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ENGEOActions

THE NEW BRUNSWICK SOURCE FOR ENGINEERING AND GEOSCIENCE NEWS

2024 APEGNB CONFERENCE - RECAP

Sharing the highlights of our 2024 professional development sessions, the 2023 AGM and our Awards Reception.

LUMBER-BASED MASS TIMBER PRODUCTS IN CONSTRUCTION

Following up with Dr. Meng Gong, on questions from members following his presentation as part of our 2024 Annual Conference.

TECHNOLOGY EVOLUTION

The evolving role of AI and cybersecurity within regulatory bodies. Experts weigh in.

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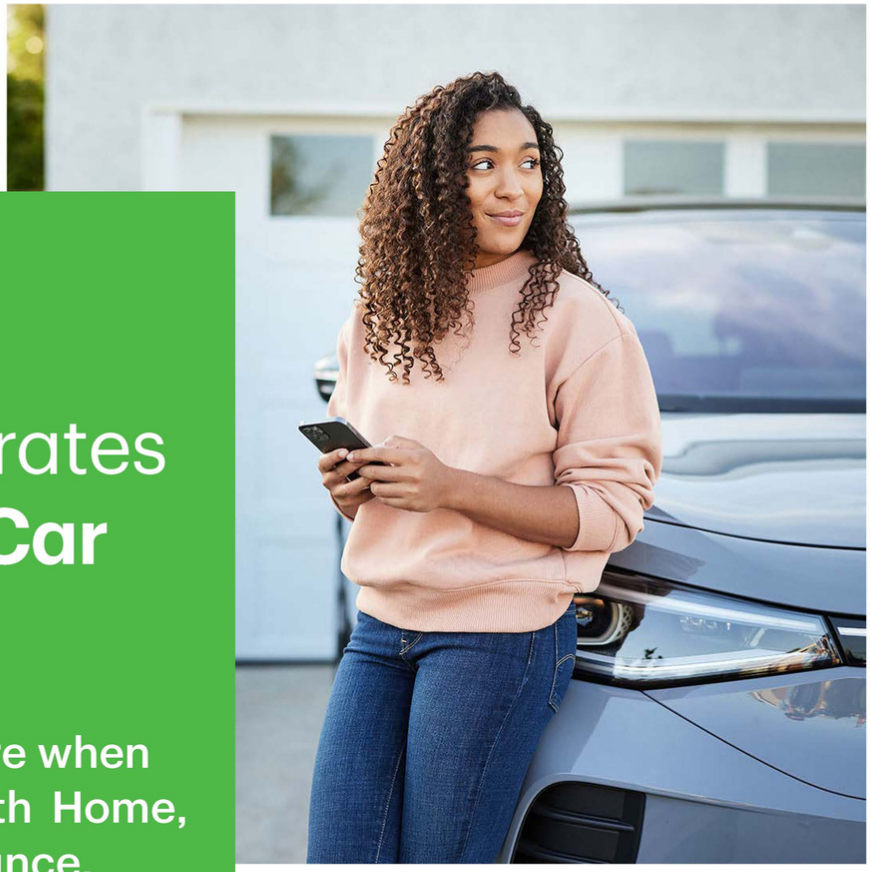

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AI-> Cybersecurity

Understanding how organizations can leverage AI responsibly to strengthen their cybersecurity defenses and protect against evolving threats.

Message from the President

Following another successful APEGNB Annual Conference and Annual General Meeting, I am honored to address you as your newly appointed President for the year 2024.

Our recent conference was truly a testament to the dedication and expertise of our members. From insightful keynote speeches to engaging panel discussions, we explored the latest advancements and challenges in our fields, paving the way for innovation and progress. The AGM provided us with the opportunity to reflect on our achievements, address pertinent issues, and set ambitious goals for the future.

I want to extend my appreciation to all the attendees, speakers, sponsors, and organizers who contributed to the success of the event. Your commitment to excellence and your passion for our professions are what make our association strong.

Also, I want to express my sincere gratitude to our outgoing President, Raphaël Roy, P.Eng., FEC. His leadership and dedication over the past year have been truly commendable!

Furthermore, I would like to extend a warm welcome to the new (and returning!) Council and Committee members who have agreed to take on roles for the year. Your expertise and commitment will be invaluable as we work together to advance the interests of our members and promote the highest standards of professionalism and ethics in engineering and geoscience.

As President, I am humbled by the trust and confidence you have placed in me. I am eager to work collaboratively with each of you to advance the interests of our members and promote the highest standards of professionalism and ethics in engineering and geoscience.

In the year ahead, with Council, I hope to focus on several key initiatives:

1. **Promoting Diversity and Inclusion:** Diversity drives innovation and fosters creativity. With Council, I am committed to creating a more inclusive environment within our association where all voices are heard and valued.

2. **Public Outreach**: It is crucial that we advocate for policies and regulations that support our professions and address the pressing challenges facing our industries.

Holly Young, P.Eng., FEC
105th President, APEGNB

3. **Professional Development:** Continuous learning is essential for staying relevant and competitive in today's rapidly evolving world. We will work to champion initiatives and opportunities that provide our members with access to quality professional development opportunities and resources.

Together, we have the power to shape the future of our professions and make a positive impact on society. I am confident that we will achieve great things in the year ahead.

Thank you once again for entrusting me with this honor. I look forward to working together to advance our shared goals.

Together, we are creating a brighter future.

With gratitude,

Holly Young

HOLLY YOUNG, P.ENG., FEC

President, APEGNB
president@apegnb.com

p.s. – If you want to make a difference, please volunteer with your Association. Feel free to send me an email to find out more.

Message from the CEO and Registrar

In an era marked by increasing use of digital technology to create, modify or manipulate images and documents, the integrity and professionalism of the engineering and geoscience sectors are paramount. Recent legal cases have brought into sharp focus the significance of the regulated use of professional designations and titles. These cases underscore the key role regulators – such as APEGNB - play in protecting the public interest while upholding the integrity of professional designations.

In early December, a BC Supreme Court decision affirmed the claim of Engineers and Geoscientists BC (EGBC) against a member of the public who had never been a registrant, for using the term "engineer" in distributed materials. Similar to APEGNB, Engineers and Geoscientists BC is "given the exclusive right to use certain reserved titles, namely: (a) "professional engineer;" (b) "professional engineering licensee;" and (c) "engineer in training." Under their provincial legislation, this right "...effectively prohibits non-registrants from using reserved titles or other names that express or imply either membership in the regulatory body, or authority to practice the profession regulated by that body." The court found that the individual was claiming to be an "engineer" with an applied sciences degree and engineering experience, and had been engaged to do contract engineering work". These actions were found to be contrary to the provincial laws, and were therefore prohibited. The individual was ultimately found guilty of misuse of the title and a permanent injunction was issued to prohibit him from using the title "engineer" or any other language that would imply that he was a registrant of EGBC, or authorized to practice engineering.

The second case focused on a member of the public who sealed documents using a computer-generated engineering stamp, a falsified number, and signed off on electrical plans as an engineer. Engineers Nova Scotia filed a police report and the individual was charged with fraud under the Criminal Code of Canada. While Crown Prosecutors argued for a period of jail time, and the individual requested a discharge, the judge determined that it would be contrary to the public interest for the case to be discharged. Noting that the activities were done through a sustained effort over time, the final decision was for a period of custody to be served in the community followed by a period of probation.

Both of these cases highlight the need to ensure the protection of the public, upholding the role and mandate of the regulatory bodies including APEGNB. They also highlight the importance of ensuring the protection of titles for engineering and geoscience, as they are reserved under legislation for those individuals who are qualified to be licensed.

Lia Daborn, CAE

APEGNB has also identified cases where a professional's stamp was used in an unauthorized manner over the past year. We were advised by clients who had noticed that the individuals were not listed on our public registry. In one case, the engineer was registered in another jurisdiction and modified the year on their stamp.

In the second instance, a member's stamp was used by another individual to stamp and seal documents that the client knew were outside of the practice area of the member. The client contacted the member directly and the case is now under investigation by the RCMP.

The importance of the P.Eng. or P.Geo. designation is a message that APEGNB presents at every meeting with government officials, in order to ensure that they are aware of the importance of licensure for professionals in the province. As self-regulated professions, we rely on the members to identify any potential breach or mis-use and bring it to the attention of our office so that it can be properly investigated. This also applies to companies that advertise 'engineering' or 'geoscience' services within New Brunswick. They, too, are required to register and obtain a Certificate of Authorization in order to do work in the province. We have the support of government in ensuring this happens through their granting of exploration rights and registration of companies through Service New Brunswick.

We continue to inform the public about the process for filing complaints and the importance of ensuring the engineers and geoscientists practicing in New Brunswick have a permit to practice by confirming their licensure status on the public registry. As shown by the examples above, practising engineering or geoscience without a license, is an offense under the provincial legislation and can be prosecuted. As self-regulated professionals, there is also an onus on all members of APEGNB to ensure that only those who are licensed to practice, are doing so.

Should you identify anyone who may be 'off side', you are encouraged to contact our office.

Lia Daborn
LIA DABORN, CEO & REGISTRAR, APEGNB
lia@apegnb.com

Resources:
EGBC case: www.egbc.ca/News/Articles/Court-Ruling-Confirms-Title-Protection-Over-Engine
Nova Scotia case: https://decisia.lexum.com/nsc/nspc/en/item/522213/index.do?q=Connors
APEGNB cases: www.apegnb.com/category/discipline/

2024 APEGNB ANNUAL CONFERENCE

The regulatory by-laws under the *Engineering and Geoscience Professions Act* require that the annual general meeting of the Association of Professional Engineers and Geoscientists of New Brunswick be held in the first six months following the fiscal year, so it is customarily held the third week of February.

Our 2024 Annual Conference was another year of a hybrid style event. We welcomed nine (9) online professional development sessions between February 12-14. These online sessions averaged about 200 viewers each! Once again, we also offered panel discussions featuring experts on the National Building Code and Accessibility that took place the morning of February 16, followed by a luncheon sponsored by TD Insurance and the annual general meeting on Friday afternoon to close us out. In addition, we hosted our "Rising Stars of Engineering and Geoscience" Awards and Recognition Reception the evening of February 15, also in-person in Moncton.

104th Annual General Meeting

The 104th Annual General Meeting was called to order and 81 in-person and 54 virtual registrants were in attendance. The business of the meeting included:

- Minutes from the 2022 AGM
- Messages and greetings from the President, CEO, and our national bodies.
- Audited financial statements
- 2024 election results (Fredericton District)
- Installation of New Council

Rory Pickard, P.Eng.

APEGNB engaged ClearPicture, an independent third party to conduct the 2024 Fredericton District Council election. It was reported that 193 voting ballots were received, giving an overall participation percentage of 14%. Council welcomes Rory Pickard, P.Eng. as the elected representative for the Fredericton District.

In addition, the following positions on Council will see new faces.

President (1 year term).....Holly Young, P.Eng., FEC
Vice-President (1 year term).....Shawn Amberman, P.Eng.
Past-President (1 year term).....Raphaël Roy, P.Eng., FEC
Councillor At-Large (2 year term)....André-Michel Léger, P.Eng.

District Councillors (2 year term) - District representatives may be re-elected for a second and third term but are not eligible for a further term until at least two years have elapsed since the expiry of the previous term.)

- Karine Savoie, P.Eng. NORTHWESTERN
- Bill Woodhouse P.Eng. SAINT JOHN
- Michelle Roy, P.Eng. NORTHEASTERN
- Jérémie Aubé, P.Eng. MONCTON
- Adrian Davis, P.Geo. GEOSCIENCE COUNCILLOR
- Kevin Kilfoil, P.Eng. COUNCILLOR-AT-LARGE

Public Representatives (2 year term)

- Andrea Stierle-MacNeil
- Marie-Claude Doucet, LLB, MBA

Appointment to National Organizations

- Marlo Rose, P.Eng., FEC, Director, Engineers Canada
- Matthew Alexander, P.Geo., FGC, Director, Geoscientists Canada

Outgoing Councillors

Thank you to our Outgoing Councillors in 2024 and for giving your time to Council and your profession. Your efforts are greatly appreciated.

- Tammy Lamey, P.Eng.
- Michelle Paul-Elias, P.Eng., FEC, FGC (Hon.)

2024 Annual Conference

Highlights from our in-person sessions, Awards and Recognition and the Annual General Meeting

2024 APEGNB AWARDS AND RECOGNITION

C.C. Kirby Award - Dr. Arun Valsangkar, P.Eng., FEC
Given in recognition of outstanding service or contribution to both the engineering profession and the province of New Brunswick. The Kirby Award is the most prestigious award a professional engineer can receive from the Association.

Arun Valsangkar, PhD, PEng, a Professor Emeritus at the University of New Brunswick and Senior Consultant at Stantec Consulting Ltd., boasts over 50 years of expertise in teaching, research, and consulting. His career spans major projects across Canada, focusing on marine infrastructures, mining facilities, transportation, and more.

With extensive contributions to teaching and research, including over 150 published papers, he's been recognized with prestigious awards like the Legget Medal and the CGS's Quigley and Meyerhof Awards for his exceptional work in geotechnical engineering. Dr. Valsangkar's impact on education has been recognized with the University of New Brunswick's highest teaching award, and he has mentored numerous graduate and undergraduate students while actively engaging with professional organizations at local, provincial, and national levels.

Dr. Valsangkar, P.Eng., FEC, (right) winner of the 2024 C.C. Kirby award. Pictured with Holly Young, P.Eng., FEC, 2024 APEGNB President and Raphaël Roy, P.Eng.,FEC, 2023 president of APEGNB.

Margot Allain-Bélanger thanks Raphaël Roy, 2023 APEGNB President as she accepts the 2024 APEGNB Women in Engineering Award.

Women in Engineering Award - Margot Allain-Bélanger, ing.
Presented to an outstanding engineer who, in the opinion of the Association, through their engineering and career achievements, has demonstrated noteworthy support for women in engineering and has established a benchmark of engineering excellence.

Margot Allain Belanger has been a professional engineer since 2001. She worked in consulting engineering for a decade before becoming Director of Municipal Operations in Shediac follwed by several years as the OUtreach Coorindator with the Faculty of Engineering at the Université de Moncton. She is passionate about inclusion in engineering, and through her role as Outreach Officer, she advocated for the promotion of diversity in engineering. She has presented hundreds of lectures revolving around Diversity, Equity and Inclusion in the profession, and led workshops for girls and mentored those wishing to enter engineering. Currently a doctoral student in water engineering at Université Laval, she remains active by teaching and continuing her volunteerism with APEGNB.

Young Professional Achievement Award
Alaina Seymour, P.Eng.
Given to a young outstanding professional engineer/geoscientist who has carried out major engineering/geoscience achievements in or on behalf of New Brunswick. The Award recognizes exceptional technical achievements in his/her chosen fields.

Alaina Seymour, P.Eng., earned her Chemical Engineering degree in 2016. Excelling as a process engineer and later earning her Project Management Professional (PMP) designation, she joined Dillon in 2021, swiftly becoming integral to the team. Her expertise spans transportation, infrastructure, water/wastewater, and facilities projects, showcasing exceptional leadership and technical skills. Alaina is the Growth Segment Account Manager for Indigenous clients. She actively engages with communities, identifying funding opportunities and overseeing large-scale projects addressing vital social and health service gaps. In this role, she manages account development, ensuring client satisfaction and project completion for Indigenous communities.

Alania Seymour, P.Eng., proudly accepts the 2024 Young Professional Achievement Award.

2024 APEGNB AWARDS AND RECOGNITION

Outstanding Educator Award - Yassine Bouslimani, ing.
Recognizes exemplary contributions to the teaching of the engineering/geoscience professions at New Brunswick universities.

In late 2023, after learning of his recognition as APEGNB's 2024 Outstanding Educator, we were saddened to learn of his sudden passing. On the evening of February 15, 2024, Yassine was remembered for his exemplary contributions to engineering and his dedication to his students. The award was accepted in his name by Mohsen Ghribi, Professor and Chair of the Electrical Engineering Department, Université de Moncton.

Yassine is honoured by his peers and colleagues as members of the Faculty of Engineering at the Université of Moncton accept the award on his behalf.

Geoscientists Canada Fellowship

The FGC honours individuals who have given noteworthy service to the geoscience profession, through service to Geoscientists Canada, service to one of the provincial and territorial regulatory bodies that are the constituent associations of Geoscientists Canada, or service in another capacity.

- **Christy Cunningham, P.Geo. was recognized with a 2024 FGC distinction for her service to her profession and the industry at large.**

Fellow of Engineers Canada (FEC)

The following members received a certificate of fellowship and the privilege of using the designation Fellow of Engineers Canada (FEC) upon recommendation from APEGNB in honour of exceptional contributions to the engineering profession.

Karine Savoie, ing., FEC - Karine has been a member of APEGNB since 2004. She has been active in her Northwest Branch serving in multiple roles and volunteering in her community. She has been part of APEGNB Council as the Northwest District Representative since 2020.

Kevin Gallant, P.Eng., FEC - Kevin has been registered with APEGNB for over 20 years. He has served on both provincial Council (2004) and his branch district for several years serving in various capacities.

Jeff Earle, P.Eng., FEC- Jeff has been a professional member in good standing with the organization since 2001, active in his community and with the Association.

Dr. Robin Chaplin, P.Eng., FEC - Dr. Chaplin has had a very satisfying career, mostly in power generation for just over 60 years and has worked in all major disciplines. As a professor at UNB he taught dozens of courses in three departments.

Raphaël Roy, P.Eng., FEC - Raphaël has been a professional member with APEGNB since 2006. He served as the 104th President of APEGNB.

2024 APEGNB AWARDS AND RECOGNITION

Life Distinction Awards

At the 2022 AGM, a by-law was put forward to remove the former "Life Membership" category and replace it with a more robust category that takes into consideration involvement with the Association and length of practice within the province.

2024 marked the inaugural awarding of the Engineering Life Distinction and the Geoscience Life Distinction recognitions.

In particular, the Geoscience Life distinction is noteworthy as the Association only began regulating the Geoscience profession in 1999 and in order to get to the point where even one P.Geo. could be recognized under the previous Life Membership category, it would have not been for another 10 years!

Considering the new criteria, we are now pleased to be able to recognize the significant contributions of these professionals to our Association and to our province.

On behalf of the professions and the province that they serve, we congratulate all of the 2024 Life Distinction recipients.

Engineering Life Distinction

- Dr. Robin Chaplin, P.Eng., FEC
- David Crandall, P.Eng., FEC
- Anthony Nabuurs , P.Eng., FEC
- James Pike, P.Eng.

Geoscience Life Distinction

- Robin Adair, P.Geo.
- Bruce Broster, P.Geo., FGC, FEC(Hon.)
- David Lentz, P.Geo., FGC
- Victor Nowicki, P.Geo., FGC, FEC (Hon.)
- Jeff Ollerhead, P.Geo.
- Michael Parkhill, P.Geo, FGC
- Reginald Wilson, P.Geo., FGC, FEC (Hon.)

Anthony Nabuurs, P.Eng., FEC receives his Engineering Life Distinction recognition.

David Lentz, P.Geo., FGC, receives his Geoscience Life Distinction recognition.

David Crandall, P.Eng., FEC receives his Engineering Life Distinction recognition.

Jeff Ollerhead, P.Geo. receives his Geoscience Life Distinction recognition.

Victor Nowicki, P.Geo., FGC, FEC (Hon.) receives his Geoscience Life Distinction recognition.

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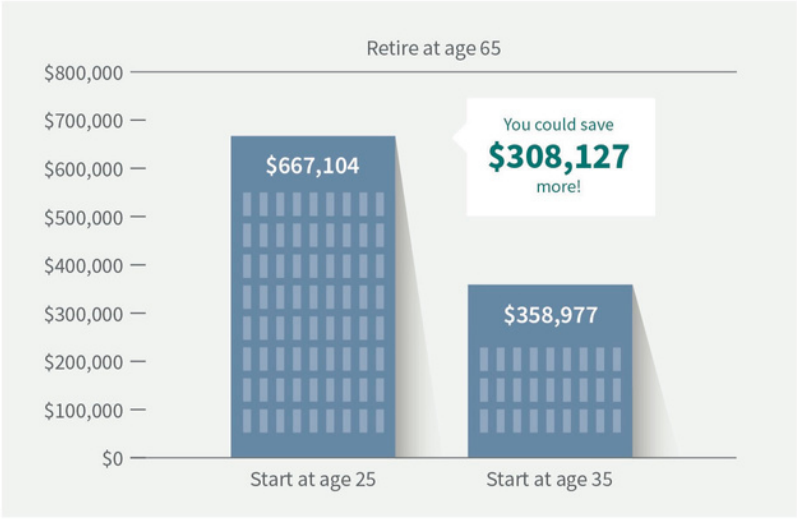

The Engineers Canada-sponsored Financial Security Program is exclusive to engineers and geoscientists, as well as their families, across Canada.

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EFFECTIVE AI: THE EVOLVING ENVIRONMENT OF ANALYTICS

Submitted by Jeremy Adamson, AI and Analytics Strategy Consultant

Analytics and artificial intelligence have transitioned from being an investment in the future to becoming core components of corporate strategy and a competitive necessity. According to a recent Deloitte survey, half of Canadian business expressed the belief that AI would fundamentally alter their businesses in the next 1-3 years[i].

Despite the overwhelming enthusiasm for the potential value of AI, most initiatives end in failure. These failures are largely due to professional myopia, where data scientists, driven by a passion for technology, overlook human factors, strategic alignment, and governance.

The recent surge in interest for generative AI occurs against the backdrop of these challenges. Organizations that struggle to reconcile simple operational metrics now face pressure by executives and shareholders to implement complex AI solutions.

A 2023 study by Wallstreet Zen revealed that publicly traded companies mentioning AI in their earnings calls experienced an increase in their share price 2 points higher than those that did not[ii]. Under intense pressure to execute, practitioners are struggling to demonstrate measurable results.

In the seventy-year history of artificial intelligence as a practice, two major "AI winters" have occurred, where the hype failed to materialize. We are at an inflection point, and without a reorientation towards well-governed and feasible use cases, a third winter may be imminent. We can avoid this by focusing on two key aspects.

Separate what is cool from what is valuable

Since the release of ChatGPT, prognosticators have written countless articles predicting the obsolescence of professions like lawyers, tax planners, psychologists, financial advisors, and life coaches within a year. Tech startups have developed narrowly scoped products that perform simple API calls to existing large language models with mixed results. In the 2023 Gartner Hype Cycle, generative AI was deemed to be at the peak of inflated expectations[iii]. While this is true, it doesn't diminish the significant opportunities presented by this new technology.

Executives know that they want AI, but they do not know how or where. Practitioners, fueled by a passion for technology, have promoted ambitious transformational projects, leaving quick wins on the table. Products exist today that can quickly develop marketing copy, assist developers, synthesize information, and provide immediate productivity boosts to several organizational functions, but are underutilized.

The commercial application of generative AI requires use cases that are aligned to business metrics. While some use cases may appear compelling on the surface, if they do not increase revenue, reduce costs, or help manage risk, they will not withstand scrutiny by stakeholders. Practitioners need to always be focused on value.

Consider the evolving regulatory environment

In the last decade, regulatory focus across the OECD has shifted from incentivizing investment to controlling development and application. This shift intensified in the past year with the explosive rise in generative AI capabilities and the narrative shift towards AI as a potential world-ending technology.

The philosophies guiding these policies vary significantly worldwide. In the United States, policies are mostly non-binding recommendations, while in the European Union, key use cases and applications have been explicitly forbidden. Jurisdictions grapple with balancing priorities such as encouraging innovation, protecting intellectual property, preserving jobs, and avoiding bias.

Industry heavily influences shaping these regulations. After being the first to market with ChatGPT, OpenAI's Sam Altman advised Congress to implement guardrails to reduce the risk of irresponsible applications, attempting to create a legislative moat for his organization. In November 2023, the Bletchley Declaration, signed by 28 countries (including Canada), encourages partnerships between industry, academia, and transnational organizations like the non-profit foundation that owns OpenAI [iv].

In Canada, the final form of these policies remains unknown. Bill C-27 and the Artificial Intelligence and Data Act companion document provide some clues[ii]. The policy states that an "AI Minister" will

monitor organizations for compliance and order audits, with criminal prosecutions for the reckless use of AI. The policy leaves the door open for provincial supplementation, creating a patchwork of permissible AI activities. While definitions for what is allowable and what is "reckless" have yet to be outlined, a review of the current federal guide on the use of generative AI provides some guidance on the technical posture of the government. This document warns that the use of AI will erode the abilities of public servants and permits it to be used only for ideation—not to make decisions. It bookends this with several warnings that AI is a source of pollution, encourages IP theft, and reinforces negative biases[v].

Practitioners and organizations that are currently deploying AI are doing so in a legally undefined area. It's akin to constructing buildings without knowledge of building codes, but with forewarning that noncompliance will lead to criminal prosecution. Practitioners need to find conservative use cases with little legal ambiguity.

In such a fluid environment, regulations and public perceptions can change quickly. Taking a human-centric approach to AI deployment can help mitigate risks and reduce the likelihood of significant reputational damage.

Summary

If we are to realize the most value from generative AI, we need a collaborative, multidisciplinary approach involving technologists, ethicists, policymakers, and legal experts. Practitioners working in isolation limit impact and expose organizations to regulatory risks. AI and analytics need to occur within an environment of transparency, trust, and collaboration. If we can understand and mitigate the challenges of traditional analytics in this new environment, we will benefit personally and professionally. We need to focus on governance, delivery, and a human-centric approach to execution. Generative AI can generate great social and commercial benefits if we can use it in a mature way.

[i] Gartner Research. "Hype Cycle for Artificial Intelligence, 2023," July 19, 2023. https://www.gartner.com/en/documents/4543699
[i] Ammanath, Beena, Susanne Hupfer, and David Jarvis. "Thriving in the Era of Pervasive AI: Deloitte's State of AI in the Enterprise, 3rd Edition." Deloitte Insights, 2020.
[iii] Wallstreet Zen. "Can the Mere Mention of AI Move Stock Prices in 2023?" Accessed November 20, 2023.
[iv] AI Safety Summit. "The Bletchley Declaration by Countries Attending the AI Safety Summit," November 1, 2023.
[v] Government of Canada. "Guide on the Use of Generative AI," September 6, 2023. What options are out there?

Jeremy Adamson is an AI and analytics strategy consultant and the author of Minding the Machines and Geeks with Empathy. Jeremy holds an M.Eng from the University of New Brunswick and an MBA from the University of Calgary. Learn more at www.rjeremyadamson.com

Atlantic Geoscience Society Colloquium and Annual General Meeting

SUBMITTED BY
MICHAEL PARKHILL, P.GEO., FGC

The Atlantic Geoscience Society (AGS) met for the 50th time, in Moncton, New Brunswick at the Crowne Plaza Hotel February 2-3, 2024. A total of 87 presentations were made and of these, 48 were student presentations. AGS continues to be a great venue for students to present and is at the leading edge of what is happening in Atlantic Canada.

The meeting included seven special sessions:

1. From ocean crust to mountain peaks a celebration of the career of Sandra Barr;
2. Gold in the Northern Appalachians;
3. Sedimentary successions through time;
4. Igneous-hydrothermal systems and critical metals in the northeast;
5. Educational outreach, EdGEO, and outreach opportunities;
6. Environmental geoscience and sustainability; and
7. The energy transition and achieving carbon neutrality.

The remaining talks were organized into one general session surrounding Geoscience research developments.

Also included with the conference was a half day, short course on "Geochemical Data Collection, Preparation, Analysis, and Presentation delivered by Dr. Cliff Stanley, P.Geo. (Acadia University). This course was good for 4 hours toward APEGNB's Continuing Professional Development (CPD) under the Technical Learning category.

The traditional Saturday evening Awards banquet and social was highlighted by a talk from Brian Hebert on "*Citizen science in geology: past, present and future*" and the announcement of the societies awards, as well as student prizes for best poster and oral presentation.

- The Laing Ferguson Distinguished Service Award is given in recognition of exceptional and altruistic contributions to the Atlantic Geoscience Society and/or to foster public appreciation of Atlantic Geoscience over a long period of time. The 2024 award was made to Dr. Cliff Stanley for his contributions to Atlantic geoscience and geochemical techniques relating to the mining industry, as well as serving on AGS Council as President and Councillor for several years.

AGS President Donnelly Archibald (left) presents the Atlantic Geoscience Societies, Gesner Medal, Distinguished Scientist Award to Dr. Adrian Park (center) of the New Brunswick Department of Natural Resources and Energy Development. Nominator, Steven Hinds, P.Geo. (right) read the citation.

- The Gesner Medal is awarded to a person who has developed and promoted the advancement of geoscience in the Atlantic Region and beyond in any field of geology. Dr. Adrian Park of the New Brunswick Department of Natural Resources and Energy Development, Geological Surveys Branch received the Gesner Medal, Distinguished Scientist award for his extensive mapping experience in New Brunswick geology, dedication to teaching students, and promotion of geoscience in public forums.

- The student award winners were:
  - The Rob Raeside Award, best undergraduate student poster, Keaton Markham, Acadia University;
  - The Rupert MacNeill Award, best undergraduate student paper, Jessica MacIsaac, Cape Breton University;
  - The Graham Williams Award, best graduate student poster, Mitch Maracle, Acadia University; and
  - The Sandra Barr Award, best graduate student paper, Pēteris Rozenbaks, Dalhousie University.

Next year's Colloquium will be in Dartmouth, Nova Scotia in early February.

On behalf of the society, we thank Colloquium organizers Denise Brushett, Aaron Bustard, Lynn Dafoe, Susan Johnson, Olivia King, David Lentz, Mike Parkhill, Rob Raeside, Steven Rossiter, Deanne van Rooyen, Jim Walker, and Chris White as well the numerous session chairs and judges, for facilitating an excellent meeting with 188 registrants.

AGS acknowledges support from the corporate sponsors and partners for the meeting: New Brunswick Department of Natural Resources and Energy Development, Engineers and Geoscientists New Brunswick, Terrane Geoscience, Dillon Consulting, Nova Scotia Department of Natural Resources and Renewables, and Geoscientists Nova Scotia.

ENGINEERS CANADA
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The vital role of public members on engineering regulator boards

Legislative frameworks for professional self-regulation depend on professions autonomously governing themselves. The governing body is tasked with safeguarding the public, upholding trust, and overseeing critical regulatory functions such as licensing, continuing competency, ethical standards, and disciplinary actions.

Historically, there was an assumption that governing bodies could effectively oversee the regulation of their peers because they were exclusively composed of licensed professionals possessing the necessary knowledge and expertise. However, as self-regulation has evolved over the past century, there has been a growing recognition that genuine public protection relies on these governing bodies including greater public representation.

For instance, the Professional Standards Authority for Health and Social Care in the United Kingdom has reported on a transition from traditional self-regulation to a more collaborative approach termed "shared regulation." This model emphasizes a more equitable balance between professionals and public representatives on governing boards. The aim is to ensure that regulatory decisions reflect a collective commitment to the well-being of the public and align with the broader interests of society. It represents a paradigm shift recognizing that public members are not merely symbolic figures but are a strategic necessity.

The role of public members

Public members with positions on engineering regulator boards or councils carry the same responsibilities as their professional counterparts to uphold public trust in the profession and ensure effective governance. Whether participating in board meetings or serving on committees, public members play a dynamic role, ensuring a comprehensive approach to decision-making and reinforcing the commitment to the well-being and safety of the public.

While they may not possess the same technical engineering expertise as their professional peers, public members bring valuable knowledge from diverse domains, such as legal, technological, or accounting expertise, enhancing the board or councils' overall capability. Moreover, their distinct perspective sheds light on how proposed professional requirements and standards may be received by the broader public and viewed through a consumer lens, providing a crucial dimension to regulatory decision-making

Successful public members embody traits such as curiosity, engagement, and a willingness to voice their perspectives. Their effectiveness is heightened when they approach their roles with a readiness to learn and comprehend the proceedings. By questioning the appropriateness of decisions and ensuring alignment with ethical considerations, public members further enhance their impact in fostering a constructive and accountable regulatory environment.

The contributions of public members

With proper support, including public members on engineering regulatory boards or councils significantly strengthens and enhances the robustness and trustworthiness of regulatory processes. Their presence reflects the diversity, transparency, and accountability essential in contemporary regulatory processes and helps to bolster public safety, mitigate professional bias, and enhance overall accountability.

Board or council members from outside of the engineering profession can mitigate potential biases and promote fairness and more balanced decision-making processes that avoid unduly favouring the interests of the profession. Furthermore, these public members serve as a reflection of the wider population that the regulator aims to serve, offering valuable insights into how decisions can resonate with and affect the broader public. Finally, public members educate the public. They serve as communicators, breaking down complex professional issues into plain language to build awareness and understanding about the engineering profession, its standards, and the regulatory body's role. Through clear and accessible communication, public members foster a sense of collaboration and shared responsibility among the broader population, thereby strengthening the connection between the profession and the public it serves.

The proportion of public members

The proportion of professional to public members remains one of the most discussed topics about public representation in professional regulation. Legislation in most Canadian provinces and territories stipulates the inclusion of public members on engineering regulator boards, with the specific number of positions outlined.

In the Canadian regulatory landscape, boards or councils tend to have a greater representation of professionals than public members. This is true of Canadian engineering boards too. For engineering regulators that currently incorporate public members on their boards, the proportion of public members remains quite low. However, newer engineering legislation, such as that enacted in British Columbia in 2018, includes a much higher percentage of public members. Other Canadian professions are seeing similar changes as legislation is updated.

Despite existing legislative frameworks, there is movement toward a more equitable 50/50 distribution between professional and public members to promote a fair and diverse governance perspective. This shift may necessitate moving away from electoral processes, favoring a comprehensive appointments system for all members, irrespective of their professional or public status. Notably, the UK's Professional Standards Authority for Health and Social Care underwent significant reform in 2008, transitioning its governing board to exclusively comprise public members with no prior registration under the regulator.

Fundamentally, the inclusion of public members on boards or councils ensures a thoughtful consideration of the interests and perspectives of both professional members and the broader public. In turn, this enhances the effectiveness of governance through fostering more collaborative decision-making and providing safeguards for the integrity of regulatory processes.

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Lumber-based Mass Timber Products in Construction

A follow-up Q&A with Dr. Meng Gong

Dr. Meng Gong is a Professor of Innovative Wood Products and Construction with the UNB Faculty of Forestry and Environmental Management, and the Director of the Wood Science and Technology Centre. As part of APEGNB's 2024 Annual Conference, he provided a lecture on lumber based mass timber products in construction.

There were several questions that came in after his presentation so APEGNB followed up with Dr. Gong to find out some answers. Below are the questions that we received as well as answers from Dr. Gong.

Q: What is the average lifespan of a wood framed building compared to concrete or steel alternatives?

A: The average lifespan of a wood framed building varies, which is dependent on many factors including design, construction quality, maintenance, environmental conditions, and the wood materials used. For wood-framed buildings, when properly maintained, they can last 100 years or more. Historical structures around the world have demonstrated that wood can endure for centuries under the right conditions. However, without proper maintenance, wood is susceptible to factors like moisture, insects, and decay, which can significantly reduce its lifespan.

Q: Why would a timber construction have a higher value (+/- 4.5%) compared to concrete?

A: This is an insightful question. The information cited in my presentation comes from the report titled "Image 2025 – Mass Timber: Build It, and They Will Come." published by RBC on September 30, 2020. My personal view attributes this number to the aesthetic appeal and the health benefits associated with timber buildings.

Q: Can Nail laminated timber (NLT) products be used in a beam application similar to GLT or are they limited to horizontal panels?

A: Nail laminated timber (NLT) can indeed be used in beam applications, although it is more commonly seen in horizontal panel applications such as flooring, decking, and roof systems. The use of NLT as beams is less common than glue laminated timber (GLT / glulam), because glulam beams are specifically engineered to carry loads over long spans and can be manufactured to meet specific strength requirements.

Q: How do the concerns with respect to fire and fire protection using wood get addressed? CSA Standard? National Building Code?

A: When mass timber products, such as glue-laminated timber and cross-laminated timber, are exposed to fire, their outer layers will char, creating a protective layer that insulates the inner core of the wood and furthermore maintaining the structural integrity of the wood. The 2020 edition of the National Building Code outlines the minimum required dimensions for structural mass timber elements utilized in encapsulated mass timber construction.

Q: Do they treat with wood preservative the glue-laminated timber (GLT) when used to build bridges?

A: Yes. The creosote is, for example, used in the Nappan March Bridge in Amherst, Nova Scotia.

Q: Is there any concern about off gassing with any engineered wood products?

A: In the past, concerns about off-gassing formaldehyde from engineered wood products were significant, especially when urea formaldehyde adhesives were used in products like plywood. However, advancements in adhesive technology have led to the adoption of phenol resorcinol formaldehyde and polyurethane adhesives for producing glue laminated and cross laminated timber. These developments have effectively addressed and mitigated the issue of off-gassing, making it a concern of the past.

Q: Are there any concerns with leaching of potential contaminants from the glue or other treatment products?

A: For mass timber products like glue laminated timber (glulam), cross laminated timber (CLT), and laminated veneer lumber (LVL) used as structural components in building construction, off-gassing issues are generally not a concern, referring to the answer to question 6. When these structural engineered wood products are used in building construction, they typically do not undergo chemical treatment and thus do not present a leaching problem. This contrasts with CCA-treated poles or decking products, which may pose potential leaching risks.

Q: With global warming does using engineering lumber products reduce GHGs compared to other building products like steel, concrete?

A: Yes, this has been supported by numerous life cycle assessment analyses that compare timber buildings to steel-concrete structures. Wood's dual attributes are significant: it sequesters carbon during tree growth, and when utilized, particularly in structural mass timber products for building construction, it effectively stores carbon for the duration of its use. The report "*The state of mass timber in Canada 2021*", published by the Government of Canada, states *"As high-value wood products, mass timber can play an instrumental role in the circular economy by providing a renewable source of building materials and contributing to a lower carbon footprint for the construction sector."*

Q: Do you have resources available related to Timber Framing? I.e. building using sawn timber?

A: Timber framing, a traditional wood construction method, primarily utilizes tenon-mortise connections. This method is rich in history and can be thoroughly researched online under "Timber Framing." It's worth noting that New Brunswick is home to several companies specializing in the production of heavy timber structures.

Q: Is there limitation to laminate timber used in outdoor application. Any special consideration to use laminate timber in outdoor application?

A: Laminated timber products, including nail laminated timber, have a long history in bridge decking applications, with glue laminated timber also being used for bridge construction. However, there are limitations for outdoor uses, necessitating special considerations for moisture, UV, and decay protection. This includes treating wood with chemicals like CCA and creosote, selecting galvanized steel fasteners, applying anti-UV coatings, and designing for effective drainage to minimize wood decay potential.

INFRASTRUCTURE THAT CREATES WEALTH AND EQUALITY: *A CALL TO ACTION*

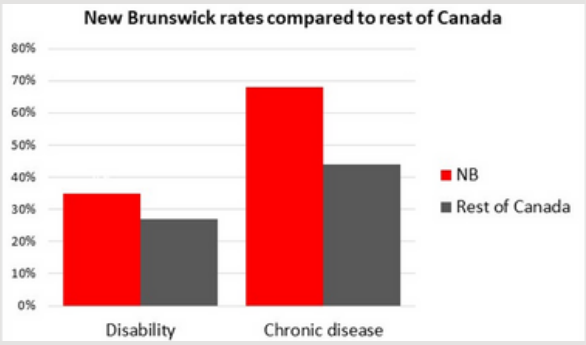
SUBMITTED BY DR. ANNA ROBAK, P.ENG.

Do you think that if we keep planning and managing infrastructure the way we have been, we will be able to create the productive, thriving society we want in New Brunswick? Neither do I.

New Brunswick is projecting a labour shortage of 60,000 people in the next five years, yet 30,000 New Brunswickers with mobility disabilities want to be fully employed. Chronic disease is on the rise, placing further burden on the healthcare system and reducing available labour. This situation is not conducive to a vibrant society.

What if we shifted our perspective from treating infrastructure as a basic foundation, to seeing it as a critical lever in reversing some of the frightening trends we're seeing? What if it played a key role in reducing chronic disease, reducing the labour shortage, and fostering a vibrant, innovative community? What if it could create wealth and equality? The truth is, it could. Here's how infrastructure plays a key role in:

Reducing chronic disease.
New Brunswick has the second highest rate of chronic disease in Canada, and the rate is rising. Between 20 and 30% of chronic disease is due to inadequate physical activity. Yet there is plenty of evidence to show how the built environment entices or discourages physical activity. Children living within 400m of a park, for example, are 60% less likely to be obese. People who use active transportation or transit are 15% more likely to get the recommended amount of daily physical activity[6]. Infrastructure that is attractive, close to us, and affordable, could reduce 20 to 30% of chronic disease. Could a different approach to planning our towns reduce the cost of healthcare? Considering it costs New Brunswickers (at least, the ones that receive treatment) $5 Billion per year, it's worth investigating.

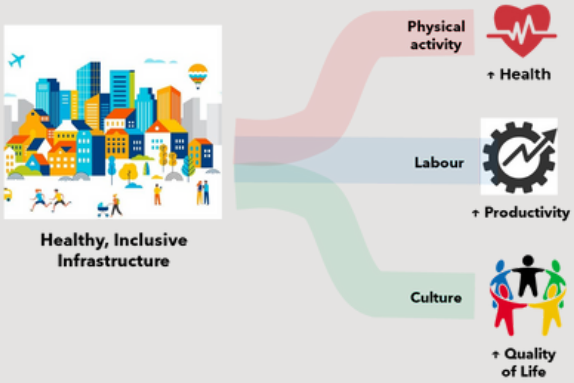


Disability and chronic disease rates in New Brunswick compared to the rest of Canada

Reducing the labour shortage.
New Brunswick has estimated a labour shortage of 60,000 people over the next five years. Infrastructure can be designed to make it easier for un- and under-employed New Brunswickers to access employment. Rather than focusing on making trips faster for existing travelers, shifting the focus on how to get more people able to reach employment and education.

In addition to the 30,000 people with disabilities who want to work, we have underemployed newcomers, older adults, and low-income individuals. But many of these people cannot physically use public transit, or transit is too far, or too unaffordable, or takes too long to get to a destination. Could a different approach to planning our infrastructure increase productivity by filling the labour gap?

Improving quality of life.
In addition to improving health and access to employment, the built environment can improve quality of life by providing spaces to enjoy the outdoors, and other people's company. If we design for this kind of environment, we will all enjoy a better quality of life.



Infrastructure +
Infrastructure plays a key role in reducing chronic disease, reducing the labour shortage, and much more. But infrastructure is just one piece of the puzzle. The right infrastructure in the right place doesn't ensure people will get more physical activity; they may also need accessible and affordable childcare, a physiotherapist who can give appropriate exercises, a doctor's motivation, or enough pay to hold one job rather than two or three.

New collaborations must be formed to make it work - shared accountabilities between departments and levels of government; arrangements with non-profits; and incentives for the private sector.

The result will be increased innovation, new business opportunities, and attraction of the best and brightest to a province that is doing things right.

Next steps
We are building an infrastructure strategy to create wealth and equality in New Brunswick. If you want to contribute, contact me at anna.robak@unb.ca.

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THE EVOLVING ROLE OF AI IN SHAPING CYBERSECURITY: OPPORTUNITIES, CHALLENGES, AND ETHICAL CONSIDERATIONS

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Artificial Intelligence (AI) has become an indispensable tool in the realm of cybersecurity, offering a range of capabilities that enhance threat detection, incident response, and access control. However, this integration of AI into cybersecurity is not without its challenges and ethical considerations.

AI's ability to analyze vast amounts of data in real-time has revolutionized threat detection. Unlike traditional rule-based systems, AI-powered solutions can detect anomalies and identify new and emerging threats, allowing organizations to proactively protect their systems and data.

In incident response (of a cyberattack), AI algorithms can analyze and prioritize security alerts, enabling security teams to respond more effectively. By automating certain aspects of incident response, such as isolating infected systems or blocking malicious traffic, AI not only reduces response times but also frees up human resources for more complex tasks.

Moreover, AI enhances authentication and access control mechanisms by analyzing user behavior patterns. This helps organizations strengthen their security posture by ensuring that only authorized users have access to sensitive data and systems.

However, the integration of AI in cybersecurity also presents challenges. Adversarial attacks, where cybercriminals exploit vulnerabilities in AI algorithms, can undermine security measures. Additionally, ethical concerns arise regarding the responsible use of AI in cybersecurity, particularly in terms of privacy and data protection.

One of the most concerning aspects of AI misuse is its potential to generate misleading or harmful content. AI models like GPT (Generative Pre-trained Transformer) can be used to create fake news articles, social media posts, or other forms of deceptive content that appear legitimate but are factually incorrect or intended to manipulate individuals.

Moreover, AI can be used to craft convincing chatbots or emails that impersonate real people or organizations, leading to social engineering and phishing attacks. By mimicking human communication styles and crafting personalized messages, malicious actors can trick individuals into revealing sensitive information or clicking on malicious links.

In addition, AI can be exploited to generate spam and misinformation campaigns, flooding online platforms with fake content and making it difficult for users to discern genuine information from false information. This not only undermines trust in online platforms but also poses a significant challenge for content moderation efforts.

Furthermore, there is the potential for AI to be weaponized for cyberattacks. Malicious actors could use AI to automate parts of cyberattacks, such as generating phishing emails or crafting malicious code, making it harder for defenders to detect and respond to such attacks.

It is important to recognize that AI is a tool, and like any tool, it can be used for both good and malicious purposes. Responsible AI use requires a multifaceted approach that includes robust security measures, ongoing monitoring and evaluation, and adherence to ethical guidelines.

In conclusion, while AI offers immense potential to enhance cybersecurity, its misuse poses significant risks. By understanding these risks and taking proactive measures to mitigate them, organizations can leverage AI responsibly to strengthen their cybersecurity defenses and protect against evolving threats.

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