

CANADA 3.0 INSPIRED CONVERSATION SUMMARY REPORT



How Can Canada's Technology Innovation "Ecosystem" Support Technology Companies (and vice versa)?

A summary of the table discussions that took place at the Inspired Conversation sponsored by CCEMC, CMC and Tessellate Inc. on October 30, 2014 as part of the Canada 3.0 Conference in Calgary produced by TRTech, CDMN, CleanTech Canada and JWN .



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Canada 3.0 Inspired Conversation Summary Report

How Can Canada's Technology Innovation "Ecosystem" Support Technology Companies (and vice versa)?

Event Overview

- On October 30, 2014 the Climate Change and Emissions Management Corporation (CCEMC), Carbon Management Canada (CMC) and Tessellate Inc. sponsored an Inspired Conversation as part of the program for the Canada 3.0 Conference in Calgary Alberta, produced by TRTech, Canadian Digital Media Network (CDMN) and JuneWarren-Nickle's Energy Group.
- The approximately 100 attendees reflected a variety of different points of view and contributed to a genuine dialogue on issues of interest to the Inspired Conversation sponsors. Attendees represented the following sectors: industry; business; academia; environmental groups; government and the innovation system.

What is an Inspired Conversation?

- An Inspired Conversation is a brief dialogue designed to seek input and views from a variety of participants on an issue of significant importance to a company, organization, sector or political jurisdiction.

Operating Principles

- A key challenge is identified as the focus of the conversation. The hosts of the Inspired Conversation have invited attendees to engage them in a dialogue in their search to advance the thinking on the key challenge and to identify potential solutions.
- The Inspired Conversation operates under "Chatham House Rules." Participants are free to voice their opinions and ideas freely secure, in the knowledge that anything said during the Inspired Conversation is not for attribution.
- The Inspired Conversation is intended to generate input from diverse participants in order to:
 - ♦ refine and improve the initial thinking on the challenge;
 - ♦ identify potential initiatives to address the key challenge and potential collaborators to design, develop and test the initiative;
 - ♦ determine the appropriate next steps required to continue the conversation and possibly turn it into action.
- An Inspired Conversation Summary Report is prepared and distributed to all participants with an invitation to continue the conversation in an informal way if participants are interested.

Key Challenge

The Key Challenge identified for the Canada 3.0 Inspired Conversation was based on the following question and context setting provided by Kirk Andries, Managing Director at the CCEMC:
How can Canada's Technology Innovation "Ecosystem" Better Support Technology Companies (and Vice Versa)?

From RFPs to grand challenges to open innovation calls, industry and government are reaching out for clean technology solutions. This session is a chance for participants to shape how these processes should continue to evolve.

Environmental sustainability and environmental technology innovation are a shared responsibility across all segments of the Canadian Energy Supply Chain: customers, technology integrators, technology developers, financiers/funders, government, NGO's, and others all play a role in moving ideas from concept to commercial product.

This 'ecosystem' of players must work effectively together to (a) define and prioritize key challenges and (b) develop technology to solve those challenges. Due to the diversity and complexity of the ecosystem, regular communication and collaboration between the players about how to continuously improve the ecosystem is important to ensure maximum productivity and innovation output. To that end, this Inspired Conversation connected some of Canada's innovation customers, funders, and enablers together with innovators and technology developers to discuss tangible ways of improving the innovation system to better support and enable Canadian technology companies.

Candid, honest discussions occurred at each of the tables that focused on a series of questions (set out on the following page) designed to gather input from across the technology innovation spectrum that will help inform technology challenges, open calls, and other initiatives going forward.



Key Questions

The facilitators and recorders at each of the discussion tables were responsible for guiding the conversation based on the following set of key questions. These questions were provided as a guide to start the conversation. Not every table discussion touched on each of the questions, nor were they expected to.

- What are the main barriers or challenges facing innovators when trying to commercialize technologies for use in the energy sector?
- How do we “fill the innovation funnel” so there is a continuous supply of new ideas. The well is nearly dry. What would it take to stimulate engagement?
- Are innovation challenges in the energy sector sufficiently defined for technology developers to effectively work on solutions? If not, how could challenge-definition be improved so that technology development is demand driven?
- Is greater collaboration to refine and improve ideas, raise funds and connect innovators to customers seen as a potential solution to improving performance and shortening the SEARCH FOR FIT timeline. If not, why not? If yes, what needs to change to encourage more collaboration?
- What needs to change for companies to focus more of their innovation investments to support innovators that are not currently in their supply chain?
- Are there ways in which coordination between procurement and engineering might facilitate/accelerate incorporation of novel technologies (e.g. parallel technical and business suitability approvals)?

Summary of Key Findings

Over the course of the Inspired Conversation discussions held at the various tables were varied, informative and touched upon many facets of how the technology innovation ecosystem can better support companies and vice versa. Despite the wide-ranging topics of discussion there were consistent themes that emerged. These themes are identified below and some of the specific elements of the discussion are highlighted.

✓ Fill the Innovation Funnel by Publicizing Challenges

An overarching theme that was consistent across all table discussions was the desire from innovators and entrepreneurs to better understand the challenges facing the oil and gas sector. More specifically, industry needs or challenges should be systematically and clearly articulated in order to align the efforts of solution providers with potential future customers of their innovations.

There was a clear indication that the innovation model needed to switch to a “demand-pull” approach that utilizes both public and private funding to define challenges and support promising innovations through to commercialization.

“Canada is very good at ideation, but very poor at growing companies and businesses. Ideas are free. Everything else costs money.”

“Business directed innovation allows things to move quickly. Is there a method to incentivize industry to better publish their needs?”

“Many SMEs have technologies and not solutions. They need to be embodied in a solution and a process to be brought to market.”

“We need specific, reproducible, quantitatively expressed needs and requirements to drive innovation.”

✓ **Test Facilities and Commercialization Centres are Needed to Mitigate Risk**

Developing innovations and integrating those innovations into existing operations or new markets are inherently risky endeavours. Another key theme of the Inspired Conversation was the need for test facilities to reduce the innovation risk for both entrepreneurs at the pilot stage and industrial customers at the pre-commercial stage. These test facilities would mitigate some of the costs for small companies and eliminate down time at existing operations of industry players when new technology testing is required.

Attendees discussed the commonly-held beliefs that:

- only proven technologies are acceptable in the oil and gas sector;
- technologies cannot be proven on existing projects because it is too risky;
- there are very few test facilities to prove out technologies because they are too expensive to build, and;
- the result is a never-ending cycle of slow progress and limited innovation.

A series of test facilities would help to break the cycle.

“There is a need for providing safe sandboxes for testing out innovative new products without risk to ongoing operations.”

“Risk-taking is necessary, but the oil and gas sector is risk averse. Sandboxes are required to mitigate risk, accelerate testing and improve uptake.”

“Test facilities are necessary to turn interesting, cool innovations into risk-free, predictable projects that can be delivered into the supply chain.”

✓ **Procurement Processes are Inhibiting Innovation Uptake**

A number of the table discussions at the Inspired Conversation identified a number of disconnects that are hampering the ability of established procurement practices to recognize the benefits of onboarding innovations and the value of having SMEs as valid procurement partners. In most cases,

the planning horizon for large companies is very long. Senior levels in the company may be concerned with innovation, but operations groups such as procurement remain risk averse and reject much of the innovation without direct input from senior management. There is a need to validate that innovation leads to greater profitability for it to be taken onboard.

In addition, it was noted that it is challenging for innovators to identify and strike relationships with the right people inside corporations. Innovators and SMEs find it difficult to get in front of big companies and once they are there the innovator must quickly identify the customer within the customer.

“Oil and gas companies are risk averse. The last thing that they want is to be considered innovative because their customers do not want or expect this behavior. Produce oil and gas, deliver value to shareholders. That is the mindset.”

“Large companies want change, but won’t change themselves. Small companies can bring change quickly, but lack mechanisms to connect with procurement systems.”

“Procurement is specialized decision-making. Corporate culture defines the process.”

✓ **Innovation Ecosystem Incoherence Limiting Effectiveness**

A significant part of the discussion at the Inspired Conversation centered on the innovation ecosystem itself and how its fragmentation was hampering collaboration and effectiveness. Innovators noted that it was difficult for them to interact with the innovation ecosystem because its components are ill-defined and elements of the system are in competition with one another and driven by self-interest.

There was also a significant amount of conversation centered on the possible need for the innovation ecosystem to consider two different project cycles – one that would support long-term investment to create a culture of innovation and strategic innovation in the province and a shorter-term approach that would reflect the need for SME growth in the economy to address immediate challenges.

In general, alignment with the overarching themes of the Inspired Conversation, the discussions around the objectives of the innovation ecosystem focused on:

- Challenge definition.
- Innovation creation, development and testing.
- Financial, investment and business systems support.
- First customer and procurement system support.

“Start-ups need the right assistance at the right time. Innovator and entrepreneur needs are different depending on their Technology Readiness Level (TRL) and their Business Readiness Level (BRL).”

“The support available in the ecosystem is generic and not specific enough to be useful. The ecosystem needs to clearly identify for innovators where to engage in the ecosystem depending on the type of assistance they are looking for.”

“There are too many organizations with competing objectives and unclear deliverables in the innovation ecosystem. Either simplify the system or simplify the roles of participants in the innovation ecosystem.”

✓ **Enhance Mentoring/Management/Matchmaking to Connect SMEs with Large Company Needs**

Collaboration is the key characteristic if the innovation ecosystem is to be effective. Each part of the system must work together to achieve a common objective. The innovation ecosystem needs to embrace on-line, real-time collaboration on challenges and new methods such as crowd development, crowdsourcing and crowd funding to support and mentor innovators.

Beyond collaboration, much of the discussion centred on the fact that the innovation ecosystem needs to enhance the level and type of mentorship provided to entrepreneurs and SMEs. There was a recognition that there is a shortage of qualified, sophisticated management teams available to mentor and guide innovators through both the financing and the commercialization process.

“More needs to be done to support the small company – large company interaction. There is often a disconnect between the business realities of these two types of organizations and it can be overwhelming for an SME to interact with a major oil and gas company.”

“Ideas from other sectors like collision days, sprints, crowd development, accelerators and incubators should be modified to work in the oil and gas sector.”



✓ Balancing Investment Needs with Innovation Needs

The final theme that wound its way through the Inspired Conversation was focused on access to the investment community. There was a general recognition that ideas cannot accelerate fast enough without funding and that traditional financial institutions are not willing to take investment risks outside of their comfort zone. As a result, there needs to be a way to inject patient capital into the system. Oil and gas timelines are very long. Most start-ups don't have enough runway to wait out the system.

Innovation in the funding/investment/financing is necessary to change the way that innovator support occurs. A system of collaborative financing that includes access to all types of funding -- Angels, VCs, government funding, CCEMC, etc. -- where one source of funding does not disqualify an entrepreneur from other future funding sources could go a long way to addressing one of the largest challenges facing any innovator.

“What is the role of the investment community in supporting innovation and the innovation ecosystem? Often investors are only interested in the potential business return and not in the technology itself.”

“No one wants to buy or invest unless you have a customer. How do you find your first customer before you run out of runway?”



Conclusions

Based on feedback received by the session sponsors the Canada 3.0 Inspired Conversation was successful in seeking input and views from a variety of participants on an issue of significant importance. In addition to providing an opportunity for direct participation by interested and engaged attendees, the Inspired Conversation highlighted a number of key challenges and themes that warrant more detailed discussion.

The Key Challenge identified for this Inspired Conversation was: How can Canada's Technology Innovation "Ecosystem" Better Support Technology Companies (and Vice Versa)? The context setting remarks provided by CCEMC highlighted the need for challenge definition and prioritization, collaboration between and across both industry and the innovation system and an ongoing need to improve the innovation system to better support and enable Canadian technology companies. The six themes that ran through the majority of the table conversations were aligned with the Key Challenge context and were focused on what was necessary to improve the innovation system.

The sponsors believe that there is an opportunity to continue to engage experts from a number of industrial sectors, innovators, entrepreneurs, governments and environmental organizations in focused dialogue on the topics identified at the Canada 3.0 Inspired Conversation in an effort to define a series of actions that could be undertaken to address these challenges.

Thank you for contributing to the tremendous success of the Canada 3.0 Inspired Conversation.