

ICT base strengthens resilience of city regions

Panel: Creating Digital Opportunity for Canada: Challenges and Emerging Trends

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Moderator: **David Wolfe**, Co-Director, Innovation Policy Lab President and CEO, Cybera; *Panelists:* **Catherine Beaudry**, Professor, Department of Mathematics and Engineering, Polytechnique Montréal; **Tijs Creutzberg**, Program and Business Development Director, Council of Canadian Academies; **Adam Holbrook**, Associate Director, Centre for Policy Research on Science and Technology, Simon Fraser University; **Tara Vinodrai**, Associate Professor, School of the Environment, University of Waterloo

Takeaways and recommendations:

- ✓ Urban centres with strong concentration of digital technologies are resilient to economic downturns, even when anchor firms fail
- ✓ When large companies like Nortel Network or Blackberry fail, much of the talent they attracted to their respective regions remains
- ✓ Strong, enduring industry-academic linkages are a key building block to achieving and maintaining economic growth
- ✓ Long-term, company-specific data needed for effective policy decisions to sustain regional growth

The policy issue: Tech-based firms rise and fall, hiring or shedding thousands of skilled workers. Urban centres with strong industry-academic linkages and critical mass in key technology domains tend to retain critical mass, particularly in the area of information and communications technology (ICT). Urban centres are better able to weather business cycles and disruptions in ICT technology when there are policies and programs that enhance industry-academic collaborations. Panelists focused on the local context for global networks through an examination of four Canadian regions – Ottawa, Montreal, Vancouver and Waterloo.

These region's experiences in developing collaborative relationships and building critical ICT feeds into ongoing research at the University of Toronto's Innovation Policy Lab. The five-year research program is examining four broad themes: Canada's position in global production networks; the local contexts for the growth of digital technology firms and their innovation environments; the application of digital technologies across a wide range of industrial sectors; and the role of digital infrastructure in building smart communities.

"Knowledge is sticky. Our studies show that scientists stay close to home and research capabilities remain embedded in the region," said Wolfe. "There are lots of digital technologies that are bleeding over to other areas like medical technology ... We need to think how about how all these sectors interrelate."

The options: The protracted decline and demise in the 2000s of Nortel Networks was a major blow to the ICT sector. Yet Creutzberg said preliminary results of his team's research show that Nortel's deep historical roots in the nation's capital have enabled the region to withstand "transformative, disruptive change" as ICT transitions from hardware- to software-enabled networks.

Much of the ex-Nortel talent has remained in the region and hundreds of new firms have formed, often collaborating with long-time research organizations such as the National Research Council, the Communications Research Centre and intermediary organizations such as Invest Ottawa.

"Ottawa ICT has experienced big external shocks in the last 15 years. In six years, Nortel went from 95,000 employees to gone," said Creutzberg. "But Ottawa has bounced back several times (and) Ottawa is going to be a player in the next iteration of networks ... Nortel seeded capabilities for next generation networking shift."

Waterloo is now experiencing a similar, albeit less severe, shock with the dramatic downsizing of Blackberry. And Vinodrai said that – similar to Ottawa – preliminary results show that the region is retaining much of the talent shed by the company.

"Blackberry is similar to the story of Nortel. It couldn't compete with others in the mobile space," said Vinodrai. "Our study is grounded in understanding regional economics ... Blackberry was critical for bringing in talent elsewhere (and) most of the talent stayed in the (Waterloo) region or in Toronto."

The Montreal component of the Innovation Policy Lab study focuses on ICT hardware and university-industry linkages. Using historical data from several sources, including the Natural Sciences and Engineering Research Council (NSERC), Beaudry identified a significant evolution in university-industry collaborations from studying hardware makers like Nortel to hardware users like Bell Canada during a 20-year period when manufacturing in the region declined. NSERC data also showed that the dollar value of grants to Montreal area universities dropped, while the number of grants awarded increased, as did the number of researchers.

As the same time, there was a significant decline in the number of university-industry research projects involving multiple companies. Partnering with single firms was becoming the new norm.

"There's a fragmentation in collaboration on the academic side compared to what we had before ... The move to one researcher, one firm is what I call the SME-ization of university-industrial research. Instead of benefitting from the team you go to one student on an R&D co-op or Mitacs (internship) grant," said Beaudry. "That contrasts with the demand you can see in more fundamental research where you see much larger networks."

Vancouver's digital technology sector is divided into two distinct categories: games, animation and visual effects (GAV) software and everything else. Data are hard to come by but Holbrook says the Canadian branch of the Global Entrepreneurship Monitor (GEM) program shows significant differences in innovation conditions in the region compared to other parts of Canada and the world.

“Closer linkages to certain elements in the Pacific Rim are important in the way any industry in Vancouver is going to be competitive ... Vancouver prides itself on being Hollywood North and basically a branch of the entertainment software part of the world,” said Holbrook. “Policy has to have regional modifications to it but to what degree is open to discussion.”