

The CSEM Newsletter

CSEM's mission is to represent the interests and enhance the capabilities of engineers in management in order to advance and promote efficient management of commerce, industry and public affairs.



Canadian Society for Engineering Management
Société canadienne de gestion en ingénierie

Spring 2000
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A member Society of the Engineering Institute of Canada



Une société adhérente à l'Institut canadien des ingénieurs



From the President

CSEM President,
Ken Putt,
P.Eng., FEIC.

As we enter the 21st Century, it's appropriate to look forward to the future with optimism and enthusiasm.

The engineering profession and members of the Canadian Society for Engineering Management (CSEM) have an important opportunity to play an integral part in building Canada's innovative responses to the challenges and the opportunities of the 21st Century.

I had the opportunity to take such an initiative recently when I suggested that the Engineering Institute of Canada (EIC) member technical societies needed to get more 'meat' out of the EIC Annual General Meeting. As award-winning engineers and effective engineering managers know, innovation doesn't occur until a new idea is reduced to commercial practice. It's much the same with organizational ideas, where it's important to "put your money where your mouth is." Since every consultant knows time is money, I was asked to spend some time working with a facilitator from an EIC Participating Partner, Don MacCalder, of the Anslie

Group, to put together a workshop on the theme of "How to Achieve More Synergism Between the EIC and Its Member Societies?"

The EIC Workshop on Synergism was held June 14, 1999 in Ottawa and was attended by EIC National Council and the presidents or their representatives from the Civils (CSCE), Geotechnical Society (CGS), the Medical and Biological Engineers (CMBES), the Electrical, Electronic and Computer specialists (IEEE), Management Engineers (CSEM), the Chemists and Chemical Engineers (CSChE), the Mechanicals (CSME). As well, the Life Members Organization was represented.

Common among our desired outcomes was to achieve increased knowledge from our Engineering Institute of Canada peers in the following areas: increased interaction and networking; learning from other technical societies; reviewing each other's approaches, similarities and differences; looking for symptoms of success; identifying opportunities for collaboration and sharing; clarifying what other societies offer their membership; increasing interest of university students in the technical societies, particularly the GOLD program seeking involvement of graduates of the last decade; and learning how to be more inclusive.

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WWW.CSEM-SCGI.CA

ARE YOU KEEPING UP ON LOCAL BRANCH EVENTS? WHAT WOULD YOU LIKE TO SEE THERE? LET US KNOW.

THIS ISSUE

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How to attract other disciplines? How to attract non-engineers working in the relevant fields to the technical societies? Second Society memberships; how to maintain and increase academic memberships? How to increase industrial memberships and sponsorships? Group memberships; better examples of specific actions taken through the auspices of the EIC; resource sharing by the EIC Member Societies, e.g. administration functions, conferences, world-wide web development and maintenance, training; and solutions to common problems experienced by more than one technical society.

A full copy of the workshop report is available from the EIC office at:
1980 Ogilvie Road,
P.O. Box 27078
RPO Gloucester CTR., Gloucester,
Ontario K1J 9L9.

Of particular interest were the commitments that were made at the EIC Synergy Workshop to:

- Develop an EIC Lobbying Agenda
- Develop a Participating Partners Workshop to run adjacent to the next EIC Council Meeting in Regina, October 24, 1999, which has since been done successfully
- To ensure CSChE continuity on the EIC Council for organizational memory
- Provide feedback to the EIC Council on the ACADEMY OF SCIENCE/ACADÉMIE DES SCIENCES - sponsored activity, PARTNERSHIP GROUP FOR SCIENCE AND ENGINEERING (PAGSE), which interacts with Members of Parliament and leading federal regulators, which EIC has since joined
- The CSChE will develop specs for technical society contact lists in Canada's major cities
- The CGS agreed to lead a task force to develop an EIC Environmental Conference

- EIC Member Societies were welcomed to participate in CSEM branch meetings in Calgary, Edmonton, Vancouver and Ottawa
- The EIC would distribute Professional Association surveys to EIC member technical societies
- The EIC coordinating office agreed to be the recipient of all technical society newsletters, publications and intelligence and reroute appropriate items among the technical societies; all technical societies agreed to copy newsletters and other society initiatives to the EIC office and 'hot links' to their worldwide web home pages
- The CSCE Executive Director agreed to the role of identifying key target industry members as a sub-set of the proposed lobbying agenda
- The EIC Treasurer agreed to consult the technical societies on a new EIC auditor; a new auditor has been recommended at

considerable cost savings, with improved service

- The technical societies were asked to, where possible, provide continuity of membership on the EIC Technical Professional Development Committee (TPDC)

Our engineering management skills and abilities were effectively utilized in obtaining successful outcomes from the disparate groups participating the Synergy Workshop and, hopefully, on-going improved relationships amongst the diverse EIC stakeholders.

The Canadian Society For Engineering Management intends to provide its members and all those interested in engineering management continued professional development opportunities and access to leading engineering management thinking into the new millenium and beyond. We welcome the opportunity to serve you and your project and general management colleagues.

"CSEM President, Ken Putt, P.Eng., FEIC, was appointed as a member the Natural Sciences and Engineering Research Council (NSERC) Advisory Committee on University-Industry Grants (ACUIG) for a term ending December 31, 2001. The Advisory Committee meets in Ottawa four times each year to make recommendations for NSERC funding of all joint university-industry collaborative research projects and all industrially co-funded NSERC Industrial Research Chairs, where NSERC funding exceeds \$75K in any given year. As well, the progress of existing Industrial Research Chairs and collaborative research projects are reviewed. Successful management of collaborative research and multiple stakeholder projects are germane to and utilize the skill-sets of members of the Canadian Society For Engineering Management.

CIRQUE+ EYE ON THE FUTURE

Engineering Opportunities in Our Millennium
A Student Conference on Opportunities in Industry
Presented by the Queen's University Engineering Society



The Ottawa Chapter of the Canadian Society for Engineering Management had the pleasure of sponsoring CIRQUE + "Engineering Opportunities in Our Millennium" held at Queen's University. CSEM's contribution to the event was \$200.00. This is the second year that CSEM Ottawa has contributed to that event. Last year, Gord Thomson, P.Eng., FEIC, CSEM President-Elect was a speaker at the event. The event was held in Kingston Ontario on January 28th and 29th, 2000. Over 150 engineering student delegates attended.



Hon. Norm Stirling, Minister of Intergovernmental Affairs and Government House Leader Ontario Legislature

CIRQUE+ is in its 17th year and was developed to introduce Queen's University engineering students to the vast opportunities available to them upon graduation, including those outside traditional engineering fields. Prominent speakers from industry and government had the opportunity to address the students, such as: Scott Taylor, Manager of Manufacturing Technology, MDS Nordion; The Honourable Norm Stirling, Ontario Minister of

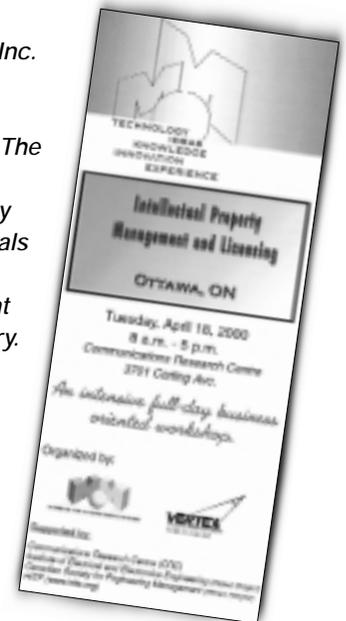
Intergovernmental Affairs and Government House Leader; and, Heather Chalmers, Account Manager, General Electric.

CSEM Ottawa is also an on-going supporter of the PEO Student Papers Night, a friendly competition between the engineering faculties of Carleton University and the University of Ottawa. This event, to be held in April 2000, will be reported in our next Newsletter



CIRQUE+ 2000 Committee

The Canadian Society for Engineering Management, Ottawa Chapter, was a supporter of the Materials and Manufacturing Ontario Sponsored "Intellectual Property and Management Licensing Seminar" held in Ottawa on April 18th, 2000. This is the third year in a row that this event has been held in Ottawa and CSEM Ottawa organized and sponsored the first two. This was a full day business-oriented workshop to introduce technology managers to intellectual property and licensing basics. Gord Thomson, P.Eng., LL. B. FEIC, CSEM President-Elect, was a featured speaker at the conference addressing trade-mark, trade-secret and copyright issues. Another active CSEM member from Mississauga, Davey Tyrrell, P.Eng., MCSEM, President of Vertex Intellectual Property Strategies Inc. spoke on licensing strategies. The event was attended by 25 individuals from government and industry.



CALGARY CHAPTER NEWS

On October 5, 1999 Denzil Doyle, P.Eng., M.C.S.E.M., President of Capital Alliance Ventures Inc., Ottawa's unique labour sponsored venture fund, delivered a seminar, "Making Technology Happen".

There were twenty-one attendees from industry. The course included the following topics:

- Identifying exploitable technology.
- Preparation of business plans.
- Market research.
- Launching a technology intensive company.

- Estimating investment and payback.
- Negotiating licensing agreements.
- Implementing a sound management process.
- Role of the Board of Directors.
- The role of the long range plan, the budget and the forecast.
- Choosing the appropriate corporate structure.

Fees included the cost of membership in C.S.E.M., C.S.E.M. members were credited this amount. The profit was shared 50:50 between C.S.E.M. National and Calgary.

Denzil's address was well received, one attendee bought all spare copies of his book for his staff!

Iron ring gets stamp of approval

CANADA POST TO HONOUR 75-YEAR-OLD CEREMONY

by *Susanne Frame*

The iron ring symbol is about to receive a stamp of approval—literally. On April 25, 2000, Canada Post will issue a postage stamp to honour the 75th anniversary of the Ritual of the Calling of an Engineer—the obligation ceremony in which graduating engineers participate.

“It is our hope that the commemorative stamp project will strengthen the bonds among Canadian engineers through enhancement of their public image, while highlighting Canadian engineering achievements,” says Rémy Dussault, Ing., Chief Warden of the Seven Wardens Inc., the group that administers and maintains the ritual across the country.

Canada Post rarely recognizes 75th anniversaries, but will make an exception thanks to the vigorous four-year letter-writing campaign set in motion by Don Turner, P.Eng., a Warden of Camp 1 and the Chair of the Seven Wardens’ Commemorative Stamp

Committee. Thanks to his efforts, Canadian engineering associations, engineering deans and students, individual engineers and political dignitaries like Jane Stewart, David Collenette and deputy prime minister Herb Gray all wrote Canada Post chair André Ouellet asking that the commemorative stamp be issued this year.

The Ritual of the Calling of an Engineer, or the Iron Ring Ceremony, originates from 1922, when seven past presidents of the Engineering Institute of Canada attended a meeting in Montreal. At that meeting, Herbert Haultain, P. Eng., a mining engineering professor at the University of Toronto, voiced his request for an organization to link engineers in Canada more closely together. Haultain then wrote to English poet Rudyard Kipling, who in turn responded with an obligation and a ceremony called, “The Ritual of the Calling of an Engineer.” The first Iron Ring Ceremony took place on April 25, 1925 at the University of Toronto.

At the ceremony, engineering graduates receive an iron ring, symbolizing both the pride and humility of the profession, which is meant to remind engineers of their obligations to maintain high professional standards.

Canada Post will print seven million stamps. The average print run is five or six million for a commemorative stamp. But unlike the definitive stamps of Queen Elizabeth or the Canadian flag, the iron ring stamp will only be available for one year. This is Canada Post’s first tête bêche stamp: a two-piece, peel-and-stick stamp that you assemble into a ring on the envelope.

Stamps will be available at any post office in Canada, or through the National Philatelic Centre by calling (800) 565-4362 or (902) 863-6550.

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Photos from the June 1999 EIC Workshop on Synergism.

The following points were reported to the workshop by Ken Putt, CSEM President.

1. Some overlap exists between CSEM and the management group (EMS) of IEEE Canada
2. CSEM’s interests are broad and management oriented
3. Identifying clear focus and mandate
4. Society membership included as part of conference registration if participants not members
5. Large opportunity for 2nd membership within EIC federation
6. Interests - project management
7. Continuity in executive is required
8. Regular Newsletter with wide distribution; course offerings in place.
9. Potential for collaboration with other technical societies, ie, agriculture, mining, etc possible.

André Rollin presents a certificate of appreciation to Mike Sozozuk who recently retired as the EIC Executive Director.



Synergy Workshop Participants - June 14, 1999

Back Row: L to R: John Plant, Doug Thierman, Geoff Scott, Joe Ploeg, Bruce Peachey, Norm Jeffrey, Dave Sego, George Archer, Ken Putt, Don Russell, André Rollin, Paul Amyotte, Guy Gosselin

Front Row: L to R: Michel Langelier, Len Bateman, Linda Weaver, Fleurette Olive, Celia Desmond



HONORS, AWARDS & FELLOWSHIPS

EIC Awards Dinner

MARCH 6, 2000 – OTTAWA

*L to R: R Kearney, R. Garneau,
M. Mohitpour, E. Petriu,
N. Georganas, C. Desmond,
P. Kaiser, A. Rollin, W. Krzymine,
A. Carty, M. El-Hawary,
B. Lukajic, F. Matich, A. Perks.*



*André Rollin
congratulates Mo
Mohitpour MCSEM on
his EIC Fellowship. Mo
Mohitpour is a Senior
Engineering Specialist
with Trans Canada
International Calgary,
Alberta.*

*The CSEM table: L to R:
F. Olive, A. H. Wilson,
David and Julie Weaver,
Carol and Mo Mohitpour,
Ken Putt*



Marketing engineering services

THE "VIRTUAL ENGINEERS" MODEL

by R. Anthony Warner, P.Eng.



If the Internet and e-business strategies are not a big part of how you do business yet, they probably should be. They provide venues for engineers to find new ideas, check out the competition, network, promote companies and even bid on projects. Here's how you can use Internet-based technologies to better market and deliver your services.

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The "virtual engineers" (VE) model was developed to help engineers market and deliver engineering services cost-effectively in the Information Age and 21st century. Based on current business and employment models, it's aimed at revolutionizing the marketing and delivery of engineering services by enhancing the returns to professional engineers, while reducing the cost of professional engineering services to industry. Any engineer who studied engineering with the objectives of consulting, specializing, and having economic security, and personal and economic freedom will find this model useful.

As Internet-based technologies become the basis of our community, engineers have to reengineer their business models, marketing skills and media in order to sell their services effectively. The VE model serves large firms, individuals, industry, business and academic sectors, by focusing on reducing overhead costs that reduce earnings through the use of Internet technologies. It requires a shift from the traditional low-tech, high-touch marketing approach, to a high-tech, low-touch approach similar to most new marketing models. It involves building superior relationships with the right customers. To use the model,

engineers will need to get up to speed on how to use Internet technologies in their businesses.

HOW DOES IT WORK?

Under the VE model, engineering firms and engineering departments convert themselves into "virtual companies," and both employee engineers and engineers in independent practice become "virtual engineers." Virtual companies are companies that outsource their engineering services to independent contractor engineers or virtual engineers. Many Canadian companies have already outsourced their engineering departments to engineering firms and, to a smaller extent, use sole practitioner engineers for specialized services. In addition, many Canadian companies and some Ontario government departments have converted some of their employed engineers into independent contractors, allowing them to provide services to other companies.

These business models are being implemented so that engineers, their employers and clients benefit from the process. The VE model is aimed at shaping the future by creating a business model in which all engineers are sole practitioners, who use Internet

technologies extensively to market and deliver their services. This means that they have to reengineer their business processes by converting to Web-based marketing, and streamlining their project procurement and delivery process to an e-business environment. The e-business environment minimizes the costs and some of the risks associated with these processes.

Currently, government websites like www.merx.cebra.com (a federal site with links to the provincial government), list public projects up for tender and enable engineering firms to locate suitable request for proposals (RFPs) on line. Increasingly in the future, engineers will seek out projects and conduct their work through e-business Internet portals. They will not only procure RFPs, but they will also submit their proposals and procure projects at the portal.

Online procurement minimizes overall procurement costs by reducing the time required to prepare RFPs and proposals. It also reduces the risks associated with procurement, because engineers are able to work with clients to assess their bids and success factors online—sometimes even in real-time. Architectural services are currently being procured at www.e-architect.com, and manufacturing parts and equipment are currently being purchased at portals like www.suppliermarket.com.

THE NEW WAVE IN MARKETING

One of the critical success factors in using the VE model is to have strategic marketing focused on your areas of expertise and specialization. Specifically, you should target areas where your procurement costs are low, due to short proposal preparation time, and your project delivery process can be maximized (i.e., easily reproducible). Traditional engineering marketing activities include publishing newsletters, writing articles/papers, doing market research, advertising in trade journals and networking. The VE model does not change these activities, but rather, changes the medium in which they are executed, by taking

the use of websites and the Internet several steps further.

For example, newsletters are converted to news releases at websites, via email or on a news service. Similarly, articles and papers are posted on topic specific “portals” on the Web. Market research and technical research are done using online resources at topic specific portals. Networking is done by participating in online discussions, news and chat groups. In these groups, engineers find ideas, meet vendors, check out the competition and network in a virtual world.

The VE model also enables engineers to leverage online partners, clients and suppliers. In the virtual world, an article or other information piece can be e-mailed to your email list and, if leveraged properly, can be forwarded in a matter of minutes to most of the contacts of those on your email list. This broadcast feature is critical to marketing success, but should be limited to only valuable, useful information. When used properly, an engineer can reach thousands of qualified prospective clients with one e-mail.

This type of leveraged e-mail distribution is currently done through partnering agreements. But in the digital future, all members of an online community will be involved in these types of activities.

ENGINEERING INTERNET PORTALS

Unlike typical websites that are owned by, and used to promote, specific organizations, Internet “portals” exist to promote industry or service sectors, such as business.com or loans.com. In marketing terms, they

offer “professional branding” for professionals who wish to market and sell their products and services to a specific community.

The VE model involves advertising and marketing on an engineering specific Internet portal like www.e-Engineer.com, where advertising and marketing are dynamic. For example, newsletters are converted to news releases at websites, via email or on a news service; articles and papers are posted; market research and technical research are done using online resources; trade show participation is done by participating in online discussions, news and chat groups. At Internet portals engineers find ideas, meet vendors, check out the competition and network in a virtual world.

Use of engineering portals is an efficient process to move engineering business on to the Internet quickly. An effective portal should provide for:

- marketing and solicitation via the Internet;
- submissions of requests for proposals, proposals and statements of qualifications;
- issuing and receiving purchase orders;
- issuing invoices and receiving payment;
- submissions of project reports and drawings delivery; and
- a knowledge database for engineers and their clients.

Use of Internet portals can enable engineers to reduce substantially the cost of these activities. This approach enables us to reduce engineering fees by stripping off the inefficient overhead structure of the past, while increasing profitability.

FAST FACTS ON SELF-EMPLOYED ONTARIO ENGINEERS

Percentage of self-employed PEO members	Type of work	Median total cash compensation
1998	7.9% Consulting	Self-employed members \$87,550
1988	4.5% Entirely engineering	Employee members \$72,875
	Non-engineering 14%	

Note: Statistics are from PEO's 1998 Report on Engineers' Salaries, Survey of Members.

The Virtual Engineers Collective has demonstrated this by transferring higher income to its member-engineers, while still making a significant profit. Established in 1997, Virtual Engineers has used Internet technology to unite several self-employed engineers to form a full-service engineering firm. The company has significantly increased the revenues of self-employed engineers, reduced the cost of engineering services to corporate and government clients and made significant returns on its investment. The VE Collective has provided work and services for over 20 engineers.

It's clear that there is no future without the Internet. The VE model helps engineers streamline their business operations, improve client services, win proposals and deliver effective projects.

Although the demand for engineering skills has been growing steadily,

engineers have been lagging behind other professions in the use of the latest technologies to promote our profession and services. Many of the other major professions, including doctors and lawyers, have already started using Internet portals like doctors.com in the United States. The Internet has evolved so that, now, the easiest and least expensive way to influence key decision makers and build public support is by soliciting and posting information on the Web.

MAXIMIZING FEES

Currently Ontario's 63,000 professional engineers earn an annual total of approximately \$4 billion. Using a 3:1 billing ratio, this is equivalent to \$12 billion in engineering fees or approximately \$200,000 in billings per engineer. This represents the potential engineering fees in the current market. Although corporate Ontario is prepared to spend \$12 billion on engineering services, it is able to reduce this expenditure by employing engineers as salaried employees, keeping the difference as savings in exchange for taking on the risks for potential mistakes. On the other hand, employed engineers transfer profits to their employers in exchange for job security, there by reducing potential earnings.

A simplified model of how the VE model could benefit engineers is as follows. Let's say the model was applied throughout the Ontario engineering profession, and all engineers became virtual engineers. Ontario engineers' \$4 billion in salaries would be converted to \$12 billion in engineering fees, \$8 billion of which would be actual value added and \$4 billion of which would go to overhead and the bottom line. The VE model would use technology to cut an additional \$2 billion from overhead costs and the bottom line, efficiently transferring \$6 billion to engineers. The virtual corporation would receive \$3 billion, and clients would save \$1 billion. If managed properly, the virtual corporation could increase profits and distribute more money to individual engineers, without reducing quality.

R. Anthony Warner, P. Eng., founder & president, V E Collective Inc., coined the phrase "virtual engineers" and is the developer of the e-Engineer.com Web portal. For his MSc/MBA at Columbia University in New York, he studied systems modeling and management control with professor Martin K. Starr, who has written several books and works on integrating engineering services within industry.

The CSEM Newsletter

DO YOU HAVE A SHORT ARTICLE OR ANNOUNCEMENT YOU WISH PUBLISHED?

WOULD YOU LIKE TO PLACE AN ADVERTISEMENT IN THIS NEWSLETTER?

IF SO, PLEASE WRITE EDITOR@CSEM-SCGI.CA

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The deadline for articles or advertising is August 31, 2000.**

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Becoming a virtual engineer

ENGINEERS SHOULD TAKE THE FOLLOWING STEPS TO GET INTERNET READY.

- Study Internet-based business models.
- Install the hardware and software necessary for easy Internet access and to create Web-based documents, and communicate over the Internet via websites and email .
- Build your own local Intranet. For proprietors, this could be as simple as saving information on a personal computer in HTML format, with easy browsing capabilities.
- Select an Internet service provider that offers the speed and bandwidth needed to enable drawings to be sent quickly. For smaller engineering firms, it may be more cost effective to use broadband, value-added service providers that can deliver engineering resources and meet your needs.
- Establish a Web presence in many formats, such as banner-ads, single and multi-page ads, and hot links.
- Be prepared to update and upgrade your system on a regular basis. In today's virtual world, change is constant and you are expected to keep up. Success depends on staying and looking current.