



Summary Report

July 17, 2018

Executive Summary

Harnessing the Power of Data and Intellectual Property

Sustainable Development Technology Canada - Third Annual Cleantech Leadership Summit

MAY 30, 2018 | NATIONAL ARTS CENTRE | OTTAWA, ONTARIO

Since 2016, the Sustainable Development Technology Canada (SDTC) Cleantech Leadership Summit has brought together industry leaders, policymakers and investors to discuss how to advance the country's cleantech sector both nationally and on a global scale. This third installment focused on how Canadian cleantech companies can harness the power of data and intellectual property (IP).

Participants heard from six expert panels on a wide range of topics with both direct and indirect impacts on cleantech, including:

1. **Data ownership, privacy, sovereignty and retention.** Who is entitled to collect what data — and what should they be allowed to do with it? Panellists discussed the big questions and practical challenges, how Canadian companies can capitalize on the immediate opportunities, and the need for a national data strategy.
2. **Data-related challenges and opportunities for Canada's primary industries.** How can oil and gas, mining, fishing and other sectors extract the most value from their data? Panellists discussed the need for better data and how business can obtain the "social licence to operate" by collecting and sharing open, transparent data about their environmental and operational performance.
3. **Scaling Canadian cleantech companies.** A panel that included Canadian cleantech business leaders along with the Honourable Navdeep Bains, Minister of Innovation, Science and Economic Development, discussed the importance of having a proper IP strategy as well as how various federal initiatives are helping to build up Canada's innovation foundation.
4. **The future of smart cities.** Panellists discussed how data will transform municipal infrastructure, why cities need to think very carefully about how much control over their data they give up to external partners, and why open data formats are essential to accelerating innovation.
5. **Data-driven disruption in the agriculture sector.** How is cleantech disrupting the status quo and reinventing the way farmers approach their work? Panellists discussed how fierce competition in the sector is putting an increased emphasis on IP protection and why farmers tend to be more reluctant than others to give up their data.
6. **Policy supports offered by the Government of Canada.** Panellists discussed the commitments made by government to help companies scale up their cleantech solutions as well as how government culture can make it difficult to fully meet the needs of cleantech entrepreneurs — and what it will take to transform that culture to one that thinks digital-first.

As SDTC Chairman Jim Balsillie said during his opening remarks, the day's discussions were designed to give participants a better understanding of how data can be used to "unleash multiple engines of prosperity across the country" — and to collect the ideas necessary to improve Canada's cleantech outputs.

Table of Contents

Executive summary	1
Defeating the Goliaths	3
Canada’s Moment to Win	3
Whose Data is it Anyway? (And Why Should Cleantech Entrepreneurs Care?)	4
The Need for a National Data Strategy	5
Canada’s Opportunity	5
The Data Opportunity for Canada’s Primary Industries.....	6
Strengthening Business, Building Relationships	6
Finding Value in a Mountain of Data	6
Creating the Social License to Operate	7
Scaling Canadian Cleantech Companies	8
Generating, Protecting and Getting Value from our IP	8
Why Protecting Cleantech IP Matters.....	8
Freedom to Practice.....	8
Looking Ahead.....	9
(Re)Building cities.....	10
Making the Most of Data-driven Smart Cities	10
Who Controls A City’s Data?	10
Open Data is Essential.....	11
Disrupting the status quo.....	12
Fierce Competition.....	12
Protecting Farmers’ Data	13
Coming together	14
How Government is Helping Cleantech Reach the Next Level	14
How Canada Supports Cleantech Innovation	14
Changing the Culture	15
Appendix: Summit agenda.....	17

“We need a ‘Team Canada’ approach that evolves over time and is based on continuous dialogue between innovators and public policymakers. The stakes are big and changing quickly, so we also need to act quickly.”

~ Leah Lawrence, President & CEO, SDTC

“The explosive growth in industrial big data has just begun — and the competitive environment is being redrawn as we speak.”

~ Leah Lawrence, President & CEO, SDTC

Defeating the Goliaths

It has been said the data is the “new oil” because of its potential to dramatically transform the underpinnings of our economy and society. Yet unlike oil, the world’s reserves of data are growing at an almost unfathomable rate — and will only continue to do so as sensors and monitors are embedded in everything from phones and buildings to pipelines and heavy equipment. At the dawn of this new data-driven economy, now is the time to ask how Canada’s cleantech innovators intend to harness and unleash the power of data and generate value from the intellectual property (IP) it enables.

That was the issue explored throughout the day at the third annual Sustainable Development Technology Canada (SDTC) Cleantech Leadership Summit. Some 170 industry leaders, policymakers and investors gathered in Ottawa to take part in far-reaching discussions about the role data and analytics will play in the future of Canada’s cleantech sector.

Canada’s Moment to Win

According to SDTC President and CEO Leah Lawrence, that role could — and should — be a powerful one. Like David starting down Goliath, the prospect of starting a business in Canada and growing it on the world stage can seem daunting. But by using data in new and exciting ways, our smaller, scrappier cleantech companies have an incredible opportunity to outsmart the giants of the global cleantech marketplace and fundamentally change the rules of the game — and in doing so, access new global markets and expand their business.

If this is to be Canada’s moment to take on the giants and win, cleantech entrepreneurs will need the support of public policymakers as well as new national and provincial strategies to ensure a level playing field for domestic and international innovators alike.

That sentiment was echoed by SDTC Chairman Jim Balsillie, who called for new strategies at both the government and industry levels that will allow companies to access and use data in ways that give them greater freedom to operate globally.

“Neither the policy community nor business leaders alone can determine how Canada will position itself in the data-driven economy,” he said. “We must work together if we are to improve Canada’s cleantech outputs.”

Those strategies begin at events like this Summit: by establishing a dialogue between innovators and policymakers that shapes a better understanding of the connections between data and IP and how they can be used to generate business value.

“The control of knowledge, data and IP is becoming key to economic and political power. The conventional wisdom of trade agreements — free trade with minimal government involvement — doesn’t translate into the data economy. If you assume the law of comparative advantage will hold for free flows of data, you’re in for an unpleasant surprise.”

~ Blayne Haggart, Associate Professor, Brock University

Whose Data is it Anyway? (And Why Should Cleantech Entrepreneurs Care?)

Data governance may be the most important public policy issue of our time. Who owns this valuable resource? Who is entitled to collect it — and what should they be allowed to do with it? The opening panel of the Cleantech Leadership Summit considered these and related questions, kicking off a day of dialogue about data.

Never before have individuals, companies and societies had so much capacity to generate data, and never before has it played such a central role in how economies work. That’s a fair reason for companies and governments to be preoccupied with questions of how to harness data for efficiency, sustainability and economic value. Competition around data is ramping up — in no small part because it is key to generating IP. In the words of Brock University’s Blayne Haggart, “It takes knowledge to create knowledge.”

This makes having access to data vitally important, not only for individual companies but also for nations. Data sovereignty matters, and its implications extend all the way to international trade agreements. While there are strong calls today for free and open data flows, if data and IP are the keys to economic prosperity, just how “free and open” should they be? Should data collected from citizens in one country be used to generate economic benefit in another?

Separate from macro questions like these, businesses face practical challenges when it comes to data. Some are convinced their data is extremely valuable and hoard it; others want to share their data but lack the infrastructure or expertise to do so. Contracts don’t often delineate who owns data. Large organizations struggle to break their data out of silos. And many organizations of all sizes produce what’s known as “data exhaust”: data that’s generated by a company that has no interest or capacity to use it.

Addressing these issues requires investment in digital infrastructure (which requires capital), processes and connectivity for data collection, and a policy landscape that helps clarify data ownership.

MODERATOR

Sean Silcoff

Reporter, *Globe and Mail*

PANELLISTS

Anil Arora

Chief Statistician, Government of Canada

Blayne Haggart

Associate Professor, Brock University

Maithili Mavinkurve

Co-founder & COO, Sightline Innovations

Alex Whalley

Associate Professor, University of Calgary

The Need for a National Data Strategy

Canada today tends to punch above its weight when it comes to artificial intelligence (AI) and other aspects of data science. A national data strategy could help Canadian companies seize that advantage collectively rather than tear each other apart through competition — by offering cooperative models, eliminating duplication of effort and providing the architecture for collaboration.

Privacy and trust must be key considerations of such a strategy. The extraterritorial reach of Europe’s General Data Protection Regulation provides ambitious defences for individual privacy but raises other questions about data and IP. Rather than allow Canada to be governed by another jurisdiction’s rules, it may be important to establish a larger, treaty-based framework.

“Canadians are known for being collaborative and welcoming,” said Sightline Innovations Co-founder and COO Maithili Mavinkurve, “but our frameworks need to change. We are principles-based. We may need to be more prescriptive because others may not be so principled.”

A further issue to be addressed through a national data strategy is how to reconcile data sovereignty and IP retention with direct foreign investment in Canada. The realities of the data economy may require rethinking about foreign investment, not only to keep Canadian IP in Canada but also because domestic IP may in fact be an important attractor *of* foreign investment.

Canada’s Opportunity

Sensor data from Internet of Things (IoT) networks will open up new opportunities for efficiency, optimization and sustainability across a multitude of industries.

“The diffusion of AI is following the expected model,” said the University of Calgary’s Alex Whalley. “The base technology is becoming more affordable and the value of the assets it produces — data and analytics — is on the rise.”

And those analytics will transform value chains in virtually every economic sector.

Canadian companies should seize whatever immediate opportunities exist to get that transformation going, taking simple steps, forging partnerships and leveraging organizations like SDTC. Data governance, data sovereignty, government involvement and having the right talent base will all be key to achieving this.

“We need to understand now: what are data that are individually really critical, and who needs to invest in the infrastructure and expertise to get value out of them?” noted Anil Arora, Chief Statistician for the Government of Canada. “And where is a collective benefit available?”

Should the protection of personal information be a basic human right?

Some elements of privacy are likely basic human rights, though discussion would be needed even to define basic assumptions. At a minimum, ensuring awareness of what’s being exchanged — the value obtained for sharing information — is key. This raises questions about whether or not it might be appropriate in some circumstances for people to be paid for personal information, questions complicated by the fact that the sharing of one person’s information may by association constitute the sharing of another person’s information. The panellists agreed it will be essential to educate Canadians about the new economy and their privacy within it.

“The major opportunity for companies in these sectors is the transparency data can provide. By making it open and available for anybody to see, people can see what is really going on, which helps create the social licence to operate.”

~ Nils Voermann, Global Managing Director of Technologies,
Hatch

The Data Opportunity for Canada’s Primary Industries

Strengthening Business, Building Relationships

Canada is a global leader in primary industries like oil and gas extraction, mining, forestry and fishing. Data has a lot in common with the natural resources at the heart of these sectors: it becomes significantly more valuable after it has been refined. And that’s where the world-class expertise possessed by Canadian companies can help deliver a significant competitive advantage.

It’s not enough for companies in Canada’s primary industries to just collect data, said Nils Voermann, Global Managing Director at consulting-engineering company Hatch Ltd. If they want to extract the most possible value from their data, they need to enhance and support it using analytical approaches that are shaped by something only they can bring to the table: decades of real-world experience in the field.

“By combining that knowhow with data and analytics,” he said, “we can add value, insight and eventually foresight that will provide a sustainable competitive advantage for Canada as whole.”

With *insight*, companies can establish benchmarks in areas like emissions control and energy reduction. But with *foresight*, they can go a step further to create forward-looking predictive and prescriptive analytics that will help optimize entirely different aspects of their business, such as equipment maintenance.

Finding Value in a Mountain of Data

Canada’s primary industries are well monitored, with some five million sensors deployed in vehicles, facilities, machinery and other assets. The problem is that there may actually be *too much* data being collected for companies to make sense of it all.

“Of all the data being produced, industry is only using about one percent of it, maybe less, in their day-to-day functioning,” said Gerry Protti, Past-Chair of the Alberta Energy Regulator. “It’s a huge iceberg and we’re only just touching the edge of it.”

To use all that data effectively, companies need to be able to process and analyze large volumes of unstructured data in real time. Big data analytics and machine learning will prove useful in this regard.

MODERATOR

Kelsey Johnson
Reporter, *iPolitics*

PANELLISTS

Gerry Protti
Past-Chair, Alberta Energy Regulator

Nils Voermann
Global Managing Director:
Technologies, Hatch Ltd.

Banu Ormeci
Professor, Carleton University

Ian MacGregor
CEO, North West Refining

So, too, will forming and strengthening networks and consortia with universities and governments. But at the end of the day, the accuracy of the data collected is most important.

“Natural resource data is not generated through ‘likes’ or clicks,” said Carleton University’s Banu Ormeçi. “It is based on science and engineering, and therefore needs to be collected in a scientific way.”

As the saying goes in the data science community, “garbage in, garbage out.” In other words, even if a company employs the most sophisticated algorithms, if the incoming data is of poor quality, it will be very difficult to extract anything meaningful or useful at the end of the process.

“Companies spend an enormous amount of effort trying to clean up the data they’ve got, only to find it’s not granular enough to do what they need,” said Ian MacGregor, CEO of North West Refining. “It has to be the right quality from the very start. Collect as broad and deep as you can because there’s just no way to turn bad data into good data.”

Creating the Social License to Operate

There’s another benefit to having high-quality data: it can help build important relationships with the communities in which resource-extraction companies operate. While Canada’s primary industries boast exceptional environmental performance, communities are often concerned about the potential impacts of new projects on air, water and soil quality.

“Having the right data is so important to explaining the impacts of your major projects,” said Protti. “Without that data, you don’t have facts to help make your case. You just have opinions.”

By sharing data in an open and transparent way, companies can assure the public that standards and regulatory requirements are being met — and in doing so, create the social licence need to operate in their communities.

Alberta has a long history of taking an open-source approach to its data, making information on rig reports, drill cuttings and other areas available since the early 1900s. It now has the largest repository of data on the drilling process in the world — and has been essential to developing Canadian expertise and a vibrant entrepreneurial spirit in the primary industries.

Will companies willingly release their performance data?

While some companies may need incentives to publish environmental and other operations-related data — whether by law or through mechanisms like tax credits — others are eager to contribute to a pool that will help clarify sector performance, prompting change and ultimately strengthening the entire industry.

“Only 10% of small- and medium-sized enterprises in Canada have intellectual property, and only 9% have IP strategies. We’re working to raise IP literacy so companies can use their IP better.”

~ The Honourable Navdeep Bains, Minister of Innovation, Science and Economic Development

Scaling Canadian Cleantech Companies

Generating, Protecting and Getting Value from our IP

One marker of just how important IP assets have become is that, over the past 40 years, “intangibles” have gone from representing just 17% of the S&P 500’s total market value to accounting for 84% of its value in 2015.¹ That figure also points to a gap Canadian companies need to close: in the same 40 years, the TSX has not followed suit. Today just 40% of our country’s largest stock exchange listings are intangible.

The reality is too few Canadian companies have IP strategies, especially small and mid-sized ones. That includes cleantech companies. And with the federal government investing \$2.3 billion in cleantech, the lack of a strategic approach to managing and protecting IP could lead to missed opportunities.

Why Protecting Cleantech IP Matters

Cleantech companies employ more than 180,000 Canadians and generate some \$26 billion in goods and services. A record 13 Canadian cleantech companies made the 2017 Global Cleantech Innovation Index, earning the country a top-four ranking. Those achievements in a highly competitive global marketplace are testament to the innovation power of cleantech firms and to the government’s assertion that there is no choice to be made between a healthy environment and a healthy economy — both of which depend on well-defended and managed IP.

The effort that kicked off in April 2018 to establish a national IP strategy for Canada is therefore a timely and much-needed complement to innovation-building initiatives like the Innovation and Skills Plan, Strategic Innovation Fund, Clean Growth Hub and industry-led Economic Strategy Tables. (As further proof of cleantech’s economic vitality, the Clean Growth Hub had more than 400 companies on its roster within six months of launch.)

Freedom to Practice

The participants in this panel of SDTC’s Cleantech Leadership Summit validated the importance of IP strategy to companies like theirs. GHGSat President Stephane Germain said his firm, which use satellites to monitor global greenhouse emissions, needed to have patents to raise capital — and continues to encounter competition in its idea space.

MODERATOR

Leah Lawrence
President & CEO, SDTC

PANELLISTS

The Honourable Navdeep Bains
Minister of Innovation, Science and Economic Development

Stephane Germain
President, GHGSat

Karen Hamberg
Vice President, Strategy, Westport

Warren Wall
Executive Vice President, Corporate Affairs, D-Wave Systems

¹ Ocean Tomo LLC, 2015. *Annual Study of Intangible Asset Market Value*. <http://www.oceantomo.com/2015/03/04/2015-intangible-asset-market-value-study/>

“We found out in April that a San Francisco company wanted to patent a nebulous concept related to what we do,” he said. “Somehow they got it. Fortunately ours preceded theirs.”

Karen Hamberg, Vice President of Strategy at Westport, said her company obtained its first patent in 1989. Despite that long lead time, there is no guarantee competitors won’t catch up.

“We were a bit young and naïve and bold, and thought if we spent so much and did so much work no one will catch us or reverse engineer,” she said. “Of course, there are now some fast followers we’re concerned about.”

Warren Wall said IP is built into the DNA of D-Wave Systems. The quantum computing company holds 160 U.S. patents and has hundreds more in process.

“We have a stake in the ground, which positions us well,” he said. “Big players are coming in, ramping up. We don’t go after others. We want to give ourselves the freedom to practice and the big companies run into us.”

The Honourable Navdeep Bains, Minister of Innovation, Science and Economic Development, acknowledged that’s what the Government of Canada wants to see: companies pursuing freedom to practice. The reality is that small companies don’t have the cash to litigate, so they need to take that approach.

Looking Ahead

Some of today’s data sets, such as the fuel pathways for biogas or petroleum, are privately held, making it challenging for companies like Westport to help customers with truck fleets understand the carbon intensity of a specific litre of fuel.

A national data strategy will be an important complement to a national IP strategy. The panel asserted that open data is critical — as broad as possible — first in Canada and then internationally. Minister Bains agreed, saying the government sees the economic potential of data and adding, “We need the trust of citizens and institutions to realize its positive impact.”

Supporting Canadian cleantech innovation

The Minister of Innovation, Science and Economic Development announced more than \$26 million in new SDTC funding for four Canadian cleantech companies at the 2018 Cleantech Leadership Summit:

- \$10 million for D-Wave Systems Inc. for energy-efficient quantum computing systems
- \$2.3 million to support Ionormr Innovations Inc.’s efficient, durable and cost-effective water treatment and purification membrane system, grid-level energy storage and cleantech energy generation technology
- \$4 million for MineSense Technologies Ltd. to advance sensor technology and data analytics to make mining process cleaner and more efficient
- \$10 million for MEG Energy Corp. to improve bitumen recovery in oil sands development and production while reducing GHG emissions and water consumption

“Smart cities give us the opportunity to think deliberately about our infrastructure. So how do we turn data into an asset that can be monetized by the public sector in a way that accelerates innovation in the built environment?”

~ Kurtis McBride, CEO, Miovision

(Re)Building Cities

Making the Most of Data-driven Smart Cities

As long as cities have existed, growth has been tied to physical infrastructure: roads, waterworks, electricity and other systems that citizens rely on every day. As new technologies emerge and mature, an additional layer — data — is being placed on top of that infrastructure and bringing about dramatic changes in the process.

Cleantech companies like Opus One Solutions are already using data to make electric power grids cleaner and more resilient. But its President and CEO, Joshua Wong, sees something more ambitious in store. He envisions the city as a platform, where its many disparate systems — energy, traffic, water — are combined to form a single “data highway” from which countless business models can be launched.

Whether the goal is to use that data to make cities safer, more energy efficient or more livable, it will be important to focus on specific outcomes and work back from there. With a concrete goal in mind, “We can then step together and define the starting policy framework and technical standards that will get us there,” said Thoughtwire CEO Mike Monteith.

Yet not everybody thinks more data will necessarily lead to positive outcomes. As digital surveillance becomes the norm, Bianca Wylie of the Open Data Institute said things could easily take a turn toward the dystopian. That makes it vitally important to ask hard philosophical questions now about how much of our data we are willing to expose.

“We’re at the point where we have to decide what our future will look like,” she said. “For the past 10 years, we’ve just been saying technological change is coming and we need to get ready. We forget that we’re still the ones in charge of that technology.”

Who Controls a City’s Data?

One of those hard questions pertains to who gets access to and ownership over a city’s data. While initiatives like Toronto’s Sidewalk Labs may potentially bring greater levels of sustainability and economic opportunity, innovation could be stifled if control of the data is ceded to a single “Goliath” like Alphabet while other companies are locked out. Defining clear boundaries about who owns what data and how it can be used will be key.

MODERATOR

Jane Kearns

Senior Advisor, Cleantech, MaRS
Discovery District

PANELLISTS

Joshua Wong

President & CEO, Opus One Solutions

Kurtis McBride

CEO, Miovision

Bianca Wylie

Founder, Open Data Institute Toronto

Lewis Wynne-Jones

Head of Data Acquisition and Content
Strategy, ThinkData Works

Mike Monteith

CEO, Thoughtwire

There is also the potential that cities will accidentally “mortgage the future” by relinquishing control of their data too soon. For Miovision CEO Kurtis McBride, one of the main challenges is that, right now, it’s difficult to tell for certain which data will end up being valuable and which data will not. If data truly is the new oil, he cautions that cities can’t repeat the mistakes made with that resource.

“The value of oil is much higher now than it was hundreds of years ago because we eventually found second- and third-order uses for that commodity,” he explained. “We can look at today’s data and say it’s not worth much, but we might later realize we gave away massive amounts of it without knowing what it was really worth.”

Open Data is Essential

If cleantech companies are to contribute to the development of cleaner, more sustainable cities, they need municipal data to be available in an open format that is easy to access and work with. Yet data is too often trapped in silos that prevent its full potential from being unlocked.

Standardization and ubiquity of data should be the goal — and cities should be releasing all of their data so anybody can start extracting value from it. Cities should not spend too much time refining the data before it is released, either. Different users

will want to consume the data in different ways, meaning it’s impossible to shape the data in a way that will work for everybody. By simply releasing as much data as they can in an openly accessible format, it will foster the creation of a “data marketplace” where that data can then be manipulated and distributed in any number of ways.

“Yes, it’s a bit of a Wild West approach,” says ThinkData Works’ Lewis Wynne-Jones. “But getting bogged down in the details of how the data is delivered will only slow us down.”

Keeping infrastructure secure

Privacy is just one of several important issues for infrastructure-related cleantech projects: reliability, resiliency and security all need to be considered as well. What would be the impact on water or energy delivery, for example, if the data collected for a smart city solution were compromised?

“Why do we have to be commodity producers? Why not digital titans? Why can’t Canada have the biggest digital agri-business out there?”

~ Wade Barnes, President & CEO, Farmers Edge

Disrupting the Status Quo

Data-driven Cleantech Will Reinvent Agriculture

With an estimated 10 billion people living on the planet by 2050, pressures on food production will only intensify. Farmers worldwide need to grow more with less environmental impact, and data and analytics are essential to that capability. The day is coming soon when a farmer will walk into his or her field with a tablet, check the conditions and run algorithms to determine what will be needed over the next few weeks. And Canadian companies are well positioned to be the ones to help them do it.

“There’s a big disruption coming in agriculture and it’s going to hit like a sledgehammer,” said Wade Barnes of agricultural Internet of Things (IoT) company Farmers Edge. “We’re disrupting the farmer’s relationship with trusted advisors. The major grain companies used to go build elevators, buy low and sell high. But the middleman is being eliminated. Return on investment is down from 30 percent to five percent for these guys.”

The instruments of this disruption are sensor networks and highly accurate, specialized analytics. That specialization is key. Farming can’t have “little mistakes”: the predictive models have to be very accurate. While tech-first companies tend to want to use software and public data, leading Canadian companies recognize the need to start with the most local of conditions.

“We can develop data platforms in-house,” said Annett Rozek, Chief Scientific Officer of Terramera. “We build our own data management systems and algorithms and train them. That’s the product: trained algorithms.”

Fierce Competition

Because of their value, those algorithms can be subject to some rough play, especially by larger companies trying to protect their market share and muscle in on the digital space. Canadian clean agriculture firms recognize the need to protect that intellectual property in order to partner with, rather than be dominated by, the big companies.

While that’s true, Semios Founder and CEO Michael Gilbert wondered, “Can we have an offence, too? Be like Google, go out and manage data in other countries? SDTC has enabled us to manage farms in California, Michigan, Washington.”

The opportunity is there. Brazil, for example, is to agriculture what Saudi Arabia is to oil. Currently the country doesn’t have the connected infrastructure to support IoT solutions: farm crews drive around on

MODERATOR

Kelsey Johnson
Reporter, *iPolitics*

PANELLISTS

Wade Barnes
President & CEO, Farmers Edge

Michael Gilbert
Founder & CEO, Semios

Annett Rozek
Chief Scientific Officer, Terramera

motorcycles to take manual rain gauge measurements. But giants like Monsanto and Amazon are racing to digitalize the country. Can Canadian technologies have a place in that future?

Barnes thinks so.

“Most farmers in Brazil don’t can’t get crop insurance because there’s no public data set for the insurers to work with. They can’t manage the risk,” he said. “In a digitalized environment, you could insure a Brazilian farm from Toronto. Right now, we do things Amazon can’t do around digitalization of the farm. We have a competitive edge. We need to get to the good ground and hold it.”

Protecting Farmers’ Data

While some companies are pressing farmers to sell their data, many farmers are reluctant: they believe their decisionmaking is their “secret sauce”. But a “righteous” approach by digital clean agriculture companies, where farmers can share their data anonymously in exchange for higher yields, is appealing.

“Our position is you don’t need to disclose,” said Rozek. “We give you a 10-times more effective product and free intelligence on how to use it. Farmers happily provide data that goes into our database anonymously so we can give them an analysis that lets them realize value of that data.”

With the country’s agriculture sector challenged to grow exports to \$25 billion by 2025, the ability to leverage data with assured privacy and boost production is a powerful value proposition.

“Putting data behind a firewall does nothing for anybody. It stifles innovation and stops partnerships. A Chief Digital Officer for Canada could help break down the siloes internally and ensure the raw data firms need to innovative is available.”

~ Alex Benay, Chief Information Officer, Government of Canada

Coming Together

How Government is Helping Cleantech Reach the Next Level

From a new national IP strategy to the Clean Growth Hub, the Government of Canada provides companies with the policy supports needed to accelerate and scale up their cleantech solutions. The final panel of the third annual Cleantech Leadership Summit provided an update on the supports being offered — as well as the challenges faced by all government departments as they work to better understand the full potential of a data-driven economy.

“Five years from now, we’ll be looking at the economy in a complete different way,” predicted Andy Noseworthy, Assistant Deputy Minister of Cleantech at Innovation, Science and Economic Development (ISED) Canada. “The future will be shaped around the convergence and integration of activity across all sectors — where oil and gas learns from what’s working in advanced manufacturing, for example — and data and analytics are at the root of it all.”

MODERATOR

Leah Lawrence
President & CEO, SDTC

PANELLISTS

Andy Noseworthy
Assistant Deputy Minister, Cleantech,
[ISED](#)

Alex Benay
Chief Information Officer, Government
of Canada

Mark Schaan
Director General, Marketplace
Framework Policy Branch, ISED

Chantal Guay
CEO, Standards Council of Canada

But if Canada is to realize this future and build up a portfolio of cleantech companies that have fully grown to scale, continued leadership at the global level and a significant culture change within our government institutions will be needed.

How Canada Supports Cleantech Innovation

In Budget 2017, the federal government committed \$2.3 million to help scale up and commercialize cleantech. It also launched the Clean Growth Hub, which brings together 13 departments and agencies under one roof to give cleantech companies a single “storefront” for accessing a wide range of government services and expertise. Budget 2017 also laid out Canada’s first national IP strategy, which recognizes the importance of IP to competing in the global marketplace and commits to providing entrepreneurs and innovators with the tools and advice they need to maximize the potential of their IP.

While those announcements and initiatives grab the headlines, the everyday regulations and frameworks currently in place — on everything from competition and privacy to bankruptcy and IP — play a major role in empowering innovation and unleashing the potential of the Canadian economy. By representing Canada’s interests at international standard-setting organizations, the Standards Council of

Canada works to ensure any new standards developed will meet the needs of innovative Canadian companies and help open the doors to global markets.

But Standards Council CEO Chantal Guay warns the current way of developing standards is getting antiquated — and needs to be much more agile to provide the solutions cleantech companies need at the pace of change inherent to their industry.

“I look at the demographics of those making the standards and they’re all close to retirement,” she said. “We need to digitally transform our culture. Compared to countries like China, we are way behind and need to catch up or we’ll miss the train.”

Changing the Culture

Alex Benay, Chief Information Officer for the Government of Canada, put it more bluntly: “Across all levels of government, we’re still used to working in an analog way. Our thinking hasn’t evolved to digital yet.”

While the data exists that would allow a smart fridge to tell people about the latest food recalls, for instance, Benay said the federal government doesn't yet understand the true importance of data — and hasn't created the platform to consolidate what is currently a fragmented digital agenda. Part of the challenge lies in the fact that it is very difficult for data to be shared across the many federal departments and agencies. A more cohesive cross-governmental data strategy will be needed to knock down the barriers and unlock the full potential of data.

Changing the culture and modernizing the way government works won't be easy, said ISED's Mark Schaan, given the tensions that come with working in what is still a very traditional system. “

“The biggest challenge is the ubiquitousness and intersectionality of it all,” he explained. “With so many cooks in the kitchen and with data touching everything, getting coordinated can be quite difficult.”

Despite these challenges, the panellists agreed that Canada has a very strong opportunity to frame the conversation about data and IP around uniquely Canadian values — and use those values to take the lead on the international stage as other countries begin to dive into questions of data ownership and access.

“The people at this summit are the heart and soul of the Canadian cleantech ecosystem. If anybody’s going to change the future of cleantech in this country, it’s us.”

~ Leah Lawrence, President & CEO, SDTC

Appendix: Summit Agenda

Third Annual Cleantech Leadership Summit
Harnessing the Power of Data and Intellectual Property
Wednesday, May 30, 2018 | National Arts Centre

8:30 – 8:40	<p>Welcoming remarks <i>Jim Balsillie, Chairman of the Board of Directors, SDTC</i></p>
8:40 – 9:00	<p>How has cleantech in Canada evolved over the past year? What are the challenges and risks ahead? <i>Leah Lawrence, President & CEO, SDTC</i></p>
9:00 – 10:10	<p>Whose data is it anyway and why cleantech entrepreneurs should care <i>Moderator: Sean Silcoff, Reporter, Globe and Mail</i></p> <p><i>Panellists:</i> <i>Anil Arora, Chief Statistician, Government of Canada</i> <i>Maithili Mavinkurve, Co-founder & COO, Sightline Innovations</i> <i>Blayne Haggart, Associate Professor, Brock University</i> <i>Alex Whalley, Associate Professor, University of Calgary</i></p>
10:10 – 10:40	<p>Networking break</p>
10:40 – 11:50	<p>Primary industries: Canada’s data opportunity? <i>Moderator: Kelsey Johnson, Reporter, iPolitics</i></p> <p><i>Panellists:</i> <i>Ian MacGregor, CEO, North West Refining</i> <i>Gerry Protti, Past-Chair, Alberta Energy Regulator</i> <i>Banu Ormeci, Professor, Carleton University</i> <i>Nils Voermann, Global Managing Director: Technologies, Hatch Ltd.</i></p>
11:50 – 12:20	<p>Lunch</p>
12:20 – 12:35	<p>Keynote and funding announcement <i>Hon. Navdeep Bains, Minister of Innovation, Science and Economic Development</i></p>

12:35 – 1:00	<p>CEO panel discussion Moderator: Leah Lawrence, President & CEO, SDTC</p> <p><i>Panellists:</i> Hon. Navdeep Bains, Minister of Innovation, Science and Economic Development Warren Wall, Executive Vice President, Corporate Affairs, D-Wave Systems Stephane Germain, President, GHGSat Karen Hamberg, Vice President, Strategy, Westport</p>
1:00 – 2:10	<p>(Re)Building cities Moderator: Jane Kearns, Senior Advisor, Cleantech, MaRS Discovery District</p> <p><i>Panellists:</i> Lewis Wynne-Jones, Head of Data Acquisition and Content Strategy, ThinkData Works Joshua Wong, President & CEO, Opus One Solutions Kurtis McBride, CEO, Miovision Bianca Wylie, Founder, Open Data Institute Toronto Michael Monteith, CEO, Thoughtwire</p>
2:10 – 3:20	<p>Agriculture and food Moderator: Kelsey Johnson, Reporter, iPolitics</p> <p><i>Panellists:</i> Wade Barnes, President & CEO, Farmers Edge Michael Gilbert, Founder & CEO, Semios Annett Rozek, Chief Scientific Officer, Terramera</p>
3:20 – 3:50	<p>Networking break</p>
3:50 – 4:50	<p>Coming together: What tools are available to support companies in getting to the next level Moderator: Leah Lawrence, President & CEO, SDTC</p> <p><i>Panellists:</i> Chantal Guay, CEO, Standards Council of Canada Mark Schaan, Director General, Marketplace Framework Policy Branch, ISED Andy Noseworthy, Assistant Deputy Minister, Cleantech, ISED Alex Benay, Chief Information Officer, Government of Canada</p>
4:50 – 5:00	<p>Where to from here: Summary and next steps</p>
5:00 – 7:00	<p>Reception and demonstration</p>