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Building college capacity to support SME digital technology adoption: case study

National Research Council of Canada. Industrial Research Assistance Program. Digital Technology Adoption Pilot Program; Selkirk College

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Publisher's version / Version de l'éditeur:

<https://doi.org/10.4224/21274686>

Digital Technology Adoption Learning Series, 2014-03

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Digital Technology Adoption Pilot Program

Selkirk College

Building college capacity to support SME digital technology adoption

Case Study

March 2014



Introduction

Serving British Columbia's rural southeast corner, Selkirk College has become well-positioned to meet the critical needs of small and medium-sized enterprises (SMEs) for digital technology research and development (R&D). With the assistance of the Digital Technology Adoption Pilot Program (DTAPP) delivered by the National Research Council of Canada Industrial Research Assistance Program (NRC-IRAP), the college has moved from a place of limited capacity to one of established procedures, processes and successes in helping SMEs with challenges such as database mechanization, rapid prototyping and geospatial mapping.

Ian Parfitt, co-ordinator of the Selkirk Geospatial Research Centre (SGRC), notes that “developing and nurturing partnerships with SMEs takes time. While we have a long-running and productive relationship with businesses in the forestry sector, we have struggled to connect with other SMEs in the region that could also benefit from our expertise and capacity.”

According to Terri MacDonald, Regional Innovation Chair in Rural Economic Development, Columbia Basin Rural Development Institute, NRC-IRAP Industrial Technology Advisor (ITA) Bruce Hardy was instrumental in helping the college to not only create a new paradigm for working with businesses, but also improve its capacity to work with companies where no other R&D support is available. “His personalized guidance, broad regional knowledge, technical expertise and business savvy were vital elements in steering us in this relatively new direction,” she says.

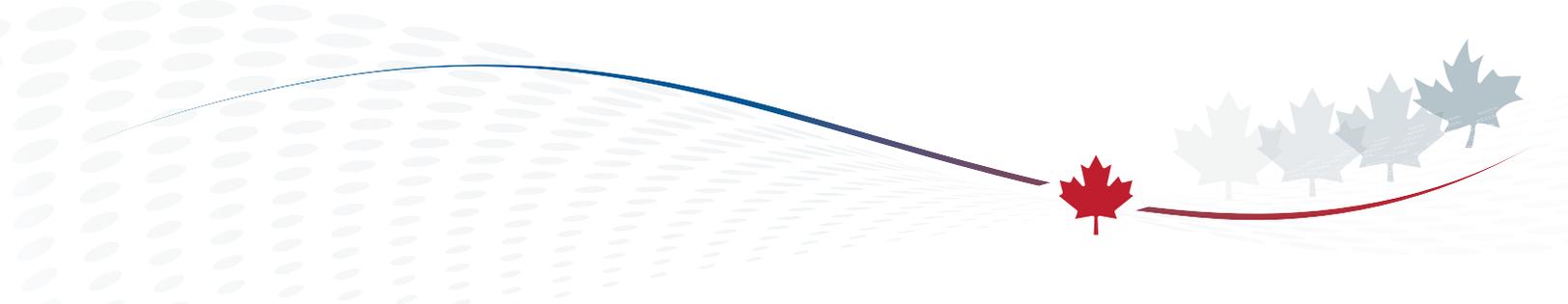
MacDonald's goal was to advance Selkirk College in the business services area, and create an environment where they could continue to do this work over the long term. The DTAPP project helped them establish the groundwork for this, create a track record and position them to move forward.

She also found that NRC-IRAP's flexibility in addressing the college's needs was beneficial in helping them support local SMEs' broad range of requirements. “It's not a one-size-fits-all program, so that enabled us to tailor our assistance to enterprises,” she says. During the 14 months in which DTAPP partnered with Selkirk, 20 faculty, support staff and students worked with 178 SMEs to provide advisory services, direct assistance and training.

To support this new initiative, career opportunities at the college were created, including: one full-time faculty member, four co-op students and two administrative/technical support staff.

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Ian Parfitt, co-ordinator of
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Paving the way to successful Digital Technology Adoption

To kick-start this enormous undertaking, DTAPP funding allowed Selkirk to retain industry liaison officer Carlos Rodrigues to plan the approach and manage its implementation. He developed a methodology for “shaking the trees”—gathering information about specific SME needs, presenting project ideas for approval by the college, and implementing those that would have the most impact. As the college’s “road warrior” travelling to the far-flung corners of the region, he met in person with SMEs across the region. He also connected with existing government and community organizations to identify resources that might be beneficial to the various digital technology projects.

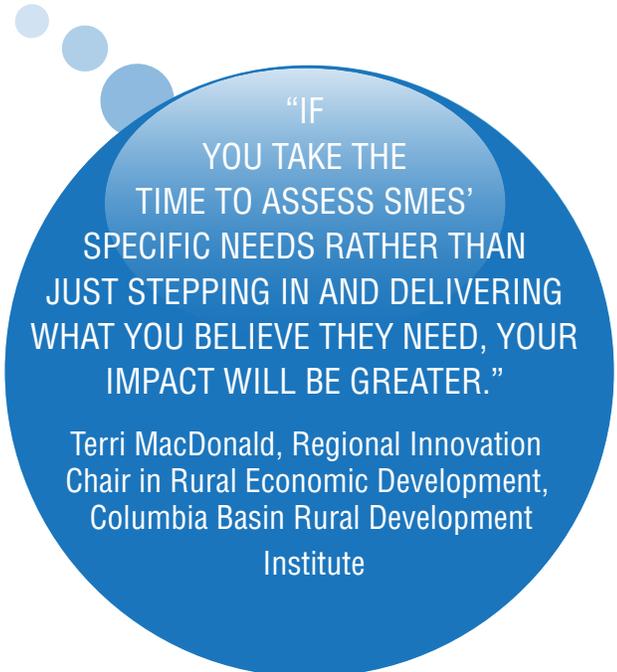


Selkirk College helps enterprises in local industries, including forestry, adopt digital technology.

“I combed the databases from chambers of commerce and village councils for lists of SMEs, then got on the phone, email and road to conduct needs assessments in small groups or one-on-one,” he reports. “Once we had a handle on their needs, we figured out what solution would help them most and how we could deliver results.” The focus was on leveraging Selkirk’s greatest assets—digital technology and geospatial research—and identifying internal resources (faculty and students) that could help SMEs advance. “Our strategy was choosing projects that were a really good fit and making our impact there.”

Among the types of assistance that Selkirk provided were database mechanization, rapid prototyping and geospatial mapping drawing on expertise from the Selkirk Geospatial Research Centre and the Digital Arts and New Media program. Unique projects were delivered to companies across the huge Columbia Basin in several sectors: agriculture, retail, energy, manufacturing, tourism and forestry, including:

- Enabling four agricultural businesses to increase productivity by using the Selkirk Geospatial Research Centre’s remote sensing technology to analyze land. Findings depict the overall health of vegetation and identify key areas where land use could be studied further.



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▶ ▼ The Selkirk Geospatial Research Centre uses geographic information systems (GIS) to conduct land analyses with remote sensing technology.

- Improving the productivity of a cluster of tourism businesses by using the centre’s geographic information systems (GIS) to create an interactive web map of company locations and recreational amenities in the community as well as a map that illustrates where tourists originate. Another important part of the project was training these enterprises in digital technology to help them move to online marketing and expand their sales opportunities.
- Enabling two manufacturing companies to save time and money by providing them with affordable rapid prototyping (3D printing) services for testing new products.
- Providing a forestry consulting firm with access to an online planning application to help them meet requirements for industry-specific reporting.

Additional information about these initiatives is posted here: <http://cbrdi.ca/research-areas/applied-research/selkirk-sme-adoption-of-digital-technologies-pilot-project>

The digital destination—impressive results

Two enterprises that benefitted from this assistance explain how the college and digital technology helped them boost productivity and increase competitiveness.

Valhalla Technologies, Castlegar, B.C.

Deep in British Columbia’s Selkirk Mountains, a two-person startup that manufactures infrared lenses for military reconnaissance and planetary studies found a time- and money-saving manufacturing solution through Selkirk College’s 3D printing.

Each group of lenses is custom-made to a client’s specifications. While they are being ground, lenses need to be held in place by differently sized mounts, or chucks—and the traditional way of having those made is expensive, according to Valhalla owner and director, Colin Carew. “We would take our drawings to local machinists to make the chucks out of metal,” he says. “But they are busy working for



the big smelters, pulp mills and utilities, so it might be a couple of weeks before we got the product. With our customers wanting three-week delivery, it was tough for us to crank out orders on time.” Carew points out that a machinist’s hourly rate and the cost of materials can add up, so finding a digital solution saved them more than \$5,000 per year initially on 15 to 20 sizes.



The rapid prototyper (3D printer) can quickly create prototypes to countless specifications.

Using a 3D printer takes only hours to produce the chucks. Thanks to advice from DTAPP and the college, Carew also found that making them from plastic rather than metal worked equally well and was considerably cheaper. “We can basically download the dimensions, push print and make as many as we like for pennies.” Having realized the benefits of using this digital technology, Valhalla has purchased their own 3D printer and can custom-manufacture chucks as they are needed.

“Ultimately, the quality of the lens and the price attract clients,” he points out. “This was a big step for us, since it has certainly brought our costs down and made us more competitive.” He adds that with their knowledge and resources, colleges like Selkirk should become centrepieces in the economic development of small towns all across Canada.

Tabletree Enterprises, Creston, B.C.
[tabletreejuice.com]

Thinking outside the traditional fruit-growing box was the key to Tabletree’s survival, according to owners Gary and Susan Snow. Reeling from a number of blows over their four years of growing and marketing cherries, the Snows realized they had to throw all their creativity into doing something new and different with the resources at hand.

“As a result, we developed a new proprietary process and machine to make juice from the cherries,” they note. Winning second prize in a competition of the British Columbia Innovation Council landed them enough money to start the juice business and build the machinery and plant. The four-person enterprise went on to win the “Best Pure Juice” designation at the World Juice Awards, which is

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Colin Carew, owner and director,
Valhalla Technologies



Soil analysis by the Selkirk Geospatial Research Centre will help juice producers Gary and Susan Snow increase the productivity and profitability of their cherry orchards.

attended by multinationals as big as Coca Cola, Del Monte, Welch's and Chiquita.

Using student and faculty expertise, Selkirk College is helping Tabletree in two areas of business that are critical to increasing their efficiency and competitiveness. One project is to move them from a paper-based record-keeping system to an electronic database that helps them track inventory and orders, as well as help customers identify where and when their products are available.

The other project helps them to analyze several different microclimates in their 18 acres of cherry orchards and rectify growth issues. Using remote sensing technology from the Selkirk Geospatial Research Centre, the college mapped out the nutritional and moisture content in about 11 acres of soil. "This will help us with productivity and

profitability, because we won't put nutrients into areas that don't need them, or overwater sections that are already wet enough," the Snows point out.

They know that to succeed they have to expand, and digital technology will provide the infrastructure base that will allow them to grow with confidence and meet the needs of customers who rely on the healing properties of Tabletree juices. "We had such a great experience with Selkirk that we will continue to work with them any way we can."

Best Practices for establishing college SME support programs

Through this learning journey, MacDonald and the Selkirk team developed some best practices they consider essential to cementing the college's approach to providing SME support. The top three are:

1) Build relationships and partnerships

The relationship with NRC-IRAP has helped the college gain a better understanding of and adapt to the many specialized needs that arise from the massive diversity of the geographic area, industry sectors and types of businesses operating throughout the West Kootenay region.

MacDonald points out that colleges are part of a "landscape of service providers that support companies, and it's important we don't work in isolation." She advises looking for ways to actively engage with other providers since it is a great opportunity to build collaborative partnerships within the community.



Realizing that you cannot be everything to everyone is a key factor in success or failure, according to MacDonald. “If we lack a certain type of expertise here, we can connect our companies with other colleges and universities across the country that have other specialties.”

As a result of their DTAPP project, Selkirk College has so far established three partnerships with post-secondary institutions: College of the Rockies, Okanagan College and British Columbia Institute of Technology (BCIT). Other opportunities for collaboration have been identified and are being pursued. These are in addition to existing partnerships with Community Futures, chambers of commerce, and economic development practitioners.

2) Assess needs and manage expectations

“If you take the time to assess SMEs’ specific needs rather than just stepping in and delivering what you believe they need, your impact will be greater,” she says. And the college bases its decisions on solid research findings.

MacDonald has determined that building capacity around your assets creates a win-win situation for both the college and enterprises. “No matter how exciting a project may be, we methodically assess our resources, time and staff and base our decisions on our capacity to deliver measurable results.”

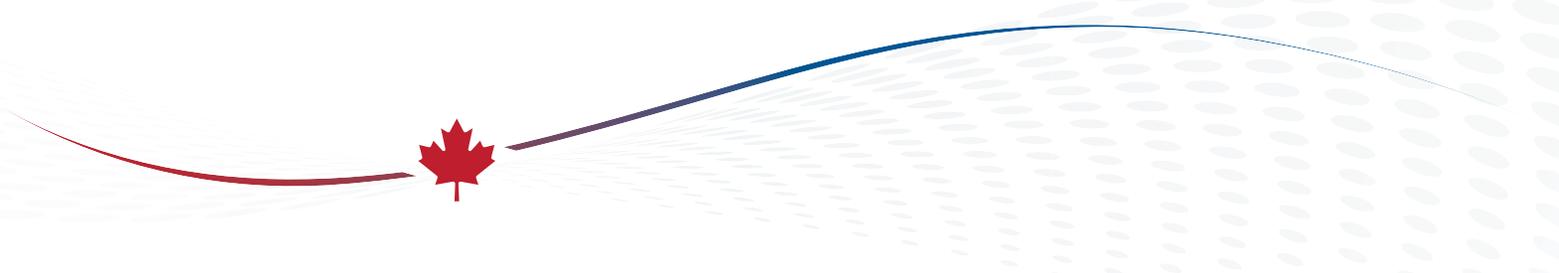
3) Get students involved

With DTAPP funding, Selkirk hired four co-op students who delivered the bulk of the work in the advisory and GIS projects with impressive results. For upcoming projects, the college will be focusing its still-limited resources on assigning faculty and students who specialize in geospatial and digital technology to SME projects.

One anecdote illustrates how far-reaching the effects of such involvement can be for students, and how they can add value to the business community. “One of our former students involved in these projects identified a need for database projects, but we don’t have that programming here at the college,” says MacDonald. “She’s considering creating her own company to provide those services.” If she proceeds, it means that the college will have linked a former student with a lucrative business opportunity with potential for future regional economic impacts.

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Future possibilities

“We’ve gained an appetite for this kind of work, so look forward to building on what we do well—geospatial and digital technology,” says MacDonald. “We developed some good capacity at Selkirk College, and considering that my position covers the entire region, we’ll be looking at how we can share lessons learned with our sister college, College of the Rockies.”

She believes that colleges across the country should become more proactive in helping SMEs, and do so in partnership with business support organizations and other post-secondary institutions. During the initial DTAPP projects, Selkirk provided SMEs with useful and effective referrals to other colleges in British Columbia and Alberta. These have expanded the network to share best practices and refer SMEs to specific expertise offered beyond the immediate area.

MacDonald also enlists her personal networks across the region, pointing out that the support of community organizations and resources are integral to any initiatives that colleges undertake. “Colleges are in a good position to show leadership in bringing together service providers for the benefit of businesses and the Canadian economy.”

About the Digital Technology Adoption Pilot Program (DTAPP)

As part of the Government of Canada’s Digital Economy Strategy, NRC-IRAP is delivering the Digital Technology Adoption Pilot Program (DTAPP). DTAPP was created as a pilot program to deliver support from November 2011 to March 31, 2014.

DTAPP represents a significant investment in the Canadian economy to increase the productivity growth of small and medium-sized enterprises (SMEs) in Canada across all sectors through the adoption of digital technologies.

An important component of DTAPP is to assess and measure the outcomes of digital technology adoption on the productivity of SMEs. DTAPP will utilize this aggregate knowledge and transfer successful practices and lessons learned to the broader SME community in order to:

- ▶ improve the rate of digital technology adoption by SMEs
- ▶ improve understanding of the link between digital technologies and productivity
- ▶ raise awareness of the benefits and importance of adopting these technologies

This information will be a critical tool to encourage prospective adopters of digital technologies and will continue to impact the potential productivity growth of the Canadian economy well into the future.