projet qui sont sauvegardés et souvent mis en évidence comme "des Histoires à succès" tant sur notre site Web que dans ce magazine. De plus en plus, ces projets utilisent la technologie au bénéfice de l'humanité.

Notre Fonds général est crucial au niveau de notre capacité de fonctionnement chaque année et vos dons non dirigés nous permettent de maintenir notre base forte.

Nos Fonds dotés supportent une large gamme de récompenses, de Prix et de Bourses. S'il vous plaît considérez faire un don dirigé afin de doter un Prix de l'IEEE ou créer un nouveau Prix de votre choix. Les Prix de l'IEEE Canada pour Ingénieur exceptionnel, Informatique et Énergie électrique sont disponibles pour la dotation de médaille.

J'ai apprécié votre appui passé et je vous recommande vivement de continuer à faire ainsi et augmenter vos contributions lorsque c'est possible. Si vous n'avez pas encore fait de don, je vous recommande vivement de le faire – nous pourrions faire tellement plus avec votre appui financier. Toutes les façons différentes de donner et les programmes de reconnaissance des donateurs sont entièrement décrits sur notre site Web.

Si vous estimez qu'il existe des façons de nous améliorer, s'il vous plaît entrez en contact avec moi – Vos suggestions sont les bienvenues.

Je termine en remerciant les nombreux bénévoles de l'IEEE au Canada qui contribuent à l'effort de volontariat qui constitue la Fondation canadienne de l'IEEE. Je voudrais souligner l'aide inestimable de Luc Matteau, John Mowbray et Christian Pepin dans la préparation de ce document.

Veuillez agréer l'expression de nos sentiments les plus distingués

Robert T.H. (Bob) Alden
Président
Fondation canadienne de l'IEEE

L'année 2011 en revue - les dons d'individus ont augmenté à 20,070 $ comparativement à 19,927 $ en 2010.

La Fondation a reçu 1485 $ en dons afin de supporter le Fonds de Bourse de la Section de Vancouver via notre site Web, et le Fonds des Membres à vie canadiens (CLMF) a reçu des dons de 950 $.

Le graphique illustre la distribution entre le processus de renouvellement d'adhésion à l'IEEE (en fonds américains), notre propre service de don en ligne canadien (avec des reçus par retour de courriel) et les chèques faits payables "à la Fondation canadienne de l'IEEE Inc." expédiés par la poste à notre trésorier.

Chaque cadeau fait une différence. Ce tableau d'honneur reconnaît formellement tous les donateurs dont la contribution s'élève à 25$ ou plus. La Fondation étend aussi ses remerciements à ces donateurs qui ne sont pas inscrits.

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We are the Champions

TISP Canada volunteers share their passion for helping teachers deliver pre-university science and engineering education

It could be a scene in any middle-school science class. Scissors, electrical wire, various-sized dowels and an assortment of Styrofoam plates and cups carpet the desks. Spying a few quizzical looks, the teacher makes a beeline over and offers a suggestion, then heeds another summons across the room to help with the voltmeter. Smiles break out as the reading stabilizes.

Except that, it's not a middle-school science class. And the "students" are actually science teachers themselves, learning the ABCs of a wind turbine lesson plan at a workshop organized by IEEE Ottawa Section's Janet Davis, as part of the Canada Science and Technology Museum's second annual Summer Institute for Elementary Teachers. Welcome to one arm of IEEE Canada's Teacher In-Service Program (TISP)—a multi-section initiative boasting as many different activities as there are wind turbine designs.

From Victoria to Newfoundland, IEEE Section TISP volunteers share their expertise to promote pre-university science and technology education. In some instances, it's a teacher workshop such as the one described above in Ottawa last July. Other volunteers go directly into classrooms and supervise a "hands on" design activity. Weekly clubs at local schools are another way volunteers – also known as TISP Champions—engage students in math programs, or progressively teach the fundamentals of computer programming. Champions have co-developed four- and five-day teacher workshops on robotics, and captured the imagination of the next generation of space researchers with the launch of high-altitude balloons.

What inspires a TISP Champion? For Vancouver Section's Steven McClain, it's the feedback from students, particularly when they start to take the initiative on a project. "You steer them towards topics and give them some guidance," explains McClain, a support engineer with Cadex Electronics Inc. "Then through the miracle of Google and what-have-you, they start feeding it back to you, and say 'Well, we did such-and-such for a while and it was great. But, now what happens if we try this?'"

For fellow Vancouver Section TISP Champion Tanaya Guha, it's a passion for increasing the standard of science and engineering education. "If we can interest high school students at an earlier age, chances are they will become more successful engineers and scientists. This is the best way to increase the pool of talent in the field." On track to complete her PhD this spring at UBC, Guha gained an interesting insight through presentations at Vancouver's University Hill Secondary School—students' surprisingly narrow perception of modern engineers' work. "Many of them thought all engineers did was design bridges and put up buildings. Biomedical, software engineering, hardware design … they had no idea these were career options for engineers."

A goal for both McClain and Guha is to reach more teachers, as important as it is to connect with students through classroom visits. Easier said than done. While it requires many phone calls and e-mails to schedule a classroom visit, it can take *dozens* of calls and e-mails to organize a teacher workshop. But Section TISP volunteers, like wind turbines, connect to an infrastructure—in this case the TISP Canada Committee. Headed by Montreal Section's Anader Benyamin-Seeyar, a telecom industry consultant with 40 years of industry and academic experience, the TISP Canada Committee brings together veterans of two nationally-organized teacher workshops and numerous local offerings. The Committee meets roughly every month by TeleConference, giving a forum for Champions from roughly a dozen Sections to report on past and upcoming local activities, and plan major events such as workshops. With the support of Educational Outreach staff at IEEE Headquarters, the Committee is helping Vancouver Section plan a teacher workshop in 2013, in cooperation with Seattle Section.

The 2013 Vancouver TISP workshop will bring together local teachers from the Seattle and Vancouver areas, plus TISP Champions from across Canada. Rolling their sleeves up, teachers will test drive two "tried and true" lesson plans designed to stimulate student interest in the opportunities open to engineers and scientists. For IEEE members, the learning is on a different level at these workshops. Between offering bits of advice on matters such as the whens and hows of the western union splice, they hear first-hand about science/technology teachers' challenges.

"The Mississauga TISP workshop in 2011 was a turning point for me," says Kingston Section Champion Umar Iqbal, who teaches at Queen's University. "It was very motivating." With no prior experience with TISP, a somewhat hesitant Iqbal was persuaded by Section Chair Shahram Yousefi to accompany him to the event, held in late April. That fall, Iqbal and fellow TISP Champion Basel Nabulsi began joint planning with R.G Sinclair Public School for an afterschool robotics club. The first meeting was held early in the new year, running until June 2012. The club would have continued this fall, but has been put on hold pending completion of protracted contract negotiations between the Ontario government and the Province's teachers. TISP Champions who attended Canada's first national workshop in Montreal in 2009 similarly report how the experience inspired them to become involved.

"Western area members interested in attending in Vancouver should contact me right away," encourages Benyamin-Seeyar. "Some of our veteran Champions from the east will be returning to lend a hand, but we're primarily interested in linking teachers with IEEE volunteers from the Prairies, BC and Washington state."

While the nationally-organized workshops help forge initial linkages with teachers, most of the local workshops organized with school boards grow out of progressively strengthened relationships with teachers and principals. The experience of Northern Canada Section (NCS) TISP Champions Mooney Sherman and Rossitza Marinova is a case in point. Now an IT security consultant, Sherman had a previous career as a Montessori teacher. Marinova teaches at Concordia University College of Alberta in the Department of Mathematical and Computing Sciences. In the fall of 2011, Sherman, Marinova and three other NCS members were invited to oversee student design sessions as part of an all-day Science Technology Engineering/Environment and Mathematics (STEM) Conference for boys at St. James Elementary School in Edmonton, part of the Edmonton Catholic School Board. The design challenge? A candy bag able to withstand the rigours of a shipping and unintended free-fall, but still economical enough to keep the precious contents within the purchasing power of the "end user." As can be expected, the sessions were well received!

Building on the success of the 2011 All Boys STEM Conference, and ongoing classroom presentations throughout 2012, Sherman and Marinova doubled the number of sessions offered at this fall's Conference. The design challenges this time were a wind turbine and a rubber band race car, the latter taking the checkered flag for popularity. All of these efforts are paying off. "The Principal and Vice-Principal say teachers have already observed changes in the children's reactions," Sherman reports. "They are more engaged, so material can be taught at a higher level. It's a domino effect." Most significantly, the Board science consultant is working to include TISP in a Professional Development day in the New Year, paving the way for broader student impact, says Sherman.

But what if there are no science/technology PD days? Travel four time zones east, and Brian Kidney, TISP Champion from Newfoundland and Labrador Section, faces a much different educational outreach landscape. For three or four years, Kidney and a small but enthusiastic group of other Section volunteers have made steady inroads into schools and school boards – judging at science fairs being one of the arterials. Through a serendipitous introduction at a charity ball, a local high school teacher named Paul King joined them, helping the group navigate their way to regional school district officials. The signs looked promising until it became apparent there were no open PD days where teachers could attend a session of their choice, there are only district-wide closures for cross-curriculum presentations. Undaunted, the group hopes to arrange a session for teachers in August at Memorial University in St. John's.

Kidney, a research and project engineer at Memorial University, is quick to point out the benefits of a teacher joining the Committee. In particular, he cites the difference between lesson plan exercises at a teacher work-

by Bruce Van-Lane

shop versus classroom delivery. "At the Mississauga workshop, the groups spent maybe 45 minutes on the wind turbine design," he notes. "Paul teaches it over four classes." In the last, each straw and coffee filter in the kit is assigned an economic value, with the goal of maximum performance for the least cost. "It's a real world approach, which works particularly well for high school students," says Kidney.

It is this emphasis on design that sets TISP apart from other classroom resources, says London Section TISP Champion Murray MacDonald. "Teachers know the scientific method: observe, generate a hypothesis, conduct an experiment to test it, that approach … ," MacDonald explains. "If you want to become a scientist, that's fine. But if your goal is be an engineer, you're going to need some exposure to the concept of design." Not that MacDonald, an electrical/electronic manufacturing consultant, is averse to helping teachers with the pure science part. That need can be particularly acute at the primary school level, he says. "I've seen Grade 5 and 6 English teachers struggling to deliver the science curriculum—those teachers are desperate for any kind of help we can provide."

MacDonald echoes Brian Kidney's respect for teachers' classroom expertise. He recalls a mildly perplexing experience delivering the previously described "Candy Bag" design lesson to two consecutive classes—with dramatically different results. The first spent relatively little time recording their ideas on paper, without seeming to connect them much to the upcoming task—then "jumped right into building." The second spent a lot of time on the paper design—even asking MacDonald to review it—before proceeding to execute. In discussion later with the teacher about the two classes' contrasting approaches, MacDonald wondered what accounted for the difference. Had he just managed the second group better, having just seen the first largely skirt the design task? The teacher had a different take. "There will be some students that are the natural leaders," MacDonald recalls the explanation proffered. "Their style will tend to dictate how the whole group operates." MacDonald's insights from this and other similar classroom experiences? "Engineers have to follow the teachers' lead in figuring out how to deliver lesson plans. That's what teachers do for a living. And engineers don't."

No argument here from Ottawa's Janet Davis, engineering manager with Wind River. In fact, the Section has three teachers on its TISP committee. Paralleling the recruitment of teacher Paul King in Newfoundland, a personal connection played a role in bringing the trio onboard—a Committee member's child attended Ottawa's All Saints Catholic High School, which has a strong robotics club, thanks in part to ongoing support from the IEEE Canadian Foundation. A bit of parent volunteering brought an opportunity to meet the club's teacher mentor, Paul McDonough. Through McDonough, two other Ottawa-area teachers became converts: Ross Morrison from Longfields Davidson Heights Secondary School and Richard Seniuk from Glebe Collegiate Institute (also an IEEE Canadian Foundation grant recipient). It was actually McDonough, Morrison and Seniuk together with Davis providing the encouragement/support at the Summer Institute for Elementary Teachers session. "We have teachers helping teachers," says Davis. Morrison also brought a few wind turbines his high school students had constructed, which was particularly motivating for attendees. "They were really surprised at the level of sophistication of the designs, especially from scrap materials," Davis says.

For Anis Haque, Southern Alberta Section TISP Champion, teacher input prior to classroom visits is every bit as vital, notwithstanding he faces students himself from the front of lecture halls at the University of Calgary. "It's totally different teaching elementary school students—keeping their concentration, finding content they're interested in, those kinds of things." Haque requests feedback from the teacher for every classroom session he gives, modifying the program as he goes along. Where possible, he'll try to meet with the teacher beforehand to exchange ideas about what will work best with his/her particular class(es). Keen to make the most amount of difference in his outreach, Haque frequent targets schools 25-40 km outside of Calgary, locating them through Google maps, then looking at individual school profiles. "There are other organizations that can offer enrichment in the city," Haque explains. "I like to go into schools where the students wouldn't otherwise have these opportunities."

Prefering to teach primarily first-year engineering courses, Haque sees the results when students enter the program without adequate knowledge of the field or adequate preparation, at times complaining they simply don't like the subject matter. "Today's elementary school children, they will be coming to my classroom," he observes. I want future science and engineering students to come with true passion. That's my objective."

NCS's Rossitza Marinova also works with undergraduate students in the IT and Computer Science courses she teaches at Concordia University College. A founder of the Canadian Math Kangaroo Contest in 2006, in 2010 she started a weekly Math Kangaroo Club in Edmonton that offers five levels of exercises/quizzes for participants ranging from Grade 1 to Grade 9. Born and educated in Bulgaria, Marinova believes math and science competitions are neglected in Canada as motivating tools for awakening and developing curiosity. "I've often been asked whether a competitive environment is actually good for children. But everyone appreciates sports competitions," Marinova quips. "For those that do well in math and not in sports, why shouldn't they be given a chance to shine?" A long-term goal of hers is to offer some parts of the program on-line.

Umar Iqbal in Kingston can definitely see the difference enrichment makes when students enter the robotics and applied science classes he teaches at Queen's University—some being far ahead of their peers. "When students come to university with background knowledge and excitement they are very easy to teach," says Iqbal. The additional exposure seems to have been usually at the high school level, a situation he'd like to remedy. "If we start motivating children at a very early age, we can avoid them being confused later on when they choose a career." Certainly Iqbal and his TISP colleague Basel Nabulsi have opened up more than a few young minds. Upon asking one of his afterschool club members about what her future career might be, the response was "I had different plans, but now I want to be a robotics engineer!" Iqbal and Nabulsi hope to enlarge the number of schools they reach through a future two- to three-day student workshop that would be held at Queen's University. A small number of students from each school would be invited along with one or two teachers, who can then share material with other teachers from their schools.

Dave Hepburn from Hamilton Section and instrumentation consultant Patrick Finnigan from Toronto Section are TISP Champions who have pioneered another way to deliver teacher workshops—through science teachers associations. For the last half-dozen years they've presented a lesson plan at the annual Science Teachers' Association of Ontario (STAO) annual conference. At last month's event they were a marquee attraction, drawing 25 teachers into "winding" their way through the "Build a Transformer" lesson plan Hepburn has created. Fully bilingual, Hepburn had barely unpacked his suitcase from Quebec's annual counterpart conference, organized by l'Association pour l'enseignement de la science et de la technologie au Québec (APSQ). It was here the switch was first publicly thrown on the transformer lesson plan. "With 16 participants, they found at least 17 wrong ways of building it," recalls Hepburn. "But that was OK," he reassures us. "Firstly, you learn more from your mistakes. It also resulted in a good deal of hilarity and bonhomie all around." Be sure to read the full account of both events' activities in the upcoming February 2013 issue of the *TISP Canada Courier*, whose Editor-in-Chief is Canadian Atlantic Section TISP Champion Dirk Werle of ÆRDE Environmental Consulting. Werle, whose graphic design skills and sparkling turn-of-phrase make each issue a delight to read, is backed by Associate Editors Dave Hepburn and Murray MacDonald.

Are there other equally dedicated Champions? Most definitely! You can meet them all by browsing back issues of the *Courier*. They, and TISP Canada contact information, can be found at http://www.ieee.ca/tisp.

Bruce Van-Lane is Managing Editor, IEEE Canadian Review. *He can be reached at vanlane@ieee.org*.

Engineering Management: What's New in the Literature?

by Terrance Malkinson

- The Panama Canal is an important international maritime trade link between the Atlantic and Pacific Oceans and is essential for global commerce. Originally built 100 years ago under very difficult conditions, the canal is now undergoing a $5B reconstruction project scheduled for completion in 2014. This is a huge project employing a large international workforce that is facing challenges of materials, geology, climate and logistics. The project is the cover story of the July 23, 2012 issue of Engineering News-Record [269(3):18-25, www.enr.com]. The complexity of the project and how engineers are finding innovative solutions to tough problems are detailed.

- Alex Hutchinson reports on the Niagara Tunnel Hydro project ["A Very Big Dig." Canadian Geographic, 113(2):26-38, April 2012. www.canadiangeographic.ca]. A $1.6B, 10.2 km tunnel will funnel water from an intake above the falls to the downstream generating station providing power for an estimated 160,000 homes. Planning for this project began in 1982 and tunneling commenced in 2006. The article describes this project, as well as other hydroelectric projects associated with Niagara Falls.

- The cover story of the June issue of Inc. ["How to Be a Great Boss" pp. 68-76, www.inc.com] focuses on an analysis of companies and leaders that have had exceptional performance despite current operating challenges in a turbulent business environment characterized by unpredictability. An interview with Jim Collins co-author of the entrepreneurially focused book Great by Choice, discusses his recent research on companies that have achieved productivity ten times the industry average. A second article "Thirteen Ways of Looking at a Leader" provides a snapshot of the most prevalent types of leaders, their leadership style, sources of further information on each style, and case studies of leaders who exemplify each style.

- A profile of Richard Branson and his innovation strategies is provided by Jason Ankeny in the June 2012 issue of Entrepreneur ["The Good Sir Richard," pp. 30-38. www.entrepreneur.com]. An inset "Words of Wisdom" summarizes his five perspectives on building a business. A second article in the same issue of Entrepreneur ["100 Brilliant Companies to Watch," pp. 52-68] provides comprehensive profiles of a number of high-technology companies and snapshots of others in this year's annual survey of the innovation excellence.

- Ken Demead discusses family engagement in shared technology projects and the father-son bonding that develops; in his article "How to Be a Geek Dad" in the June 2012 issue of Wired [pp.126-139, www.wired.com]. Inspiring children at a young age to follow their ideas is critical for teaching them creativity, innovation and entrepreneurial skills. These attributes will serve them well as they choose their education path, pursue their education and apply the learning throughout their career.

- A special report in the August 13, 2012 issue of Canadian Business "26 Things Holding Canada Back" [www.canadianbusiness.com] provides interesting reading on Canadian barriers to success in today's business climate. With desire and a little effort many of the issues discussed could easily be rectified.

- "Retire Happy" is the title of the cover story in the July 16, 2012 issue of Canadian Business. Strategies to assist you in achieving your dream retirement are provided. Because of changing economic conditions many employees are re-evaluating their retirement plans and considering extending their working life. The strategy common to best retirement planning is to start investing when you are young and become debt free as soon as you are able.

- Twelve core competencies of scholarly writing emerged from the research of Anita Ondrusek as she reviews the professional literature on writing skills of graduate students in: "What the Research Reveals about Graduate Students' Writing Skills: A Literature Review" [Journal of Education for Library and Information Science, 53(3):176-188, July 2012].

- In the editorial "In Pursuit of Scientific Excellence: Sex Matters" in The American Journal of Physiology [302(9):R1023-R1024, May 2012 http://ajpheart.physiology.org/content/302/9/H1771.full], Virginia Miller, from the Department of Surgery and Physiology and Biomedical Engineering at the Mayo Clinic, discusses an issue important to research design and reporting of results. A surprising number of investigators continue to design their experiments and report their results without consideration of the sex of the experimental subject or material derived therefrom. As Dr. Miller states "sex is such a basic biological variable that influences physiology and disease." She goes on to discuss its importance to the interpreting of the outcomes and applications of the investigation. The American Physiological Society is now requiring the reporting of the sex of experimental animals or humans and tissues derived from them in all manuscripts to be published. It is hoped that all journals will adopt such a policy. This will lead to the improved conduct, communication, and application of science.

- Chris Crofts provides a method for measuring and reporting the impact of an organization's investment in internal social media in "Creating a Dashboard to Demonstrate Social Media Impact" [Strategic Communication Management, 16(4):38-41, April 2012]. Business leaders today require proof of financial ROI. They also require insights into employee thoughts, feelings, and behaviors. This tool is based on three scores — impact, penetration, and value. The comprehensive one-page dashboard report that is created will help encourage dialogue on the impact of internal social media on the organization.

- The May 2012 issue of Harvard Business Review spotlights innovation for the 21st Century [90(5), www.hbr.org] in three articles: "Managing Your Innovation Portfolio" (pp. 66-74), "The Trillion-Dollar R&D Fix" (pp. 76-82), and "Six Myths of Product Development" (pp. 84-94). Insights on balance, effectiveness, and fallacies that are causing problems for innovation emerge.

- Ginka Toegel and Jean Louis Barsoux discuss the importance for a leader to become self-aware and to understand their natural inclinations in "How to Become a Better Leader" [Sloan Management Review, 53(3):51-60, Spring 2012, www.sloanreview.mit.edu]. The authors discuss five leadership dimensions including the need for stability, extraversion, openness, agreeableness, and conscientiousness. They continue on to identify common leadership pitfalls associated with each of these.

- The cover story of the April 2012 issue of Forbes magazine focuses on America's Best Leaders. [pp. 76-86]. Jeff Bezos founder and CEO of Amazon is profiled by George Anders. Amazon has more than 20 million products in stock which began with books and is now expanding to a variety of non-media goods. Stock price is up 397% in the past five years. An inset highlights the founders top ten maxims for business success.

Author Biography: see page 7

CONFERENCES: IEEE Canada & Collaboration: 2013–2014

WEST

26th IEEE Canadian Conference on Electrical and Computer Engineering (CCECE)

2013-05-05…08 Regina, SK
http://ieee.ca/ccece13

2013 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)
2013-05-24...06-02, Vancouver, BC
www.icassp2013.com/

2013 IEEE 17th International Conference on Computer Supported Cooperative Work in Design (CSCWD)
2013-06-27...29, Whistler, BC
2013.cscwd.org/

2013 IEEE International Professional Communication Conference (IPCC 2013)
2013-07-15...17, Vancouver, BC
ewh.ieee.org/soc/pcs/

2013 IEEE Power & Energy Society General Meeting
2013-07-21...25, Vancouver, BC
www.pes-gm.org/2013

2013 IEEE International Games Innovation Conference (IGIC)
2013-09-23…25, Vancouver, BC
ice-gic.ieee-cesoc.org

2013 IEEE 19th Pacific Rim International Symposium on Dependable Computing (PRDC)
2013-12-02…04, Vancouver, BC
prdc.dependability.org/2013/

2014 IEEE Electrical Safety, Technical and Mega Projects Workshop (ESTMP)
2014-03-03...05, Calgary, AB, Canada
www.ieee.org/estmp

2014 IEEE 80th Vehicular Technology Conference (VTC Fall)
2014-09-14...17, Vancouver, BC
www.ieeevtc.org/vtc2014fall/

2014 IEEE International Telecommunications Energy Conference
2014-09-28...10-02, Vancouver, BC
www.intelec.org

CENTRE

2013 IEEE Radar Conference (RadarCon)
2013-04-29...05-03, Ottawa, ON
www.ieeeradarcon13.org/

2013 International Conference on Advances in Industrial Control, Electronics and Computer Engineering (AICECE)
2013-05-06...08, Kingston, ON
http://www.aicece.net/

2013 IEEE Electrical Insulation Conference (EIC)
2013-06-02...05, Ottawa, ON, Canada
ewh.ieee.org/conf/eic/index.html

2013 IEEE Conference on Computational Intelligence and Games (CIG)
2013-08-11…13, Niagara Falls, ON
eldar.mathstat.uoguelph.ca/dashlock/CIG2013/

2013 IEEE International Conference on Smart Energy Grid Engineering (SEGE)
2013-08-28…30, Oshawa, ON
ewh.ieee.org/conf/sege/2013/

2014 IEEE Conference on Computer Communications
2014-04-27...05-02, Toronto, ON
www.ieee-infocom.org/2014

EAST

2013 IEEE Electrical Power & Energy Conference (EPEC)

2013-08-21...23, Halifax, NS
http://www.ieee.ca/epec13

2013 IEEE International Symposium on Medical Measurements and Applications (MeMeA)
2013-05-04…05, Gatineau, QC
memea2013.ieee-ims.org

2014 IEEE International Geoscience and Remote Sensing Symposium
2014-07-13...18, Quebec City, QC
www.grss-ieee.org/event/igarss-2014

OCEANS 2014
2014-09-14…19, St. John's, NL
www.oceans14mtsieeestjohns.org

CCECE 2013

26th Annual

Canadian Conference on Electrical and Computer Engineering

May 5 to May 8, 2013, Regina, Saskatchewan

http://www.ccece2013.org

"Electrical and Computer Engineering—The Enabler of the New Economy"

Call for Papers and Proposals/ Reviewers

The 2013 Canadian Conference on Electrical and Computer Engineering (CCECE 2013) will be held in Regina, Saskatchewan, Canada from May 5-8, 2013 at Delta Hotel.

CCECE 2013 provides a forum for the presentation of electrical and computer engineering research and development from Canada and around the world. Keynote speakers include Professor Eric Grimson (MIT Chancellor), and Dr. Ibrahim Gedeon (Telus CTO)

Volunteer reviewers, please contact Program Chairs:
Dr. Mehran Mehrandezh (Mehran.Mehrandezh@uregina.ca), Dr. JingTao Yao (jtyao@cs.uregina.ca), or Dr. Anh Dinh (anh.dinh@usask.ca)

Industry Tracks abstracts/position papers will be accepted for an Industry Track in the areas of mining, power, and agriculture. Please contact: industrytrack@ccece2013.org

Papers are invited, in French or English. Topics of interest include, but are not limited to:

- CIRCUITS, DEVICES AND SYSTEMS
- CONTROL AND ROBOTICS
- POWER ELECTRONICS AND ENERGY SYSTEMS
- COMPUTERS, SOFTWARE AND APPLICATIONS
- SIGNAL AND MULTIMEDIA PROCESSING
- COMMUNICATIONS AND NETWORKS
- BIOMEDICAL AND HEALTH INFORMATICS

Regular Paper Submission

Please submit original full length paper(s) to the Technical Program committee using the online submission process on our website at: http://www.ccece2013.org. Click on "Call for Papers" and follow the instructions provided.

Tutorial or Workshop Proposals

Tutorial or Workshop Proposals should be submitted before January 14, 2013 to the Tutorials and Workshop Chairs at: tutorials@ccece2013.org

Industrial Exhibits and Sponsorships

For industrial exhibits please contact the Industrial Exhibits Chair at:
exhibits@ccece2013.org

For sponsorships please contact the Sponsorship Chair at:
sponsorship@ccece2013.org

Ph.D. Mentorship Program

Volunteer faculty members; please contact the student activities at:
studentactivity@ccece2013.org

Important Dates

Tutorial or Workshop Proposals Deadline:	January 14, 2013
Full Length Paper Submission Deadline:	January 14, 2013
Notification of Acceptance will be sent out:	February 20, 2013
Author's Registration ends:	March 15, 2013

Publications

Selected full-length papers accepted in this conference will be recommended for publication in IEEE Canadian Journal of Electrical & Computer Engineering, after another round of review of extended versions. Authors wishing to submit papers that do not fit within any of the symposia topics listed above are encouraged to do so to the "general interest" symposium. All full-length papers presented in this conference will appear in conference proceeding published by IEEE and can be accessed through IEEE Xplore.

Questions & Comments

For any other questions or comments, please contact the General Chair:
Raman Paranjape, Tel: 306 585-5290, Fax: 306 585-4855, Raman.Paranjape@uregina.ca

IEEE Canada

CCGÉI *2013*

26ème
Congrès canadien de génie électrique et informatique

5 mai avu 8 mai 2013, Regina, Saskatchewan

http://www.ccece2013.org

"Génie électrique et informatique—Le moteur de la nouvelle économie"

Appel de communications et propositions

25ème Congrès canadien de génie électrique et informatiquLe Congrès canadien de génie électrique et informatique édition 2013 aura lieu à Regina (Saskatchewan), Canada du 5 au 8 mai à l'hôtel Delta. Le CCGÉI 2013 constitue un forum où les recherches et développements en génie électrique et informatique effectués au Canada et dans le reste du monde sont présentés.

Les conférenciers de séances plénières incluent le professeur Eric Grimson (chancelier de MIT), et Dr. Ibrahim Gedeon (CTO de Telus).

Pour faire partie du comité de révision, veuillez vous adresser aux présidents du programme technique:

Mehran Mehrandezh (Mehran.Mehrandezh@uregina.ca), Dr. JingTao Yao (jtyao@cs.uregina.ca), ou Dr. Anh Dinh (anh.dinh@usask.ca)

Nous vous invitons aussi à soumettre des sommaires d'articles de nature industrielle dans les domaines suivants: mines, puissance énergétique, et agriculture. Contact: industrytrack@ccece2013.org

Nous vous invitons à présenter des communications, en français ou en anglais, pour les symposiums suivants :

- CIRCUITS, DISPOSITIFS ET SYSTÈMES
- COMMANDE ET ROBOTIQUE
- ÉLECTRONIQUE DE PUISSANCE ET SYSTÈMES ÉNERGÉTIQUES
- ORDINATEURS, LOGICIELS ET APPLICATIONS
- TRAITEMENT DU SIGNAL ET MULTIMÉDIA
- COMMUNICATIONS ET RÉSEAUX
- INFORMATIQUE SANTÉ ET BIOMÉDICALE

Soumission d'une communication régulière

Veuillez soumettre votre (vos) communication(s) originale(s) complète(s) au Comité de programme technique en utilisant le processus de soumission en ligne sur notre site web à http://www.ccece2013.org. Cliquer sur « Soumission d'une communication » et suivre les instructions fournies.

Soumission d'une proposition de séance didactique et d'atelier

Les propositions de séance didactique et d'atelier devraient être soumises avant le 14 janvier 2013 au président en charge des séances didactiques et d'atelier à tutorials@ccece2013.org.

Expositions industrielles et parrainages

Pour les expositions industrielles, veuillez contacter le président en charge des expositions industrielles à exhibits@ccece2013.org. Pour les parrainages, veuillez contacter les présidents en charge de ces dossiers à sponsorship@ccece2013.org.

Programme de mentorat pour les étudiants en doctorat

Professeurs bénévoles : Contacter le président en charge des activités étudiantes au studentactivity@ccece2013.org

Dates importantes

Propositions de séance didactique ou d'atelier:	14 janvier 2013
Envoi de communication complète :	14 janvier 2013
Notification d'acceptation/refus :	20 février 2013
Inscription des auteurs :	15 mars 2013

Publications

Les articles sélectionnés pour cette conférence seront proposés pour publication dans le Journal canadien de génie électrique et informatique, après un autre cycle de révision de versions étendues. Les personnes qui souhaitent soumettre des communications sur un thème autre que ceux indiqués ci-dessus sont encouragées à le faire dans le cadre d'un symposium « général ». Tous les articles présentés lors de cette conférence seront publiés par IEEE et apparaîtront dans IEEE Xplore.

Questions & Commentaires:

Pour toutes autres questions ou commentaires, svp contactez le président de la conférence: Raman Paranjape, Tél: 306 585-5290, Fax: 306 585-4855, Raman.Paranjape@uregina.ca

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