More than Technology Push is Needed to Drive Innovation Success

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Much ink has spilled in the debate about Canada's position in global innovation rankings, its strategies to build a "culture" of innovation, and the roles of Universities, Government and the private sector. Without question, we need to leverage our investments in research excellence, particularly in science, technology, engineering and mathematics (STEM). Basic research is critical in part because we are notoriously bad at anticipating where excellent science will lead. And we all know of examples of discoveries that have transformed society in ways few could have planned or imagined.

However, the dominant models of technology transfer that focus on pushing research out of the lab and into the market produce uneven results at best. At Ryerson, researchers work with partners to develop next-generation technological solutions, but they also explore the strategic, organizational, and individual factors affecting the demand side. Our unique approach to collaborative and multi-disciplinary research is driving innovation, not just by creating new products, services and ventures in one of the world's most successful incubators – the Digital Media Zone – but also in promoting innovation in existing organizations. With our partners, we look at user needs, organizational drivers, factors shaping personal preferences and behavior, and policy and legal issues, whether in digital technology, health care, advanced manufacturing, and the environment and sustainability. We work to understand the demand as well as the supply side of innovation.

Consider the lament that the under-utilization of digital technology in Canada is impeding growth and productivity improvements – whether in advanced manufacturing, health care, or education. Much of the focus has been on the supply side, on developing new tools, and on technology push, such as in mobile technologies, big data, and 3D visualization and printing. But new technologies only produce innovation if they are actually used. At Ryerson we draw not only on the STEM disciplines but on the important insights from Social Sciences, Humanities, and Design disciplines to better understand the processes of innovation, the complex and often irrational dimensions of human and organizational behavior, the dynamics of large social systems, the role of aesthetics and of identity, the importance of policy and ethical implications, the measurement of impact, and more.

Ryerson University researcher, Victor Yang, designs game changing surgical navigation system for spinal fusion surgeries.

For example, Ryerson's Centre for Cloud and Context-Aware Computing (RC4) partners with industry to develop leading-edge technology and tools, and also examines the impediments and drivers of mobile technology adoption and develops evidence-based strategies to promote them. We found, for example, that short-term business priorities often prevent companies, particularly Small and Medium Enterprises, from investing in ICT solutions even though, over time, these investments improve growth and productivity. Our action-oriented research, with partners like the Ontario Chamber of Commerce, helps SMEs develop the absorptive capacity they need to innovate.

In our Advanced Manufacturing, Design and 3D Printing Lab, researchers work with leading 3D and augmented reality companies to develop applications to solve real-world needs. And we have industrial and interior designers, social psychologists, and consumer behavior experts working with aerospace engineers to design everything from aircraft interiors to amusement park rides that will create outstanding user experiences.

In health care, our researchers recently built a game-changing surgical navigation system and complementary surgical tools for use in spinal fusion surgeries. But it is not a shortage of leading-edge technology that is impeding innovation in Canadian health care. To help drive transformation, we also examine health system processes, organizational structures, patient-centered care, and policies in technology-enabled innovation.

The technology-driven 'if we build it they will come' approach produces uneven results. By effectively linking academics and industry partners, labs to markets, technology makers and technology users, we are more likely to succeed. At Ryerson, we are creating a culture of entrepreneurship where trial and error, agility, and adaptation are core to our innovation DNA. And true to our roots, we are eroding silos between disciplines to drive technological, economic and social innovation.