

IEEE TORONTO SECTION in 2008 – 2009. ASPIRATIONS and ACHIEVEMENTS. EX-CHAIR NOTES.

BY ALEXEI BOTCHKAREV

INTRODUCTION AND PURPOSE

These notes were conceived to share some experience the author gained as the IEEE Toronto Section Chair, to show what worked successfully and what did not, and to draw attention to some points of concern and possible solutions, which could help the Section be more effective and efficient in serving the organization's constituency.

The author had honour and privilege to be the Toronto Section Chair for two years in 2008-09. The Toronto Section has grown from its beginnings as the first AIEE section outside the United States in 1903 to a large diverse technical and professional organization. With a membership of around 4,000 members, Toronto Section is the largest section in Canada and one of largest worldwide. The Section has 16 technical chapters, four affinity groups, 12 standing committees and student branches in 6 universities and colleges. The operation of the IEEE Toronto Section is managed by the Section Executive Committee, whose members - around 40 - (all volunteers) are elected or appointed every two years. The officers are elected by the membership of the Section - the remainder are appointed by the section chair. The second "circle" of the volunteers includes chapter vice-chairs, treasures and secretaries, which brings the total number of the section's most active volunteers to about 100. It is the dedication and passion of these professionals that make the Toronto Section so valuable for the local IEEE members. I regret that the format and size of these notes does not allow naming all of them. This high-energy leadership group and virtually unlimited resources of volunteers, allows the section to deliver great events and set a vision to be nationally and internationally recognized as a leading IEEE Section.

Some materials on the topics of these notes were published elsewhere mostly in a concise form and a different style (see a list at the bottom of the article).

STRATEGIC THINKING FOR THE SECTION

As in any business planning, the most important task for the section chair and officers is to set up strategic directions for the section for the next term (usually two years). It's obvious that for each section the strategic directions will be different. They will depend on the section's priorities, resources, etc. However, the following criteria should help identifying the strategic initiatives for any section. The strategic initiative should:

- Influence large segment of the section membership;
- Address cross-chapter technical interests;
- Require and stimulate collaborative work of many members of the Executive Committee;
- Increase section's public visibility (beyond the IEEE constituency).

A strategic initiative could be a one-time event or a series of coordinated activities that meets one or more of the above criteria. Experience shows that there should be no more than three to five strategic initiatives for a two-year period. It needs to be mentioned that strategic initiatives are not replacing regular events delivered by the individual technical chapters and committees.

For the 2008-09, Toronto Section decided to focus on the following initiatives:

- Senior membership campaign
- IEEE TIC-STH 2009 conference
- IEEE Milestone - External Cardiac Pacemaker
- Organizational improvements.

Strategic initiatives, as most activities the Section was conducting in 2009, were dedicated to the IEEE 125th Anniversary, celebrating the history of the global organization and contributions to the profession by members of the IEEE Toronto Section.

All initiatives may sound pretty standard - however most of them were prepared and delivered with innovative approaches.

Notwithstanding the importance of the strategic initiatives, there's another area of the section chair activities that is critical to the functioning of the section. That is recruiting volunteers and making appointments. Decisions in this area may have both positive and negative effects. This work may seem not as visible, as some events; however results of this work will determine the face of the section for several years ahead, usually for a longer period than the term of chair's office. So, this work is as important as any initiatives that chair actually delivers or drives.

To make this work more effective and efficient, it requires a clear definition of the associated processes and responsibilities in the IEEE official documentation, primarily in the MGA Operations Manual (Section 9). The Manual calls for annual elections of all section and chapter officers. By all means, an election is the key for a dynamic improvement of the section management. However, the access to the centralized IEEE voting system (vTool) is necessary to make the election provision a reality on the ground.

Meanwhile, some aspects of the section management seem to be "grey" areas from the Manual's perspective. For instance, what's the process of appointing chairs of the section standing committees (history, awards, etc.)? Or what's the process of replacing a chapter chair, if elected chair resigns before the next elections? Arguably, a section chair should be given the authority to act promptly in such situations and make a temporary appointment.

Another question (which arises more often than we'd like it to see), is what can be done if a chapter/committee chair or volunteer in any other position, is not performing as expected or even is not meeting minimum requirements? For instance, a chapter chair is not able to organize two events per year. The current policies provide a simple answer: the chapter should be dissolved. However, should chapter members be held responsible for the inaction/inability of one person? The above questions boil down to a sensitive and not often discussed notion: can a volunteer be fired? I tend to give a positive answer to this question. However, there should be an official process of doing that (guaranteeing all due respect to the person in question), and this process should be documented in the Manual.

Final point of this segment of the notes. Are there any commitments the section chair has after his/her term of office is over? Current MGA Operations Manual doesn't proscribe any, and not even mention an existence of the section Past Chair (although this is done at the Regional level). That doesn't seem to be a wise utilization of the experience, knowledge and skills any section chair acquires during his/her term. Establishing a section past chair "trajectory", where for the next three terms a person becomes sequentially chair of the Nominations, Awards & Recognition and History Committees would serve two purposes:

- Utilization of the accumulated knowledge and experience;
- Would guarantee rotation of the chairs for the committees where long-term sitting may not be beneficial for the organization.

To wrap up this segment of notes. Section chair has a dilemma: go with the flow and observe how the chapters are conducting events, or push with Section-level strategic activities, which necessarily turns into many-many hours of volunteer work. My position: it doesn't worth it to make to the top of the Section, if you don't want to make a difference for your organization, or don't have ideas, and ambition to implement them.

ORGANIZATIONAL IMPROVEMENTS

The purpose of the organizational improvements is to add value to the local services to members. Toronto Section has members who belong to all IEEE Societies, and one of the important membership benefits is the opportunity to communicate with peer members locally. By 2008, Toronto Section had representation of many IEEE Societies (see Fig.1 below – white boxes on the top of the chart indicate non-affiliated IEEE Societies). Through individual or joint technical chapters the Section was affiliated with at least 75% of the societies. However, nine societies were not represented.

IEEE Toronto Section – Technical Chapters

January 2008

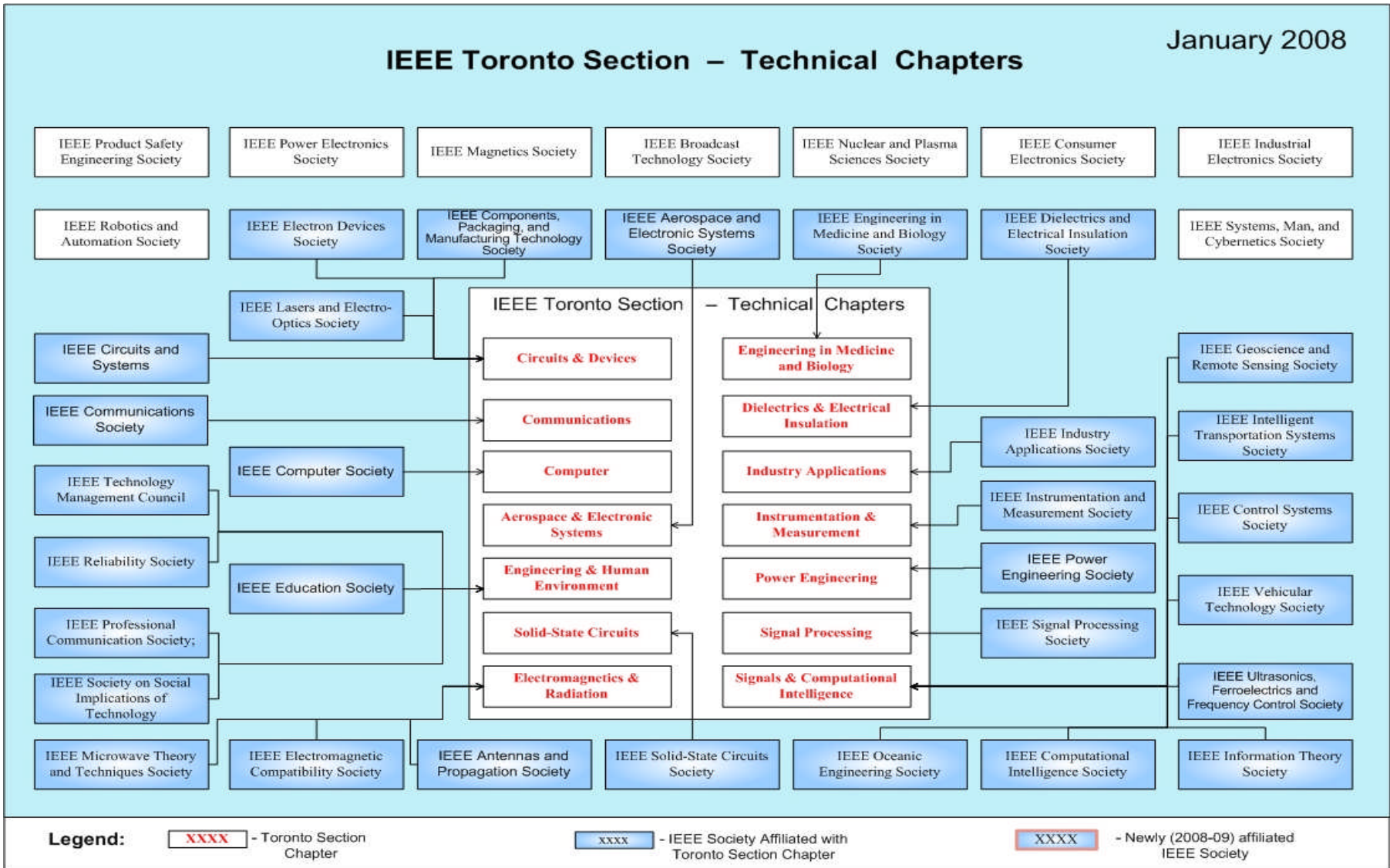


Fig 1. Toronto Section. Affiliations of the Technical Chapters with IEEE Societies as of January 2008

The strategic goal was set to establish affiliations with all societies. Creation of additional affiliations is not just a number game. We believe that by setting up new or reorganized joint chapters we establish initial conditions for the local services (events, campaigns) to be provided to a wider segment of membership. Nine non-affiliated societies had approximately 200 - 300 hundred local registered society members. Also, experience shows that for each registered society member, there are at least 2 - 3 members who are interested in the field, but prefer not to join the society for economic reasons. So, the total estimate of the members who would benefit of this strategic initiative is over 500, which constitutes a large portion of the local IEEE community.

Two new chapters were formed: Nuclear and Plasma Sciences and Magnetics. However, most of the new affiliations were created by adding new societies to the existing chapters. The following chapters were affiliated with additional IEEE Societies:

- Engineering and Human Environment Chapter:
 - o IEEE Product Safety Engineering Society
 - o IEEE Industrial Electronics Society
- Communications Chapter:
 - o IEEE Broadcast Technology Society
- Instrumentation and Measurement Chapter:
 - o IEEE Systems, Man, and Cybernetics Society
 - o IEEE Robotics and Automation Society
- Industry Applications Chapter:
 - o IEEE Power Electronics Society
 - o IEEE Consumer Electronics Society.

This approach has a couple of advantages over creating new chapters. Firstly, the petition in this case is easier, as it requires only six signatures of the members of the prospective society (as compared to 12 signatures required for the new chapter). Secondly, first steps of the newly affiliated society are made easier due to the existing structure and leadership of the "base" chapter. It needs to be taken into account that some societies are not looking favourably at joint chapters. Also, because formation of a joint chapter needs approvals of all associated societies, at some point that makes the process very lengthy. The whole Toronto Section initiative of affiliating nine societies took two full years.

At present Toronto Section has affiliations with all IEEE societies (see Fig. 2 below). It is the second one worldwide to have affiliations with all IEEE Societies (after Italy Section). Moving ahead, the section is making efforts to build a core leadership of the newly affiliated societies in all joint chapters. Recommendation for each joint chapter is to have a vice chair for each affiliated society. Current section structure is considered to be interim. The ultimate goal is to build capacity in all IEEE technical areas and use joint chapters as "incubators" to prepare and launch individual chapters as they become ready.

Other organizational improvements of 2008-09 include:

- Formation of IEEE Toronto Section Consultants Network Affinity Group.
- Formation of the new Student Branch at Humber College.

Possible future action in improving the Section's organizational structure could be setting up chapters for IEEE councils. Councils cover important inter-disciplinary areas in the interests of many Societies. Creating chapters affiliated with councils is relatively new opportunity within IEEE. So, this way should be pursued with due diligence. Initial steps in this direction could be setting up working groups or appoint coordinators for each of the councils.

IEEE Toronto Section – Technical Chapters

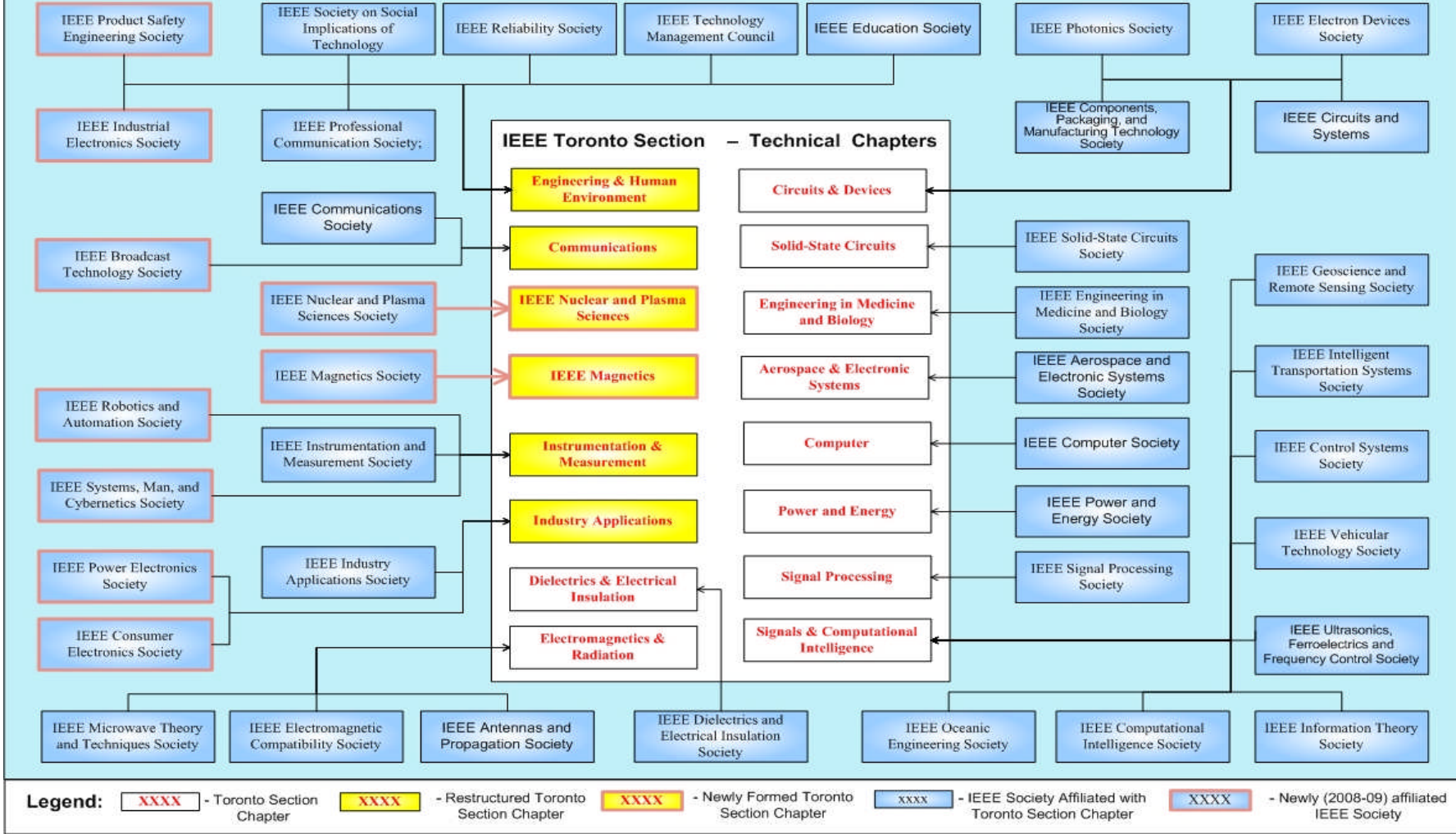


Fig 2. Toronto Section. Affiliations of the Technical Chapters with IEEE Societies as of December 2009

TORONTO SENIOR MEMBERSHIP DRIVE

In 2008-09, senior membership activities were considered one of the Toronto Section's strategic initiatives. That means that senior membership events were placed high on the section's priority list and there was a consensus among the executive committee regarding the importance of these activities and willingness to personally participate in them. Reaching such a consensus is crucial for the success of any strategic initiative because they require a lot of collaborative work and personal commitment of the executive committee members is necessary.

Another necessary component of the strategic initiative is a clearly stated, quantifiable goal. Our goal for 2008 was to facilitate 50 senior member elevations. The goal was rather ambitious as the Section's annual number was usually in the range of 20 – 30 elevations. Leaping forward, I'm glad to share that the Section managed to overreach this goal.

Senior membership activities were delivered in the form of campaigns – coordinated events with a predetermined starting point and a set of planned processes. This approach helped projecting a sense of urgency and keeping a pace in producing results, which otherwise would take much longer time. There are two key processes in a senior membership campaign: identification of the potential candidates and preparation of the references.

Identification of the potential candidates was done in two steps. At first, members of the executive committee and technical chapters' chairs conducted a search through their personal contacts. Usually this search (especially if it's performed year after year) doesn't bring large number of candidates. However, the quality of the candidates (in a sense of the chances for success) is high because it is based on the established relationships and good understanding of the candidates' status. The second step involved more formal search through the section membership list and selection of the candidates by such parameters as education and duration of membership that would most likely meet the senior membership requirements. (Actually, the duration of membership is not a formal requirement, and it was used just as a proxy to estimate candidates' number of years in profession.) After that a letter of invitation was sent to the pool of candidates with explanation of the requirements to senior member grade. It is very important that at this early point the section offered candidates help in guiding them through the elevation process. Response from the candidates was really good bringing back dozens of the potential senior members enthusiastically looking forward to apply for the elevation. All responses were filtered to check, if they meet minimum senior membership requirements. Most candidates had experience and qualifications way beyond the minimum requirements. No more than ten percent were recommended to apply later.

It is well known that acquiring references could be a very painful undertaking which can delay application submission or even deter qualified members from launching the process. That's why section's commitment to provide help with references has a lot of value and highly appreciated by the candidates. Communicating section's promise to find referees for each candidate is an important part of the campaign. Obviously, delivering on this promise requires a hard work. Normally, a candidate needs to three (3) references. Nomination from the section is counted for one reference. Section's nomination has two positive aspects: it doesn't require writing actual reference (just a statement of nomination, although evaluation of the candidates' eligibility is still involved), and section receives certain financial perk for each nominated senior member. In our campaigns, section chair nominated all candidates on behalf of the section. Even after the nomination is secured, finding two referees per candidate is not a trivial task when the number of candidates is between 50 and 100.

Our campaigns included so called "On-the-Spot" senior membership elevation events. For these events, we invited all potential candidates and had to up ten ExCom volunteers (who had senior member grade already). Candidates had an opportunity to submit their applications online with the assistance of the volunteers. At the same time, volunteers were able to prepare and submit references online while exploring resumes and obtaining explanations and clarifications from the candidates. Ryerson University graciously provided computer rooms with internet access for our "On-the-Spot" events. During each campaign we had at least two "On-the-Spot" senior membership elevation events.

An important resource of referees are the senior members who were elevated recently. They understand the value of the references and difficulties of getting a reference, they have a fresh memory of the procedure, and most of them want to give back to the Section which helped them.

Huge amount of paperwork generated by a campaign for a large pool of candidates (applications, resumes, supporting materials, references) usually has some missed or incomplete documents. IEEE A&A Committee staff was always helpful in resolving any errors and finalizing the submissions.

The approach and processes described above worked very well for the Toronto Section. Total number of the section new senior members was 63 in 2008 and 47 in 2009. These numbers double or even triple average annual results for the previous years. At the peak of the 2008 campaign, 37 section members were elevated at a single A&A meeting (May 2008). To put this number in a perspective, here're some statistical data for comparison. This is the highest result in Canada. The second highest result was shown by the Montreal Section - 22 senior members at one A&A session (in August 2007). The Montreal Section has generously shared their experiences with Toronto for the success of this initiative. Total number of elevations at a single A&A session for all Canadian sections is usually around 10. On the international scale, the Toronto Section number is the 4th highest result worldwide for at least three previous years: Seattle Section – 49 (Dec 2007); Dallas Section – 45 (Jan 2006); Oregon Section – 38 (Apr 2006). Figures 3 and 4 illustrate comparative number of newly elevated senior members in 2008 – 2009 by large Canadian sections.

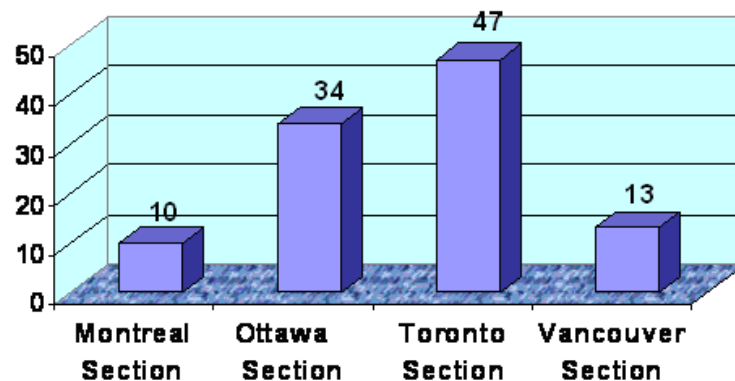


Fig. 3. Number of Senior Members elevated by the large Canadian sections in 2009

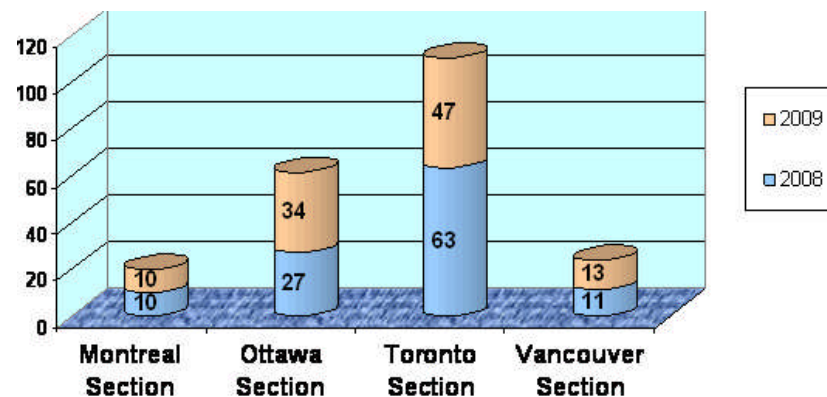


Fig. 4. Number of Senior Members elevated by the large Canadian sections in 2008 - 2009

Section chair has a responsibility to communicate back to section members the results of the senior membership campaigns emphasizing the names of the newly elevated members and most active referees/volunteers. We did it through the IEEE e-Notice service.

However, the overarching result of our campaigns is over 100 happy newly elevated senior members whose professional achievements got an adequate recognition.

These results wouldn't be possible without hard work of many Toronto Section volunteers. In 2008-09, over 40 volunteers were involved in the senior membership campaigns. Most valuable were contributions of Dimitri Androutsos, Section's Membership Development Chair, who led and orchestrated the campaign of 2008 and launched a very successful membership drive in 2009 with over 100 submitted applications, and dedicated work of Patrick Finnigan, Pelle Westlind, Bruno Di Stefano (among many others), who prepared many references.

Some issues with senior membership, which we experienced during our campaigns, need to be mentioned. Often they are related to the cases where elevation was declined.

- Seems that specialists working in the fields relatively new to the IEEE (e.g. enterprise architecture, medical engineering) tend to have less chances for elevation than specialists of the traditional fields (e.g. electrical, power). That can be explained by a lower level of awareness of these fields by the members of the A&A Review Panels.
- Requirements to the senior member (especially regarding significant performance) are formulated rather vaguely and allow a variety of interpretations.
- Current "free-style" format of the significant performance abstract often presents difficulties for the A&A Review Panel members in evaluating applications and making decisions.
- Two previous points often make it impossible for the A&A reviewers to make a decision (which results in a request to submit additional supporting materials), or lead to a rejection of an application with a statement: "They (reviewers) feel that the candidate is presently short the required number of years of significant performance". Unfortunately, this term is very adequate for the type of decisions made. I doubt that any serious business processes could be founded on "feelings".

It is understandable that any changes to the requirements and the current IEEE process, intended to make the procedure more objective, would take a long time. Meanwhile, the quality of the process can be significantly improved by using a structured significance performance abstract. Toronto Section developed a guide (a template and a sample) to help candidates in documenting their significant performance.

The main advantage of the Structured Significance Performance Abstract (SSPA) is that it takes reviewers out of the miserable necessity of going back and forth between the significant performance abstract, usually a result of a quick free-style writing with no details, and the candidate's resume prepared for a different purpose and having no reference to the IEEE senior member requirements criteria. Making comparison of these documents for many dozens candidates "on the fly" during the A&A meeting is a daunting experience.

The SSPA has a table format (see a sample below). A table allows detailing of the candidate's accomplishments and integrating them with dates and positions held. Each position candidate held (with dates and a title) is given a separate section (several rows). A separate row(s) is given to provide information pertaining to each of the significant performance indicator/criteria applicable to the candidate:

- Substantial engineering, responsibility or achievement.
- Publication of engineering or scientific papers, books, or inventions.
- Technical direction or management of important scientific or engineering work with evidence of accomplishment.
- Recognized contributions to the welfare of the scientific or engineering profession.
- Development or furtherance of important scientific or engineering courses that fall within the IEEE designated fields of interest.

STRUCTURED SIGNIFICANT PERFORMANCE ABSTRACT (Sample)

First Name: John Last Name: Smith IEEE Member Number: 123456789
Total Duration of Significant Performance: 7.5 years (seven years and six months)

| Start Date: Sep. 2006 | Position: Associate Professor | | | |
|---|---|--------------|------------|-------------------------|
| End Date: Present (Sep. 2010) | Organization: Deep Lake University Toronto, Ontario, Canada | | | |
| Duration: 4 (four) years | | | | |
| Evidence of Significant Performance | | | | |
| No. | | Start | End | Duration, months |
| <u>Substantial engineering responsibility or achievement</u> | | | | |
| 1 | Principal investigator of a project funded by Natural Science and Engineering Research Council of Canada. Research grant \$100,000. Invented a new technique for failure recovery in optical long haul networks based on network hierarchical trees. A US patent was granted in 2009. Invention has been implemented in Northern Network Utilities. | 2006 | 2009 | 23 |
| <u>Publication of engineering or scientific papers, books, or inventions</u> List your papers (if you have more than 3 – 5 – attach a separate list). | | | | |
| 2 | Published 15 scientific papers in the peer-reviewed journals, two patents. List of publications attached. | 2008 | 2010 | |
| <u>Technical direction or management of important scientific or engineering work with evidence of accomplishment</u> | | | | |
| 3 | Co-founder of the company (spin-off from the Deep Lake University) for the commercialization of large-scale cognitive networking technologies. The company supplies technology licensing and radio modules. The major responsibilities include leading the technology and product development teams. | 2007 | 2010 | 39 |
| <u>Recognized contributions to the welfare of the scientific or engineering profession</u> | | | | |
| 4 | Member, IEEE Technical Standard Committee on Smart Grids | 2008 | 2009 | 24 |
| 5 | EIC The Excellence in Education Award – February 2010 | | | |
| 6 | IEEE Toronto Section Appreciation of Service Award – October 2009 (volunteer) | 2007 | 2008 | 24 |
| <u>Development or furtherance of important scientific or engineering courses that fall within the IEEE designated fields of interest</u> | | | | |
| 7 | Developed and taught several courses in the Bachelor of IT and Master of IT Security programs at the university: • Introduction to Networking • Advanced Network Design (Graduate Course) | 2006 | 2010 | 37 |
| 8 | Chair of the Curriculum Committee, Faculty of Engineering: Main contributor to development of a new bachelor program in Information Technology with concentration in Networking and IT security. Contributed to development of the M.Sc. program in Computer Science and the one-year Master program in IT Security. | 2009 | 2010 | 20 |

| | | | | |
|---|--|--------------|------------|-------------------------|
| Start Date: Apr. 2003 | Position: Program Manager | | | |
| End Date: Aug. 2006 | Organization: Electric Grid, Inc. | | | |
| Duration: 3.5 years (42 months) | Toronto, Ontario, Canada | | | |
| Evidence of Significant Performance | | | | |
| No. | | Start | End | Duration, months |
| <u>Substantial engineering responsibility or achievement</u> | | | | |
| 9 | Technical Lead in the development of fuzzy logic and neural networks for the energy applications. Achieved 20% improvement in control performance. | 2003 | 2004 | 24 |
| <u>Publication of engineering or scientific papers, books, or inventions</u> List your papers (if you have more than 3 – 5 – attach a separate list). | | | | |
| 10 | John Smith, “Performance Study of a Self-Repairing Protection Devices in Networks”, IEEE Broadnets 2007, October 2007, USA. John Smith, “Hierarchical Protection Scheme for Networks”, 2006. US Patent Number 7,654,321 | 2006 | 2008 | |
| <u>Technical direction or management of important scientific or engineering work with evidence of accomplishment</u> | | | | |
| 11 | Project: Day-Ahead Market (DAM) - major evolution in the Ontario electricity system and market. Budget: \$50M. Role: Project Manager. Managed a team of 12 members. | 2003 | 2004 | 12 |
| 12 | Project: Wireless Monitor with Interference Robustness Budget: \$750,000 Role: Project Leader. Led and coordinated a project team of 20 members. | 2004 | 2005 | 12 |
| 13 | On-going management of a department responsible for the product development and engineering support of network products. Budget: Annual revenues of approx. \$25 million. Role: Senior Manager. Managed department of 10 (on average) engineering and product staff. | 2004 | 2006 | 33 |
| <u>Recognized contributions to the welfare of the scientific or engineering profession</u> | | | | |
| 14 | Member, International Council On Large Electric Systems (CIGRE) Working Group C6.16 – Rural Electrification | 2003 | 2005 | 24 |
| 15 | Employee of the Year award for contributions in network performance – October 1985 | | | |
| 16 | Chair, Conferences Committee, IEEE Canada (volunteer) | 2004 | 2005 | 24 |

- Contributions equivalent to those of the above in such areas as technical editing, patent prosecution or patent law, provided these contributions serve to advance progress substantially in IEEE designated fields.

Obviously, preparation of the SSPA requires more time than a currently used abstract. But it's worth it. The use of the SSPA will save a lot of time for reviewers, make decisions more objective and accurate, and avoid elevation delays caused by submitting requests for additional supporting information. The SSPA has already helped Toronto Section to resolve several senior member cases, which were initially rejected.

SENIOR MEMBER IN THE REAL WORLD (OUTSIDE IEEE DOMAIN)

Streamlining issues in the senior membership processes is important. However from the IEEE worldwide organizational point of view, this approach of fixing current problems is of tactical nature and value. Let's look at a bigger picture. Our analysis of the worldwide data of senior member elevations for 2006 – 2009 (based on the information available on the [A&A website](#)) shows not a very bright situation. The 2006 was the best year, which was followed by two years of decline in almost all IEEE Regions. Although the fall stopped in 2009, none of the regions exceeded their 2006 positions. During the current decade (2000 – 2010) the total number of senior members in the organization exhibited modest growth: approximately from 26,000 to 31,000.

Total worldwide number of the newly elevated senior members (SM) during this period is 8,939 and annual average is 2,236. Figure 5 shows number of elevations by year. The 2006 was the best year when 2,607 SM were elevated. Next two years exhibited decline. In 2008, only 1,849 members were elevated which is about 30% reduction compared to the 2006. During 2009 the number of elevations increased to 2,097. However, the level of 2006 – 2007 was not regained.

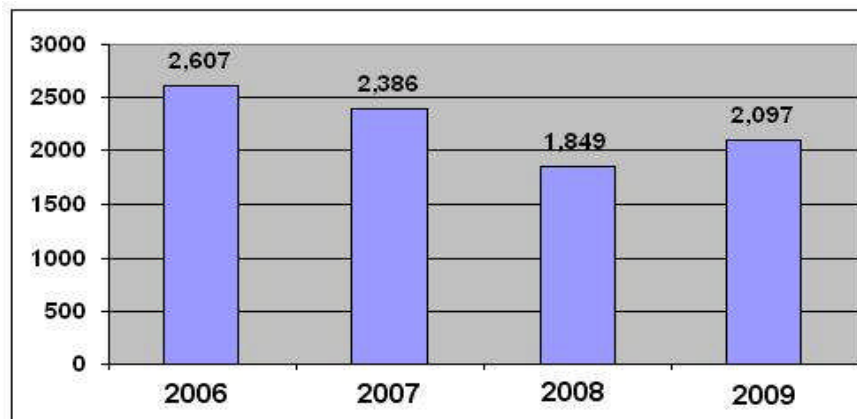


Figure 5: Number of senior members elevated worldwide by year

A detailed view of the performance of the Regions is presented in Figure 6. The chart shows regional numbers of elevated senior members with a break down by years. Generally, performance of most regions follows the overall IEEE pattern. For most regions, the year 2006 was the best one, except for Regions 6 and 7. Most regions experienced a drop in 2007 – 2008. Many regions displayed signs of revival in 2009, except Regions 1, 5 and 9. Although the fall stopped in 2009, none of the regions exceeded their 2006 - 2007 positions. The exception is Region 6, which exceeded its 2007 result by one senior member.

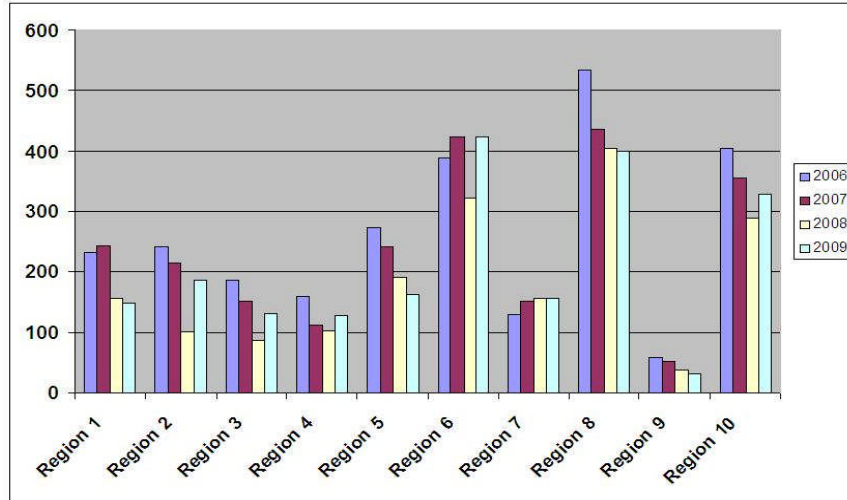


Figure 6: Number of senior members elevated by Region by year in 2006 – 2009

Figure 7 shows the SM elevation results of the top-10 IEEE sections worldwide in 2006 - 2009. Toronto Section holds 7th place on this list. Three other Canadian sections: Ottawa, Montreal, Vancouver have respectively 22nd, 26th and 52nd positions.

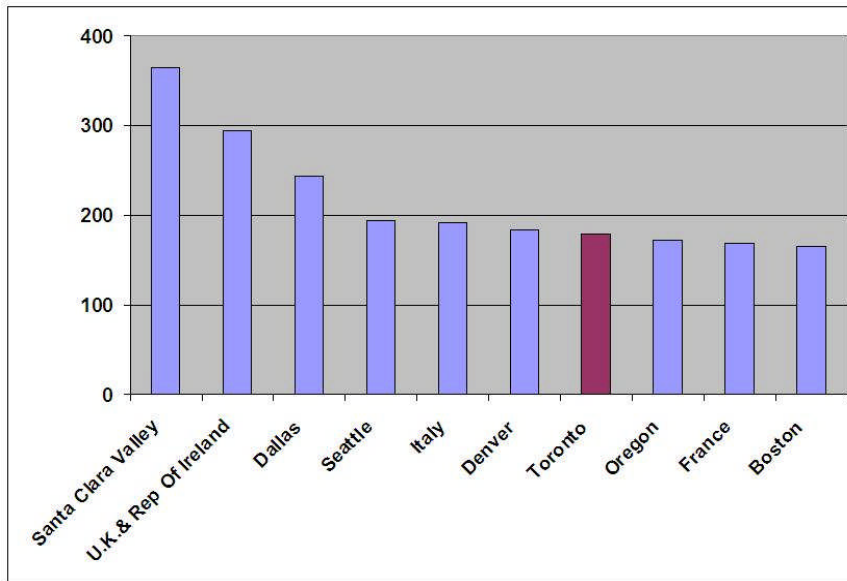


Figure 7: Number of SM elevations by top 10 sections worldwide in 2006 – 2009

Comparing these results to the achievements of other non-profit professional organizations in the recognition of professional qualifications of their members can be revealing. Need to note upfront, that there are no identical or even “very similar” organizations and their respective “recognition tools”, whether it is a member grade or a professional certification. However, the purpose and the goals of the recognition are very much alike. That makes high-level comparison of approaches and results possible.

The Project Management Institute (PMI) is a non-profit professional organization for the project management profession with the purpose of advancing project management. PMI is relatively young organization established in 1969. Until recently (1999), its membership was around 50,000. PMI offers several professional certifications in the field of project management. Their most popular and successful certification is the Project Management Professional (PMP). The number of PMPs worldwide grew from 27 thousand in 2000 to **393,000** in 2010 (according to [Wikipedia](#)). Yes, this is not a typo; the number of PMPs is approaching astounding four hundred thousand. Monthly rate of new PMPs is 4,300 individuals. This is comparable to the number of the IEEE senior members program gaining over two years.

Need to note, that not all PMPs are the PMI members (as membership in the organization is not a certification requirement). However, total PMI membership is also growing very fast. If the same trend continues, PMI will within the next 10 years become the largest professional organization with the PMP certification being the biggest driving factor for the growth.

Keep in mind that PMI operates in a non-regulated area (as the IEEE). So its credentials are really a matter of choice for the candidates, as compared to professional engineering certifications backed by certain provincial/federal regulations and leaving no choice to a person who wants to be in a profession.

PMI certification success story deserves to be explored in detail with a purpose of identifying and later implementing all appropriate “secrets” of growth in the IEEE environment. Meanwhile, here are a couple of high-level observations and comparisons between the IEEE senior member and PMI PMP. Being a member of both organizations and holding both credentials, allow me to highlight the distinctions that follow. These distinctions are embedded in the concept of each of the credentials, communicated/marketed to the membership and external stakeholders (prospective members and employers), and perceived by all interested parties.

- Static vs Forward-looking.
 - o IEEE SM requirements are preoccupied with fixation of the achievements made up to date. No requirement for further professional growth.
 - o PMI PMP is confirming the holder has skills to go ahead. Require continues professional growth after certification. Includes periodic re-certification.
- Internal vs Multi-directional.
 - o IEEE SM is almost exclusively an internal product. Not known and appreciated anywhere else outside the IEEE. No visible efforts are undertaken by the organization to communicate the value of the senior members to the companies which employ them.
 - o PMI succeeded not only in delivering a quality product – certified project managers – but also in communicating to their employers and convincing them that PMP has a great value for the organization. As a result of the PMI's marketing efforts, their certification became a standard human resources requirement for the project management positions (at least in North America). Through the value perceived by employers, certification became a real tool for the thousands of PMP holders in career advancement.

Although Microsoft cannot be used in the same comparative framework – for not being a professional association – their Microsoft Certified Professional (MCP and its multiple variations) credential follows the same direction - targeting employers, showing them the value of the MCP.

I believe, it can be to a great advantage of the IEEE to introduce a new credential. I'd like to propose adopting a certification with a working title Certified Distinguished Member (CDM) of the IEEE. New credential is to fix the drawbacks of the current senior membership and capitalize on the proven best practices of PMI and Microsoft.

I'd like to suggest the following framework of features/characteristics for the CDM:

- **Eligibility Criteria:**

- CDM member shall have at least three (3) years of continuous membership in IEEE on the date of submitting the application and at least five (5) years of total IEEE membership. Any membership grade (including Student) counts. This point ensures candidate's demonstrated commitment to the organization.
- CDM member shall have at least one (1) year of participating in the IEEE as a volunteer in any formal position/role at any level on the date of submitting the application. This point ensures candidate's demonstrated commitment to the organization and profession.
- CDM candidate shall be a senior member. This point ensures that all senior member educational and working experience requirements have been already met by the candidate.
- CDM candidate can apply for the certification at least two (2) years after his/her elevation to senior member.
- CDM candidate shall demonstrate continuous significant performance during at least two (2) years prior to applying for the certification. Criteria of significant performance are same as used to determine senior membership.
- CDM candidate shall hold at least one professional certification in the IEEE or related fields for at least one year prior to applying for the CDM certification. A list of professional certifications should be developed. It should include both IEEE certifications, e.g. Certified Software Development Professional, Certified Biometrics Professional, etc., and external to IEEE reliable, industry-accepted certifications such as PMI PMP, Professional Engineer (e.g. Professional Engineer in the province of Ontario granted by Professional Engineers of Ontario), etc.
- This point ensures that a candidate has passed a rigorous exam (on the top of other certification requirements), which is a vital requirement for any respected certification.
- CDM candidate shall submit references from a least two (2) IEEE members having higher membership grades.

- **Post-certification Requirements:**

- Certification is granted for a limited period of time - 4 years.
- After a period of 4 years CDM must undergo a re-certification process in order to maintain certification.
- CDM must maintain his/her IEEE membership.
- CDM must continue exhibiting significance performance.
- CDM must be committed to continuing professional development and education. Scoring system must be developed to qualify professional development. Certain incentives must be included for the CDMs to attend events/activities organized by IEEE.

- **IEEE Commitments:**

- IEEE must clearly identify CDM value propositions for all stakeholders, e.g. various segments of members, organization as a whole, societies, geographical units, etc.
- Most important is the value proposition to the potential CDM employers.
- It should include not only clear description of the value and high caliber of the CDM holders, but also possible tangible incentives targeting employers directly as e.g.

discounts for the corporate Xplore subscriptions for companies employing certain number of CDMs.

- IEEE should commit to the extensive use of its resources, including financial, to promote CDM to the potential employers in industry and academia. One of the goals of this campaign should be recognition of the CDM as an accepted prerequisite for full professor appointments in academia, and similar responsibility positions in industry (in the IEEE fields).

- **CDM positioning:**
- In the hierarchy of the IEEE credentials, CDM should be placed higher than a senior member but lower than a Fellow.
- The targeted audience of the certification are the experienced professionals in the mid-term of their careers, seeking further development and growth to senior positions in the industry and academia.
- The requirements outlined above place an average CDM holder higher than a holder of any other professional certification.

With the CDM certification, I believe, IEEE will make a direct positive impact on the career advancement of its members. That will not only be a fulfillment of the prime function of the professional association, but also will have an avalanche-like effect on the growth of membership and improvement of the IEEE financial situation. Understandably, the above suggestion is a sketch which needs to be verified.

TORONTO SECTION CELEBRATES A MILESTONE: A NEW WAY

The IEEE Milestones program honours significant technical achievements in areas associated with IEEE.

In 2006, Toronto Section submitted a proposal for a milestone – [First External Cardiac Pacemaker](#). In 1950, in Room 64 of the Banting Institute at the University of Toronto, Drs. Wilfred Bigelow and John Callaghan successfully paced the heart of a dog using an external electronic pacemaker-defibrillator having implanted electrodes. The device was developed by Dr. John Hopps at the National Research Council of Canada.

The work of Dr. Hopps had really pioneering significance:

- It led to the use of cardiac pacemakers in humans.
- It marked a starting point for a discipline of biomedical engineering and a whole industry of electronic devices in medicine.
- It directly impacting lives of several million people who received pacemakers.

The external cardiac pacemaker was approved by the IEEE as a milestone in 2008.

According to the [IEEE Milestone program](#) website: “After recommendation by the IEEE History Committee and approval by the IEEE Board of Directors, a bronze plaque commemorating the achievement is placed at an appropriate site with an accompanying dedication ceremony”. So the recommended process contains two steps:

- IEEE approval
- Placing plaque at a dedication ceremony.

Sounds pretty easy and straightforward. However, after thorough consideration, Toronto Section decided to use a different approach.

A New Approach

Our approach was based on two major observations.

Firstly. By definition, any milestone is an achievement of significant importance. Celebrating its history cannot be a one-day event – plaque dedication ceremony. Any single event of any size and budget won't be suitable to reflect the greatness of the technical achievement and its impact on the wellbeing of humanity.

Second point may seem to be blunt. Most milestones are well-known and recognized worldwide way before they become IEEE milestones. Proclaiming it a milestone by the IEEE doesn't bring a big additional "value" to the invention/achievement. It is the IEEE that is getting more from the milestone (whether IEEE had a connection to the innovation – by the inventor membership -- or often not). Milestones provide IEEE with an opportunity for extensive publicity efforts targeting both internal and external to the organization parties and bringing public visibility to the IEEE and its entities. This opportunity shouldn't be missed.

Exception to the above maybe some milestones with local impact (as a creation of the first computer in the country/region – not the first worldwide). In those cases, IEEE, due to its worldwide reach and scope, contributes to the "globalization" of the local achievement.

Based on the above considerations, our milestone concept included the following notions:

- Plaque dedication ceremony is only one (final) step in a set of events/activities in promoting the invention and getting public visibility for the IEEE and the Section.
- Milestone celebrations (as opposed to the plaque dedication ceremony) are comprised of several coordinated events/activities.
- Milestone celebrations have an extended timeline – approximately 12 – 15 months (after the IEEE approval).
- Milestone celebrations should be delivered as Section's strategic initiative. That means that milestone events are to be placed high on the section's priority list and there should be a consensus among the executive committee regarding the importance of these activities and willingness to personally participate in them.

Section ad hoc committee was formed to lead and coordinate milestone activities. Over a dozen of the ExCom members were involved. Pelle Westlind led the committee. Patrick Finnigan, who initiated the milestone proposal and spearheaded it's the efforts to get IEEE approval, continued to play a key role.

The first event in the series of the milestone celebration activities was a talk at the Section's annual general meeting (AGM) in October 2008. Luckily enough, one of the world leaders in cardiac pacemaker development and manufacturing is located in Mississauga, Ontario – Medtronic of Canada Ltd company. Company's president Neil Fraser kindly agreed to be an invited speaker at the AGM and delivered a speech on "The History and Advances of the Cardiac Pacemakers". AGM was attended by one hundred members.

The next milestone event was organized by the Section's Engineering in Medicine and Biology (EMB) chapter in May 2009. The keynote speaker was Professor Shelley McKellar from the University of Western Ontario, who is specializing in medical history. She presented a talk on "Repairing the Diseased Heart: The Impact of Medical Engineering". Wine and cheese reception accompanied the event which was attended by fifty people.

Meanwhile, several other activities were undertaken.

- Gathering and analyzing information on the how other sections (Canadian and worldwide) celebrated milestones. Sections Congress in Quebec was a good opportunity for collecting first-hand information and experience from the delegates.

- Gathering Dr. John Hopps biographical information. His inventions prior to and after Pacemaker. His relationship with IEEE – it turned out he was awarded an IEEE Canada medal. John Hopps' son – Don was contacted. He lives in Ottawa. Don enthusiastically joined our preparation efforts.
- Several write ups were prepared and published in the section's annual printed newsletter, IEEE Canadian Review magazine and section's website.
- Contacting local media was a difficult experience. It has shown that positive results require consistent efforts of relationship building.
- Attracting sponsors left much more to be desired. As a result, milestone budget was very tight.
- Bronze plaque has been ordered, and logistics of its installation on the site were worked out with the vendor and building owner.

A very important part of the celebrations was a special milestone session at the IEEE Toronto International Conference – Science and Technology for Humanity (TIC-STH). The IEEE TIC-STH was another strategic activity organized by the Toronto Section in 2009 (<http://toronto.ieee.ca/tic-sth2009>). The conference covered advanced interdisciplinary areas across a broad spectrum of the IEEE fields of interest and attracted 360 papers by authors from 29 countries out of which 186 papers were accepted. Special Pacemaker milestone session at the conference was organized by Professor Sri Krishnan from Ryerson University.

The session included presentations from academia, hospitals and medical industry on the topics such as “Cardiac Electrophysiology Advancements”, “Electrical Engineering Applied to Cardiac Electrophysiology”, “Cardiac Pacemakers -- Industrial Perspective”. In our opinion, organizing a symposia or a workshop on the topic of the milestone is very appropriate to reveal how the initial invention stimulated further development of science and industry.

The plaque dedication ceremony at the Banting Institute at the University of Toronto took place on September 26, 2009. It was attended by the Toronto Section volunteers, representatives of the Region 7 (Canada) and members of the Dr. Hopps family.

We consciously didn't take a risk of having a large gathering at the site of the plaque installation. That was a mitigation measure to avoid uncertainties with weather (and we didn't have a budget to arrange for a temporary chalet on site), and difficulties of arranging proper safety and security in a large city. However, the plaque unveiling ceremony was naturally continued in-house as part of the special session at TIC-STH at Ryerson University. This session was attended by several dozen people. Also the session was broadcast using web conferencing.

After Champagne Bubbles Settle

It may seem that after the dedication ceremony is history, the milestone activities can be considered completed. Not yet.

In Toronto, the final point in the milestone activities was the presentation at the Section's annual general meeting in October 2009 delivered by Pelle Westlind. This presentation summed up everything that was done by the milestone committee volunteers during the year full of events.

IEEE Milestone website doesn't have any recommendations regarding post dedication ceremony activities. I believe, two items may be considered by any section after celebrations:

- Celebration activities necessarily leave behind a large volume of materials: photos, presentations, etc. All these historic documents must be preserved, systematized and published on a dedicated page of the Section's website.
- Inventions that were assigned a milestone status continue live their own “lives” and count their age. It would be good to make a tradition celebrating their anniversaries (let's say every ten years). For example, Pacemaker, invented in 1950, can be celebrating its 60th anniversary this year.

I would suggest making the above points an official responsibility of the section hosting the milestone.

Overall, milestone celebrations were a great success. The new concept of milestone celebrations worked very well for us.

IEEE TORONTO INTERNATIONAL CONFERENCE – SCIENCE AND TECHNOLOGY FOR HUMANITY (TIC-STH 2009)

[IEEE TIC-STH 2009](#) was organized and hosted by the IEEE Toronto Section. Ryerson University was used as a venue. The conference was focused on advanced interdisciplinary problems across a broad spectrum of the IEEE fields of interest. The scope was not limited to the traditional IEEE areas – electrical, computing, and engineering. There were very strong papers in education, social implications of technology and sustainable development of the society.

The conference attracted 360 papers out of which 186 papers were accepted after rigorous peer-review process (~50% acceptance rate). Authors represented 29 countries. IEEE TIC-STH 2009 turned out to be a huge success story from all perspectives: technical, organizational, financial and customer satisfaction. Realization of the Truly Integrated Conference concept was one of the drivers for this success.

Post-conference attendee survey shows good customer experience of the online attendees. Although the conference was not immune to some roughnesses, the overall level of satisfaction of the online audience is even higher than that of the onsite participants - see Figure 8 (Participants were responding to the statement/question “Overall – the conference was well organized”).

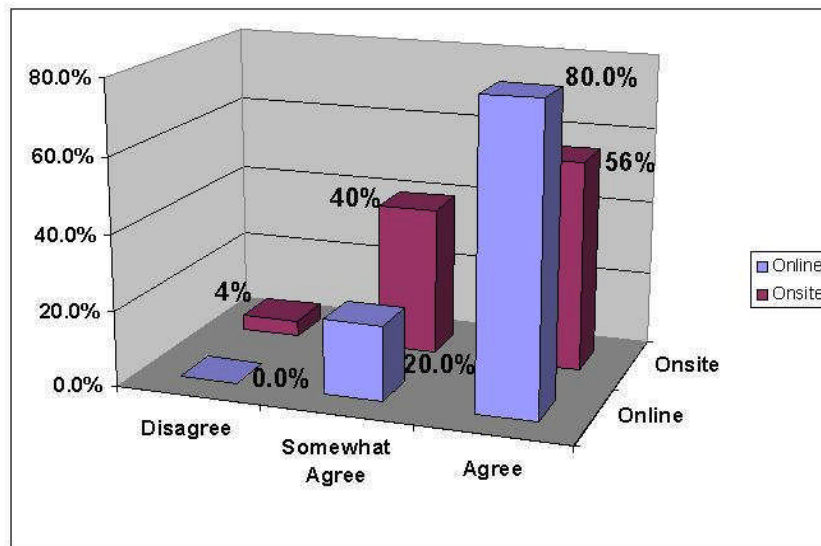


Figure 8: Participants' feedback (Overall – the conference was well organized)

INSTEAD of a CONCLUSION

These notes by no means cover all the activities of the Toronto Section in 2008 – 2009. However, even a quick description of the strategic initiatives show great achievements. Toronto Section can be proud of these achievements.

A List of Other Publications on the Topic of this Article

- A. Botchkarev "A Strategic Approach to Senior Member Elevations" 2010 (accepted)
- A. Botchkarev "Beyond Senior Membership" 2010 (submitted)
- A. Botchkarev "Statistics Reveal It All: IEEE Senior Membership" 2010 (submitted)
- A. Botchkarev "Toronto Section Celebrates a Milestone: A New Way" 2010 (submitted)
- A. Botchkarev "Strategic Thinking for the Section" *The Institute*, 2010, July.
[The Institute online](#). [Full text PDF](#)
- A. Botchkarev, L. Zhao, H. Rasouli "Designing a Truly Integrated (Onsite and Online) Conference: Concept, Processes, Solutions". *IEEE Canadian Review*, Winter 2010, No. 62, pp. 15 – 19.
[Abstract](#). [Full text PDF](#). [ICR online](#).
- A. Botchkarev, L. Zhao, H. Rasouli "Designing a Truly Integrated (Onsite and Online) Conference: Concept, Processes, Solutions". <http://arxiv.org/ftp/arxiv/papers/1001/1001.1794.pdf>, 2010.
(Results of the same project as above, full-length article).
[Abstract](#). [Full text PDF](#).

About the Author

Alexei Botchkarev is a Senior Information Management Advisor with the Knowledge Management Branch, Ministry of Health and Long-Term Care (Government of Ontario), and an Adjunct Professor at Ryerson University. He is an information and knowledge management professional, consultant and researcher (www.gsrc.ca). He has over 30 years of experience in project management, systems analysis, modelling and simulation, business processes analysis, information systems solutions, requirements analysis and scientific research. He holds B.Eng. 5-year degree from the Kiev Aviation Engineering Academy, Ukraine and Ph.D. from the aerospace R&D Institute. In the course of his career, Dr. Botchkarev worked as an employee or consultant in multiple industries (aerospace, information technologies, advanced materials, healthcare, education and training) and in various capacities (program/project manager, product manager, marketing manager, research analyst) in Canada, US, Europe, and Asia. He was Chair of the IEEE Toronto Section and a member of the IEEE Canada Board of Directors in 2008 - 2009. He was a founding member of the IEEE TIC-STH 2009 Organizing Committee.

