

SELKIRK-SME ADOPTING DIGITAL TECHNOLOGIES FINAL REPORT

March 2014



Selkirk College received funding from the National Research Council of Canada (NRC) Industrial Research Assistance Program to support the Adoption of Digital Technology (ADT) by small- and medium-sized enterprises (SMEs) in the Columbia Basin Boundary region from January 2013 to February 2014. NRC funding was through the Digital Technology Adoption Pilot Program (DTAPP), a component of the Government of Canada's overall strategy to boost the productivity of SMEs and improve Canada's digital economy. The ADT project team included a College-Industry Liaison Officer, a Project Coordinator, a Project Outreach Assistant, 4 Co-Op students from the Business Administration and Geographic Information Systems, and 11 faculty members. A total of 2901 hours of training, advisory services and direct support was provided to 222 SMEs and 16 non-profits, including a total of 171 hours of outreach, 1301 hours of training, and 1429 hours of advisory and direct support. This report provides a summary of project activities and a discussion of lessons learned.

TECHNOLOGY TRAINING

Activities: 4-6 workshops to 20 SMEs, 3 GIS online workshops piloted to 10 SMEs, opportunities identified for future related training, programming, and student learning

The Selkirk-SME ADT project exceeded expectations in the delivery of both digital technology, specialized and one-on-one technology training but only achieved some progress in the area of online training because 4 (not 10) SMEs piloted the 3 online geospatial courses. An impressive total of 26 workshops, courses and one-on-one training in 7 communities provided 1301 hours of training to 142 SMEs and 175 employees. An additional 171 hours was spent on awareness and outreach activities.

As outlined in the table below, 71 SMEs and 97 employees attended 128 digital technology workshops in 5 communities for a total of 828 hours of training. Five specialized training workshops in 4 communities were also offered as part of this project resulting in a total of 369 hours of specialized training to 61 SMEs and 68 employees in the building and environmental science fields. Forty hours of one-on-one database and social media focused training was provided to 6 SMEs in 4 communities. Three online geospatial courses were also developed as part of this project. While it was expected that 10 SMEs would pilot these courses, only 4 SMEs were a part of the course pilots because of time constraints. The online courses took longer than expected to develop. A total of 64 hours of online training was accessed by the 4 SMEs. Please see Appendix A for course descriptions and Appendix H for a summary of training provided to each SME.

Table 1. Technology Training

Training	Workshops / Courses	SMEs	Employees	Communities	Total Hours
Digital Technology Workshops	18	71	97	5	828
Specialized Training	5	61	68	4	369
One-on-One Training	-	6	6	4	40
Online Geospatial Training	3	4	4	-	64
Total	26	142	175	7	1301

Program development in the area of digital fabrication was identified as a programming opportunity. In addition, the continued online delivery of specialization training in geospatial technologies was an identified opportunity. Social media, wordpress, Word, and Excel related training should continue to be delivered through the Community Education and Workplace Training departments and coordinated with related training delivered by other providers (i.e. Community Futures). Future specialized training should respond to industry needs and opportunities and seek to bring in speakers from other institutions as required¹.

PROVIDE ADVISORY SERVICES AND DIRECT SUPPORT

Activities: advisory services to between 25-50 SMEs, direct support to minimum 10 SMEs via pilot projects

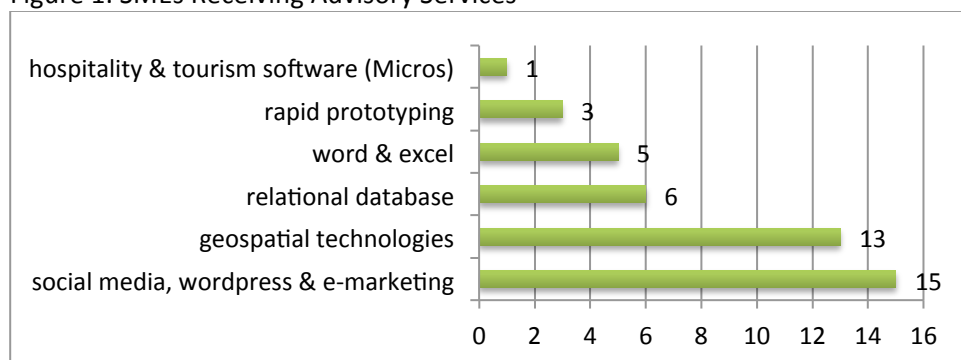
The target of advisory services delivered to 25-50 SMEs was fully achieved, however, the depth and nature of advisory services and direct support provided to SMEs exceeded expectations, including direct support projects that utilized computer aided design (CAD), 3D printing, and geospatial and remote sensing technologies. These projects effectively built on the technological expertise of faculty and students from the Geographic Information Systems programs, the Selkirk Geospatial Research Centre and the Digital Arts and New Media program.

The Selkirk-SME ADT project exceeded expectations having provided 29 SMEs and 4 non-profits with 1429 hours of advisory services and direct support, including 345 hours of advisory services and 1084 hours of direct support. As detailed in Figure 1, advisory services focused primarily on social media, wordpress & e marketing, geospatial technologies, relational databases, Word & Excel, and rapid prototyping. As detailed in Table 2, direct support focused on geospatial and rapid prototyping technologies, in addition to database development. Manufacturing, technology, tourism, energy and agricultural SMEs received direct support through pilot projects.

Table 2. Advisory Services and Direct Support

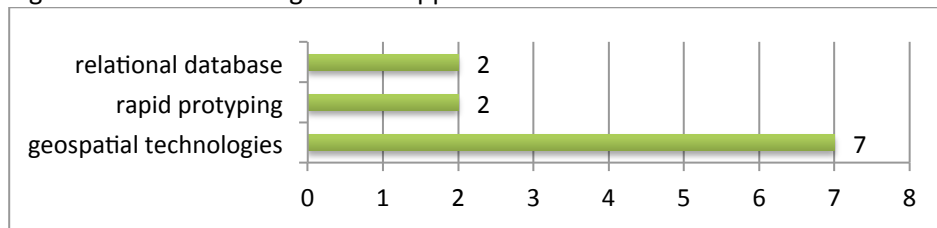
Type of Support	SMEs	Non-Profits	Hours
General Inquiries	24	3	188
Linkages for SMEs	1	1	1
Other' Advisory Services	7	1	156
Direct Support	11	2	1084
Total	29	4	1429

Figure 1. SMEs Receiving Advisory Services



¹ Dr. Douglas MacLeod, the Chair of the Royal Architectural Institute of Canada, delivered 4 *Technologies for Builders workshops* across the region as part of the Selkirk-SME ADT project.

Figure 2. SMEs Receiving Direct Support



Project staff, faculty and students were extensively involved in the Selkirk-SME ADT project with over 6648 hours of training, advisory and direct support provided to SMEs in our region. This included 3773 hours of project and technical staff support to SMEs, 2161 hours of student support, and 714 hours of faculty release time. It was identified that database development services are in high demand in the area and are indirectly related to existing Selkirk College programming. A member of the project technical staff, and former Selkirk College student, is considering a 'spin off' company to address this need.

UNDERSTANDING SME NEEDS AND COLLEGE CAPACITIES

Activities: review existing related research, minimum 20 1-on-1 consultations with SMEs, minimum 10 interviews with business support providers, research colleges' capacities and capabilities, research focused on best practices in colleges' support to SMEs, host 1 ADT in GIS conference, produce and disseminate online and print marketing materials

SME needs and college capacities research exceeded expectations with the production of a *SME Needs & College Capacities report* highlighting the ways that Selkirk College could best support the needs of SMEs in the region. It was identified that existing expertise in the areas of geospatial and digital media technologies were best positioned to support manufacturing, technology, energy, forestry, agricultural, and tourism sectors. Research involved the synthesis of existing and new research, including interviews with over 550 businesses in the region generated from the regional Business Retention and Expansion Pilot project, State of the Regional Economy research, findings from the regional Productivity Initiative, highlights from the Industrial Research Chair for Colleges consultations with industry, one-on-one ADT consultations with 220 SMEs, consultations with 11 business support providers, and a SME productivity and college applied research capacity literature review. Consultations were also conducted with project leads at other DTAPP funded colleges and senior faculty and administrators from Selkirk College, including Deans, Directors, School Chairs, and Coordinators focused on exploring any possible opportunities for SME training and support, including any specialized technological expertise that could be shared with SMEs. This research resulted in the *SME Needs & College Capacities report* including recommendations for future college applied research capacity improvements.

Online and print materials were produced to promote ADT support services available at Selkirk College. Five video profiles of SMEs who have adopted technology to improve productivity were produced and are featured at <http://cbrdi.ca/resources/videos/>. Currently an online intake mechanism and client / project management system is being developed to support future related applied research activities, internal and external communications and reporting.

SME Needs & College Capacities Report

- Literature review on adopting digital technologies to support productivity in rural SMEs
- Synthesis of existing SME needs related research reports
- One-on-one consultations with 220 SMEs
- One-on-one consultations with 11 business support providers
- One-on-one consultations with 18 Selkirk College senior staff

- Literature review on applied research at community colleges in Canada
- Consultations with ADT project leads at 4 other post-secondary institutions in BC and Alberta
- Identification of a series of ARI capacity improvement recommendations
- ARI related processes, policies, procedures and forms in development / approved
- Presentation of project-related lessons learned at the Association of Canadian Community Colleges Applied Research Symposium in March 2014
- Online 'request for ARI support' intake mechanism (in development post-project)
- Open source college client and project management and tracking system (in development post-project)
- Updated Applied Research and Innovation Strategic Plan (in development post-project)

New Ways to Use Digital Technologies in the Field 2-day Provincial Conference

- 55 conference attendees
- 1 key note speaker
- 1 day digital technologies workshop

Marketing Materials

- 5 ADT Video Profiles of SMEs
- 1 ADT at Selkirk College brochure produced
- 1 Selkirk Geospatial Research Centre Brochure produced
- 1 National Research Council Success Story featuring the Selkirk-SME ADT project
- 1 Project Launch and 1 Project End Press Release (in development)

Lessons Learned

Build relationships and partnerships The relationship with NRC-IRAP helped the college gain a better understanding of and adapt to the many specialized needs that arise from the industry sectors and types of businesses operating throughout the region. Partnerships with business support providers helped Selkirk College market training opportunities, generate referrals, and best position itself as part of landscape of service providers that support companies in the region. Partnerships with other post-secondary institutions helped to identify pockets of expertise from elsewhere that could benefit our region (e.g. *Technology for Builders* workshops). Selkirk College will continue to look for ways to actively explore opportunities to build collaborative partnerships.

Assess needs and manage expectations It is important to take the time needed to assess SMEs' specific needs rather than just stepping in and delivering what you believe they need. It has been useful to take a *SME cluster* approach to needs assessment research and targeted support to companies. For example, this project targeted agricultural businesses in the Boundary and Creston areas, hospitality and tourism businesses in Christina Lake and Revelstoke, forestry and manufacturing businesses in the West Kootenay corridor. Taking a methodical approach to assessing resources, time and staff was also key to ensuring decisions were based on the capacity to deliver measurable results.

Get students involved Co-op students from the geospatial and business administration programs played a significant role in this project, contributing over 2000 hours of research, training, advisory and direct support to companies. Utilizing student expertise has been an extremely effective way to enhance student learning through applied research and, at the same time, address the technology needs of companies. Faculty members are critical to ensuring quality learning opportunities are identified and supported.

Build capacity by doing Identify capacity limitations early in the project and collectively work to address those challenges. A lack of awareness, coordination, and purposeful alignment of applied research activities, and a lack of institutional and administrative support at the college were identified at the beginning of the project. An explicit goal of this project was to work to build capacity in these areas ‘by doing’. Selkirk College now has the capacity to continue and even expand the scope of support it can offer to companies and communities.

Next Steps

Selkirk College plans to continue to deliver ADT-related support through in-class projects, NSERC Applied Research and Development grants, by brokering partnerships with other post-secondary institutions, and is actively seeking National Research Council, Natural Sciences and Engineering Research Council of Canada, and/or Western Economic Diversification funding in order to build on the momentum generated from this project. Future support will build on identified expertise in geospatial and digital media technologies and possibly other areas and is expected to include applied research with companies in the following areas:

- Remote Sensing
- Digital Mapping
- Data Storage and Management
- Rapid Prototyping
- Repetitive Manufacturing
- 3 D Modelling

This project served to reinvigorate an Applied Research and Innovation (ARI) Working Group at Selkirk College. This group is now actively moving forward on recommendations aimed at further improving applied research and innovation capacity, including:

- Develop an ARI Strategic Plan building on recent ARI-related consultation and research efforts and recent lessons learned from the ADT project,
- Develop ARI policies, processes and procedures,
- Develop an Institutional Enterprise Model and related systems for self-funded institutes and departments to support the integration of ARI within administrative functions,
- Establish mechanisms to support the consolidation and coordination of ARI-related activities, evaluation and reporting and communications,
- Establish mechanisms to encourage and support faculty and student-led ARI activities (i.e. release time, research internships, community service learning placements), and
- Create opportunities to share ARI stories and celebrate successes.

Selkirk College is also now well positioned to broker the support of other post-secondary institutions that can offer specialized technological expertise outside the scope of existing Selkirk College capacities and capabilities. For example, an MOU will be signed between Selkirk College and BCIT to support commercialization related needs of companies in the region, a geospatial research partnership is being explored with College of New Caledonia, and opportunities for partnerships related to ‘mapping market opportunities’ are being explored.

Future training and applied research efforts will continue focus on identified *SME cluster* needs, actively building college applied research capacity, and incorporating lessons learned from this project.

The success of the Selkirk-SME ADT project is further evidenced by our National Research Council success story:
http://www.nrc-cnrc.gc.ca/eng/irap/dtapp/resources/casestudy_05.html