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**INSIDE**  
THIS ISSUE

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# THE KEYSTONE PROFESSIONAL

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## The Ideas That Make Our Lives Better

During my career, I've often reflected on the true value and meaning of our professions. We are seen by society as professionals that apply the fundamentals of science and use of the Earth's resources to solve problems. When we talk about engineering and geoscience in the public realm or when the public talks about our professions, it's more often than not focused on the "what" or the "how".

Wanting to gain more insight into the public's perception, I did what almost everyone does today – I typed "geoscience" into Google to see what would come up. Besides the various definitions of geoscience, there were a few job postings. When I did the same thing for "engineering", there were the various definitions, a few engineering consulting firms and job postings, but there was also a YouTube video entitled *What is Engineering?* from the University of Newcastle. Obviously, the video focused on the "what", but at the very end there was the following line: "The idea is shared with the world to make all our lives better."

For me, this line highlights the true value and meaning of our professions – the "why". Everything that we do ultimately makes the world a better place to live. After graduation, it was only natural for me to begin my career in the public service. I understood that this path would give me the satisfaction of seeing the true value and meaning of engineering throughout my career. I can honestly say that I have been rewarded every day, and I am always reminded of the importance of what we do for the citizens of Manitoba.

I recently attended two events that reinforced this belief.

“Everything that we do ultimately makes the world a better place to live. After graduation, it was only natural for me to begin my career in the public service. I understood that this path would give me the satisfaction of seeing the true value and meaning of engineering throughout my career.”

The first was an event hosted by the Committee for Increasing the Participation of Women in Engineering (CIPWIE), where an IMAX film entitled *Dream Big: Engineering our World* was showcased. The promotional materials for this film state that it is a "short film that explores the human ingenuity behind engineering marvels – big and small – and reveals the heart that drives engineers to create better lives for people around the world". It did just that! I will always be reminded of one of the stories from the film. It focused on a young graduate engineer who made the thoughtful decision to work in Haiti building pedestrian bridges over dangerous rivers. The very personal impact that this new bridge had on the locals and their vastly improved quality of life could not be overlooked or taken for granted.

The second event was the Awards Dinner for the 2019 Western Engineering Competition. It was a great night, and our University of Manitoba students did a fantastic job in hosting and representing

the province. The keynote speaker for the event, Dr. Jeannette Montufar, P.Eng., FEC, spoke on the "Engineering Changes Lives" initiative. Dr. Montufar told the story of how she became a professional engineer. When she was young, she wanted a career that would help people and make their lives better. Then her family moved to Canada and Dr. Montufar believed that she now had to consider other factors: I'm good in math and physics, I like solving problems, and I want a comfortable life. She chose engineering. After graduation, she realized that she was actually doing what she wanted to do when she was younger – helping people and improving the quality of life for society. For her, the true meaning and value of engineering is the "why".

I encourage all of us to change the discussion – when we talk about the "what" and "how" of our engineering and geoscience professions, let's also talk about the "why".

If you have any questions or would like to discuss ideas or concerns with me, I can be contacted at [President@EngGeoMB.ca](mailto:President@EngGeoMB.ca). ☎

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## Internet Pace **Requires Reflection**

I spoke to a member recently. It's important to tell you some background. This professional is early career, age approximately 35, and fully connected to the digital world. Twitter, Facebook, Instagram; logged in to all of the social media and online services. She is a manager at her workplace and highly skilled in all of the latest software, sharing platforms, and communication tools. We were talking in person and she commented, "The more I work at a fast-paced Internet speed, the more I feel the need to disconnect". She further explained that the barrage of information coming at her every day causes her to become fatigued as she tries to keep up with the massive volume of details. Her response? Take a break from the devices. Take a day of

quiet solitude away from all the incoming communication: calls, emails, texts, news feeds, and tweets. Take time to reconnect body, mind, and spirit by disconnecting from the technology. Want to discuss this more? Uh, I guess you could send me an email...or call me for a coffee and let's meet in real time.

### **Engineering Changes Lives**

Engineers Geoscientists Manitoba and its partner agencies are halfway through the two-year program, "Engineering Changes Lives". Manitoba is attempting to be a game-changer among provinces by aggressively researching and brainstorming solutions to the problem of gender inequity in the profession. With strong support from Hon. Rochelle Squires, Minister responsible for Status of Women, as well as the University

of Manitoba, Engineering Changes Lives project leader Lisa Stepanuk has initiated outreach to stakeholders, a research study, and a media campaign in the first year. Watch for more in 2019 as this project continues with a firm foot on the gas pedal.

### **Centennial is Coming**

We're one year away from the big 100th anniversary of the Association in 2020. Centennial Committee Chair Ray Hoemsen, P.Eng., FEC, tells me that event planning is well underway. An online survey of members and an in-person focus group have provided great input about member preferences for different activities, events, projects, and souvenirs. The big gala dinner is already booked for April 4, 2020. The evening will be hosted in the spectacular City View Room at the RBC Convention Centre for members to gather with staff, government representatives, and engineering and geoscience dignitaries to mark this milestone occasion in the Association's history. Save the date to your device today!

Heritage Committee Chair Glen Cook, P.Eng., FEC, has a strong committee of 16 volunteers searching through 100 years of council minutes, photographs, and member anecdotes to provide a fascinating retrospective of engineering and geoscience in Manitoba. Many volunteers on various task groups are working to make this a memorable year-long celebration. Get involved if you have the time and interest.

Your feedback is important. If you have any thoughts on anything you read in *The Keystone Professional*, please email me at [GKoropatnick@EngGeoMB.ca](mailto:GKoropatnick@EngGeoMB.ca). ☎

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# Geology and Society – Old as the Hills

By R. Reichelt, P. Geo., FGC

## Introduction

The science of geology usually affects society by enabling the exploitation of mineral resources: “if it’s not grown, it’s mined”. However, geology has also contributed to our understanding of our place in time by informing us of the immense age of the earth or, as Stephen Jay Gould put it, the discovery of “Deep Time”.<sup>1</sup>

## Traditional Approaches

Before the development of modern approaches to studying the earth, most people relied on traditional approaches to answering the question “how old is the earth?” Traditional answers vary widely. For example, many Protestant Christians accepted Bishop James Ussher’s calculation, published in 1650, that the Almighty created the earth in 4004 B.C.<sup>2</sup> In Hindu mythology, the world is approximately 1.97 billion years into the current 4.32 billion year cycle that corresponds to one day in the life of the god Brahma.<sup>3</sup>

The problem with these traditional approaches is that they generally do not rely on physical evidence. This isn’t a problem when considering spiritual matters. The narratives of traditional religious scripture discuss many issues. The important thing to the authors of the Bible, for example, was how people should relate to one another and to the supernatural forces of the universe, especially the Almighty Creator. They had no way of knowing how old the earth was and, even if they did, it wouldn’t have significantly affected their narrative. As one commentator puts it, the Bible is more concerned with the Rock of Ages rather than the age of rocks.<sup>4</sup> Unfortunately, however spiritually satisfying traditional narratives are, they don’t provide useful answers to those seeking explanations based on verifiable evidence.

## The Evidence of the Rocks

Geoscience works by studying the natural world and developing explanations of those observations based on the

evidence. This is how the discovery of deep time happened; it was the result of the progressive accumulation of evidence. The story is fairly complex, involving many people and their work, rivalries, mistakes, and the lesson of all their effort. Keep that in mind when reading the brief summary below.

“The entire existence of *Homo sapiens*, 300,000 years, can be represented by 30cm. The 5,000 years of recorded history amounts to 5mm and an individual human life of 80 years equals 0.08mm on this scale.

Really makes you feel important doesn’t it?”

From their study of geology, James Hutton and Charles Lyell both recognized that the earth was probably very old; they just couldn’t find the evidence to give a definitive age.<sup>5</sup> One of the first attempts to calculate an age for the earth from known scientific principles was by William Thomson, Lord Kelvin. Starting with the assumption that the earth was originally molten and estimating heat transfer from the earth to space, within the earth, and from the sun to the earth, Lord Kelvin believed that the earth was between 20 and 100 million years old.<sup>6</sup>

The flaw with Lord Kelvin’s estimate, made in 1863, was that it did not take into account the heat from radioactive decay. The discovery of radioactive elements by Marie Curie in 1898 led to further investigations into radioactive minerals by many other researchers. Thousands of research papers have resulted in an accumulation of knowledge which has led to the current estimate that the earth is approximately 4.54 billion years old.<sup>7</sup>

## A Very Long Time

4.54 billion years is an immense period of time. To visualize it, imagine a line

where every millimetre (mm) represents a thousand years and every metre (m) is a million years. On this scale, the line representing the total age of the earth will be 4,540m long. 4,000m of the line represents the length of the Precambrian. The next 540m represents the Phanerozoic Eon, the age of complex

life. Approximately 252 million years ago, 252m on the time line, the Paleozoic Era ended with the Permian mass extinctions. At 66m from the present on the time line, the Cretaceous Period ended with the K/T mass extinction. The entire existence of *Homo sapiens*, 300,000 years,<sup>8</sup> can be represented by 30cm. The 5,000 years of recorded history amounts to 5mm and an individual human life of 80 years equals 0.08mm on this scale.

Really makes you feel important doesn’t it?

It gets worse. Fossil evidence indicates that most of the species that have ever lived have gone extinct<sup>9</sup> and there is no reason to believe that humans are exempt from this fate.

## Living with the Facts

As the exercise above illustrates, when we visualize the vast expanse of time that led up to the present, our own significance can appear to be vanishingly small. This can be unsettling and people will react in predictable ways when confronted with these facts.

One common reaction to learning that the world has been proven to be

very old is to ignore the facts or actively deny them. Neither of these approaches are really helpful, since they preserve the sense of our own importance at the cost of denying proven reality. I think that a better approach is to embrace and incorporate the lessons of deep time.

One lesson of deep time is that we are the heirs of an immensely long history of life. The geologic time scale is really a history of life on this planet. From the

earliest life during the Archean Eon to the present day, that history is rich and complex and we are part of it. Enjoy the immense adventure of life.

Another lesson of deep time should be a measure of humility. We are not as important as we would like to think we are and that is a good thing. The lessons from our religious traditions can help us with accepting humility without denigrating the value of our admittedly short lives.

One of the historic roles of religious teachings is to reconcile people to their mortal fate and we should make use of those lessons.

In the end, we are left to ponder lessons of deep time. The genie is out of the bottle and, short of purposefully forgetting what we have learned, we cannot go back to the days of innocence. I think that the best path forward is to embrace reality and enjoy the insights that geology has given us.

Of course, dear reader, you are free to disagree with me and, in the best practices of geoscience, prove me wrong.

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## Meet the People That Make Life Work Better

# Neemee Batstone, P.Eng., FEC

## Member Profile

Neemee Batstone has over 20 years experience in the industrial engineering field. She is an Operations Excellence Manager for StandardAero Limited, responsible for problem-solving, training, and developing employees at all levels to achieve business goals. She volunteers her time as the President of the Canadian Coalition of Women in Engineering, Sciences, Trades and Technology (CCWESTT), and in her spare time she enjoys making crafts and having family adventures with her boys.

### What was the catalyst for you to enter the engineering profession?

My high school physics teacher. I enjoyed physics and chemistry and was uncertain on what career opportunities I had. He introduced me to the world of engineering by sharing his insights and encouraging me to take the co-operative program in high school. While in the program I was exposed to the field of engineering and its potential opportunities.

### What does a typical workday look like for you?

I collaborate with all levels of the business to continually improve and drive performance outcomes. Most of my day revolves around project management through communication and various problem-solving tools. A typical workday would be spent conversing with different groups of employees to brainstorm and implement

solutions that are preventing us from flowing the work through different processes. It's a combination of technical improvements and teamwork to make our daily work activities easy to follow and our work environment safe.

### What advice do you have for people considering entering the geoscience and engineering professions?

The professions of engineering and geoscience offer opportunities to grow and develop into any career path you wish to explore. They also provide financial security and personal development to achieve your personal goals. There are plenty of opportunities to engage and participate, both personally and professionally, with colleagues (who can become your mentor, friends, and family).

### Why did you decide to take on the role of President for CCWESTT?

We have a voice and an opportunity to share our experiences and drive change within our profession and others and, as President, I have an opportunity to use my knowledge and skills to drive a national vision forward. The organization of CCWESTT also aligns with our 30 by 30 initiative at Engineers Geoscientists Manitoba. With their support and presence, we can drive awareness and recognition of our efforts.

### What does CCWESTT provide its members?

CCWESTT gives its members an opportunity to engage and empower colleagues and themselves to drive diversity and awareness of women in Science, Engineering, Trades



& Technology (SETT), as well as recognition and communication of best practices and achievements across Canada.

### What is the relationship between the CCWESTT organization and the CCWESTT conferences?

With the support of the CCWESTT organization, the conference allows participants to gather and build old and new relationships that result in sharing best practices and partnering on common initiatives. That then opens the door to individuals, businesses, and government to engage together in both current and future endeavours. Lastly, it opens communication and builds awareness to the achievements and opportunities of individuals and organizations in support of women in SETT.

### What do you get out of engineering that you couldn't get out of any other line of work?

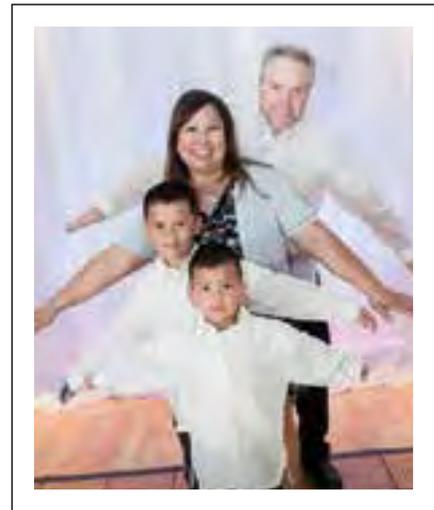
As an engineer, I have the opportunity to make the world a better place through



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diverse collaboration at various levels of an organization. I also have the opportunity to volunteer and apply my knowledge to help communities and share best practices with others within the field.

**As an advocate of the 30 by 30 initiative, what goals would you like to see reached in the next five years?**

I would like to see a better awareness for parents and schools to understand that engineering is a profession that their children can enjoy and find value in their future. As a whole, I'd like to see each professional engineer and professional geoscientist, as well as interns, mentoring a grade school student to expose them to the various disciplines that are available. The more we expose students at a younger age, the more likely that they will consider it later.

**Why is it important that there is diversity amongst the geoscience and engineering professions?**

Diversity amongst the professions has proven to drive innovation and inspiration that meets the needs of the greater good.

**Why do you choose to be an actively volunteering member of Engineers Geoscientists Manitoba?**

Why not? As part of our profession (and every profession), it is important to give as much as you have taken. In my career, I have learned and increased my knowledge, which can be beneficial for the future generations. 



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# Being

## An Engineer

By R. Britton, P.Eng., FEC

**"B**eing" an engineer, as opposed to "doing" engineering, has been a recurrent theme in my writing and presentations for some time.

This past summer I was invited to give a Keynote Address at the Canadian Engineering Education Association's annual meeting. I had been asked to reflect on changes I had experienced over my years in academe, and changes that I thought were still required. I entitled my presentation *Helping Students Transition from "Being" a Student to "Becoming" an Engineer*. It prompted some interesting hallway discussions, many of which are still ongoing.

***"During the drive west, with two restless children in the back seat of the car, I came to believe I understood what Mr. Kennedy had meant when he told me he wanted me to "be" an engineer."***

During a recent conversation with a long-time colleague, he asked when, and why, I came to see "being" and "doing" as different, and equally important, elements in the practice of engineering. In response, I shared an experience from my days as the Farm Buildings Engineer for Beaver Lumber. This seemed to provide an "ah" moment for him, as it had for me. Further discussion led to him insisting that I share my story in the next issue of *The Keystone Professional*.

So, Oscar, here is the story.

In 1966, I was hired as the Farm Buildings Engineer for Beaver Lumber. I came to this position with four years of varied engineering experience in both Canada and England. After about a month at HQ in Winnipeg, Mr. Kennedy, the President of Beaver Lumber, told me that I was being transferred to the Ontario office to "be" an engineer. I still had corporate design responsibilities,

but...during the trip from Winnipeg to Toronto I kept wondering what "being" an engineer amounted to.

About 10 months later, I found myself on a dairy farm, standing on the burned-out foundation of a 100-year-old barn, talking to the farmer. He showed me pictures of his old barn and assured me that his loss was covered by insurance. He spoke, with well-deserved pride, about his dairy herd and its production record. Then he told me that he wanted us to build a barn "exactly" like the one that had burned down. I told him that we could do that, but we wouldn't. He kicked me off the farm. No one in the sales department was happy with me.

About a week later, I was in my office in Toronto when I heard a loud voice at the receptionist's desk asking to speak to "that damn engineer". Apparently, he had spent the week talking to colleagues in the dairy business and they convinced him he needed a "new" barn, not a replacement.

During that discussion, he asked me why I didn't just "take his money" and do what he wanted. I pointed out that "new" technology would solve both labour and sanitation problems that were a part of his "old" system, and that the "new" barn would cost less than a replacement. It was my responsibility to do what I considered to be "right".

I designed the new barn, we provided a quote, and it was under construction when my family and I headed to Saskatoon for a technical conference. During the drive west, with two restless children in the back seat of the car, I came to believe I understood what Mr. Kennedy had meant when he told me he wanted me to "be" an engineer.

At that conference in Saskatoon I was offered an opportunity to teach at the University of Manitoba (U of M) and work on my master's degree. I accepted that offer and, as a result, I never did see the "new" barn, but I was told that



the farmer was happy with his new facility. Fast forward through two years at U of M and another four years at Texas A&M University, during which I was fully immersed in academics. In the fall of 1973, I found myself back on staff at the U of M and still wondering about “being” an engineer. I have never been able to find a course to explain that concept. I guess that part of my understanding comes

from the school of hard knocks, without a diploma.

As members of Engineers Geoscientists Manitoba, we are all bound by the ABCs (Act/By-laws/Code of Ethics). Fundamentally, these documents define the “being” side of our professional lives. Take a look at those documents. I’m certain you will see the connection. ☉

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# Strategic Mineral Exploration at Inaugural Industry-Led Convention

By L. Stewart, P.Geo.



**O**n November 22, 2018, the Manitoba Prospectors and Developers Association (MPDA), in partnership with Orix Geoscience, presented the inaugural Central Canada Mineral Exploration Convention (CCMEC) at the Victoria Inn in Winnipeg. The MPDA collaborated with industry to promote this first-ever industry-driven mineral exploration convention in Manitoba, which served as a new platform to showcase and shape the future of the mining industry.

The theme for the event was *Strategic Exploration: Navigating Change Through Collaboration*. Over the course of the day, over 350 exploration professionals, academics, government representatives, suppliers, financiers, innovators, Indigenous Peoples, and communities participated in networking, professional development, and industry engagement related to the activities of the mineral exploration industry of Manitoba.

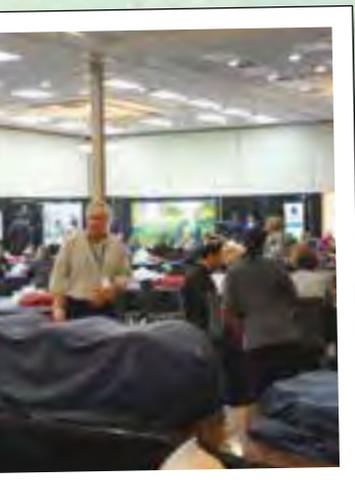
Sessional speakers included a line-up of globally recognized industry experts, including representatives from Manitoba's mineral producers. Sessions focused on innovation in exploration and Manitoba exploits while including a variety of subjects of interest to the mineral resource community. Financing is a crucial element of exploration programs and there were presentations discussing methods for raising capital, advantages of flow-through financing, and legal perspectives on financing, to assist with generating funds to support exploration. New techniques in exploration advance projects in innovative ways and presentations discussed developments in the methodologies and advantages of valuing exploration, as well as innovative technologies involving unmanned aerial vehicles and applications of big data.

Legislative representation was important to the success of the event and the Government of Manitoba supported the

convention with representation from multiple departments and branches. Hon. Blaine Pedersen, Minister of Growth, Enterprise, and Trade, addressed the audience, expressing optimism for the industry in Manitoba. Acting Director of Mines Branch and Geological Survey, Alisa Ramrattan, echoed the sentiment, suggesting change is on the horizon for the industry.

A highlight of the day was the Indigenous and Industry Luncheon, including a cultural teaching and blessing from a respected First Nations elder and perspectives on community engagement from First Nations and Métis. In addition, the Keynote Speaker of the day was Former National Chief of the Assembly of First Nations, Phil Fontaine.

In an effort to spark discussion, CCMEC hosted an engaging panel discussion, which provided a venue for candid dialogue for all stakeholders in the industry directed toward the future of mining in Manitoba. The session was



moderated by the University of Manitoba's Dean of the Clayton H. Riddell Faculty of Environment, Earth, and Resources, Dr. Norman Halden, P.Geo., and provided opportunity for questions to be sourced from the audience and directed toward representatives from a cross-section of the mineral resources industry in Manitoba, including intermediate mining producers, consulting exploration, and prospectors.

In addition to the formal presentations and discussions, CCMEC provided an opportunity to network and connect with new and old contacts. The Diversity Event was a dedicated time with the emphasis on creating connections with other stakeholders over a glass of wine or bottle of beer.

The first-ever industry-driven mineral exploration CCMEC event was a resounding success. With the support of the mineral exploration industry, we have initiated a dialogue toward change for the industry. We hope to continue the conversation next year! 🍷



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# IEEQ Program Quiz



Have you been keeping up with the Internationally-Educated Engineers Qualification (IEEQ) Program at the University of Manitoba? The program is proud to have celebrated its 15th anniversary this past fall, so take this quiz to find out how much you know!

1. As of October 2018, how many internationally-educated engineers have completed the program?
  - a. 173
  - b. 228
  - c. 98
2. Forty-one internationally-educated engineers are currently enrolled in and are completing a program that includes:
  - a. Senior-level engineering courses
  - b. A co-op work term
  - c. Language and communication development
  - d. Cultural orientation
  - e. Professional networking
  - f. All of the above
3. The completion of the IEEQ Program leads to a Post-Baccalaureate Diploma in Engineering from the University of Manitoba, and \_\_\_\_\_ eligibility with Engineers Geoscientists Manitoba.
  - a. Engineering Intern
  - b. Certificate of Authorization
  - c. Licensing
4. To date, how many of the 228 graduates of the IEEQ Program have also fulfilled Engineers Geoscientists Manitoba's professional experience requirements and are registered as professional engineers?
  - a. 77
  - b. 111
  - c. 168
5. Forty-seven countries of origin have been represented in the IEEQ Program so far, with the top six source countries (in order) being:
  - a. India, China, Philippines, Nigeria, Colombia, France
  - b. Philippines, China, India, Germany, Argentina, Ethiopia
  - c. Philippines, India, Ukraine, China, Nigeria, Ethiopia
  - d. China, Philippines, Ukraine, India, Germany, Mexico
6. IEEQ students select courses from the following engineering discipline(s):
  - a. Civil
  - b. Electrical and Computer
  - c. Mechanical
  - d. Industrial
  - e. Biosystems
  - f. All of the above
7. True or False? IEEQ Students are admitted as international students, studying for a short term, with intentions to return to their home countries.
 

TRUE, individuals are eligible to participate in the IEEQ Program, providing they have a valid study permit.

FALSE, in order to apply to the IEEQ Program, applicants must be Permanent Residents or Canadian Citizens. IEEQ graduates are proud to live and work as Manitobans and Canadians!
8. Ninety-nine Manitoba companies have provided over 238 \_\_\_\_\_ opportunities to IEEQ students to date, in the public sector, consulting engineering services companies, manufacturers, mining, construction, agri-business, and aerospace.
  - a. Co-op work experience
  - b. Management
  - c. Scholarship and bursary

**The IEEQ Program welcomes the participation of the Manitoba engineering community.**

If you currently employ internationally-educated engineers, the IEEQ Program may be a licensing pathway to consider that benefits your employee and your company.

If you are seeking engineering talent, consider hiring an internationally-educated engineer from the IEEQ Program.

IEEQ Staff welcome the opportunity to visit your workplace and offer in-house seminars on managing cultural diversity in the engineering workplace.

For more information, please contact the IEEQ Program at 204-474-8961 or [ieeq@umanitoba.ca](mailto:ieeq@umanitoba.ca). Visit us online at [www.umanitoba.ca/engineering/ieeq](http://www.umanitoba.ca/engineering/ieeq).



9. Which statement is true about IEEQ Program applicants?
- Applicants generally apply immediately after the completion of their internationally-earned degrees, and have no previous experience working as engineers abroad.
  - Applicants hold a range of previous experience, from none at all to up to 20 years in senior engineering positions.
  - Only applicants with previous engineering work experience are accepted into the IEEQ Program.
10. In what way can you show your support to the participants in the IEEQ Program?
- Create a bursary award to be offered to IEEQ students
  - Hire an IEEQ student for a co-op work term
  - Become a mentor to an IEEQ student
  - Volunteer as a guest speaker
  - Offer an industry tour
  - Any or all of the above! ☺

Answer key - 1. B), 2. F), 3. A), 4. B), 5. C), 6. F), 7. False 8. A), 9. B), 10. F)



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### WHAT IS BITCOIN?

Bitcoin is a cryptocurrency. A cryptocurrency is a “digital currency based on a cryptographic system”.<sup>1</sup> In other words, it is a piece of computer code, a digital file that you can buy or create and that will be accepted as having value. To verify the legitimacy of a unit of cryptocurrency, the digital file includes an innovative piece of software, called blockchain<sup>2</sup>, that contains a record of past transactions in a cryptocurrency network. The entire history of any coin is available to verify the legitimacy of the individual coin.

Cryptocurrencies are usually issued by a private agency. There are more than a few cryptocurrencies on the market. Common ones include Bitcoin, Ethereum, Litecoin, and Monero. In the remainder of this article, I will focus mostly on Bitcoin.

The initial transaction that creates a Bitcoin unit of currency (a bitcoin) is called “mining”. This is a metaphor: no picks, shovels, drillers, explosives, excavators, or burly workers wearing hard hats are involved. Rather, imagine ordinary, mostly young, people tending to their computers to solve a mathematical puzzle that, when solved, results in the Bitcoin enterprise issuing a bitcoin unit to the person or corporate entity that solved the puzzle. This process establishes the legitimacy of each bitcoin and marks the beginning of the transaction record for the blockchain registry of that particular bitcoin.

### HARDWARE FOR BITCOIN MINING

Over the time that bitcoins have been available, since 2009, the algorithms that need to be solved to generate a bitcoin have become more difficult to solve. This is because the algorithms

have been designed to dynamically change in difficulty based on how often bitcoins are being awarded.<sup>3</sup>

To cope with the increasing need for more computing power, there has been an evolution in the hardware used to mine bitcoins. Initially, the central processing units (CPUs) found in all computers were adequate to solve the algorithms. Later, cryptocurrency enthusiasts discovered that graphical processing units (GPUs), or graphics cards, were more efficient. Eventually, field programmable gate arrays (FPGAs) and application-specific integrated circuits (ASICs) were found to be even more efficient at solving the algorithms.<sup>4</sup>

FPGAs are semiconductor devices that can be reprogrammed to accommodate desired application or functionality requirements after manufacturing.<sup>5</sup> Thus, they can be reconfigured for solving different algorithms; by using an FPGA system, you could switch from mining bitcoin to earning Ether on the Ethereum network, for example. On the other hand, ASICs are microchips designed for a specific application. They can only be used for one purpose, so if the ones you are using are designed to mine bitcoins, for instance, they can only be used to mine bitcoins. If you want to mine another kind of cryptocurrency, such as Ether, you will have to design and build another ASIC for that purpose. If the administrators of the cryptocurrency you are mining change their algorithm, the carefully designed ASIC made to mine it becomes useless. However, the big advantage of an ASIC over a CPU, GPU, or FPGA is that an ASIC is much more efficient, often 100 times more, than the other hardware in the use of electrical power to generate cryptocurrency coins.<sup>6</sup>

# itc coin

## Mining

By R. Reichelt, P. Geo., FGC, and S. Reichelt

### DISCLAIMER

NOTHING IN THIS ARTICLE SHALL BE TAKEN AS FINANCIAL ADVICE.

Before investing in any investment vehicle, do your due diligence.

### FURTHER READING

The field of cryptocurrencies is rapidly changing. In addition to the references listed below you may also want to follow up with other sources such as:

- **Cryptoline News:** [www.cryptolinenews.com/2018/10/bitcoin-mining-2](http://www.cryptolinenews.com/2018/10/bitcoin-mining-2)
- **Coin Central:** [www.coincentral.com](http://www.coincentral.com)
- **Cryptoglobe:** [www.cryptoglobe.com](http://www.cryptoglobe.com)
- **Crypto Post Gazette:** [www.cryptopostgazette.com](http://www.cryptopostgazette.com)

### REFERENCES

- <sup>1</sup> Wiktionary, March 2018, Cryptocurrency, <https://en.wiktionary.org/wiki/cryptocurrency>
- <sup>2</sup> Wikipedia, March 2018, Blockchain, <https://en.wikipedia.org/wiki/Blockchain>
- <sup>3</sup> Wawro, A., April 11, 2013, 7 Things You Need to Know About Bitcoin, PC World, <https://www.pcworld.com/article/2033715/7-things-you-need-to-know-about-bitcoin.html>
- <sup>4</sup> Bitcoin Mining, 2017, <https://bitcoinexchangeguide.com/bitcoin-mining/>
- <sup>5</sup> Xilinx, 2018, Field Programmable Gate Array (FPGA), <https://www.xilinx.com/products/silicon-devices/fpga/what-is-an-fpga.html>
- <sup>6</sup> Bitcoin Mining, 2017, op. cit. ☒



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# CURLING FUNSPIEL

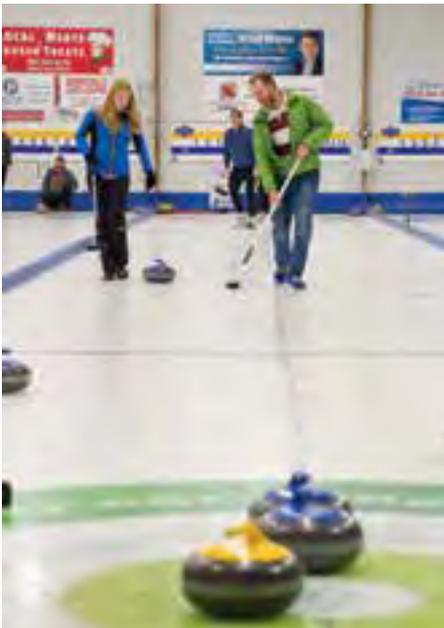
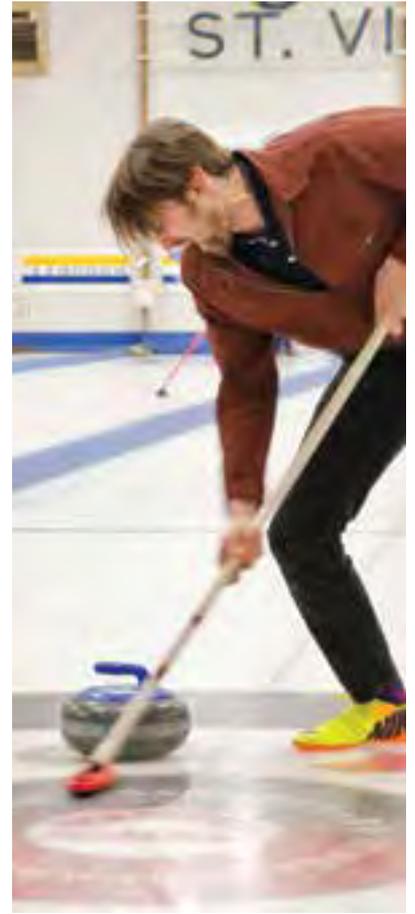
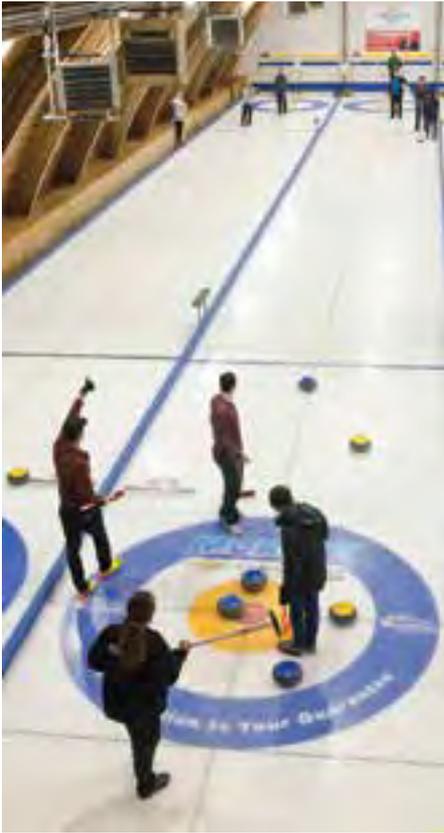


**J**anuary 23, 2019, marked the second Curling Funspiel in the Association's Sport Committee's current revival of an old tradition. There were 18 teams gathered at St. Vital Curling Club, in search of a fun afternoon, prizes, and their name on the trophy. Using a cumulative high-value scoring system,

all teams had the chance to score big, from the seasoned league players to the non-curlers who were trying the game for the very first time. The afternoon was filled with five two-end games, as well as a Draw to the Button competition. Congratulations to the team from SMS Engineering Ltd., who quickly emerged at

the top of the pack, and fiercely defended their spot to win 21 points ahead of the second place team.

The Sports Committee would like to thank all participants for joining this year's Funspiel and helping to raise over \$4000 to support geoscience students at the University of Brandon. 



Winnipeg team from SMS Engineering Ltd. (L-R) Jordan Bull, P.Eng., Teresa Jenkins, Marty Dziadek, and Nick Polischuk.

## Thank You to our Sponsors



### SAVE THE DATE

Mark your calendars! Our 16th Annual Making Links Engineering Classic is on Thursday, June 20, 2019 at the Links at Quarry Oaks. For more information, visit [EngGeoMB.ca/Events](http://EngGeoMB.ca/Events)

# Strategic Plan 2019

The Association's brand and name recognition are valuable in maintaining the Association's positive relationship with government officials. Ministers, MPs, MLAs, City Councillors, and provincial Deputy Ministers were amongst the attendees at Engineers Geoscientists Manitoba's 2018 Ingenium events. Not only do these events provide opportunities for Association members to build relationships with government officials, they showcase to officials the great achievements of Manitoba engineers, geoscientists, and the industry.

New initiatives planned for 2019 include:

- Engineers Geoscientists Manitoba Act Change
- Sustainable Development for Manitoba – Building Regional Adaption Capacity and Expertise (BRACE) Program with Manitoba Sustainable Development and Natural Resources Canada
- Diversity Outreach
  - Engineering Changes Lives – 30 by 30
  - Increasing Indigenous Practitioners

## Engineers Geoscientists Manitoba Act Change

Two years ago, Engineers Geoscientists Manitoba began a comprehensive review of its by-laws. Thus far, By-law 17 (the by-law for re-writing by-laws), By-law 13 (Code of Ethics), and By-law 15 (Discipline Procedures) have been re-written and approved by the membership. As a result of these by-law changes and the Association's desire to increase administrative efficiency and strengthen its appeal and disciplinary processes, a call was made to Hon. Blaine Pedersen, Minister of Growth, Enterprise, and Trade, who is responsible for the Act governing the Association, to ask to table changes to the Engineers Geoscientists Manitoba Act.

The Minister requested, and was provided with, an initial written

list of the changes sought by the Association. Since this submission, the Professional Standards, Admissions, and Government Relations Departments, along with the Government Relations Advisory Committee, have been working with the Association's legal counsel to prepare the documentation needed by the legislative drafters.

The Association is consulting with stakeholders, practitioners, committees, and the public to obtain feedback on the proposed Act changes and to solicit further recommendations.

In addition, the Association is hopeful that MLA Kelly Bindle will be successful in his efforts to exempt the Association from *The Limitation of Actions Act*. It was noted by Mr. Bindle that the entire *Limitations of Actions Act* is under review and is expected to be changed by government over the next several years.

## Sustainable Development for Manitoba – BRACE Program

In June 2018, it was announced that all infrastructure projects costing over \$10 million and seeking Infrastructure Canada funding will require the use of a Climate Lens to assess projected greenhouse gas emissions and climate adaptation/resiliency. All Green Infrastructure Program projects will also require a Climate Lens assessment, regardless of project cost. The Climate Lens requires engineers, planners, and architects to consider and mitigate the long-term risks to infrastructure from climate change, significantly impacting practice. The role of creating expertise in conducting assessments is being left to industry.

The Sustainable Development Task Group submitted a proposal with Manitoba Sustainable Development in November 2018 to obtain funding from Natural Resources Canada to establish a Building Regional Adaption Capacity

and Expertise (BRACE) program within Manitoba. BRACE will build capacity within and across targeted sectors and regions to understand, assess, and reduce the risks of a changing climate.

Scott Sarna, Director of Government Relations, will serve on the BRACE Project Steering Committee, overseeing communication and integration across the project. A Project Delivery Lead will be hired to chair a committee to oversee the development and delivery of courses for engineers and other infrastructure decision makers.

## Diversity Outreach

### Engineering Changes Lives – 30 by 30

In December 2017, Council approved \$785,000 for the 30 by 30 Initiative to ensure that 30% of newly licensed engineers will be women by 2030 (End E-5.2). The initiative was structured into three phases to be executed over two years, from January 2018 to December 2019.

Phase One was the development of a marketing analysis and marketing plan. The initial marketing campaign was targeted to middle and high school students in Manitoba, which resulted in thousands of signatures on petitions to some of the province's largest employers of engineers, asking what they will do to ensure that 30% of newly licensed engineers would be women by 2030. The marketing campaign resulted in a "Dear 2030" video of middle and high school girls and educators imploring employers to act to achieve the 30 by 30 goal.

On November 13, 2018, the Association hosted a successful launch of the Manitoba 2030 Coalition at the Manitoba Legislature, attended by the Minister responsible for the Status of Women, the Honourable Rochelle Squires, girls and educators featured in the video, and representatives from nine of the largest employers of engineers in Manitoba. The Coalition

will work together to address gendered barriers to the recruitment, retention, and equity of the profession and will hold its inaugural meeting in Spring 2019.

Phase Two consisted of hiring staff, establishing a Provincial Steering Committee, completing an environmental scan, and developing a strategic plan. Phase One and Two were completed by December 2018, one year ahead of schedule.

Phase Three is the execution of the strategic plan, which began in January 2019. A Diversity Outreach Department was created within the Association. Director of Diversity Outreach, Lisa Stepnuk, will be responsible for the execution of the strategic plan.

#### **Increasing Indigenous Practitioners**

The initiative to increase Indigenous professionals (End E-5.1) will also fall under the Diversity Outreach Department. The new department was given funding and staffing to create an environmental scan, strategic plan, operational/action plans, a potential provincial steering committee, and other aspects of the initiative.

The Association included questions in the Probe Research Indigenous Omnibus Survey 2018 to assess Indigenous communities' perceptions of engineering and engineers. The responses will guide the development of the environmental scan and the strategic plan.

#### **Conclusion**

The Government Relations Department appreciates feedback on its priorities and strategies as it executes the Government Relations 2019 strategic plan and continues to develop its 2020-2025 strategic plan. If you would like further information about the strategic plan or to provide recommendations, please send an email to Scott Sarna at [SSarna@EngGeoMB.ca](mailto:SSarna@EngGeoMB.ca). ☎



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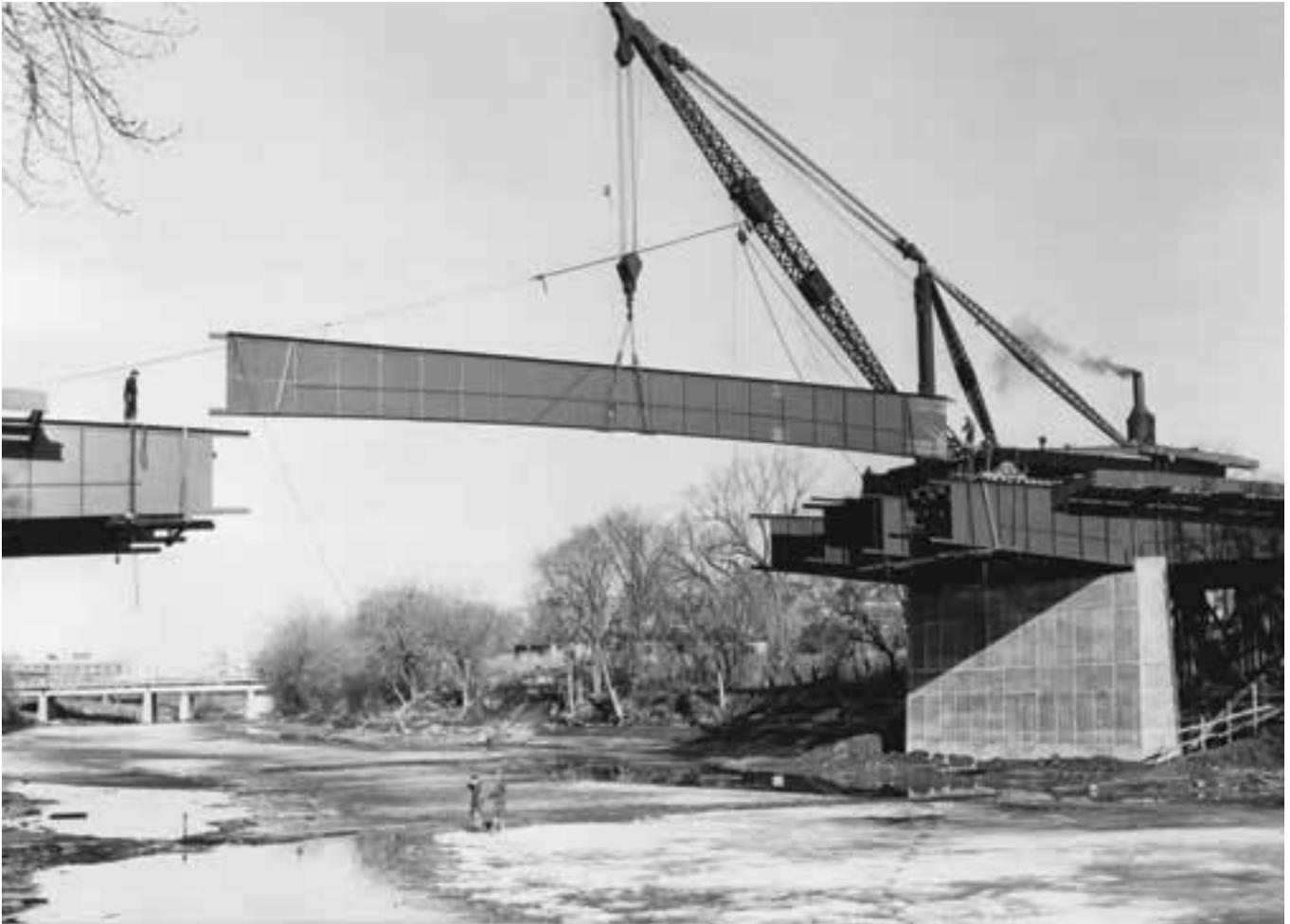
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# The Study of History

By the Heritage Committee



Mid Town Bridge 1955

A recent posting of the definition of History by K. Kris Hirst captures one of the mantras of the Heritage Committee. The author highlights that you first need to tell the story so that others can be in a position to pick it apart and help add to the full story.

"History is the study of the human past as it is described in the written documents left by human beings. The past, with all its decisions completed, its participants dead, and its history told,

is what the general public perceives as the immutable bedrock on which we historians and archaeologists stand. But as purveyors of the past, we recognize that the bedrock is really quicksand, that bits of the story are yet untold, and that what has been told comes tainted by the conditions of what we are today."<sup>1</sup>

The Heritage Committee has recently made some progress in helping to tell our stories by upgrading our Wiki

server's capacity to make it easier for the committee to share all of our history. Check out the new site at <http://heritage.enggeomb.ca> and if you can help us tell our stories and share interesting photos of our work, that would be great as we know that history does not wait for anyone.

<sup>1</sup> <https://www.thoughtco.com/what-is-history-collection-of-definitions-171282> 

# Countdown to the Centennial

**ASSOCIATION  
ARCHIVE**

THE MANITOBA PROFESSIONAL ENGINEER

## ON METRICATION

by N. P. PESCHUK, P. Eng.

By introducing the White Paper On Metric Conversion, in January, 1970, the Federal Government began the process of eventual adoption of the metric system in Canada. Although a time table for the conversion has not as yet been set, the Metric Preparatory Commission has been working for the last year or so in planning and formulating recommendations in this direction. Because of the introduction of the metric system many presently accepted standards, will not convert directly from the presently used English System to a convenient metric unit. For example, the standard road width of 24 feet becomes 7315 centimeters. Obviously the road width will be more convenient to work with if it were 700 centimeters or 750 centimeters. Thus metrication opens up another avenue, the rationalization of standards, since in the process of metrication it will become necessary to "change" standard sizes. This provides a unique opportunity for standards setting organizations, industry, government and manufacturers to re-write standards eliminating much of the jungle of standards and sizes created during the century. One only has to look at the multi-sized paper, multi-types of screws and bolts, and nails, many originally designed to meet the needs of a particular customer and then adopted as a standard, to realize that considerable savings

will result in inventory and manufacturing if standards are rationalized.

Many manufacturing organizations and technical organizations have taken upon themselves to begin the process of metrication. One has only to look at milk cartons, dry goods, and paints to see that the manufacturers have indicated the metric equivalent to the pint, the quart, the gallon and the pound on their product. Eventually this will lead to these products being sold in metric sized containers. Technical Societies have begun accepting articles using metric measurements. A number have adopted the policy of printing the English Units followed by the metric equivalent with the purpose of eventually adopting the metric system as the customary units for publication.

Since measurements are the engineer's stock in trade, the engineering community have a tremendous stake in any decision to switch from the "inch-pound" or English system to the universal family of measurements units based on the decimals known as the Systeme International des Unites or S. I. metric system. Much of the work that the engineer is involved in, out of necessity, demands that he work with the decimal. In measurement we have bastardized the English system so that we talk about 565.75 feet, not 565 feet 9 inches. The advantage of using a system based on a system of units of ten is very clear to us.

In the world, the U.S.A. is the only

major country which hasn't changed to the metric standards. Other non-metric countries are Eambia, Guyana, Jamaica, Liberia, Malawi, Nigeria and Sierra Leone. Canada has committed itself to the metric system. Many countries, including Great Britain the originator of the "inch-pound system", are nearing the end of their conversion period from their customary unit system to the metric system. World trade is metric.

Unfortunately many of the engineers feel very uncomfortable when expressing their opinion on metrication. The initial reaction appears to be hostility towards the change. This is a natural reaction particularly when we consider the amount of effort that will have to be exerted by the engineering community in the conversion of standards and the loss of familiar, if not practical, customary English Units.

Metric means across-the-board re-education on all aspects of weights and measures. New design standards for familiar engineering values call for the substitution of newtons for horsepower, kilograms for pounds, grams for ounces, with new metric size standards for bar and wire stock, sheet metal, screws, bolts, plywood, and all other material.

Engineers, as to be expected, will have a great deal to do with the successful metrication and the rationalization of standards in Canada. Out of necessity we will have to "think Metric" long before the general public.



"I thought you say ve use metracal system on dees job, so I lose 25 pounds, but I read plans in feet and inches."

AUGUST 1972

## Welcome New Members

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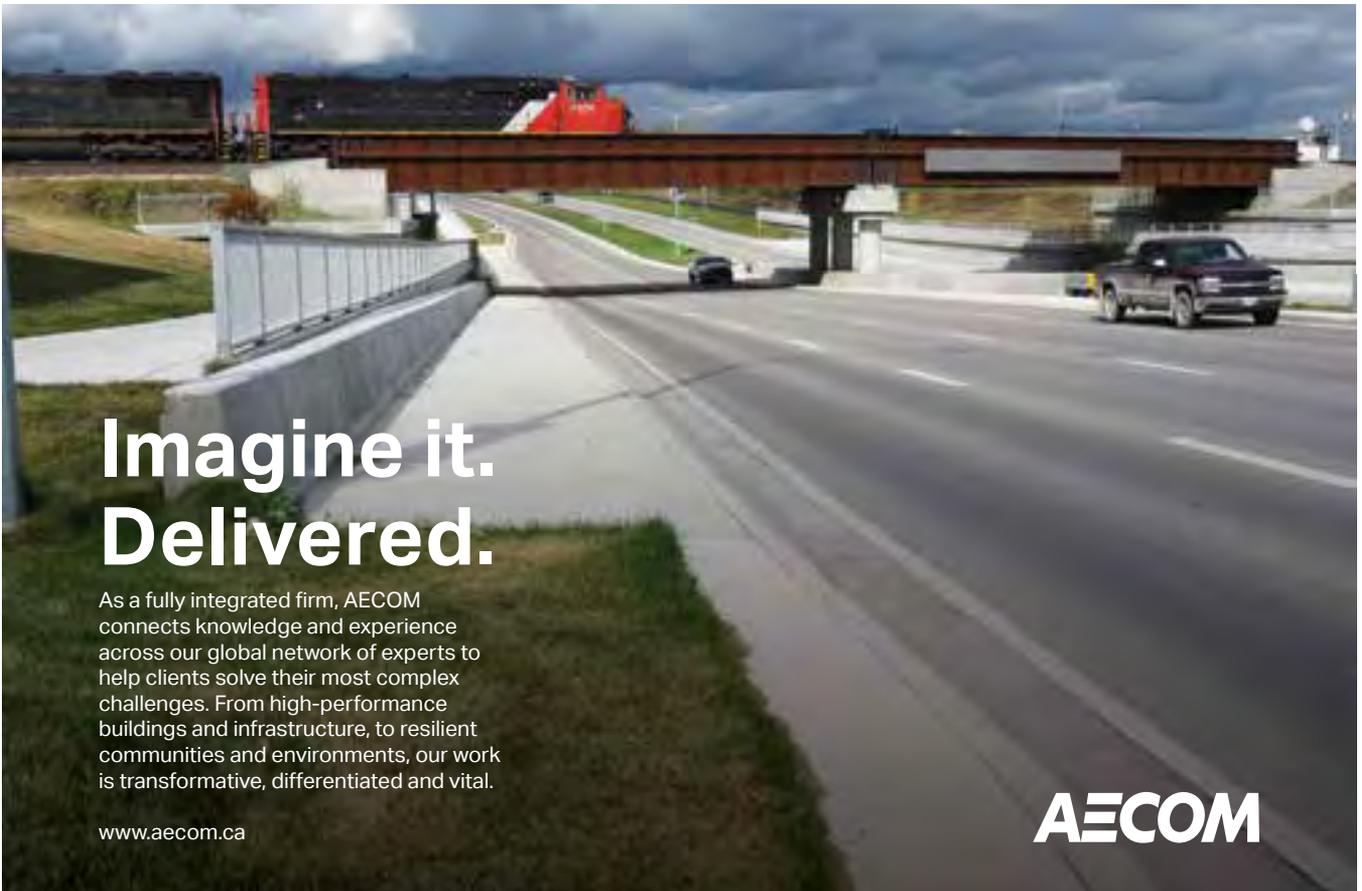
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## We've Got You Covered

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Secondary Professional Liability Insurance (SPLI) is a unique program that protects members. It ensures that you, the public, and the reputation of the engineering profession stay protected in numerous cases involving professional services:

- **Whistleblowing:** You "blow the whistle" on an employer due to illegal or unsafe practices and, as a result, face legal costs and/or professional repercussions.
- **Incidental professional consulting services:** You consult informally with someone in your community, including friends and neighbours, and they bring a claim against you.
- **Worldwide:** You are working in the United States and are found liable for work you've done.
- **Prior acts:** You have a claim brought against you for work you've done for a previous employer.
- **Pollution:** You are accused of polluting.
- **Intellectual Property:** You are accused of copyright or patent infringement.
- **Estate:** Your estate comes under threat as a result of a posthumous claim made against you.

- **Retirement:** You require coverage for an incident that happened prior to retirement.
- **Mentoring:** Your mentee is the subject of a claim.
- **Libel and slander:** You are accused of slander or libel.
- **Cyber network security:** You cause unauthorized access to a third-party computer network, resulting in data loss or other damage.
- **Disciplinary actions:** You have administrative or disciplinary action brought against you and incur legal costs.
- **Loss of documents:** You incur expenses to replace lost or damaged documents.
- **Crisis event and reputation management:** You need to hire a public relations firm to manage a crisis situation.

*Note: The examples in this list are not exhaustive. The policy wording prevails for all coverage interpretations.*

Beyond personal protection for professional services, Secondary Professional Liability Insurance plays an important role in ensuring that engineers feel comfortable in situations involving professional risk. Whether it's whistleblowing, mentoring, or working abroad, SPLI allows you to more securely take actions that promote the

overall health and reputation of the engineering profession.

### Who is Covered?

All Engineers Geoscientists Manitoba members in good standing (and other participating provincial engineering regulators).

### Coverage limits

- Coverage per member: \$250,000 per claim, plus defence costs for claims made in Canada
  - Aggregate per project: \$500,000
  - Legal advice related to whistleblowing: \$75,000
  - Loss of income related to whistleblowing: \$75,000
  - Outplacement services related to whistleblowing: \$10,000
  - Legal expenses for disciplinary hearing, regulatory or administrative actions: \$30,000
  - Loss of documents: \$5,000
  - Crisis event and reputation management: \$15,000
  - Deductible per claim: None
- For more information, call the insurance hotline 1-800-361-9080 or visit the FAQ page <https://engineerscanada.ca/services/insurance-financial-and-other-benefits/>.

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## Past President Appointed to the Order of Canada



Congratulations to Association Past President Dr. Digvir Jayas, P.Eng., FEC, FGC (Hon.), for his appointment to the Order of Canada, in

recognition of his advancements to agricultural practices worldwide and for his promotion of academic and

scientific research in Canada.

Dr. Jayas is Vice-President (Research and International) at the University of Manitoba and a former Tier I (Senior) Canada Research Chair in Stored-Grain Ecosystems. He conducts research related to drying, handling, and storing grains and oilseeds and digital image processing for grading and processing operations in the Agri-Food industry. Dr. Jayas served as President of Engineers Geoscientists Manitoba Council in 2006

and Engineers Canada Director from 2010 to 2017.

Governor General Julie Payette announced 105 new appointments to the Order of Canada on December 27, 2018. Established in 1967 by Her Majesty Queen Elizabeth II, the Order of Canada is the cornerstone of the Canadian Honours System, and recognizes outstanding achievement, dedication to the community, and service to the nation.

## A Night at the Movies *Dream Big: Engineering Our World*

By K. Atamanchuk, P.Eng., FEC

On January 16 and 17, 2019, the Committee for Increasing the Participation of Women in Engineering (CIPWIE), a committee of Engineers Geoscientists Manitoba, hosted exclusive screenings of the 3D IMAX film *Dream Big: Engineering Our World*. The film, produced by MacGillivray Freeman Films in partnership with the American Society of Civil Engineers and presented by Bechtel Corporation has been shown in theatres and science centres across North America and finally made its way to the big screen in Winnipeg for the first time!

*Dream Big: Engineering Our World* tells the story of how engineering changes

lives. From the design of safe structures, to ideas for a sustainable future for us all, *Dream Big* fills us with hope and shows just how exciting and rewarding a career in engineering can be. The stunning images and personal stories make this awe-inspiring film a winner for all ages.

Close to 700 Association members, friends, families, and special guests attended the *Dream Big* screenings. Special thanks goes out to our event sponsors: University of Manitoba – Faculty of Engineering, Red River College – School of Skilled Trades and Technologies, the Association of Consulting Engineering Companies



(ACEC-MB), and the Society of Automotive Engineers (SAE) Manitoba Chapter. If you weren't able to attend, don't worry, *Dream Big* is now available on Netflix! So next time you're in the mood for a great movie, why not *Dream Big*?

## Association Selected as Finalist for Spirit of Winnipeg Award

The Winnipeg Chamber of Commerce has revealed the finalists for the 10th annual Spirit of Winnipeg Awards and Engineers Geoscientists Manitoba is proud to announce that they have been selected as one of three finalists for the Wellness and

Workplace Culture Award. This category recognizes practices and enabling conditions for improved inclusivity, productivity, skills, health, and satisfaction for employees.

Chosen by volunteer judges drawn from the business community, the Spirit

of Winnipeg Award recipients embody the ambitious, innovative, caring spirit of our prairie home. The winners will be revealed at the Spirit of Winnipeg Awards Gala on Wednesday, March 6, at the Club Regent Event Centre.

## Arab Members Chapter PMP Certification Course



L-R: Rabie H., Manpreet G., Homam E., Mohammed M. [Chapter Chair], Shatha K., Nasr E. [Facilitator], Youssef M. [Chapter Secretary], Ismail I., Tuan L., Vincent A., Ramzy F.

The Arab Members Chapter of Engineers Geoscientists Manitoba has successfully organized a preparation course for the Project Management Professional (PMP) certification. The course was held at the University of Manitoba Faculty of Engineering between October 9 and December 6, 2018.

Facilitated by Nasr Const. Inc., who was hired by the Chapter to deliver the course, eight attendees completed the 35-hour requirement to be eligible to apply for the PMP exam. This was the first course organized by Arab Members

Chapter and feedback from attendees was very positive. This positive feedback will encourage the Chapter to organize more courses in the near future, not only in PMP but in other areas of interest to the Chapter members and the larger engineering community in Manitoba.

All of the attendees received certificates of completion on the last day of the course, and the Chapter assured them of its support in their future journey with any questions or consultation.

Contact the Chapter via email: [contact@aegm.ca](mailto:contact@aegm.ca), or like the Facebook page at [www.facebook.com/EGM.Arab.Chapter/](http://www.facebook.com/EGM.Arab.Chapter/).

## Five More Years – Federal Government Extends Mining Exploration Credit



The Government of Canada Fall Economic Statement on November 22, 2018, brought significant support for the mineral exploration sector. The statement announced a five-year extension of the Mineral Exploration Tax Credit (METC) until March 31, 2024. The METC is a 15% non-refundable federal tax credit on eligible expenses related to mineral exploration. This credit allows exploration companies to raise equity funds to conduct prospecting and exploration work distal to an existing mine site. It may be used in conjunction with associated flow-through, shares which transfer expenses through the exploration company directly to the investor.

This is the first multi-year renewal since the inception of the METC in 2000. The extension reduces uncertainty for junior exploration companies, provides stability for planning, and will assist in raising equity capital for multi-year projects. The mineral exploration industry in Canada generates significant economic and social benefits, particularly in remote and Indigenous communities. The government support will drive new discoveries and advance Canada's mineral industry competitiveness in the global market. ✚

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# NEW Code of Ethics

The by-law changes approved last fall represented a significant point in Engineers Geoscientists Manitoba's history, since this change included approval, by the membership, of the new Code of Ethics. The change reflects Council's desire to have a code that is comprised purely of guiding principles. It also moves towards creating a consistent national standard by following the model established through Engineers Canada.

One of the key benefits of the new Code of Ethics is its simplicity. The previous Code of Ethics was comprised of five canons and 38 sub-canons. The new code distils the essence of our ethical obligations to the following:

Hold paramount the safety, health, and welfare of the public and the protection of the environment and promote health and safety within the workplace.

Offer services, advise on, or undertake engineering or geoscientific assignments only in areas of their competence, and practise in a careful and diligent manner and in compliance with applicable legislation.

Act as faithful agents of their clients or employers, maintain confidentiality, and avoid conflicts of interest, but, where such conflict arises, fully disclose the circumstances without delay to the employer or client.

Keep informed in order to maintain their competence and strive to advance the body of knowledge within which they practise.

Conduct themselves with integrity, treat clients, colleagues, and others with equity, fairness, courtesy, and good faith, give credit where it is due, and accept, as well as give, honest and fair professional criticism.

Present clearly to employers and clients the possible consequences if engineering or geoscientific decisions or judgements are overruled or disregarded.

Report to their regulator and other appropriate agencies any perceived illegal or unethical engineering or

geoscientific decisions or practices by registrants or others.

Be aware of, and ensure that clients and employers are made aware of, societal and environmental consequences of actions or projects and endeavour to interpret engineering or geoscientific issues to the public in an objective and truthful manner.

In order to achieve the end result, the code now avoids prescriptive elements. For example, the previous code made reference to a requirement that "each practitioner shall...be open and honest when engaged as an expert witness and give opinions conscientiously, only after an adequate study of the matter under review". Through consultation with the general membership, it is clear that the sentiment behind this old canon is widely held, and is included in principle in the new Code of Ethics, particularly under the eighth canon.

Under the new model, this type of prescriptive element will be addressed through Practice Notes or Practice Guidelines. Since the Code of Ethics is updated only on a 15 to 20 year cycle, this model allows for timely modifications to prescriptive elements. It also allows

for in-depth guidance to members, as appropriate. To that end, under the example presented above, Engineers Geoscientists Manitoba is moving to publish a new guideline on providing expert witness services.

It is worth noting that Engineers Geoscientists Manitoba wholly owns the new Code of Ethics. As mentioned above, this new code is based on the model developed by Engineers Canada. However, some minor changes were made prior to adoption of the model. More importantly, Engineers Geoscientists Manitoba's members can approve future changes to the code.

Have you discussed the new Code of Ethics with fellow practitioners? What aspects of the new code fit well with your practice? Are there new guidelines or practice notes that you'd like to see after reading the new code?

As always, I appreciate comments and discussion about standards issues. If you'd like to talk about the above topic or any other area of concern, please do not hesitate to contact me at: [MGregoire@EngGeoMB.ca](mailto:MGregoire@EngGeoMB.ca). ☎

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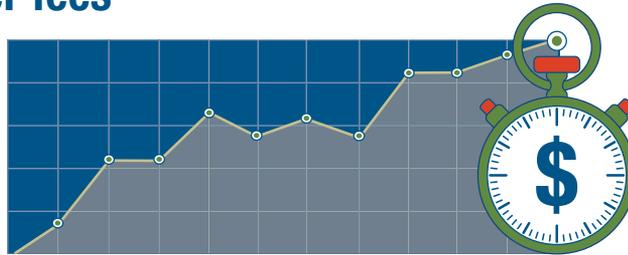
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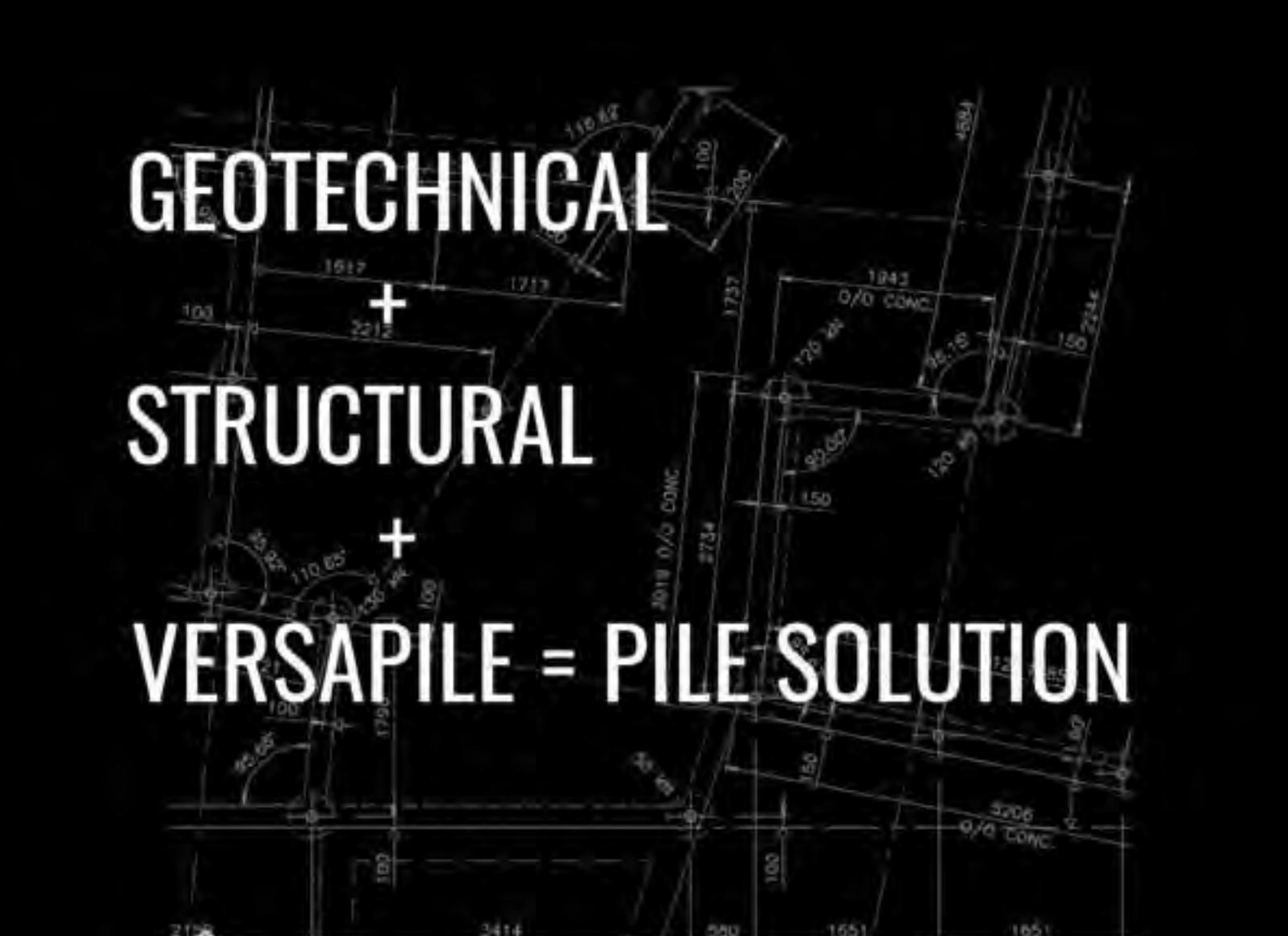
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