



Digital literacy, coordination key to maximizing benefits from big data

Panel: **Data Driven Decisions: Putting IoT, Big Data and Analytics to Work for Better Public Policy**

Organized by Cybera

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Panelists: **Ron Winsor**, President and CEO, Cybera; **Janet Bax**, Interim President, Council of Canadian Academies; **Jim Ghadbane**, President and CEO, CANARIE; **Jill Kowalchuk**, Consultant; **Bonnie Schmidt**, President and Founder, Let's Talk Science; **Shannon Wilson**, Business Development Executive, IBM; **Aaron Maxwell**, Machine Learning Research Scientist, Makeplain Corporation

Takeaways and recommendations

- ✓ Establish a platform for tools and services to address the gap in Canadian infrastructure for digital research data management
- ✓ Build awareness in government of the importance of data access and analysis to generate knowledge from existing and future data sets that benefit the greatest number of people
- ✓ Extracting knowledge from big data requires different yet complementary skillsets working collaboratively
- ✓ Ways of using data are changing as younger, computationally literate people enter the system
- ✓ Privacy issues should only be cited for certain types of data, not all. Governments often hesitant to release data sets for research purposes.
- ✓ New markets for data will emerge when the entrepreneurial community develops business cases for making data meaningful to more people
- ✓ Canada needs to join other countries in establishing a national big data policy that informs both the research community and end users
- ✓ To remain competitive, Canada must become a nation of digital citizens with high levels of digital literacy

The policy issue: There's a growing need to integrate big data, the Internet of Things, and the power of analytics into a single model for use by policymakers. Sensors, networking, storage and access systems must work in tandem to convert information into knowledge and maximize the impact of data on decision making. Canada is a long way from possessing an optimal model but the discussion is starting and it must engage broadly, from schools and students to the research and policy communities and the private sector.

The options: From the generation and dissemination of data to its analysis and ultimate use, the era of big data is posing challenges on several fronts. One of the more pressing challenges is the use of privacy concerns to restrict the access and use of data by

researchers and policymakers, said Bax, who noted that the Council of Canadian Academies has been denied critical data for some of its expert surveys.

“Data is a critical component to building good evidence and it needs to be good data,” said Bax. “It’s so essential but there are many challenges to getting it ... For my first (expert panel) assessment on the career trajectory of women researchers in Canada, data for women in government was not made available to us. It may exist but it was not made available to us.”

Privacy concerns usually arise over data involving the behaviour, condition and actions of people but, as the delegates heard, there are other types of data that can lead to solid evidence and knowledge for use by policymakers.

“We shouldn’t allow a discussion about protecting personal privacy to stop the sharing of data that isn’t sensitive, like astronomy,” said Kowalchuk. “There are lots of other data out there that don’t have those same challenges.”

A growing amount of data being generated today is in the hands of industry, especially in the health care sector. Those with the ability to combine data from multiple sources and deploy it efficiently can empower both commerce and positive patient health outcomes, said Wilson, who is responsible for business development at IBM Canada.

“We work with health research organizations and there’s a common need to understand what each other is doing,” said Wilson. **“Gain from the insight that can be gained from analytics. The entrepreneurial community will figure out how to make data meaningful and that’s going to push change to the market.”**

To enhance the benefit of big data collection, dissemination and analysis, the issue of computational literacy is a perennial problem faced by those engaged in education, research and end use. While Canada has a solid foundation in science, technology, engineering and math (STEM) skills, there is room for improvement to ensure that data usage is optimized in the future.

There’s also a need to better inform those in the research community lacking a firm grasp of the rapidly expanding role computers and digital literacy play in the economy and society.

“There’s a lot of fear over data due to a lack of understanding,” said Maxwell. **“In the scientific community, I’ve used supercomputers at SHARCNET and CANARIE to move data to researchers all over the country and the world. Professors often didn’t understand what I was doing because they didn’t understand computers.”**

Young digital citizens skilled in the use, interpretation and use of data will prompt change from within and open up opportunities for commercial applications, said Schmidt. Widespread computational literacy, she added, will require better coordination across provincial jurisdictions to enable the next generation of knowledge workers. But political leaders and civil leaders also need to be skilled in asking the right questions.

“The lack of alignment is challenging and trying to get data courses in schools is difficult,” said Schmidt. **“Commonalities of fields and jurisdictions are essential.”**

How big data informs decision making for the benefit of the end user remains the primary objective of policies informing their collection, analysis and use, making the need for coherent policies paramount.

“We live in a world where policies aren’t keeping up with the ways we use the data,” said Ghadbane. **“How should policies evolve to meet the ongoing needs of this massive deluge of data we’re all contributing to?”**