**Mission**

To enhance the competitiveness and sustainability of the Canadian mining industry by ensuring excellence in research, innovation and commercialization.

**Vision**

Canada is a global leader in the mining industry through leading edge research and innovation.

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President's / Chair's Message

Conversations about the future of the Canadian mining industry and our technical strengths and weaknesses were pursued by many people for many years. There had also been periodic attempts to turn these conversations to action with efforts to create new groups or programs. But it wasn’t until the fall of 2007 that those conversations led to a concrete plan and the creation of the Canada Mining Innovation Council (CMIC). Many people deserve credit for helping us take the plunge, but Steven Lucas, supported by NRCan, was an instrumental driver. Six years on, it seems like we have come a long way but at the same time have so much to do.

In 2007, we were driven by three factors – rapid growth in the global mining industry, the sense that the Canadian mining industry was not keeping pace with the technical, research and educational capacity in competing jurisdictions, and the degree of fragmentation in industry, academia and government across our magnificent country. Some of these things are still true today, but the world has changed and with it there are new pressures on the mining industry. Today’s realities include declining margins and lower productivity in operations, cost pressures and declining support for R&D, sustainability and community engagement imperatives, and the increasing need to have more effective and efficient mining in the remote north. CMIC has never been more important, but the challenge of providing timely commercial solutions has perhaps never been harder.

From the beginning, CMIC was a volunteer organization with minimal infrastructure and few paid employees. With that lean beginning, CMIC still managed to organize the largest collaborative project funded by NSERC, the Footprints Exploration program involving 14 universities and 26 companies ranging from majors to small technology providers. This program epitomizes CMIC goals – to facilitate broad-based collaborative research and innovation. Our exploration colleagues set the example but it has proven difficult to emulate across all the disparate parts of our industry. While maintaining our goals for facilitation, collaboration, and as open innovation as possible, we have recognized the need for flexibility as we seek to deliver new programs. One thing is clear, we will remain small and nimble and feel no need to own our products – we are not a research broker or institute. We take pride in successes across the country, such as COSIA in Alberta and IMII in
Saskatchewan, where CMIC provided some initial help and an appropriate model respectively. Both of these groups are experiencing rapid growth and success.

In the last year, CMIC appointed a new Executive Director and CEO, Carl Weatherell, and since Carl arrived, CMIC has moved to our own modest office with vastly improved infrastructure. While we are better established, we are still lean and heavily reliant on the immense group of volunteers from industry, academia and government who drive the ideas and programs. I am coming to the end of my term as President – or Chair under our new governance and bylaws – which we hope will be approved at the AGM. Working with CMIC has been a great experience even through the ups and downs of a fledgling organization that is attempting to create change in an industry that for many realistic reasons finds change difficult. Over the last six years, I have benefitted enormously from the interaction with a wonderful group of people. They are too many to name but they all exhibit the innovative, optimistic, and honest approach that CMIC needs to be successful. As the organization continues to mature, including the move to a small high functioning Board, it is critical that we continue to connect with the doers in our business. These are the people who truly understand risk-reward the desperate need for innovation.

I wish our new Chair, Peter Kondos, and everybody involved with CMIC and our vital industry success in the coming years.

John Thompson
President CMIC 2012-14
May 2014
Executive Director and CEO Message

I could not agree more with the Chair, John Thompson. This past year was a whirlwind of activity, reaching out and talking to as many members and other CMIC participants as possible and really understanding and fine-tuning what we are, our value proposition to the industry and where we need to go. We launched the first CMIC project from the Exploration technical group, a project that shattered a number of records in the geoscience research space. Our technical groups are busy although three lost their leadership due to the many changes in the industry at large; two have already been replaced. We also started to re-think how to address the grand challenges of the industry and focusing on open innovation as the operating modality for CMIC in general. Critical in all of our activities going forward is to work towards direct correlations to the financial levers that are close to the hearts of senior executives and shareholders. Further, we extended our reach into the most senior levels of government advising them of the absolute necessity to support innovation in the industry.

This is a good start, but we have a long way to go.

We have been using the terms business ecosystem and open innovation to describe who we are and how we operate in part because they have been used extensively with significant success in sectors such as information technology and aerospace. More importantly, these approaches are exceptionally efficient providing for rapid deployment of solutions for these sectors at low cost. An essential element in this approach is to lever existing assets. Thus, our intent is not to create additional infrastructure, replicate what already exists or compete with existing organizations. Rather, CMIC works with existing organizations, identify strengths, fill gaps and lever the considerable strengths that already exist within, and outside, of the industry. As a first step, we are planning the first annual research, development and innovation group meeting in June 2014. Additionally, a national mining innovation forum is being planned with IBM as a co-host. CMIC is also partnering with the Coalition for Eco-Efficient Comminution (CEEC) based in Melbourne, Australia to address issues related to comminution. We are also starting to work with the Canadian Mineral Processors (CMP) on this front. On the environment front we have initiated discussions with a number of municipal, provincial and national bodies that focus on water monitoring.
To ensure our success in addressing the seemingly impossible challenges facing the industry we need to consider the impossible, move out of our comfort zones, learn and adapt from other sectors and act collectively as an industry. We must ask different questions; while we all want more effective ways to manage tailings, we must be asking how do we eliminate tailings? How do we significantly increase the efficiency of comminution? How do we increase labour productivity by 300% or underground development rates by 100%? How do we decrease OPEX 5% through energy management or radically change energy budgets for critical mining processes by 50%? Who do we need to collaborate with to answer these seemingly impossible questions?

Tackling these questions is a lofty goal that can only be addressed by working collectively. The Board, the CMIC office and I are committed to addressing these challenges; will you join us?

Carl Weatherell
Executive Director & CEO
May 2014
Who We Are

The Canada Mining Innovation Council (CMIC) is a federally incorporated non-profit corporation.

CMIC was incorporated in 2009 at the request of the industry, government and academia to provide innovation leadership to the mining industry and directly address five (5) major challenges. These challenges are:

1. **The Mining Innovation Gap** – as the complexity of the mining industry changes and accelerates, the gap between these complexities and the capability of the industry to operate efficiently is increasing exponentially (see Figure 1 below).

*CMIC’s Role: define the industry wide pre-competitive challenges at a national level and chart courses to solutions.*

- Ability to discover new deposits
- Complexity & grade of deposits
- Depth of mines
- Energy requirements
- Health & safety
- People
- Environmental impact

*Figure 1: The Innovation Gap*
2. **Fragmentation of Research, Development and Innovation Organizations** – there are over 100 organizations with an emphasis on assisting the mining industry including 12 separate research, development and innovation (RDI) organizations scattered across Canada, not including the centres of expertise in universities and colleges. Unfortunately the level of collaboration between these centres and those in colleges and universities is not sufficient to drive transformative change in the industry.

*CMIC’s Role:* to foster collaborations between these centres, leveraging existing expertise and funding to arrive at implemented solutions faster and more cost effectively.

3. **Diversity of the Industry** – while the industry has fostered collaboration for many years, much of this effort has been specific to sub-disciplines (e.g., exploration in discrete areas), or driven by a single commodity issue. CMIC’s goal is to increase and diversify the scope of collaboration across the industry, amongst researchers and technology providers, and with the inclusion of other sectors.

*CMIC’s Role:* to encourage and accelerate collaboration by focusing on those challenges that are common to all commodity driven companies.

4. **“Tyranny of Short Termism”**¹ – although mining operations are decades of mine life, they are driven by weekly, monthly and at best annual KPIs. Companies are under pressure from shareholders and analysts to deliver in the short term with an emphasis on cost-cutting and throughput rather than margin improvement and long term value creation. This is a challenging environment in which to develop innovation.

*CMIC’s Role:* to focus on 5-10 year horizons while providing incremental value on an annual basis.

5. **Innovation Investment Gap** – investment in RDI activities in the industry is low and declining compared to other sectors such as forestry, automotive and

¹ [http://hbr.org/2011/03/capitalism-for-the-long-term/ar/1](http://hbr.org/2011/03/capitalism-for-the-long-term/ar/1)
manufacturing and is approximately nine (9) times less than that of another competing country, Australia.

**CMIC’s Role:** to communicate the importance of, create awareness of and generate interest in RDI in mining to governments.

**Achievements**

**Impact**
One of our major goals is to foster collaborations across Canada to assist the industry become more sustainable into the future. This approach inspired the creation of both COSIA and IMII by CMIC Board members.

**COSIA, Canada’s Oil Sands Innovation Alliance, is an alliance of oil sands producers focused on accelerating the pace of improvement in environmental performance in Canada’s oil sands through collaborative action and innovation. It currently reports 156 active R&D projects and a $900 million R&D portfolio.**

**IMII, International Minerals Innovation Institute, is a unique public-private-post-secondary partnership jointly funded by industry and government. It is a catalyst to developing industry-driven education and training programs to address labour force needs in the sector.**

**Projects**
On May 11, 2013 CMIC launched its first technical project from the Exploration Group. The Footprints project is a 5-year $13.1 million project, initially comprised of 14 universities and 26 companies, 14 of which were SME’s. The consortium has since grown to over 53 organizations. Additional projects have been identified and are being developed.

CMIC partnered with CEMI and SNOLAB in the Mining Observatory Data Control Centre (MODCC) project to address data integration issues of the industry. CMIC will enable the development of a tripartite knowledge/technology transfer mechanism between the Small and Medium Enterprise (SME) community, large multinationals and academic researchers.
Technical Groups

In late 2013, CMIC engaged the services of two (2) experienced mining consultants to push the mining and environment groups forward.

A draft roadmap defining the major innovation and technology penetration challenges faced by the industry is being honed with the Energy group and external stakeholders.

The Environmental Stewardship Group is moving towards pre-feasibility and feasibility reports that define the technical areas of focus and the areas of greatest need for the Canadian mining industry in the spectrum of mining environmental concerns.

The Processing Group has narrowed the focus to Energy in Comminution and Regrind while the Mining and HQP groups are re-evaluating the opportunities to maximize the impact on the industry.

Governance
The CMIC Board initiated a process to modernize governance and administration to improve operations, effectiveness, and transparency and comply with new legislation for non-profit organizations (Not-for-Profit Corporations Act or NFPCA). The NFPCA is a new piece of legislation for all federally incorporated non-profits. A Task Force of the Board, in collaboration with legal counsel, prepared Articles of Continuance and a new by-law as part of this process.

Federal Government Outreach
CMIC’s outreach has historically focussed on Natural Resources Canada. Over the course of the past twelve (12) months, the CMIC Executive Director & CEO met with Ministers or Chiefs of Staff from the following Departments:
• Natural Resources Canada
• Department of Finance
• Aboriginal Affairs and Northern Development Canada
• Environment Canada
• Industry Canada
Organization
Many changes have taken place at CMIC during 2013. In summary:
• Tom Hynes retired and Carl Weatherell became the new Executive Director & CEO
• The Second CMIC Signature Event was held in February 2013 with 150 participants
• CMIC now has moved into its own office and has significantly improved the associated operational infrastructure
• New and modern communications vehicles are in operation.

Strategy

The following are the strategic priorities of CMIC for 2014, as set by the Board of Directors.

1. **Change and adapt our business model** - Although not by design, CMIC was widely known as a network brokering research and development for the mining industry. In reality, CMIC is a facilitating organization focused on increasing the RDI effort focused on the Canadian mining industry using a range of approaches as appropriate and extensive collaboration. CMIC supports the industry need for solutions supported but not driven by research on its own. CMIC relies heavily upon almost 200 volunteers from the industry and associated organizations. Accordingly, CMIC is adopting a more holistic business model where CMIC orchestrates and supports the flow of technology and information among people, enterprises and institutions. Innovation and technology development results from a complex set of relationships among many players in the system, which includes industry, major and small (SME) technology providers, universities and government research institutes. We are also adopting an open innovation approach to address industry challenges. This approach allows for the discovery and adoption of solutions more rapidly and at lower cost than typical closed loop innovation or a pure research approach.

2. **Identify and implement alternative operating funding mechanisms** - The current model primarily driven by membership fees is not sustainable and provides for little growth with significant amounts of effort. We are exploring and have tested alternative revenue models including valued added services such as...
project/program management, provision of intellectual capital to other organizations, acquiring intellectual property royalties from technical solutions developed as a result of CMIC, and funding from foundations. The ultimate aim is to become financially stable while designing a revenue model that is scalable. We will continue to examine and test other revenue streams.

3. **Expand and diversify our membership base** - Our membership base relies heavily upon mining companies and government yet the greatest impact to the industry through CMIC will be through service providers including equipment suppliers and manufacturers who actually take innovative technologies to market. Our financial plan to 2018 has targeted the greatest growth in the service provider category and includes many organizations outside of the mining industry.

4. **Increase the value to members** - We are ensuring our activities address the major financial levers recognized by executive leadership in the industry including OPEX, CAPEX, labour productivity, energy efficiency and sustainability. Additionally, the open innovation framework allows for reduced financial input, reduced risk, and identification of solutions faster and at significantly reduced cost to all participants.

5. **Generate value added projects faster** - Our Footprints project is the epitome of the types of projects CMIC wishes to launch. However, we have been slow launching other projects and are actively examining root causes and re-identifying key opportunities.

6. **Minimize the competitive approach between organizations** - Research, development and innovation organizations targeting the mining industry can view each other as competitors due to pressures from the institutions that house them, specific sources of funding and overlapping goals. We are planning the first national meeting of research, development and innovation leaders from provincial and federal government labs and RDI organizations relevant to the industry for the summer of 2014. We intend for this to be an annual event that will increase understanding, define common goals and facilitate increased collaboration.

7. **Increase profile in government and with corporate leaders** - In the past CMIC has focused heavily on Natural Resources Canada as the department that
represents mining in the federal government. The impact of our work and potential solutions is significantly broader than just in the mining sector. During 2013 we spent considerable efforts discussing CMIC and its impacts on federal government departments such as Finance, Environment Canada, Industry Canada and Aboriginal and Northern Development Canada. We will continue to work with these departments to increase our profile. At the corporate level, many senior executives are not aware of CMIC nor of the impacts we will see in the future. We have started to reach out to senior executives and will expand our efforts to work with them into the future.

Financials

CMIC’s fiscal year ends December 31, 2013. Our auditor is Schwartz Levitsky Feldman. Our head office is in Ottawa, Ontario Canada.

The 2013 fiscal year was a strong year for CMIC. Although we realized a net deficit of $33,749 we saw a net gain of eight (8) new members. We completed an overhaul of our financial system as suggested in the auditors reports for fiscal years 2011 and 2012 and are now operating as an independent entity with CIM providing accounting services for CMIC.

The organization will be on solid financial footing for 12-18 months and alternative revenue sources are being identified and tested in collaboration with the Executive Committee and Board members.

A summary of the last three (3) years of our audited financial statements is presented below. Final audited statements are available on our web site at http://www.cmic-ccim.org/about/annual-report/.

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Membership

Previously membership was based on a combination of paying members and those that are providing significant contributions to the advancement of CMIC objectives. As of January 2014, we adopted a much simpler approach, identifying members as those organizations that provide annual membership dues exclusively. Using this revised definition we ended fiscal year 2013 with a total of 75 paying members. Organizations that joined in the past year include; CH2M Hill, Activation Laboratories, Areva, Cliffs Natural Resources and Genome BC.

The figure below provides the memberships by type of organization from 2009 to 2013. The first three years of CMIC, 2009-2011, relied heavily on contributions from government for its core operations. The reliance on NRCan for core funding will end March 31, 2015 and we are projecting greater growth in the operating mining companies and service providers.

Figure 2: Memberships by type of organization from 2009 to 2013