CANADIAN MEDICAL AND BIOLOGICAL ENGINEERING SOCIETY
SOCIÉTÉ CANADIENNE DE GÉNIE BIOMÉDICAL

The CMBES Newsletter

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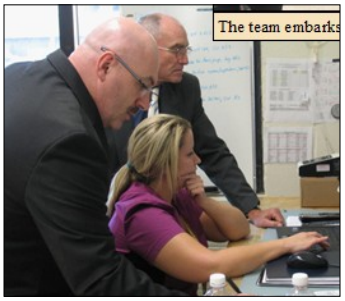

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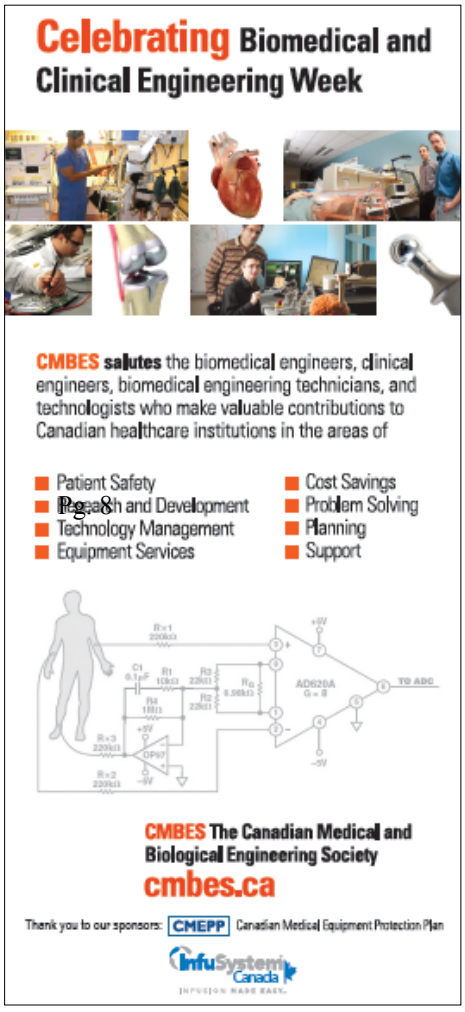

CMBES Announces Group Purchase Plans for Members

Apart from the general benefits of membership, the Canadian Medical and Biological Engineering Society, CMBES members also have the opportunity to participate in a Group Purchase Plan. A plan has been devised, allowing you as a member to reap the benefits from a Group Purchase Plan immediately. While the savings are group based, your coverage is always individual. This plan includes key vendors who have great appeal, Staples office supplies, The Personal home and auto insurance and The Willow Design Group. Your membership can realize significant savings on items that usually are a majority of any personal purchase. Stay tuned – more suppliers to come!

Vendors

Staples Advantage

Members are offered a discount of 10%-30% on purchases. This amazing partnership will now give you access to everything through an on-line purchasing website, catalogue, flyers, and sales items that are different from the retail establishment. You can now order from your home office or any business location you have and receive free next day delivery with large discounts catered to your needs. Fast Internet ordering through www.eway.ca or toll-free Customer Care support at 1 877-272-2121.

To receive immediate savings and set up your Staples Advantage account for your location, contact: Geneviève Brousseau, 1 800-363-8555 ext. 8270, or genevieve.brousseau@staples.com.

The Personal Home and Auto Group Insurance

The Personal's home and auto group insurance offers you personalized coverage, attractive discounts and quality service. What's more, your spouse and dependents can benefit from your group offer. Whether it's online or over the phone, The Personal will give you a quick, detailed quote. For more information, visit www.thepersonal.com .

The Willow Design Group

Members are offered a 13% discount on any design projects. The Willow Design Group specializes in small business website design, including both custom and template design options. Specializing in working with business owners to create affordable, effective web designs to help promote their businesses, and offering a wide range of design services, The Willow Design Group is here to help you with all your design needs!

To begin your savings and receive a free quote on your design projects, visit their website: http://www.thewillowdesigngroup.com/.

NorthPay

Pivotal Payments brings you payment acceptance convenience, support and specialized pricing for credit and debit card processing services. It gives us great pleasure to introduce association members to our new Canadian NorthPay processing solution. Pivotal Payments is offering association members a 10 – 30% decrease in their overall processing fees. Pivotal Payments wants to earn your business. Take advantage of our No Term month-to-month processing contract which you are free to cancel at any time as long as you provide us with 30 days notice. Tel # 1-866-883-9038 | Fax# 1-866-847-6129. mabdulai@pivotalpayments.com .

Upcoming Events 2013/2014

CMBEC37 will be held in Vancouver May 20—23th, 2014.

Webinars for the 2013/2014 Series

Sessions are being scheduled for the Spring. Part 2 on Medical Device Cybersecurity is in the queue. Tentative topics for the balance of the schedule are: Infusion Pump Integration, CMBES Peer Review, and the Newly proposed CE Standards of Practice.

CMBES Peer Review Update

Based on the CMBES Clinical Engineering Standards of Practice (CESOP), the CMBES Peer Review is an excellent way for biomedical/clinical engineering centres to obtain recognition for their work and accomplishments. This on-site multi-discipline review focuses on clinical engineering programs specifically. If you think you are ready to be surveyed, please contact me (capuamik@hhsc.ca) or the secretariat (secretariat@cmbes.ca).

The CMBES Peer Review Committee continues to meet and is currently working on improving the audit process and on the surveyor guidance document. Approving and planning for upcoming reviews has also taken place.

A recent peer review took place at Eastern Health in St. John's, Newfoundland. Look for a pictorial later in this issue of the CMBES Newsletter.

Mike Capuano, CBET/CCE; **Chair, Peer Review Committee**

Meet the CMBES Executive!

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University Health Network
Manager, Medical Engineering Department
Toronto, ON
E-mail

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Manager, Biomedical Technology
Hamilton Health Sciences
Hamilton, ON E-mail

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Manager, Biomedical Engineering - VIHA
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Victoria, BC
E-mail

Professional Affairs

Gordon McNAmee
Manager, Biomedical Engineering
Brandon Regional Health Authority
Brandon, MB
E-mail

Awards	Treasurer	Conference Planning
		
Dennis Len Director, Biomedical Engineering Regina Qu'Appelle Health Region Regina, SK E-mail	Kyle Eckhardt MEng Clinical Engineer Health Sciences Centre, Winnipeg, MB E-mail	Sarah Kelso Regional Manager, Clinical Engineering Program Winnipeg, MB E-mail

The CMBES Executive is expanding!

New Committee - Bilingual Affairs
Chair: Mohcine El Garch

Nous sommes heureux d'accueillir Mohcine El Garch au sein de l'équipe de direction en tant que président du comité de bilinguisme. Ce nouveau rôle a été établi dans le but d'améliorer les communications du CMBES dans les deux langues, en anglais et en français. Cela permettra d'augmenter le contenu bilingue autant que possible et également de mieux représenter les membres francophones au sein de l'association.

Mohcine El Garch, est ingénieur en génie biomédical de formation (2004) et titulaire d'une maîtrise en qualité et management des performances (2005). Il a commencé sa carrière comme coordonnateur qualité ou il avait en charge la mise en place d'une démarche qualité au sein d'un groupe de recherche. Il a par la suite occupé le poste d'ingénieur clinique et coordonnateur de projets au sein de différents organismes et hôpitaux québécois. Il occupe actuellement le poste de gestionnaire de projet en technologies médicales depuis septembre 2013 au sein du Groupe Biomédical Montérégie. Ses principaux domaines d'intérêts sont la gestion des technologies, le management de la qualité en génie biomédical, la gestion de projet, ainsi que l'intégration des technologies de l'information. A ce titre, il participe à la réalisation de mission de gestion de projet technologique auprès d'établissement de santé. Mohcine est également membre de l'APIBQ, l'Association des physiciens et ingénieurs biomédicaux du Québec depuis plusieurs années et président du comité de formation continue de l'association depuis 2010. E-mail

We are glad to have Mohcine El Garch join the executive team as chair of the Bilingual Affairs Committee. This new role is designed to improve English/French communications in the CMBES, better-represent the Francophone membership, and to increase bilingual content as much as possible.

Mohcine El Garch, graduated in biomedical engineering in 2004 and holds a Masters in Quality and Performance Management (2005). He began his career as a quality coordinator and was responsible for the establishment of a quality management system within a research group. He subsequently served as a clinical engineer and project coordinator in different agencies and hospitals in Quebec . He currently holds the position of Project Manager in medical technology since September 2013 at the Groupe Biomedical Montérégie . His main areas of interest are technology management, management of quality in biomedical engineering, project management, and the integration of information technology. Mohcine is also a member of the APIBQ , the Association of Physicists and Biomedical Engineers of Quebec for several years and Chair of the APIBQ Continuing Education Committee since 2010. E-mail

Check out the Forum!

Go to cmbes.ca and log into your account. The discussion board promotes networking with peers similar to a Listserv but more comprehensive. It supports categories established by the CMBES to allow focused discussions.

Biomedical Engineering General Discussion

NEWTOPIC* | Search this forum... | Search | 56 topics • Page 1 of 2 • 1 2

ANNOUNCEMENTS	REPLIES	VIEWS	LAST POST
Changes to the CMBES Forum or "Where has my topic gone?" by Michael Hamilton » Wed Jan 16, 2013 10:29 pm	1	475	by Anthony_Chan Mon Feb 04, 2013 11:36 am

TOPICS	REPLIES	VIEWS	LAST POST
donating old equipment by Chris Scott » Tue Oct 15, 2013 2:24 pm	3	355	by rb1 Thu Nov 14, 2013 1:22 pm
Biomedical Engineering Internships at the UofC by vdias » Mon Nov 04, 2013 12:16 pm	0	166	by vdias Mon Nov 04, 2013 12:16 pm
Use of Wireless Devices with Pre-Shared Keys by KyleEckhardt » Wed Oct 30, 2013 12:28 pm	0	122	by KyleEckhardt Wed Oct 30, 2013 12:28 pm
MUSE MAC5500 connectivity issues by jlam » Tue Oct 29, 2013 1:38 pm	0	86	by jlam Tue Oct 29, 2013 1:38 pm
PM Completion Rates by Akrivoy » Mon Jul 15, 2013 10:31 am	4	512	by Chris Scott Tue Oct 15, 2013 1:42 pm
IFMBE International Conference on Health Informatics by MuratF » Fri Sep 06, 2013 2:53 pm	0	257	by MuratF Fri Sep 06, 2013 2:53 pm
IFMBE Survey by Michael Hamilton » Tue Aug 06, 2013 3:24 pm	0	292	by Michael Hamilton Tue Aug 06, 2013 3:24 pm
OPA gain on Medivator Advantage Scope Cleaner by BernieD » Tue Jul 30, 2013 9:11 am	0	318	by BernieD Tue Jul 30, 2013 9:11 am

Conference Planning

by Sarah Kelso, Conference Planning Chair

Future Conference Locations

Our national Conference is held in locations across Canada from year to year.

The schedule of future Conferences is:

- **2014 CMBEC37, Vancouver, BC**
- **2015 CMBEC38, Toronto, ON [2015 World Congress]**
- **2016 CMBEC39, Calgary, AB**

CMBES Soapbox

Viewpoints on Soapbox may not reflect those of the CMBES.

Education and Development - It Must Never End

By Mike Capuano, CBET, CCE

Ever stop and think, 'What am I doing here?' One minute you're at your desk in primary school trying to pay attention to the teacher and, the next, you're involved in mitigating an adverse event that might have injured or killed a patient. Yes, time flies but whether it's investigating an adverse event, leading an important project, or supporting complex medical devices; you are a critical contributor to society's need for creativity and problem solving. This is a field that uses technology to help vulnerable human beings. Everything we do has an effect from preventing delays in patient care to enhancing diagnoses to systems improvement. I've read previous attempts at penning the 'day in the life' of a biomedical engineer. They did pretty well but the only thing missing was the persistent feeling of 'I could do more.' It's pretty safe to say that, given minimal resources, a lot gets accomplished on a day to day basis. However, it isn't surprising that we still feel there is a lot we can still do. Our bosses and clients depend on us to assist where possible and provide answers to difficult and often complex questions. It's literally something different every day. How do we stay on top of that? Education and development is key to survival in this field. Rapid change and deeper understanding of systems and management practices continues to challenge us. Imaging science, integration and interfacing, failure analysis, mobile technologies, and now home care are all knocking at our doors. How do we adapt to these challenges? Really there is no other option than to continue your formal education as far as you can go. Then continue to practice, read, watch, study, attend courses, and last but not least, attend conferences on a regular basis. The CMBES conference fulfils this need for biomedical engineering in Canada. It not only provides current information but it also helps to fill in the blanks because you are 'there.' You can ask questions and discuss issues with colleagues directly and make connections at the same time.

Canadian artificial heart pioneer Dr. Tofy Mussivand addresses delegates at CMBES27 in Ottawa.

Engineers in Scrubs at UBC

By **Antony Hodgson,** Professor, B.A.Sc., M.A.Sc. (British Columbia), Ph.D. (MIT and Harvard University), Postdoctoral Fellowship (Clemson University)

We all know that biomedical engineering has and will continue to have a huge impact on healthcare, especially as our society faces ever-increasing pressures due to demographic changes. Technological innovation will play a key role in our responses to those pressures.

And while it is true that advances in healthcare technology are ultimately driven by fundamental advances in technical fields such as imaging, molecular biology, nano- and micro-scale device fabrication and materials science, these advances only become innovations and have an impact through a complex product development process in which engineers, clinicians, hospitals, patients, regulators and companies all play crucial roles.

What is perhaps underappreciated is that, according to a report from the US National Academy of Engineering, "the process of medical device innovation is dominated primarily by individuals, usually in academic and clinical settings, who are involved in the development and use of new technologies in their respective fields", and that "inventive users [frequently clinicians] are the principal driving force behind most medical device innovations". Furthermore, "it is nearly impossible for a biomedical company to be successful if it does not retain close ties to a clinical environment; ... For companies that are trying to innovate in medical fields, it is critical that they relate closely to the medical scene." "Small, innovative firms and university or hospital employees trying to satisfy their own needs as clinical or diagnostic users are the primary contributors to milestone developments in the medical device field".

So if the innovation literature says that we must explicitly put clinicians at the heart of the process, then we need to train BME students to interact with clinicians so that they can understand what clinicians are trying to accomplish and see opportunities to address these issues with engineering solutions.

Here at UBC, we took up that challenge two years ago by introducing a program we call "Engineers in Scrubs" (or EiS) that is being funded by NSERC's Collaborative Research and Training Experience (CREATE) program. The goal of EiS is to put new graduate BME students directly in contact with clinicians and the clinical environment as quickly as possible so that, in addition to their technical specializations, they will develop a deep experiential understanding of the clinical ecosystem in which their future work will be based, learn about medical technology innovation processes, and have the experience of working through a multidisciplinary medical technology design project.

We are doing this through two main courses: a one-term Orientation to the Clinical Environment (OCE) course (1 credit) and a one-and-a-half-term Interdisciplinary Team Project in Medical Innovation (3 credits).

In the OCE course, EiS students participate in a series of tours that introduce them to the various facilities at Vancouver General Hospital where the use of technology is most apparent: the operating rooms, intensive care units, radiology and the clinical engineering department, amongst others. In addition, all the EiS students are partnered with a clinical cosupervisor and spend time shadowing them and their residents to develop a better understanding of the clinical tasks they are trying to do. Students also take an asepsis protocol course so that they are qualified to visit the operating rooms.

In the team design project, EiS students work with a selected set of clinical departments using a process we call MedTech CAFEs (Clinical Advances From Engineering). A CAFE takes place over a period of approximately 3 weeks. In the first meeting, generally held during an extended weekly Grand Rounds session, surgeons from the partnering department rapidly present a series of up to 20 or so problems or issues that they experience in the clinical setting. The engineers and clinicians then divide up into smaller discussion groups of roughly 6 -8 people and talk through subsets of 3-5 of the problems in more detail. The point is for the engineers to gain a better appreciation of what the issues are and to probe the clinicians to try to understand what the impact of the problems are for clinical care. At the end of the small group discussion, each group

appoints a clinician to present their top-ranked problem and explain why they believe it's both pressing and promising; the other participants in the room can then add their own thoughts and comments.

One or two of the problems from each group are then chosen for further investigation, and the EiS students are asked to take the next 2-3 weeks to perform a literature review on and further investigation into the problem, normally in collaboration with the clinician who initially proposed the problem, to try to validate it as a problem - i.e., that the problem itself is significant and that currently available methods to deal with the problem are inadequate.

At the second CAFE meeting, each student briefly presents their review findings, and another short discussion follows in which the clinicians comment on what the students have found. At the end of the session, the clinicians vote on which problem they would most like to have the students continue to work on during the year.

After we have run CAFEs with all participating departments (typically three per year), we then divide the students into teams and assign one to each partnering department to work with during the year. Each team has both an engineering faculty supervisor and a clinical mentor (normally an attending clinician). From late fall through until April, the student teams then meet weekly. We use five 3-week cycles that follow several key stages in the medtech design process: needs finding, needs screening, concept generation, concept selection and development strategy and planning. We begin each cycle either with a visit from someone in the medtech sector or a visit to a medtech facility or company. The second week is normally a student-led seminar that takes us deeper into the cycle's focus, and the third week is a team meeting with the supervisor and mentor.

We started this process last year and have been very pleased with the results so far. The original departments that worked with us were plastic surgery, vascular surgery and orthopaedic trauma, and students worked on a range of projects including a surgical smoke evacuator, an approach for avoiding and correcting instrument magnetization in microsurgery and a sterilizable drill cover that allows ordinary non-sterile drills to be used safely in developing countries (as part of UBC's Uganda Sustainable Trauma Orthopaedic Program). The students on this latter project were also invited to present their work at the recent Institute for Global Orthopaedics and Traumatology Summit at UC San Francisco as part of a disruptive innovation panel there and are actively discussing with manufacturers and distributors how to get their design into the field.

We are now in our third year of the program, and the second with the more structured MedTech CAFE process, and demand for this program is almost twice what we can accommodate (this year, we admitted 14 students to EiS out of 40 admitted to our graduate program overall). With demand for both medical technologies and biomedical engineers expected to increase steadily over the next decade, we are eagerly looking forward to seeing how this program will contribute to building capacity in Canada's medtech sector in the coming years.

CMBES Webinar Series

Webinar Schedule for 2013/14:

1. Early Warning Monitoring Systems in Non-critical Care Settings - October 18, 2013
2. Medical Device Cybersecurity - Risks and Legal Review (Part 1) - November 8, 2013
3. CSA Standards: An Update for Clinical Engineering - December 6, 2013
4. CMEPP: An Alternative to OEM Contracts - **Cancelled**
5. Medical Device Cybersecurity - Risks and Legal Review (Part 2) - **Date To be Announced**
6. Closed-Loop Infusion Systems - **Date to be Announced**
7. The New CMBES Clinical Engineering Standards of Practice - **Date to be Announced**
8. 3D Printing, Can it Help Clinical Engineering? **- Date to be Announced**

Missed a Webinar? Download it from the Store at www.cmbes.ca. Membership and registrant discounts apply.

Peer Review Team Visits Eastern Health in St. John's, NFLD

CMBES Peer Review continues to be a desired option for clinical engineering centres in Canada. The team was invited to review the Health Technology and Data Management program at Eastern Health in St. John's. This most recent review took place in early October, 2013. The weather was beginning to get cool but was perfect for all of the activities conducted that week . Eastern Health operates all health care facilities on the Avalon, Burin and Bonavista Peninsulas. They have 925 acute care beds, including 87 critical care beds, in 17 facilities. The peer review focused on 3 sites, Health Sciences Centre (St. John's), St. Clare's Mercy Hospital (St. John's), and Carbonear General (Carbonear).

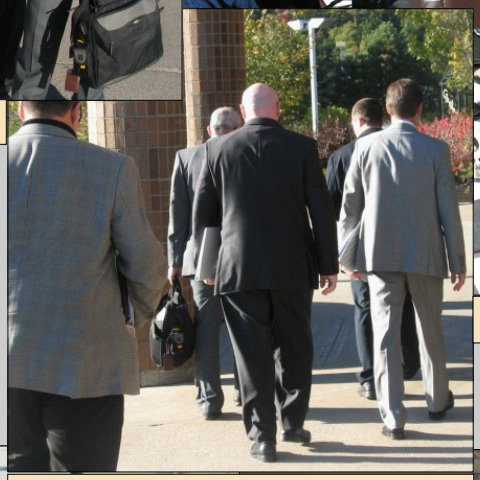
The survey team consisted of the following Peer Review Committee members:

- **Mike Capuano**, CET, CBET, CCE$^{(US)}$, Manager of Biomedical Technology, Hamilton Health Sciences (Lead Surveyor)
- **Petr Kresta**, P.Eng., M.H.Sc., Regional Director of the Clinical Engineering Program and Technical Director of the Diagnostic Imaging Program, Winnipeg Regional Health Authority (Surveyor)
- **Fernando Lebron**, P.Eng., M.A.Sc., CCE., former Director of Biomedical Engineering, London Health Sciences Centre (Surveyor)
- **Gord McNamee**, CBET, Manager, Biomedical Engineering Services, Brandon Regional Health Services (Intern Surveyor)
- **Steve Smith,** PEng., Director, Clinical Engineering, Facilities, and IT Services, Health Association Nova Scotia (Intern Surveyor)

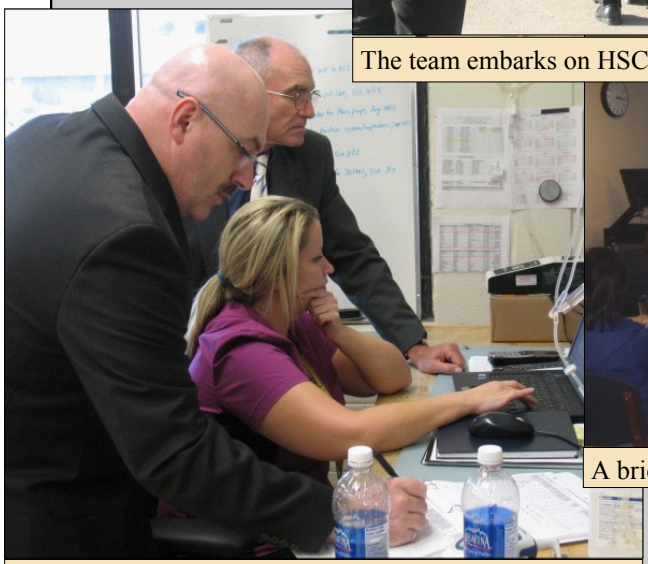
Images From St. John's

Mike, Gord, Petr, Steve, and Fern.

Prep meeting (Gord, Petr, and Steve).



The team embarks on HSC in St. John's.



Steve and Fern obtain data with technologist's help.

A briefing report presented by survey team to EH staff.

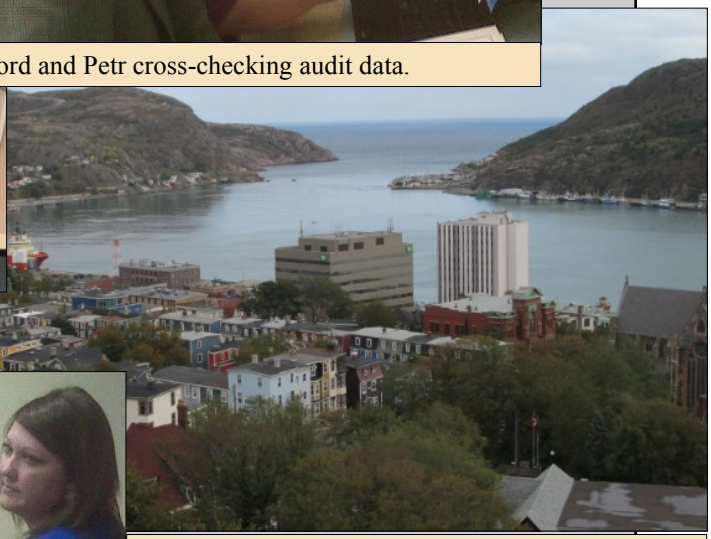
More Images From St. John's

Fern and Steve in a critical care unit during the records audit.

Fern discusses audit with an EH technologist.

Gord and Petr cross-checking audit data.

Steve, Petr, Gord, and Fern.



Beautiful St. John's harbour. (Pic: Maria Capuano)

EH technologist provides Fern with info on Dialysis machine.

IFMBE Excerpt

Zhou Dan, Ying Jun
Zhou Dan
IFMBE CED member

Development of Clinical Engineer Certification in China

Dr. Zhou Dan is an expert of clinical engineering and hospital management. He engaged in hospital operation management for a long time, and his major studies include the construction of digital hospital and hospital performance analysis in the information environments. He is adjunct professor of Zhejiang University and is certified as an International Clinical Engineer. He has published 12 articles, and is now working for 6 national research projects and acting as chief expert of the National High Technology Research and Development Program of China.

Since the 1960s, a large number of new high-tech medical devices were widely used in hospitals, which greatly improved the level of diagnosis and treatment and made great contribution to human health. At the same time, occurrence of device incidents have increased because of poor maintenance and defective medical equipment, especially for some life support medical equipment such as ventilators, heart-lung machines, blood dialysis machine etc. Good maintenance and proper use of this equipment provides increased patient safety. Qualified clinical engineers (CE) in hospitals are a key factor in ensuring the safety, effectiveness, and reliability of equipment. In the early 1970s, AAMI was certified Clinical Engineers. In 1977 it was the International Certification Commission and then ACCE in 2000. The program provides post certification to clinical engineers normally based in various medical institutions. Now, there are more than 3000 qualified clinical engineers, and tens of thousands qualified clinical engineering technicians in USA. Also, Japan has established a national qualification examination system for clinical engineers and technicians. So far, more than 10,000 people passed the exam and were certified as Clinical Engineering Technicians.

In China, hospitals are not yet set up for CE positions and the clinical engineers that serve in medical institutions lack the appropriate professional qualification, certification, and occupation access. Clinical engineering technical personnel are seriously insufficient, while numbers of medical devices have dramatically increased. This situation causes a serious imbalance. In large hospitals, the number of engineering technical personnel is far less than those in USA hospitals.

Clinical engineer participants receive training from professor Yadin David in 2012.

Equipment priced over 10 million RMB ($160,000) is maintained by no more than one technician on average. The numbers of clinical engineering technicians with Bachelor degrees or above is far lower than the level in developed countries. Human resources of medical engineering in China cannot keep up with the development of new technology and equipment.

In order to promote the development of clinical engineer training systems to international standards, China began to explore ways to establish a clinical engineer certification system in the last ten years. First, the international clinical engineer certification was introduced. In 2005, the Medical Engineering Division of the Chinese Medical Association hosted the first international clinical engineer certification advanced training courses and certification examinations. With the expansion of the influence of certification examination, the division held six sessions from 2005 to 2012. We invited several international senior specialists to conduct lectures and exams, including professor Yadin David who is the former chairman of the American College of Clinical Engineering (ACCE), professor William A. Hyman, professor James Wear, and professor Elliot B. Sloane. The form and content of examination align with international standards. In order to evaluate the comprehensive capacity of candidate, the certification examination consists of two parts, written and interview in English, all the questions come from the American Clinical Engineer Certification Examination Bank. In the six sessions of training classes, there were more than 700 clinical engineering technical staffs from hospitals and universities participating, 219 people passed and were awarded international clinical engineer certification. Certified persons covered 18 provinces and 90 hospitals nationwide.

Written certification examination in 2012.

Most of them are the responsible person of medical engineering department and 37 percent person are senior professional titles. In the past seven years, China always made efforts to establish own clinical engineering certification system. Based on the success of international clinical engineer certification, in In October of 2012, the process of clinical engineer qualification in China took a new and important step forward. The Medical Engineering Division carried out Chinese Registered Clinical Engineer Certification training and examination. Candidates were the junior engineering employee in large hospitals or graduates who majored in medical engineering. All over the country, there are 20 million people who are qualified to participate in the examination. Registered clinical engineer certification is the basic admission exam for this occupation.

The examination focuses on the basic theory and skills, and consists of a theoretical exam and a practical test. We have established the Chinese exam question bank and the theoretical exam questions are randomly selected from the bank. The practical test requires candidates to demonstrate proficiency in repair, measurement, maintenance, etc. An expert committee is selected around the country to evaluate the ability of every candidate and give the final determination. In 2012, 176 people enrolled the examination, 58 people passed the exam and obtained registered clinical engineer certification. Contrasting with international clinical engineer certification, registered clinical engineer certification covers a wide range of junior medical engineering practitioners. In the future, international clinical engineer certification will target mostly the senior engineer who will have engaged in clinical engineering for more than ten years.

In China, there are about 500 people qualified to participate in the examination. China set up such a grading certification system including international clinical engineers and registered engineers. This system contributes to an established continuing education system of biomedical engineering employees and has effectively improved the quantity and quality of clinical engineering in China. The next step is to have the Medical Engineering Division recommend that government officially authorize the clinical engineer training and certification system.

Certification interview.

Professional Affairs by Gord McNamee

Transition to New NFP Act

As you may be aware, the new Canada Not-for-profit Corporations Act (NFP Act) is now in force. Federal not-for-profit corporations are required to transition to the NFP Act. Until we make the transition, our current bylaws remain in effect but all corporations incorporated under the old legislation must transition to the Canada Not-for-profit Corporations Act by October 17, 2014. To make the transition to the NFP Act, a federally incorporated not-for-profit corporation (like CMBES) will need to replace its letters patent, supplementary letters patent (if any) and by-laws with a Certificate of Continuance (attached to which are the corporation's articles) and new by-laws that comply with the NFP Act. The association will "continue" into the new Act and is issued a Certificate of Continuance instead of a Certificate of Incorporation.

The new bylaws are designed to be more simple and less detailed.

In order to make this a smooth transition, a committee was formed to address the new requirements. This involves reviewing our Letters Patent and Bylaws, completing the Articles of Continuance Transition form, assessing the default rules vs maintaining bylaws we deem worth keeping, obtaining membership approval, and submitting the required documents.

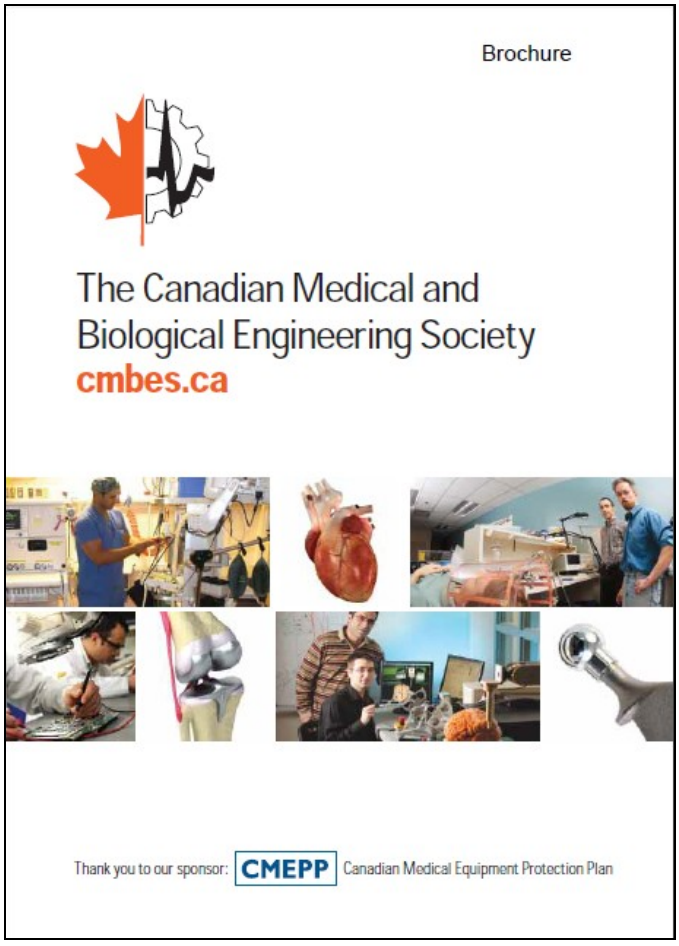
Board representatives on the committee :

- Murat Firat (President)
- Michael Hamilton (Information Technology)
- Anne Stacey (Secretariat)
- Sarah Kelso (Conference Planning)

NBCEAW is Fast-approaching

Time to start thinking about what activities you plan to engage in to celebrate National Biomedical and Clinical Engineering Appreciation Week. This year it takes place from **May 18th to 24th, 2014**. Check out the CMBES website for tools, information, and ideas you might use to celebrate at our facility or organization.

http://www.cmbes.ca/index.php?option=com_content&view=article&id=136&Itemid=224



CMBES President Meets The Princess Royal

As many of you know Her Royal Highness The Princess Royal, Colonel-in-Chief of the Royal Canadian Medical Service (RCMS) visited the Canadian Forces Health Services Training Centre at the Canadian Forces Base (CFB) Borden on October 23rd, 2013. During the visit, Her Royal Highness presented the RCMS with a Royal Banner during a special ceremony as a sign of Royal favour in recognition of the sacrifice and valorous service of RCMS members in Afghanistan operations since 2002. The Princess Royal met with personnel of all ranks of the Royal Canadian Medical Service (RCMS). It was only the third ever presented to a Canadian Armed Forces element.

CMBES President Murat Firat (second from right) is about to engage with a handshake and chat with Her Royal Highness, Princess Anne (The Princess Royal).

Colonel-in-Chief, accompanied by Surgeon General, Colonel Commandant and RCMS Chief Warrant Officer, arrives on parade to present the Princess Royal's Banner

In addition to ranks of the Royal Canadian Medical Service, key representatives of Canadian medical organizations and those who support medical programs and technologies were invited. These included engineering societies like the CMBES. This highlights the importance of societies like the CMBES which represents all facets medical engineering in Canada. As members of the CMBES we are proud to have our president, Murat Firat represent us in this high profile event; likely one of very few which involves our society at such a high level. Thank you Murat!

The Colonel-in-Chief, Colonel Commandant, Canadian Forces Surgeon General and members of the Royal Canadian Medical Ser-

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CMBES History - Part 1

As we approach the CMBES's 50th Anniversary in 2015, it might be fitting to brush with the past a bit and look at what makes up the CMBES, who we are, and where we came from. Luckily, retired member Orest Z. Roy (Oz), M.Sc., P.Eng has been feeding us some information in this regard and we are only happy to pass it on at this time. Oz was President of the CMBES from 1976 to 1979 and was awarded CMBES Fellow status in 1986. I've decided to create a series leading up to 2015 in order to generate some noise for the occasion. We will bring out more of it in later issues. Also, if the readership has any history to pass on, please send it to me or the Secretariat.

Mike Capuano (capuamik@hhsc.ca)

In the Beginning:

In 1959 a small international group of electronics engineers met in Paris to discuss the current developments in the emerging field of medical engineering. The meeting was designated as the First International Conference of Medical Electronics. A result of that meeting was an expressed intention to organize an international body, which would foster and nurture the development of medical engineering. John Davis a physician and engineer from the Allen Memorial Institute in Montreal and Jack Hopps an electrical engineer from the National Research Council of Canada were the Canadian representatives. The meeting was held at the UNESCO building in Paris and the outcome was the formation of the International Federation for Medical Electronics, later to become the IFMBE. The arguments for the formation of the IFMBE were so compelling that the Canadian representatives determined that it was fundamental for Canada to take part in this activity and that a Canadian focus on medical engineering was essential.

From the beginning the IFMBE was constituted as an umbrella organization of national societies. To become a member of the IFMBE a national society needed at least 20 individual members. For the Canadians at that time this appeared to be a daunting task. A number of avenues for potential members were explored including the use of the organizational capabilities of the National Research Council's Associate Committee on Biophysics chaired by Dr. Alan Burton. However, the Associate Committee proved to be more interested in biophysics than medical engineering and showed a general disinterest in health care concerns. Finally after much discussion and many strategy sessions, twenty- six individuals, mainly from the academic and government community, were identified as possible members and the process of forming a new society began.

In 1965 the Canadian medical engineering community consisted of the Medical Engineering Section at the NRC, the graduate school of Medical Engineering at the University of Saskatchewan, the Institute of Medical Electronics at the University of Toronto and embryo organizations at Queen's, McGill and Dalhousie Universities. In 1965 there were very few hospital based clinical engineers and the continuing interaction of engineers and the medical profession was uncommon. The NRC realized that the health care sector presented many opportunities for the innovative and the constructive use of technology. In order to encourage growth and increased activity in this field the NRC sponsored the first conference on medical engineering. The conference was held in Ottawa, in 1966, in the auditorium of the Radio and Electrical Engineering Division. Twenty papers were presented and 60 people were in attendance. At the conference the Canadian Medical and Biological Engineering Society was formed and the first officers were elected. The National Research Council kindly agreed to provide the office space for the CMBES Secretariat and a new society was launched. The secretariat was located in the in the Radio and Electrical Engineering Division Building on the NRC Montreal Rd. campus.

By Orest Roy

The First CMBES Executive:

President: J.A. Hopps-- NRC

Vice president: Dr. J.H. Milsum-- McGill University

Secretary: W. Delbridge --Health and Welfare Canada

Treasurer: Dr. F.A. Roberge-- University of Montreal

Membership Chairman: D.W. Lywood --Queen's University

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Advanced College Pursuit in Ottawa

Boldly Going Where No One Has Gone Before: Algonquin College Enters The Qualcomm Tricorder XPRIZE Challenge

TV prop inspires XPRIZE.

Space. The final frontier. These are the voyages of Algonquin College's Team in the Qualcomm Tricoder XPRIZE challenge. Their one year mission: to build a tricorder from the television show *Star Trek.*

Their task is difficult. Their tricorder must offer many different functions in one single handheld device supported by, or based on, smartphone technology. The device must provide the user reliable health diagnoses in their home, and that the user actually enjoys using. Success, and beating out the other 34 teams, comes with a $10 million dollar prize.

Some of the XPRIZE challenges are relatively easy, with well-known and established technology behind diagnosis or monitoring –type II diabetes, hypertension (high blood pressure) and vital signs such as body temperature and oxygen saturation. Others are significantly more difficult, including hemorrhagic stroke, COPD, and an HIV screen. The challenge, and one that Algonquin College students in the nursing program, the Electrical Engineering technician program, and the Mobile Application Design and Development program have been putting their heads together to solve, is in creating a single device that can, without a professional medical practitioner, detect and diagnose these conditions. All that work gathering data is only half the battle, however. The other half of the scoring for this challenge is based on the user experience – not only must the device be technologically capable, but the user must enjoy the experience, and want to use the device again.

As this project covers a wide range of disciplines, students from multiple programs have the opportunity to collaborate in ways that would not normally occur in their own programs. Algonquin College has recently enabled several similar efforts at the College, as students from different disciplines and even different campuses collaborated on projects including the 2013 US Department of Energy Solar Decathlon, and the 2013 Ottawa Red Bull Flugtag. The College also regularly fosters connections between industry, faculty, and students through Applied Research projects. The Office of Applied Research and Innovation works with local and national companies to address their needs and help students gain practical experience in researching and developing new products.

The three student teams are currently progressing towards the challenge's qualifying round deadline of May 15, 2014, which requires proof-of-concept documentation and research. The nursing team is compiling the medical literature necessary to support the device and advising the engineering team on the creating of a proof-of-concept prototype, and both are working with the mobile team in developing the phone interface and Bluetooth communication with the device. In short order, a technical writing team and a media design team will be added to help craft the final documentation for the project.

The challenge is also designed to foster collaboration between the participating teams. Thirty-four teams from across the globe are participating in this challenge, including three from Canada.(see: http://www.qualcommtricorderxprize.org/teams)

Whether through collaboration or individual team effort, ten teams will make it through the qualifying round and into the finals, racing to build a test-ready device for the spring of 2015. Through this competition, Algonquin College's students and faculty will have an opportunity to gain valuable knowledge, as well as opportunities to collaborate with other organizations.

This article was submitted by Adam Jarvis, Professor with the School of Media and Design, John Omura, Project Manager of the Design Centre in the Office of Applied Research and Innovation, and Phil Gaudreau, Communications Officer for Algonquin College.

CMBES Academic Affairs

Last year, CMBES created new by-laws that enable the establishment of CMBES student chapters. These student chapters can help CMBES in its mission "to advance and promote the theory and practice of engineering sciences and technology to medicine and biology, serving as a forum for information exchange between healthcare professionals, scientists, and the general public." These student chapters are also eligible to received matched financial funding from the Society to support their activities. If you are interested establishing a CMBES student chapter or learning more, you can refer to the CMBES By-Laws section 1.7(b) Student Chapters (available on the website www.cmbes.ca) or contact the Society!

By Adrian Chan, PhD

Elevate your profile - become a CMBES committee member!

The CMBES executive is interested in building our committees. If you think you have the right stuff, have a desire to contribute, and want become part of a dynamic team; then this is for you. Contact the CMBES Secretariat or any of the executive members if you are interested in any of the following portfolios:

- **Membership**
- **Awards**
- **Professional Affairs (Peer Review, CE/Biomed Week, Standards of Practice)**
- **Publications and Marketing**
- **Future Conference Planning**
- **Conference Organizing Committees**

CMBES Secretariat, 1485 Laperriere Avenue, Ottawa, ON K1Z 7S8, Tel: 613.728.1759, secretariat@cmbes.ca

CMBES AWARDS

Awards Chairman
Dennis Len

The Awards Committee is in the process of finalizing the nominations for the CMBES 2014 Awards.

The CMBES Award Categories are:

Outstanding Canadian Biomedical Engineer

This CMBES Award was established in 1989 and is presented to a Canadian biomedical engineer who has made outstanding contributions in the field of biomedical engineering. Such achievements can be in the form of scientific or technical developments as well as a broad-spectrum of areas such as leadership, service and organizational skills that contributed to the improvement of health care delivery in Canada, or prominence in organizations concerned with biomedical engineering at the national or international level. Achievements for consideration shall have taken place during the three years immediately preceding the award year.

A potential candidate must be a professional engineer who is a member in good standing of CMBES and actively engaged in biomedical engineering activity in Canada. The award will be presented annually at the CMBES Conference. This award will be made only if a worthy candidate is proposed.

Outstanding Canadian BMET

This CMBES Award was established in 1982 and is presented to a Canadian BMET to recognize excellence in the field of biomedical engineering technology. This award is presented to a technician or technologist who has distinguished him or herself in one or more of the following areas:

- scientific or technical abilities
- exceptional service and/or technical skills
- outstanding contributions to the improvement of health care technology
- notoriety in the profession of biomedical engineering technology at the national and/or international level.

A nominee must be a certified BMET or eligible for certification as a BMET and must be a member in good standing of CMBES. The nominee must be actively engaged in some form of biomedical engineering technology in Canada. Achievements for consideration shall have taken place during the three years immediately preceding the award year. The award will be made only if a worthy candidate is proposed and will be presented annually at the CMBES Conference.

Early Career Achievement Award

This CMBES Award, established in 2007, is intended to recognize young professionals who have demonstrated outstanding performance and achievement in the early stages of their career. To be eligible for this award a candidate must be a member in good standing of CMBES, who graduated from a College or University program related to biomedical engineering in the broadest sense and has been working in the field for a maximum of 5 years. This award will be presented to an individual who has consistently demonstrated exceptional skills in such areas as: client services, technical performance, sophisticated scientific or technology development. The award will be made only if a worthy candidate is proposed and will be presented annually at the CMBES Conference

Special Membership Recognition/Honours

Special Membership status is awarded only to distinguished individuals who have made significant contributions to the profession of biomedical engineering and to CMBES in particular. Special Membership status are awarded in the following three categories:

Fellow

A fellowship may be conferred by the CMBES Executive, upon recommendation of the Awards Committee, to a member of the CMBES with an exceptional record of accomplishments and service to biomedical engineering whether in practice, development or research. The accomplishments shall have contributed to the advancement or application of engineering, science and technology, and in so doing, bringing significant value to CMBES and the profession. The candidate shall have been a full member of the CMBES for a minimum of 10 Years. Fellows, upon retirement are exempt from paying fees and retain their privileges in CMBES.

Emeritus

Emeritus status is conferred by the Executive, upon recommendation of the Awards Committee, to an experienced and distinguished member of CMBES, who has substantially retired, for outstanding achievement and contributions throughout his or her career. This honour recognizes individual excellence and years of exceptional dedication, leadership, loyalty and service to the profession. Society Emeritus members are exempt from paying membership fees, but are no longer voting members.

Honorary Member

Honorary membership is a significant honour bestowed by the Executive, upon recommendation of the Awards Committee to an extraordinary individual, who is not a member of CMBES, but has distinguished him or herself by contributing to the objectives of the Society or has performed meritorious service on behalf of the Society. Honorary Members do not pay dues nor do they have voting rights in the Society.

We are also perusing the possibility of new award categories. If you have any suggestions for any additional awards please contact me.

The Awards Committee is also looking for volunteers, as we have a couple of vacancies. We typically meet monthly on-line via Go To Meeting. Meetings can last from 30 to 60 minutes.

If you have any suggestions or wish to volunteer please contact me at:
dennis.len@hotmail.com

Membership Committee Update

by Martin Poulin, M.Eng, PEng

On December 12, 2013, we had 298 active members. As we pass through our planned transition from calendar year to staggered renewals, our current numbers in January are 250 active members. This should rebound as we catch up with the staggered renewals.

The membership committee has met a few times this year to discuss how to move some of the recently identified strategic initiatives forward. We have had Dr Rajeev Jadav from Toronto and Gad Ecosta from the University Health Network (Toronto) join the team. Our emphasis this year is marketing to students, the French speaking communities in Canada and Biomedical Engineering Technologists to encourage participation with CMBES.

Our recent marketing initiative was to get 40 CMBES promotional pamphlets sent to each of the Biomedical/Clinical Engineering schools across Canada to provide to recent graduates. The hope is to make them aware of their national society and encourage them to get involved. I've found talking to many Biomed students in our area that the students are not aware of CMBES. If you are a recipient of these pamphlets, please encourage students to take a look at the CMBES website.

A significant change was made in January to membership renewal dates due to the enhanced features of our new online management system Neon. We now have floating renewal dates for members, which ensures each individual payment is applicable for a full year. The only issue associated with this automated system is that those of you who renew their membership more than 30 days after the renewal date will be considered "new" members and will receive an automated "welcome" message. Rest assured that I review the list to verify that you are indeed just renewing.

A second marketing initiative is the membership team will be contacting members registered last year who did not renew this year to encourage them to rejoin and to ask what we can do better as a society to meet their needs.

The webinars have also been a great member benefit and incentive to get members to join.

Regards,

Martin Poulin, M.Eng., P.Eng.

E-mail

A Word from *CADTH*...

CADTH — A Source of Evidence for Biomedical Engineers

When assessing biological and medical systems, CMBES members may find themselves asking where they can go for the latest evidence-based information and resources on medical device technologies to inform their work.

It may come as a surprise to many that this information exists close by — at the Canadian Agency for Drugs and Technologies in Health (CADTH). As an independent, not-for-profit organization, CADTH produces credible, impartial advice and provides evidence-based information about the effectiveness and efficiency of health technologies (devices and equipment, medical and surgical procedures, drug and vaccines).

Some CMBES members may already be familiar with CADTH by having attended past workshops, stopping by CADTH information booths at CMBES conferences, or having connected with CADTH Liaison Officers at the local level for support on specific projects.

Through the CADTH website, visitors can access CADTH's findings, recommendations, and intervention tools, many of which would be of interest to biomedical engineers.

Projects in progress:

- Wireless Device use and Patient Monitoring Equipment in any Healthcare Delivery Setting: A Review of Safety and Guidelines.
- Trancutaneous Bilirubin Measurements in Newborns: Clinical and Cost-Effectiveness and Guidelines.
- Computed Tomography Angiography vs Computed Tomography for the Diagnosis and Management of Hyperactue Stroke: A Review of Comparative Clinical Evidence and Guidelines.
- Removal of Physical Restraints in Long Term Care Settings: Clinical Safety and Harm.
- Bioabsorbable Stents for Adults with Acute Coronary Syndrome: A Review of Clinical Effectiveness, cost Effectiveness, and Guidelines.

These reports and more are available as open access at www.cadth.ca. CMBES members are also welcome to contact CADTH at requests@cadth.ca, or via their jurisdictional CADTH Liaison Officer (www.cadth.ca/en/services/liaison-officer), to discuss evidence needs and request support.

Treasurer Update

by Kyle Eckhardt, M.Eng

Dear Colleagues,

Happy New Year! I am pleased to report that the Society faired relatively well financially in 2013. Despite putting on a fantastic conference in Ottawa last year, the Society suffered a financial shortfall in its revenues. I am pleased to report that through new streams of revenue, webinars and increased memberships, the Society should post a very small annual loss.

In 2013 we also lost our auditor of over a dozen years to retirement. The executive was able to meet with him in Ottawa last year and wished him well. Many months last year were spent searching for a new firm. I am pleased to announce that the final loose ends were tied up in November and we can look forward to working with a firm that specializes in performing audits for non-profit organizations.

This New Year is a particularly busy one for the Treasurer. Its that time to renew your annual membership! CMBEC37 in Vancouver is fast approaching in May, AND planning for the 2015 World Congress is Toronto is also well underway! This year the conference will be hosted at a new venue, the Marriot Renaissance in downtown Vancouver. I am also excited to say that you can expect another fantastic evening of awards and fun at the Vancouver Aquarium! Keep your eyes open for a presentation slot with my name on it as well! I hope to be able to speak to you about a successful pilot project around IEC80001.

Although the 2015 World Congress is over a year away, the organizing committee has been hard at work for many months. I am participating on the finance committee to keep tabs on Mr. Mike Capuano, your Chair of Publications and Treasurer for the World Congress. We have almost finalized the budget for this conference. Its going to be a big one. We are estimating that the conference will draw around 2,500 people from across the world! Significantly more than the approximately 200 folks that attend a CMBEC.

Looking forward to seeing everyone in Vancouver in a few short months. Please feel free to get in touch with me should you have any questions or want to get involved. Thanks so much!

Keep those toques on!

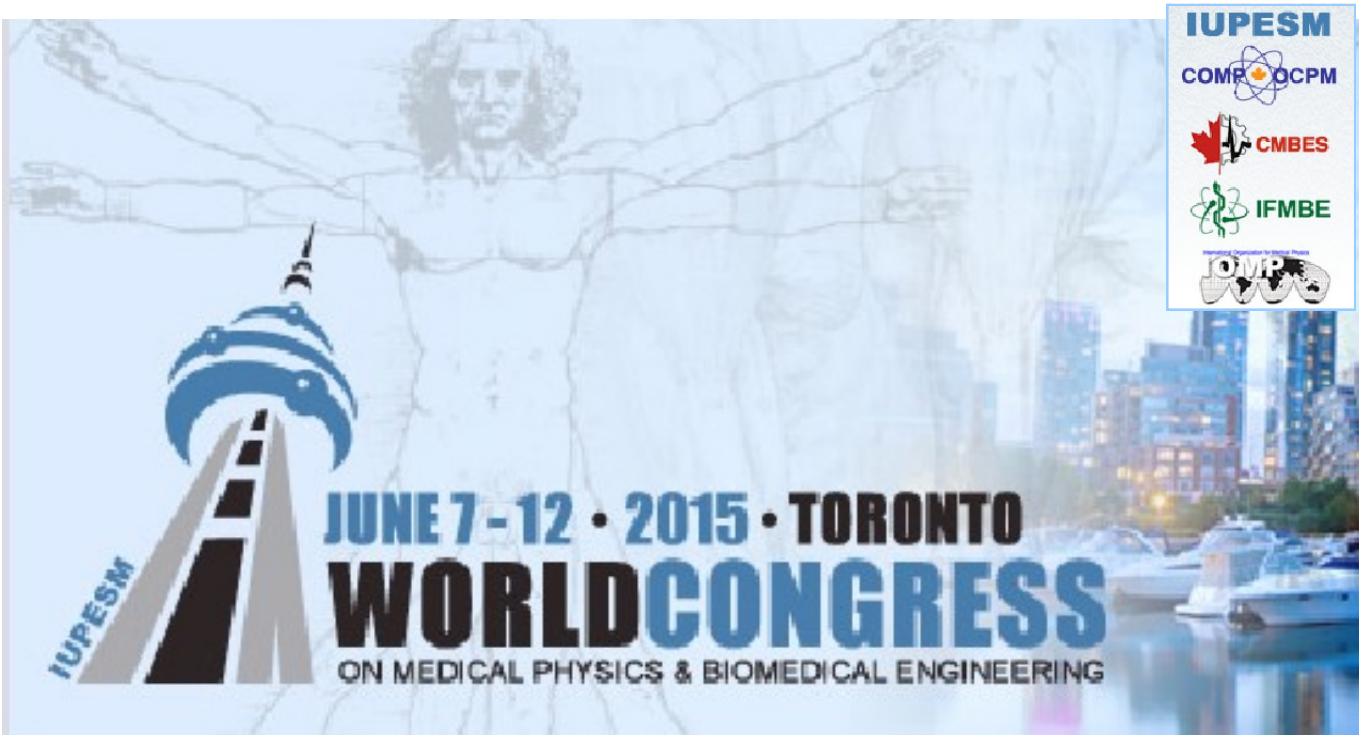
Kyle Eckhardt, MEng

E-mail

Update on 2015 World Congress in Medical Physics and Biomedical Engineering, Toronto.

Congress organizing activities are now under way. The PCO (professional conference organizer) contract was awarded to ICS (International Conference Services). A kick-off meeting was held at the 2015 World Congress venue, the Metro Toronto Convention Centre in October. Although much work lies ahead, subcommittees of the COC (Conference Organizing Committee) have begun to form. These include the Finance, International Advisory, Publicity, Scientific Program, Education, and Industrial Steering committees. Meetings are held every week. A website was developed and is being updated as we speak. Go to www.wc2015.org. This significant undertaking envelopes hundreds of sessions, keynotes, and workshops presented by scientists and engineers from around the globe. Attendance will be in the thousands. Awarded by the IUPESM (International Union for Physical and Engineering Sciences in Medicine), the CMBES and COMP (Canadian Organization of Medical physicists) have partnered to organize this significant event. It takes place in Toronto from June 7th to June 12th in 2015 at the Metro Toronto Convention Centre.

Mike Capuano, CCE
COC Treasurer, WC2015



CANADIAN MEDICAL AND BIOLOGICAL ENGINEERING SOCIETY
SOCIÉTÉ CANADIENNE DE GÉNIE BIOMÉDICAL

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